Cricket Valley Energy

July 23, 2020

Ms. Alyssa Carbone
Assistant Environmental Engineer
Division of Air Resources, Region 3
New York State Department of Environmental Conservation
21 South Putt Corners Road
New Paltz, NY 12561-1620

**RE: Title V Operating Permit Renewal Application**
**Cricket Valley Energy Center, LLC**

Dear Ms. Carbone,

Please find enclosed a Title V Operating Permit (TVOP) renewal application prepared by Tetra Tech for the Cricket Valley Energy Center, LLC (CVEC) located in Dover, NY. CVEC's TVOP Permit ID 3-1326-00275/00009 expires on February 2, 2021. In accordance with the Title 6 of the New York Code, Rules and Regulations, Subpart 201 (6 NYCRR 201-6.2(a)(4)), a renewal application must be submitted no later than 180 days prior to expiration of the permit, which is August 6, 2020.

This application does not propose any modifications to the current TVOP. We do note that Condition 1-13 (pages 41-42) in the current TVOP has compliance language for natural gas but this Condition is for the fire pump engine and the language should be for diesel. We also request a correction for Condition 23.2, that the ammonia limit of 5.0 ppmvd corrected to 15% Oxygen limit applies "*during all turbine loads, **excluding combustion turbine startup and shutdown**, all fuels being fired and all duct burner operations*."

Additionally, the Auxiliary Boiler (Process P02) is not equipped with Flue Gas Recirculation as it can meet its $NO_x$ emission limit with the installed low-$NO_x$ burners. Therefore, Emission Source/Control FGR01 has been removed in the TVOP renewal application.

This application includes an update to the proposed Startup and Shutdown Limits, as required by Condition 24 of TVOP, that was submitted to the Department on May 20, 2020. Based upon discussions with the Department, additional startup and shutdown data have been reviewed through June 2020. Provided in Attachment 8 are proposed Startup and Shutdown Limits.

Please contact me at 617-320-5219 or mduquette@cricketvalley.com if you have any questions regarding this application.

Sincerely,

Marc J. Duquette
Director, Environmental Health and Safety

# Title V Operating Permit Renewal Application
## Permit ID: 3-1326-00275/00009

## Cricket Valley Energy Center
## Dover, Dutchess County, New York

**July 2020**

*Prepared for:*

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TETRA TECH

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# ACRONYMS/ABBREVIATIONS

| Acronyms/Abbreviations | Definition |
|---|---|
| % | percent |
| BACT | Best Available Control Technology |
| CFR | Code of Federal Regulations |
| CI | compression ignition |
| CO | carbon monoxide |
| $CO_{2e}$ | carbon dioxide equivalents |
| CTG | combustion turbine generator |
| CVEC | Cricket Valley Energy Center, LLC |
| the Facility | Cricket Valley Energy Center |
| GE | General Electric |
| GHG | greenhouse gas |
| g/hp-hr | grams per horsepower-hour |
| HAP | hazardous air pollutant |
| hp | horsepower |
| HRSG | heat recovery steam generator |
| $H_2SO_4$ | sulfuric acid mist |
| kW | kilowatts |
| lb/MMBtu | pounds per million British thermal units |
| MW | megawatt |
| NAAQS | National Ambient Air Quality Standards |
| NESHAP | National Emissions Standards for Hazardous Air Pollutants |
| NNSR | Nonattainment New Source Review |
| $NO_x$ | nitrogen oxides |
| NSPS | New Source Performance Standards |
| NSR | New Source Review |
| NYCRR | New York Codes, Rules and Regulations |
| NYSDEC | New York State Department of Environmental Conservation |
| Pb | lead |

| | |
|---|---|
| the Permit | Air State Facility Permit Number 3-1326-00275/00009 |
| PM | particulate matter |
| $PM_{10}$ | particulate matter with a diameter equal to or less than 10 microns |
| $PM_{2.5}$ | particulate matter with a diameter equal to or less than 2.5 microns |
| ppmw | parts per million by weight |
| PSD | Prevention of Significant Deterioration |
| RACT | Reasonably Available Control Technology |
| RBLC | RACT/BACT/LAER Clearinghouse |
| SCR | selective catalytic reduction |
| SER | Significant Emission Rate |
| $SO_2$ | sulfur dioxide |
| $SO_3$ | sulfur trioxide |
| tpy | tons per year |
| ULSD | ultra-low sulfur distillate |
| USEPA | United States Environmental Protection Agency |
| VOC | volatile organic compounds |

# 1.0 INTRODUCTION

Cricket Valley Energy Center, LLC (CVEC) was issued Permit Number 3-1326-00275/00009 (the Permit) for the construction and operation of the Cricket Valley Energy Center (the Facility), a nominal net 1,000-megawatt (MW) combined-cycle electric generating facility, on a site located in Dover, Dutchess County, New York. In accordance with New York State Department of Environmental Conservation's (NYSDEC) regulations, the Permit authorized both construction of the facility in accordance with Title 6 New York Codes, Rules and Regulations (6 NYCRR) Part 231 and operating as a Title V source in accordance with 6 NYCRR Part 201-6. The Permit expires on February 2, 2021 and this application has been submitted more than 180 days prior to expiration in accordance with 6 NYCRR Part 201-6.2(a)(4)).

CVEC operates three General Electric (GE) Model 7FA.05 combustion turbine generators (CTGs) operating in combined-cycle mode with supplemental firing of the heat recovery steam generators (HRSGs). Natural gas is the sole fuel fired in the CTGs and duct burners. In addition to the CTGs, the facility operates a natural gas-fired auxiliary boiler, a 1,500-kilowatt (kW) ultra-low sulfur distillate (ULSD) fired emergency generator engine, and a 260-horsepower (hp) ULSD-fired emergency fire pump engine.

CVEC is operating in compliance with the Permit.

## 1.1 APPLICATION OVERVIEW

### 1.1.1 Application Organization

In accordance with NYSDEC regulations and guidance, a Title V Permit renewal application must contain all information required for an initial Title V Permit. This application includes the following:

- Application Forms
- List of Exempt Activities
- Plot Plan
- Process Flow Diagrams
- Methods Used to Determine Compliance
- Emission Calculations

### 1.1.2 Application Contacts

To facilitate agency review of this application, individuals familiar with the Facility and this application are identified below.

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# 2.0 FACILITY DESCRIPTION

## 2.1 FACILITY DESCRIPTION

The facility is located in Dover, Dutchess County, New York. The Facility uses GE 7FA.05 combustion turbine technology; supplemental (duct) firing in the combined-cycle unit HRSGs is incorporated into the facility's design. An auxiliary boiler is used to assist plant start-up and maintain warm or hot-start conditions during standby periods. The sole fuel for the CTGs, duct burners and auxiliary boiler is natural gas. The facility operates a 1,500 kW ULSD-fired emergency generator engine and a 260-hp ULSD-fired emergency fire pump engine to support facility operations. ULSD is the sole fuel for the emergency generator and emergency fire pump engines. An air-cooled condenser is a dry cooling system where steam is condensed inside air-cooled finned tubes; this system component is not an emission source.

## 2.2 DESCRIPTION OF SIGNIFICANT EMISSION SOURCES

### 2.2.1 Combustion Turbine Generators and Duct Burners

Thermal energy is produced by combustion of natural gas in the three CTGs and each CTG is capable of running independently of the other. The thermal energy is converted to mechanical energy in the CTG that drives its integral compressor and electric generator. Each CTG has a rated heat input of 2,395.7 million British thermal units per hour (MMBtu/hr). The duct burners in each HRSG have a permitted heat input of 247 MMBtu/hr, which was used as the basis for determining the potential to emit (PTE).

Each HRSG is equipped with a selective catalytic reduction (SCR) system to control nitrogen oxide ($NO_x$) emissions and an oxidation catalyst to control carbon monoxide (CO) and volatile organic compound (VOC) emissions from the CTG and duct burners. The SCR uses 19 percent aqueous ammonia ($NH_3$) as a reagent. The aqueous $NH_3$ is injected into the flue gas stream upstream of the SCR catalyst, where it mixes with $NO_x$. A catalyst bed is located in a temperature zone of the HRSG where the catalyst is most effective. The exhaust gases pass through the catalyst where the $NO_x$ reacts with $NH_3$ to form nitrogen gas ($N_2$) and water ($H_2O$). $NO_x$ concentrations are controlled to 2.0 parts per million by volume dry basis corrected to 15 percent $O_2$ (ppmvdc), with or without duct-firing, during all steady-state operating load conditions, including with and without duct firing. A small amount of $NH_3$ passes through the catalyst and is emitted to the atmosphere, which is called "ammonia slip."

Exhaust gases from the CTGs and duct burners pass through the oxidation catalyst where excess air oxidizes the CO and VOC to form carbon dioxide ($CO_2$) and $H_2O$. The oxidation catalyst system reduces CO concentrations to no greater than 2.0 parts per million by volume dry basis corrected to 15 percent $O_2$ (ppmvdc), with or without duct-firing, during all steady-state operating load conditions, including with and without duct firing. VOC concentrations are controlled to 0.7 ppmvdc without duct firing, and 2.0 ppmvdc with duct firing.

### 2.2.2 Auxiliary Boiler

The Facility operates an auxiliary boiler rated at 60 MMBtu/hr to assist with startup of the CTGs by maintaining warm or hot-start conditions during most standby periods. The auxiliary boiler fires natural gas as the sole fuel and operates as needed to keep the HRSG warm during periods when the CTGs are not operating and provide steam to the steam turbine generator to minimize start-up duration. The auxiliary boiler is limited to a maximum of 4,500 hours of operation per rolling 12-month period. The auxiliary boiler is equipped with low-$NO_x$ burners to minimize $NO_x$ emissions. Emissions of all other pollutants are minimized by using natural gas as the sole fuel and by employing good combustion practices.

### 2.2.3 Emergency Generator Engine

The Facility operates a Caterpillar Model 3512C emergency generator engine rated at 1,500 kW (electrical) to provide power to the Facility during periods when there is loss of power from the grid, for emergency lighting and other necessary systems to ensure plant safety. The emergency generator engine fires ULSD and has a mechanical power rating of 2,206 hp. The emergency generator engine is only used during periods when power from the grid is unavailable and for testing to maintain operational readiness in the event of an emergency. Therefore, operating hours are limited to 500 hours per year. The emergency generator engine has an associated small ULSD storage tank.

### 2.2.4 Emergency Diesel Fire Pump Engine

The Facility operates a Clarke Model JU6H-UFADS8 emergency fire pump powered by a John Deere Model 6068HFC48 engine rated at 260 hp (mechanical) to provide on-site firefighting capabilities. The emergency fire pump engine fires ULSD and typically only operates for testing and to maintain operational readiness in the event of an emergency. Similar to the emergency generator, it is limited to a maximum of 500 operating hours per year. The emergency fire pump engine has an associated small ULSD storage tank.

## 2.3 DESCRIPTION OF INSIGNIFICANT EMISSION SOURCES

The Facility utilizes ancillary equipment to support facility operations. This ancillary equipment is exempt from Title V permitting requirements as Exempt Activities in accordance with 6 NYCRR Subpart 201-3.2. The Facility also includes a number of Trivial Activities as defined under 6 NYCRR Subpart 201-3.3.

### 2.3.1 Aqueous Ammonia Storage Tanks

The Facility includes a 19 percent by weight aqueous $NH_3$ tank for use in the SCR system. The tank is exempt from air permitting as a pressurized storage vessel in accordance with 6 NYCRR Subpart 201-3.2(22).

### 2.3.2 Fuel Oil Storage Tank

The emergency generator and emergency fire pump engines each have a dedicated ULSD storage tank. These tanks are exempt from air permitting as distillate fuel storage tanks with a capacity less than 300,000 gallons in accordance with 6 NYCRR Subpart 201-3.2(21).

### 2.3.3 Trivial Activities

The Facility conducts the following trivial activities:

- Boiler water treatment operations;
- Office equipment - copying machines, computer/word processor printers, blueprint copying machines, paper shredders, and photographic processing equipment;
- Hand-held or manually operated equipment used for buffing, polishing, carving, cutting, drilling, machining, routing, sanding, sawing, surface grinding, sand blasting or turning ceramic art work, ceramic precision parts, leather, metal parts, plastics. fiberboard, fiberglass, masonry, carbon, glass, graphite, wood or rubber;
- General facility maintenance activities - plastic pipe welding, soldering, brazing, cutting torches, janitorial activities, steam cleaning, water washing, acid and caustic washing activities, miscellaneous use of solvents, adhesives and caulking, miscellaneous sandblasting, non-asbestos insulation removal, application of refractory and insulation, the periodic use of air for clean-up, and, the process of demolition and rebricking boilers, smelters, furnaces and kilns (this does not include the subsequent operation of such

equipment), the surface coating of equipment and buildings as is related to maintenance and construction, and activities which occur for maintenance of grounds such as lawn care, weed control and pest control;
- Employee/visitor activities - smoking areas for the consumption of tobacco products, cooking equipment for food, comfort air conditioning systems, hot water tanks, and clothes dryer vents;
- Vehicle emissions - vehicle emissions from forklifts, automobiles, trucks, cranes, bulldozers, etc.;
- Storage of portable containers, drums, and bags of chemicals in rooms, buildings and warehouses;
- Trivial activities that have been identified by U.S. EPA in Appendix A of the "White Paper" issued on July 10, 1995.

## 2.4 EMISSIONS ESTIMATES

### 2.4.1 Potential Annual Emissions

Air emissions from the Facility consist of products of combustion from the CTGs, duct burners, auxiliary boiler, and two emergency engines. Emissions from the insignificant activities and trivial activities have not been quantified in accordance with OAC Chapter 3745-77-03(C)(3). The Facility does not operate any sources of fugitive emissions with quantifiable emissions and therefore, fugitive emissions are not provided with this application.

Table 2-1 presents a summary of the potential annual criteria pollutant, GHG, and total hazardous air pollutants (HAPs) emissions for each significant emission source listed in Section 2.2 in units of tpy.

**Table 2-1. Summary of Potential Emissions For Significant Emission units (tpy)**

| Pollutant | CTGS | Auxiliary Boiler | Emergency Generator Engine | Emergency Fire Pump Engine | Facility Total |
|---|---|---|---|---|---|
| $NO_x$ | 244.0 | 1.15 | 5.84 | 0.43 | 251.4 |
| CO | 287.8 | 4.99 | 3.16 | 0.37 | 296.3 |
| VOC | 94.9 | 0.20 | 0.24 | 0.03 | 95.4 |
| $SO_2$ | 37.8 | 0.15 | 0.005 | 0.001 | 38.0 |
| $PM_{10}/PM_{2.5}$ | 173.3 | 0.68 | 0.18 | 0.02 | 174.1 |
| $H_2SO4$ | 20 | 0.01 | 0.0004 | 0.00005 | 19.7 |
| GHG | 3,577,129 | 15,811 | 595 | 74 | 3,593,609 |
| Total HAPs | 17.67 | 0.25 | 0.02 | 0.003 | 17.9 |

Supporting emission calculations for Table 2-1 are provided in Appendix F.

### 2.4.2 Startup and Shutdown Emissions

Condition 24 of the Permit requires the Facility to monitor all occurrences of startup and shutdown from the combustion turbines, including the duration of each startup and shutdown event, and the total pounds of emissions of $NO_X$, CO, and $NH_3$ during each startup and shutdown event.

Condition 24 also requires the Facility to submit proposed startup and shutdown limits to the Department. Initial proposed limits were submitted to NYSDEC by email on May 20, 2020, based on actual startup and shutdown data

through April 30, 2020. NYSDEC has agreed that the Facility may submit revisions to the proposed startup and shutdown limits as part of this application.

Table 2-2 presents the currently proposed startup and shutdown limits, which are based on an updated analysis of actual operating and emissions data for a total of 131 startup events and 121 shutdown events, occurring between February 21 and June 30, 2020. A detailed description of this analysis, and requested permit language for the proposed startup and shutdown limits, are provided in Appendix G.

**Table 2-2. Proposed Startup and Shutdown Limits for Combustion Turbines**

| Type of Event | Duration (minutes) | $NO_X$ (lb/event) | CO (lb/event) | $NH_3$ (lb/event) |
|---|---|---|---|---|
| Startup | 60 | 80.0 | 330.0 | 25.0 |
| Shutdown | 20 | 5.0 | 5.0 | 3.0 |

The initial application for the Permit was based upon a maximum startup duration of 60 minutes. However, the Facility has experienced several startup events on all three units longer than 60 minutes since the Facility has achieved commercial operation. CVEC is reviewing startup procedures with GE to make every effort to limit startup duration to less than 60 minutes. However, CVEC does not want to propose a permit limit that cannot be met consistently. Therefore, CVEC may propose a startup duration longer than 60 minutes pending the outcome of the review of startup procedures with GE. Should CVEC determine that a longer startup time is necessary, we will provide NYSDEC with a detailed analysis to document why the longer duration is necessary with supporting documentation from GE. If deemed necessary by CVEC, a proposal for a longer startup duration will be provided to NYSDEC within 45 calendar days of submittal of the application. The proposed pound per event limits in Table 2-2 are supported by the analysis of facility-specific SU/SD data provided in Appendix G and consequently would not be changed by any future proposed change in startup duration.

Appendix G also requests that a condition be added to define a “tuning event,” which is a twice-yearly maintenance activity performed on each combustion turbine to optimize its performance prior to each summer and winter season. The requested permit language states that the emission limits for steady-state operation, startup, and shutdown would not apply during “tuning events,” and states that each turbine would be allowed up to two tuning events per calendar year, not to exceed four hours per event.

Finally, Appendix G requests modified permit language for the existing ppmvd limits for $NO_X$, CO, and $NH_3$, to state that the steady-state ppmvd limits do not apply to any 1-hour average that contains at least one minute of startup or shutdown, and do not apply to any 1-hour average that includes part of a tuning event.

# 3.0 REGULATORY APPLICABILITY EVALUATION

This section contains an analysis of the applicability of federal and state air quality regulations to the proposed Facility. The specific regulations and programs that are included in this review include:

- New Source Review (NSR);
- New Source Performance Standards (NSPS);
- Federal National Emission Standards for Hazardous Air Pollutants (NESHAP);
- Federal Acid Rain Program; and
- Other NYSDEC requirements.

## 3.1 NEW SOURCE REVIEW

NSR applies to proposed new major sources of air pollutants. The NSR program for major sources includes two distinct permitting programs, Prevention of Significant Deterioration (PSD) permitting for projects located in an area designated as unclassified or attainment with the National Ambient Air Quality Standards (NAAQS) and Non-Attainment New Source Review (NNSR) permitting for projects located in an area designated as nonattainment with the NAAQS. As an area may be in attainment with one or more NAAQS and nonattainment with one or more NAAQS at any time, an individual project may be subject to both PSD and NNSR permitting depending upon its potential emissions. The NYSDEC has adopted under Title 6 New York Codes, Rules and Regulations (NYCRR) Part 231 permitting requirements for new sources that establishes the requirements for projects subject to NNSR and/or PSD requirements. Dutchess County is designated as unclassified or attainment with all applicable ambient air quality standards. However, all of New York State is located in the Ozone Transport Region and therefore, the entire state is treated as a marginal nonattainment area for ozone.

Under the NNSR program, a project located in an area designated as nonattainment for ozone must satisfy NNSR requirements for NOx and/or VOC emissions if they exceed the NNSR thresholds. The NNSR thresholds for $NO_x$ and VOC emissions in Dutchess County are 100 tons per year (tpy) and 50 tpy, respectively. Under the PSD program, combined-cycle CTG power plants with potential emissions greater than 100 tpy of one or more criteria pollutants are considered new major stationary sources. Once a major source threshold is triggered for one pollutant under the PSD program, PSD review must also be completed for all pollutants whose potential emissions exceed their respective Significant Emission Rate (SER).

Table 3-1 presents a comparison of the Facility's potential emissions with the applicable NNSR and PSD major source thresholds. As summarized in Table 3-1, the Facility exceeds the NNSR major source thresholds for $NO_x$ and VOC emissions and exceeds the PSD major source threshold for $NO_x$, CO, and $PM_{10}/PM_{2.5}$. In addition, the Facility's potential emissions of VOC, sulfuric acid ($H_2SO_4$), and greenhouse gases (GHGs) exceed their respective SER and, therefore, PSD review is also required for these pollutants.

The Permit contains all applicable requirements under the PSD and NNSR programs.

**Table 3-1. Summary of Permitted Potential Emissions and NSR Thresholds**

| Pollutant | Annual Emissions (tpy) | NNSR Major Source Threshold (tpy) | PSD Major Source Threshold (tpy) | PSD SER (tpy) | NNSR Applies? (Yes/No) | PSD Applies? (Yes/No) |
|---|---|---|---|---|---|---|
| $PM_{10}$ | 174.1 | N/A | 100 | 15 | N/A | Yes |
| $PM_{2.5}$ | 174.1 | N/A | 100 | 10 | N/A | Yes |
| $SO_2$ | 38.0 | N/A | 100 | 40 | N/A | No |
| $NO_x$ | 251.4 | 100 | 100 | 40 | Yes | Yes |
| CO | 296.3 | N/A | 100 | 100 | N/A | Yes |
| VOC | 95.4 | 50 | 100 | 40 | Yes | Yes |
| $H_2SO_4$ | 19.7 | N/A | 100 | 7 | N/A | Yes |
| Pb | $1.3 \times 10^{-3}$ | N/A | 10 | 0.6 | N/A | No |
| GHGs[a] | 3,593,609 | N/A | NA | 75,000 | N/A | Yes |

[a] GHGs are expressed as carbon dioxide equivalents ($CO_2e$). Note that as of a June 23,2014, Supreme Court Decision, GHG emissions cannot determine major source status. The United States Environmental Protection Agency (USEPA) issued a Policy Memo dated July 24, 2014, indicating that it will apply the current GHG SER threshold for requiring PSD BACT review for GHG "anyway" sources.

## 3.2 NEW SOURCE PERFORMANCE STANDARDS

NSPS are technology-based standards applicable to new and modified stationary sources. NSPS have been established for approximately 70 source categories. Several NSPS subparts apply to the Facility. Following is a description of the applicable subparts and the Facility's compliance with these standards.

### 3.2.1 40 CFR 60 Subpart A – General Provisions

Any source subject to an applicable standard under 40 Code of Federal Regulations (CFR) 60 is also subject to the general provisions under Subpart A. Because the Facility is subject to other Subparts of the regulation, the requirements of Subpart A also apply. The Facility has complied with the applicable notifications, performance testing, recordkeeping, and reporting outlined in Subpart A.

### 3.2.2 40 CFR 60 Subpart KKKK – Stationary Combustion Turbines

Subpart KKKK places emission limits on $NO_x$ and $SO_2$ on the combustion turbines and duct burners. For new CTGs firing natural gas with a rated heat input greater than 850 MMBtu/hr, the applicable $NO_x$ emission limits are:

- 15 ppmvdc for natural gas and 42 ppmvdc for oil; or
- 54 nanograms per Joule (ng/J) of useful output (0.43 pounds per megawatt-hour [lb/MW-hr]) for natural gas and 160 ng/J or useful energy output (1.3 lb/MW-hr) for oil.

Additionally, $SO_2$ emissions are limited to:

- Emissions limited to 110 ng/J (0.90 lb/MW-hr) gross output; or
- Emissions limited to 26 ng/J (0.060 lb/MMBtu).

The CTGs and duct burners are controlled with an SCR system to limit $NO_x$ emissions to 2.0 ppmvdc for natural gas firing. $SO_2$ emissions are limited to 0.0015 lb/MMBtu by firing pipeline-quality natural gas.

Additionally, the provisions of this Subpart require continuous monitoring of $NO_x$ emissions, which can be satisfied by use of a 40 CFR Part 75 certified $NO_x$ continuous emissions monitoring system (CEMS). Each combustion turbine is equipped with a CEMS.

### 3.2.3 40 CFR 60 Subpart TTTT – Greenhouse Gas Emissions for New or Modified Electric Generating Units

Subpart TTTT limits carbon dioxide ($CO_2$) emissions from new CTGs with an annual capacity factor (on a 3-year rolling basis) that exceeds its "design efficiency" as defined in the rule. The combustion turbines and duct burners are subject to this standard and the applicable limit is 1,000 pounds of $CO_2$ per megawatt-hour (lb $CO_2$/MW-hr) gross energy output or 1,030 lb $CO_2$/MW-hr net energy output on a rolling 12-month basis. The Facility continuously monitors $CO_2$ emissions in accordance with 40 CFR Part 75 and gross electrical output in accordance with Subpart TTTT to demonstrate compliance with this emission limit. The Subpart TTTT applicable requirements, including emission limits, operating limits, monitoring, recordkeeping, and reporting, have been included in the applicable requirements provided in the eBusiness Center Title V application form.

### 3.2.4 40 CFR 60 – Subpart Dc – Small Industrial-Commercial-Institutional Steam Generating Units

Subpart Dc is applicable to steam generating units with a maximum heat input capacity greater than 10 MMBtu/hr and less than 100 MMBtu/hr. The installed auxiliary boiler has a maximum heat input capacity of 60 MMBtu/hr and is subject to this standard. The standard requires initial notifications at the start of construction and at initial start-up. In addition, records must be maintained regarding the amount of fuel burned on a monthly basis. No emission or operating limits are imposed by this standard on natural gas fired boilers.

### 3.2.5 40 CFR 60 – Subpart IIII – Stationary Compression Ignition Internal Combustion Engines

Subpart IIII is applicable to owners and operators of stationary compression ignition (CI) internal combustion engines that commence operation after July 11, 2005. This standard applies to the emergency generator and emergency fire pump diesel engines.

For model year 2009 and later, fire pump engines with a displacement less than 30 liters per cylinder and an energy rating between 175 and 300 hp, Table 4 of Subpart IIII provides the following emission limits:

- 3.0 grams per horsepower-hour [g/hp-hr]) of NOx + VOC
- 2.6 g/hp-hr of CO
- 0.15 g/hp-hr of PM

To comply with Subpart IIII, new emergency stationary CI generator engines with a displacement less than 30 liters per cylinder must meet the emission standards per 40 CFR 60.4205(b). The applicable limits for a 2,206-hp mechanical emergency generator engine (1,500 kW electrical) are USEPA's Tier 2 limits as follows:

- 4.8 g/hp-hr of $NO_x$ + VOC
- 2.6 g/hp-hr of CO
- 0.15 g/hp-hr of PM

Compliance with these emission standards are demonstrated by purchasing an engine that has been certified by the manufacturer to meet these limits. The Facility has purchased engines meeting these limits as certified by the manufacturer. In addition to these emission limits, this standard imposes operating restrictions, maintenance requirements, and recordkeeping requirements. The Subpart IIII requirements applicable to each engine, including

emission limits, operating limits, monitoring, recordkeeping, and reporting, have been included in the applicable requirements provided in the application forms.

## 3.3 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (40 CFR PARTS 61 AND 63)

There are no 40 CFR Part 61 standards applicable to the Facility's operations. USEPA AP-42 emission factors, other applicable emission factors, and vendor information were reviewed to determine the Facility's applicability to a standard under 40 CFR Part 63. Based on potential emission calculations, the potential emissions of a single HAP do not exceed the major source threshold of 10 tpy and potential emissions of combined HAPs are less than the major source threshold of 25 tpy. Therefore, the major source NESHAP standards under 40 CFR Part 63 are not applicable to the Facility.

NESHAP Subpart YYYY is applicable to new combustion turbines located at major sources of HAP emissions. CVEC is a minor source of HAP emissions and therefore, NESHAP Subpart YYYY does not apply.

The USEPA has also promulgated a variety of standards applicable to area sources, those sources that are not considered major sources of HAPs. NESHAP Subpart JJJJJJ applies to certain industrial, commercial, and institutional boilers located at an area source. Natural gas fired boilers are exempt from this standard and therefore it does not apply to the auxiliary boiler.

NESHAP Subpart ZZZZ applies to reciprocating internal combustion engines located at an area source. In accordance with this NESHAP, new emergency engines are required to meet the requirements under the applicable NSPS. As discussed in Section 3.2.5, the emergency generator and emergency fire pump engines meet the NSPS requirements under 40 CFR 60 Subpart IIII and therefore are compliant with NESHAP Subpart ZZZZ.

## 3.4 ACCIDENTAL RELEASE PROGRAM

Section 112(r) of the Clean Air Act governs the storage and handling of certain chemicals. Aqueous $NH_3$ at a concentration of 19% by weight will be used as the reagent for the SCR systems for controlling $NO_x$ emissions. Facilities that store aqueous $NH_3$ solutions containing less than 20% ammonia by weight are not subject to the accidental release requirements under Section 112(r) and are not required to prepare a Risk Management Plan in accordance with 40 CFR 68, Subpart G.

## 3.5 ACID RAIN PROGRAM

Title IV of the Clean Air Act Amendments required USEPA to establish a program to reduce emissions of acid rain forming pollutants, called the Acid Rain Program. The overall goal of this program is to achieve significant environmental benefits through reduction in $SO_2$ and $NO_x$ emissions. To achieve this goal, the program employs a market-based approach for controlling air pollution. Under the market-based aspect of the program, affected units are allocated $SO_2$ allowances by the USEPA, which may be used to offset emissions, or traded under the market allowance program. In addition, to ensure that facilities do not exceed their allowances, affected units are required to monitor and report their emissions using a CEMS system or optional emissions data protocol per Appendix D, as approved under 40 CFR Part 75.

The Facility is subject to the Acid Rain Program based on the provisions of 40 CFR 72.6(a)(3) because the combined cycle gas turbine units are considered "utility units" under the program definition and they do not meet the exemptions listed under paragraph (b) of this Section. The Facility's Acid Rain Permit is incorporated into the Permit. The Facility is operating in accordance with its Acid Rain permit. A renewal application for the Acid Rain Permit is provided in Appendix H.

## 3.6 CROSS-STATE AIR POLLUTION RULE

The Cross-State Air Pollution Rule (CSAPR) went into effect on January 1, 2015, and replaced the Clean Air Interstate Rule (CAIR). New York is subject to the CSAPR and subject units must comply with the program. The facility's three CTGs are subject units and therefore must comply with CSAPR.

The NYSDEC has adopted regulations under 6 NYCRR Parts 243 ($NO_x$ Ozone Season Group 2 Trading Program), 244 ($NO_x$ Annual Trading Program), and 245 ($SO_2$ Group 1 Trading Program) to administer the CSAPR program in New York. In accordance with these regulations, the NYSDEC controls the allowance allocation and accounting process; emissions are reported to the United States Environmental Protection Agency (EPA) through their Clean Air Markets program, specifically via the Acid Rain CEMS installed on each budget unit. The NYSDEC CSAPR rules establish both seasonal and annual power plant emission budgets for $SO_2$ and $NO_X$ based upon the budgets established for New York State by the EPA. "Seasonal" refers to the five-month ozone season (OS, May 1st through September 30th). New York sources are subject to the annual $NO_X$ allowance program, the Group 2 $NO_X$ OS allowance program, and Group 1 annual $SO_2$ allowance program. For states in designated Group 1 or Group 2 programs (not relevant to the annual $NO_X$ program), the Group 1 and Group 2 allowances are not interchangeable.

The facility will receive an allocation from New York's CSAPR New Unit Set Aside (NUSA) account for each of the three budget programs. The facility must secure sufficient allowances through the NUSA account, and the allowance market place if necessary, to cover actual emissions for each calendar year. CVEC's first compliance year under the three CSAPR budget rules will be the 2020 operating year. CSAPR does not impose any new permitting requirements on the facility. The facility will comply with the applicable CSAPR requirements.

## 3.7 STATE OF NEW YORK REGULATIONS

In addition to regulations already discussed in preceding sections, state regulations that pertain to this Facility are listed in Table 3-2. Titles shown in italics in the table are permits, notifications, and/or reports needed for construction and operation of the Facility.

**Table 3-2. NYSDEC Applicable Regulations**

| Rule | Description |
|---|---|
| *6 NYCRR Part 201-6* | *Title V Permits* |
| 6 NYCRR Part 202-1 | Emissions test methods and procedures for new and existing sources |
| 6 NYCRR Part 225-1 | Limits sulfur content of fuels |
| 6 NYCRR Part 227-1 | Control of particulate and visible emissions from stationary sources |
| 6 NYCRR Part 227-2 | Reasonably Available Control Technology (RACT) for Major Facilities of NOx |
| *6 NYCRR Part 231* | *Permit to Install New Sources of Pollution* |
| 6 NYCRR Part 242 | $CO_2$ Budget Trading Program |
| 6 NYCRR Part 251 | $CO_2$ Performance Standards for Major Electric Generating Facilities |

The requirements of the regulations listed in Table 3-2 that apply to the facility are provided in the Title V application forms.

### 3.7.1 Regional Greenhouse Gas Initiative

The NYSDEC has adopted regulations under 6 NYCRR Part 242 ($CO_2$ Budget Trading Program), to administer the Regional Greenhouse Gas Initiative (RGGI) program in New York. RGGI is a cooperative effort of ten Northeast and Mid-Atlantic states (Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, New Jersey, Rhode Island, and Vermont) to implement a regional cap-and-trade program to control $CO_2$ emissions from power plants. The RGGI program requires electric generating units equal to or greater than 25 MW to hold sufficient $CO_2$ allowances to cover actual emissions. Facilities subject to the Acid Rain Program quantify emissions in accordance with 40 CFR 75. New York's program does not allocate allowances to subject units, all allowances must be purchased through auctions held quarterly. CVEC's first compliance year under the RGGI program rule will be the 2020 operating year.

# 4.0 REFERENCES

Rising et al. 2004. *Survey of Ultra-Trace Metals in Gas Turbine Fuels* by Rising, Sorurbakhsh and Wu, American Chemical Society Paper, Division of Fuel Chemistry, 2004

USEPA 2000. Compilation of Air Pollutant Emission Factors AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources.

# APPENDIX A: PERMIT APPLICATION FORMS

# New York State Department of Environmental Conservation
# Air Permit Application

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

| DEC ID | Application ID | Application Type |
|---|---|---|
| 3-1326-00275 | -/ | State Facility ¯ Title V |

## Section I - Certification

### Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information required to complete this application, I believe the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

| | |
|---|---|
| Responsible Official Marc Duquette | Title Director, EH&S |
| Signature Marc A. Duquette | Date 7/24/20 |

### Professional Engineer Certification

I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments as they pertain to the practice of engineering. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

| | |
|---|---|
| Professional Engineer Mark Swyka | NYS License No. 06453 |
| Signature | Date 7-21-2020 |

STATE OF NEW YORK MARK A. SWYKA LICENSED PROFESSIONAL ENGINEER

## Section II - Identification Information

### Type of Permit Action Requested

New × Renewal Significant Modification Administrative Amendment Minor Modification

Application for the construction of a new facility ¯ Application involves the construction of new emission unit(s)

### Facility Information

Name Cricket Valley Energy Center, LLC

Location Address 2241 NY Route 22

City / × Town / ¯ Village Dover Plains | Zip

### Owner/Firm Information

Business Taxpayer ID: 270605498

Name Cricket Valley Energy Center, LLC

Street Address 155 Federal Street, 17th Floor

City Boston | State/Province MA | Country United States | Zip 02110

Owner Classification: Federal State Municipal × Corporation/Partnership Individual

### Owner/Firm Contact Information

| | |
|---|---|
| Name Marc Duquette | Phone (617) 320-5219 |
| E-mail Address mduquette@cricketvalley.com | Fax |
| Affiliation Cricket Valley Energy Center, LLC | Title Director, EH&S |
| Street Address 2241 ST RTE 22 | |
| City Dover Plains \| State/Province NY \| Country United States | Zip 12522 |

### Facility Contact Information

| | |
|---|---|
| Name Marc Duquette | Phone |
| E-mail Address mduquette@cricketvalley.com | Fax |
| Affiliation Cricket Valley Energy Center, LLC | Title |
| Street Address 2241 ST RTE 22 | |
| City Dover Plains \| State/Province NY \| Country United States | Zip 12522 |

**New York State Department of Environmental Conservation**
**Air Permit Application**

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

| DEC ID |
|---|
| 3 - 1 3 2 6 - 0 0 2 7 5 |

**Project Description** ☐ Continuation Sheet(s)

Title V Operating Permit No. 3-1326-00275/00009 (Mod 1 effective date 03/23/2018, Mod 2 effective date 12/05/2018, expiration date 02/02/2021) renewal application.

## Section III - Facility Information

**Facility Classification**

☐ Hospital ☐ Residential ☐ Educational/Institutional ☐ Commercial ☐ Industrial ☒ Utility

**Affected States (Title V Applications Only)**

☐ Vermont ☐ Massachusetts ☐ Rhode Island ☐ Pennsylvania Tribal Land: _____
☐ New Hampshire ☐ Connecticut ☐ New Jersey ☐ Ohio Tribal Land: _____

| SIC Code(s) | | | NAICS Code(s) | | | |
|---|---|---|---|---|---|---|
| 4911 | | | 221112 | | | |

**Facility Description** ☐ Continuation Sheet(s)

The facility is an electric generating plant with three General Electric Model 7FA.05 natural gas fired combustion turbine generators (CTGs) operating in combined cycle mode. The exhaust from each CTG is sent to a heat recovery steam generator (HRSG) to generate additional electricity in a steam turbine generator (STG). Each HRSG is equipped with natural gas fired duct burners to create additional steam during periods of peak demand.

**Compliance Statements (Title V Applications Only)**

I certify that as of the date of this application the facility is in compliance with all applicable requirements. ☒ Yes ☐ No

If one or more emission units at the facility are not in compliance with all applicable requirements at the time of signing this application (the 'NO' box must be checked), the noncomplying units must be identified in the "Compliance Plan" block on page 8 of this form along with the compliance plan information required. For all emission units at the facility that are operating in compliance with all applicable requirements, complete the following:

☒ This facility will continue to be operated and maintained in such a manner as to assure compliance for the duration of the permit, except those emission units referenced in the compliance plan portion of this application.

☒ For all emission units subject to any applicable requirements that will become effective during the term of the permit, this facility will meet such requirements on a timely basis.

☒ Compliance certification reports will be submitted at least once per year. Each report will certify compliance status with respect to each applicable requirement, and the method used to determine the status.

**Facility Applicable Federal Requirements** ☐ Continuation Sheet(s)

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 201 | 1 | 2 | | | | | |
| 6 | NYCRR | 201 | 1 | 4 | | | | | |
| 6 | NYCRR | 201 | 1 | 5 | | | | | |
| | | | | | | | | | |

**Facility State Only Requirements** ☐ Continuation Sheet(s)

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 201 | 5 | | | | | | |
| 6 | NYCRR | 211 | 2 | | | | | | |
| 6 | NYCRR | 242 | | | | | | | |
| 6 | NYCRR | 251 | 3 | a | 1 | | | | |

| DEC ID |
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| 3 - 1 3 2 6 - 0 0 2 7 5 |

## Section III - Facility Information

### Facility Description (continuation)

Combustion emissions from the CTGs and duct burners are controlled by the use of natural gas as the sole fuel and good combustion practices. Additional reduction in emissions of nitrogen oxides (NOx) and carbon monoxide (CO) are achieved through the use of selective catalytic reduction (SCR) and an oxidation catalyst, respectively.

In addition to the primary electric generating equipment, the facility includes a natural gas fired auxiliary boiler, a 1,500 kilowatt (kW) emergency diesel generator engine, a 260 horsepower emergency diesel fire pump engine, an air cooled condenser (ACC), an aqueous ammonia storage tank, and a waste water treatment system.

Additional details are provided in the attached application text, completed application forms, supporting emission calculations and vendor equipment specifications.

**New York State Department of Environmental Conservation**
**Air Permit Application Form**

| DEC ID |
|---|
| 3 - 1 3 2 6 - 0 0 2 7 5 |

## Section III - Facility Information

| Facility Applicable Federal Requirements (continuation) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
| 6 | NYCRR | 201 | 6 | 2 | d | | | | |
| 6 | NYCRR | 201 | 1 | 10 | a | | | | |
| 6 | NYCRR | 201 | 2 | | | | | | |
| 6 | NYCRR | 201 | 3 | 2 | a | | | | |
| 6 | NYCRR | 201 | 3 | 3 | a | | | | |
| 6 | NYCRR | 201 | | 1 | a | 1 | | | |
| 6 | NYCRR | 201 | 6 | 1 | a | 2 | | | |
| 6 | NYCRR | 201 | 6 | 1 | a | 4 | | | |
| 6 | NYCRR | 201 | 6 | 2 | a | 4 | | | |
| 6 | NYCRR | 202 | 1 | 1 | | | | | |
| 6 | NYCRR | 202 | 1 | 2 | | | | | |
| 6 | NYCRR | 202 | 1 | 3 | | | | | |
| 6 | NYCRR | 211 | 1 | | | | | | |
| 6 | NYCRR | 211 | 2 | | | | | | |
| 6 | NYCRR | 225 | 1 | 2 | g | | | | |
| 6 | NYCRR | 227 | 1 | 3 | a | | | | |
| 6 | NYCRR | 227 | 1 | 3 | b | | | | |
| 6 | NYCRR | 231 | 3 | | | | | | |
| 6 | NYCRR | 231 | 4 | | | | | | |
| 6 | NYCRR | 231 | 5 | | | | | | |
| 6 | NYCRR | 231 | 7 | | | | | | |
| 6 | NYCRR | 231 | 11 | 1 | | | | | |
| 6 | NYCRR | 231 | 12 | | | | | | |
| 40 | CFR | 60 | A | 7 | a | 1 | | | |
| 40 | CFR | 60 | A | 7 | b | | | | |
| 40 | CFR | 60 | A | 13 | | | | | |
| 40 | CFR | 60 | IIII | 4211 | a | | | | |
| 40 | CFR | 60 | IIII | 4211 | c | | | | |
| 40 | CFR | 60 | KKKK | 4333 | | | | | |
| 40 | CFR | 60 | KKKK | 4375 | a | | | | |
| 40 | CFR | 72 | | | | | | | |

**New York State Department of Environmental Conservation**
**Air Permit Application Form**

| DEC ID |
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| 3 - 1 3 2 6 - 0 0 2 7 5 |

## Section III - Facility Information

**Facility Applicable Federal Requirements (continuation)**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 40 | CFR | 68 | | | | | | | |
| 40 | CFR | 82 | F | | | | | | |
| 6 | NYCRR | 243 | | | | | | | |
| 6 | NYCRR | 244 | | | | | | | |
| 6 | NYCRR | 245 | | | | | | | |
| 6 | NYCRR | 272 | | | | | | | |
| 6 | NYCRR | 201 | 6 | 4 | | | | | |
| 6 | NYCRR | 201 | 6 | 6 | | | | | |
| 6 | NYCRR | 202 | 1 | 4 | | | | | |
| 6 | NYCRR | 202 | 2 | 3 | | | | | |
| 6 | NYCRR | 202 | 2 | 4 | | | | | |
| 6 | NYCRR | 202 | 2 | 5 | | | | | |
| 6 | NYCRR | 231 | 10 | | | | | | |
| 40 | CFR | 60 | TTTT | | | | | | |
| 40 | CFR | 75 | | | | | | | |
| 40 | CFR | 97 | AAAAA | | | | | | |
| 40 | CFR | 97 | CCCCC | | | | | | |
| 40 | CFR | 97 | EEEEE | | | | | | |
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**New York State Department of Environmental Conservation**
**Air Permit Application Form**

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| 3 - 1 3 2 6 - 0 0 2 7 5 |

## Section III - Facility Information

| Facility State Only Requirements (continuation) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
| 6 | NYCRR | 251 | 5 | | | | | | |
| 6 | NYCRR | 251 | 6 | | | | | | |
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| DEC ID |
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**Facility Compliance Certification** — × Continuation Sheet(s)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 211 | 2 | | | | | | |

| Applicable Federal Requirement / × State Only Requirement | Capping | CAS Number | Contaminant Name |
|---|---|---|---|
| | | | |

**Monitoring Information**

Work Practice Involving Specific Operations | Ambient Air Monitoring | Record Keeping/Maintenance Procedures

**Compliance Activity Description**

Except as permitted by a specific part of this Subchapter and for open fires for which a restricted burning permit has been issued, no person shall cause or allow any air contamination source to emit any material having an opacity equal to or greater than 20 percent (six minute average) except for one continuous six-minute period per hour of not more than 57 percent opacity.

| Work Practice Type Code | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | |

| Monitored Parameter Code | Monitored Parameter Description | Manufacturer's Name/Model Number |
|---|---|---|
| 01 | Opacity | |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 20 | 0 | 136 | percent |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 18 | 6 min avg (Method 9) | 4 | Upon request | 10 | Upon request |

**Facility Emissions Summary** — × Continuation Sheet(s)

| CAS Number | Contaminant Name | Potential to Emit (tons/yr) | Actual Emissions (pounds/yr) |
|---|---|---|---|
| 0NY075 - 00 - 5 | PM-10 | 174.1 | |
| 0NY750 - 02 - 5 | PM-2.5 | 174.1 | |
| 007446 - 09 - 5 | Sulfur Dioxide | 38.0 | |
| 0NY210 - 00 - 0 | Oxides of Nitrogen | 251.4 | |
| 000630 - 08 - 0 | Carbon Monoxide | 296.3 | |
| 007439 - 92 - 1 | Lead (elemental) | 0.0013 | |
| 0NY998 - 00 - 0 | Total Volatile Organic Compounds | 95.4 | |
| 0NY100 - 00 - 0 | Total Hazardous Air Pollutants | 17.9 | |
| 0NY750 - 00 - 0 | Carbon Dioxide Equivalents | 3,593,609 | |
| 7664-93-9 | Sulfuric Acid Mist | 19.7 | |
| 7664-41-7 | Ammonia | 225.5 | |
| 106-99-0 | 1,3-Butadiene | 0.013 | |
| 75-07-0 | Acetaldehyde | 1.2 | |

| DEC ID |
|---|
| 3 - 1 3 2 6 - 0 0 2 7 5 |

## Section III - Facility Information

**Facility Emissions Summary (continuation)**

| CAS No. | Contaminant Name | PTE | | Actual |
|---|---|---|---|---|
| | | (lbs/yr) | Range | (lbs/yr) |
| 107-02-8 | Acrolein | 2,453 | | |
| 120-12-7 | Anthracene | 0.02 | | |
| 71-43-2 | Benzene | 753 | | |
| 56-55-3 | Benzo(a)anthracene | 0.02 | | |
| 50-32-8 | Benzo(a)pyrene | 0.01 | | |
| 106-97-8 | Butane | 3,952 | | |
| 218-01-9 | Chrysene | 0.02 | | |
| 53-70-3 | Dibenz(a,h)anthracene | 0.01 | | |
| 74-84-0 | Ethane | 5,834 | | |
| 100-41-4 | Ethylbenzene | 1,962 | | |
| 50-00-0 | Formaldehyde | 7,129 | | |
| 110-54-3 | Hexane | 9,190 | | |
| 91-20-3 | Napthalene | 83.8 | | |
| 109-66-0 | Pentane | 4,893 | | |
| 85-01-8 | Phenanthrene | 0.1 | | |
| 130498-29-2 | PAH | 140.1 | | |
| 74-98-6 | Propane | 3,011 | | |
| 115-07-1 | Propylene | 23 | | |
| 75-56-9 | Propylene Oxide | 1,809 | | |
| 129-00-0 | Pyrene | 0.06 | | |
| 108-88-3 | Toluene | 7,991 | | |
| 1330-20-7 | Xylene(s) | 3,926 | | |
| 07440-38-2 | Arsenic | 1.0 | | |
| 07440-39-3 | Beryllium | 0.06 | | |
| 07440-41-7 | Barium | 8.3 | | |
| 07440-43-9 | Cadmium | 5.6 | | |
| 07440-47-3 | Chromium | 7.2 | | |
| 07440-48-4 | Cobalt | 0.4 | | |
| 07440-50-8 | Copper | 1.6 | | |
| 07439-96-5 | Manganese | 1.9 | | |

**New York State Department of Environmental Conservation**
**Air Permit Application Form**

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

| DEC ID |
|---|
| 3 - 1 3 2 6 - 0 0 2 7 5 |

## Section III - Facility Information

**Facility Emissions Summary (continuation)**

| CAS No. | Contaminant Name | PTE (lbs/yr) | PTE Range | Actual (lbs/yr) |
|---|---|---|---|---|
| 07439-97-6 | Mercury | 1.3 | | |
| 07439-98-7 | Molybdenum | 2.1 | | |
| 07440-02-0 | Nickel | 10.7 | | |
| 07782-49-2 | Selenium | 0.1 | | |
| 07440-62-2 | Vanadium | 4.3 | | |
| 07440-66-6 | Zinc | 101 | | |
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Continuation Sheet 2 of 2

**New York State Department of Environmental Conservation**
**Air Permit Application Form**

| DEC ID |
|---|
| 3 - 1 3 2 6 - 0 0 2 7 5 |

## Section III - Facility Information

### Facility Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 227 | 1 | 3 | a | | | | |

| | | CAS No. | Contaminant Name |
|---|---|---|---|
| ☒ Applicable Federal Requirement<br>☐ State Only Requirement | ☐ Capping | | Opacity |

**Monitoring Information**

- ☐ Continuous Emission Monitoring
- ☐ Intermittent Emission Testing
- ☐ Ambient Air Monitoring
- ☒ Monitoring of Process or Control Device Parameters as a Surrogate
- ☐ Work Practice Involving Specific Operations
- ☐ Record Keeping/Maintenance Procedures

**Description**

No person shall operate a stationary combustion installation which exhibits greater than 20 percent opacity (six minute average), except for one six-minute period per hour of not more than 27 percent opacity.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 01 | Parameter | |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 20 | 0 | 136 | Percent |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 18 | 6-minute avg (Method 9) | 4 | Upon Request | 10 | Upon Request |

| DEC ID |
|---|
| 3-1326-00275 |

## Section IV - Emission Unit Information

| Emission Unit Description | ☐ Continuation Sheet(s) |
|---|---|
| Emission Unit | U-00001 |

This emission unit will consist of one natural gas fired GE Model 7F.05 combustion turbine generator (CTG) and one heat recovery team generator (HRSG) with supplemental natural gas firing exhausted through a common stack.

**Building Information** ☐ Continuation Sheet(s)

| Building ID | Building Name | Length (ft) | Width (ft) | Orientation |
|---|---|---|---|---|
| CTGEN01 | Combustion Turbine Generator Building | 670 | 100 | 0° |
| HRSG01 | Heat Recovery Steam Generator Enclosure | 128 | 160 | 90° |
| ACC01 | Air Cooled Condenser | 190 | 190 | 90° |
| | | | | |

Emission Unit: -

**Emission Unit Emissions Summary** ☐ Continuation Sheet(s)

| CAS Number | Contaminant Name | | | |
|---|---|---|---|---|
| | | | | |
| ERP (lbs/yr) | Potential to Emit | | Actual Emissions | |
| | (lbs/hr) | (lbs/yr) | (lbs/hr) | (lbs/yr) |
| | | | | |

| CAS Number | Contaminant Name | | | |
|---|---|---|---|---|
| | | | | |
| ERP (lbs/yr) | Potential to Emit | | Actual Emissions | |
| | (lbs/hr) | (lbs/yr) | (lbs/hr) | (lbs/yr) |
| | | | | |

| CAS Number | Contaminant Name | | | |
|---|---|---|---|---|
| | | | | |
| ERP (lbs/yr) | Potential to Emit | | Actual Emissions | |
| | (lbs/hr) | (lbs/yr) | (lbs/hr) | (lbs/yr) |
| | | | | |

| CAS Number | Contaminant Name | | | |
|---|---|---|---|---|
| | | | | |
| ERP (lbs/yr) | Potential to Emit | | Actual Emissions | |
| | (lbs/hr) | (lbs/yr) | (lbs/hr) | (lbs/yr) |
| | | | | |

# New York State Department of Environmental Conservation
# Air Permit Application

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

| DEC ID |
|---|
| 3-1326-00275 |

## Emission Point Information

☐ Continuation Sheet(s)

| Emission Point | EP001 | | | | | |
|---|---|---|---|---|---|---|
| Ground Elevation (ft) | Height (ft) | Height Above Structure (ft) | Inside Diameter (in) | Exit Temp. (°F) | Cross Section | |
| | | | | | Length (in) | Width (in) |
| 435 | 283 | 170 | 228 | 165 | | |
| Exit Velocity (FPS) | Exit Flow (ACFM) | NYTM (E) (KM) | NYTM (N) (KM) | Building | Distance to Property Line (ft) | Date of Removal |
| 44 | 756,000 | | | | | |

| Emission Point | | | | | | |
|---|---|---|---|---|---|---|
| Ground Elevation (ft) | Height (ft) | Height Above Structure (ft) | Inside Diameter (in) | Exit Temp. (°F) | Cross Section | |
| | | | | | Length (in) | Width (in) |
| | | | | | | |
| Exit Velocity (FPS) | Exit Flow (ACFM) | NYTM (E) (KM) | NYTM (N) (KM) | Building | Distance to Property Line (ft) | Date of Removal |
| | | | | | | |

| Emission Point | | | | | | |
|---|---|---|---|---|---|---|
| Ground Elevation (ft) | Height (ft) | Height Above Structure (ft) | Inside Diameter (in) | Exit Temp. (°F) | Cross Section | |
| | | | | | Length (in) | Width (in) |
| | | | | | | |
| Exit Velocity (FPS) | Exit Flow (ACFM) | NYTM (E) (KM) | NYTM (N) (KM) | Building | Distance to Property Line (ft) | Date of Removal |
| | | | | | | |

## Emission Source/Control Information

☐ Continuation Sheet(s)

| Emission Source ID | Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model Number |
|---|---|---|---|---|---|---|---|
| CT001 | C | 12/2017 | 10/2019 | N/A | | | General Electric 7F.05 |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| 2333.1 | 25 | MMBtu/hr (HHV) at ISO conditions | | | | |

| Emission Source ID | Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model Number |
|---|---|---|---|---|---|---|---|
| DB001 | C | 12/2017 | 10/2019 | N/A | | | |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| 247 | 25 | MMBtu/hr (HHV) | | | | |

| Emission Source ID | Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model Number |
|---|---|---|---|---|---|---|---|
| DLN01 | K | 12/2017 | 10/2019 | N/A | 103 | Dry low Nox Burner | General Electric |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| | | | | | | |

**New York State Department of Environmental Conservation**
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| 3 - 1 3 2 6 - 0 0 2 7 5 |

## Section IV - Emission Unit Information

**Emission Source/Control (continuation)**

Emission Unit: U - 0 0 0 0 1

| Emission Source ID | Emission Source Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model No. |
|---|---|---|---|---|---|---|---|
| SCR01 | K | 12/2017 | 10/2019 | N/A | 033 | Selective Catalytic Reduction | Alstom |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| | | | | | | |

| Emission Source ID | Emission Source Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model No. |
|---|---|---|---|---|---|---|---|
| OXC01 | K | 12/2017 | 10/2019 | N/A | 110 | Oxidation Catalyst | |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| | | | | | | |

| Emission Source ID | Emission Source Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model No. |
|---|---|---|---|---|---|---|---|
| AUX01 | C | 12/2017 | 10/2019 | N/A | | | |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| 60 | 25 | MMBtu/hr (HHV) | | | | |

| Emission Source ID | Emission Source Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model No. |
|---|---|---|---|---|---|---|---|
| LNB01 | K | 12/2017 | 08/2019 | N/A | 102 | Low-NOx Burner | Alzeta CSB560 |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| | | | | | | |

| Emission Source ID | Emission Source Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model No. |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| | | | | | | |

| Emission Source ID | Emission Source Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model No. |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| | | | | | | |

| DEC ID |
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**Process Information** ☒ Continuation Sheet(s)

Emission Unit U-00001 Process P01

**Process Description**

Natural gas firing of the GE 7F.05 combustion turbine (CT001) with and without supplemental firing (DB001). Dry low-NOx combustors (DLN01) and selective catalytic reduction (SCR01) will be used to control NOx emissions. An oxidation catalyst (OXC01) will be used to control CO and VOC emissions. Natural gas throughput rates based upon a heat content of 1,000 BTU/CF (HHV) and include both CT001 and DB001. Quantity per hour is based upon maximum hourly rate for all ambient conditions and quantity per year is based upon maximum hourly rate at ISO conditions for 8,760 hours per year.

| Source Classification Code (SCC) | Total Throughput | | Throughput Quantity Units | |
|---|---|---|---|---|
| | Quantity/Hr | Quantity/Yr | Code | Description |
| 2-01-002-01 | 2.64 | 22,050 | 0115 | million cubic feet of natural gas |

| Confidential / Operating at Maximum Capacity | Operating Schedule | | Building | Floor/Location |
|---|---|---|---|---|
| | Hours/Day | Days/Year | | |
| ☒ Operating at Maximum Capacity | 24 | 365 | CTGEN01 | First Floor |

**Emission Point Identifier(s)**

| | | | | | | |
|---|---|---|---|---|---|---|
| EP001 | | | | | | |

**Emission Source/Control Identifier(s)**

| | | | | | | |
|---|---|---|---|---|---|---|
| CT001 | DLN01 | SCR01 | OXC01 | | | |
| | | | | | | |

Emission Unit U-00001 Process P02

**Process Description**

Natural gas firing of the auxiliary boiler (AUX01) with a maximum firing rate of 60 MMBtu/hr (HHV). Operation of the auxiliary boiler will be limited to no more than 4,500 hours per 12-month period. Natural gas throughput rates based upon a heat content of 1,000 BTU/CF (HHV). See Section 2 of this application for a more detailed process description.

| Source Classification Code (SCC) | Total Throughput | | Throughput Quantity Units | |
|---|---|---|---|---|
| | Quantity/Hr | Quantity/Yr | Code | Description |
| 1-02-006-02 | 0.06 | 270 | 0115 | million cubic feet of natural gas |

| Confidential / Operating at Maximum Capacity | Operating Schedule | | Building | Floor/Location |
|---|---|---|---|---|
| | Hours/Day | Days/Year | | |
| ☒ Operating at Maximum Capacity | 24 | See Description | | |

**Emission Point Identifier(s)**

| | | | | | | |
|---|---|---|---|---|---|---|
| EP001 | | | | | | |

**Emission Source/Control Identifier(s)**

| | | | | | | |
|---|---|---|---|---|---|---|
| AUX01 | LNB01 | | | | | |
| | | | | | | |

| DEC ID |
|---|
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| Emission Unit | Emission Point | Process | Emission Source | Emission Unit Applicable Federal Requirements | | | | | | | | | | × Continuation Sheet(s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Title | Type | Part | Subpart | Section | Subdiv. | Parag. | Subparag. | Cl. | Subcl. | |
| U-00001 | EP001 | P01 | CT001 | 40 | CFR | 60 | KKKK | 4320 | 1 | | | | | |
| U-00001 | EP001 | P01 | CT001 | 40 | CFR | 60 | KKKK | 4330 | a | 2 | | | | |
| U-00001 | EP001 | P01 | CT001 | 40 | CFR | 60 | KKKK | 4333 | a | | | | | |
| U-00001 | EP001 | P01 | CT001 | 40 | CFR | 60 | KKKK | 4340 | b | 1 | | | | |

| Emission Unit | Emission Point | Process | Emission Source | Emission Unit State Only Requirements | | | | | | | | | | × Continuation Sheet(s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Title | Type | Part | Subpart | Section | Subdiv. | Parag. | Subparag. | Cl. | Subcl. | |
| U-00001 | EP001 | P01 | CT001/DB001 | 6 | NYCRR | 242 | 1 | 5 | | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 6 | NYCRR | 242 | 2 | 4 | | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 6 | NYCRR | 242 | 3 | | | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 6 | NYCRR | 242 | 4 | | | | | | | |

**Emission Unit Compliance Certification** ☐ Continuation Sheet(s)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 5 | 4 | | | | | |

Applicable Federal Requirement | State Only Requirement | Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS Number | Contaminant Name |
|---|---|---|---|---|---|
| U-00001 | EP001 | P01 | CT001 / DB001 | NY210-00-0 | Oxides of Nitrogen (NOx) |

**Monitoring Information**

× Continuous Emission Monitoring
Intermittent Emission Testing
Ambient Air Monitoring
Monitoring of a Process or Control Device Parameters as a Surrogate
Work Practice Involving Specific Operations
Record Keeping/Maintenance Procedures

**Compliance Activity Description**

Facility will maintain a NOx emission limit of 2.0 ppmv at 15 percent O2 (w/ and w/o duct burning) to satisfy LAER. This will be achieved through the application of DLN burners in combination with SCR. This limit applies at all load conditions except startup and shutdown. The facility will use CEMS to monitor NOx stack emissions.

| Work Practice Type Code | Process Material | | Reference Test Method |
|---|---|---|---|
| | Code | Description | |
| | | | 40 CFR 60, App. A, Method 7E |

| Monitored Parameter | | Manufacturer's Name/Model Number |
|---|---|---|
| Code | Description | |
| 23 | concentration | GE DLN, SCR Alstom |

| Limit | | Limit Units | |
|---|---|---|---|
| Upper | Lower | Code | Description |
| 2.0 | | 275 | parts per million by volume (dry) at 15% O2 |

| Averaging Method | | Monitoring Frequency | | Reporting Requirements | |
|---|---|---|---|---|---|
| Code | Description | Code | Description | Code | Description |
| 08 | 1-hour average | 01 | continuous | 07 | quarterly |

**New York State Department of Environmental Conservation**
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## Section IV - Emission Unit Information

| Emission Unit | Emission Point | Process | Emission Source | Emission Unit Applicable Federal Requirements (continuation) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Title | Type | Part | Subpart | Section | Subdiv. | Parag. | Subparag. | Clause | Subcl. |
| U-00001 | EP001 | P01 | CT001 | 40 | CFR | 60 | KKKK | 4345 | | | | | |
| U-00001 | EP001 | P01 | CT001 | 40 | CFR | 60 | KKKK | 4350 | | | | | |
| U-00001 | EP001 | P01 | CT001 | 40 | CFR | 60 | KKKK | 4365 | | | | | |
| U-00001 | EP001 | P01 | CT001 | 40 | CFR | 60 | KKKK | 4375 | | | | | |
| U-00001 | EP001 | P01 | CT001 | 40 | CFR | 60 | KKKK | 4380 | | | | | |
| U-00001 | EP001 | P01 | CT001 | 40 | CFR | 60 | KKKK | 4395 | | | | | |
| U-00001 | EP001 | P01 | CT001 | 40 | CFR | 60 | KKKK | 4400 | | | | | |
| U-00001 | EP001 | P01 | CT001 | 40 | CFR | 60 | KKKK | 4405 | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 40 | CFR | 72 | A | 6 | a | 3 | i | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 40 | CFR | 72 | A | 9 | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 40 | CFR | 75 | A | 2 | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 40 | CFR | 75 | B | 10 | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 40 | CFR | 75 | B | 11 | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 40 | CFR | 75 | B | 12 | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 40 | CFR | 75 | B | 13 | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 40 | CFR | 75 | C | | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 40 | CFR | 75 | D | | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 40 | CFR | 75 | F | | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 40 | CFR | 75 | G | | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 40 | CFR | 75 | H | | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 40 | CFR | 97 | A | | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 40 | CFR | 97 | D | | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 40 | CFR | 97 | H | | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 40 | CFR | 97 | AAAAA | | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 40 | CFR | 97 | CCCCC | | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 40 | CFR | 97 | EEEEE | | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 6 | NYCRR | 227 | 2 | 4 | e | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 6 | NYCRR | 227 | 2 | 6 | a | 4 | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 6 | NYCRR | 227 | 2 | 6 | b | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 6 | NYCRR | 231 | 5 | 4 | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 6 | NYCRR | 231 | 7 | 6 | | | | | |

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## Section IV - Emission Unit Information

| Emission Unit | Emission Point | Process | Emission Source | Emission Unit Applicable Federal Requirements (continuation) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Title | Type | Part | Subpart | Section | Subdiv. | Parag. | Subparag. | Clause | Subcl. |
| U-00001 | EP001 | P01 | CT001/DB001 | 6 | NYCRR | 243 | | | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 6 | NYCRR | 244 | | | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 6 | NYCRR | 245 | | | | | | | |
| U-00001 | EP001 | P02 | AUX01 | 40 | CFR | 60 | Dc | 48c | a | | | | |
| U-00001 | EP001 | P02 | AUX01 | 6 | NYCRR | 231 | 5 | 5 | 4 | | | | |
| U-00001 | EP001 | P02 | AUX01 | 6 | NYCRR | 231 | 7 | 7 | 6 | | | | |

Continuation Sheet 2 of 2

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| 3 | - | 1 | 3 | 2 | 6 | - | 0 | 0 | 2 | 7 | 5 |

## Section IV - Emission Unit Information

| Emission Unit | Emission Point | Process | Emission Source | Emission Unit State Only Requirements (continuation) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Title | Type | Part | Subpart | Section | Subdiv. | Parag. | Subparag. | Clause | Subcl. |
| U-00001 | EP001 | P01 | CT001/DB001 | 6 | NYCRR | 242 | 5 | | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 6 | NYCRR | 242 | 6 | | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 6 | NYCRR | 242 | 7 | | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 6 | NYCRR | 242 | 8 | | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 6 | NYCRR | 251 | 3 | | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 6 | NYCRR | 251 | 4 | | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 6 | NYCRR | 251 | 5 | | | | | | |
| U-00001 | EP001 | P01 | CT001/DB001 | 6 | NYCRR | 251 | 6 | | | | | | |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 227 | 2 | 4 | e | 3 | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00001 | EP001 | P01 | CT001/DB001 | NY210-00-0 | Oxides of Nitrogen |

**Monitoring Information**

☒ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

The turbines will meet a LAER emission rate of 2.0 ppmvd at 15% O2, with and without duct firing. The emission level applies at all operating loads except during startup and shutdown. LAER is more stringent than 227.2.4 and therefore satisfies this requirement.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | 40 CFR 60, App. A, Method 7E |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | DLN from GE, SCR from Alstom |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 2.0 | | 275 | parts per million by volume (dry, corrected to 15% O2) |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 08 | 1-hour average | 01 | continuous | 07 | quarterly |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 40 | CFR | 60 | KKKK | 4320 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00001 | EP001 | P01 | CT001/DB001 | NY210-00-0 | Oxides of Nitrogen |

**Monitoring Information**

☒ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

The facility will meet a LAER emission rate of 2.0 ppmvd at 15% O2, with and without duct firing. The emission levels apply at all operating loads except during startup and shutdown. LAER is more stringent than 40 CFR 60.4320 and therefore satisfies this requirement.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | 40 CFR 60, App. A, Method 7E |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | DLN from GE, SCR from Alstom |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 2.0 | | 275 | parts per million by volume (dry, corrected to 15% O2) |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 08 | 1-hour average | 01 | continuous | 07 | quarterly |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 5 | 4 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00001 | EP001 | P01 | CT001/DB001 | NY998-00-0 | Volatile Organic Compounds |

**Monitoring Information**

☐ Continuous Emission Monitoring
☒ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

The facility will meet a LAER emission rate of 1.8 ppmvd at 15% O2 with duct firing and 0.7 ppmvd at 15% O2 without duct firing. The emission levels apply at all operating loads except during startup and shutdown. These emission levels will be achieved through good combustion practices and an oxidation catalyst. Stack testing for non-methane hydrocarbons will be conducted to demonstrate compliance with these limits.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | 40 CFR 60, App. A, Method 25A & 18 |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | Oxidation catalyst is TBD |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 2.0 | | 275 | parts per million by volume (dry, corrected to 15% O2) |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 08 | 1-hour average | 14 | As required | 10 | Upon request |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 7 | 6 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00001 | EP001 | P01 | CT001/DB001 | 630-08-0 | Carbon Monoxide |

**Monitoring Information**

☒ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

The facility will meet a BACT emission rate of 2.0 ppmvd at 15% O2 with and without duct firing. This emission levels apply at all operating loads except during startup and shutdown. These emission levels will be achieved through good combustion practices and an oxidation catalyst. CEMS will be used to demonstrate compliance.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | 40 CFR 60, App. A, Method 10 |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | Oxidation catalyst is TBD |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 2.0 | | 275 | parts per million by volume (dry, corrected to 15% O2) |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 08 | 1-hour average | 01 | Continuous | 07 | Quarterly |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 7 | 6 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00001 | EP001 | P01 | CT001/DB001 | NY075-00-0 | Particulate Matter |

**Monitoring Information**

☐ Continuous Emission Monitoring
☒ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

Facility will maintain a PM10/PM2.5 emission limit of 0.005 lb/MMBtu without duct burning and 0.006 lb/MMBtu with duct burning as BACT for the proposed project. These levels of emissions will be achieved by firing pipeline quality natural gas as the sole fuel in the turbines and duct burner. The facility will conduct stack testing to demonstrate compliance with these limits.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | 40 CFR 60, App. A, Method 5 and RM201/201A & 202 |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 0.006 | | 7 | pounds per million Btu |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 08 | 1-hour average | 14 | As required | 10 | Upon request |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 7 | 6 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00001 | EP001 | P01 | CT001/DB001 | 7664-09-5 | Sulfur Dioxide |

**Monitoring Information**

☐ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☒ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

Facility will maintain a SO2 emission limit of 0.0015 lb/MMBtu (with and without duct burning) as BACT. This level of emissions will be achieved by firing pipeline quality natural gas with a maximum sulfur content of 0.4 grains/100 SCF in the combustion turbine and duct burners.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| 04 | 12 | Natural gas | |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 32 | Sulfur Content | |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 0.4 | | 13 | grains per 100 DSCF |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 17 | Annual maximum rolled monthly | 05 | Monthly | 10 | Upon request |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 7 | 6 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00001 | EP001 | P01 | CT001/DB001 | 7664-93-9 | Sulfuric Acid Mist |

**Monitoring Information**

☐ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☒ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

Facility will maintain a sulfuric acid mist emission limit of 0.00065 lb/MMBtu (with and without duct burning) as BACT. This level of emissions will be achieved by firing pipeline quality natural gas with a maximum sulfur content of 0.4 grains/100 SCF in the combustion turbine and duct burners.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| 04 | 12 | Natural gas | |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 32 | Sulfur Content | |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 0.4 | | 13 | grains per 100 DSCF |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 17 | Annual maximum rolled monthly | 05 | Monthly | 10 | Upon request |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 227 | 2 | 4 | c | 1 | ii | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00001 | EP001 | P02 | AUX01 | NY210-00-0 | Oxides of Nitrogen |

**Monitoring Information**

☐ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☒ Record Keeping/Maintenance Procedures

**Description**

The auxiliary boiler will meet a LAER emission rate of 0.0085 lb/MMBtu. The auxiliary boiler will use low-NOx burners to control NOx emissions. LAER is more stringent than 227.2.4 and therefore satisfies this requirement.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | 40 CFR 60, App. A, Method 7E |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 0.011 | | 7 | pounds per million Btu |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 08 | 1-hour average | 14 | As required | 10 | Upon request |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 5 | 4 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00001 | EP001 | P02 | AUX01 | NY210-00-0 | Oxides of Nitrogen |

**Monitoring Information**

☐ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☒ Record Keeping/Maintenance Procedures

**Description**

The auxiliary boiler will meet a LAER emission rate of 0.0085 lb/MMBtu. The auxiliary boiler will use low-NOx burners to meet this limit. The facility will use vendor guarantees and/or stack testing to document compliance with this LAER emission limit, as required.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | 40 CFR 60, App. A, Method 7E |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 0.011 | | 7 | pounds per million Btu |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 08 | 1-hour average | 14 | As required | 10 | Upon request |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 5 | 4 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00001 | EP001 | P02 | AUX01 | NY998-08-0 | Volatile Organic Compounds |

**Monitoring Information**

☐ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☒ Record Keeping/Maintenance Procedures

**Description**

The auxiliary boiler will meet a LAER emission rate of 0.0015 lb/MMBtu through the use of good combustion practices. The facility will use vendor guarantees and/or stack testing to document compliance with this LAER emission limit, as required.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | 40 CFR 60, App. A, Methods 18 & 25A |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 0.0015 | | 7 | pounds per million Btu |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 08 | 1-hour average | 14 | As required | 10 | Upon request |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 7 | 6 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00001 | EP001 | P02 | AUX01 | 630-08-0 | Carbon Monoxide |

**Monitoring Information**

☐ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☒ Record Keeping/Maintenance Procedures

**Description**

The auxiliary boiler will meet a BACT emission rate of 0.0375 lb/MMBtu through the use of good combustion practices. The facility will use vendor guarantees and/or stack testing to document compliance with this BACT emission limit, as required.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | 40 CFR 60, App. A, Method 10 |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 0.0375 | | 7 | pounds per million Btu |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 08 | 1-hour average | 14 | As required | 10 | Upon request |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 7 | 6 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00001 | EP001 | P02 | AUX01 | NY075-00-0 | Particulate Matter |

**Monitoring Information**

☐ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☒ Record Keeping/Maintenance Procedures

**Description**

The auxiliary boiler will meet a BACT emission rate of 0.005 lb/MMBtu for PM10/PM2.5 through the use of good combustion practices and firing pipeline quality natural gas as the sole fuel. The facility will use vendor guarantees and/or stack testing to document compliance with this BACT emission limit, as required.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | 40 CFR 60, App. A, Method 5 and RM201/201A & 202 |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 0.005 | | 7 | pounds per million Btu |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 08 | 1-hour average | 14 | As required | 10 | Upon request |

| DEC ID |
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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 7 | 6 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00001 | EP001 | P02 | AUX01 | 7664-09-05 | Sulfur Dioxide |

**Monitoring Information**

☐ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☒ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

Facility will maintain a SO2 emission limit of 0.0015 lb/MMBtu as BACT. This level of emissions will be achieved by firing pipeline quality natural gas with a maximum sulfur content of 0.4 grains/100 SCF.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| 04 | 12 | Natural Gas | |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 32 | Sulfur Content | |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 0.4 | | 13 | grains per 100 DSCF |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 17 | Annual maximum rolled monthly | 05 | Monthly | 10 | Upon request |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 7 | 6 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00001 | EP001 | P02 | AUX01 | 7664-93-09 | Sulfuric Acid Mist |

**Monitoring Information**

☐ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☒ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

Facility will maintain a sulfuric acid mist emission limit of 0.0001 lb/MMBtu as BACT. This level of emissions will be achieved by firing pipeline quality natural gas with a maximum sulfur content of 0.4 grains/100 SCF.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| 04 | 12 | Natural Gas | |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 32 | Sulfur Content | |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 0.4 | | 13 | grains per 100 DSCF |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 17 | Annual maximum rolled monthly | 05 | Monthly | 10 | Upon request |

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## Section IV - Emission Unit Information

| Emission Unit Description | ☐ Continuation Sheet(s) |
|---|---|
| Emission Unit: U-00002 | |

This emission unit will consist of one natural gas fired GE Model 7F.05 combustion turbine generator (CTG) and one heat recovery team generator (HRSG) with supplemental natural gas firing exhausted through a common stack.

**Building Information** ☐ Continuation Sheet(s)

| Building ID | Building Name | Length (ft) | Width (ft) | Orientation |
|---|---|---|---|---|
| CTGEN02 | Combustion Turbine Generator Building | 670 | 100 | 0° |
| HRSG02 | Heat Recovery Steam Generator Enclosure | 128 | 160 | 90° |
| ACC01 | Air Cooled Condenser | 190 | 190 | 90° |
| | | | | |

**Emission Unit Emissions Summary** ☐ Continuation Sheet(s)

Emission Unit: -

| CAS Number | Contaminant Name | | | |
|---|---|---|---|---|
| | | | | |
| ERP (lbs/yr) | Potential to Emit | | Actual Emissions | |
| | (lbs/hr) | (lbs/yr) | (lbs/hr) | (lbs/yr) |
| | | | | |

| CAS Number | Contaminant Name | | | |
|---|---|---|---|---|
| | | | | |
| ERP (lbs/yr) | Potential to Emit | | Actual Emissions | |
| | (lbs/hr) | (lbs/yr) | (lbs/hr) | (lbs/yr) |
| | | | | |

| CAS Number | Contaminant Name | | | |
|---|---|---|---|---|
| | | | | |
| ERP (lbs/yr) | Potential to Emit | | Actual Emissions | |
| | (lbs/hr) | (lbs/yr) | (lbs/hr) | (lbs/yr) |
| | | | | |

| CAS Number | Contaminant Name | | | |
|---|---|---|---|---|
| | | | | |
| ERP (lbs/yr) | Potential to Emit | | Actual Emissions | |
| | (lbs/hr) | (lbs/yr) | (lbs/hr) | (lbs/yr) |
| | | | | |

# New York State Department of Environmental Conservation
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## Emission Point Information

☐ Continuation Sheet(s)

| Emission Point | EP002 | | | | | |
|---|---|---|---|---|---|---|
| Ground Elevation (ft) | Height (ft) | Height Above Structure (ft) | Inside Diameter (in) | Exit Temp. (°F) | Cross Section | |
| | | | | | Length (in) | Width (in) |
| 435 | 283 | 170 | 228 | 165 | | |
| Exit Velocity (FPS) | Exit Flow (ACFM) | NYTM (E) (KM) | NYTM (N) (KM) | Building | Distance to Property Line (ft) | Date of Removal |
| 44 | 756,000 | | | | | |

| Emission Point | | | | | | |
|---|---|---|---|---|---|---|
| Ground Elevation (ft) | Height (ft) | Height Above Structure (ft) | Inside Diameter (in) | Exit Temp. (°F) | Cross Section | |
| | | | | | Length (in) | Width (in) |
| | | | | | | |
| Exit Velocity (FPS) | Exit Flow (ACFM) | NYTM (E) (KM) | NYTM (N) (KM) | Building | Distance to Property Line (ft) | Date of Removal |
| | | | | | | |

| Emission Point | | | | | | |
|---|---|---|---|---|---|---|
| Ground Elevation (ft) | Height (ft) | Height Above Structure (ft) | Inside Diameter (in) | Exit Temp. (°F) | Cross Section | |
| | | | | | Length (in) | Width (in) |
| | | | | | | |
| Exit Velocity (FPS) | Exit Flow (ACFM) | NYTM (E) (KM) | NYTM (N) (KM) | Building | Distance to Property Line (ft) | Date of Removal |
| | | | | | | |

## Emission Source/Control Information

☐ Continuation Sheet(s)

| Emission Source ID | Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model Number |
|---|---|---|---|---|---|---|---|
| CT002 | C | 12/2017 | 11/2019 | N/A | | | General Electric 7F.05 |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| 2333.1 | 25 | MMBtu/hr (HHV) at ISO conditions | | | | |

| Emission Source ID | Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model Number |
|---|---|---|---|---|---|---|---|
| DB002 | C | 12/2017 | 11/2019 | N/A | | | |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| 247 | 25 | MMBtu/hr (HHV) | | | | |

| Emission Source ID | Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model Number |
|---|---|---|---|---|---|---|---|
| DLN02 | K | 12/2017 | 11/2019 | N/A | 103 | Dry low Nox Burner | General Electric |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| | | | | | | |

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## Section IV - Emission Unit Information

### Emission Source/Control (continuation)

Emission Unit: U - 0 0 0 0 2

| Emission Source ID | Emission Source Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model No. |
|---|---|---|---|---|---|---|---|
| SCR02 | K | 12/2017 | 11/2019 | N/A | 033 | Selective Catalytic Reduction | Alstom |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| | | | | | | |

| Emission Source ID | Emission Source Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model No. |
|---|---|---|---|---|---|---|---|
| OXC02 | K | 12/2017 | 11/2019 | N/A | 110 | Oxidation Catalyst | |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| | | | | | | |

| Emission Source ID | Emission Source Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model No. |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| | | | | | | |

| Emission Source ID | Emission Source Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model No. |
|---|---|---|---|---|---|---|---|
| | K | | | | | | |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| | | | | | | |

| Emission Source ID | Emission Source Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model No. |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| | | | | | | |

| Emission Source ID | Emission Source Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model No. |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| | | | | | | |

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**Process Information** [×] Continuation Sheet(s)

| Emission Unit | U-00002 | Process | P04 |
|---|---|---|---|

**Process Description**

Natural gas firing of the GE 7F.05 combustion turbine (CT002) with and without supplemental firing (DB002). Dry low-NOx combustors (DLN02) and selective catalytic reduction (SCR02) will be used to control NOx emissions. An oxidation catalyst (OXC02) will be used to control CO and VOC emissions. Natural gas throughput rates based upon a heat content of 1,000 BTU/CF (HHV) and include both CT002 and DB002. Quantity per hour is based upon maximum hourly rate for all ambient conditions and quantity per year is based upon maximum hourly rate at ISO conditions for 8,760 hours per year.

| Source Classification Code (SCC) | Total Throughput | | Throughput Quantity Units | |
|---|---|---|---|---|
| | Quantity/Hr | Quantity/Yr | Code | Description |
| 2-01-002-01 | 2.64 | 22,050 | 0115 | million cubic feet of natural gas |

| Confidential / Operating at Maximum Capacity | Operating Schedule | | Building | Floor/Location |
|---|---|---|---|---|
| | Hours/Day | Days/Year | | |
| [×] Operating at Maximum Capacity | 24 | 365 | CTGEN02 | First Floor |

**Emission Point Identifier(s)**

| | | | | | | |
|---|---|---|---|---|---|---|
| EP002 | | | | | | |

**Emission Source/Control Identifier(s)**

| | | | | | | |
|---|---|---|---|---|---|---|
| CT002 | DLN02 | SCR02 | OXC02 | | | |
| | | | | | | |

| Emission Unit | - | Process |
|---|---|---|

**Process Description**

| Source Classification Code (SCC) | Total Throughput | | Throughput Quantity Units | |
|---|---|---|---|---|
| | Quantity/Hr | Quantity/Yr | Code | Description |
| | | | | |

| Confidential / Operating at Maximum Capacity | Operating Schedule | | Building | Floor/Location |
|---|---|---|---|---|
| | Hours/Day | Days/Year | | |
| | | | | |

**Emission Point Identifier(s)**

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | |

**Emission Source/Control Identifier(s)**

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |

| DEC ID |
|---|
| 3 - 1 3 2 6 - 0 0 2 7 5 |

| Emission Unit | Emission Point | Process | Emission Source | Emission Unit Applicable Federal Requirements | | | | | | | × Continuation Sheet(s) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Title | Type | Part | Subpart | Section | Subdiv. | Parag. | Subparag. | Cl. | Subcl. |
| U-00002 | EP002 | P04 | CT002 | 40 | CFR | 60 | KKKK | 4320 | 1 | | | | |
| U-00002 | EP002 | P04 | CT002 | 40 | CFR | 60 | KKKK | 4330 | a | 2 | | | |
| U-00002 | EP002 | P04 | CT002 | 40 | CFR | 60 | KKKK | 4333 | a | | | | |
| U-00002 | EP002 | P04 | CT002 | 40 | CFR | 60 | KKKK | 4340 | b | 1 | | | |

| Emission Unit | Emission Point | Process | Emission Source | Emission Unit State Only Requirements | | | | | | | × Continuation Sheet(s) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Title | Type | Part | Subpart | Section | Subdiv. | Parag. | Subparag. | Cl. | Subcl. |
| U-00002 | EP002 | P04 | CT002/DB002 | 6 | NYCRR | 242 | 1 | 5 | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 6 | NYCRR | 242 | 2 | 4 | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 6 | NYCRR | 242 | 3 | | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 6 | NYCRR | 242 | 4 | | | | | | |

**Emission Unit Compliance Certification** ☐ Continuation Sheet(s)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 5 | 4 | | | | | |

Applicable Federal Requirement | State Only Requirement | Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS Number | Contaminant Name |
|---|---|---|---|---|---|
| U-00002 | EP002 | P04 | CT002/DB002 | NY210-00-0 | Oxides of Nitrogen (NOx) |

**Monitoring Information**

× Continuous Emission Monitoring
Intermittent Emission Testing
Ambient Air Monitoring
Monitoring of a Process or Control Device Parameters as a Surrogate
Work Practice Involving Specific Operations
Record Keeping/Maintenance Procedures

**Compliance Activity Description**

Facility will maintain a NOx emission limit of 2.0 ppmv at 15 percent O2 (w/ and w/o duct burning) to satisfy LAER. This will be achieved through the application of DLN burners in combination with SCR. This limit applies at all load conditions except startup and shutdown. The facility will use CEMS to monitor NOx stack emissions.

| Work Practice Type Code | Process Material | | Reference Test Method |
|---|---|---|---|
| | Code | Description | |
| | | | 40 CFR 60, App. A, Method 7E |

| Monitored Parameter | | Manufacturer's Name/Model Number |
|---|---|---|
| Code | Description | |
| 23 | concentration | GE DLN, SCR Alstom |

| Limit | | Limit Units | |
|---|---|---|---|
| Upper | Lower | Code | Description |
| 2.0 | | 275 | parts per million by volume (dry) at 15% O2 |

| Averaging Method | | Monitoring Frequency | | Reporting Requirements | |
|---|---|---|---|---|---|
| Code | Description | Code | Description | Code | Description |
| 08 | 1-hour average | 01 | continuous | 07 | quarterly |

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|---|
| 3 - 1 3 2 6 - 0 0 2 7 5 |

## Section IV - Emission Unit Information

| Emission Unit | Emission Point | Process | Emission Source | Emission Unit Applicable Federal Requirements (continuation) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Title | Type | Part | Subpart | Section | Subdiv. | Parag. | Subparag. | Clause | Subcl. |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 60 | KKKK | 4345 | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 60 | KKKK | 4350 | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 60 | KKKK | 4365 | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 60 | KKKK | 4375 | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 60 | KKKK | 4380 | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 60 | KKKK | 4395 | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 60 | KKKK | 4400 | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 60 | KKKK | 4405 | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 72 | A | 6 | a | 3 | i | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 72 | A | 9 | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 75 | A | 2 | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 75 | B | 10 | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 75 | B | 11 | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 75 | B | 12 | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 75 | B | 13 | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 75 | C | | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 75 | D | | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 75 | F | | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 75 | G | | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 75 | H | | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 97 | A | | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 97 | D | | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 97 | H | | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 97 | AAAAA | | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 97 | CCCCC | | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 40 | CFR | 97 | EEEEE | | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 6 | NYCRR | 227 | 2 | 4 | e | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 6 | NYCRR | 227 | 2 | 6 | a | 4 | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 6 | NYCRR | 227 | 2 | 6 | b | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 6 | NYCRR | 231 | 5 | 4 | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 6 | NYCRR | 231 | 7 | 6 | | | | | |

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| 3 | - | 1 | 3 | 2 | 6 | - | 0 | 0 | 2 | 7 | 5 |

## Section IV - Emission Unit Information

| Emission Unit | Emission Point | Process | Emission Source | Emission Unit Applicable Federal Requirements (continuation) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Title | Type | Part | Subpart | Section | Subdiv. | Parag. | Subparag. | Clause | Subcl. |
| U-00002 | EP002 | P04 | CT002/DB002 | 6 | NYCRR | 243 | | | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 6 | NYCRR | 244 | | | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 6 | NYCRR | 245 | | | | | | | |

Continuation Sheet 2 of 2

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| 3 | - | 1 | 3 | 2 | 6 | - | 0 | 0 | 2 | 7 | 5 |

## Section IV - Emission Unit Information

| Emission Unit | Emission Point | Process | Emission Source | Emission Unit State Only Requirements (continuation) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Title | Type | Part | Subpart | Section | Subdiv. | Parag. | Subparag. | Clause | Subcl. |
| U-00002 | EP002 | P04 | CT002/DB002 | 6 | NYCRR | 242 | 5 | | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 6 | NYCRR | 242 | 6 | | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 6 | NYCRR | 242 | 7 | | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 6 | NYCRR | 242 | 8 | | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 6 | NYCRR | 251 | 3 | | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 6 | NYCRR | 251 | 4 | | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 6 | NYCRR | 251 | 5 | | | | | | |
| U-00002 | EP002 | P04 | CT002/DB002 | 6 | NYCRR | 251 | 6 | | | | | | |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 227 | 2 | 4 | e | 3 | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00002 | EP002 | P04 | CT002/DB002 | NY210-00-0 | Oxides of Nitrogen |

**Monitoring Information**

☒ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

The turbines will meet a LAER emission rate of 2.0 ppmvd at 15% O2, with and without duct firing. The emission level applies at all operating loads except during startup and shutdown. LAER is more stringent than 227.2.4 and therefore satisfies this requirement.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | 40 CFR 60, App. A, Method 7E |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | DLN from GE, SCR from Alstom |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 2.0 | | 275 | parts per million by volume (dry, corrected to 15% O2) |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 08 | 1-hour average | 01 | continuous | 07 | quarterly |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 40 | CFR | 60 | KKKK | 4320 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00002 | EP002 | P04 | CT002/DB002 | NY210-00-0 | Oxides of Nitrogen |

**Monitoring Information**

☒ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

The facility will meet a LAER emission rate of 2.0 ppmvd at 15% O2, with and without duct firing. The emission levels apply at all operating loads except during startup and shutdown. LAER is more stringent than 40 CFR 60.4320 and therefore satisfies this requirement.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | 40 CFR 60, App. A, Method 7E |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | DLN from GE, SCR from Alstom |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 2.0 | | 275 | parts per million by volume (dry, corrected to 15% O2) |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 08 | 1-hour average | 01 | continuous | 07 | quarterly |

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| 3-132-6-00275 |

## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 5 | 4 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00002 | EP002 | P04 | CT002/DB002 | NY998-00-0 | Volatile Organic Compounds |

**Monitoring Information**

☐ Continuous Emission Monitoring
☒ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

The facility will meet a LAER emission rate of 1.8 ppmvd at 15% O2 with duct firing and 0.7 ppmvd at 15% O2 without duct firing. The emission levels apply at all operating loads except during startup and shutdown. These emission levels will be achieved through good combustion practices and an oxidation catalyst. Stack testing for non-methane hydrocarbons will be conducted to demonstrate compliance with these limits.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | 40 CFR 60, App. A, Method 25A & 18 |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | Oxidation catalyst is TBD |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 2.0 | | 275 | parts per million by volume (dry, corrected to 15% O2) |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 08 | 1-hour average | 14 | As required | 10 | Upon request |

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| 3-13267-00275 |

## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 7 | 6 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00002 | EP002 | P04 | CT002/DB002 | 630-08-0 | Carbon Monoxide |

**Monitoring Information**

☒ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

The facility will meet a BACT emission rate of 2.0 ppmvd at 15% O2 with and without duct firing. This emission levels apply at all operating loads except during startup and shutdown. These emission levels will be achieved through good combustion practices and an oxidation catalyst. CEMS will be used to demonstrate compliance.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | 40 CFR 60, App. A, Method 10 |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | Oxidation catalyst is TBD |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 2.0 | | 275 | parts per million by volume (dry, corrected to 15% O2) |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 08 | 1-hour average | 01 | Continuous | 07 | Quarterly |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 7 | 6 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00002 | EP002 | P04 | CT002/DB002 | NY075-00-0 | Particulate Matter |

**Monitoring Information**

☐ Continuous Emission Monitoring
☒ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

Facility will maintain a PM10/PM2.5 emission limit of 0.005 lb/MMBtu without duct burning and 0.006 lb/MMBtu with duct burning as BACT for the proposed project. These levels of emissions will be achieved by firing pipeline quality natural gas as the sole fuel in the turbines and duct burner. The facility will conduct stack testing to demonstrate compliance with these limits.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | 40 CFR 60, App. A, Method 5 and RM201/201A & 202 |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 0.006 | | 7 | pounds per million Btu |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 08 | 1-hour average | 14 | As required | 10 | Upon request |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 7 | 6 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00002 | EP002 | P04 | CT002/DB002 | 7664-09-5 | Sulfur Dioxide |

**Monitoring Information**

☐ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☒ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

Facility will maintain a SO2 emission limit of 0.0015 lb/MMBtu (with and without duct burning) as BACT. This level of emissions will be achieved by firing pipeline quality natural gas with a maximum sulfur content of 0.4 grains/100 SCF in the combustion turbine and duct burners.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| 04 | 12 | Natural gas | |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 32 | Sulfur Content | |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 0.4 | | 13 | grains per 100 DSCF |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 17 | Annual maximum rolled monthly | 05 | Monthly | 10 | Upon request |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 7 | 6 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00002 | EP002 | P04 | CT002/DB002 | 7664-93-9 | Sulfuric Acid Mist |

**Monitoring Information**

☐ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☒ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

Facility will maintain a sulfuric acid mist emission limit of 0.00065 lb/MMBtu (with and without duct burning) as BACT. This level of emissions will be achieved by firing pipeline quality natural gas with a maximum sulfur content of 0.4 grains/100 SCF in the combustion turbine and duct burners.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| 04 | 12 | Natural gas | |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 32 | Sulfur Content | |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 0.4 | | 13 | grains per 100 DSCF |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 17 | Annual maximum rolled monthly | 05 | Monthly | 10 | Upon request |

| DEC ID |
|---|
| 3-1326-00275 |

## Section IV - Emission Unit Information

| Emission Unit Description | ☐ Continuation Sheet(s) |
|---|---|
| Emission Unit | U-00003 |

This emission unit will consist of one natural gas fired GE Model 7F.05 combustion turbine generator (CTG) and one heat recovery team generator (HRSG) with supplemental natural gas firing exhausted through a common stack.

**Building Information** ☐ Continuation Sheet(s)

| Building ID | Building Name | Length (ft) | Width (ft) | Orientation |
|---|---|---|---|---|
| CTGEN03 | Combustion Turbine Generator Building | 670 | 100 | 0° |
| HRSG03 | Heat Recovery Steam Generator Enclosure | 128 | 160 | 90° |
| ACC01 | Air Cooled Condenser | 190 | 190 | 90° |
| | | | | |

Emission Unit -

**Emission Unit Emissions Summary** ☐ Continuation Sheet(s)

| CAS Number | Contaminant Name | | | |
|---|---|---|---|---|
| | | | | |
| ERP (lbs/yr) | Potential to Emit | | Actual Emissions | |
| | (lbs/hr) | (lbs/yr) | (lbs/hr) | (lbs/yr) |
| | | | | |

| CAS Number | Contaminant Name | | | |
|---|---|---|---|---|
| | | | | |
| ERP (lbs/yr) | Potential to Emit | | Actual Emissions | |
| | (lbs/hr) | (lbs/yr) | (lbs/hr) | (lbs/yr) |
| | | | | |

| CAS Number | Contaminant Name | | | |
|---|---|---|---|---|
| | | | | |
| ERP (lbs/yr) | Potential to Emit | | Actual Emissions | |
| | (lbs/hr) | (lbs/yr) | (lbs/hr) | (lbs/yr) |
| | | | | |

| CAS Number | Contaminant Name | | | |
|---|---|---|---|---|
| | | | | |
| ERP (lbs/yr) | Potential to Emit | | Actual Emissions | |
| | (lbs/hr) | (lbs/yr) | (lbs/hr) | (lbs/yr) |
| | | | | |

# New York State Department of Environmental Conservation
# Air Permit Application

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

| DEC ID |
|---|
| 3-1326-00275 |

## Emission Point Information

☐ Continuation Sheet(s)

| Emission Point | EP003 | | | | | |
|---|---|---|---|---|---|---|
| Ground Elevation (ft) | Height (ft) | Height Above Structure (ft) | Inside Diameter (in) | Exit Temp. (°F) | Cross Section | |
| | | | | | Length (in) | Width (in) |
| 435 | 283 | 170 | 228 | 165 | | |
| Exit Velocity (FPS) | Exit Flow (ACFM) | NYTM (E) (KM) | NYTM (N) (KM) | Building | Distance to Property Line (ft) | Date of Removal |
| 44 | 756,000 | | | | | |

| Emission Point | | | | | | |
|---|---|---|---|---|---|---|
| Ground Elevation (ft) | Height (ft) | Height Above Structure (ft) | Inside Diameter (in) | Exit Temp. (°F) | Cross Section | |
| | | | | | Length (in) | Width (in) |
| | | | | | | |
| Exit Velocity (FPS) | Exit Flow (ACFM) | NYTM (E) (KM) | NYTM (N) (KM) | Building | Distance to Property Line (ft) | Date of Removal |
| | | | | | | |

| Emission Point | | | | | | |
|---|---|---|---|---|---|---|
| Ground Elevation (ft) | Height (ft) | Height Above Structure (ft) | Inside Diameter (in) | Exit Temp. (°F) | Cross Section | |
| | | | | | Length (in) | Width (in) |
| | | | | | | |
| Exit Velocity (FPS) | Exit Flow (ACFM) | NYTM (E) (KM) | NYTM (N) (KM) | Building | Distance to Property Line (ft) | Date of Removal |
| | | | | | | |

## Emission Source/Control Information

☐ Continuation Sheet(s)

| Emission Source ID | Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model Number |
|---|---|---|---|---|---|---|---|
| CT003 | C | 12/2017 | 02/2020 | N/A | | | General Electric 7F.05 |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| 2333.1 | 25 | MMBtu/hr (HHV) at ISO conditions | | | | |

| Emission Source ID | Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model Number |
|---|---|---|---|---|---|---|---|
| DB003 | C | 12/2017 | 02/2020 | N/A | | | |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| 247 | 25 | MMBtu/hr (HHV) | | | | |

| Emission Source ID | Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model Number |
|---|---|---|---|---|---|---|---|
| DLN03 | K | 12/2017 | 02/2020 | N/A | 103 | Dry low Nox Burner | General Electric |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| | | | | | | |

**New York State Department of Environmental Conservation**
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NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

| DEC ID |
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| 3 - 1 3 2 6 - 0 0 2 7 5 |

## Section IV - Emission Unit Information

### Emission Source/Control (continuation)

Emission Unit: U - 0 0 0 0 3

| Emission Source ID | Emission Source Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model No. |
|---|---|---|---|---|---|---|---|
| SCR03 | K | 12/2017 | 02/2020 | N/A | 033 | Selective Catalytic Reduction | Alstom |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| | | | | | | |

| Emission Source ID | Emission Source Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model No. |
|---|---|---|---|---|---|---|---|
| OXC03 | K | 12/2017 | 02/2020 | N/A | 110 | Oxidation Catalyst | |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| | | | | | | |

| Emission Source ID | Emission Source Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model No. |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| | | | | | | |

| Emission Source ID | Emission Source Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model No. |
|---|---|---|---|---|---|---|---|
| | K | | | | | | |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| | | | | | | |

| Emission Source ID | Emission Source Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model No. |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| | | | | | | |

| Emission Source ID | Emission Source Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model No. |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| | | | | | | |

New York State Department of Environmental Conservation
Air Permit Application

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**Process Information** ☒ Continuation Sheet(s)

| Emission Unit | U - 0 0 0 0 3 | Process | P 0 5 |
|---|---|---|---|

**Process Description**

Natural gas firing of the GE 7F.05 combustion turbine (CT003) with and without supplemental firing (DB003. Dry low-NOx combustors (DLN03) and selective catalytic reduction (SCR03) will be used to control NOx emissions. An oxidation catalyst (OXC03) will be used to control CO and VOC emissions. Natural gas throughput rates based upon a heat content of 1,000 BTU/CF (HHV) and include both CT003 and DB003. Quantity per hour is based upon maximum hourly rate for all ambient conditions and quantity per year is based upon maximum hourly rate at ISO conditions for 8,760 hours per year.

| Source Classification Code (SCC) | Total Throughput | | Throughput Quantity Units | |
|---|---|---|---|---|
| | Quantity/Hr | Quantity/Yr | Code | Description |
| 2-01-002-01 | 2.64 | 22,050 | 0115 | million cubic feet of natural gas |

| Confidential | Operating Schedule | | Building | Floor/Location |
|---|---|---|---|---|
| | Hours/Day | Days/Year | | |
| × Operating at Maximum Capacity | 24 | 365 | CTGEN03 | First Floor |

**Emission Point Identifier(s)**

| | | | | | | |
|---|---|---|---|---|---|---|
| EP003 | | | | | | |

**Emission Source/Control Identifier(s)**

| | | | | | | |
|---|---|---|---|---|---|---|
| CT003 | DLN03 | SCR03 | OXC03 | | | |
| | | | | | | |

| Emission Unit | - | Process | |
|---|---|---|---|

**Process Description**

| Source Classification Code (SCC) | Total Throughput | | Throughput Quantity Units | |
|---|---|---|---|---|
| | Quantity/Hr | Quantity/Yr | Code | Description |
| | | | | |

| Confidential | Operating Schedule | | Building | Floor/Location |
|---|---|---|---|---|
| | Hours/Day | Days/Year | | |
| Operating at Maximum Capacity | | | | |

**Emission Point Identifier(s)**

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | |

**Emission Source/Control Identifier(s)**

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |

| DEC ID |
|---|
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| Emission Unit | Emission Point | Process | Emission Source | Emission Unit Applicable Federal Requirements | | | | | | | × Continuation Sheet(s) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Title | Type | Part | Subpart | Section | Subdiv. | Parag. | Subparag. | Cl. | Subcl. |
| U-00003 | EP003 | P05 | CT003 | 40 | CFR | 60 | KKKK | 4320 | 1 | | | | |
| U-00003 | EP003 | P05 | CT003 | 40 | CFR | 60 | KKKK | 4330 | a | 2 | | | |
| U-00003 | EP003 | P05 | CT003 | 40 | CFR | 60 | KKKK | 4333 | a | | | | |
| U-00003 | EP003 | P05 | CT003 | 40 | CFR | 60 | KKKK | 4340 | b | 1 | | | |

| Emission Unit | Emission Point | Process | Emission Source | Emission Unit State Only Requirements | | | | | | | × Continuation Sheet(s) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Title | Type | Part | Subpart | Section | Subdiv. | Parag. | Subparag. | Cl. | Subcl. |
| U-00003 | EP003 | P05 | CT003/DB003 | 6 | NYCRR | 242 | 1 | 5 | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 6 | NYCRR | 242 | 2 | 4 | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 6 | NYCRR | 242 | 3 | | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 6 | NYCRR | 242 | 4 | | | | | | |

**Emission Unit Compliance Certification** ☐ Continuation Sheet(s)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 5 | 4 | | | | | |

Applicable Federal Requirement | State Only Requirement | Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS Number | Contaminant Name |
|---|---|---|---|---|---|
| U-00003 | EP003 | P05 | CT003/DB003 | NY210-00-0 | Oxides of Nitrogen (NOx) |

**Monitoring Information**

× Continuous Emission Monitoring
Intermittent Emission Testing
Ambient Air Monitoring
Monitoring of a Process or Control Device Parameters as a Surrogate
Work Practice Involving Specific Operations
Record Keeping/Maintenance Procedures

**Compliance Activity Description**

Facility will maintain a NOx emission limit of 2.0 ppmv at 15 percent O2 (w/ and w/o duct burning) to satisfy LAER. This will be achieved through the application of DLN burners in combination with SCR. This limit applies at all load conditions except startup and shutdown. The facility will use CEMS to monitor NOx stack emissions.

| Work Practice Type Code | Process Material | | Reference Test Method |
|---|---|---|---|
| | Code | Description | |
| | | | 40 CFR 60, App. A, Method 7E |

| Monitored Parameter | | Manufacturer's Name/Model Number |
|---|---|---|
| Code | Description | |
| 23 | concentration | GE DLN, SCR Alstom |

| Limit | | Limit Units | |
|---|---|---|---|
| Upper | Lower | Code | Description |
| 2.0 | | 275 | parts per million by volume (dry) at 15% O2 |

| Averaging Method | | Monitoring Frequency | | Reporting Requirements | |
|---|---|---|---|---|---|
| Code | Description | Code | Description | Code | Description |
| 08 | 1-hour average | 01 | continuous | 07 | quarterly |

| DEC ID |
|---|
| 3 - 1 3 2 6 - 0 0 2 7 5 |

## Section IV - Emission Unit Information

| Emission Unit | Emission Point | Process | Emission Source | Emission Unit Applicable Federal Requirements (continuation) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Title | Type | Part | Subpart | Section | Subdiv. | Parag. | Subparag. | Clause | Subcl. |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 60 | KKKK | 4345 | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 60 | KKKK | 4350 | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 60 | KKKK | 4365 | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 60 | KKKK | 4375 | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 60 | KKKK | 4380 | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 60 | KKKK | 4395 | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 60 | KKKK | 4400 | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 60 | KKKK | 4405 | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 72 | A | 6 | a | 3 | i | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 72 | A | 9 | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 75 | A | 2 | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 75 | B | 10 | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 75 | B | 11 | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 75 | B | 12 | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 75 | B | 13 | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 75 | C | | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 75 | D | | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 75 | F | | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 75 | G | | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 75 | H | | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 97 | A | | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 97 | D | | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 97 | H | | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 97 | AAAAA | | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 97 | CCCCC | | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 40 | CFR | 97 | EEEEE | | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 6 | NYCRR | 227 | 2 | 4 | e | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 6 | NYCRR | 227 | 2 | 6 | a | 4 | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 6 | NYCRR | 227 | 2 | 6 | b | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 6 | NYCRR | 231 | 5 | 4 | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 6 | NYCRR | 231 | 7 | 6 | | | | | |

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NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

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## Section IV - Emission Unit Information

| Emission Unit | Emission Point | Process | Emission Source | Emission Unit Applicable Federal Requirements (continuation) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Title | Type | Part | Subpart | Section | Subdiv. | Parag. | Subparag. | Clause | Subcl. |
| U-00003 | EP003 | P05 | CT003/DB003 | 6 | NYCRR | 243 | | | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 6 | NYCRR | 244 | | | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 6 | NYCRR | 245 | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | |

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| 3 | - | 1 | 3 | 2 | 6 | - | 0 | 0 | 2 | 7 | 5 |

## Section IV - Emission Unit Information

| Emission Unit | Emission Point | Process | Emission Source | Emission Unit State Only Requirements (continuation) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Title | Type | Part | Subpart | Section | Subdiv. | Parag. | Subparag. | Clause | Subcl. |
| U-00003 | EP003 | P05 | CT003/DB003 | 6 | NYCRR | 242 | 5 | | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 6 | NYCRR | 242 | 6 | | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 6 | NYCRR | 242 | 7 | | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 6 | NYCRR | 242 | 8 | | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 6 | NYCRR | 251 | 3 | | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 6 | NYCRR | 251 | 4 | | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 6 | NYCRR | 251 | 5 | | | | | | |
| U-00003 | EP003 | P05 | CT003/DB003 | 6 | NYCRR | 251 | 6 | | | | | | |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 227 | 2 | 4 | e | 3 | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00003 | EP003 | P05 | CT003/DB003 | NY210-00-0 | Oxides of Nitrogen |

**Monitoring Information**

☒ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

The turbines will meet a LAER emission rate of 2.0 ppmvd at 15% O2, with and without duct firing. The emission level applies at all operating loads except during startup and shutdown. LAER is more stringent than 227.2.4 and therefore satisfies this requirement.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | 40 CFR 60, App. A, Method 7E |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | DLN from GE, SCR from Alstom |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 2.0 | | 275 | parts per million by volume (dry, corrected to 15% O2) |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 08 | 1-hour average | 01 | continuous | 07 | quarterly |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 40 | CFR | 60 | KKKK | 4320 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00003 | EP003 | P05 | CT003/DB003 | NY210-00-0 | Oxides of Nitrogen |

**Monitoring Information**

☒ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

The facility will meet a LAER emission rate of 2.0 ppmvd at 15% O2, with and without duct firing. The emission levels apply at all operating loads except during startup and shutdown. LAER is more stringent than 40 CFR 60.4320 and therefore satisfies this requirement.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | 40 CFR 60, App. A, Method 7E |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | DLN from GE, SCR from Alstom |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 2.0 | | 275 | parts per million by volume (dry, corrected to 15% O2) |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 08 | 1-hour average | 01 | continuous | 07 | quarterly |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 5 | 4 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00003 | EP003 | P05 | CT003/DB003 | NY998-00-0 | Volatile Organic Compounds |

**Monitoring Information**

☐ Continuous Emission Monitoring
☒ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

The facility will meet a LAER emission rate of 1.8 ppmvd at 15% O2 with duct firing and 0.7 ppmvd at 15% O2 without duct firing. The emission levels apply at all operating loads except during startup and shutdown. These emission levels will be achieved through good combustion practices and an oxidation catalyst. Stack testing for non-methane hydrocarbons will be conducted to demonstrate compliance with these limits.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | 40 CFR 60, App. A, Method 25A & 18 |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | Oxidation catalyst is TBD |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 2.0 | | 275 | parts per million by volume (dry, corrected to 15% O2) |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 08 | 1-hour average | 14 | As required | 10 | Upon request |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 7 | 6 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00003 | EP003 | P05 | CT003/DB003 | 630-08-0 | Carbon Monoxide |

**Monitoring Information**

☒ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

The facility will meet a BACT emission rate of 2.0 ppmvd at 15% O2 with and without duct firing. This emission levels apply at all operating loads except during startup and shutdown. These emission levels will be achieved through good combustion practices and an oxidation catalyst. CEMS will be used to demonstrate compliance.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | 40 CFR 60, App. A, Method 10 |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | Oxidation catalyst is TBD |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 2.0 | | 275 | parts per million by volume (dry, corrected to 15% O2) |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 08 | 1-hour average | 01 | Continuous | 07 | Quarterly |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 7 | 6 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00003 | EP003 | P05 | CT003/DB003 | NY075-00-0 | Particulate Matter |

**Monitoring Information**

☐ Continuous Emission Monitoring
☒ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

Facility will maintain a PM10/PM2.5 emission limit of 0.005 lb/MMBtu without duct burning and 0.006 lb/MMBtu with duct burning as BACT for the proposed project. These levels of emissions will be achieved by firing pipeline quality natural gas as the sole fuel in the turbines and duct burner. The facility will conduct stack testing to demonstrate compliance with these limits.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | 40 CFR 60, App. A, Method 5 and RM201/201A & 202 |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 0.006 | | 7 | pounds per million Btu |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 08 | 1-hour average | 14 | As required | 10 | Upon request |

**New York State Department of Environmental Conservation**
**Air Permit Application Form**

| DEC ID |
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| 3-132-6-00275 |

## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 7 | 6 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00003 | EP003 | P05 | CT003/DB003 | 7664-09-5 | Sulfur Dioxide |

**Monitoring Information**

☐ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☒ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

Facility will maintain a SO2 emission limit of 0.0015 lb/MMBtu (with and without duct burning) as BACT. This level of emissions will be achieved by firing pipeline quality natural gas with a maximum sulfur content of 0.4 grains/100 SCF in the combustion turbine and duct burners.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| 04 | 12 | Natural gas | |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 32 | Sulfur Content | |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 0.4 | | 13 | grains per 100 DSCF |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 17 | Annual maximum rolled monthly | 05 | Monthly | 10 | Upon request |

**New York State Department of Environmental Conservation**
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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 7 | 6 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00003 | EP003 | P05 | CT003/DB003 | 7664-93-9 | Sulfuric Acid Mist |

**Monitoring Information**

☐ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☒ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

Facility will maintain a sulfuric acid mist emission limit of 0.00065 lb/MMBtu (with and without duct burning) as BACT. This level of emissions will be achieved by firing pipeline quality natural gas with a maximum sulfur content of 0.4 grains/100 SCF in the combustion turbine and duct burners.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| 04 | 12 | Natural gas | |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 32 | Sulfur Content | |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 0.4 | | 13 | grains per 100 DSCF |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| 17 | Annual maximum rolled monthly | 05 | Monthly | 10 | Upon request |

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## Section IV - Emission Unit Information

**Emission Unit Description** ☐ Continuation Sheet(s)

Emission Unit: U - 0 0 0 0 4

This emission unit will consist of one diesel fired emergency fire pump engine that will operate no more than 500 hours per year.

**Building Information** ☐ Continuation Sheet(s)

| Building ID | Building Name | Length (ft) | Width (ft) | Orientation |
|---|---|---|---|---|
| WATANK | Service/fire water storage tank | | | |
| | | | | |
| | | | | |
| | | | | |

Emission Unit: -

**Emission Unit Emissions Summary** ☐ Continuation Sheet(s)

| CAS Number | Contaminant Name | | | |
|---|---|---|---|---|
| | | | | |
| ERP (lbs/yr) | Potential to Emit | | Actual Emissions | |
| | (lbs/hr) | (lbs/yr) | (lbs/hr) | (lbs/yr) |
| | | | | |
| CAS Number | Contaminant Name | | | |
| | | | | |
| ERP (lbs/yr) | Potential to Emit | | Actual Emissions | |
| | (lbs/hr) | (lbs/yr) | (lbs/hr) | (lbs/yr) |
| | | | | |
| CAS Number | Contaminant Name | | | |
| | | | | |
| ERP (lbs/yr) | Potential to Emit | | Actual Emissions | |
| | (lbs/hr) | (lbs/yr) | (lbs/hr) | (lbs/yr) |
| | | | | |
| CAS Number | Contaminant Name | | | |
| | | | | |
| ERP (lbs/yr) | Potential to Emit | | Actual Emissions | |
| | (lbs/hr) | (lbs/yr) | (lbs/hr) | (lbs/yr) |
| | | | | |

# New York State Department of Environmental Conservation
# Air Permit Application

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

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| 3-1326-00275 |

## Emission Point Information

☐ Continuation Sheet(s)

| Emission Point | EP004 | | | | | |
|---|---|---|---|---|---|---|
| Ground Elevation (ft) | Height (ft) | Height Above Structure (ft) | Inside Diameter (in) | Exit Temp. (°F) | Cross Section | |
| | | | | | Length (in) | Width (in) |
| 435 | 14 | 0 | 6 | 687 | | |
| Exit Velocity (FPS) | Exit Flow (ACFM) | NYTM (E) (KM) | NYTM (N) (KM) | Building | Distance to Property Line (ft) | Date of Removal |
| 108 | 1,277 | | | | | |

| Emission Point | | | | | | |
|---|---|---|---|---|---|---|
| Ground Elevation (ft) | Height (ft) | Height Above Structure (ft) | Inside Diameter (in) | Exit Temp. (°F) | Cross Section | |
| | | | | | Length (in) | Width (in) |
| | | | | | | |
| Exit Velocity (FPS) | Exit Flow (ACFM) | NYTM (E) (KM) | NYTM (N) (KM) | Building | Distance to Property Line (ft) | Date of Removal |
| | | | | | | |

| Emission Point | | | | | | |
|---|---|---|---|---|---|---|
| Ground Elevation (ft) | Height (ft) | Height Above Structure (ft) | Inside Diameter (in) | Exit Temp. (°F) | Cross Section | |
| | | | | | Length (in) | Width (in) |
| | | | | | | |
| Exit Velocity (FPS) | Exit Flow (ACFM) | NYTM (E) (KM) | NYTM (N) (KM) | Building | Distance to Property Line (ft) | Date of Removal |
| | | | | | | |

## Emission Source/Control Information

☐ Continuation Sheet(s)

| Emission Source ID | Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model Number |
|---|---|---|---|---|---|---|---|
| FP001 | C | 12/2017 | 8/2019 | N/A | | | |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| 460 | 219 | horsepower (mechanical) | | | | |

| Emission Source ID | Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| | | | | | | |

| Emission Source ID | Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| | | | | | | |

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**Process Information** [×] Continuation Sheet(s)

| Emission Unit | U-00004 | Process | P06 |
|---|---|---|---|

**Process Description**

Emergency fire pump engine rated at 460 brake horsepower firing diesel fuel. Annual diesel fuel fired based upon 500 hours per rolling 12-month period.

| Source Classification Code (SCC) | Total Throughput | | Throughput Quantity Units | |
|---|---|---|---|---|
| | Quantity/Hr | Quantity/Yr | Code | Description |
| 2-02-001-02 | 20.3 | 10,150 | 15 | gallons |

| Confidential | Operating Schedule | | Building | Floor/Location |
|---|---|---|---|---|
| | Hours/Day | Days/Year | | |
| × Operating at Maximum Capacity | See description | | | |

**Emission Point Identifier(s)**

| | | | | | | |
|---|---|---|---|---|---|---|
| EP004 | | | | | | |

**Emission Source/Control Identifier(s)**

| | | | | | | |
|---|---|---|---|---|---|---|
| FP01 | | | | | | |
| | | | | | | |

| Emission Unit | - | Process |
|---|---|---|
| | | |

**Process Description**

| Source Classification Code (SCC) | Total Throughput | | Throughput Quantity Units | |
|---|---|---|---|---|
| | Quantity/Hr | Quantity/Yr | Code | Description |
| | | | | |

| Confidential | Operating Schedule | | Building | Floor/Location |
|---|---|---|---|---|
| | Hours/Day | Days/Year | | |
| Operating at Maximum Capacity | | | | |

**Emission Point Identifier(s)**

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | |

**Emission Source/Control Identifier(s)**

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |

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| Emission Unit | Emission Point | Process | Emission Source | Emission Unit Applicable Federal Requirements | | | | | | | | | | × Continuation Sheet(s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Title | Type | Part | Subpart | Section | Subdiv. | Parag. | Subparag. | Cl. | Subcl. | |
| U-00004 | EP004 | P06 | FP001 | 40 | CFR | 60 | IIII | 4205 | c | | | | | |
| U-00004 | EP004 | P06 | FP001 | 40 | CFR | 60 | IIII | 4206 | | | | | | |
| U-00004 | EP004 | P06 | FP001 | 40 | CFR | 60 | IIII | 4207 | b | | | | | |
| U-00004 | EP004 | P06 | FP001 | 40 | CFR | 60 | IIII | 4209 | a | | | | | |

| Emission Unit | Emission Point | Process | Emission Source | Emission Unit State Only Requirements | | | | | | | | | | ☐ Continuation Sheet(s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Title | Type | Part | Subpart | Section | Subdiv. | Parag. | Subparag. | Cl. | Subcl. | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
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**Emission Unit Compliance Certification** ☐ Continuation Sheet(s)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 40 | CFR | 60 | IIII | 4205 | c | | | | |

Applicable Federal Requirement | State Only Requirement | Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS Number | Contaminant Name |
|---|---|---|---|---|---|
| U-00004 | EP004 | P06 | FP001 | NY210-00-0 | Oxides of Nitrogen (NOx) |

**Monitoring Information**

| | |
|---|---|
| Continuous Emission Monitoring | Monitoring of a Process or Control Device Parameters as a Surrogate |
| Intermittent Emission Testing | Work Practice Involving Specific Operations |
| Ambient Air Monitoring | × Record Keeping/Maintenance Procedures |

**Compliance Activity Description**

Facility will purchase a fire pump engine that will be certified to meet the federal emission standards under 40 CFR 60 Subpart IIII for the current model years. Thus the engine will maintain a NOx + HC emission rate of 3.0 g/hp-hr. Compliance with this limit is also considered LAER. Compliance will be demonstrated via certification by the vendor and adherence to vendor specified maintenance recommendations.

| Work Practice Type Code | Process Material | | Reference Test Method |
|---|---|---|---|
| | Code | Description | |
| | | | |

| Monitored Parameter | | Manufacturer's Name/Model Number |
|---|---|---|
| Code | Description | |
| 23 | concentration | |

| Limit | | Limit Units | |
|---|---|---|---|
| Upper | Lower | Code | Description |
| 3.0 | | 319 | grams per brake horsepower hour |

| Averaging Method | | Monitoring Frequency | | Reporting Requirements | |
|---|---|---|---|---|---|
| Code | Description | Code | Description | Code | Description |
| | | 14 | as required | 10 | Upon request |

**New York State Department of Environmental Conservation**
**Air Permit Application Form**

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

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|---|
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## Section IV - Emission Unit Information

| Emission Unit | Emission Point | Process | Emission Source | Emission Unit Applicable Federal Requirements (continuation) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Title | Type | Part | Subpart | Section | Subdiv. | Parag. | Subparag. | Clause | Subcl. |
| U-00004 | EP004 | P06 | FP001 | 40 | CFR | 60 | IIII | 4214 | b | | | | |
| U-00004 | EP004 | P06 | FP001 | 6 | NYCRR | 231 | 7 | 6 | | | | | |
| | | | | | | | | | | | | | |
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Continuation Sheet 1 of 1

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 40 | CFR | 60 | IIII | 6 | 4205 | c | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00004 | EP004 | P06 | FP001 | NY998-00-00 | Volatile organic compounds |

**Monitoring Information**

☐ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☒ Record Keeping/Maintenance Procedures

**Description**

Facility will purchase a fire pump engine that will be certified to meet the federal emission standards under 40 CFR 60 Subpart IIII for the current model years. Thus the engine will maintain a NOx + HC emission rate of 3.0 g/hp-hr. Compliance with these federal limits is also considered LAER. Compliance will be demonstrated via certification by the vendor and adherence to vendor specified maintenance recommendations.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 3.0 | | 319 | Grams per brake horsepower hour |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| | | 14 | As Required | 10 | Upon request |

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| 3-13267-00275 |

## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 40 | CFR | 60 | IIII | 6 | 4205 | c | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00004 | EP004 | P06 | FP001 | 630-08-0 | Carbon Monoxide |

**Monitoring Information**

☐ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☒ Record Keeping/Maintenance Procedures

**Description**

Facility will purchase engines that have been certified by the manufacturer to meet the federal emission standards under 40 CFR 60.4202 for the current model year. Thus the engines will maintain a CO emission rate of 2.6 g/hp-hr. Compliance with this federal limit is also considered BACT. Compliance will be demonstrated via certification by the vendor and adherence to vendor specified maintenance recommendations.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | TBD |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 2.6 | | 319 | Grams per brake horsepower hour |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| | | 14 | As Required | 10 | Upon request |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 40 | CFR | 60 | IIII | 6 | 4205 | c | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00004 | EP004 | P06 | FP001 | NY075-00-0 | Particulate |

**Monitoring Information**

☐ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☒ Record Keeping/Maintenance Procedures

**Description**

Facility will purchase engines that have been certified by the manufacturer to meet the federal emission standards under 40 CFR 60.4202 for the current model year. Thus the engines will maintain a particulate emission rate of 0.15 g/hp-hr. Compliance with this federal limit is also considered BACT. Compliance will be demonstrated via certification by the vendor and adherence to vendor specified maintenance recommendations.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | TBD |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 0.15 | | 319 | Grams per brake horsepower hour |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| | | 14 | As Required | 10 | Upon request |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 40 | CFR | 60 | IIII | 6 | 4205 | c | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00004 | EP004 | P06 | FP001 | 7664-04-5 | Sulfur Dioxide |

**Monitoring Information**

☐ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☒ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

The facility will maintain a SO2 emission limit of 0.0015 lb/MMBtu as BACT for the proposed project fire pump engine. The proposed engines will only combust diesel fuel with a maximum sulfur content of 0.0015 percent sulfur by weight.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | TBD |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 0.15 | | 319 | Grams per brake horsepower hour |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| | | 14 | As Required | 10 | Upon request |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 7 | 6 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00004 | EP004 | P06 | FP001 | 07664-93-9 | Sulfuric Acid Mist |

**Monitoring Information**

☐ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☒ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

The facility will maintain a sulfuric acid mist emission limit of 0.00011 lb/MMBtu as BACT for the proposed project fire pump engine. The proposed engines will only combust diesel fuel with a maximum sulfur content of 0.0015 percent sulfur by weight.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | TBD |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 0.15 | | 319 | Grams per brake horsepower hour |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| | | 14 | As Required | 10 | Upon request |

| DEC ID |
|---|
| 3-1326-00275 |

## Section IV - Emission Unit Information

| Emission Unit Description | ☐ Continuation Sheet(s) |
|---|---|
| Emission Unit: U-00005 | |

This emission unit will consist of one 1,500 kW electrical (1,645 mechanical) diesel fired emergency generator engine that will operate no more than 500 hours per year.

**Building Information** ☐ Continuation Sheet(s)

| Building ID | Building Name | Length (ft) | Width (ft) | Orientation |
|---|---|---|---|---|
| EGENC | Emergency Generator Engine Enclosure | 38.5 | 11 | 0° |
| | | | | |
| | | | | |
| | | | | |

Emission Unit: -

**Emission Unit Emissions Summary** ☐ Continuation Sheet(s)

| CAS Number | Contaminant Name | | | |
|---|---|---|---|---|
| | | | | |
| ERP (lbs/yr) | Potential to Emit | | Actual Emissions | |
| | (lbs/hr) | (lbs/yr) | (lbs/hr) | (lbs/yr) |
| | | | | |
| CAS Number | Contaminant Name | | | |
| | | | | |
| ERP (lbs/yr) | Potential to Emit | | Actual Emissions | |
| | (lbs/hr) | (lbs/yr) | (lbs/hr) | (lbs/yr) |
| | | | | |
| CAS Number | Contaminant Name | | | |
| | | | | |
| ERP (lbs/yr) | Potential to Emit | | Actual Emissions | |
| | (lbs/hr) | (lbs/yr) | (lbs/hr) | (lbs/yr) |
| | | | | |
| CAS Number | Contaminant Name | | | |
| | | | | |
| ERP (lbs/yr) | Potential to Emit | | Actual Emissions | |
| | (lbs/hr) | (lbs/yr) | (lbs/hr) | (lbs/yr) |
| | | | | |

# New York State Department of Environmental Conservation
# Air Permit Application

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

| DEC ID |
|---|
| 3-1326-00275 |

## Emission Point Information

☐ Continuation Sheet(s)

| Emission Point | EP005 | | | | | |
|---|---|---|---|---|---|---|
| Ground Elevation (ft) | Height (ft) | Height Above Structure (ft) | Inside Diameter (in) | Exit Temp. (°F) | Cross Section | |
| | | | | | Length (in) | Width (in) |
| 435 | 47 | 15 | 18 | 659 | | |
| Exit Velocity (FPS) | Exit Flow (ACFM) | NYTM (E) (KM) | NYTM (N) (KM) | Building | Distance to Property Line (ft) | Date of Removal |
| 94 | 10,000 | | | | | |

| Emission Point | | | | | | |
|---|---|---|---|---|---|---|
| Ground Elevation (ft) | Height (ft) | Height Above Structure (ft) | Inside Diameter (in) | Exit Temp. (°F) | Cross Section | |
| | | | | | Length (in) | Width (in) |
| | | | | | | |
| Exit Velocity (FPS) | Exit Flow (ACFM) | NYTM (E) (KM) | NYTM (N) (KM) | Building | Distance to Property Line (ft) | Date of Removal |
| | | | | | | |

| Emission Point | | | | | | |
|---|---|---|---|---|---|---|
| Ground Elevation (ft) | Height (ft) | Height Above Structure (ft) | Inside Diameter (in) | Exit Temp. (°F) | Cross Section | |
| | | | | | Length (in) | Width (in) |
| | | | | | | |
| Exit Velocity (FPS) | Exit Flow (ACFM) | NYTM (E) (KM) | NYTM (N) (KM) | Building | Distance to Property Line (ft) | Date of Removal |
| | | | | | | |

## Emission Source/Control Information

☐ Continuation Sheet(s)

| Emission Source ID | Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model Number |
|---|---|---|---|---|---|---|---|
| EDG01 | C | 12/2017 | 8/2019 | N/A | | | Caterpillar 3512C |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| 2206 | 219 | horsepower (mechanical) | | | | |

| Emission Source ID | Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| | | | | | | |

| Emission Source ID | Type | Date of Construction | Date of Operation | Date of Removal | Control Type Code | Control Type Description | Manufacturer's Name/Model Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

| Design Capacity | Design Capacity Units Code | Design Capacity Units Description | Waste Feed Code | Waste Feed Description | Waste Type Code | Waste Type Description |
|---|---|---|---|---|---|---|
| | | | | | | |

**New York State Department of Environmental Conservation**
**Air Permit Application**

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

| DEC ID |
|---|
| 3-1326-00275 |

**Process Information** ☒ Continuation Sheet(s)

| Emission Unit | U-00005 | Process | P07 |
|---|---|---|---|

**Process Description**

Emergency generator engine rated at 2,206 brake horsepower firing diesel fuel. Annual diesel fuel fired based upon 500 hours per rolling 12-month period.

| Source Classification Code (SCC) | Total Throughput | | Throughput Quantity Units | |
|---|---|---|---|---|
| | Quantity/Hr | Quantity/Yr | Code | Description |
| 2-02-001-02 | 104.6 | 52,300 | 15 | gallons |

| Confidential | Operating Schedule | | Building | Floor/Location |
|---|---|---|---|---|
| | Hours/Day | Days/Year | | |
| ☒ Operating at Maximum Capacity | See description | | | |

**Emission Point Identifier(s)**

| | | | | | | |
|---|---|---|---|---|---|---|
| EP005 | | | | | | |

**Emission Source/Control Identifier(s)**

| | | | | | | |
|---|---|---|---|---|---|---|
| EDG01 | | | | | | |
| | | | | | | |

| Emission Unit | - | Process |
|---|---|---|

**Process Description**

| Source Classification Code (SCC) | Total Throughput | | Throughput Quantity Units | |
|---|---|---|---|---|
| | Quantity/Hr | Quantity/Yr | Code | Description |
| | | | | |

| Confidential | Operating Schedule | | Building | Floor/Location |
|---|---|---|---|---|
| | Hours/Day | Days/Year | | |
| Operating at Maximum Capacity | | | | |

**Emission Point Identifier(s)**

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | |

**Emission Source/Control Identifier(s)**

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |

| DEC ID |
|---|
| 3-1326-00275 |

| Emission Unit | Emission Point | Process | Emission Source | Emission Unit Applicable Federal Requirements | | | | | | | | | | ☒ Continuation Sheet(s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Title | Type | Part | Subpart | Section | Subdiv. | Parag. | Subparag. | Cl. | Subcl. | |
| U-00005 | EP005 | P07 | EDG01 | 40 | CFR | 60 | IIII | 4205 | b | | | | | |
| U-00005 | EP005 | P07 | EDG01 | 40 | CFR | 60 | IIII | 4206 | | | | | | |
| U-00005 | EP005 | P07 | EDG01 | 40 | CFR | 60 | IIII | 4207 | b | | | | | |
| U-00005 | EP005 | P07 | EDG01 | 40 | CFR | 60 | IIII | 4209 | a | | | | | |

| Emission Unit | Emission Point | Process | Emission Source | Emission Unit State Only Requirements | | | | | | | | | | ☐ Continuation Sheet(s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Title | Type | Part | Subpart | Section | Subdiv. | Parag. | Subparag. | Cl. | Subcl. | |
| | | | | | | | | | | | | | | |
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**Emission Unit Compliance Certification** ☐ Continuation Sheet(s)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 40 | CFR | 60 | IIII | 4205 | b | | | | |

Applicable Federal Requirement | State Only Requirement | Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS Number | Contaminant Name |
|---|---|---|---|---|---|
| U-00005 | EP005 | P07 | EDG01 | NY210-00-0 | Oxides of Nitrogen (NOx) |

**Monitoring Information**

| | |
|---|---|
| Continuous Emission Monitoring | Monitoring of a Process or Control Device Parameters as a Surrogate |
| Intermittent Emission Testing | Work Practice Involving Specific Operations |
| Ambient Air Monitoring | × Record Keeping/Maintenance Procedures |

**Compliance Activity Description**

Facility will purchase an emergency generator engine that will be certified to meet the federal emission standards under 40 CFR 60 Subpart IIII for the current model years. Thus the engine will maintain a NOx + HC emission rate of 4.8 g/hp-hr in accordance with 40 CFR 60.4202(b)(2) and 40 CFR 89.112(a), Table 1. Compliance with these federal limits is also considered LAER. Compliance will be demonstrated via certification by the vendor and adherence to vendor specified maintenance recommendations.

| Work Practice Type Code | Process Material | | Reference Test Method |
|---|---|---|---|
| | Code | Description | |
| | | | |

| Monitored Parameter | | Manufacturer's Name/Model Number |
|---|---|---|
| Code | Description | |
| 23 | concentration | Caterpillar 3512C |

| Limit | | Limit Units | |
|---|---|---|---|
| Upper | Lower | Code | Description |
| 4.8 | | 319 | grams per brake horsepower hour |

| Averaging Method | | Monitoring Frequency | | Reporting Requirements | |
|---|---|---|---|---|---|
| Code | Description | Code | Description | Code | Description |
| | | 14 | as required | 10 | Upon request |

**New York State Department of Environmental Conservation**
**Air Permit Application Form**

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

| DEC ID |
|---|
| 3 - 1 3 2 6 - 0 0 2 7 5 |

## Section IV - Emission Unit Information

| Emission Unit | Emission Point | Process | Emission Source | Emission Unit Applicable Federal Requirements (continuation) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Title | Type | Part | Subpart | Section | Subdiv. | Parag. | Subparag. | Clause | Subcl. |
| U-00005 | EP005 | P07 | EDG01 | 40 | CFR | 60 | IIII | 4214 | b | | | | |
| U-00005 | EP005 | P07 | EDG01 | 6 | NYCRR | 231 | 7 | 6 | | | | | |
| | | | | | | | | | | | | | |
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Continuation Sheet 1 of 1

**New York State Department of Environmental Conservation**
**Air Permit Application Form**

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|---|
| 3 - 1 3 2 6 - 0 0 2 7 5 |

## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 40 | CFR | 60 | IIII | 6 | 4205 | b | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00005 | EP005 | P07 | EDG01 | NY998-00-00 | Volatile organic compounds |

**Monitoring Information**

☐ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☒ Record Keeping/Maintenance Procedures

**Description**

Facility will purchase an emergency generator engine that will be certified to meet the federal emission standards under 40 CFR 60 Subpart IIII for the current model years. Thus the engine will maintain a NOx + HC emission rate of 4.8 g/hp-hr in accordance with 40 CFR 60.4202(b)(2) and 40 CFR 89.112(a), Table 1. Compliance with these federal limits is also considered BACT. Compliance will be demonstrated via certification by the vendor and adherence to vendor specified maintenance recommendations.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 4.8 | | 319 | Grams per brake horsepower hour |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| | | 14 | As Required | 10 | Upon request |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 40 | CFR | 60 | IIII | 6 | 4205 | b | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00005 | EP005 | P07 | EDG01 | 630-08-0 | Carbon Monoxide |

**Monitoring Information**

☐ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☒ Record Keeping/Maintenance Procedures

**Description**

Facility will purchase an emergency generator engine that will be certified to meet the federal emission standards under 40 CFR 60 Subpart IIII for the current model year. Thus the engine will maintain a CO emission rate of 2.6 g/hp-hr in accordance with 40 CFR 60.4202(b)(2) and 40 CFR 89.112(a), Table 1. Compliance with this federal limit is also considered BACT. Compliance will be demonstrated via certification by the vendor and adherence to vendor specified maintenance recommendations.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | TBD |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 2.6 | | 319 | Grams per brake horsepower hour |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| | | 14 | As Required | 10 | Upon request |

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 40 | CFR | 60 | IIII | 6 | 4205 | b | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00005 | EP005 | P07 | EDG01 | NY075-00-0 | Particulate |

**Monitoring Information**

☐ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☐ Work Practice Involving Specific Operations
☒ Record Keeping/Maintenance Procedures

**Description**

Facility will purchase an emergency generator engine that will be certified to meet the federal emission standards under 40 CFR 60 Subpart IIII for the current model year. Thus the engine will maintain a PM emission rate of 0.15 g/hp-hr in accordance with 40 CFR 60.4202(b)(2) and 40 CFR 89.112(a), Table 1. Compliance with this federal limit is also considered BACT. Compliance will be demonstrated via certification by the vendor and adherence to vendor specified maintenance recommendations.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | TBD |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 0.15 | | 319 | Grams per brake horsepower hour |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| | | 14 | As Required | 10 | Upon request |

**New York State Department of Environmental Conservation**
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|---|
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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 40 | CFR | 60 | IIII | 6 | 4207 | b | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00005 | EP005 | P07 | EDG01 | 7664-04-5 | Sulfur Dioxide |

**Monitoring Information**

☐ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☒ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

The facility will maintain a SO2 emission limit of 0.0015 lb/MMBtu as BACT for the proposed emergency generator engine. The proposed engines will only combust diesel fuel with a maximum sulfur content of 0.0015 percent sulfur by weight in accordance with 40 CFR 80.510(b)(1)(i) .

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | TBD |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 0.0015 | | 7 | pounds per million Btus |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| | | 14 | As Required | 10 | Upon request |

**New York State Department of Environmental Conservation**
**Air Permit Application Form**

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## Section IV - Emission Unit Information

### Emission Unit Compliance Certification (continuation)

**Rule Citation**

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| 6 | NYCRR | 231 | 7 | 6 | | | | | |

☒ Applicable Federal Requirement ☐ State Only Requirement ☐ Capping

| Emission Unit | Emission Point | Process | Emission Source | CAS No. | Contaminant Name |
|---|---|---|---|---|---|
| U-00005 | EP005 | P07 | EDG01 | 07664-93-9 | Sulfuric Acid Mist |

**Monitoring Information**

☐ Continuous Emission Monitoring
☐ Intermittent Emission Testing
☐ Ambient Air Monitoring
☐ Monitoring of Process or Control Device Parameters as a Surrogate
☒ Work Practice Involving Specific Operations
☐ Record Keeping/Maintenance Procedures

**Description**

The facility will maintain a sulfuric acid mist emission limit of 0.00011 lb/MMBtu as BACT for the proposed emergency generator engine. The proposed engines will only combust diesel fuel with a maximum sulfur content of 0.0015 percent sulfur by weight.

| Work Practice Type | Process Material Code | Process Material Description | Reference Test Method |
|---|---|---|---|
| | | | |

| Parameter Code | Parameter Description | Manufacturer Name/Model No. |
|---|---|---|
| 23 | Concentration | TBD |

| Limit Upper | Limit Lower | Limit Units Code | Limit Units Description |
|---|---|---|---|
| 0.00011 | | 7 | pounds per million Btus |

| Averaging Method Code | Averaging Method Description | Monitoring Frequency Code | Monitoring Frequency Description | Reporting Requirements Code | Reporting Requirements Description |
|---|---|---|---|---|---|
| | | 14 | As Required | 10 | Upon request |

# New York State Department of Environmental Conservation
# Air Permit Application

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

| DEC ID |
|---|
| 3 - 1 3 2 6 - 0 0 2 7 5 |

## Determination of Non-Applicability (Title V Applications Only)

☐ Continuation Sheet(s)

### Rule Citation

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

| Emission Unit | Emission Point | Process | Emission Source |
|---|---|---|---|
| | | | |

☐ Applicable Federal Requirement
☐ State Only Requirement

### Non-Applicability Description

### Rule Citation

| Title | Type | Part | Subpart | Section | Subdivision | Paragraph | Subparagraph | Clause | Subclause |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

| Emission Unit | Emission Point | Process | Emission Source |
|---|---|---|---|
| | | | |

☐ Applicable Federal Requirement
☐ State Only Requirement

### Non- Applicability Description

## Compliance Plan

☐ Continuation Sheet(s)

For any emission units which are <u>not in compliance</u> at the time of permit application, the applicant shall complete the following:

| Consent Order | | Certified progress reports are to be submitted every 6 months beginning / / |
|---|---|---|

| Emission Unit | Process | Emission Source | Applicable Federal Requirement | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Title | Type | Part | Subpart | Section | Subdiv. | Parag. | Subparag. | Clause | Subcl. |
| | | | | | | | | | | | | |

| Remedial Measures and Intermediate Milestones | R/I | Date Scheduled |
|---|---|---|
| | | |
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# New York State Department of Environmental Conservation
# Air Permit Application

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

| DEC ID |
|---|
| 3 - 1 3 2 6 - 0 0 2 7 5 |

## Request for Emission Reduction Credits

☐ Continuation Sheet(s)

Emission Source

### Emission Reduction Description

### Contaminant Emission Reduction Data

Baseline Period ____/____/_____ to ____/____/_____

| | | Reduction | |
|---|---|---|---|
| | | Date | Method |
| | | | |

| CAS Number | Contaminant Name | ERC (lbs/yr) | |
|---|---|---|---|
| | | Netting | Offset |
| | | | |
| | | | |
| | | | |

### Facility to Use Future Reduction

Name — Application ID

Location Address

☐ City/ ☐ Town / ☐ Village — State — Zip

## Use of Emission Reduction Credits

☐ Continuation Sheet(s)

Emission Source

### Proposed Project Description

### Contaminant Emissions Increase Data

| CAS Number | Contaminant Name | Project Emission Potential (lbs/yr) |
|---|---|---|
| | | |

### Statement of Compliance

☐ All facilities under the ownership of this "owner/firm" are operating in compliance with all applicable requirements and state regulations including any compliance certification requirements under Section 114(a)(3) of the Clean Air Act Amendments of 1990, or are meeting the schedule of a consent order.

### Source of Emission Reduction Credit - Facility

Name — Permit ID

Location Address

☐ City/ ☐ Town / ☐ Village — State — Zip

| Emission Source | CAS Number | Contaminant Name | ERC (lbs/yr) | |
|---|---|---|---|---|
| | | | Netting | Offset |
| | | | | |
| | | | | |

| DEC ID |
|---|
| 3 - 1 3 2 6 - 0 0 2 7 5 |

| Supporting Documentation and Attachments | |
|---|---|
| Required Supporting Documentation | Date of Document |
| × List of Exempt Activities (attach form) | Date of this application |
| × Plot Plan | 05/01/2017 |
| × Process Flow Diagram | Date of this application |
| × Methods Used to Determine Compliance (attach form) | Date of this application |
| × Emissions Calculations | 12/18/2018 |
| Optional Supporting Documentation | Date of Document |
| Air Quality Model | |
| Confidentiality Justification | |
| Ambient Air Quality Monitoring Plan or Reports | |
| Stack Test Protocol | |
| Stack Test Report | |
| Continuous Emissions Monitoring Plan | |
| Lowest Achievable Emission Rate (LAER) Demonstration | |
| Best Available Control Technology (BACT) Demonstration | |
| Reasonably Available Control Technology (RACT) Demonstration | |
| Toxic Impact Assessment (TIA) | |
| Environmental Rating Demonstration | |
| Operational Flexibility Protocol/Description of Alternate Operating Scenarios | |
| Title IV Permit Application | |
| Emission Reduction Credit (ERC) Quantification (attach form) | |
| Baseline Period Demonstration | |
| Use of Emission Reduction Credits (attach form) | |
| Analysis of Contemporaneous Emissions Increase/Decrease | |
| Other Supporting Documentation | Date of Document |
| | |
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# APPENDIX B: LIST OF EXEMPT ACTIVITIES

**New York State Department of Environmental Conservation**
**Air Permit Application**

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

| DEC ID | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 3 | - | 1 | 3 | 2 | 6 | - | 0 | 0 | 2 | 7 | 5 |

# List of Exempt Activities

**Instructions**

Applicants for Title V facility permits must provide a listing of each exempt activity, as described in 6 NYCRR Part 201-3.2(c), that is currently operated at the facility. This form provides a means to fulfill this requirement.

In order to complete this form, enter the number and building location of each exempt activity. Building IDs used on this form should match those used in the Title V permit application. If a listed activity is not operated at the facility, leave the corresponding information blank.

**Combustion**

| Rule Citation 201-3.2(c) | Description | Number of Activities | Building Location |
|---|---|---|---|
| (1) | Stationary or portable combustion installations where the furnace has a maximum heat input capacity less than 10 mmBtu/hr burning fuels other than coal or wood; or a maximum heat input capacity of less than 1 mmBtu/hr burning coal or wood. This activity does not include combustion installations burning any material classified as solid waste, as defined in 6 NYCRR Part 360, or waste oil, as defined in 6 NYCRR Subpart 225-2. | | |
| (2) | Space heaters burning waste oil at automotive service facilities, as defined in 6 NYCRR Subpart 225-2, generated on-site or at a facility under common control, alone or in conjunction with used oil generated by a do-it-yourself oil changer as defined in 6 NYCRR Subpart 374-2. | | |
| (3)(i) | Stationary or portable internal combustion engines that are liquid or gaseous fuel powered and located within the New York City metropolitan area or the Orange County towns of Blooming Grove, Chester, Highlands, Monroe, Tuxedo, Warwick, or Woodbury, and have a maximum mechanical power rating of less than 200 brake horsepower. | | |
| (3)(ii) | Stationary or portable internal combustion engines that are liquid or gaseous fuel powered and located outside of the New York City metropolitan area or the Orange County towns of Blooming Grove, Chester, Highlands, Monroe, Tuxedo, Warwick, or Woodbury, and have a maximum mechanical power rating of less than 400 brake horsepower. | | |
| (3)(iii) | Stationary or portable internal combustion engines that are gasoline powered and have a maximum mechanical power rating of less than 50 brake horsepower. | | |
| (4) | Reserved. | | |
| (5) | Gas turbines with a heat input at peak load less then 10 mmBtu/hour | | |

| DEC ID |
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| 3 - 1 3 2 6 - 0 0 2 7 5 |

| Rule Citation 201-3.2(c) | Description | Number of Activities | Building Location |
|---|---|---|---|
| (6) | Emergency power generating stationary internal combustion engines, as defined in 6 NYCRR Part 200.1(cq), and engine test cells at engine manufacturing facilities that are utilized for research and development, reliability performance testing, or quality assurance performance testing. Stationary internal combustion engines used for peak shaving and/or demand response programs are not exempt. | | |
| **Combustion Related** | | | |
| (7) | Non-contact water cooling towers and water treatment systems for process cooling water and other water containers designed to cool, store or otherwise handle water that has not been in direct contact with gaseous or liquid process streams. | | |
| **Agricultural** | | | |
| (8) | Feed and grain milling, cleaning, conveying, drying and storage operations including grain storage silos, where such silos exhaust to an appropriate emissions control device, excluding grain terminal elevators with permanent storage capacities over 2.5 million U.S. bushels, and grain storage elevators with capacities above one million bushels. | | |
| (9) | Equipment used exclusively to slaughter animals, but not including other equipment at slaughterhouses, such as rendering cookers, boilers, heating plants, incinerators, and electrical power generating equipment. | | |
| **Commercial - Food Service Industries** | | | |
| (10) | Flour silos at bakeries, provided all such silos are exhausted through an appropriate emission control device. | | |
| (11) | Emissions from flavorings added to a food product where such flavors are manually added to the product. | | |
| **Commercial - Graphic Arts** | | | |
| (12) | Screen printing inks/coatings or adhesives which are applied by a hand-held squeegee. A hand-held squeegee is one that is not propelled though the use of mechanical conveyance and is not an integral part of the screen printing process. | | |
| (13) | Graphic arts processes at facilities located outside the New York City metropolitan area or the Orange County towns of Blooming Grove, Chester, Highlands, Monroe, Tuxedo, Warwick, or Woodbury whose facility-wide total emissions of volatile organic compounds from inks, coatings, adhesives, fountain solutions and cleaning solutions are less than three tons during any 12-month period. | | |

| Rule Citation 201-3.2(c) | Description | Number of Activities | Building Location |
|---|---|---|---|
| (14) | Graphic label and/or box labeling operations where the inks are applied by stamping or rolling. | | |
| (15) | Graphic arts processes which are specifically exempted from regulation under 6 NYCRR Part 234, with respect to emissions of volatile organic compounds which are not given an A rating as described in 6 NYCRR Part 212. | | |
| **Commercial - Other** | | | |
| (16) | Gasoline dispensing sites registered with the department pursuant to 6 NYCRR Part 612. | | |
| (17) | Surface coating and related activities at facilities which use less than 25 gallons per month of total coating materials, or with actual volatile organic compound emissions of 1,000 pounds or less from coating materials in any 12-month period. Coating materials include all paints and paint components, other materials mixed with paints prior to application, and cleaning solvents, combined. This exemption is subject to the following:<br><br>(i) The facility is located outside of the New York City metropolitan area or the Orange County towns of Blooming Grove, Chester, Highlands, Monroe, Tuxedo, Warwick, or Woodbury; and<br><br>(ii) All abrasive cleaning and surface coating operations are performed in an enclosed building where such operations are exhausted into appropriate emission control devices. | | |
| (18) | Abrasive cleaning operations which exhaust to an appropriate emission control device. | | |
| (19) | Ultraviolet curing operations. | | |
| **Municipal/Public Health Related** | | | |
| (20) | Landfill gas ventilating systems at landfills with design capacities less than 2.5 million megagrams (3.3 million tons) and 2.5 million cubic meters (2.75 million cubic yards), where the systems are vented directly to the atmosphere, and the ventilating system has been required by, and is operating under, the conditions of a valid 6 NYCRR Part 360 permit, or order on consent. | | |
| **Storage Vessels** | | | |
| (21) | Distillate fuel oil, residual fuel oil, and liquid asphalt storage tanks with storage capacities below 300,000 barrels. | 2 | |

| DEC ID |
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| 3 - 1 3 2 6 - 0 0 2 7 5 |

| Rule Citation 201-3.2(c) | Description | Number of Activities | Building Location |
|---|---|---|---|
| (22) | Pressurized fixed roof tanks which are capable of maintaining a working pressure at all times to prevent emissions of volatile organic compounds to the outdoor atmosphere. | | |
| (23) | External floating roof tanks which are of welded construction and are equipped with a metallic-type shoe primary seal and a secondary seal from the top of the shoe seal to the tank wall. | | |
| (24) | External floating roof tanks which are used for the storage of a petroleum or volatile organic liquid with a true vapor pressure less than 4.0 psi (27.6 kPa), are of welded construction and are equipped with one of the following:<br><br>(i) a metallic-type shoe seal;<br><br>(ii) a liquid-mounted foam seal;<br><br>(iii) a liquid-mounted liquid-filled type seal; or<br><br>(iv) equivalent control equipment or device. | | |
| (25) | Storage tanks, including petroleum liquid storage tanks as defined in 6 NYCRR Part 229, with capacities less than 10,000 gallons, except those subject to 6 NYCRR Part 229 or Part 233. | | |
| (26) | Horizontal petroleum or volatile organic liquid storage tanks. | | |
| (27) | Storage silos storing solid materials, provided all such silos are exhausted through an appropriate emission control device. This exemption does not include raw material, clinker, or finished product storage silos at Portland cement plants. | | |
| **Industrial** | | | |
| (28) | Processing equipment at existing sand and gravel and stone crushing plants which were installed or constructed before August 31, 1983, where water is used for operations such as wet conveying, separating, and washing. This exemption does not include processing equipment at existing sand and gravel and stone crushing plants where water is used for dust suppression. | | |
| (29)(i) | Sand and gravel processing or crushed stone processing lines at a non-metallic mineral processing facility that are a permanent or fixed installation with a maximum rated processing capacity of 25 tons of minerals per hour or less. | | |

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| Rule Citation 201-3.2(c) | Description | Number of Activities | Building Location |
|---|---|---|---|
| (29)(ii) | Sand and gravel processing or crushed stone processing lines at a non-metallic mineral processing facility that are a portable emission source with a maximum rated processing capacity of 150 tons of minerals per hour or less. | | |
| (29)(iii) | Sand and gravel processing or crushed stone processing lines at a non-metallic mineral processing facility that are used exclusively to screen minerals at a facility where no crushing or grinding takes place. | | |
| (30) | Reserved. | | |
| (31) | Surface coating operations which are specifically exempted from regulation under 6 NYCRR Part 228, with respect to emissions of volatile organic compounds which are not given an A rating pursuant to 6 NYCRR Part 212. | | |
| (32) | Pharmaceutical tablet branding operations. | | |
| (33) | Thermal packaging operations, including, but not limited to, therimage labeling, blister packing, shrink wrapping, shrink banding, and carton gluing. | | |
| (34) | Powder coating operations. | | |
| (35) | All tumblers used for the cleaning and/or deburring of metal products without abrasive blasting. | | |
| (36) | Presses used exclusively for molding or extruding plastics except where halogenated carbon compounds or hydrocarbon solvents are used as foaming agents. | | |
| (37) | Concrete batch plants where the cement weigh hopper and all bulk storage silos are exhausted through fabric filters, and the batch drop point is controlled by a shroud or other emission control device. | | |
| (38) | Cement storage operations not located at Portland cement plants where materials are transported by screw or bucket conveyors. | | |
| (39)(i) | Cold cleaning degreasers with an open surface area of 11 square feet or less and an internal volume of 93 gallons or less or, having an organic solvent loss of 3 gallons per day or less. | | |
| 39(ii) | Cold cleaning degreasers that use a solvent with a VOC content or five percent or less by weight, unless subject to the requirements of 40 CFR 63 Subpart T. | | |

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| Rule Citation 201-3.2(c) | Description | Number of Activities | Building Location |
|---|---|---|---|
| (39)(iii) | Conveyorized degreasers with an air/vapor interface smaller than 22 square feet (2 square meters), unless subject to the requirements of 40 CFR 63 Subpart T. | | |
| (39)(iv) | Open-top vapor degreasers with an open-top area smaller than 11 square feet (1 square meter), unless subject to the requirements of 40 CFR 63 Subpart T. | | |
| **Miscellaneous** | | | |
| (40) | Ventilating and exhaust systems for laboratory operations. Laboratory operations do not include processes having a primary purpose to produce commercial quantities of materials. | | |
| (41) | Exhaust or ventilating systems for the melting of gold, silver, platinum and other precious metals. | | |
| (42) | Exhaust systems for paint mixing, transfer, filling or sampling and/or paint storage rooms or cabinets, provided the paints stored within these locations are stored in closed containers when not in use. | | |
| (43) | Exhaust systems for solvent transfer, filling or sampling, and/or solvent storage rooms provided the solvent stored within these locations are stored in containers when not in use. | | |
| (44) | Research and development activities, including both stand-alone and activities within a major facility, until such time as the administrator completes a rule making to determine how the permitting program should be structured for these activities. | | |
| (45) | The application of odor counteractants and/or neutralizers. | | |
| (46) | Hydrogen fuel cells. | | |
| (47) | Dry cleaning equipment that uses only water-based cleaning processes or those using liquid carbon dioxide. | | |
| (48) | Manure spreading, handling and storage at farms and agricultural facilities. | | |

# APPENDIX C: PLOT PLAN

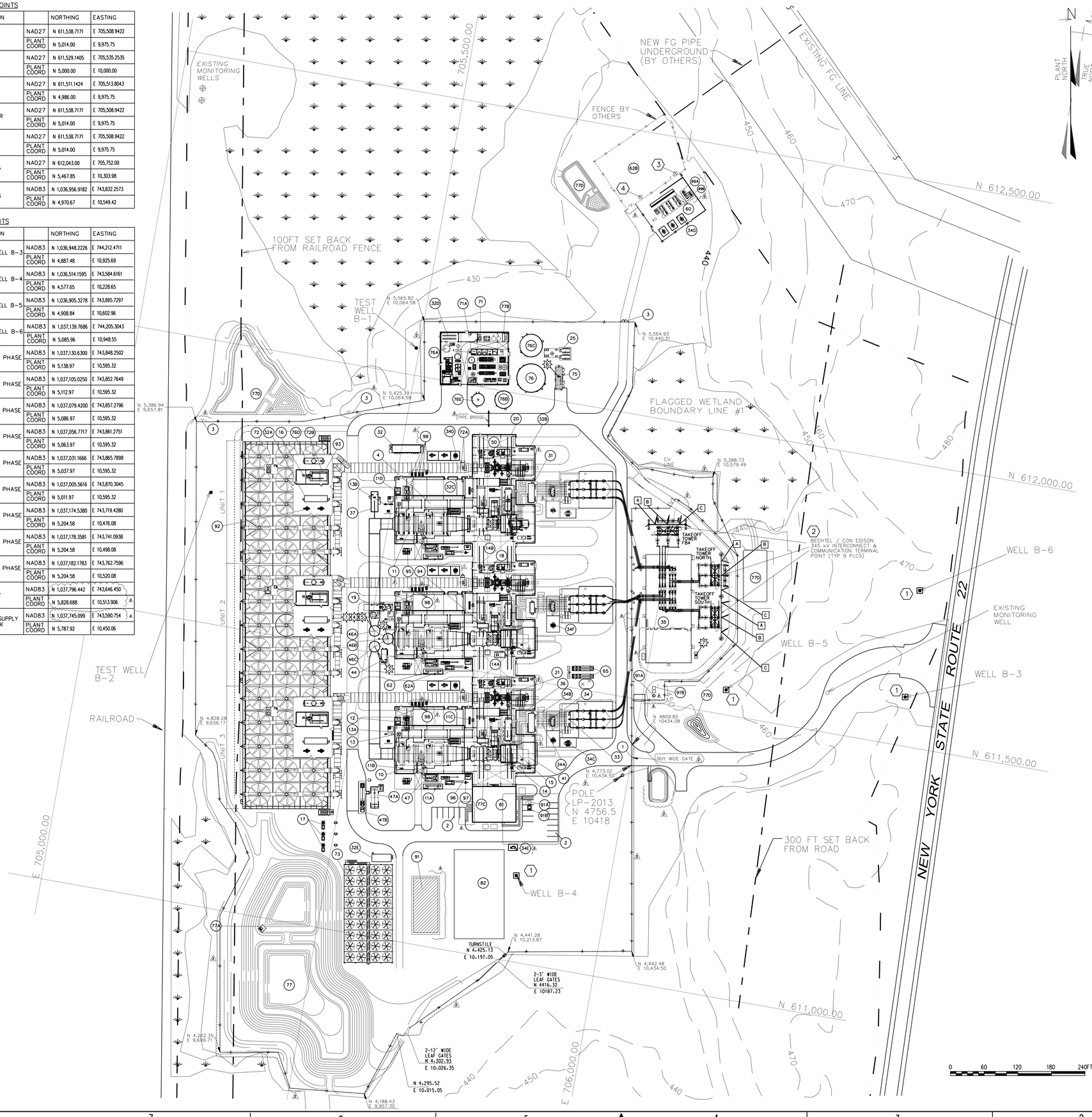
NA_FORMATS.CEL AC=ESTD_NA 03/17/15

## EMISSION POINTS

| NO. | DESCRIPTION | | NORTHING | EASTING |
|---|---|---|---|---|
| ✲ | HRSG STACK 1 | NAD27 | N 611,538.7171 | E 705,508.9422 |
| | | PLANT COORD | N 5,014.00 | E 9,975.75 |
| ✲ | HRSG STACK 2 | NAD27 | N 611,529.1405 | E 705,535.2535 |
| | | PLANT COORD | N 5,000.00 | E 10,000.00 |
| ✲ | HRSG STACK 3 | NAD27 | N 611,511.1424 | E 705,513.8043 |
| | | PLANT COORD | N 4,986.00 | E 9,975.75 |
| ✲ | DIESEL GENERATOR | NAD27 | N 611,538.7171 | E 705,508.9422 |
| | | PLANT COORD | N 5,014.00 | E 9,975.75 |
| ✲ | AUXILIARY BOILER | NAD27 | N 611,538.7171 | E 705,508.9422 |
| | | PLANT COORD | N 5,014.00 | E 9,975.75 |
| ✲ | DIESEL FIRE PUMP | NAD27 | N 612,043.00 | E 705,752.00 |
| | | PLANT COORD | N 5,467.85 | E 10,303.98 |
| ✲ | SWITCH YARD EDG | NADB3 | N 1,036,956.9182 | E 743,832.2573 |
| | | PLANT COORD | N 4,970.67 | E 10,549.42 |

## TIE-IN POINTS

| NO. | DESCRIPTION | | | NORTHING | EASTING |
|---|---|---|---|---|---|
| 1 | MAKE-UP WATER SUPPLY | WELL B-3 | NADB3 | N 1,036,948.2226 | E 744,212.4711 |
| | | | PLANT COORD | N 4,887.48 | E 10,925.69 |
| | | WELL B-4 | NADB3 | N 1,036,514.1595 | E 743,584.6161 |
| | | | PLANT COORD | N 4,577.65 | E 10,228.65 |
| | | WELL B-5 | NADB3 | N 1,036,905.3278 | E 743,895.7297 |
| | | | PLANT COORD | N 4,908.84 | E 10,602.96 |
| | | WELL B-6 | NADB3 | N 1,037,139.7686 | E 744,205.3043 |
| | | | PLANT COORD | N 5,085.96 | E 10,948.55 |
| 2 | ELECTRICAL INTERCONNECTION | TAKEOFF TOWER NORTH A PHASE | NADB3 | N 1,037,130.6300 | E 743,848.2502 |
| | | | PLANT COORD | N 5,138.97 | E 10,595.32 |
| | | TAKEOFF TOWER NORTH B PHASE | NADB3 | N 1,037,105.0250 | E 743,852.7649 |
| | | | PLANT COORD | N 5,112.97 | E 10,595.32 |
| | | TAKEOFF TOWER NORTH C PHASE | NADB3 | N 1,037,079.4200 | E 743,857.2796 |
| | | | PLANT COORD | N 5,086.97 | E 10,595.32 |
| | | TAKEOFF TOWER SOUTH A PHASE | NADB3 | N 1,037,056.7717 | E 743,861.2751 |
| | | | PLANT COORD | N 5,063.97 | E 10,595.32 |
| | | TAKEOFF TOWER SOUTH B PHASE | NADB3 | N 1,037,031.1666 | E 743,865.7898 |
| | | | PLANT COORD | N 5,037.97 | E 10,595.32 |
| | | TAKEOFF TOWER SOUTH C PHASE | NADB3 | N 1,037,005.5616 | E 743,870.3045 |
| | | | PLANT COORD | N 5,011.97 | E 10,595.32 |
| | | TAKEOFF TOWER F84 A PHASE | NADB3 | N 1,037,174.5380 | E 743,719.4280 |
| | | | PLANT COORD | N 5,204.58 | E 10,476.08 |
| | | TAKEOFF TOWER F84 B PHASE | NADB3 | N 1,037,178.3581 | E 743,741.0938 |
| | | | PLANT COORD | N 5,204.58 | E 10,498.08 |
| | | TAKEOFF TOWER F84 C PHASE | NADB3 | N 1,037,182.1783 | E 743,762.7596 |
| | | | PLANT COORD | N 5,204.58 | E 10,520.08 |
| 3 | FUEL GAS SUPPLY | | NADB3 | N 1,037,796.442 | E 743,646.450 |
| | | | PLANT COORD | N 5,828.688 | E 10,513.906 |
| 4 | ELECTRICAL POWER SUPPLY AND DCS SERIAL LINK | | NADB3 | N 1,037,745.099 | E 743,590.754 |
| | | | PLANT COORD | N 5,787.92 | E 10,450.06 |

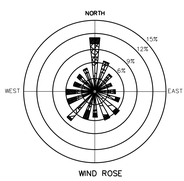



| | |
|---|---|
| 1 | • MAIN GATE |
| 2 | • PARKING |
| 3 | • SECONDARY GATE |
| 4 | PIPE RACK |
| 10 | HEAT RECOVERY STEAM GENERATOR (HRSG) BUILDING |
| 11 | HEAT RECOVERY STEAM GENERATOR (HRSG) |
| 11A | DUCT FIRING SKID |
| 11B | LP RECIRCULATION PUMP |
| 11C | SAMPLE PANEL (SWAS) |
| 11D | CHEMICAL FEED SYSTEM |
| 12 | HRSG BOILER FEEDWATER PUMP |
| 13 | HRSG BLOWDOWN TANK |
| 13A | BLOWDOWN SUMP |
| 13B | BLOWDOWN COOLER |
| 14 | COMBUSTION TURBINE (CTG) |
| 14A | • WATER WASH SKID |
| 14B | COMBUSTION TURBINE WATER WASH DRAIN SUMP |
| 15 | COMBUSTION TURBINE GENERATOR (BELOW) |
| 16 | CONDENSATE PUMP |
| 17 | • CLOSED COOLING WATER PUMPS |
| 18 | INTERNAL DRAINS TANK |
| 19 | • AUXILIARY BOILER |
| 20 | MCE BUILDING |
| 21 | STEAM TURBINE/GENERATOR (STG) |
| 25 | • AIR COMPRESSORS/DRYERS/RECEIVER |
| 30 | • DELETED |
| 31 | LCI COMPARTMENT |
| 32 | • COMMON POWER CONTROL CENTER (PCC) |
| 32A | AIR COOLED CONDENSER MCC |
| 32B | START-UP HEATER SWITCHGEAR |
| 32C | CTs/HRSG MCC |
| 32D | • WATER TREATMENT MCC |
| 32E | • FIN FAN MCC |
| 33 | MAIN TRANSFORMER |
| 34 | AUXILIARY TRANSFORMER |
| 34A | CTG GENERATOR CIRCUIT BREAKER |
| 34B | STEAM TURBINE GENERATOR CIRCUIT BREAKER |
| 34C | ISOLATION TRANSFORMER |
| 34D | START-UP HEATER TRANSFORMER |
| 34E | BACK-UP POWER FEED TRANSFORMER |
| 34F | EXCITATION TRANSFORMER |
| 34G | FUEL GAS ELECTRIC HEATER TRANSFORMERS |
| 35 | • GAS INSULATED SWITCHGEAR (GIS) SWITCHYARD BUILDING |
| 36 | ISOPHASE BUS DUCT |
| 37 | • EMERGENCY DIESEL GENERATOR |
| 41 | COMBUSTION TURBINE INLET FILTER |
| 44 | • CONTINUOUS EMISSIONS MONITORING (CEMS) |
| 46A | UNIT 1 STACK |
| 46B | UNIT 2 STACK |
| 46C | UNIT 3 STACK |
| 47 | SELECTIVE CATALYTIC REDUCTION (SCR) SKID |
| 47A | • AMMONIA STORAGE TANK & FORWARDING PUMPS |
| 47B | • AMMONIA UNLOADING AREA |
| 50 | LAYDOWN AREA |
| 60 | • FUEL GAS HEATING AND PRESSURE REDUCING STATION |
| 62 | FUEL GAS PREHEATER |
| 62A | FUEL GAS ELECTRIC STARTUP HEATER |
| 62B | • FUEL GAS METERING STATION (BY OWNER) |
| 65 | • HYDROGEN TUBE TRAILERS |
| 71 | • WATER TREATMENT BUILDING |
| 71A | • WATER TREATMENT BUILDING LAB |
| 72 | AIR COOLED CONDENSER (ACC) |
| 72A | ACC DRAIN POT AND PUMPS |
| 72B | STEAM JET AIR EJECTOR (SJAE) |
| 73 | • FIN FAN COOLER |
| 75 | • DIESEL/ELECTRIC FIRE PUMP HOUSE |
| 76 | • SERVICE/FIRE WATER STORAGE TANK |
| 76A | • POTABLE WATER STORAGE TANK |
| 76B | • DEMINERALIZED WATER STORAGE TANK |
| 76C | • WASTE WATER COLLECTION TANK |
| 76D | CONDENSATE EXTRACTION TANK |
| 76E | • RO CONCENTRATE COLLECTION TANK |
| 77 | • STORM WATER MANAGEMENT COLLECTION POND |
| 77A | • RAIN CAPTURE SUMP |
| 77B | • OIL/WATER SEPARATOR |
| 77C | POWER BLOCK AREA SUMP |
| 77D | • BIO RETENTION POND |
| 81 | • ADMINISTRATION/CONTROL ROOM BUILDING |
| 82 | • TEMPORARY CRAFT CHANGE HOUSE / FUTURE OWNER'S STORAGE FACILITY |
| 91 | • LEACH FIELD |
| 91A | • PUMP CHAMBER |
| 91B | • SEPTIC TANK |
| 92 | ACC TRANSFORMERS |
| 93 | ACC MECHANICAL BUILDING |
| 94 | WATER MIST SKID |
| 95 | FUEL GAS ABSOLUTE SEPARATOR |
| 96 | FILTER DRAIN TANK |
| 97 | FUEL GAS SCRUBBER |
| 98 | ELE. ROOM VENTILATION FAN |
| 99A | • FUEL GAS FILTER SEPARATOR |
| 99B | • FUEL GAS DRAIN TANK |

• DENOTES EQUIPMENT IS COMMON/SERVICES ALL UNITS

LEGEND

- GRAVEL ROAD
- LIMIT OF DISTURBANCE (LOD)
- FENCELINE




WIND ROSE
PREDOMINANT WIND DIRECTION JUNE - JULY- AUGUST

| NO. | DATE | REVISIONS | BY | CHK | DES. SUPV. | ENGR | PROJ ENGR | APPR |
|---|---|---|---|---|---|---|---|---|
| 2 | 04/17/20 | REVISED AS NOTED & RE-ISSUED FOR USE | ND | SS | RCB | – | RG | – |
| 1 | 02/14/18 | REVISED TO INCORPORATE OWNER'S COMMENTS AND AS NOTED | DPP | SS | RCB | – | UG | – |
| 0 | 05/01/17 | ISSUED FOR USE | CAM | JJS | JCL | – | PK | – |

SCALE AS NOTED | DATE | DESIGNED | DRAWN | CHIEF ENGR.

**BECHTEL ASSOCIATES PROFESSIONAL CORP**

CRICKET VALLEY ENERGY CENTER

PLOT PLAN

| JOB NO. | DRAWING NO. | REV. |
|---|---|---|
| 26068-000 | P1-0010-00001 | 002 |

34"X44" E SIZE

PSC=

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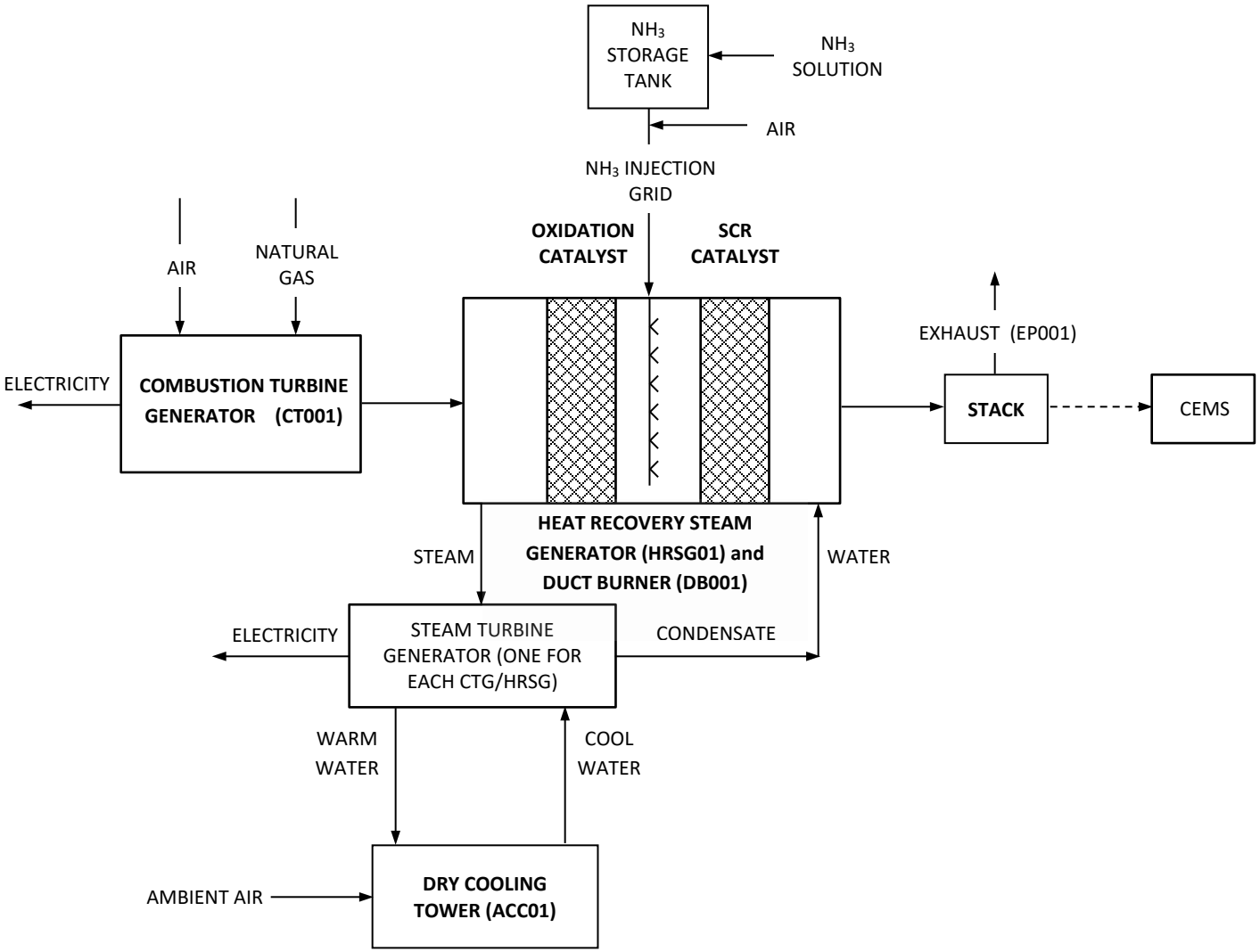
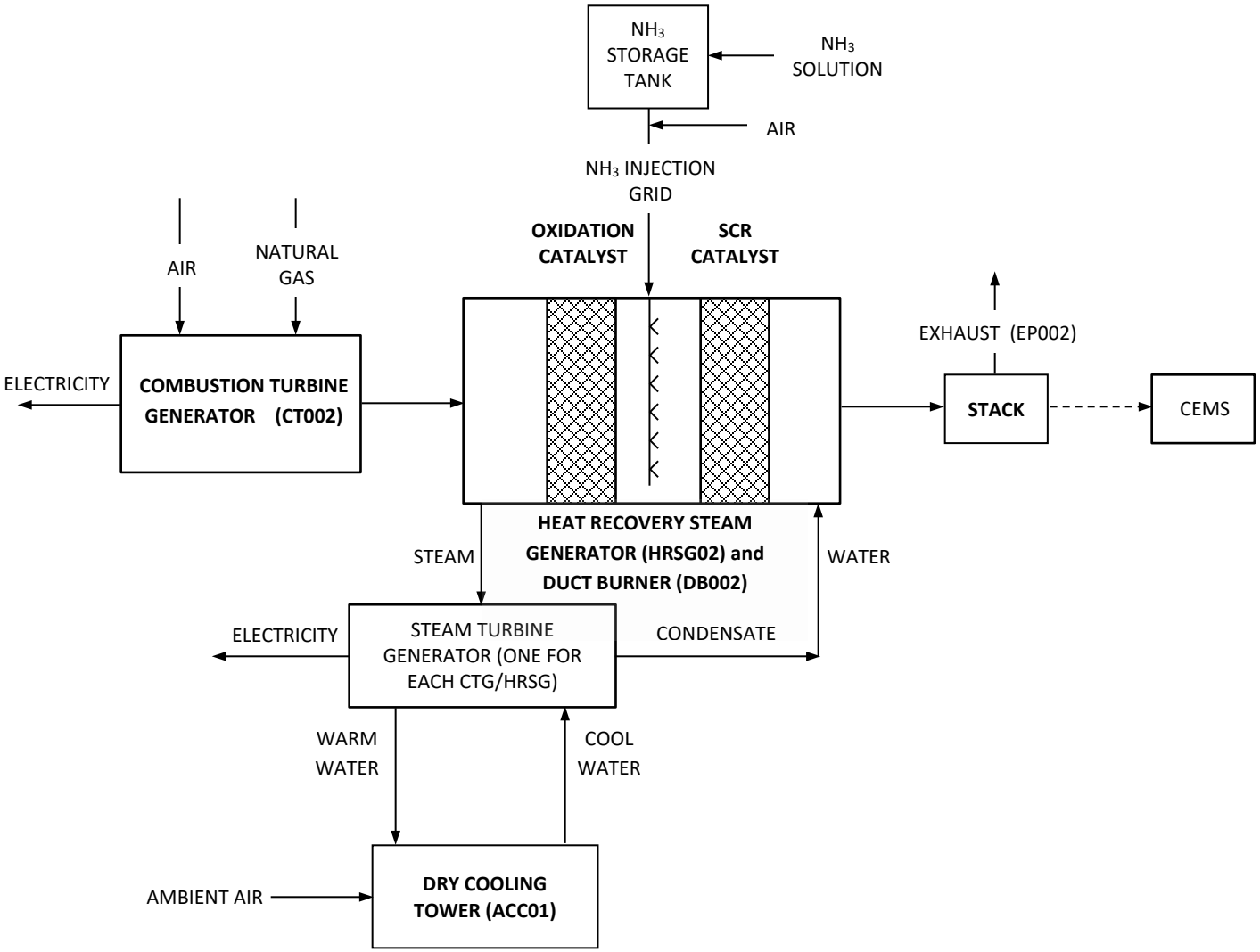
# APPENDIX D: PROCESS FLOW DIAGRAMS

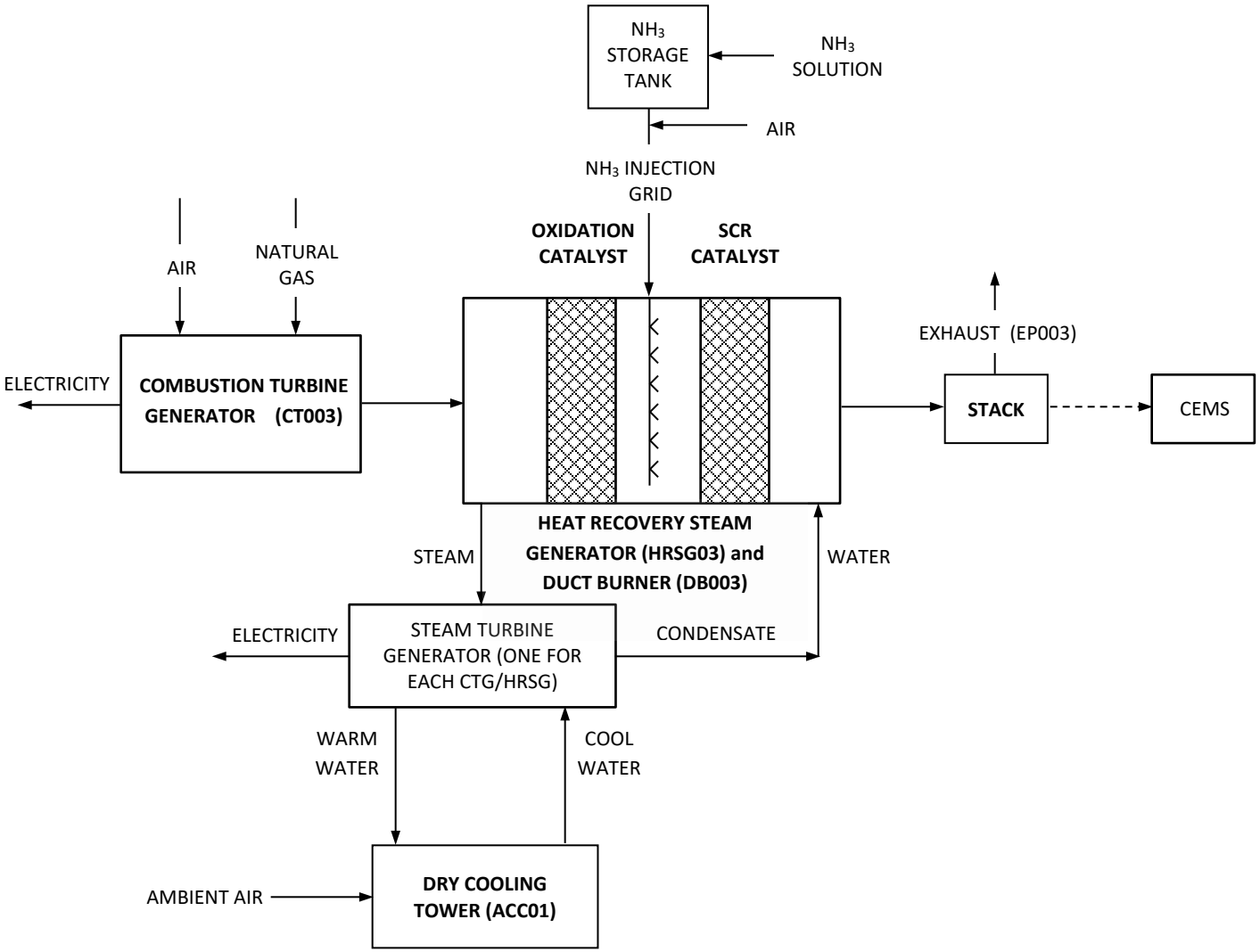
## COMBUSTION TURBINE and DUCT BURNERS #1– PROCESS FLOW DIAGRAM



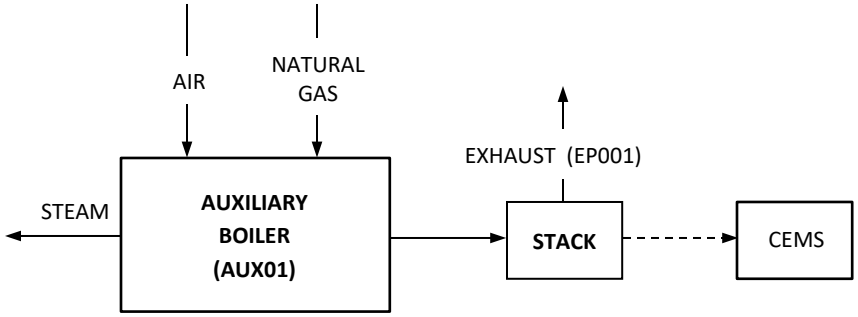
**COMBUSTION TURBINE and DUCT BURNERS #2– PROCESS FLOW DIAGRAM**



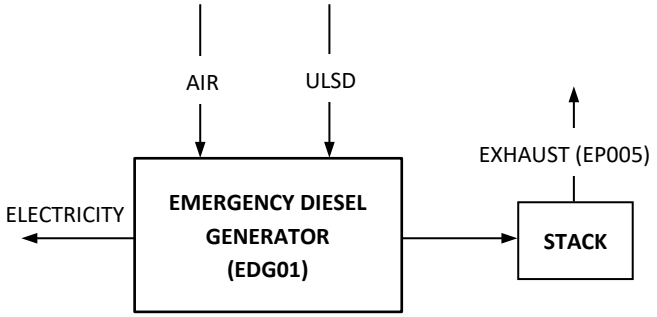
## COMBUSTION TURBINE and DUCT BURNERS #3– PROCESS FLOW DIAGRAM



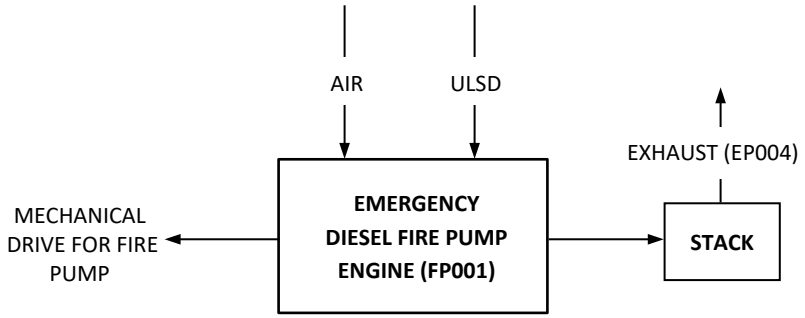
**AUXILIARY BOILER – PROCESS FLOW DIAGRAM**



**EMERGENCY DIESEL GENERATOR – PROCESS FLOW DIAGRAM**



**EMERGENCY DIESEL FIRE PUMP ENGINE – PROCESS FLOW DIAGRAM**



# APPENDIX E: METHODS USED TO DETERMINE COMPLIANCE

| DEC ID |
|---|
| 3 - 1 3 2 6 - 0 0 2 7 5 |

## Methods Used to Determine Compliance

| Emission Unit ID | Permit Condition / Applicable Requirement | Method Used to Determine Compliance | Compliance Date |
|---|---|---|---|
| Facility Wide | Permit Condition 1, 6 NYCRR 200.6 | An ambient air quality impact analysis was submitted with the application for Permit ID 3-1326-00275/00009 to demonstrate compliance with the applicable ambient air quality standards. | 02/03/2016 |
| Facility Wide | Permit Condition 2, 6 NYCRR 201-6.4 (a) (7) | CVEC has paid all fees consistent with the fee schedule authorized by ECL 72-0303. | As of the date of certification of this renewal application. |
| Facility Wide | Permit Condition 3, 6 NYCRR 201-6.4 (c) | CVEC includes the following information in any required compliance monitoring records and reports:<br>(i) The date, place, and time of sampling or measurements;<br>(ii) The date(s) analyses were performed;<br>(iii)The company or entity that performed the analyses;<br>(iv) The analytical techniques or methods used including quality assurance and quality control procedures if required;<br>(v) The results of such analyses including quality assurance data where required; and<br>(vi) The operating conditions as existing at the time of sampling or measurement.<br>Any deviation from permit requirements is clearly identified in all records and reports. Reports are certified by a responsible official, consistent with Section 201-6.2 of Part 201. | As of the date of each monitoring record and report. |

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## Methods Used to Determine Compliance

| Emission Unit ID | Permit Condition / Applicable Requirement | Method Used to Determine Compliance | Compliance Date |
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| Facility Wide | Permit Condition 4, 6 NYCRR 201-6.4 (c) (2) | Compliance monitoring and recordkeeping is conducted according to the terms and conditions contained in Permit ID 3-1326-00275/00009 and follows all quality assurance requirements found in applicable regulations. Records of all monitoring data and support information are retained for a period of at least 5 years from the date of the monitoring, sampling, measurement, report, or application. All supporting information including all calibration and maintenance records and all original data recordings for continuous monitoring instrumentation, and copies of all reports as required by the permit. | As of the date of certification of this renewal application. |
| Facility Wide | Permit Condition 5, 6 NYCRR 201-6.4 (c) (3) (ii) | CVEC submits a compliance monitoring report every 6 months no later than each January 30th and July 30th and contains all information required under 6 NYCRR 201-6.4 (c). Each report identifies all instances of deviations from permit requirements and are certified by the responsible official. The reports state the probable cause of any deviations and any corrective actions or preventive measures taken. Deviation reports are submitted in accordance with the time frame of the applicable requirement or the time frame under Permit Condition 5, Item 5.2, as applicable. | As of the date of the most recent report. |

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## Methods Used to Determine Compliance

| Emission Unit ID | Permit Condition / Applicable Requirement | Method Used to Determine Compliance | Compliance Date |
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| Facility Wide | Permit Condition 6, 6 NYCRR 201-6.4 (e) | CVEC submits an annual compliance certification report no later than each January 30th and contains all information required under 6 NYCRR 201-6.4 (e) and Permit Condition 6, Item 6.2. | As of the date of the most recent compliance certification report. |
| Facility Wide | Permit Condition 7, 6 NYCRR 202-2.1 | CVEC submits an annual emission statement by no later than April 15th each year. | As of the date of the most recent emission statement report. |
| Facility Wide | Permit Condition 8, 6 NYCRR 202-2.5 | CVEC maintains the following records at the facility and these will be made available to representatives of the department upon request during normal business hours. These records will be maintained for at least five years.<br>(1) a copy of each emission statement submitted to the department; and<br>(2) records indicating how the information submitted in the emission statement was determined, including any calculations, data, measurements, and estimates used. | As of the date of the most recent emission statement report. |
| Facility Wide | Permit Condition 9, 6 NYCRR 215.2 | Except as allowed by Title 6 NYCRR Section 215.3, no person shall burn, cause, suffer, allow or permit the burning of any materials in an open fire. CVEC does no allow open fires at the facility. | As of the date of certification of this renewal application. |
| Facility Wide | Permit Condition 10, 6 NYCRR 200.7 | CVEC operates and maintains all emission control equipment on emission units U-00001, U-00002, and U-00003 in accordance with industry practices, standards and procedures, inclusive of manufacturer's specifications. | As of the date of certification of this renewal application. |
| Facility Wide | Permit Condition 11, 6 NYCRR 201-1.7 | CVEC does not operate any air cleaning devices that collect air contaminants and therefore this requirement is not applicable. | Not Applicable |
| Facility Wide | Permit Condition 12, 6 NYCRR 201-1.8 | CVEC does not operate any air cleaning devices that collect air contaminants and therefore this requirement is not applicable. | Not Applicable |
| Facility Wide | Permit Condition 13, 6 NYCRR 201-3.2 (a) | CVEC certifies that all Exempt Activities identified in this application are operated and meet the specific criteria for exemption. Records will be maintained on-site for 5 years to verify compliance. | As of the date of certification of this renewal application. |
| Facility Wide | Permit Condition 14, 6 NYCRR 201-3.3 (a) | CVEC certifies that all Trivial Activities, as defined under NYCRR identified in 6 NYCRR 201-3.3 (c), that are performed at the facility meet the specific criteria for a Trivial Activity. Records will be maintained on-site for 5 years to verify compliance. | As of the date of certification of this renewal application. |

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## Methods Used to Determine Compliance

| Emission Unit ID | Permit Condition / Applicable Requirement | Method Used to Determine Compliance | Compliance Date |
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| Facility Wide | Permit Condition 15, 6 NYCRR 201-6.4 (a) (4) | CVEC will upon request furnish to the department in a reasonable time any information that the department may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. CVEC will also furnish to the department copies of records required to be kept by the permit or, for information claimed to be confidential, the permittee may furnish such records directly to the administrator along with a claim of confidentiality, if the administrator initiated the request for information or otherwise has need of it. | As of the date of certification of this renewal application, the department has not requested any information of this nature. |
| Facility Wide | Permit Condition 16, 6 NYCRR 201-6.4 (a) (8) | CVEC shall allow the department or an authorized representative to: (i) enter upon the premises or where permit records are kept; (ii) have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit; (iii) inspect at reasonable times any emission sources, equipment (including monitoring and air pollution control equipment), practices, and operations regulated or required under the permit; and (iv) sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit or applicable requirements. | As of the date of certification of this renewal application. |
| Facility Wide | Permit Condition 17, 6 NYCRR 201-6.4 (f) (6) | CVEC will provide written notice a minimum of seven days in advance of any changes that contravene an express permit term, provided that such changes would not violate applicable requirements and are not a modification. | CVEC has not made any changes meeting these criteria. |
| Facility Wide | Permit Condition 18, 6 NYCRR 202-1.1 | CVEC will complete emissions testing requested by the department for the purposes of demonstrating compliance with an applicable requirement. | As of the date of certification of this renewal application. |
| Facility Wide | Permit Condition 19, 40 CFR Part 68 | CVEC does not have a chemical listed in Tables 1,2,3 or 4 of 40 CFR §68.130 at a quantity greater than the threshold quantity listed in Tables 1,2,3 or 4, | Not Applicable |
| Facility Wide | Permit Condition 20, 40 CFR 82, Subpart F | CVEC complies with all applicable provisions of 40 CFR Part 82. | As of the date of certification of this renewal application. |
| Emission Units U-00004 and U-00005 | Permit Condition 1-2, 6 NYCRR 200.1 (cq) | The emergency generator and the emergency fire pump engine have been operated less than 500 hours of operation per year per engine, rolled monthly, and CVEC maintains records on site tracking the hours of operation, rolling the hours monthly. | As of the date of certification of this renewal application. |
| Facility Wide | Permit Condition 22, 6 NYCRR 200.7 | CVEC maintains records to verify concentration of ammonia stored on-site is equal to or less than 19% by weight. Records of vendor certifications or analyses per delivery are used to verify concentration. | As of the date of certification of this renewal application. |
| Emission Units U-00001, U-00002, and U-00003 | Permit Condition 23, 6 NYCRR 200.7 | CVEC operates continuous emissions monitoring systems (CEMS) to verify that the ammonia concentration in the exhaust is 5.0 parts per million by volume dry basis corrected to 15% oxygen (ppmvdc) during all turbine loads, all fuels being fired, and all duct burner operations. Reports of the CEMS data are submitted quarterly. | As of the date of certification of this renewal application. |

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## Methods Used to Determine Compliance

| Emission Unit ID | Permit Condition / Applicable Requirement | Method Used to Determine Compliance | Compliance Date |
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| Emission Units U-00001, U-00002, and U-00003 | Permit Condition 24, 6 NYCRR 201-1.4 (a) | CVEC monitors all occurrences of start-up and shut-down from the combustion turbines including duration of start-up and shut-down and total pounds of emissions of NOx, CO and NH3 monitored by a CEMS. The facility recorded its 15th startup and 15th shutdown on approximately March 22, 2020 and submitted a letter on May 20, 2020 with proposed start-up and shut-down limits to the Department for approval. | May 20, 2020 |
| Emission Unit U-00001 | Permit Condition 25, Item 25.1. 6 NYCRR 201-6 | This emission unit consists of one natural gas fired GE Model 7F.05 combustion turbine generator (CTG), one heat recovery steam generator (HRSG) with supplemental natural gas firing, and one natural gas fired auxiliary boiler. The CTG, HRSG, and auxiliary boiler are exhausted through a common stack. | As of the date of certification of this renewal application. |
| Emission Unit U-00002 | Permit Condition 25, Item 25.2. 6 NYCRR 201-6 | This emission unit consists of one natural gas fired GE Model 7F.05 CTG and one HRSG with supplemental natural gas firing exhausted through a common stack. | As of the date of certification of this renewal application. |
| Emission Unit U-00003 | Permit Condition 25, Item 25.3. 6 NYCRR 201-6 | This emission unit consists of one natural gas fired GE Model 7F.05 CTG and one HRSG with supplemental natural gas firing exhausted through a common stack. | As of the date of certification of this renewal application. |
| Emission Unit U-00004 | Permit Condition 25, Item 25.4. 6 NYCRR 201-6 | This emission unit consists of one 260 horsepower emergency diesel-fired fire pump engine. | As of the date of certification of this renewal application. |
| Emission Unit U-00005 | Permit Condition 25, Item 25.5. 6 NYCRR 201-6 | This emission unit consists of one 1,500 kW electrical (1,645 mechanical) diesel fired emergency generator engine. | As of the date of certification of this renewal application. |
| Facility Wide | Permit Condition 26, 6 NYCRR 201-6.4(d)(4) | CVEC is not subject to any schedule of compliance and therefore semi-annual compliance reports are not required. | As of the date of certification of this renewal application. |
| Facility Wide | Permit Condition 27, 6 NYCRR 202-1.2 | No less than 30 days prior to an emission test required by applicable requirement or requested by the department, CVEC will submit written notification to the department of the time and date of the test, the acceptable procedures to be used to stack test, including sampling and analytical procedures. CVEC will allow the commissioner, or his representative, free access to observe the stack testing identified in the notification. | As of the date of certification of this renewal application. |
| Facility Wide | Permit Condition 28, 6 NYCRR 202-2.3 | All emission statements required by Permit Condition 7 and 6 NYCRR 202-2.1 will include all information listed in Item 28.1 of Permit Condition 28. | As of the date of certification of this renewal application. |
| Facility Wide | Permit Condition 29, 6 NYCRR 202-2.4 | All emission statements required by Permit Condition 7 and 6 NYCRR 202-2.1 will by submitted no later than April 30th each year and include all information listed in Item 29.1 of Permit Condition 29. | As of the date of certification of this renewal application. |

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## Methods Used to Determine Compliance

| Emission Unit ID | Permit Condition / Applicable Requirement | Method Used to Determine Compliance | Compliance Date |
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| Facility Wide | Permit Condition 30, 6 NYCRR 211.1 | CVEC will not cause or allow emissions of air contaminants to the outdoor atmosphere of such quantity, characteristic or duration which are injurious to human, plant or animal life or to property, or which unreasonably interfere with the comfortable enjoyment of life or property. Notwithstanding the existence of specific air quality standards or emission limits, this prohibition applies, but is not limited to, any particulate, fume, gas, mist, odor, smoke, vapor, pollen, toxic or deleterious emission, either alone or in combination with others. | As of the date of certification of this renewal application. |
| Facility Wide | Permit Condition 31, 6 NYCRR 225-1.2 (g) | CVEC will only fire distillate oil with a sulfur content no greater than 0.0015 percent sulfur in any stationary combustion installation at the facility. Records of vendor certifications or analyses per delivery are used to verify concentration. | As of the date of certification of this renewal application. |
| Facility Wide | Permit Condition 32, 6 NYCRR 225-1.2 (h) | CVEC will only fire distillate oil with a sulfur content no greater than 0.0015 percent sulfur in any stationary combustion installation at the facility. Records of vendor certifications or analyses per delivery are used to verify concentration. | As of the date of certification of this renewal application. |
| Emission Units U-00004 and U-00005 | Permit Condition 1-3, 6 NYCRR 227-1.3 | The emergency fire pump engine and emergency generator engine are operated and maintained in accordance with manufacturer specifications to ensure that emissions of opacity do not exceed 20 percent opacity (six minute average), except for one six-minute period per hour of not more than 27 percent opacity. When the emergency generator and fire pump engine are operating, their stacks are observed to ensure that visible emissions do not exceed the limit. CVEC will take corrective actions, as necessary, and will record and maintain these corrective actions on site for Department review. | No corrective actions have been required as of the date of certification of this renewal application. |
| Emission Units U-00001, U-00002, and U-00003 | Permit Condition 1-4, 6 NYCRR 227-1.3(a) | CVEC operates the CTGs, duct burners, and auxiliary boiler to ensure that emissions of opacity do not exceed 20 percent opacity (six minute average), except for one six-minute period per hour of not more than 27 percent opacity. The facility shall conduct performance tests on the combustion turbines, associated duct burners, and the auxiliary boiler operating in conjunction to verify compliance. | Performance tests were completed on 03/06/20 (U-00001), 03/11/20 (U-00002), and 04/17/20 (U-00003) and verified compliance with the applicable opacity limits |
| Facility Wide | Permit Condition 1-5, 6 NYCRR 231-5.3 | The facility maintains rolling 12-month records from emission units U-00001, U-00002, U-00003, U-00004, and U-00005 to verify that facility-wide emissions of NOx and VOC are no greater than 251.4 tons per year (tpy) and 95.4 tpy, respectively. | As of the date of certification of this renewal application. |
| Emission Unit U-00001 | Permit Condition 1-6, 6 NYCRR 231-5.4 | CVEC maintains a NOx emission limit of 2.0 ppmvdc (with and without duct burning) to satisfy LAER. Emissions are controlled through the application of DLN burners in combination with Selective Catalytic Reduction (SCR). This limit applies at all load conditions except start-up and shutdown. CVEC operates CEMS to verify compliance with the NOx emissions limit. | As of the date of certification of this renewal application. |

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## Methods Used to Determine Compliance

| Emission Unit ID | Permit Condition / Applicable Requirement | Method Used to Determine Compliance | Compliance Date |
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| Emission Units U-00001, U-00002, and U-00003 | Permit Condition 36, 6 NYCRR 231-5.4 | To satisfy LAER requirements, CVEC operates each CTG and associated duct burner to limit the VOC emission rate to no greater than of 0.7 ppmvdc, without duct firing. This emission limit applies at all operating loads, except during startup and shutdown, and is achieved through good combustion practices and an oxidation catalyst. Stack testing will be conducted to demonstrate compliance with these limits. | Performance tests were completed on 03/06/20 (U-00001), 03/11/20 (U-00002), and 04/17/20 (U-00003) and verified compliance with the applicable VOC limit. |
| Emission Units U-00001, U-00002, and U-00003 | Permit Condition 37, 6 NYCRR 231-5.4 | To satisfy LAER requirements, CVEC operates each CTG and associated duct burner to limit the VOC emission rate to no greater than of 1.8 ppmvdc, with duct firing. This emission limit applies at all operating loads, except during startup and shutdown, and is achieved through good combustion practices and an oxidation catalyst. Stack testing will be conducted to demonstrate compliance with these limits. | Performance tests were completed on 03/06/20 (U-00001), 03/11/20 (U-00002), and 04/17/20 (U-00003) and verified compliance with the applicable VOC limit. |
| Facility Wide | Permit Condition 1-7, 6 NYCRR 231-5.5 | CVEC obtained 136 tons of VOC emission reduction credits in accordance with Part 231-5.2(d) from the 3M Bristol facility (PA_DEC ID#: PADEP 09-00005) to offset the facility's potential to emit VOCs of 95.4 tons per year at a ratio of 1.15 to 1. | Completed and verified prior to issuance of the Title V permit on 02/03/16. |
| Facility Wide | Permit Condition 1-8, 6 NYCRR 231-5.5 | CVEC obtained 322.11 tons of NOx emission reduction credits in accordance with Part 231-5.2(d) from these facilities: Norbord Industries, Inc. DEC ID# 4-1230-00019, 178.24 tpy; Georgia-Pacific Consumer Operations LLC, DEC ID# 5-0913-00004, 142.87 tpy; and EastRiver Housing Corporation, DEC ID# 2-6206-00096, 1.0 tpy. These offset the facility's potential to emit NOx of 251.4 tons per year at a ratio of 1.15 to 1. | Completed and verified prior to issuance of the Title V permit on 02/03/16. |
| Facility Wide | Permit Condition 1-9, 6 NYCRR 231-7.5 | CVEC operates Emission Units U-00001, U-00002, U-00003, U-00004 and U-00005 to limit Facility-wide PTE to 296.3 tpy of CO, 174.1 tpy of PM2.5, 174.1 tpy of PM10, 19.7 tpy of H2SO4, and 3,593,609 tpy CO2e to satisfy BACT. Records of monthly and rolling 12-month emissions are kept to verify compliance. | As of the date of certification of this renewal application. |
| Emission Unit U-00004 | Permit Condition 1-10, 6 NYCRR 231-7.6 | CVEC maintain records of monthly and rolling 12-month operating hours to verify compliance with the emergency fire pump engine greenhouse gas emissions limit of 74 tpy. Monthly and rolling 12-month emissions are calculated based upon operating hours, the rated firing rate of the engine, and the emission factors published in 40 CFR Part 98, Subpart C, Tables C-1 and C-2 for CO2 and CH4/N2O, respectively and the global warming potentials published in in 40 CFR Part 98, Subpart A, Table A-1. | As of the date of certification of this renewal application. |

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| Emission Unit ID | Permit Condition / Applicable Requirement | Method Used to Determine Compliance | Compliance Date |
| Emission Unit U-00005 | Permit Condition 1-11, 6 NYCRR 231-7.6 | CVEC maintain records of monthly and rolling 12-month operating hours to verify compliance with the emergency generator engine greenhouse gas emissions limit of 595 tpy. Monthly and rolling 12-month emissions are calculated based upon operating hours, the rated firing rate of the engine, and the emission factors published in 40 CFR Part 98, Subpart C, Tables C-1 and C-2 for CO2 and CH4/N2O, respectively and the global warming potentials published in in 40 CFR Part 98, Subpart A, Table A-1. | As of the date of certification of this renewal application. |
| Emission Unit U-00005 | Permit Condition 1-12, 6 NYCRR 231-7.6 | CVEC maintain records of diesel sulfur content at or below 0.0015 percent to verify compliance with the emergency generator engine sulfuric acid emissions limit of 0.0001 lb/MMBtu. Fuel sulfur records are kept in accordance with Permit Conditions 31 and 32. | As of the date of certification of this renewal application. |
| Emission Unit U-00004 | Permit Condition 1-13, 6 NYCRR 231-7.6 | CVEC maintain records of diesel sulfur content at or below 0.0015 percent to verify compliance with the emergency fire pump engine sulfuric acid emissions limit of 0.0001 lb/MMBtu. Fuel sulfur records are kept in accordance with Permit Conditions 31 and 32. This application requests a correction of the permit language for Condition 1-13 as the current language is redundant with Condition 42 and does not reflect firing of diesel fuel in U-00004. | As of the date of certification of this renewal application. |
| Emission Units U-00001, U-00002, and U-00003 | Permit Condition 42, 6 NYCRR 231-7.6 | CVEC maintain records of natural sulfur content at or below 0.4 grains per 100 dry standard cubic feet of natural gas to verify compliance with the combustion turbine sulfuric acid emissions limit of 0.00065 lb/MMBtu. Fuel sulfur records are kept in accordance with 40 CFR 75, App. D, Sect. 2.3 and through certification or analysis provided by the natural gas supplier. | As of the date of certification of this renewal application. |
| Emission Units U-00001, U-00002, and U-00003 | Permit Condition 43, 6 NYCRR 231-7.6 | CVEC completed performance testing within 180 days of startup that verified compliance with the sulfuric acid emissions limit of 0.00065 lb/MMBtu for each emission unit. | Performance tests were completed on 03/06/20 (U-00001), 03/11/20 (U-00002), and 04/17/20 (U-00003) and verified compliance with the applicable sulfuric acid limit. |
| Emission Units U-00001, U-00002, and U-00003 | Permit Condition 44, 6 NYCRR 231-7.6 | CVEC completed performance testing within 180 days of startup that verified compliance with the particulate emission rate limit of 0.006 lb/mmBtu, with duct firing, for each emission unit. | Performance tests were completed on 03/06/20 (U-00001), 03/11/20 (U-00002), and 04/17/20 (U-00003) and verified compliance with the applicable sulfuric acid limit. |

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| Emission Unit ID | Permit Condition / Applicable Requirement | Method Used to Determine Compliance | Compliance Date |
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| Emission Units U-00001, U-00002, and U-00003 | Permit Condition 45, 6 NYCRR 231-7.6 | CVEC completed performance testing within 180 days of startup that verified compliance with the particulate emission rate limit of 0.005 lb/mmBtu, without duct firing, for each emission unit. | Performance tests were completed on 03/06/20 (U-00001), 03/11/20 (U-00002), and 04/17/20 (U-00003) and verified compliance with the applicable sulfuric acid limit. |
| Emission Units U-00001, U-00002, and U-00003 | Permit Condition 46, 6 NYCRR 231-7.6 | CVEC operates 40 CFR 60, Appendices B and F, compliant CEMS on each unit to verify that the CO emissions, with and without duct firing, are at or below 2.0 ppmvdc on a 1-hour average. Reports of the CEMS data are submitted quarterly. | As of the date of certification of this renewal application. |
| Emission Units U-00001, U-00002, and U-00003 | Permit Condition 47, 6 NYCRR 231-7.6 | Within 90 days of start-up of the facility and on an annual basis thereafter, CVEC will conduct a Department-approved heat rate performance test on each combined cycle unit while it is operating at maximum load to verify that the heat rate of each combined cycle combustion turbine will not exceed a heat rate of 7,604 Btu/kW-hr HHV net basis, without duct firing, for full load at ISO conditions. | The most recent heat rate performance test was completed on 04/14/20 (U-00003) |
| Emission Units U-00001, U-00002, and U-00003 | Permit Condition 48, 40 CFR 60.4, Subpart A | All requests, reports, applications, submittals, and other communications to the Administrator pursuant to 40 CFR 60, Subpart A for the combustion turbines, duct burners, and auxiliary boiler will be submitted in duplicate to the following address:<br>Director, Division of Enforcement and Compliance Assistance<br>USEPA Region 2<br>290 Broadway, 21st Floor<br>New York, NY 10007-1886<br>Copies of all correspondence to the Administrator pursuant to this part shall also be submitted to the NYSDEC Regional Office issuing this permit (see address at the beginning of this permit) and to the following address:<br>NYSDEC<br>Bureau of Quality Assurance<br>625 Broadway<br>Albany, NY 12233-3258 | CVEC has completed all notifications and performance testing required under 40 CFR 60, Subparts A, Dc, and KKKK. Semi-annual reports of excess emissions and CEMS monitor downtime are submitted in accordance with §60.7(c). |
| Emission Units U-00001, U-00002, and U-00003 | Permit Condition 49, 40 CFR 60.7(a)(1), Subpart A | CVEC submitted notification of the date construction for each subject emission unit within 30 days from commencement as follows:<br>U-00001, P01 (CTG and duct burner): 12/14/2017<br>U-00001, P02 (auxiliary boiler): 10/17/2018<br>U-00002, P04 (CTG and duct burner): 02/22/2018<br>U-00003, P05 (CTG and duct burner): 03/27/2018 | See description. |

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| Emission Unit ID | Permit Condition / Applicable Requirement | Method Used to Determine Compliance | Compliance Date |
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| Emission Units U-00001, U-00002, and U-00003 | Permit Condition 50, 40 CFR 60.7(b), Subpart A | CVEC maintains records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of the combined cycle combustion turbines and auxiliary boiler; any malfunction of the air pollution control equipment; and periods during which a CEMS or monitoring device is inoperative. | As of the date of certification of this renewal application. |
| Emission Units U-00001, U-00002, and U-00003 | Permit Condition 51, 40 CFR 60.7(f), Subpart A | CVEC will keep records of all measurements, including CEMS, monitoring devices, and performance testing measurements; all CEMS performance evaluations; all continuous monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required by this part, recorded in permanent form suitable for inspections. CVEC shall maintain these records for at least two years following the date of such measurements, reports, and records. | As of the date of certification of this renewal application. |
| Emission Units U-00001, U-00002, and U-00003 | Permit Condition 52, 40 CFR 60.8(b), Subpart A | All performance testing that has been conducted on the combustion turbines and duct burners was completed in accordance with a pretest protocol submitted to the Administrator in advance of the testing, which defined the methods and procedures prescribed in 40 CFR 60 Subparts A and KKKK. | The pretest protocol is dated 06/24/2019 |
| Emission Units U-00001, U-00002, and U-00003 | Permit Condition 53, 40 CFR 60.8(d), Subpart A | CVEC notified the Administrator by letter more than 30 days in advance of the performance testing that has been conducted on the combustion turbines and duct burners. | Test notification dated 09/30/2019 |
| Emission Units U-00001, U-00002, and U-00003 | Permit Condition 54, 40 CFR 60.8(e), Subpart A | The exhaust stacks on Emission Units U-00001, U-00002, and U-00003 are equipped with sampling ports adequate for applicable test methods; a safe sampling platform; safe access to the sampling platform; and utilities for sampling and testing equipment. | Initial performance testing completed on 03/06/20 (U-00001), 03/11/20 (U-00002), and 04/17/20 (U-00003) |
| Emission Units U-00001, U-00002, and U-00003 | Permit Condition 55, 40 CFR 60.8(f), Subpart A | The initial performance testing for NOx emissions from the combustion turbines and duct burners consisted of three separate 1-hour test runs. | Initial performance testing completed on 03/06/20 (U-00001), 03/11/20 (U-00002), and 04/17/20 (U-00003) |
| Emission Units U-00001, U-00002, and U-00003 | Permit Condition 56, 40 CFR 60.13, Subpart A | The NOx CEMS installed on the combustion turbines and duct burners are installed, calibrated, maintained, and operated in accordance with the requirements of section 60.13. | Initial CEMS performance testing completed on 03/06/20 (U-00001), 03/11/20 (U-00002), and 04/17/20 (U-00003) |
| Emission Units U-00004 and U-00005 | Permit Condition 1-14, 40 CFR 60, Subpart IIII | CVEC installed, operates, and maintains the emergency fire pump engine and emergency generator engine in accordance with 40 CFR 60, Subpart IIII. | As of the date of certification of this renewal application. |

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|---|---|---|---|
| Emission Unit U-00005 | Permit Condition 1-15, 40 CFR 60.4205(b), Subpart IIII | The emergency generator engine has been certified by the manufacturer to meet the federal emission standards under 40 CFR 60 Subpart IIII for the current model years. Thus, the engine will maintain a PM emission rate of 0.15 g/hp-hr in accordance with 40 CFR 60.4202(b)(2) and 40 CFR 89.112(a), Table 1. Compliance with these federal limits is also considered BACT. Compliance is demonstrated via certification by the vendor and adherence to vendor specified maintenance recommendations. | Certificate Number HCPXL78.1NZS-016 issued by USEPA to Caterpillar Inc. on 07/29/2016. |
| Emission Unit U-00005 | Permit Condition 1-16, 40 CFR 60.4205(b), Subpart IIII | The emergency generator engine has been certified by the manufacturer to meet the federal emission standards under 40 CFR 60 Subpart IIII for the current model years. Thus, the engine will maintain a NOx + HC emission rate of 4.8 g/hp-hr in accordance with 40 CFR 60.4202(b)(2) and 40 CFR 89.112(a), Table 1. Compliance with these federal limits is also considered LAER. Compliance is demonstrated via certification by the vendor and adherence to vendor specified maintenance recommendations. | Certificate Number HCPXL78.1NZS-016 issued by USEPA to Caterpillar Inc. on 07/29/2016. |
| Emission Unit U-00005 | Permit Condition 1-17, 40 CFR 60.4205(b), Subpart IIII | The emergency generator engine has been certified by the manufacturer to meet the federal emission standards under 40 CFR 60 Subpart IIII for the current model years. Thus, the engine will maintain a CO emission rate of 2.6 g/hp-hr in accordance with 40 CFR 60.4202(b)(2) and 40 CFR 89.112(a), Table 1. Compliance with these federal limits is also considered BACT. Compliance is demonstrated via certification by the vendor and adherence to vendor specified maintenance recommendations. | Certificate Number HCPXL78.1NZS-016 issued by USEPA to Caterpillar Inc. on 07/29/2016. |
| Emission Unit U-00005 | Permit Condition 1-18, 40 CFR 60.4205(b), Subpart IIII | The emergency generator engine has been certified by the manufacturer to meet the federal emission standards under 40 CFR 60 Subpart IIII for the current model years. Thus, the engine will maintain a NOx + HC emission rate of 4.8 g/hp-hr in accordance with 40 CFR 60.4202(b)(2) and 40 CFR 89.112(a), Table 1. Compliance with these federal limits is also considered LAER. Compliance is demonstrated via certification by the vendor and adherence to vendor specified maintenance recommendations. | Certificate Number HCPXL78.1NZS-016 issued by USEPA to Caterpillar Inc. on 07/29/2016. |
| Emission Unit U-00004 | Permit Condition 1-19, 40 CFR 60.4205(c), Subpart IIII | The emergency fire pump engine has been certified by the manufacturer to meet the federal emission standards under 40 CFR 60 Subpart IIII for the current model years. Thus, the engine will maintain a CO emission rate of 2.6 g/hp-hr in accordance with Table 4 of 40 CFR 60, Subpart IIII. Compliance with these federal limits is also considered BACT. Compliance is demonstrated via certification by the vendor and adherence to vendor specified maintenance recommendations. | Certificate Number HJDXL13.5103-011 issued by USEPA to Deere & Company on 08/04/2016. |
| Emission Unit U-00004 | Permit Condition 1-20, 40 CFR 60.4205(c), Subpart IIII | The emergency generator engine has been certified by the manufacturer to meet the federal emission standards under 40 CFR 60 Subpart IIII for the current model years. Thus, the engine will maintain a NOx + HC emission rate of 3.0 g/hp-hr in accordance with Table 4 of 40 CFR 60, Subpart IIII. Compliance with these federal limits is also considered LAER. Compliance is demonstrated via certification by the vendor and adherence to vendor specified maintenance recommendations. | Certificate Number HJDXL13.5103-011 issued by USEPA to Deere & Company on 08/04/2016. |

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## Methods Used to Determine Compliance

| Emission Unit ID | Permit Condition / Applicable Requirement | Method Used to Determine Compliance | Compliance Date |
|---|---|---|---|
| Emission Unit U-00004 | Permit Condition 1-21, 40 CFR 60.4205(c), Subpart IIII | The emergency generator engine has been certified by the manufacturer to meet the federal emission standards under 40 CFR 60 Subpart IIII for the current model years. Thus, the engine will maintain a NOx + HC emission rate of 3.0 g/hp-hr in accordance with Table 4 of 40 CFR 60, Subpart IIII. Compliance with these federal limits is also considered LAER. Compliance is demonstrated via certification by the vendor and adherence to vendor specified maintenance recommendations. | Certificate Number HJDXL13.5103-011 issued by USEPA to Deere & Company on 08/04/2016. |
| Emission Unit U-00004 | Permit Condition 1-22, 40 CFR 60.4205(c), Subpart IIII | The emergency generator engine has been certified by the manufacturer to meet the federal emission standards under 40 CFR 60 Subpart IIII for the current model years. Thus, the engine will maintain a particulate matter emission rate of 0.15 g/hp-hr in accordance with Table 4 of 40 CFR 60, Subpart IIII. Compliance with these federal limits is also considered BACT. Compliance is demonstrated via certification by the vendor and adherence to vendor specified maintenance recommendations. | Certificate Number HJDXL13.5103-011 issued by USEPA to Deere & Company on 08/04/2016. |
| Emission Unit U-00005 | Permit Condition 1-23, 40 CFR 60.4207(b), Subpart IIII | The emergency generator engine meets an SO2 emission limit of 0.0015 lb/MMBtu by only combusting diesel fuel with a maximum sulfur content of 0.0015 percent sulfur by weight in accordance with 40 CFR 80.510(b)(1)(i). Records of vendor certifications or analyses per diesel delivery are used to verify sulfur concentration. | As of the date of certification of this renewal application. |
| Emission Unit U-00004 | Permit Condition 1-24, 40 CFR 60.4207(b), Subpart IIII | The emergency generator engine meets an SO2 emission limit of 0.0015 lb/MMBtu by only combusting diesel fuel with a maximum sulfur content of 0.0015 percent sulfur by weight in accordance with 40 CFR 80.510(b)(1)(i). Records of vendor certifications or analyses per diesel delivery are used to verify sulfur concentration. | As of the date of certification of this renewal application. |
| Emission Units U-00004 and U-00005 | Permit Condition 59, 40 CFR 60.4211(a), Subpart IIII | CVEC complies with the emission standards specified in 40 CFR 60 Subpart IIII and does all of the following:<br>(1) Operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's emission-related written instructions;<br>(2) Change only those emission-related settings that are permitted by the manufacturer; and<br>(3) Meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply. | As of the date of certification of this renewal application. |
| Emission Units U-00004 and U-00005 | Permit Condition 60, 40 CFR 60.4211(c), Subpart IIII | The emergency generator engine complies with the emission standards specified in §60.4205(b) and the emergency fire pump engine complies with the emission standards specified in §60.4205(c). Certificate Numbers HCPXL78.1NZS-016 and HCPXL78.1NZS-016 were issued by the USEPA for the emergency generator engine and emergency fire pump engine, respectively, to certify compliance with the applicable standards. The engines are installed and configured according to the manufacturer's specifications. CVEC provided a copy of the manufacturer's certification of compliance with the emission standards specified in 40 CFR 60 Subpart IIII with the application submitted in January 2018 for Modification 2 of Permit ID 3-1326-00275/00009 issued on March 23, 2018. | January 2018 |

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**Methods Used to Determine Compliance**

| Emission Unit ID | Permit Condition / Applicable Requirement | Method Used to Determine Compliance | Compliance Date |
|---|---|---|---|
| Emission Units U-00001, U-00002, and U-00003 | Permit Condition 61, 40 CFR 72 | CVEC is subject to the Title IV Acid Rain Regulations found in 40 CFR Parts 72, 73, 75, 76, 77 and 78. The Acid Rain Permit is an attachment to this permit. An Acid Rain permit renewal application is included with this Title V operating permit renewal application | As of the date of certification of this renewal application. |
| Emission Units U-00001, U-00002, and U-00003 | Permit Condition 62, 40CFR 97.406, Subpart AAAAA | CVEC complies has designated representative, Marc Duquette, in accordance with §97.413 through 97.418 of Subpart AAAAA. Marc Duquette is also the Title V Responsible Official and his contact information is provided with this renewal application. CVEC shall notify the Department of any changes made to the representative (or alternative) or their contact information. CVEC operates Emission Units U-00001, U-00002, and U-00003 to comply with the monitoring, reporting, and recordkeeping requirements of §§97.430 through 97.435 of Subpart AAAAA and 40 CFR 75, Subpart H. CEMS emission reports are submitted quarterly. The CEMS emissions data is used to calculate allocations of TR NOx Annual allowances and to determine compliance with the TR NOx Annual emissions limitation and assurance provisions. As of the allowance transfer deadline for a control period in a given year, CVEC shall hold in the facility's compliance account, TR NOx Annual allowances available for deduction for such control period under §97.424(a) in an amount not less than the tons of total NOx emissions for such control period from Emission Units U-00001 (P01), U-00002 (P04), and U-00003 (P05). CVEC has prepared a Monitoring Plan in accordance with §97.434(b) and §75.73(c) and (e) documenting the emissions monitoring systems and procedures. | As of the date of certification of this renewal application. |
| Emission Units U-00001, U-00002, and U-00003 | Permit Condition 63, 40CFR 97.506, Subpart BBBBB | CVEC complies has designated representative, Marc Duquette, in accordance with §97.513 through 97.518 of Subpart BBBBB. Marc Duquette is also the Title V Responsible Official and his contact information is provided with this renewal application. CVEC shall notify the Department of any changes made to the representative (or alternative) or their contact information. CVEC operates Emission Units U-00001, U-00002, and U-00003 to comply with the monitoring, reporting, and recordkeeping requirements of §97.530 through 97.535 of Subpart BBBBB and 40 CFR 75, Subpart H. CEMS emission reports are submitted quarterly. The CEMS emissions data is used to calculate allocations of TR NOx Ozone Season allowances and to determine compliance with the TR NOx Ozone Season emissions limitation and assurance provisions. As of the allowance transfer deadline for a control period in a given year, CVEC shall hold in the facility's compliance account, TR NOx Ozone Season allowances available for deduction for such control period under §97.524(a) in an amount not less than the tons of total NOx Ozone Season emissions for such control period from Emission Units U-00001 (P01), U-00002 (P04), and U-00003 (P05). CVEC has prepared a Monitoring Plan in accordance with §97.534(b) and §75.73(c) and (e) documenting the emissions monitoring systems and procedures. | As of the date of certification of this renewal application. |

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## Methods Used to Determine Compliance

| Emission Unit ID | Permit Condition / Applicable Requirement | Method Used to Determine Compliance | Compliance Date |
|---|---|---|---|
| Emission Units U-00001, U-00002, and U-00003 | Permit Condition 64, 40CFR 97.606, Subpart CCCCC | CVEC complies has designated representative, Marc Duquette, in accordance with §97.613 through 96.518 of Subpart CCCCC. Marc Duquette is also the Title V Responsible Official and his contact information is provided with this renewal application. CVEC shall notify the Department of any changes made to the representative (or alternative) or their contact information. CVEC operates Emission Units U-00001, U-00002, and U-00003 to comply with the monitoring, reporting, and recordkeeping requirements of §97.630 through 97.635 of Subpart CCCCC and 40 CFR 75, Subpart H. CEMS emission reports are submitted quarterly. The CEMS emissions data is used to calculate allocations of TR SO2 Group 1 allowances and to determine compliance with the TR SO2 Group 1 emissions limitation and assurance provisions. As of the allowance transfer deadline for a control period in a given year, CVEC shall hold in the facility's compliance account, TR SO2 Group 1 allowances available for deduction for such control period under §97.624(a) in an amount not less than the tons of total SO2 Group 1 emissions for such control period from Emission Units U-00001 (P01), U-00002 (P04), and U-00003 (P05). CVEC has prepared a Monitoring Plan in accordance with §97.634(b) and §75.62 documenting the emissions monitoring systems and procedures. | As of the date of certification of this renewal application. |
| Emission Unit U-00001 | Permit Condition 65, Item 65.1, 6 NYCRR 201-6 | The exhaust stack has a Height of 283 feet and an exit Diameter of 228 inches and is located at NYTMN (km.): 4614.8 and NYTME (km.): 618.142. | As of the date of certification of this renewal application. |
| Emission Unit U-00004 | Permit Condition 65, Item 65.2, 6 NYCRR 201-6 | The exhaust stack has a Height of 14 feet and an exit Diameter of 6 inches and is located at NYTMN (km.): 4614.954 and NYTME (km.): 618.216. | As of the date of certification of this renewal application. |
| Emission Unit U-00005 | Permit Condition 65, Item 65.3, 6 NYCRR 201-6 | The exhaust stack has a Height of 14 feet and an exit Diameter of 18 inches and is located at NYTMN (km.): 4614.773 and NYTME (km.): 618.217. | As of the date of certification of this renewal application. |
| Emission Unit U-00002 | Permit Condition 65, Item 65.4, 6 NYCRR 201-6 | The exhaust stack has a Height of 283 feet and an exit Diameter of 228 inches and is located at NYTMN (km.): 4614.792 and NYTME (km.): 618.15. | As of the date of certification of this renewal application. |
| Emission Unit U-00003 | Permit Condition 65, Item 65.5, 6 NYCRR 201-6 | The exhaust stack has a Height of 283 feet and an exit Diameter of 228 inches and is located at NYTMN (km.): 4614.792 and NYTME (km.): 618.144. | As of the date of certification of this renewal application. |
| Emission Unit U-00001 | Permit Condition 66, Item 66.1, 6 NYCRR 201-6 | Process P01 is comprised of natural gas combustion in the combustion turbine and the duct burner. Emission Source/Control: CT001 – Combustion Design Capacity: 2,395.7 million Btu per hour; DB001 – Combustion Design Capacity: 247 million Btu per hour; DLN01 – Control Type: DRY LOW NOx BURNER; OXC01 –Control Type: CATALYTIC OXIDATION; and SCR01 – Control Type: SELECTIVE CATALYTIC REDUCTION (SCR) as described in detail on the application forms. | As of the date of certification of this renewal application. |

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**Methods Used to Determine Compliance**

| Emission Unit ID | Permit Condition / Applicable Requirement | Method Used to Determine Compliance | Compliance Date |
|---|---|---|---|
| Emission Unit U-00001 | Permit Condition 66, Item 66.2, 6 NYCRR 201-6 | Process P02 is comprised of a natural gas fired auxiliary with hours of operation limited to 4500 hours per year, which equates to 270 million cubic feet of natural gas consumption per year. Emission Source/Control: AUX01 – Combustion Design Capacity: 60 million Btu per hour; FGR01 - Control Type: FLUE GAS RECIRCULATION; and LNB01 –Control Type: LOW NOx BURNER as described in detail on the application forms. | As of the date of certification of this renewal application. |
| Emission Unit U-00002 | Permit Condition 66, Item 66.3, 6 NYCRR 201-6 | Process P04 is comprised of natural gas combustion in the combustion turbine and the duct burner. Emission Source/Control: CT002 – Combustion Design Capacity: 2,395.7 million Btu per hour; DB002 – Combustion Design Capacity: 247 million Btu per hour; DLN02 – Control Type: DRY LOW NOx BURNER; OXC02 –Control Type: CATALYTIC OXIDATION; and SCR02 – Control Type: SELECTIVE CATALYTIC REDUCTION (SCR) as described in detail on the application forms. | As of the date of certification of this renewal application. |
| Emission Unit U-00003 | Permit Condition 66, Item 66.4, 6 NYCRR 201-6 | Process P05 is comprised of natural gas combustion in the combustion turbine and the duct burner. Emission Source/Control: CT003 – Combustion Design Capacity: 2,395.7 million Btu per hour; DB003 – Combustion Design Capacity: 247 million Btu per hour; DLN03 – Control Type: DRY LOW NOx BURNER; OXC03 –Control Type: CATALYTIC OXIDATION; and SCR03 – Control Type: SELECTIVE CATALYTIC REDUCTION (SCR) as described in detail on the application forms. | As of the date of certification of this renewal application. |
| Emission Unit U-00004 | Permit Condition 66, Item 66.5, 6 NYCRR 201-6 | Process P06 is comprised of diesel oil combustion in an emergency fire pump engine rated at 260 hp with operation limited to no more than 500 hours per year. Emission Source/Control: FP001 – Combustion Design Capacity: 260 horsepower (mechanical) as described in detail on the application forms. | As of the date of certification of this renewal application. |
| Emission Unit U-00005 | Permit Condition 66, Item 66.6, 6 NYCRR 201-6 | Process P07 is comprised of diesel oil combustion in an emergency generator engine rated at 2,206 hp with operation limited to no more than 500 hours per year. Emission Source/Control: FP001 – Combustion Design Capacity: 2206 horsepower (mechanical) as described in detail on the application forms. | As of the date of certification of this renewal application. |
| Emission Unit U-00001 | Permit Condition 67, 6 NYCRR 231-5.4 | CVEC operates Process P02, the auxiliary boiler, no more than 4,500 hours per rolling 12 month period. CVEC maintains records of hourly operation and natural gas consumption. | As of the date of certification of this renewal application. |
| Emission Unit U-00001 | Permit Condition 68, 6 NYCRR 231-5.4 | To satisfy LAER requirements, CVEC operates Process P02, the auxiliary boiler, to limit the VOC emission rate to no greater than 0.0015 lb/mmBtu. This emission limit applies at all operating loads, except during startup and shutdown, and is achieved through good combustion practices. Stack testing will be conducted to demonstrate compliance with these limits. | Performance test completed on 10/04/19 and verified compliance with the applicable VOC limit. |

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**Methods Used to Determine Compliance**

| Emission Unit ID | Permit Condition / Applicable Requirement | Method Used to Determine Compliance | Compliance Date |
|---|---|---|---|
| Emission Unit U-00001 | Permit Condition 69, 6 NYCRR 231-5.4 | To satisfy LAER requirements, CVEC operates Process P02, the auxiliary boiler, to limit the NOx emission rate to no greater than 0.0085 lb/mmBtu. This emission limit applies at all operating loads, except during startup and shutdown, and is achieved through good combustion practices. Stack testing will be conducted to demonstrate compliance with these limits. | Performance test completed on 10/04/19 and verified compliance with the applicable NOx limit. |
| Emission Unit U-00001 | Permit Condition 70, 6 NYCRR 231-7.6 | To satisfy BACT requirements for P02, only pipeline quality natural gas with a maximum sulfur content of 0.4 grains/100 dscf will be fired in the auxiliary boiler. The natural gas fired in P02 is the same as the gas fired in P01 and compliance will be demonstrated through the records maintained for Permit Condition 42. | As of the date of certification of this renewal application. |
| Emission Unit U-00001 | Permit Condition 71, 6 NYCRR 231-7.6 | To satisfy BACT requirements for P02, only pipeline quality natural gas with a maximum sulfur content of 0.4 grains/100 dscf will be fired in the auxiliary boiler to limit sulfuric acid emissions to no more than 0.00011 lb/mmBtu. The natural gas fired in P02 is the same as the gas fired in P01 and compliance will be demonstrated through the records maintained for Permit Condition 42. | As of the date of certification of this renewal application. |
| Emission Unit U-00001 | Permit Condition 72, 6 NYCRR 231-7.6 | To satisfy BACT requirements, CVEC operates Process P02, the auxiliary boiler, to limit the particulate emission rate to no greater than 0.005 lb/mmBtu. This emission limit is achieved through good combustion practices and by firing pipeline quality natural gas as the sole fuel. Stack testing will be conducted to demonstrate compliance with these limits. | Performance test completed on 10/04/19 and verified compliance with the applicable particulate limit. |
| Emission Unit U-00001 | Permit Condition 73, 6 NYCRR 231-7.6 | To satisfy BACT requirements, CVEC operates Process P02, the auxiliary boiler, to limit the CO emission rate to no greater than 0.0375 lb/mmBtu. This emission limit is achieved through good combustion practices. Stack testing will be conducted to demonstrate compliance with these limits. | Performance test completed on 10/04/19 and verified compliance with the applicable particulate limit. |
| Emission Unit U-00001 | Permit Condition 74, 6 NYCRR 231-7.6 | To satisfy BACT and 6 NYCRR Part 251.3(a) requirements, CVEC operates Process P02, the auxiliary boiler, to limit the greenhouse gas emission rate to no greater than 119 lb/mmBtu. This emission limit is achieved through firing pipeline quality natural gas as the sole fuel and reporting emissions in accordance with 40 CFR 98, Subpart C. | As of the date of certification of this renewal application. |
| Emission Unit U-00001 | Permit Condition 75, 40 CFR 60.48c(a) | CVEC submitted the following notifications for P02, the auxiliary boiler. The notifications includes all required information listed under 40 CFR 60.48c(a)(1) through (3):<br>• date of construction: submitted 10/17/2018<br>• date of actual startup: submitted 08/29/2019 | See description. |
| Emission Unit U-00001 | Permit Condition 76, 40 CFR 60.48c(g)(2) | CVEC records the amount of natural gas fired in P02, the auxiliary boiler, on a monthly basis. | As of the date of certification of this renewal application. |

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**Methods Used to Determine Compliance**

| Emission Unit ID | Permit Condition / Applicable Requirement | Method Used to Determine Compliance | Compliance Date |
|---|---|---|---|
| Emission Unit U-00004 | Permit Condition 88, 6 NYCRR 231-7.6 | CVEC maintain records of diesel sulfur content at or below 0.0015 percent to verify compliance with the emergency fire pump engine sulfuric acid emissions limit of 0.0001 lb/MMBtu. Fuel sulfur records are kept in accordance with Permit Conditions 31 and 32. | As of the date of certification of this renewal application. |

# APPENDIX F: EMISSION CALCULATIONS

## Cricket Valley Energy Center
## Summary of Facility-Wide Potential Annual Emissions

### Facility-Wide Potential Annual Emissions (TPY)

| Pollutant | CTGs (CT & DB) (CT001-CT003) | Auxiliary Boiler (AB01) | Emergency Generator Engine (EDG01) | Fire Pump (FP01) | Facility Total (tpy) |
|---|---|---|---|---|---|
| $NO_x$ | 244.0 | 1.15 | 5.84 | 0.43 | 251.4 |
| CO | 287.8 | 4.99 | 3.16 | 0.37 | 296.3 |
| VOC | 94.9 | 0.20 | 0.24 | 0.03 | 95.4 |
| $SO_2$ | 37.8 | 0.15 | 0.005 | 0.001 | 38.0 |
| PM | 173.3 | 0.68 | 0.18 | 0.02 | 174.1 |
| $PM_{10}$ | 173.3 | 0.68 | 0.18 | 0.02 | 174.1 |
| $PM_{2.5}$ | 173.3 | 0.68 | 0.18 | 0.02 | 174.1 |
| $CO_2e$ | 3,577,129 | 15,811 | 595 | 74 | 3,593,609 |
| $H_2SO_4$ | 20 | 0.01 | 0.0004 | 0.00005 | 19.7 |
| $NH_3$ | 225.5 | N/A | N/A | N/A | 225.5 |
| Lead (Pb) | 1.2E-03 | 6.6E-05 | 2.8E-06 | 3.5E-07 | 1.3E-03 |
| Total HAPs | 17.67 | 0.25 | 0.02 | 0.003 | 17.9 |

## Cricket Valley Energy Center
## Combustion Turbines (CT001-CT003) - Potential Emissions

Each turbine will operate at full rated load for 8,760 hours per year.
Duct firing will be unrestricted at 8,760 hours per year per turbine
Over the course of 8,760 operating hours, the average annual temperature will be 59°F
GE operating Case #14 correspond to full load with duct firing at 59°F

| Operating Condition | CTG Load | Fuel | Ambient Temp. (°F) | Duct Firing? | Hours |
|---|---|---|---|---|---|
| GE Case #15 | 100% | Nat. Gas | 59 | Off | 0 |
| GE Case #14 | 100% | Nat. Gas | 59 | On | 8,760 |
| **Total** | | | | | **8,760** |

PTE is the sum of the steady state PTE plus the net increase due to startup/shutdown operation

| Pollutant | GE Case #14 | | SU/SD | PTE/CTG | PTE/3 CTGs |
|---|---|---|---|---|---|
| | lb/hr | tpy | tpy | tpy | tpy |
| $NO_x$ | 18.55 | 81.23 | 0.10 | 81.3 | 244.0 |
| CO | 11.29 | 49.46 | 46.46 | 95.9 | 287.8 |
| VOC | 5.82 | 25.49 | 6.15 | 31.6 | 94.9 |
| $PM_{10}/PM_{2.5}$ | 13.19 | 57.76 | 0 | 57.8 | 173.3 |
| $SO_2$ | 2.88 | 12.60 | 0 | 12.6 | 37.8 |
| $CO_2e$ | 299,479 | 1,311,720 | 0 | 1,311,720 | 3,577,129 |
| $H_2SO_4$ | 1.63 | 7.14 | 0 | 7.1 | 19.7 |
| NH3 | 17.16 | 75.17 | 0 | 75.2 | 225.5 |

**NOTES:**
CO2e and H2SO4 emissions for three turbines capped at limit established in Permit No. 3-1326-00275/00004 issued 09/27/2012.

## Cricket Valley Energy Center
## Combustion Turbine Startup and Shutdown Emissions - (CT0001, CT0002, and CT0003)

### Startup/Shutdown Operating Data

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| hot starts/unit/gas | 10 | number/yr | 0.50 | hours/event | 0 | Avg. hours downtime | 30 | minutes/event |
| warm starts/unit/gas | 200 | number/yr | 0.75 | hours/event | 8 | Avg. hours downtime | 525 | minutes/event |
| cold starts/unit/gas | 50 | number/yr | 1.00 | hours/event | 72 | Avg. hours downtime | 4,380 | minutes/event |
| shutdowns/unit/gas | 260 | number/yr | 0.33 | hours/event | N/A | Avg. hours downtime | 20.0 | minutes/event |

### Startup/Shutdown Emissions Self-Correcting Analysis

| | | Gas Start | | |
|---|---|---|---|---|
| | | **NOx** | **CO** | **VOC** |
| Hot Start Emissions | lbs/event | 30.0 | 250.0 | 40.0 |
| Warm Start Emissions | lbs/event | 45.0 | 260.0 | 40.0 |
| Cold Start Emissions | lbs/event | 80.0 | 570.0 | 50.0 |
| Shutdown Emissions | lbs/event | 10.0 | 280.0 | 70.0 |
| Shutdown/Hot start - duration (including downtime) | hrs | 0.8 | 0.8 | 0.8 |
| Shutdown/Warm start - duration (including downtime) | hrs | 9.1 | 9.1 | 9.1 |
| Shutdown/Cold start - duration (including downtime) | hrs | 73.3 | 73.3 | 73.3 |
| Shutdown/Hot start - avg hourly emissions[1] | lb/hr | 43.1 | 531.9 | 111.0 |
| Shutdown/Warm start - avg hourly emissions[1] | lb/hr | 6.1 | 59.4 | 12.1 |
| Shutdown/Cold start - avg hourly emissions[1] | lb/hr | 1.2 | 11.6 | 1.6 |
| Steady state average hourly (GE Case #14) | lb/hr | 18.55 | 11.29 | 5.82 |
| Hot start - self correcting? | lb/hr | no | no | no |
| Warm start - self correcting? | lb/hr | yes | no | no |
| Cold start - self correcting? | lb/hr | yes | no | yes |
| Hot Start Net increase | lb/event | 20.5 | 433.8 | 87.6 |
| Warm Start Net increase | lb/event | 0.0 | 437.4 | 57.1 |
| Cold Start Net increase | lb/event | 0.0 | 21.9 | 0.0 |

[1] Includes balance of the hour at the steady state hourly rate (GE Case #14)

### Startup/Shutdown Potential Net Emissions Increase Over Full Load Steady State Operation (tpy/unit)

| **SUSD Type** | **NOx** | **CO** | **VOC** |
|---|---|---|---|
| Shutdown/Hot Start | 0.10 | 2.17 | 0.44 |
| Shutdown/Warm Start | - | 43.74 | 5.71 |
| Shutdown/Cold Start | - | 0.55 | - |
| **TOTAL** | **0.10** | **46.46** | **6.15** |

## Cricket Valley Energy Center
## Potential Emissions From Ancillary Equipment

| Pollutant | Auxiliary Boiler (AB01) | Emergency Generator Engine (EDG01) | Emergency Fire Pump Engine (FP01) |
|---|---|---|---|
| | 60 MMBtu/hr | 2206 bhp | 260 bhp |
| $NO_x$ | 7 ppmvd @ 3% $O_2$ | 4.80 g/bhp | 3.0 g/bhp |
| | 0.008 lb/MMBtu | 1.606 lb/MMBtu | 0.94 lb/MMBtu |
| | 0.51 lb/hr | 23.34 lb/hr | 1.72 lb/hr |
| | 1.15 TPY | 5.84 TPY | 0.43 TPY |
| CO | 50 ppmvd @ 3% $O_2$ | 2.6 g/bhp | 2.6 g/bhp |
| | 0.037 lb/MMBtu | 0.870 lb/MMBtu | 0.82 lb/MMBtu |
| | 2.22 lb/hr | 12.64 lb/hr | 1.49 lb/hr |
| | 4.99 TPY | 3.16 TPY | 0.373 TPY |
| VOC | 3.5 ppmvd @ 3% $O_2$ | 0.20 g/bhp | 0.20 g/bhp |
| | 0.00148 lb/MMBtu | 0.067 lb/MMBtu | 0.063 lb/MMBtu |
| | 0.09 lb/hr | 0.97 lb/hr | 0.115 lb/hr |
| | 0.20 TPY | 0.24 TPY | 0.029 TPY |
| $PM_{10}/PM_{2.5}$ | N/A ppmvd @ 3% $O_2$ | 0.15 g/bhp | 0.15 g/bhp |
| | 0.005 lb/MMBtu | 0.050 lb/MMBtu | 0.047 lb/MMBtu |
| | 0.30 lb/hr | 0.73 lb/hr | 0.09 lb/hr |
| | 0.68 TPY | 0.18 TPY | 0.021 TPY |
| $SO_2$ | 0.0011 lb/MMBtu | 0.0015 lb/MMBtu | 0.0015 lb/MMBtu |
| | 0.07 lb/hr | 0.02 lb/hr | 0.0027 lb/hr |
| | 0.15 TPY | 0.005 TPY | 0.0007 TPY |
| $H_2SO_4$ | 0.00009 lb/MMBtu | 0.00011 lb/MMBtu | 0.00011 lb/MMBtu |
| | 0.005 lb/hr | 0.0017 lb/hr | 0.00021 lb/hr |
| | 0.01 TPY | 0.0004 TPY | 0.00005 TPY |
| Pb | 4.9E-07 lb/MMBtu | 7.7E-07 lb/MMBtu | 7.7E-07 lb/MMBtu |
| | 2.9E-05 lb/hr | 1.1E-05 lb/hr | 1.4E-06 lb/hr |
| | 6.6E-05 TPY | 2.8E-06 TPY | 3.5E-07 TPY |
| $CO_2$ | 117.0 lb/MMBtu | 163.1 lb/MMBtu | 163.1 lb/MMBtu |
| | 7,020 lb/hr | 2,371 lb/hr | 297 lb/hr |
| | 15,795 TPY | 593 TPY | 74 TPY |
| $CH_4$ | 0.0022 lb/MMBtu | 0.0066 lb/MMBtu | 0.0066 lb/MMBtu |
| | 0.1323 lb/hr | 0.096 lb/hr | 0.012 lb/hr |
| | 0.30 TPY | 0.0240 TPY | 0.0030 TPY |
| $N_2O$ | 0.00022 lb/MMBtu | 0.0013 lb/MMBtu | 0.0013 lb/MMBtu |
| | 0.0132 lb/hr | 1.9E-02 lb/hr | 0.00241 lb/hr |
| | 0.030 TPY | 4.8E-03 TPY | 6.0E-04 TPY |
| $CO_2e$ | 7,027 lb/hr | 2,379 lb/hr | 298 lb/hr |
| | 15,811 TPY | 595 TPY | 74 TPY |

NOTES:

*Natural Gas SO2 emissions based upon a sulfur content of 0.4 gr/100 dscf*

*ULSD SO2 emissions based upon a sulfur content of 15 ppmw*

*Aux Boiler criteria pollutant emission factors from BACT analysis*

*Emergency Generator criteria pollutant emission factors based on Tier 2 emission standards in 40 CFR 89.*

*Fire Pump criteria pollutant emission factors based on post -2009 emission standards in 40 CFR 60 Subpart IIII.*

*H2SO4 emissions assume a 5% conversion of SO2 --> SO3 (on a molar basis)*

*Fuel specific CO2, CH4 and N2O emission factors from 40 CFR 98, Subpart C*

*Pb factor for NG is from AP-42 Table 1.4-2, and Pb factor for ULSD is from "Survey of Ultra-Trace Metals in Gas Turbine Fuels", 11th Annual International Petroleum Conference, Oct 12-15, 2004.*

## Cricket Valley Energy Center
## Potential HAP Emissions

| HAP | Emission Units | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (CT0001, CT0002, and CT0003) | | AB01 | | EDG01 | | FP01 | | Totals | |
| | lb/hr/unit | tpy/3 units | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy | lb/hr | tpy |
| **Organic Compounds** | | | | | | | | | | |
| Acetaldehyde | 9.58E-02 | 1.23E+00 | | | 3.66E-04 | 9.16E-05 | 1.40E-03 | 3.49E-04 | 2.90E-01 | 1.23E+00 |
| Acrolein | 1.53E-02 | 1.96E-01 | | | 1.15E-04 | 2.86E-05 | 1.68E-04 | 4.21E-05 | 4.66E-02 | 1.96E-01 |
| Benzene | 2.93E-02 | 3.73E-01 | 1.26E-04 | 2.84E-04 | 1.13E-02 | 2.82E-03 | 1.70E-03 | 4.25E-04 | 1.35E-01 | 3.76E-01 |
| 1,3-Butadiene | 1.03E-03 | 1.32E-02 | | | | | 7.12E-05 | 1.78E-05 | 3.16E-03 | 1.32E-02 |
| Dichlorobenzene | 2.96E-04 | 2.90E-03 | 7.20E-05 | 1.62E-04 | | | | | 9.61E-04 | 3.06E-03 |
| Ethylbenzene | 7.67E-02 | 9.81E-01 | | | | | | | 2.30E-01 | 9.81E-01 |
| Formaldehyde | 2.82E-01 | 3.55E+00 | 4.44E-03 | 9.99E-03 | 1.15E-03 | 2.87E-04 | 2.15E-03 | 5.37E-04 | 8.57E-01 | 3.56E+00 |
| Hexane | 4.45E-01 | 4.35E+00 | 1.08E-01 | 2.43E-01 | | | | | 1.44E+00 | 4.59E+00 |
| Propylene oxide | 6.95E-02 | 8.89E-01 | | | 5.60E-02 | 1.40E-02 | 6.48E-03 | 1.62E-03 | 4.39E-01 | 9.05E-01 |
| Toluene | 3.12E-01 | 3.99E+00 | 1.98E-04 | 4.46E-04 | 4.09E-03 | 1.02E-03 | 7.44E-04 | 1.86E-04 | 9.54E-01 | 4.00E+00 |
| Xylene | 1.53E-01 | 1.96E+00 | | | 2.81E-03 | 7.02E-04 | 5.19E-04 | 1.30E-04 | 4.72E-01 | 1.96E+00 |
| **PAHs** | | | | | | | | | | |
| Acenaphthene | 4.45E-07 | 4.35E-06 | 1.08E-07 | 2.43E-07 | 6.80E-05 | 1.70E-05 | 2.58E-06 | 6.46E-07 | 2.76E-04 | 2.23E-05 |
| Acenaphthylene | 4.45E-07 | 4.35E-06 | 1.08E-07 | 2.43E-07 | 1.34E-04 | 3.35E-05 | 9.21E-06 | 2.30E-06 | 5.47E-04 | 4.04E-05 |
| Anthracene | 4.45E-07 | 4.35E-06 | 1.08E-07 | 2.43E-07 | 1.79E-05 | 4.47E-06 | 3.40E-06 | 8.51E-07 | 7.64E-05 | 9.92E-06 |
| Benzo(a)anthracene | 4.45E-07 | 4.35E-06 | 1.08E-07 | 2.43E-07 | 9.04E-06 | 2.26E-06 | 3.06E-06 | 7.64E-07 | 4.07E-05 | 7.62E-06 |
| Benzo(a)pyrene | 2.96E-07 | 2.90E-06 | 7.20E-08 | 1.62E-07 | 3.74E-06 | 9.34E-07 | 3.42E-07 | 8.55E-08 | 1.62E-05 | 4.08E-06 |
| Benzo(b)fluoranthene | 4.45E-07 | 4.35E-06 | 1.08E-07 | 2.43E-07 | 1.61E-05 | 4.03E-06 | 1.80E-07 | 4.51E-08 | 6.62E-05 | 8.67E-06 |
| Benzo(g,h,i)perylene | 2.96E-07 | 2.90E-06 | 7.20E-08 | 1.62E-07 | 8.08E-06 | 2.02E-06 | 8.90E-07 | 2.22E-07 | 3.42E-05 | 5.31E-06 |
| Benzo(k)fluoranthene | 4.45E-07 | 4.35E-06 | 1.08E-07 | 2.43E-07 | 3.17E-06 | 7.92E-07 | 2.82E-07 | 7.05E-08 | 1.44E-05 | 5.46E-06 |
| Chrysene | 4.45E-07 | 4.35E-06 | 1.08E-07 | 2.43E-07 | 2.22E-05 | 5.56E-06 | 6.42E-07 | 1.61E-07 | 9.11E-05 | 1.03E-05 |
| Dibenz(a,h)anthracene | 2.96E-07 | 2.90E-06 | 7.20E-08 | 1.62E-07 | 5.03E-06 | 1.26E-06 | 1.06E-06 | 2.65E-07 | 2.21E-05 | 4.59E-06 |
| 7,12-Dimethylbenz(a) anthracene | 3.95E-06 | 3.87E-05 | 9.60E-07 | 2.16E-06 | | | | | 1.28E-05 | 4.08E-05 |
| Fluoranthene | 7.16E-07 | 7.01E-06 | 1.74E-07 | 3.92E-07 | 5.86E-05 | 1.46E-05 | 1.39E-05 | 3.46E-06 | 2.51E-04 | 2.55E-05 |
| Fluorene | 6.67E-07 | 6.53E-06 | 1.62E-07 | 3.65E-07 | 1.86E-04 | 4.65E-05 | 5.31E-05 | 1.33E-05 | 8.00E-04 | 6.67E-05 |
| Indeno(1,2,3-cd)pyrene | 4.45E-07 | 4.35E-06 | 1.08E-07 | 2.43E-07 | 6.02E-06 | 1.50E-06 | 6.83E-07 | 1.71E-07 | 2.62E-05 | 6.27E-06 |
| 3-Methylchloranthrene | 4.45E-07 | 4.35E-06 | 1.08E-07 | 2.43E-07 | | | | | 1.44E-06 | 4.59E-06 |
| 2-Methylnaphthalene | 5.93E-06 | 5.80E-05 | 1.44E-06 | 3.24E-06 | | | | | 1.92E-05 | 6.13E-05 |
| Naphthalene | 3.26E-03 | 4.13E-02 | 3.60E-05 | 8.10E-05 | 1.89E-03 | 4.73E-04 | 1.54E-04 | 3.86E-05 | 1.75E-02 | 4.19E-02 |
| Phenanthrene | 4.20E-06 | 4.11E-05 | 1.02E-06 | 2.30E-06 | | | 5.35E-05 | 1.34E-05 | 6.71E-05 | 5.68E-05 |
| Pyrene | 1.21E-06 | 1.18E-05 | 2.94E-07 | 6.62E-07 | 5.39E-05 | 1.35E-05 | 8.70E-06 | 2.17E-06 | 2.28E-04 | 2.82E-05 |
| **TOTAL PAH** | 5.44E-03 | 6.91E-02 | 4.12E-05 | 9.28E-05 | 3.08E-03 | 7.71E-04 | 3.06E-04 | 7.64E-05 | 2.90E-02 | 7.00E-02 |
| **Metals** | | | | | | | | | | |
| Arsenic | 4.94E-05 | 4.84E-04 | 1.20E-05 | 2.70E-05 | 6.72E-07 | 1.68E-07 | 8.41E-08 | 2.10E-08 | 1.63E-04 | 5.11E-04 |
| Beryllium | 2.96E-06 | 2.90E-05 | 7.20E-07 | 1.62E-06 | | | | | 9.61E-06 | 3.06E-05 |
| Cadmium | 2.72E-04 | 2.66E-03 | 6.60E-05 | 1.49E-04 | 7.46E-08 | 1.86E-08 | 9.34E-09 | 2.33E-09 | 8.81E-04 | 2.81E-03 |
| Chromium | 3.46E-04 | 3.38E-03 | 8.40E-05 | 1.89E-04 | 1.80E-04 | 4.51E-05 | 2.26E-05 | 5.64E-06 | 1.87E-03 | 3.62E-03 |
| Chromium VI | 6.18E-05 | 6.04E-04 | 1.50E-05 | 3.38E-05 | 3.26E-05 | 8.14E-06 | 4.08E-06 | 1.02E-06 | 3.35E-04 | 6.47E-04 |
| Cobalt | 2.03E-05 | 1.98E-04 | 4.92E-06 | 1.11E-05 | | | | | 6.57E-05 | 2.09E-04 |
| Lead | 1.21E-04 | 1.18E-03 | 2.94E-05 | 6.62E-05 | 1.12E-05 | 2.80E-06 | 1.40E-06 | 3.50E-07 | 4.39E-04 | 1.25E-03 |
| Manganese | 9.14E-05 | 8.95E-04 | 2.22E-05 | 5.00E-05 | 4.10E-06 | 1.03E-06 | 5.13E-07 | 1.28E-07 | 3.13E-04 | 9.46E-04 |
| Mercury | 6.18E-05 | 6.04E-04 | 1.50E-05 | 3.38E-05 | 1.50E-07 | 3.74E-08 | 1.87E-08 | 4.69E-09 | 2.01E-04 | 6.38E-04 |
| Nickel | 5.19E-04 | 5.08E-03 | 1.26E-04 | 2.84E-04 | 2.15E-05 | 5.38E-06 | 2.69E-06 | 6.73E-07 | 1.77E-03 | 5.37E-03 |
| Selenium | 5.93E-06 | 5.80E-05 | 1.44E-06 | 3.24E-06 | 3.72E-06 | 9.31E-07 | 4.66E-07 | 1.16E-07 | 3.46E-05 | 6.23E-05 |
| **Max Single Hap** | | | | | | | | | | **4.6** |
| **Total HAPs** | | | | | | | | | | **17.9** |

| NOTES: | |
|---|---|
| | Pound per hour rates for CTGs based upon maximum firing rate (GE Case #6). |
| | Ton per year rates for CTGs based upon ISO with duct firing (GE Case #14) for 8,760 hours per year. |
| | Pound per hour rates for auxiliary boiler, black start engines and fire pump engine based upon maximum rating rate. |
| | Ton per year rates for auxiliary boiler based upon max lb/hr for 4,500 hours per year. |
| | Ton per year rates for emergency generator and fire pump engines based upon max lb/hr for 500 hours per year. |

## Cricket Valley Energy Center
## Combustion Turbine & Duct Burner Potential HAP Emissions (lb/hr/unit) - (CT0001, CT0002, and

| AMBIENT CONDITIONS: | 105°F | | 59°F | -8°F |
|---|---|---|---|---|
| GE CASE #: | Case 23 | Case 26 | Case 14 | Case 6 |
| Fuel | **Natural Gas** | | | |
| Turbine Load | 100% | 100% | 100% | 100% |
| GT Heat Input (MMBtu/hr, HHV) | 2,240 | 2,059 | 2,333 | 2,396 |
| DB Heat Input (MMBtu/hr, HHV) | 189 | 233 | 184 | 247 |
| **HAP** | | | | |
| **Organic Compounds** | | | | |
| Acetaldehyde | 8.961E-02 | 8.235E-02 | 9.332E-02 | 9.583E-02 |
| Acrolein | 1.434E-02 | 1.318E-02 | 1.493E-02 | 1.533E-02 |
| Benzene | 2.728E-02 | 2.519E-02 | 2.838E-02 | 2.927E-02 |
| 1,3-Butadiene | 9.633E-04 | 8.852E-04 | 1.003E-03 | 1.030E-03 |
| Dichlorobenzene | 2.268E-04 | 2.796E-04 | 2.208E-04 | 2.964E-04 |
| Ethylbenzene | 7.169E-02 | 6.588E-02 | 7.466E-02 | 7.666E-02 |
| Formaldehyde | 2.606E-01 | 2.439E-01 | 2.704E-01 | 2.821E-01 |
| Hexane | 3.402E-01 | 4.194E-01 | 3.312E-01 | 4.446E-01 |
| Propylene oxide | 6.497E-02 | 5.970E-02 | 6.766E-02 | 6.948E-02 |
| Toluene | 2.919E-01 | 2.684E-01 | 3.039E-01 | 3.123E-01 |
| Xylene | 1.434E-01 | 1.318E-01 | 1.493E-01 | 1.533E-01 |
| **PAHs** | | | | |
| Acenaphthene | 3.402E-07 | 4.194E-07 | 3.312E-07 | 4.446E-07 |
| Acenaphthylene | 3.402E-07 | 4.194E-07 | 3.312E-07 | 4.446E-07 |
| Anthracene | 3.402E-07 | 4.194E-07 | 3.312E-07 | 4.446E-07 |
| Benzo(a)anthracene | 3.402E-07 | 4.194E-07 | 3.312E-07 | 4.446E-07 |
| Benzo(a)pyrene | 2.268E-07 | 2.796E-07 | 2.208E-07 | 2.964E-07 |
| Benzo(b)fluoranthene | 3.402E-07 | 4.194E-07 | 3.312E-07 | 4.446E-07 |
| Benzo(g,h,i)perylene | 2.268E-07 | 2.796E-07 | 2.208E-07 | 2.964E-07 |
| Benzo(k)fluoranthene | 3.402E-07 | 4.194E-07 | 3.312E-07 | 4.446E-07 |
| Chrysene | 3.402E-07 | 4.194E-07 | 3.312E-07 | 4.446E-07 |
| Dibenz(a,h)anthracene | 2.268E-07 | 2.796E-07 | 2.208E-07 | 2.964E-07 |
| 7,12-Dimethylbenz(a) anthracene | 3.024E-06 | 3.728E-06 | 2.944E-06 | 3.952E-06 |
| Fluoranthene | 5.481E-07 | 6.757E-07 | 5.336E-07 | 7.163E-07 |
| Fluorene | 5.103E-07 | 6.291E-07 | 4.968E-07 | 6.669E-07 |
| Indeno(1,2,3-cd)pyrene | 3.402E-07 | 4.194E-07 | 3.312E-07 | 4.446E-07 |
| 3-Methylchloranthrene | 3.402E-07 | 4.194E-07 | 3.312E-07 | 4.446E-07 |
| 2-Methylnaphthalene | 4.536E-06 | 5.592E-06 | 4.416E-06 | 5.928E-06 |
| Naphthalene | 3.026E-03 | 2.816E-03 | 3.143E-03 | 3.263E-03 |
| Phenanthrene | 3.213E-06 | 3.961E-06 | 3.128E-06 | 4.199E-06 |
| Pyrene | 9.261E-07 | 1.142E-06 | 9.016E-07 | 1.210E-06 |
| **TOTAL PAH** | 5.058E-03 | 4.689E-03 | 5.259E-03 | 5.440E-03 |
| **Metals** | | | | |
| Arsenic | 3.780E-05 | 4.660E-05 | 3.680E-05 | 4.940E-05 |
| Beryllium | 2.268E-06 | 2.796E-06 | 2.208E-06 | 2.964E-06 |
| Cadmium | 2.079E-04 | 2.563E-04 | 2.024E-04 | 2.717E-04 |
| Chromium | 2.646E-04 | 3.262E-04 | 2.576E-04 | 3.458E-04 |
| Chromium VI | 4.725E-05 | 5.825E-05 | 4.600E-05 | 6.175E-05 |
| Cobalt | 1.550E-05 | 1.911E-05 | 1.509E-05 | 2.025E-05 |
| Lead | 9.261E-05 | 1.142E-04 | 9.016E-05 | 1.210E-04 |
| Manganese | 6.993E-05 | 8.621E-05 | 6.808E-05 | 9.139E-05 |
| Mercury | 4.725E-05 | 5.825E-05 | 4.600E-05 | 6.175E-05 |
| Nickel | 3.969E-04 | 4.893E-04 | 3.864E-04 | 5.187E-04 |
| Selenium | 4.536E-06 | 5.592E-06 | 4.416E-06 | 5.928E-06 |
| **Total HAPs** | **1.311E+00** | **1.317E+00** | **1.341E+00** | **1.487E+00** |

## Cricket Valley Energy Center
## HAP Emission Factors

| HAP | Emission Factors | | | | |
|---|---|---|---|---|---|
| | CTG | Duct Burners | AB01 | EDG01 | FP01 |
| | lb/MMBtu | lb/MMBtu | lb/MMBtu | lb/MMBtu | lb/MMBtu |
| **Organic Compounds** | | | | | |
| Acetaldehyde | 4.00E-05 | | | 2.52E-05 | 7.67E-04 |
| Acrolein | 6.40E-06 | | | 7.88E-06 | 9.25E-05 |
| Benzene | 1.20E-05 | 2.10E-06 | 2.10E-06 | 7.76E-04 | 9.33E-04 |
| 1,3-Butadiene | 4.30E-07 | | | | 3.91E-05 |
| Dichlorobenzene | | 1.20E-06 | 1.20E-06 | | |
| Ethylbenzene | 3.20E-05 | | | | |
| Formaldehyde | 1.10E-04 | 7.50E-05 | 7.40E-05 | 7.89E-05 | 1.18E-03 |
| Hexane | | 1.80E-03 | 1.80E-03 | | |
| Propylene oxide | 2.90E-05 | | | 3.85E-03 | 3.56E-03 |
| Toluene | 1.30E-04 | 3.40E-06 | 3.30E-06 | 2.81E-04 | 4.09E-04 |
| Xylene | 6.40E-05 | | | 1.93E-04 | 2.85E-04 |
| **PAHs** | | | | | |
| Acenaphthene | | 1.80E-09 | 1.80E-09 | 4.68E-06 | 1.42E-06 |
| Acenaphthylene | | 1.80E-09 | 1.80E-09 | 9.23E-06 | 5.06E-06 |
| Anthracene | | 1.80E-09 | 1.80E-09 | 1.23E-06 | 1.87E-06 |
| Benzo(a)anthracene | | 1.80E-09 | 1.80E-09 | 6.22E-07 | 1.68E-06 |
| Benzo(a)pyrene | | 1.20E-09 | 1.20E-09 | 2.57E-07 | 1.88E-07 |
| Benzo(b)fluoranthene | | 1.80E-09 | 1.80E-09 | 1.11E-06 | 9.91E-08 |
| Benzo(g,h,i)perylene | | 1.20E-09 | 1.20E-09 | 5.56E-07 | 4.89E-07 |
| Benzo(k)fluoranthene | | 1.80E-09 | 1.80E-09 | 2.18E-07 | 1.55E-07 |
| Chrysene | | 1.80E-09 | 1.80E-09 | 1.53E-06 | 3.53E-07 |
| Dibenz(a,h)anthracene | | 1.20E-09 | 1.20E-09 | 3.46E-07 | 5.83E-07 |
| 7,12-Dimethylbenz(a) anthracene | | 1.60E-08 | 1.60E-08 | | |
| Fluoranthene | | 2.90E-09 | 2.90E-09 | 4.03E-06 | 7.61E-06 |
| Fluorene | | 2.70E-09 | 2.70E-09 | 1.28E-05 | 2.92E-05 |
| Indeno(1,2,3-cd)pyrene | | 1.80E-09 | 1.80E-09 | 4.14E-07 | 3.75E-07 |
| 3-Methylchloranthrene | | 1.80E-09 | 1.80E-09 | | |
| 2-Methylnaphthalene | | 2.40E-08 | 2.40E-08 | | |
| Naphthalene | 1.30E-06 | 6.00E-07 | 6.00E-07 | 1.30E-04 | 8.48E-05 |
| Phenanthrene | | 1.70E-08 | 1.70E-08 | | 2.94E-05 |
| Pyrene | | 4.90E-09 | 4.90E-09 | 3.71E-06 | 4.78E-06 |
| **TOTAL PAH** | 2.20E-06 | 6.87E-07 | 6.87E-07 | 2.12E-04 | 1.68E-04 |
| **Metals** | | | | | |
| Arsenic | | 2.00E-07 | 2.00E-07 | 4.62E-08 | 4.62E-08 |
| Beryllium | | 1.20E-08 | 1.20E-08 | | |
| Cadmium | | 1.10E-06 | 1.10E-06 | 5.13E-09 | 5.13E-09 |
| Chromium | | 1.40E-06 | 1.40E-06 | 1.24E-05 | 1.24E-05 |
| Chromium VI | | 2.50E-07 | 2.50E-07 | 2.24E-06 | 2.24E-06 |
| Cobalt | | 8.20E-08 | 8.20E-08 | | |
| Lead | | 4.90E-07 | 4.90E-07 | 7.69E-07 | 7.69E-07 |
| Manganese | | 3.70E-07 | 3.70E-07 | 2.82E-07 | 2.82E-07 |
| Mercury | | 2.50E-07 | 2.50E-07 | 1.03E-08 | 1.03E-08 |
| Nickel | | 2.10E-06 | 2.10E-06 | 1.48E-06 | 1.48E-06 |
| Selenium | | 2.40E-08 | 2.40E-08 | 2.56E-07 | 2.56E-07 |
| **Total HAPs** | **4.26E-04** | **1.89E-03** | **1.89E-03** | **5.48E-03** | **7.53E-03** |

Notes:
1. Blank entry indicates no emission factor reported in the reference cited.
2. Organic HAP emission factors for CTGs are from Tables 3.1-3 and 3.1.4 of AP-42 except for formaldehyde which is based on the CTG formaldehyde emission factor in memo from Melanie Taylor (Alpha-Gamma Technologies, Inc.) to Sims Roy (EPA) titled "HAP Emission Factors for Stationary Combustion Turbines" 10/23/2002.
3. Emission factors for duct burners and axuliary boiler are from AP-42 Tables 1.4-3 and 1.4-4.
4. Hexavalent chrome is based on 18% of the total chrome emissions per EPA 453/R-98-004a.
5. Organic HAP emission factors for fire pump engines are from Tables 3.3-1 and 3.3-2 of AP-42.
6. Organic HAP emission factors for black start engines are from Tables 3.4-3 and 3.4-4 of AP-42.
7. Metal emission factors for the emergency generator and fire pump engine are based on the paper “Survey of Ultra-Trace Metals in Gas Turbine Fuels”, 11th Annual International Petroleum Conference, Oct 12-15, 2004. Where trace metals were detected in any of 13 samples, the average result is used. Where no metals were detected in any of 13 samples, the detection limit was used.

# APPENDIX G: PROPOSED CTG STARTUP AND SHUTDOWN LIMITS

**PROPOSED DEFINITIONS AND EMISSION LIMITS FOR STARTUP, SHUTDOWN, AND TUNING**
**EMISSION UNITS U-00001, U-00002, and U-00003**

As required by Condition 24 of the Permit, the Facility has submitted proposed startup and shutdown limits for the three combustion turbines at the facility, emission units U-00001, U-00002, and U-00003.

Condition 24 requires the Facility to monitor all occurrences of startup and shutdown from the combustion turbines, including the duration of each startup and shutdown event, and the total pounds of emissions of $NO_X$, CO, and $NH_3$ during each startup and shutdown event, as measured and recorded by the CEMS for each combustion turbine.

Condition 24 also requires the Facility to submit proposed startup and shutdown limits to the Department within 60 days of recording the 15$^{th}$ startup and shutdown. The facility recorded its 15$^{th}$ startup and 15$^{th}$ shutdown on approximately March 22, 2020. Only startup and shutdown events that occurred after the date that each combustion turbine completed its initial performance tests and initial CEMS certification tests were used in determining when the 15$^{th}$ startup and shutdown event occurred.

Initial proposed limits were submitted to NYSDEC by email on May 20, 2020, based on actual startup and shutdown data through April 30, 2020. NYSDEC has agreed that the Facility may submit revisions to the proposed startup and shutdown limits as part of the Title V permit renewal application.

Analysis

The proposed startup and shutdown limits are based on actual operating and emissions data for a total of 131 startup events and 121 shutdown events, occurring between February 21 and June 30, 2020. A total of 12 startup events that exceeded the vendor-estimated duration of 60 minutes were excluded from the analysis. A total of seven shutdown events that exceeded the vendor-estimated duration of 20 minutes were also excluded from the analysis. A Microsoft Excel® workbook is being provided to NYSDEC in electronic format. The workbook contains the data evaluated and the calculations performed. A table summarizing the results the analysis is included with this appendix.

The Facility is proposing $NO_x$ and CO mass emission limits in units of pounds emitted per event for each startup and shutdown, based on a review of actual CEMS data. The Facility is requesting that a single set of startup emission limits be considered for the purpose of simplifying recordkeeping and reporting, rather than different emission limits assigned specifically to cold, warm, and hot starts.

The Facility also proposes that $NH_3$ emission limits during startup and shutdown be similarly expressed in units of pounds emitted per event, based on a review of actual CEMS data, with a conservative margin applied based on engineering judgment. The Facility notes that, during startup periods when ammonia is injected while the catalyst is coming up to operating temperature, the measured $NH_3$ concentration is out-of-range of the instrument scale. For the purposes of performing this analysis, we assumed these out-of-range concentrations were 30 ppmvd based on an instrument scale of 20 ppmvd. To ensure no conflicts in the permit conditions, we are also requesting clarification of Item 23.2 of the existing permit to exclude startup and shutdown periods (see below).

Proposed Definitions and Emission Limits during Startup, Shutdown, and Tuning

We propose the following definitions and emission limits be added as compliance certification conditions for the following emission units and their respective processes:

Emission Unit: U-00001
Process: P01

Emission Unit: U-00002
Process: P04

Emission Unit: U-00003
Process: P05

Below are the proposed monitoring descriptions for each condition or emission limit related to startup, shutdown, and tuning.

**Startup duration**

Startup is defined as the period of time from when a "FLAME ON" signal is received from the Distributed Control System (DCS) until steady-state operation is attained as identified by 10 consecutive minutes of compliance with steady-state CO and $NO_X$ emission limits. The duration of a startup shall not exceed 60 minutes.

The initial application for the Permit was based upon a maximum startup duration of 60 minutes. However, the Facility has experienced several startup events on all three units longer than 60 minutes since the Facility has achieved commercial operation. CVEC is reviewing startup procedures with GE to make every effort to limit startup duration to less than 60 minutes. However, CVEC does not want to propose a permit limit that cannot be met consistently. Therefore, CVEC reserves the right to propose a startup duration longer than 60 minutes pending the outcome of the review of startup procedures with GE. Should CVEC determine that a longer startup time is necessary, we will provide NYSDEC with a detailed analysis to document why the longer duration is necessary with supporting documentation from GE.

The owner or operator shall record the date and time of each startup event. A report consisting of the recorded information shall be submitted to the Department with the facility's required excess emissions report. All records shall be maintained and readily available for a minimum of five years.

**Shutdown duration**

Shutdown is defined as the period of time from initiation of shutdown by the control room operator until a "FLAME OFF" signal is received from the DCS. The duration of a shutdown shall not exceed 20 minutes.

The owner or operator shall record the date and time of each shutdown event. A report consisting of the recorded information shall be submitted to the Department with the facility's required

excess emissions report. All records shall be maintained and readily available for a minimum of five years.

**Definition of "Tuning event"**

In addition to the proposed startup and shutdown limits required by Condition 24 of the Permit, the Facility also requests that "tuning event" be defined as a maintenance activity for each combustion turbine, during which the emission limits for steady-state operation, startup, and shutdown do not apply. Each GE 7FA.05 combustion turbine will require seasonal tuning of the machine twice a year, once prior to the summer and once prior to the winter. Each tuning period is designed to optimize the turbine for ambient conditions during the upcoming season, while minimizing the likelihood of excessive emissions, excessive combustor dynamics, or loss of flame (due to lean blow-out). The Facility requests that an allowance be made for tuning to be performed twice a year on each combustion turbine, with each tuning event lasting up to 4 hours.

The following definition of "tuning event" is proposed to be added as a compliance condition:

> Tuning event is defined as a period of low-load operation of a combustion turbine for the purpose of tuning the turbine prior to the summer or winter season, not to exceed four hours per event, during which the emission limits for steady-state operation, startup, and shutdown do not apply. Each combustion turbine is allowed up to two tuning events per calendar year.

**Startup emission limits**

> The owner or operator shall limit $NO_X$ emissions from each combustion turbine generator to 80.0 pounds per startup event. Emissions shall be monitored and recorded on a continuous basis with a CEM system.
>
> The owner or operator shall limit CO emissions from each combustion turbine generator to 330.0 pounds per startup event. Emissions shall be monitored and recorded on a continuous basis with a CEM system.
>
> The owner or operator shall limit $NH_3$ emissions from each combustion turbine generator to 25.0 pounds per startup event. Emissions shall be monitored and recorded on a continuous basis with a CEM system.

**Shutdown emission limits**

> The owner or operator shall limit $NO_X$ emissions from each combustion turbine generator to 5.0 pounds per shutdown event. Emissions shall be monitored and recorded on a continuous basis with a CEM system.
>
> The owner or operator shall limit CO emissions from each combustion turbine generator to 5.0 pounds per shutdown event. Emissions shall be monitored and recorded on a continuous basis with a CEM system.

The owner or operator shall limit $NH_3$ emissions from each combustion turbine generator to 3.0 pounds per shutdown event. Emissions shall be monitored and recorded on a continuous basis with a CEM system.

Steady-State Emission Limits for NOx, CO, and $NH_3$

**NOx ppmvd emission limit: Item 1.6-2**

In addition to the proposed NOx emission limits presented above for startup and shutdown conditions, the Facility requests that Item 1.6-2 of the existing Permit be amended to include a statement that the NOx ppmvd limit does not apply to any 1-hour average that contains at least one minute of startup or shutdown, and does not apply to any 1-hour average that includes part of a tuning event, such that the monitoring description reads:

> Facility must maintain a NOx emission limit of 2.0 ppmvd at 15 percent O2 (with and without duct burning) to satisfy LAER. This will be achieved through the application of DLN burners in combination with Selective Catalytic Reduction (SCR). This limit applies at all load conditions, except that it does not apply to any 1-hour average that includes at least one minute of a startup, shutdown, or tuning event. The facility will use CEMS to monitor NOx stack emissions.

**CO ppmvd emission limit: Item 46.2**

In addition to the proposed CO emission limits presented above for startup and shutdown conditions, the Facility requests that Item 46.2 of the existing Permit be amended to include a statement that the CO ppmvd limit does not apply to any 1-hour average that contains at least one minute of startup or shutdown, and does not apply to any 1-hour average that includes part of a tuning event, such that the monitoring description reads:

> Each combustion turbine and associated duct burner will not exceed a CO emission rate of 2.0 ppmvd at 15% oxygen, with and without duct firing. This emission limit applies at all operating loads, except that it does not apply to any 1-hour average that includes at least one minute of a startup, shutdown, or tuning event, and will be achieved through good combustion practices and an oxidation catalyst to satisfy BACT requirements. The facility will install, operate and maintain a CEMS in order to monitor CO stack emissions.

**Ammonia slip ppmvd emission limit: Item 23.2**

In addition to the proposed $NH_3$ emission limits presented above for startup and shutdown conditions, the Facility requests that Item 23.2 of the existing Permit be amended to include a statement that the CO ppmvd limit does not apply to any 1-hour average that contains at least one minute of startup or shutdown, and does not apply to any 1-hour average that includes part of a tuning event, such that the monitoring description reads:

> The facility shall install, calibrate, maintain and operate continuous emissions monitors for ammonia. The 5.0 ppmvd corrected to 15% Oxygen limit applies during all turbine loads, all fuels being fired, and all duct burner operations, except that it does not apply to any 1-hour average that includes at least one minute of a startup, shutdown, or tuning event.

During startup, ammonia is being injected in the selective catalytic reduction (SCR) system to control $NO_X$ as the temperature of the catalyst rises to the design temperature range. Ammonia slip is unstable and unpredictable during this time period and partial hour data validation could result in slip concentrations being greater than 5 ppmvd @ 15% $O_2$. If a unit starts up in the last few minutes at the top of the hour, those few minutes of initial slip concentration data are enough to validate the hour. Specifically, 40 CFR 60.13(h)(2)(iii)(B) states that only one valid data point is needed to calculate an hourly average if the unit operates only operates in one quadrant of the hour, thus necessitating the clarification. The clarification is also consistent with the exception provided for steady-state $NO_X$ and CO emission limits listed in Items 1-6.2 and Item 46.2 of the Permit. This exclusion appears to have been inadvertently left out of the originally-issued permit, and an ammonia limit during startups and shutdowns is unusual in our experience with other power plants.

# APPENDIX H: ACID RAIN PERMIT RENEWAL APPLICATION

United States
Environmental Protection Agency
Acid Rain Program

OMB No. 2060-0258
Approval expires 12/31/2021

# Acid Rain Permit Application

For more information, see instructions and 40 CFR 72.30 and 72.31.

This submission is: ☐ new ☐ revised ☑ for ARP permit renewal

**STEP 1**

**Identify the facility name, State, and plant (ORIS) code.**

| Facility (Source) Name | State | Plant Code |
|---|---|---|
| Cricket Valley Energy Center | NY | 57185 |

**STEP 2**

**Enter the unit ID# for every affected unit at the affected source in column "a."**

| a | b |
|---|---|
| Unit ID# | Unit Will Hold Allowances in Accordance with 40 CFR 72.9(c)(1) |
| U001 | Yes |
| U002 | Yes |
| U003 | Yes |
| | Yes |
| | Yes |
| | Yes |
| | Yes |
| | Yes |
| | Yes |
| | Yes |
| | Yes |
| | Yes |
| | Yes |
| | Yes |
| | Yes |
| | Yes |
| | Yes |
| | Yes |
| | Yes |
| | Yes |
| | Yes |
| | Yes |

Cricket Valley Energy Center
Facility (Source) Name (from STEP 1)

**STEP 3**

**Read the standard requirements.**

## Permit Requirements

(1) The designated representative of each affected source and each affected unit at the source shall:
- (i) Submit a complete Acid Rain permit application (including a compliance plan) under 40 CFR part 72 in accordance with the deadlines specified in 40 CFR 72.30; and
- (ii) Submit in a timely manner any supplemental information that the permitting authority determines is necessary in order to review an Acid Rain permit application and issue or deny an Acid Rain permit;

(2) The owners and operators of each affected source and each affected unit at the source shall:
- (i) Operate the unit in compliance with a complete Acid Rain permit application or a superseding Acid Rain permit issued by the permitting authority; and
- (ii) Have an Acid Rain Permit.

## Monitoring Requirements

(1) The owners and operators and, to the extent applicable, designated representative of each affected source and each affected unit at the source shall comply with the monitoring requirements as provided in 40 CFR part 75.

(2) The emissions measurements recorded and reported in accordance with 40 CFR part 75 shall be used to determine compliance by the source or unit, as appropriate, with the Acid Rain emissions limitations and emissions reduction requirements for sulfur dioxide and nitrogen oxides under the Acid Rain Program.

(3) The requirements of 40 CFR part 75 shall not affect the responsibility of the owners and operators to monitor emissions of other pollutants or other emissions characteristics at the unit under other applicable requirements of the Act and other provisions of the operating permit for the source.

## Sulfur Dioxide Requirements

(1) The owners and operators of each source and each affected unit at the source shall:
- (i) Hold allowances, as of the allowance transfer deadline, in the source's compliance account (after deductions under 40 CFR 73.34(c)), not less than the total annual emissions of sulfur dioxide for the previous calendar year from the affected units at the source; and
- (ii) Comply with the applicable Acid Rain emissions limitations for sulfur dioxide.

(2) Each ton of sulfur dioxide emitted in excess of the Acid Rain emissions limitations for sulfur dioxide shall constitute a separate violation of the Act.

(3) An affected unit shall be subject to the requirements under paragraph (1) of the sulfur dioxide requirements as follows:
- (i) Starting January 1, 2000, an affected unit under 40 CFR 72.6(a)(2); or
- (ii) Starting on the later of January 1, 2000 or the deadline for monitor certification under 40 CFR part 75, an affected unit under 40 CFR 72.6(a)(3).

(4) Allowances shall be held in, deducted from, or transferred among Allowance Tracking System accounts in accordance with the Acid Rain Program.

(5) An allowance shall not be deducted in order to comply with the requirements under paragraph (1) of the sulfur dioxide requirements prior to the calendar year for which the allowance was allocated.

(6) An allowance allocated by the Administrator under the Acid Rain Program is a limited authorization to emit sulfur dioxide in accordance with the Acid Rain Program. No provision of the Acid Rain Program, the Acid Rain permit application, the Acid Rain permit, or an exemption under 40 CFR 72.7 or 72.8 and no provision of law shall be construed to limit the authority of the United States to terminate or limit such authorization.

(7) An allowance allocated by the Administrator under the Acid Rain Program does not constitute a property right.

## Nitrogen Oxides Requirements

The owners and operators of the source and each affected unit at the source shall comply with the applicable Acid Rain emissions limitation for nitrogen oxides.

Cricket Valley Energy Center
Facility (Source) Name (from STEP 1)

**STEP 3, Cont'd.**

**Excess Emissions Requirements**

(1) The designated representative of an affected source that has excess emissions in any calendar year shall submit a proposed offset plan, as required under 40 CFR part 77.
(2) The owners and operators of an affected source that has excess emissions in any calendar year shall:
   (i) Pay without demand the penalty required, and pay upon demand the interest on that penalty, as required by 40 CFR part 77; and
   (ii) Comply with the terms of an approved offset plan, as required by 40 CFR part 77.

**Recordkeeping and Reporting Requirements**

(1) Unless otherwise provided, the owners and operators of the source and each affected unit at the source shall keep on site at the source each of the following documents for a period of 5 years from the date the document is created. This period may be extended for cause, at any time prior to the end of 5 years, in writing by the Administrator or permitting authority:
   (i) The certificate of representation for the designated representative for the source and each affected unit at the source and all documents that demonstrate the truth of the statements in the certificate of representation, in accordance with 40 CFR 72.24; provided that the certificate and documents shall be retained on site at the source beyond such 5-year period until such documents are superseded because of the submission of a new certificate of representation changing the designated representative;
   (ii) All emissions monitoring information, in accordance with 40 CFR part 75, provided that to the extent that 40 CFR part 75 provides for a 3-year period for recordkeeping, the 3-year period shall apply.
   (iii) Copies of all reports, compliance certifications, and other submissions and all records made or required under the Acid Rain Program; and,
   (iv) Copies of all documents used to complete an Acid Rain permit application and any other submission under the Acid Rain Program or to demonstrate compliance with the requirements of the Acid Rain Program.
(2) The designated representative of an affected source and each affected unit at the source shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR part 72 subpart I and 40 CFR part 75.

**Liability**

(1) Any person who knowingly violates any requirement or prohibition of the Acid Rain Program, a complete Acid Rain permit application, an Acid Rain permit, or an exemption under 40 CFR 72.7 or 72.8, including any requirement for the payment of any penalty owed to the United States, shall be subject to enforcement pursuant to section 113(c) of the Act.
(2) Any person who knowingly makes a false, material statement in any record, submission, or report under the Acid Rain Program shall be subject to criminal enforcement pursuant to section 113(c) of the Act and 18 U.S.C. 1001.
(3) No permit revision shall excuse any violation of the requirements of the Acid Rain Program that occurs prior to the date that the revision takes effect.
(4) Each affected source and each affected unit shall meet the requirements of the Acid Rain Program.
(5) Any provision of the Acid Rain Program that applies to an affected source (including a provision applicable to the designated representative of an affected source) shall also apply to the owners and operators of such source and of the affected units at the source.
(6) Any provision of the Acid Rain Program that applies to an affected unit (including a provision applicable to the designated representative of an affected unit) shall also apply to the owners and operators of such unit.
(7) Each violation of a provision of 40 CFR parts 72, 73, 74, 75, 76, 77, and 78 by an affected source or affected unit, or by an owner or operator or designated representative of such source or unit, shall be a separate violation of the Act.

Cricket Valley Energy Center
Facility (Source) Name (from STEP 1)

**STEP 3, Cont'd.**

**Effect on Other Authorities**

No provision of the Acid Rain Program, an Acid Rain permit application, an Acid Rain permit, or an exemption under 40 CFR 72.7 or 72.8 shall be construed as:

(1) Except as expressly provided in title IV of the Act, exempting or excluding the owners and operators and, to the extent applicable, the designated representative of an affected source or affected unit from compliance with any other provision of the Act, including the provisions of title I of the Act relating to applicable National Ambient Air Quality Standards or State Implementation Plans;

(2) Limiting the number of allowances a source can hold; provided, that the number of allowances held by the source shall not affect the source's obligation to comply with any other provisions of the Act;

(3) Requiring a change of any kind in any State law regulating electric utility rates and charges, affecting any State law regarding such State regulation, or limiting such State regulation, including any prudence review requirements under such State law;

(4) Modifying the Federal Power Act or affecting the authority of the Federal Energy Regulatory Commission under the Federal Power Act; or,

(5) Interfering with or impairing any program for competitive bidding for power supply in a State in which such program is established.

**STEP 4**

**Certification**

**Read the certification statement, sign, and date.**

I am authorized to make this submission on behalf of the owners and operators of the affected source or affected units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

| | |
|---|---|
| Name Marc Duquette | |
| Signature Marc J Duquette | Date 7/24/20 |

# APPENDIX I: PERFORMANCE EMISSION TEST REPORTS

# EMISSION COMPLIANCE TEST
# FOR THE
# GENERAL ELECTRIC, 7F.05, UNIT #U-00001
# PREPARED FOR
# CRICKET VALLEY ENERGY CENTER LLC
# AT THE
# CRICKET VALLEY ENERGY CENTER
# DOVER PLAINS, NEW YORK
# FEBRUARY 17-19 AND MARCH 6, 2020

## Permit No: 3-1326-00275/00009
## Facility DEC ID: 3132600275
## Report Date: March 23, 2020



**Corporate Headquarters**
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012

AIR HYGIENE, INC.

(918) 307-8865 or (888) 461-8778
www.airhygiene.com

**Remote Testing Offices**
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Ft. Worth, TX 76028
Humble, TX 77338
Shreveport, LA 71115
Miami, FL 33101
Pittsburgh, PA 15205

**EMISSION COMPLIANCE TEST**
**FOR THE**
**GENERAL ELECTRIC, 7F.05, UNIT #U-00001**
**PREPARED FOR**
**CRICKET VALLEY ENERGY CENTER LLC**
**AT THE**
**CRICKET VALLEY ENERGY CENTER**
**DOVER PLAINS, NEW YORK**
**FEBRUARY 17-19 AND MARCH 6, 2020**

Prepared and Reviewed by:

Logan K. Tsotsoros

Logan Tsotsoros
AHU Support Staff

Thomas K Graham

Thomas K. Graham, PE, QSTI
Director of AHU

I, R.W.C.

Rob White, QSTI
Test Manager
certify that this testing was conducted and
this report was created in conformance
with the requirements of ASTM D7036

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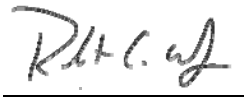
## CERTIFICATION OF INFORMATION

I certify under penalty of law that I believe the information provided in this document is true, accurate and complete. I am aware that there are significant civil and criminal penalties, including the possibility of fine or imprisonment or both, for submitting false, inaccurate or incomplete information.



Rob White, QSTI
Test Manager
Air Hygiene International, Inc.

February 23, 2020
Date

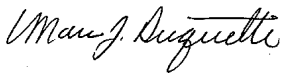
## FACILITY CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attached documents and, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil and criminal penalties, including the possibility of fine or imprisonment or both, for submitting false, inaccurate or incomplete information.

I am the responsible official with direct knowledge and overall responsibility for the information contained in this report.

Marc J. Duquette
Name

Director, EHS
Title



Signature

3/24/2020
Date

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**Emissions Compliance Test**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center LLC**
**Cricket Valley Energy Center**
**Dover Plains, New York**
**February 17-19 and March 6, 2020**

## 1.0 INTRODUCTION

Air Hygiene International, Inc. (Air Hygiene) has completed the Emissions Compliance Test for nitrogen oxides (NOx), carbon monoxide (CO), total hydrocarbons/volatile organic compounds (THC/VOC), sulfur dioxide ($SO_2$) [by fuel analysis], ammonia ($NH_3$), particulate matter ($PM_{10}$), sulfuric acid mist (SAM), opacity / visual emissions (VE), flow, moisture ($H_2O$), carbon dioxide ($CO_2$), and oxygen ($O_2$) from the exhaust of the General Electric, 7F.05, Unit #U-00001 for Cricket Valley Energy Center LLC at the Cricket Valley Energy Center in Dover Plains, New York. This report details the background, results, process description, and the sampling/analysis methodology of the stack sampling survey conducted on February 17-19 and March 6, 2020.

## 1.1 TEST PURPOSE AND OBJECTIVES

The purpose of the test was to conduct an initial compliance emission test to document levels of selected pollutants at two test loads, base loaded with duct burners on and base loaded with duct burners off (Base+DB and Base). An additional load included opacity only with the unit operating at Base+DB and the Auxiliary Boiler operating at maximum load. Both of these units share a common stack and this run condition has the potential for maximum VE production. The information will be used to confirm compliance with the operating permit issued by the New York State Department of Environmental Conservation (NYSDEC). The specific objective was to determine the emission concentrations and rates of NOx, CO, THC/VOC, $SO_2$ [fuel analysis], $NH_3$, $PM_{10}$, SAM, VE, flow, $H_2O$, $CO_2$, and $O_2$ from the exhaust of Cricket Valley Energy Center LLC's General Electric, 7F.05, Unit #U-00001 at Base+DB and Base.

## 1.2 SUMMARY OF TEST PROGRAM

The following list details pertinent information related to this specific project:

1.2.1 Participating Organizations
- New York State Department of Environmental Conservation (NYSDEC)
- Cricket Valley Energy Center LLC
- Bechtel Corporation
- Air Hygiene

1.2.2 Industry
- Electric Utility / Electric Services

1.2.3 Air Permit Requirements
- Permit Number: 3-1326-00275/00009

1.2.4 Plant Location
- Cricket Valley Energy Center in Dover Plains, New York
  - GPS Coordinates [Latitude 41.67721, Longitude -73.57992]
  - Physical Address: 2241 ST RTE 22, Dover Plains, New York 12522
  - Federal Registry System / Facility Registry Service (FRS) No. – 110043340364
  - Source Classification Code (SCC) – 10200602

1.2.5 Equipment Tested
- General Electric, 7F.05, Unit #U-00001

1.2.6 Emission Points
- Exhaust from the General Electric, 7F.05, Unit #U-00001
- For all gases, one sample point in the exhaust duct from the General Electric, 7F.05, Unit #U-00001, determined after conducting a 12-point stratification test
- For all $PM_{10}$ testing, 12 sampling points in the exhaust duct from the General Electric, 7F.05, Unit #U-00001
- For all SAM testing, one sample point in the exhaust duct from the General Electric, 7F.05, Unit #U-00001
- For opacity, one sample visual observation point from the exit of the exhaust duct to the atmosphere from the General Electric, 7F.05, Unit #U-00001

1.2.7 Emission Parameters Measured
- NOx
- CO
- THC/VOC
- $SO_2$ [fuel analysis]
- $NH_3$
- $PM_{10}$
- SAM
- Opacity
- Flow
- $H_2O$
- $CO_2$
- $O_2$

1.2.8 Dates of Emission Test
- February 17-19 and March 6, 2020

1.2.9 Federal Certifications
- Stack Testing Accreditation Council AETB Certificate No. 3796.02
- International Standard ISO/IEC 17025:2005 Certificate No. 3796.01

## 1.3 KEY PERSONNEL

| | | |
|---|---|---|
| Cricket Valley Energy Center LLC: | Marc Duquette (mduquette@cricketvalley.com) | 617-320-5219 |
| Bechtel Corporation: | John Curran | 772-678-1878 |
| Bechtel Corporation: | Peter Carr (pcarr@bechtel.com) | 571-392-6737 |
| NYSDEC: | Alyssa Carbone | 845-256-3051 |
| Air Hygiene: | Rob White (rwhite@airhygiene.com) | 918-307-8865 |
| Air Hygiene: | Swanson Bierman (swanson@airhygiene.com) | 918-307-8865 |
| Air Hygiene: | Atlas Melchert | 918-307-8865 |
| Air Hygiene: | Michael Wilmott | 918-307-8865 |
| Air Hygiene: | Aaron Blum | 918-307-8865 |
| Air Hygiene: | Matt Jones | 918-307-8865 |
| Air Hygiene: | Jeremy Johnson | 918-307-8865 |

## 2.0 SUMMARY OF TEST RESULTS

Results from the sampling conducted on Cricket Valley Energy Center LLC's General Electric, 7F.05, Unit #U-00001 located at the Cricket Valley Energy Center on February 17-19 and March 6, 2020 are summarized in the following table and relate only to the items tested.

**TABLE 2.1**
**SUMMARY OF GENERAL ELECTRIC, 7F.05, UNIT #U-00001 RESULTS**

| Parameter | Base Load | Base+DB Load | Base+DB Load and Aux Boiler | Permit Limits Base | Permit Limits Base+DB |
|---|---|---|---|---|---|
| **Heat Input (MMBtu/hr)** | 2,306.0 | 2,509.8 | 2,428.1[1] | -- | -- |
| **CT Power Output (megawatts)** | 240.7 | 241.2 | 236.4 | -- | -- |
| **Load Condition** | Nominal base load, w/o DB[2] | Nominal base load, w/ DB[3] | Nominal base load, w/ DB[3] | -- | -- |
| **Aux Boiler Fuel Flow (pph)** | -- | -- | 1,471.41 | -- | -- |
| **NOx (ppmvd)** | 2.40 | 2.52 | -- | -- | -- |
| **NOx (ppm@15%$O_2$)** | 1.77 | 1.61 | -- | 2.0 | 2.0 |
| **CO (ppmvd)** | 0.24 | 0.08 | -- | -- | -- |
| **CO (ppm@15%$O_2$)** | 0.18 | 0.05 | -- | 2.0 | 2.0 |
| **VOC (as C1) (ppmvd)** | 0.29 | 0.00 | -- | -- | -- |
| **VOC (as C1) (ppm@15%$O_2$)** | 0.21 | 0.00 | -- | 0.7 | 1.8 |
| **Total $PM_{10}$ (mg)** | 7.63 | 6.47 | -- | -- | -- |
| **Total $PM_{10}$ (lb/MMBtu)** | 0.0037 | 0.0028 | -- | 0.005 | 0.006 |
| **Fuel Sulfur (grains / 100 scf)** | 0.11 | 0.11 | -- | 0.4 | 0.4 |
| **SAM (as $H_2SO_4$) (mg)** | 0.026 | 0.040 | -- | -- | -- |
| **SAM (as $H_2SO_4$) (lb/MMBtu)** | 0.00003 | 0.00004 | -- | 0.00065 | 0.00065 |
| **$NH_3$ (ppmvd)** | 1.46 | 2.07 | -- | -- | -- |
| **$NH_3$ (ppm@15%$O_2$)** | 1.07 | 1.32 | -- | 5.0 | 5.0 |
| **Opacity (%)** | 0 | 0 | 0 | 20 | 20 |

Notes: [1]Base+DB Load and Aux Boiler Heat Input estimated using 02/19/20 fuel gas analysis. [2]Air permit specifically indicates design capacity heat input of 2395.7 MMBtu/hr [ISO Conditions, 1 atm (29.923 in Hg), temperature 15 C or 59 F, and RH 60%] for the gas turbine. [3]Air permit specifically indicates design capacity heat input of 247 mmBtu/hr [ISO Conditions, 1 atm (29.923 in Hg), temperature 15 C or 59 F, and RH 60%] for the duct burner.

The results of all measured pollutant emissions were below the required limits. All testing was conducted according to the approved testing protocol. All testing was performed without any real or apparent errors with the following exceptions:

The $PM_{10}$ filter weights were reported by the laboratory at the reportable detection limit (RDL), but included notes indicating negative filter weights. Supplemental laboratory data was provided (Appendix D) and additional data analysis indicated filter losses were accounted for in either the sample train section cleanup just prior to the filter or the sample train cleanup in the section just after the filter. As a result, the PM results are considered valid with accounting for all filter weight losses in other fractions of the sample train results.

The initial SAM analysis was conducted by titration, per the requirements of CTM-013 with all results reported below the reportable detection limits (RDLs). However, when reporting emission rates using the titration based RDL values, the SAM results exceeded permitted limits. To remedy, the SAM analysis was conducted by ion

chromatography (IC). The supplemental IC analysis (Appendix D) yielded lower RDLs and also all results that were below the permitted limits. Emission rates were calculated based on the supplemental IC data.

Following completion of the stack emission test program for Unit #U-00001, it was discovered that the U-00001 fuel gas flow meter operation was tied to a "test mode" (Mode 0) setting, and not the expected "natural gas mode" setting (Mode 1). Further investigations of the impact of this setting, indicate that the initial Mode 0 fuel gas flow results have a positive bias of 1.5%. Consequently, the original fuel gas flow results (see U-00001-supplied operational fuel gas data) have been reduced by 1.5%. The operating mode of the Unit 1 gas flowmeter has been reset to the correct Mode 1 (natural gas). The combined U-00001 Base with DB fired and auxiliary boiler in operation load opacity test was performed after the fuel gas flowmeter mode operation was corrected on 2/21/2020.

# 3.0 SOURCE OPERATION

## 3.1 PROCESS DESCRIPTION

Cricket Valley Energy Center LLC owns and operates the Cricket Valley Energy Center located at 2241 ST RTE 22 in Dover Plains, New York. Located on the Cricket Valley Energy Center are three General Electric 7F.05 Combustion Turbine Generators (CTGs), designated as Emission Units U-00001, U-00002, and U-00003. The CTGs and associated heat recovery steam generators (HRSGs) which are equipped with dry low NOx burners in combination with selective catalytic reduction systems (SCRs). The CTG-HRSGs are also equipped with oxidation catalysts which reduce CO and VOC emissions.

## 3.2 SAMPLING LOCATION

The sample ports were located approximately vertical, circular and measures 19 feet (ft) (228 inches) in diameter at the test ports which are approximately 265.8 ft above grade level with an exit elevation of approximately 282.5 ft above grade level. The test ports are located approximately 70.8 ft (850 inches) downstream and approximately 16.7 ft (200.4 inches) upstream from the nearest disturbances. Air Hygiene has field verified the measurable dimensions. Non-field verified dimensions are provided by Cricket Valley Energy Center LLC. All exhaust samples for gaseous emissions were continuously drawn from the exhaust system at the sample ports from a single point determined after conducting a stratification test. During the stratification test three points were traversed from each of the four ports. The probe was allowed to remain at a point for two times the system response time. For $PM_{10}$ testing, an initial velocity traverse was performed across the stack from 12 total points at each test load. All $PM_{10}$ sampling occurred from the same 12 points. All SAM testing occurred from a simple sample point. All opacity observations were made by viewing the point where the exhaust system exited to the atmosphere at the top of the exhaust stack.

# 4.0 SAMPLING AND ANALYTICAL PROCEDURES

## 4.1 TEST METHODS

The emission test on the General Electric, 7F.05, Unit #U-00001 at the Cricket Valley Energy Center was performed following United States Environmental Protection Agency (EPA) methods described by the Code of Federal Regulations (CFR). Table 4.1 outlines the specific methods performed on February 17-19 and March 6, 2020.

**TABLE 4.1**
**SUMMARY OF SAMPLING METHODS**

| Pollutant or Parameter | Sampling Method | Analysis Method |
|---|---|---|
| Sample Point Location | EPA Method 1 | Equal Area Method |
| Stack Flow Rate | EPA Method 2 | S-Type Pitot Tube |
| Oxygen | EPA Method 3A | Paramagnetic Cell |
| Carbon Dioxide | EPA Method 3A | Nondispersive Infrared Analyzer |
| Stack Moisture Content | EPA Method 4 | Gravimetric Analysis |
| Sulfur Dioxide | GPA 2261 | Fuel Sulfur Content |
| Nitrogen Oxides | EPA Method 7E | Chemiluminescent Analyzer |
| Sulfuric Acid Mist | CTM-013 (EPA Method 8A) | Wet Chemistry Solubility |
| Opacity | EPA Method 9 | Visual Observation |
| Carbon Monoxide | EPA Method 10 | Nondispersive Infrared Analyzer |
| Volatile Organic Compounds | EPA Method 18/25A | Gas Chromatograph and Flame Ionization Detector |
| Stack Flow Rate | EPA Method 19 | ASTM 5504 and Dry Oxygen F Factor |
| Particulate Matter | EPA Method 201A | Front Half Filterables |
| Particulate Matter | EPA Method 202 | Back Half Condensables |
| Ammonia Slip | EPA Method 320 | Fourier Transform Infrared |

## 4.2 INSTRUMENT CONFIGURATION AND OPERATIONS FOR GAS ANALYSIS

The sampling and analysis procedures used during these tests conform with the methods outlined in the Code of Federal Regulations (CFR), Title 40, Part 60, Appendix A, Methods 1, 2, 3A, 4, 7E, 9, 10, 18, 19, 25A; 40 CFR 51, Appendix M, Methods 201A and 202; 40 CFR 63, Appendix A, Method 320; Conditional Test Method (CTM)-013 [Method 8A]; ASTM 5504; and GPA 2261.

Figure 4.1 depicts the sample system used for the real-time gas analyzer tests. The gas sample was continuously pulled through the probe and transported, via heat-traced Teflon® tubing, to a heated head pump and into the FTIR then to a stainless-steel minimum-contact condenser designed to dry the sample. Transportation of the sample, through Teflon® tubing, continued into the sample manifold within the mobile laboratory via a stainless steel/Teflon® diaphragm pump. From the manifold, the sample was partitioned to the real-time analyzers through rotameters that controlled the flow rate of the sample. Exhaust samples were routed to the wet based analyzer prior to gas conditioning.

Figure 4.1 shows that the sample system was also equipped with a separate path through which a calibration gas could be delivered to the probe and back through the entire sampling system. This allowed for convenient performance of system bias checks as required by the testing methods.

All instruments were housed in a climate controlled, trailer-mounted mobile laboratory. Gaseous calibration standards were provided in aluminum cylinders with the concentrations certified by the vendor. EPA Protocol No. 1 was used to determine the cylinder concentrations where applicable (i.e. NOx calibration gases).

Table 4.2 provides a description of the analyzers used for the instrument portion of the tests. All data from the continuous monitoring instruments were recorded on a Logic Beach Portable Data Logging System which retrieves calibrated electronic data from each instrument every one second and reports an average of the collected data every 30 seconds. For target compounds measured with the Fourier transform infrared (FTIR) spectrometer, interferograms consisting of 27 co-added scans were recorded continuously during the test periods, and provided approximately 30-second average concentrations. Spectral data was analyzed by the MKS MG2000 software.

Figure 4.2 represents the sample system used for the $PM_{10}$ tests. A heated stainless-steel probe with a glass liner and stainless-steel nozzle was inserted into the sample ports of the stack to extract gas measurements from the emission stream through a filter and glass impinger train. Flow rates are monitored with oil filled manometers and total sample volumes are measured with a dry gas meter. Glassware that is used to collect and analyze Method 202 condensable particulate samples is cleaned prior to the test with soap and water, and rinsed using tap water, deionized water, acetone, and finally, hexane. After cleaning, Air Hygiene incorporates a glassware bake at 300$^{o}$C for six hours rather than the alternative of collecting a field train proof blank.

Figure 4.3 represents the sample system used for the SAM tests. A heated stainless-steel probe with a glass liner was inserted into a sample port of the stack to extract gas measurements from the emission stream through a filter and glass impinger train. Flow rates are monitored with oil filled manometers and total sample volumes are measured with a dry gas meter.

The stack gas analysis for $O_2$ and $CO_2$ concentrations was performed in accordance with procedures set forth in EPA Method 3A. The $O_2$ analyzer uses a paramagnetic cell detector and the $CO_2$ analyzer uses a continuous nondispersive infrared analyzer.

EPA Method 7E was used to determine concentrations of NOx. A chemiluminescent analyzer was used to determine the nitrogen oxides concentration in the gas stream. A $NO_2$ in nitrogen certified gas cylinder was used to verify at least a 90 percent $NO_2$ conversion on the day of the test.

CO emission concentrations were quantified in accordance with procedures set forth in EPA Method 10. A continuous nondispersive infrared (NDIR) analyzer was used for this purpose.

THC emission concentrations were quantified in accordance with procedures set forth in EPA Method 25A. A continuous flame ionization (FID) analyzer was used for this purpose. THC emissions concentrations were below VOC limits and all assumed as VOCs. EPA Method 18 for Tedlar bag sampling and analysis of methane and ethane content was not analyzed or subtracted from the THC concentrations to determine VOC concentrations.

An MKS Instruments - MultiGas™ Fourier Transform Infrared (FTIR) spectrometer, or equivalent, was used for $NH_3$ analysis per EPA Method 320. The FTIR spectrometer spectral resolution was 0.5 $cm^{-1}$. The system employed a silicon carbide infrared source at 1200ºC, a helium neon reference laser, beam splitters, potassium bromide (KBr) cell window, front-surface optical transfer mirrors, and multi-pass absorption cells. MCT detectors were used and cooled with liquid nitrogen in order to maintain a constant temperature of 77 Kelvin. The approximately 5.11-meter multi-pass path cells incorporated aspheric, aberration-correcting mirrors to increase the optical throughput and the detection sensitivity. Transducers and thermocouples were connected directly to

the insulated sample cells that provide the pressure and temperatures of the sample streams. During testing, the temperature of the absorption cells was set at 191ºC. Elevated temperature prevented gas condensation within the cell and minimized compound adhesion to the cell walls and mirrors. The volume of the absorption cell was 0.5 liters, so at a sample gas flow rate of 10.0 liters per minute, the sample gas in the cell is refreshed at least times each minute. Interferograms consisting of 27 co-added scans were recorded continuously during the test periods, and provided approximately 30-second average concentrations.

**TABLE 4.2**
**ANALYTICAL INSTRUMENTATION**

| Parameter | Manufacturer and Model | Range | Sensitivity | Detection Principle |
|---|---|---|---|---|
| NOx | THERMO 42 series | User may select up to 5,000 ppm | 0.1 ppm | Thermal reduction of $NO_2$ to NO. Chemiluminescence of reaction of NO with $O_3$. Detection by PMT. Inherently linear for listed ranges. |
| CO | THERMO 48 series | User may select up to 10,000 ppm | 0.1 ppm | Infrared absorption, gas filter correlation detector, microprocessor-based linearization. |
| $CO_2$ | SERVOMEX 1440 | 0-20% | 0.1% | Nondispersive infrared |
| $NH_3$ | MKS 2030 | User may select from multiple ranges | 0.1 ppm | Fourier Transform Infrared – FTIR |
| VOC | VIG 210 | User may select up to 10,000 ppm | 0.1 ppm | Flame Ionization Detector |
| $O_2$ | SERVOMEX 1440 | 0-25% | 0.1% | Paramagnetic cell, inherently linear. |

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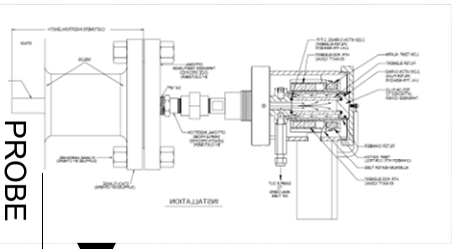
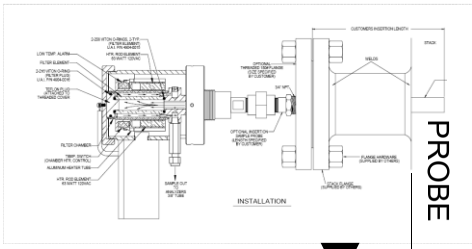



LEGEND
- Heated Teflon Tubing (pre-conditioned sample)
- Unheated Teflon Tubing (conditioned sample)
- Diluted Calibration Gas
- Calibration Gas
- Electronic Input/Output




PROCESS INLET OR 2ND STACK

dual line heated sample umbilical

STACK EXHAUST

TEST TRAILER EXTERIOR

TEST TRAILER INTERIOR

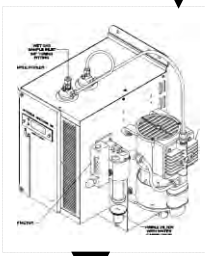
DATA RECORDER



COMPUTER



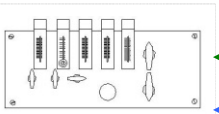
GAS CONDITIONER



dual line heated sample umbilical

MOBILE SECONDARY ANALYZERS

MANIFOLD





GAS DILUTER

THC, VOC



$O_2$, $CO_2$, NOx, CO, $SO_2$



HOT/WET ANALYZERS
COLD/DRY ANALYZERS

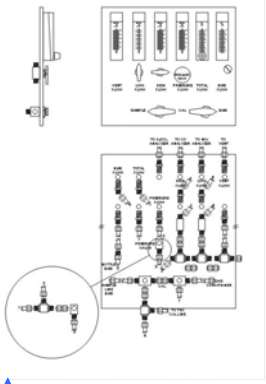


COLD/DRY ANALYZERS HOT/WET



$O_2$, $CO_2$, NOx, CO, $SO_2$

FLOW CONTROL MANIFOLD





FTIR

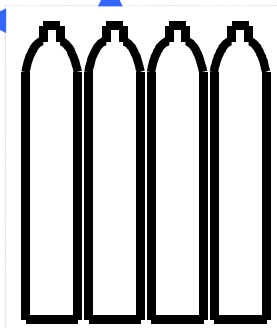
THC, VOC



CONDITIONER

VENT

CALIBRATION/ BIAS GAS BOTTLES



VENT

FIXED PRIMARY ANALYZERS

Shown fully equipped. Some labs may not contain these features and others may contain additional features specific to certain scopes.

AIR HYGIENE

Figure 4.1
EMISSIONS TESTING LAB

1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
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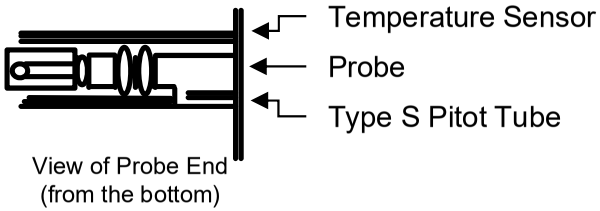



Wet Chemistry Assembly
(photo)

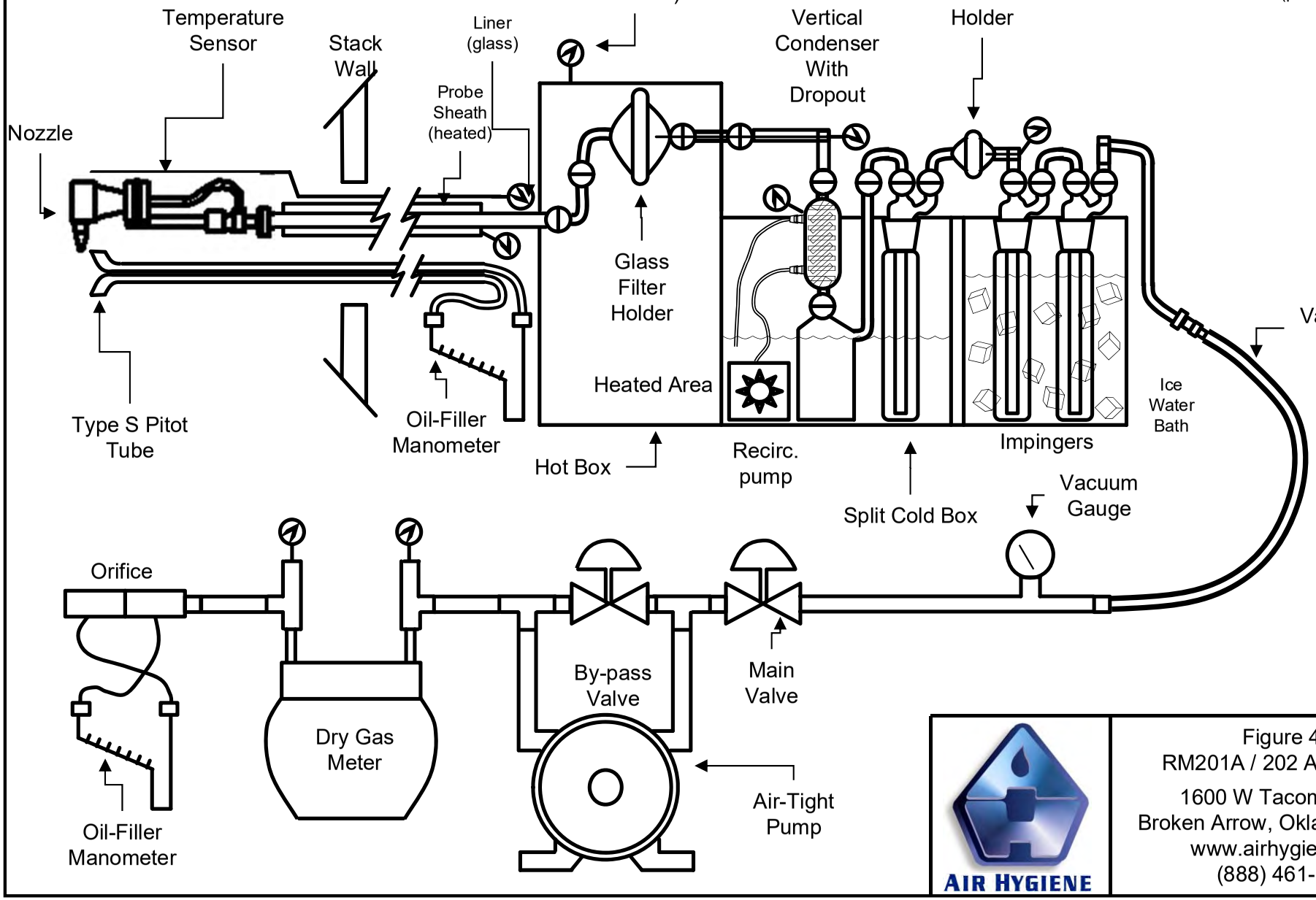


Figure 4.2
RM201A / 202 ASSEMBLY

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(888) 461-8778

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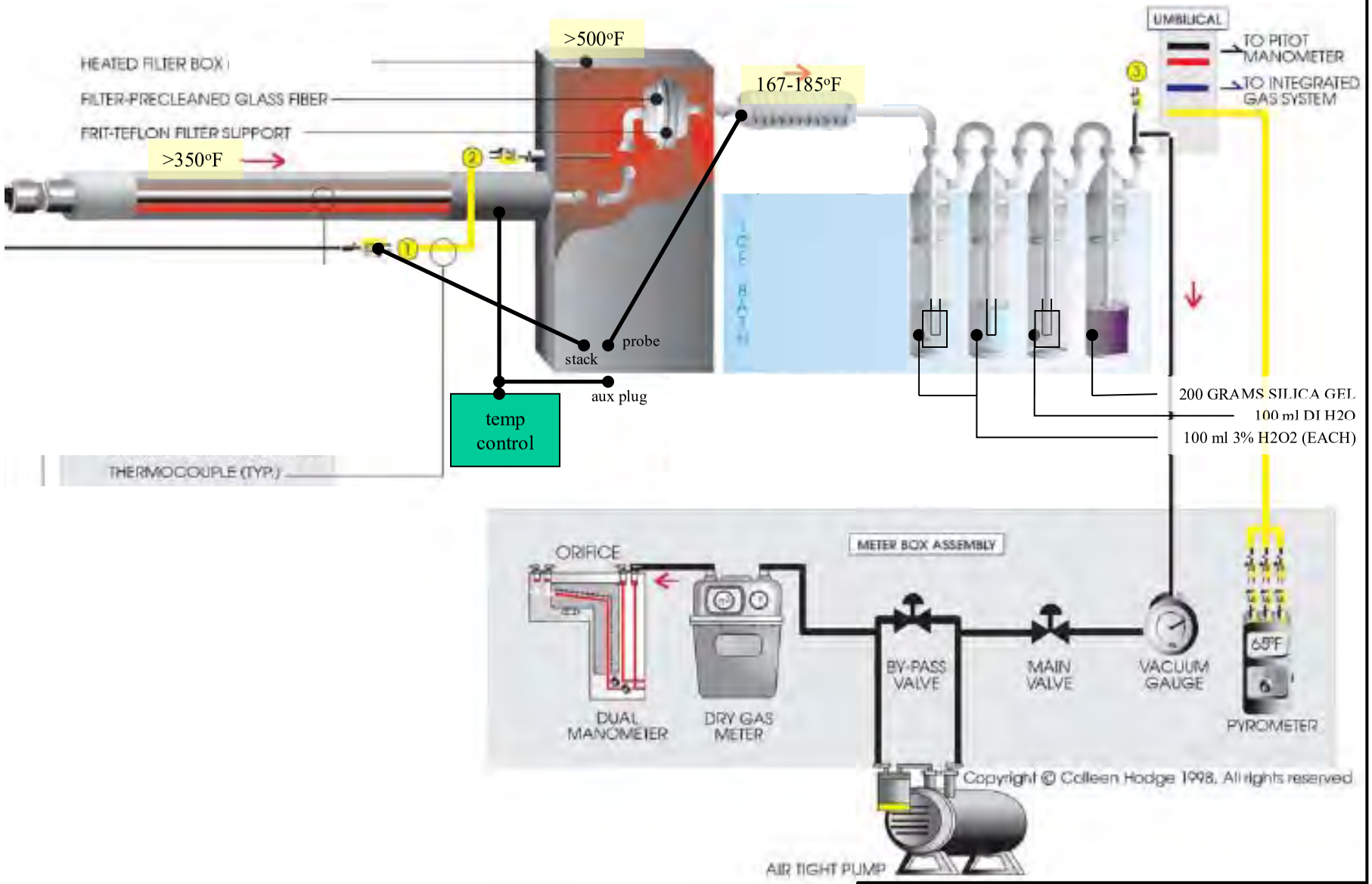


TEST NOTES:
10 LPM SAMPLE FLOW
Delta H @ 0.35 IS ABOUT 10 LPM ON STANDARD CONSOLE
15 MIN AMBIENT AIR PURGE

Figure 4.3
METHOD 8A ASSEMBLY

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Broken Arrow, Oklahoma 74012
www.airhygiene.com
(888) 461-8778

# APPENDIX A

# TEST RESULTS AND CALCULATIONS

**TABLE A.1: EMISSIONS TESTING SCHEDULE**

| Unit | Load | Component | Run | Date | Start | Stop | Time Sync | Duration |
|---|---|---|---|---|---|---|---|---|
| U-00001 | Base | Stratification Test | Base-1 | 02/05/20 | 14:35 | 16:38 | DAHS | 02:03 |
| U-00001 | Base | Cyclonic Flow Check | PM U-00001 Base-V1 | 02/16/20 | 08:00 | 08:41 | DAHS | 00:41 |
| U-00001 | Base | NOx, CO, VOC, $NH_3$ | 1-1 | 02/17/20 | 13:35 | 14:34 | DAHS | 01:00 |
| U-00001 | Base | NOx, CO, VOC, $NH_3$ | 1-2 | 02/17/20 | 14:50 | 15:49 | DAHS | 01:00 |
| U-00001 | Base | NOx, CO, VOC, $NH_3$ | 1-3 | 02/17/20 | 16:00 | 16:59 | DAHS | 01:00 |
| U-00001 | Base | Opacity | Op-1-1 | 02/17/20 | 12:30 | 13:30 | DAHS | 01:00 |
| U-00001 | Base | Opacity | Op-1-2 | 02/17/20 | 13:32 | 14:32 | DAHS | 01:00 |
| U-00001 | Base | Opacity | Op-1-3 | 02/17/20 | 14:35 | 15:35 | DAHS | 01:00 |
| U-00001 | Base | $PM_{10}$ | PM U-00001 Base-1 | 02/17/20 | 17:02 | 22:11 | DAHS | 05:09 |
| U-00001 | Base | $PM_{10}$ | PM U-00001 Base-2 | 02/17/20 | 23:05 | 04:05 | DAHS | 05:00 |
| U-00001 | Base | $PM_{10}$ | PM U-00001 Base-3 | 02/19/20 | 14:25 | 18:27 | DAHS | 04:02 |
| U-00001 | Base | SAM | SAM U-00001 Base-1 | 02/18/20 | 02:03 | 04:03 | DAHS | 02:00 |
| U-00001 | Base | SAM | SAM U-00001 Base-2 | 02/18/20 | 04:57 | 06:57 | DAHS | 02:00 |
| U-00001 | Base | SAM | SAM U-00001 Base-3 | 02/19/20 | 14:32 | 16:32 | DAHS | 02:00 |
| U-00001 | Base+DB | Stratification Test | BaseDB-1 | 02/18/20 | 10:19 | 12:01 | DAHS | 01:42 |
| U-00001 | Base+DB | Cyclonic Flow Check | PM U-00001 Base+DB-V1 | 02/18/20 | 13:50 | 14:12 | DAHS | 00:22 |
| U-00001 | Base+DB | NOx, CO, VOC, $NH_3$ | 2-1 | 02/19/20 | 04:25 | 05:24 | DAHS | 01:00 |
| U-00001 | Base+DB | NOx, CO, VOC, $NH_3$ | 2-2 | 02/19/20 | 05:33 | 06:32 | DAHS | 01:00 |
| U-00001 | Base+DB | NOx, CO, VOC, $NH_3$ | 2-3 | 02/19/20 | 06:41 | 07:40 | DAHS | 01:00 |
| U-00001 | Base+DB | Opacity | Op-2-1 | 02/19/20 | 11:00 | 12:00 | DAHS | 01:00 |
| U-00001 | Base+DB | Opacity | Op-2-2 | 02/19/20 | 12:02 | 13:02 | DAHS | 01:00 |
| U-00001 | Base+DB | Opacity | Op-2-3 | 02/19/20 | 13:04 | 14:02 | DAHS | 00:58 |
| U-00001 | Base+DB | $PM_{10}$ | PM U-00001 Base+DB-1 | 02/18/20 | 14:55 | 19:04 | DAHS | 04:09 |
| U-00001 | Base+DB | $PM_{10}$ | PM U-00001 Base+DB-2 | 02/19/20 | 04:24 | 08:15 | DAHS | 03:51 |
| U-00001 | Base+DB | $PM_{10}$ | PM U-00001 Base+DB-3 | 02/19/20 | 09:14 | 13:51 | DAHS | 04:37 |
| U-00001 | Base+DB | SAM | SAM U-00001 Base+DB-1 | 02/18/20 | 14:40 | 16:40 | DAHS | 02:00 |
| U-00001 | Base+DB | SAM | SAM U-00001 Base+DB-2 | 02/19/20 | 04:09 | 06:09 | DAHS | 02:00 |
| U-00001 | Base+DB | SAM | SAM U-00001 Base+DB-3 | 02/19/20 | 07:26 | 09:26 | DAHS | 02:00 |
| U-00001 | Base+DB & Aux Boiler | Opacity | Op-3-1 | 03/06/20 | 12:50 | 13:50 | DAHS | 01:00 |
| U-00001 | Base+DB & Aux Boiler | Opacity | Op-3-2 | 03/06/20 | 13:50 | 14:50 | DAHS | 01:00 |
| U-00001 | Base+DB & Aux Boiler | Opacity | Op-3-3 | 03/06/20 | 14:50 | 15:50 | DAHS | 01:00 |

# TEST RESULTS AND CALCULATIONS

## Emissions Results
## Base Load
## NOx, CO, VOC, and $NH_3$

## GENERAL ELECTRIC, 7F.05, UNIT #U-00001 BASE LOAD DATA SUMMARY

| Parameter | Base Load, Run - 1-1 | Base Load, Run - 1-2 | Base Load, Run - 1-3 | Average |
|---|---|---|---|---|
| **Date (mm/dd/yy)** | 02/17/20 | 02/17/20 | 02/17/20 | 02/17/20 |
| **Start Time (hh:mm:ss)** | 13:35:04 | 14:50:04 | 16:00:04 | 13:35:04 |
| **End Time (hh:mm:ss)** | 14:34:34 | 15:49:34 | 16:59:34 | 16:59:34 |
| **Run Duration (min / run)** | 60 | 60 | 60 | 60 |
| **Bar. Pressure (in. Hg)** | 30.28 | 30.28 | 30.30 | 30.29 |
| **Amb. Temp. (°F)** | 43 | 43 | 45 | 44 |
| **Rel. Humidity (%)** | 41 | 40 | 39 | 40 |
| **Spec. Humidity (lb water / lb air)** | 0.002353 | 0.002295 | 0.002414 | 0.002354 |
| **$NH_3$ Flow Rate (lb/hr)** | 169.8 | 164.8 | 172.3 | 169.0 |
| **Turbine Fuel Flow (lb/min)** | 1,673 | 1,673 | 1,678 | 1,674 |
| **Duct Burner Fuel Flow (lb/min)** | 0 | 0 | 0 | 0 |
| **Total Fuel Flow (SCFH)** | 2,260,589 | 2,261,296 | 2,267,876 | 2,263,253 |
| **Stack Flow (RM19) (SCFH)** | 51,893,455 | 51,868,559 | 52,178,300 | 51,980,105 |
| **Stack Moisture (% Method 4)** | 5.8 | 5.8 | 5.8 | 5.8 |
| **Heat Input (MMBtu/hr)** | 2,303.3 | 2,304.0 | 2,310.7 | 2,306.0 |
| **CT Power Output (megawatts)** | 240.4 | 240.4 | 241.3 | 240.7 |
| **NOx (ppmvd)** | 2.45 | 2.34 | 2.43 | 2.40 |
| **NOx (ppm@15%$O_2$)** | 1.80 | 1.72 | 1.79 | 1.77 |
| **CO (ppmvd)** | 0.31 | 0.40 | 0.02 | 0.24 |
| **CO (ppm@15%$O_2$)** | 0.23 | 0.30 | 0.01 | 0.18 |
| **VOC (as C1) (ppmvd)** | 0.57 | 0.27 | 0.02 | 0.29 |
| **VOC (as C1) (ppm@15%$O_2$)** | 0.42 | 0.20 | 0.02 | 0.21 |
| **Fuel Sulfur (grains / 100 scf)** | 0.11 | 0.11 | 0.11 | 0.11 |
| **$CO_2$ (%)** | 4.82 | 4.81 | 4.79 | 4.80 |
| **$O_2$ (%)** | 12.88 | 12.88 | 12.90 | 12.89 |

# Calculations, Formulas, and Constants

The following information supports the spreadsheets for this testing project.

## Given Data:

Ideal Gas Conversion Factor = 385.23 SCF/lb-mol at 68 deg F & 14.696 psia

Fuel Heating Value is based upon Air Hygiene's fuel gas calculation sheet. All calculations are based upon a correction to 68 deg F & 14.696 psia

High Heating Values (HHV) are used for the Fuel Heating Value, F-Factor, and Fuel Flow Data per EPA requirements.

**ASTM D 3588**

| | |
|---|---|
| Molecular Weight of NOx (lb/lb-mole) = | 46.01 |
| Molecular Weight of CO (lb/lb-mole) = | 28.00 |
| Molecular Weight of $SO_2$ (lb/lb-mole) = | 64.00 |
| Molecular Weight of THC (propane) (lb/lb-mole) = | 44.00 |
| Molecular Weight of VOC (methane) (lb/lb-mole) = | 16.00 |
| Molecular Weight of $NH_3$ (lb/lb-mole) = | 17.03 |
| Molecular Weight of HCHO (lb/lb-mole) = | 30.03 |
| Molecular Weight of $CO_2$ (lb/lb-mole) = | 44.01 |

**40CFR60, App. A., RM 19, Table 19-1**

| | |
|---|---|
| Conversion Constant for NOx = | 0.0000001194351 |
| Conversion Constant for CO = | 0.0000000726839 |
| Conversion Constant for $SO_2$ = | 0.0000001661345 |
| Conversion Constant for THC = | 0.0000001142175 |
| Conversion Constant for VOC (methane) = | 0.0000000415336 |
| Conversion Constant for $NH_3$ = | 0.0000000442074 |
| Conversion Constant for HCHO = | 0.0000000779534 |
| Conversion Constant for $CO_2$ = | 0.0000001142434 |

NOTE: units are lb/ppm*ft$^3$

## Formulas:

1. Corrected Raw Average ($C_{Gas}$), 40CFR60, App. A, RM 7E, Eq. 7E-5 (08/15/06)

$$C_{Gas} = \left(C_{Avg} - C_O\right) \times \left(\frac{C_{MA}}{C_M - C_O}\right)$$

2. Correction to % $O_2$, 40CFR60, App. A, RM 20, Eq. 20-5 (11/26/02)

$$C_{adj} = C_{Gas(T\,\mathrm{arg}\,et)} \times \left(\frac{20.9\% - AdjFactor}{20.9\% - C_{Gas(O2)}}\right)$$

3. Correction to % $O_2$ and ISO Conditions

$$C_{ISO} = C_{Adj} \times \sqrt{\frac{P_r}{P_o}} \times e^{(19 \times (H_O - 0.00633))} \times \left(\frac{288}{T_a}\right)^{1.53}$$

4. Method 19 stack exhaust flow (scfh) [ref. EPA EMC FAQ Method 19]

$$Q_S = \left(\frac{FFactor \times Q_f \times HHV}{1{,}000{,}000}\right) \times \left(\frac{20.9\%}{20.9\% - C_{Gas(O2)}}\right)$$

5. Emission Rate in lb/hr

$$E_{lb/hr} = \frac{C_{Gas}}{10^6} \times \frac{Q_S \times MW}{G}$$

6. Emission Rate in tons per year

$$E_{ton/yr} = \frac{E_{lb/hr} \times hr_{year}}{2000}$$

7. Emission Concentration in lb/MMBtu ($O_2$ based)

$$E_{lb/MMBtu} = \frac{C_{Gas} \times F_d Factor \times Conv_C \times 20.9\%}{20.9\% - C_{Gas(O2)}}$$

8. Emission Concentration in g/hp*hr

$$E_{g/hp\cdot hr} = \frac{E_{lb/hr} \times 453.6}{mw \times 1341.022} \; or \; \frac{E_{lb/hr} \times 453.6}{hp}$$

**RM 7E, (08-15-06), 12.1 Nomenclature. The terms used in the equations are defined as follows:**

ACE = Analyzer calibration error, percent of calibration span.
$B_{WS}$ = Moisture content of sample gas as measured by Method 4 or other approved method, percent/100.
$C_{Avg}$ = Average unadjusted gas concentration indicated by data recorder for the test run.
$C_D$ = Pollutant concentration adjusted to dry conditions.
$C_{Dir}$ = Measured concentration of a calibration gas (low, mid, or high) when introduced in direct calibration mode.
$C_{Gas}$ = Average effluent gas concentration adjusted for bias.
$C_M$ = Average of initial and final system calibration bias (or 2-point system calibration error) check responses for the upscale calibration gas.
$C_{MA}$ = Actual concentration of the upscale calibration gas, ppmv.
$C_O$ = Average of the initial and final system calibration bias (or 2-point system calibration error) check responses from the low-level (or zero) calibration gas.
$C_S$ = Measured concentration of a calibration gas (low, mid, or high) when introduced in system calibration mode.
$C_{SS}$ = Concentration of NOx measured in the spiked sample.
$C_{Spike}$ = Concentration of NOx in the undiluted spike gas.
$C_{Calc}$ = Calculated concentration of NOx in the spike gas diluted in the sample.
$C_V$ = Manufacturer certified concentration of a calibration gas (low, mid, or high).
$C_W$ = Pollutant concentration measured under moist sample conditions, wet basis.
CS = Calibration span.
D = Drift assessment, percent of calibration span.
$E_p$ = The predicted response for the low-level and mid-level gases based on a linear response line between the zero and high-level response.
$Eff_{NO2}$ = $NO_2$ to NO converter efficiency, percent.
H = High calibration gas, designator.
L = Low calibration gas, designator.
M = Mid calibration gas, designator.
NOFinal = The average NO concentration observed with the analyzer in the NO mode during the converter efficiency test in Section 16.2.2.
NOxCorr = The NOx concentration corrected for the converter efficiency.
NOxFinal = The final NOx concentration observed during the converter efficiency test in Section 16.2.2.
NOxPeak = The highest NOx concentration observed during the converter efficiency test in Section 16.2.2.
$Q_{Spike}$ = Flow rate of spike gas introduced in system calibration mode, L/min.
$Q_{Total}$ = Total sample flow rate during the spike test, L/min.
R = Spike recovery, percent.
SB = System bias, percent of calibration span.
$SB_i$ = Pre-run system bias, percent of calibration span.
$SB_f$ = Post-run system bias, percent of calibration span.
SB / $D_{Alt}$ = Alternative absolute difference criteria to pass bias and/or drift checks.
SCE = System calibration error, percent of calibration span.
$SCE_i$ = Pre-run system calibration error, percent of calibration span.
$SCE_{final}$ = Post-run system calibration error, percent of calibration span.
Z = Zero calibration gas, designator.

**40CFR60.355(b)(1), (09-20-06), Nomenclature. The terms used in the equations are defined as follows:**

$P_r$ = reference combustor inlet absolute pressure at 101.3 kilopascals ambient pressure, mm Hg
$P_o$ = observed combustor inlet absolute pressure at test, mm Hg
$H_o$ = observed humidity of ambient air, g $H_2O$/g air
e = transcendental constant, 2.718
$T_a$ = ambient temperature, K

**Small Engine and FTIR Nomenclature. The terms used in the equations are defined as follows:**

bhp = brake horsepower
hp = horsepower
$Q_{sys}$ = system flow (lpm)
$Q_m$ = matrix spike flow (lpm)

**RM 19, (07-29-06), 12.1 Nomenclature. The terms used in the equations are defined as follows:**

AdjFactor = Percent oxygen or carbon dioxide adjustment applied to a target pollutant
$B_{wa}$ = Moisture fraction of ambient air, percent.
Btu = British thermal unit
$\%_C$ = Concentration of carbon from an ultimate analysis of fuel, weight percent.
$\%_{CO2d}$,$\%_{CO2w}$ = Concentration of carbon dioxide on a dry and wet basis, respectively, percent.
CIP / CDP = Combustor inlet pressure / compressor discharge pressure (mm Hg); note, some manufactures reference as PCD.
E = Pollutant emission rate, ng/J (lb/million Btu).
$E_a$ = Average pollutant rate for the specified performance test period, ng/J (lb/million Btu).
$E_{ao}$, $E_{ai}$ = Average pollutant rate of the control device, outlet and inlet, respectively, for the performance test period, ng/J (lb/million Btu).
$E_{bi}$ = Pollutant rate from the steam generating unit, ng/J (lb/million Btu).
$E_{bo}$ = Pollutant emission rate from the steam generating unit, ng/J (lb/million Btu).
$E_{ci}$ = Pollutant rate in combined effluent, ng/J (lb/million Btu).
$E_{co}$ = Pollutant emission rate in combined effluent, ng/J (lb/million Btu).
$E_d$ = Average pollutant rate for each sampling period (e.g.,24-hr Method 6B sample or 24-hr fuel sample) or for each fuel lot (e.g., amount of fuel bunkered), ng/J (lb/million Btu).
$E_{di}$ = Average inlet $SO_2$ rate for each sampling period d, ng/J (lb/million Btu).
$E_g$ = Pollutant rate from gas turbine, ng/J (lb/million Btu).
$E_{ga}$ = Daily geometric average pollutant rate, ng/J (lbs/million Btu) or ppm corrected to 7 percent $O_2$.
$E_{jo}$,$E_{ji}$ = Matched pair hourly arithmetic average pollutant rate, outlet and inlet, respectively, ng/J (lb/million Btu) or ppm corrected to 7 percent $O_2$.
$E_h$ = Hourly average pollutant, ng/J (lb/million Btu).
$E_{hj}$ = Hourly arithmetic average pollutant rate for hour "j," ng/J (lb/million Btu) or ppm corrected to 7 percent $O_2$.
EXP = Natural logarithmic base (2.718) raised to the value enclosed by brackets.
Fc = Ratio of the volume of carbon dioxide produced to the gross calorific value of the fuel from Method 19
$F_d$, $F_w$, $F_c$ = Volumes of combustion components per unit of heat content, scm/J (scf/million Btu).
$ft^3$ = cubic feet
G = ideal gas conversion factor
(385.23 SCF/lb-mol at 68 deg F & 14.696 psia)
GCM = gross Btu per SCF (constant, compound based)
GCV = Gross calorific value of the fuel consistent with the ultimate analysis, kJ/kg (Btu/lb).
$GCV_p$, $GCV_r$ = Gross calorific value for the product and raw fuel lots, respectively, dry basis, kJ/kg (Btu/lb).
$\%_H$ = Concentration of hydrogen from an ultimate analysis of fuel, weight percent.
$H_b$ = Heat input rate to the steam generating unit from fuels fired in the steam generating unit, J/hr (million Btu/hr).
$H_g$ = Heat input rate to gas turbine from all fuels fired in the gas turbine, J/hr (million Btu/hr).
$\%_{H2O}$ = Concentration of water from an ultimate analysis of fuel, weight percent.
$H_r$ = Total numbers of hours in the performance test period (e.g., 720 hours for 30-day performance test period).
K = volume of combustion component per pound of component (constant)
K = Conversion factor, $10^{-5}$ (kJ/J)/(%) [$10^6$ Btu/million Btu].
$K_c$ = (9.57 scm/kg)/% [(1.53 scf/lb)/%].
$K_{cc}$ = (2.0 scm/kg)/% [(0.321 scf/lb)/%].
$K_{hd}$ = (22.7 scm/kg)/% [(3.64 scf/lb)/%].
$K_{hw}$ = (34.74 scm/kg)/% [(5.57 scf/lb)/%].
$K_n$ = (0.86 scm/kg)/% [(0.14 scf/lb)/%].
$K_o$ = (2.85 scm/kg)/% [(0.46 scf/lb)/%].
$K_s$ = (3.54 scm/kg)/% [(0.57 scf/lb)/%].
$K_{sulfur}$ = $2x10^4$ Btu/wt%-MMBtu
$K_w$ = (1.30 scm/kg)/% [(0.21 scf/lb)/%].
lb = pound
ln = Natural log of indicated value.
$L_p$,$L_r$ = Weight of the product and raw fuel lots, respectively, metric ton (ton).
$\%_N$ = Concentration of nitrogen from an ultimate analysis of fuel, weight percent.
$M_{\%}$ = mole percent
mol = mole
MW = molecular weight (lb/lb-mol)
$MW_{AIR}$ = molecular weight of air ( 28.9625 lb/lb-mole)[1]
NCM = net Btu per SCF (constant based on compound)
$\%_O$ = Concentration of oxygen from an ultimate analysis of fuel, weight percent.
$\%_{O2d}$, $\%_{O2w}$ = Concentration of oxygen on a dry and wet basis, respectively, percent.
$P_B$ = barometric pressure, in Hg
$P_s$ = Potential SO2 emissions, percent.
$\%_S$ = Sulfur content of as-fired fuel lot, dry basis, weight percent.
$S_e$ = Standard deviation of the hourly average pollutant rates for each performance test period, ng/J (lb/million Btu).
$\%_{Sf}$ = Concentration of sulfur from an ultimate analysis of fuel, weight percent.
S(wt%) = weight percent of sulfur, per lab analysis by appropriate ASTM standard
$S_i$ = Standard deviation of the hourly average inlet pollutant rates for each performance test period, ng/J (lb/million Btu).
$S_o$ = Standard deviation of the hourly average emission rates for each performance test period, ng/J (lb/million Btu).
$\%S_p$, $\%S_r$ = Sulfur content of the product and raw fuel lots respectively, dry basis, weight percent.
SCF = standard cubic feet
SH = specific humidity, pounds of water per pound of air
$t_{0.95}$ = Values shown in Table 19-3 for the indicated number of data points n.
$T_{amb}$ = ambient temperature, °F
W/D Factor = 1.0236 = conv. at 14.696 psia and
68 deg F (ref. Civil Eng. Ref. Manual, 7th Ed.)
$X_{CO2}$=$CO_2$ Correction factor, percent.
$X_k$ = Fraction of total heat input from each type of fuel k.

**EXAMPLE CALCULATIONS (FFACTOR)**

RM 19, (02-27-14),
2.0 Summary of Method,
2.1 Emission Rates. Oxygen ($O_2$) or carbon dioxide ($CO_2$) concentrations and appropriate F factors (ratios of combustion gas volumes to heat inputs) are used to calculate pollutant emission rates from pollutant concentrations.

RM 19, (02-27-14),
12.2 Emission Rates of PM, $SO_2$, and NOx. Select from the following sections the applicable procedure to compute the PM, $SO_2$, or NOx emission rate (E) in lb/MMBtu. The pollutant concentration must be in lb/scf and the F factor must be in scf/MMBtu. If the pollutant concentration (C) is not in the appropriate units, use Table 19–1 in Section 17.0 to make the proper conversion. An F factor is the ratio of the gas volume of the products of combustion to the heat content of the fuel. The dry F factor ($F_d$) includes all components of combustion less water, the wet F factor ($F_w$) includes all components of combustion, and the carbon F factor ($F_c$) includes only carbon dioxide.

Mark's Std Hdbk, 10th ed.,pg 4-26
**High Heat Value Dry** ($HHV_{dry}$), calc for Methane (single component for the fuel gas)

$$HHV_{dry}(Btu/SCF) = \left[\left(\frac{M_{\%}}{100}\right) \times GCM\right]$$

$HHV_{dry}$ = 93.12 % / 100.00 x 994.85 Btu / SCF = 926.37 Btu / SCF

Mark's Std Hdbk, 10th ed., pg 4-26
**Low Heat Value Dry** ($LHV_{dry}$), calc for Methane (single component for the fuel gas)

$$LHV_{dry}(Btu/SCF) = \left[\left(\frac{M_{\%}}{100}\right) \times NCM\right]$$

$LHV_{dry}$ = 93.12 % / 100.00 x 895.75 Btu / SCF = 834.10 Btu / SCF

Civil Eng. Ref. Man.,7th Ed.,pg 14-9/GPA Ref. Bulletin 181-86, App. C
**High Heat Value Wet** ($HHV_{wet}$), calc for entire sample (all components of the fuel gas)

$$HHV_{wet}(Btu/SCF) = \frac{HHV_{dry}}{W/D.factor}$$

$HHV_{wet}$ = 1,018.89 Btu/SCF / 1.0236 = 995.39 Btu/SCF

Civil Eng. Ref. Man.,7th Ed.,pg 14-9/GPA Ref. Bulletin 181-86, App. C
**Low Heat Value Wet** ($LHV_{wet}$), calc for entire sample (all components of the fuel gas)

$$LHV_{wet}(Btu/SCF) = \frac{LHV_{dry}}{W/D.factor}$$

$LHV_{wet}$ = 918.76 Btu/SCF / 1.0236 = 897.58 Btu/SCF

**Lbs Component per Lb-Mol of Gas** (CM), calc for Methane (single component for the fuel gas)

$$CM(lb/lb-mol) = \left[\left(\frac{M_{\%}}{100}\right) \times MW\right]$$

CM = 93.12 % / 100.00 x 16.04 lb / lb-mol = 14.94 lb/lb-mol

ASTM D 3588
**Fuel Molecular Weight** ($MW_{Fuel}$)

$$MW_{Fuel}(lb/lb \cdot mol) = \left[\sum (CM)\right]$$

$MW_{Fuel}$ = 14.94 lb/lb-mol
\+ 1.48 lb/lb-mol
+ etc. = 17.101 lb/lb-mol

Btu per Lb of Gas Gross (**GCV**)

$$GCV(Btu/lb) = \left[\frac{HHV_{dry} \times G}{MW_{Fuel}}\right]$$

GCV = 1,018.89 Btu/SCF x 385.23 $ft^3$/lbmol / 17.101 lb/lb-mol = 22,952.17 Btu/lb

ASTM D 3588 (SG)
**Specific Gravity**

$$SG = \left[\frac{MW_{Fuel}}{MW_{AIR}}\right]$$

SG = 17.10 lb/lb-mol / 28.96 lb/lb-mol = 0.5905

Btu per Lb of Gas Net (**NCV**)

$$NCV(Btu/lb) = \left[\frac{LHV_{dry} \times G}{MW_{Fuel}}\right]$$

NCV = 918.76 Btu/SCF x 385.23 $ft^3$/lbmol / 17.101 lb/lb-mol = 20,696.74 Btu/lb

**Weight Percent** of Component ($C_{\%}$), methane

$$C_{\%}(\%) = \left[\left(\frac{CM}{MW_{Fuel}}\right) \times 100\right]$$

$C_{\%}$ = 14.94 lb/lb-mol / 17.10 lb/lb-mol x 100 = 87.36 %

**Weight Percent of Volatile Organic Compounds** ($VOC_{\%}$)

$$VOC_{\%}(\%) = \left[\sum_{C_3H_8}^{C_8H_{18}} Wt_{\%}\right]$$

$VOC_{\%}$ = 0.53 % + 0.06 % + 0.06 % + etc. = 0.71 %

RM 19, (02-27-14), 12.3.2 Determined **F Factors**. If the fuel burned is not listed in Table 19–2 or if the owner or operator chooses to determine an F factor rather than use the values in Table 19–2, use the procedure below: 12.3.2.1 Equations. Use the eq

RM 19, (02-27-14),
12.1 Nomenclature

| **K (scf/lb)/%** | |
|---|---|
| H | 3.64 |
| C | 1.53 |
| S | 0.57 |
| $N_2$ | 0.14 |
| $O_2$ | 0.46 |

$$F_d = \frac{K(K_{hd}\%H + K_c\%C + K_s\%S + K_n\%N - K_o\%O)}{GCV} \quad \text{Eq. 19-13}$$

$F_d$ = $10^6$Btu / MMBtu x [ 3.64 SCF / lb · % x 23.82 % + 1.53 SCF / lb · % x 73.22 % + 0.57 SCF / lb · % x 0.00 % + 0.14 SCF / lb · % x 1.69 % - 0.46 SCF / lb · % x 1.27 % ] x lb / 22,952.17 Btu = 8,643.54 SCF / MMBtu

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (INFORMATION)**

**Specific Humidity ($RH_{sp}$)**

Note: RHsp (gr/lb) calculated using temperature, relative humidity, and barometric pressure with psychrometric chart, psychrometric calculator, or built in psychrometric algorithm.

$$RH_{sp}(lb/lb) = \left[\left(\frac{gr}{lb}\right) \times \frac{lb}{7000\,gr}\right]$$

$$RH_{sp} = \frac{16.47\ gr}{lb} \times \frac{1\ lb}{7000\ gr} = 0.002353\ \frac{lb\ H_2O}{lb\ Air}$$

**Fuel Flow Conversion ($Q_f$)**

Note: Qf(lb/min) is a value obtained from the source operator.

$$Q_f = \left[Q_f \times G \times \left(\frac{1}{MW_{Fuel}}\right)\right]$$

$$Q_f = \frac{1{,}672.52\ lb}{min} \times \frac{60\ min}{hr} \times \frac{385.23\ ft^3}{lb\text{-}mol} \times \frac{lb\text{-}mol}{17.10\ lb} = 2{,}260{,}589\ SCFH$$

**Heat Rate (MMBtu/hr)**

$$HR = \frac{HHV_{DRY} \times Q_f}{1{,}000{,}000}$$

$$\text{Heat Rate} = \frac{1{,}018.89\ Btu}{SCF} \times \frac{2{,}260{,}588.57\ SCF}{hr} \times \frac{MMBtu}{10^6\ Btu} = \frac{2{,}303.28\ MMBtu}{hr}$$

**EXAMPLE CALCULATIONS (CALIBRATION)**

**Analyzer Calibration Error**

RM 7E, (02-27-14), 12.2 Analyzer Calibration Error. For non-dilution systems, use Equation 7E-1 to calculate the analyzer calibration error for the low-, mid-, and high-level calibration gases. (calc for NOx analyzer mid gas, if applicable)

$$ACE = \left(\frac{C_{Dir} - C_V}{CS}\right) \times 100 \qquad \text{Eq. 7E-1}$$

$$ACE = \frac{8.73\ ppm - 8.90\ ppm}{17.80\ ppm} \times 100 = -0.96\ \%$$

**Calibration Error and Estimated Point, RM 25A, THC/VOC Analyzer**

RM 25A, (02-27-14), 8.4 Calibration Error Test. Immediately prior to the test series (within 2 hours of the start of the test), introduce zero gas and high-level calibration gas at the calibration valve assembly. Adjust the analyzer output to the appropriate levels, if necessary. Calculate the predicted response for the low-level and mid-level gases based on a linear response line between the zero and high-level response. Then introduce low-level and mid-level calibration gases successively to the measurement system. ... These differences must be less than 5 percent of the respective calibration gas value. (calc for THC/VOC analyzer mid gas, if applicable)

$$E_P = \frac{C_{Dir(H)} - C_{Dir(Z)}}{C_{V(H)} - C_{V(Z)}} \times C_{Dir(M)} + C_{Dir(Z)}$$

Eq. of a line
y=mx+b

$$E_p = \frac{8.89\ ppm - 0.00\ ppm}{8.77\ ppm - 0.00\ ppm} \times 4.90\ ppm + 0.00 = 4.97\ ppm$$

$$ACE = \left(\frac{C_{Dir} - C_V}{CS}\right) \times 100 \qquad \text{Eq. 7E-1}$$

$$ACE_{VOC(} = \frac{5.12\ ppm - 4.97\ ppm}{4.90\ ppm} \times 100 = 3.12\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (BIAS, DRIFT, AND CORRECTED RAW AVERAGE)**

**System Bias**

RM 7E, (02-27-14), 12.3 System Bias. For non-dilution systems, use Equation 7E-2 to calculate the system bias separately for the low-level and upscale calibration gases. (calc for NOx analyzer upscale gas, Run 1 initial bias, if applicable)

$$SB = \left(\frac{C_S - C_{Dir}}{CS}\right) \times 100$$ Eq. 7E-2

SB = $\frac{8.91 \text{ ppm} - 8.73 \text{ ppm}}{17.80 \text{ ppm}}$ x 100 = 1.01 %

**Drift Assessment**

RM 7E, (02-27-14), 12.5 Drift Assessment. Use Equation 7E-4 to separately calculate the low-level and upscale drift over each test run. (calc for NOx analyzer upscale drift, Run 1, if applicable)

$$D = \left|SB_{final} - SB_i\right|$$ Eq. 7E-4

D = | 1.85 % - 1.01 % | = 0.84 %

**Alternative Drift and Bias**

RM 7E, (02-27-14), 13.2 / 13.3 System Bias and Drift. Alternatively, the results are acceptable if |Cs – Cdir| is ≤ 0.5 ppmv or if |Cs – Cv| is ≤ 0.5 ppmv (as applicable). (calc for NOx analyzer initial upscale, Run 1, if applicable)

$$SB / D_{Alt} = \left|C_S - C_{Dir}\right|$$ Eq. Section 13.2 and 13.3

$SB / D_{Alt}$ = | 8.91 ppm - 8.73 ppm | = 0.18 ppm

**Bias Adjusted Average**

RM 7E, (02-27-14), 12.6 Effluent Gas Concentration. For each test run, calculate Cavg, the arithmetic average of all valid NOx concentration values (e.g., 1-minute averages). Then adjust the value of Cavg for bias, using Equation 7E-5b. (calc for NOx analyzer, Run 1, if applicable)

$$C_{Gas} = \left(C_{Avg} - C_O\right) \times \left(\frac{C_{MA}}{C_M - C_O}\right)$$ Eq. 7E-5b

$C_{Gas}$ = $\left(2.48 \text{ ppm} - 0.02 \text{ ppm}\right)$ $\left(\frac{8.90 \text{ ppm}}{8.99 \text{ ppm} - 0.02 \text{ ppm}}\right)$ = 2.45 ppm

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (RUNS)**

**Moisture Correction**

RM 7E, (02-27-14), 12.10 Moisture Correction. Use Equation 7E-10 if your measurements need to be corrected to a dry basis. (calc for NOx analyzer, Run 1, if applicable) Note: Calculations may not match as Run 1 results are typically also bias adjusted

$$C_D = \frac{C_W}{1 - B_{WS}}$$ Eq. 7E-10

$C_D$ = $\frac{2.31 \text{ ppmvw}}{1 - 0.06}$ = 2.45 ppmvd or inversely, $C_W = C_D \times \left(1 - B_{WS}\right)$

$C_W$ = 2.45 ppmvd x $\left(1 - 0.06\right)$ = 2.31 ppmvw

**Diluent-Corrected Pollutant Concentration, $O_2$ Based**

RM 20, (11-26-02), 7.3.1 Correction of Pollutant Concentration Using $O_2$ Concentration. Calculate the $O_2$ corrected pollutant concentration, as follows: (calc for NOx gas, Run 1, if applicable) [now contained in applicable Subpart]

$$C_{adj} = C_{Gas(Target)} \times \left(\frac{20.9\% - AdjFactor}{20.9\% - C_{Gas(O2)}}\right)$$ Eq. 20-4

$C_{adj}$ = 2.45 ppm x $\left(\frac{20.9\% - 15.00\ \%}{20.9\% - 12.88\ \%}\right)$ = 1.80 ppm@15%$O_2$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

# TEST RESULTS AND CALCULATIONS

## Emissions Results
## Base Load
## $PM_{10}$

## METHOD 201A (FRONT) AND 202 (BACK) - RESULTS

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base |
| **Project #** | bec-19-cricketvalley.ny-start#1 |

| **Historical Data** | PM U-00001 Base-1 | PM U-00001 Base-2 | PM U-00001 Base-3 | **Average** | **Units** | **Limits** |
|---|---|---|---|---|---|---|
| Run Start Time | 17:02 | 23:05 | 14:25 | | hh:mm | |
| Run Stop Time | 22:11 | 04:05 | 18:27 | | hh:mm | |
| Test Date | 02/17/20 | 02/17/20 | 02/19/20 | | mm/dd/yy | |
| Load | Base | Base | Base | | % or w/DB | -- |
| Meter Calibration Factor | 0.974 | 0.974 | 0.974 | | | |
| Pitot Tube Coefficient | 0.7240 | 0.7240 | 0.7240 | | | |
| Average Nozzle Diameter | 0.156 | 0.156 | 0.156 | | in | |
| **Stack Test Data** | PM U-00001 Base-1 | PM U-00001 Base-2 | PM U-00001 Base-3 | **Average** | **Units** | **Limits** |
| Initial Meter Volume | 328.160 | 469.310 | 283.800 | | $ft^3$ | |
| Final Meter Volume | 433.050 | 572.890 | 386.090 | | $ft^3$ | |
| Total Meter Volume | 104.890 | 103.580 | 102.290 | 103.587 | $ft^3$ | |
| Total Sampling Time | 267.75 | 268.75 | 263.25 | 266.58 | min | |
| Average Meter Temperature | 67.17 | 65.17 | 75.08 | 69.14 | °F | |
| Average Stack Temperature | 189.58 | 189.75 | 183.83 | 187.72 | °F | |
| Barometric Pressure | 29.98 | 29.88 | 30.12 | 29.99 | in Hg | |
| Stack Static Pressure | 0.95 | 0.95 | 0.95 | 0.95 | in $H_2O$ | |
| Absolute Stack Pressure | 30.05 | 29.95 | 30.19 | 30.06 | in Hg | |
| Average Orifice Pressure Drop | 0.46 | 0.46 | 0.46 | 0.46 | in $H_2O$ | |
| Absolute Meter Pressure | 30.12 | 30.02 | 30.26 | 30.13 | in Hg | |
| Avg Square Root Pitot Pressure | 1.16 | 1.16 | 1.14 | 1.15 | $\sqrt{(in\ H_2O)}$ | |
| **Moisture Content Data** | PM U-00001 Base-1 | PM U-00001 Base-2 | PM U-00001 Base-3 | **Average** | **Units** | **Limits** |
| Impinger Water Weight Gain | 116.60 | 141.10 | 136.80 | 131.50 | g | |
| Silica Gel Weight Gain | 16.60 | 12.30 | 11.50 | 13.47 | g | |
| Total Water Volume Collected | 133.44 | 153.68 | 148.57 | 145.23 | ml | |
| Standard Water Vapor Volume | 6.28 | 7.23 | 6.99 | 6.84 | scf | |
| Standard Meter Volume | 102.6 | 101.4 | 99.1 | 101.0 | dscf | |
| Standard Metric Meter Volume | 2.9 | 2.9 | 2.8 | 2.9 | dscm | |
| Calculated Stack Moisture | 5.77 | 6.66 | 6.59 | 6.34 | % | |
| Saturated Stack Moisture | 62.60 | 63.04 | 55.00 | 60.22 | % | |
| Reported Stack Moisture Content | 5.77 | 6.66 | 6.59 | 6.34 | % | |
| **Gas Analysis Data** | PM U-00001 Base-1 | PM U-00001 Base-2 | PM U-00001 Base-3 | **Average** | **Units** | **Limits** |
| Carbon Dioxide Content | 4.9 | 4.8 | 4.8 | 4.8 | % | |
| Oxygen Content | 12.7 | 12.8 | 12.8 | 12.8 | % | |
| Carbon Monoxide Content | 0.0 | 0.0 | 0.0 | 0.0 | ppm | |
| Nitrogen Content | 82.4 | 82.4 | 82.4 | 82.4 | % | |
| Stack Dry Molecular Weight | 29.29 | 29.28 | 29.28 | 29.28 | lb/lb-mole | |
| Stack Wet Molecular Weight | 28.64 | 28.53 | 28.54 | 28.57 | lb/lb-mole | |
| Calculated Fuel Factor | 1.673 | 1.688 | 1.688 | 1.683 | | |
| Fuel F-Factor | 8643.54 | 8643.54 | 8642.95 | 8643.34 | dscf/MMBtu | |
| Percent Excess Air | 140.3 | 143.0 | 143.0 | 142.1 | % | |

## METHOD 201A (FRONT) AND 202 (BACK) - RESULTS

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base |
| **Project #** | bec-19-cricketvalley.ny-start#1 |

| **Volumetric Flow Rate Data** | PM U-00001 Base-1 | PM U-00001 Base-2 | PM U-00001 Base-3 | **Average** | **Units** | **Limits** |
|---|---|---|---|---|---|---|
| Average Stack Gas Velocity | 62.27 | 62.69 | 60.79 | 61.92 | ft/sec | |
| Stack Cross-Sectional Area | 283.53 | 283.53 | 283.53 | 283.53 | ft² | |
| Actual Stack Flow Rate | 1,059,379 | 1,066,428 | 1,034,195 | 1,053,334 | acfm | |
| Wet Standard Stack Flow Rate | 51,890 | 52,048 | 51,347 | 51,762 | wkscfh | |
| Dry Standard Stack Flow Rate | 48,897,988 | 48,582,890 | 47,962,021 | 48,480,966 | dscfh | |
| Percent of Isokinetic Rate | 100.7 | 99.6 | 100.8 | 100.4 | % | |
| **Gravimetric Analysis** | PM U-00001 Base-1 | PM U-00001 Base-2 | PM U-00001 Base-3 | **Average** | **Units** | **Limits** |
| $NH_4OH$ Correction | 0.0000 | 0.0000 | 0.0000 | 0.0000 | ml | |
| $NH_4OH$ Correction | 0.0000 | 0.0000 | 0.0000 | 0.0000 | mg | |
| **Emission Rate Data** | PM U-00001 Base-1 | PM U-00001 Base-2 | PM U-00001 Base-3 | **Average** | **Units** | **Limits** |
| Total $PM_{10}$ Mass | 7.50 | 9.30 | 6.10 | 7.63 | mg | -- |
| Total $PM_{10}$ Concentration | 7.31E-05 | 9.17E-05 | 6.16E-05 | 7.54E-05 | g/dscf | -- |
| | 1.13E-03 | 1.42E-03 | 9.50E-04 | 1.16E-03 | gr/dscf | -- |
| Total $PM_{10}$ Emission Rate | 3.57 | 4.46 | 2.95 | 3.66 | kg/hr | -- |
| | 7.88 | 9.82 | 6.51 | 8.07 | lb/hr | -- |
| | 34.50 | 43.02 | 28.51 | 35.35 | tpy | -- |
| | 0.0035 | 0.0045 | 0.0030 | 0.0037 | lb/MMBtu | 0.005 |
| Filterable $PM_{10}$ Mass | 3.30 | 4.70 | 3.50 | 3.83 | mg | -- |
| Filterable $PM_{10}$ Concentration | 3.21E-05 | 4.63E-05 | 3.53E-05 | 3.79E-05 | g/dscf | -- |
| | 4.96E-04 | 7.15E-04 | 5.45E-04 | 5.86E-04 | gr/dscf | -- |
| Filterable $PM_{10}$ Emission Rate | 1.57 | 2.25 | 1.69 | 1.84 | kg/hr | -- |
| | 3.47 | 4.96 | 3.74 | 4.06 | lb/hr | -- |
| | 15.18 | 21.74 | 16.36 | 17.76 | tpy | -- |
| | 0.0016 | 0.0023 | 0.0017 | 0.0019 | lb/MMBtu | -- |
| Condensable $PM_{10}$ Mass | 4.20 | 4.60 | 2.60 | 3.80 | mg | -- |
| Condensable $PM_{10}$ Concentration | 4.09E-05 | 4.54E-05 | 2.62E-05 | 3.75E-05 | g/dscf | -- |
| | 6.31E-04 | 7.00E-04 | 4.05E-04 | 5.79E-04 | gr/dscf | -- |
| Condensable $PM_{10}$ Emission Rate | 2.00 | 2.20 | 1.26 | 1.82 | kg/hr | -- |
| | 4.41 | 4.86 | 2.77 | 4.01 | lb/hr | -- |
| | 19.32 | 21.28 | 12.15 | 17.58 | tpy | -- |
| | 0.0020 | 0.0022 | 0.0013 | 0.0018 | lb/MMBtu | -- |
| **RM 201A Quality Control** | PM U-00001 Base-1 | PM U-00001 Base-2 | PM U-00001 Base-3 | **Average** | **Units** | **Limits** |
| Stack Viscosity | 204.09 | 203.35 | 202.01 | 203.15 | µP | |
| Cyclone Flow Rate | 0.498 | 0.497 | 0.487 | 0.494 | ft³/min | |
| Dry Gas Sampling Rate | 0.383 | 0.377 | 0.376 | 0.379 | dscfm | |
| Reynolds Number | 2795.22 | 2776.75 | 2786.81 | 2,786.26 | | |
| Recalculated Cunninham | 1.079 | 1.079 | 1.077 | 1.079 | | |
| Dia. of 50% Prob. (D50) CI | 10.49 | 10.50 | 10.56 | 10.52 | | |
| Recalculated D50-1 for CIV | 2.32 | 2.33 | 2.35 | 2.33 | | |
| Z | 1.00 | 1.00 | 1.00 | 1.00 | | |
| No. Sampling Pts. Outside Δp | 0 | 0 | 0 | 0 | points | |

## Nomenclature

- %CO = carbon monoxide concentration (%)
- $\%CO_2$ = carbon dioxide concentration (%)
- $\%N_2$ = nitrogen concentration (%)
- $\%O_2$ = oxygen concentration (%)
- $\%O_{2,wet}$ = Oxygen content of gas stream, % by volume of wet gas. (Note: The oxygen percentage used in Method 201A, Equation 3 is on a wet gas basis. That means that since oxygen is typically measured on a dry gas basis, the measured percent O2 must be multiplied by the quantity (1 - $B_{ws}$) to convert to the actual volume fraction. Therefore, $\%O_{2,wet} = (1 - B_{ws}) * \%O_{2,\,dry}$)
- $(\%EA)_{avg}$ = average excess air (%)
- $(F_o)_{avg}$ = average calculated fuel factor
- $[(\Delta p)^{0.5}]_{avg}$ = Average of square roots of the velocity pressures measured during the preliminary traverse, inches W.C.
- μ = Gas viscosity, micropoise
- 12.0 = Constant calculated as 60 percent of 20.5 square inch cross-sectional area of combined cyclone head, square inches
- 17.03 = mg/milliequivalents for ammonium ion
- 22.4 = liters of ideal gas per lb-mol of substance at $0^oC$ and 1 atm (ref. Civil Engineering Reference Manual, 7th ed. - Michael R. Lindeburg)
- 24.04 = liters of ideal gas per lb-mol of substance at $20^oC$ and 1 atm (ref. Civil Engineering Reference Manual, 7th ed. - Michael R. Lindeburg)
- $5.02 \times 10^4$ = constant derived from the molecular weight and correcting standard temperature and pressure (ref. Bay Area Air Quality Management District, Source Test Procedure ST-1B, Ammonia Integrated Sampling, Adopted January 20, 1982, Regulation 7-303)
- A = distance upstream (in.)
- $A_D$ = stack diameters upstream (dia.)
- An = Area of nozzle, square feet
- $A_s$ = area of stack ($ft^2$)
- B = distance downstream (in.)
- $B_D$ = stack diameters downstream (dia.)
- $b_f$ = Average blockage factor calculated in Equation 26, dimensionless
- $B_{wm}$ = meter moisture content (%)
- $B_{ws}$ = stack moisture content (%)
- C = Cunningham correction factor for particle diameter, Dp, and calculated using the actual stack gas temperature, dimensionless
- $C_1$ = -150.3162 (micropoise)
- $C_2$ = 18.0614 (micropoise/$K^{0.5}$) = 13.4622 (micropoise/$R^{0.5}$)
- $C_3$ = $1.19183 \times 10^6$ (micropoise/$K^2$) = $3.86153 \times 10^6$ (micropoise/$R^2$)
- $C_4$ = 0.591123 (micropoise)
- $C_5$ = 91.9723 (micropoise)
- $C_6$ = $4.91705 \times 10^{-5}$ (micropoise/$K^2$) = $1.51761 \times 10^{-5}$ (micropoise/$R^2$)
- $C_a$ = Acetone blank concentration, mg/mg
- $C_b$ = Concentration of NH3 ion in the back half of train (breakthrough)
- $C_f$ = Concentration of NH3 ion in the front half of train (main catch)
- $C_{fPM10}$ = Conc. of filterable $PM_{10}$, gr/dscf
- $C_{fPM2.5}$ = Conc. of filterable $PM_{2.5}$, gr/dscf
- $C_k$ = K Factor Constant, 849.8

## Nomenclature

- $C_n$ = nozzle diameter constant, 0.03575
- $C_p$' = Coefficient for the pitot used in the preliminary traverse, dimensionless
- $C_p$ = Pitot coefficient for the combined cyclone pitot, dimensionless
- $C_{cpm}$ = Concentration of the condensable PM in the stack gas, dry basis, corrected to standard conditions, milligrams/dry standard cubic foot.
- $C_r$ = Re-estimated Cunningham correction factor for particle diameter equivalent to the actual cut size diameter and calculated using the actual stack gas temperature, dimensionless
- $D_{50}$ = Particle cut diameter, micrometers
- $D_{50(N+1)}$ = $D_{50}$ value for cyclone IV calculated during the N+1 iterative step, micrometers
- $D_{50-1}$ = Re-calculated particle cut diameters based on re-estimated $C_r$, micrometers
- $D_{50LL}$ = Cut diameter for cyclone I corresponding to the 2.25 micrometer cut diameter for cyclone IV, micrometer
- $D_{50N}$ = $D_{50}$ value for cyclone IV calculated during the Nth iterative step, micrometers
- $D_{50T}$ = Cyclone I cut diameter corresponding to the middle of the overlap zone shown in Method 201A, Figure 10 of Section 17, micrometers
- $D_e$ = equivalent stack diameter (in.)
- ΔH@ = ΔH @ 0.75 scfm (in. H2O)
- $\Delta H_{avg}$ = average orifice pressure (in. $H_2O$)
- $D_n$ = Inner diameter of sampling nozzle mounted on Cyclone I, inches
- $D_{na}$ = actual nozzle diameter (in.)
- $D_p$ = Physical particle size, micrometers
- $\Delta p$ = velocity head (in. $H_2O$)
- $\Delta p_1$ = velocity head at first current traverse point (in. $H_2O$)
- $\Delta p'_1$ = velocity head at first preliminary traverse point (in. $H_2O$)
- $\Delta p_{avg}$ = average pitot tube differential pressure (in. $H_2O$)
- $\Delta p_n$ = velocity head at subsequent current traverse point (in. $H_2O$)
- $\Delta p_{RM2}$ = method 2 velocity head (in. $H_2O$)
- $D_s$ = diameter of stack (in.)
- $F_d$ = fuel f-factor (dscf/MMBtu)
- $f_{O2}$ = stack gas fraction of $O_2$, by volume, dry basis
- I = Percent isokinetic sampling, dimensionless
- $K_1$ = standard volume correction, 17.65$^{o}$R/in. Hg
- $K_4$ = isokinetic conversion constant, 0.0945min•in.Hg/sec•$^{o}$R
- $K_5$ = water mass to std water vapor, 0.04715 $ft^3$/g
- $K_p$ = 85.49, ((ft/sec)/(pounds/mole -$^{o}$R))
- L = length of stack (in.)
- $L_{fw}$ = distance to far wall of stack (in.)
- $L_{nw}$ = distance to near wall of stack (in.) [reference]
- $m_{\#x}$ = weight measurements (g)
- $M_1$ = Milligrams of PM collected on the filter, less than or equal to 2.5 micrometers
- $M_2$ = Milligrams of PM recovered from Container #2 (acetone blank corrected), greater than 10 micrometers
- $M_3$ = Milligrams of PM recovered from Container #3 (acetone blank corrected), less than or equal to 10 and greater than 2.5 micrometers
- $M_4$ = Milligrams of PM recovered from Container #4 (acetone blank corrected), less than or equal to 2.5 micrometers

## Nomenclature

- $m_a$ = Mass of residue of acetone after evaporation, mg
- $m_c$ = Mass of the NH4+ added to sample to form ammonium sulfate, mg
- $m_{cpm}$ = Mass of the total condensable PM, mg
- $M_d$ = Molecular weight of dry gas, pounds/pound mole
- $m_{fb}$ = Mass of total CPM in field train recovery blank, mg
- $m_{fx}$ = final weight, avg of last two measurements (g)
- mg = Milligram
- mg/L = Milligram per liter
- $m_i$ = Mass of inorganic CPM, mg
- $m_{ib}$ = Mass of inorganic CPM in field train recovery blank, mg
- $M_n$ = total particulates (mg)
- $m_o$ = Mass of organic CPM, mg
- $m_{ob}$ = Mass of organic CPM in field train blank, mg
- $m_r$ = Mass of dried sample from inorganic fraction, mg
- $m_{tx}$ = tare weight (g)
- MW = molecular weight (lb/lb-mole)
- $M_w$ = Molecular weight of wet gas, pounds/pound mole
- N = Normality of ammonium hydroxide titrant
- $N_a$ = null angle (deg.)
- $N_{re}$ = Reynolds number, dimensionless
- $N_{tp}$ = Number of iterative steps or total traverse points
- $P_b$ = $P_{bar}$ = barometric pressure (in. Hg)
- $P_{bar}$ = barometric pressure (in. Hg)
- ppmCO = carbon monoxide concentration (ppm)
- ppmv = Parts per million by volume
- ppmw = Parts per million by weight
- $P_s$ = absolute stack pressure (in. Hg)
- $P_{static}$ = static pressure (in. $H_2O$)
- $P_{std}$ = standard pressure, 29.92 in. Hg
- $\Theta$ = total sampling time (min)
- $Q_{aw}$ = average stack wet flow rate (ascf/min)
- $Q_l$ = Sampling rate for cyclone I to achieve specified $D_{50}$
- $Q_m$ = estimated orifice flow rate, 0.750 acfm, else Vm/Q from previous run
- $Q_s$ = Sampling rate for cyclone I to achieve specified $D_{50}$
- $Q_{s(std)}$ = total cyclone flow rate at standard conditions (dscf/min)
- $Q_{sd}$ = dry standard stack flow rate (dscfm)
- $Q_{sST}$ = Dry gas sampling rate through the sampling assembly, dscfm
- $Q_{sw}$ = wet standard stack flow rate (ascfm)
- $R_{max}$ = Nozzle/stack velocity ratio parameter, dimensionless
- $R_{min}$ = Nozzle/stack velocity ratio parameter, dimensionless
- $t_1$ = Sampling time at point 1, min
- $t_m$ = average gas meter temperature ($^oF$)
- $t_m$ = average meter temperature ($^oF$)
- $T_m$ = Meter box and orifice gas temperature, $^oR$
- $t_n$ = Sampling time at point n, min

## Nomenclature

- $t_r$ = Total projected run time, min
- $T_s$ = Absolute stack gas temperature, $^oR$
- $T_{std}$ = standard temperature, $68^oF$, $528^oR$
- $T_u$ = absolute temperature offset, $460^oR$
- $V_a$ = Volume of acetone blank, ml
- $V_{aw}$ = Volume of acetone used in sample recovery wash, ml
- $V_b$ = Volume of aliquot taken for IC analysis, ml
- $V_c$ = Quantity of water captured in impingers and silica gel, ml
- $V_f$ = final impinger volume (ml)
- $V_i$ = initial impinger volume (ml)
- $V_{ic}$ = Volume of impinger contents sample, ml
- $V_m$ = Dry gas meter volume sampled, acf
- $V_{m(std)}$ = standard meter volume (dscf)
- $v_{max}$ = Maximum gas velocity calculated from Equations 18 or 19, ft/sec
- $v_{max}$ = maximum nozzle velocity (ft/sec)
- $V_{mf}$ = final dry gas meter reading (dcf)
- $V_{mi}$ = initial dry gas meter reading (dcf)
- $v_{min}$ = Minimum gas velocity calculated from Method 201A, Equations 16 or 17, ft/sec
- $V_{ms}$ = Dry gas meter volume sampled, corrected to standard conditions, dscf
- $v_n$ = Sample gas velocity in the nozzle, ft/sec
- $v_{org}$ = organics wash volume (ml)
- $V_p$ = Volume of water added during train purge
- $v_s$ = average stack gas velocity (ft/sec)
- $v_{sl}$ = local velocity (ft/sec)
- $V_t$ = total impinger volume (ml) = ;$(V_f-V_i)$
- $V_t$ = Volume of NH4OH titrant, ml
- $V_{w(std)}$ = volume of water vapor in gas sample at standard conditions (scf)
- $v_x$ = blank volume (ml)
- W = width of stack (in.)
- $W_{2,3,4}$ = Weight of PM recovered from Containers #2, #3, and #4, mg
- $W_a$ = Weight of blank residue in acetone used to recover samples, mg
- $W_f$ = final impinger weight (g)
- $W_i$ = initial impinger weight (g)
- $W_t$ = total impinger weight (g) = ;$(W_f-W_i)$
- $w_x$ = blank weight of solids (g)
- Y = meter calibration factor (a.k.a gamma)
- Z = Ratio between estimated cyclone IV $D_{50}$ values, dimensionless
- γ = Dry gas meter gamma value, dimensionless
- ΔH = Meter box orifice pressure drop, inches W.C.
- ΔH@ = Pressure drop across orifice at flow rate of 0.75 scfm at standard conditions, inches W.C. (Note: Specific to each orifice and meter box.)
- $\Delta p_1$ = Velocity pressure measured at point 1, inches W.C.
- $\Delta p_{avg}$ = Average velocity pressure, inches W.C.
- $\Delta p_m$ = Observed velocity pressure using S-type pitot tube in preliminary traverse, inches W.C.
- $\Delta p_{max}$ = Maximum velocity pressure, inches W.C.

## Nomenclature

- $\Delta p_{min}$ = Minimum velocity pressure, inches W.C.
- $\Delta p_n$ = Velocity pressure measured at point n during the test run, inches W.C.
- $\Delta p_s$ = Velocity pressure calculated in Method 201a, Equation 25, inches W.C.
- $\Delta p_{s1}$ = Velocity pressure adjusted for combined cyclone pitot tube, inches W.C.
- $\Delta p_{s2}$ = Velocity pressure corrected for blockage, inches W.C.
- $\theta$ = Total run time, min
- $\rho_a$ = Density of acetone, mg/ml (see label on bottle)
- $\Sigma_n$ = total number of sampling points

**EXAMPLE CALCULATIONS (Reference Method 1 - Circular Stack)**

**Diameter of Stack (in.)**

$$D(in.) = L_{fw} - L_{mw}$$

D (in.) = 236.00 in. - 8.00 in. = 228.00 in.

**Stack Diameters Downstream**

$$B_D(dia.) = \frac{B}{D}$$

$B_D$ (dia.) = $\frac{850.00 \text{ in.}}{228.00 \text{ in.}}$ = 3.73 diameters

**Area of Stack ($ft^2$)**

$$A_s(ft^2) = \pi \times \left(\frac{D}{2 \times 12}\right)^2$$

$A_s$ ($ft^2$) = 3.14 x ( $\frac{228.00 \text{ in.}}{2 \text{ x } 12\text{in./ft}}$ )$^2$ = 283.53 $ft^2$

**Stack Diameters Upstream**

$$A_D(dia.) = \frac{A}{D}$$

$A_D$ (dia.) = $\frac{200.40 \text{ in.}}{228.00 \text{ in.}}$ = 0.88 diameters

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Reference Method 3a) [Values from Run 1 test]**

**Carbon Monoxide Concentration (%)**

$$\%CO = \frac{ppmCO}{10{,}000}$$

$$\%CO\ (\%) = \frac{0.00 \quad ppm}{10{,}000\ ppm/\%} = 0.0000\ \%$$

**Nitrogen Concentration (%)**

$$\%N_2 = 100 - \%CO_2 - \%O_2 - \%CO$$

$\%N_2$ (%) = 100 - 4.90 % - 12.70 % - 0.00 / 10,000 % = 82.4 %

**Stack Dry Molecular Weight (lb/lb-mole)**

$$M_d\,(lb/lb-mol) = \sum\left(\frac{MW_{comp}}{100} \times \%component\right)$$

$$M_d\ (lb/lb\text{-}mol) = \left(\frac{44\ lb/lb\text{-}mol}{100} \times 4.90\ \%\right) +$$

$$\left(\frac{32\ lb/lb\text{-}mol}{100} \times 12.70\ \%\right) + \left(\frac{28\ lb/lb\text{-}mol}{100} \times \left[\frac{0.00}{10{,}000} + 82.40\ \right]\right) = \frac{29.29\ lb}{lb\text{-}mol}$$

**Stack Wet Molecular Weight (lb/lb-mole)**

$$M_S\,(lb/lb-mol) = \left[M_d \times \left(1 - \frac{B_{WS}}{100}\right)\right] + \left[MW_{H_2O} \times \frac{B_{WS}}{100}\right]$$

$$M_S\ (lb/lb\text{-}mol) = \left\{\frac{29.29\ lb}{lb\text{-}mol} \times \left(1 - \frac{5.77\ \%}{100}\right)\right\} + \left\{\frac{18\ lb}{lb\text{-}mol} \times \frac{5.77\ \%}{100}\right\} = \frac{28.64\ lb}{lb\text{-}mol}$$

**Average Calculated Fuel Factor ($F_o$)**

$$F_{o(avg)} = \frac{\left[20.9 - (\%O_2)_{avg} - (0.5 \times (\%CO)_{avg})\right]}{(\%CO_2)_{avg} + (\%CO)_{avg}}$$

$$F_{o(avg)} = \frac{20.9\% - 12.70\ \% - (0.5 \times 0.000\ \%)}{4.90\ \% + 0.000\ \%} = 1.673$$

**Average Excess Air (%)**

$$\%EA_{avg}\,(\%) = \frac{100 \times \left[(\%O_2)_{avg} - (0.5 \times (\%CO)_{avg})\right]}{(0.264 \times (N_2)_{avg}) - \left[(\%O_2)_{avg} - (0.5 \times (\%CO)_{avg})\right]}$$

$$(\%EA)_{AVG} = \frac{100 \times \{\ 12.70\ \% - (0.5 \times 0.000\ \%)\ \}}{(\ 0.264 \times 82.40\ \%) - \{\ 12.70\ \% - (0.5 \times 0.000\ \%)\}} = 140.28\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Reference Method 2) [Values from Run 1 test]**

**Absolute Stack Pressure (in. Hg)**

$$P_S(in.Hg) = P_b + \frac{P_{static}}{13.6}$$

$P_s$ (in. Hg) = 29.98 in. Hg + $\frac{0.95 \text{ in. } H_2O}{13.6 \text{ in. } H_2O/\text{in. Hg}}$ = 30.05 in. Hg

**Average Stack Gas Velocity (ft/sec)**

$$v_s(ft/\sec) = K_p \times C_p \times \left(\sqrt{\Delta p}\right)_{avg} \times \sqrt{\frac{(t_s)_{avg} + T_u}{P_s \times M_s}}$$

$v_{sl}$ (ft/sec) =

$\left(\frac{85.49 \text{ ft (lb/lb-mol)(in. Hg)}}{\sec \quad (^oR)(\text{in. } H_2O)}\right)^{1/2}$ x 0.72 x 1.16 in.$H_2O^{1/2}$ x $\sqrt{\frac{189.58 + 460\ ^oR}{30.05 \text{ in. Hg x } 28.64 \text{ lb/lb-mol}}}$ = $\frac{62.2 \text{ ft}}{\sec}$

**Average Stack Dry Standard Flow Rate (dscfh)**

$$Q_{sd}(dscfh) = \frac{60 \times 60 \times \left(1 - \frac{B_{ws}}{100}\right) \times v_s \times A_s \times T_{std} \times P_s}{(t_s + T_u) \times P_{std}}$$

$Q_{sd}$ (dscf/hr) = $\frac{3600 \text{ sec}}{\text{hr}}$ x (1 - $\frac{5.77\ \%}{100}$) x $\frac{62.27 \text{ ft}}{\sec}$ x 283.53 $ft^2$ x $\frac{68.00 + 460\ ^oR}{189.58 + 460\ ^oR}$ x $\frac{30.05 \text{ in. Hg}}{29.92 \text{ in. Hg}}$ = $\frac{48,897,988.27 \text{ dscf}}{\text{hr}}$

**Average Stack Wet Flow Rate (acfm)**

$$Q_{aw}(acfm) = 60 \times v_s \times A_s$$

$Q_{aw}$ (acf/min) = $\frac{60 \text{ sec}}{\text{min}}$ x $\frac{62.27 \text{ ft}}{\sec}$ x 283.53 $ft^2$ = $\frac{1,059,378.51 \text{ acf}}{\text{min}}$

**Average Stack Wet Standard Flow Rate (ascfh)**

$$Q_{sw}(ascfh) = \frac{60 \times Q_{aw} \times T_{std} \times P_s}{(t_s + T_u) \times P_{std}}$$

$Q_{sw}$ (ascf/hr) = $\frac{60 \text{ min}}{\text{hr}}$ x $\frac{1,059,378.51 \text{ acf}}{\text{min}}$ x $\frac{68.00 + 460\ ^oR}{189.58 + 460\ ^oR}$ x $\frac{30.05 \text{ in. Hg}}{29.92 \text{ in. Hg}}$ = $\frac{51,889,826.82 \text{ ascf}}{\text{hr}}$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Reference Method 4) [Values from Run 1 test]**

**Water Volume Weighed (scf)**

$$V_{wsg\ (std)}(scf) = W_t \times K_5$$

$V_{wsg(std)}$ = 133.20 g x 0.04715 $ft^3/g$ = 6.280 scf

**Standard Meter Volume (dscf)**

$$V_{m(std)}(dscf) = \frac{K_1 \times Y \times V_m \times \left(P_b + \frac{\Delta H_{avg}}{13.6}\right)}{(t_m)_{avg} + T_u}$$

$$V_{m(std)} = \frac{17.65\ ^\circ R}{\text{in. Hg}} \times 0.97 \times 104.89\ \text{dcf} \times \frac{29.98\ \text{in. Hg} + \frac{0.46\ \text{in. } H_2O}{13.6\ \text{in. } H_2O / \text{in. Hg}}}{67.17\ ^\circ F + 460\ ^\circ R} = 102.65\ \text{dscf}$$

**Calculated Moisture Content (%)**

$$B_{ws(calc)}(\%) = 100 \times \frac{V_{wsg(std)}}{V_{wsg(std)} + V_{m(std)}}$$

$$B_{ws(calc)} = 100 \times \frac{6.28\ \text{dscf}}{6.28\ \text{dscf} + 102.65\ \text{dscf}} = 5.77\ \%$$

**Saturated Moisture Content (%)**

$$B_{ws(svp)}(\%) = 100 \times \frac{10^{6.691 - \frac{3144}{t_{s(avg)} + 390.86}}}{P_b + \frac{P_{static}}{13.6}} \le 100$$

$$B_{ws(svp)} = 100 \times \frac{10^{\left(6.691 - \frac{3144}{189.58\ ^\circ F + 390.86}\right)}}{29.98\ \text{in. Hg} + \frac{0.95\ \text{in. } H_2O}{13.6\ \text{in. } H_2O / \text{in. Hg}}} \le 100 = 62.60\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Isokinetic Sampling) [Values from Run 1 test]**

**Desired Orifice (in. $H_2O$)** (first point)

$$\Delta H_d\,(in.H_2O) = K \times \Delta p$$

$\Delta H_d$ (in. $H_2O$) = x

in. $H_2O$ = in. $H_2O$

**Absolute Meter Pressure (in. Hg)**

$$P_m\,(in.Hg) = P_b + \frac{\Delta H\,@}{13.6}$$

$P_m$ (in. Hg) = 29.98 in. Hg + $\frac{1.88 \text{ in. } H_2O}{13.6 \text{ in. } H_2O/\text{in. Hg}}$ = 30.12 in. Hg

**Recommended Nozzle Diameter (in.)**

$$D_{nt}\,(in.) = \sqrt{\frac{C_{ti} \times Q_{mi} \times P_{mi}}{(t_{mi} + T_{ti}) \times C_p} \times \left(\frac{1 - \frac{B_{wm}}{100}}{1 - \frac{B_{ws}}{100}}\right)} \times \sqrt{(t_s + T_{ti}) \times \left[\frac{M_d \times \left(1 - \frac{B_{ws}}{100}\right) + \left(18 \times \frac{B_{ws}}{100}\right)}{P_s \times \Delta p_{avg}}\right]}$$

$$D_{ni}\,(in.) = \sqrt{\frac{0.03575 \text{ (lb-mole•°R•in. } H_2O)^{1/2}\text{•min•in.}^2}{\text{acf•in. Hg}^{3/4}\text{•lb}^{1/2}} \text{ x } 0.75 \text{ acf x } 30.12 \text{ in. Hg } \left(1 - \frac{0.00\ \%}{100}\right) \text{ x } \left(\frac{1}{1 - \frac{5.77\ \%}{100}}\right) \text{ x } \sqrt{(189.58 \text{ °F} + 460\text{°R}) \text{ x } \frac{\frac{29.29 \text{ lb}}{\text{lb-mole}} \text{ x } \left(1 - \frac{5.77\ \%}{100}\right) + \left(\frac{18 \text{ lb}}{\text{lb-mol}} \text{ x } \frac{5.77\ \%}{100}\right)}{30.05 \text{ in. Hg x } 1.16 \text{ in. } H_2O}}} = 0.221 \text{ in.}$$

**ΔP to ΔH Isokinetic Factor**

$$K = C_k \times C_p^2 \times \Delta H\,@ \times D_{na}^4 \times \left[\frac{M_d \times \left(1 - \frac{B_{wm}}{100}\right) + \left(18 \times \frac{B_{wm}}{100}\right)}{M_d \times \left(1 - \frac{B_{ws}}{100}\right) + \left(18 \times \frac{B_{ws}}{100}\right)}\right] \times \left(\frac{1 - \frac{B_{ws}}{100}}{1 - \frac{B_{wm}}{100}}\right)^2 \times \left(\frac{t_m + T_u}{ts + T_u}\right) \times \frac{P_s}{P_m}$$

$$K = \frac{849.8}{\text{in. } H_2O\text{•in.}^4} \text{ x } 0.72^2 \text{ x } 1.88 \text{ in. } H_2O \text{ x } 0.16^4 \text{ x } \left(\frac{1 - \frac{5.77\ \%}{100}}{1 - \frac{0.00\ \%}{100}}\right)^2 \text{ x } \frac{67.17 \text{ °F} + 460\text{°R}}{189.58 \text{ °F} + 460\text{°R}} \text{ x } \left(\frac{\frac{29.29 \text{ lb}}{\text{lb/mole}} \text{ x } \left(1 - \frac{0.00\ \%}{100}\right) + \left(\frac{18 \text{ lb}}{\text{lb-mol}} \text{ x } \frac{0.00\ \%}{100}\right)}{\frac{29.29 \text{ lb}}{\text{lb/mole}} \text{ x } \left(1 - \frac{5.77\ \%}{100}\right) + \left(\frac{18 \text{ lb}}{\text{lb-mol}} \text{ x } \frac{5.77\ \%}{100}\right)}\right) \text{ x } \frac{30.05 \text{ in. Hg}}{30.12 \text{ in. Hg}} = 0.36$$

**Percent Isokinetic (%)** (first point)

$$I\,(\%) = \frac{K_4 \times \left((t_s)_{avg} + T_u\right) \times V_{m(std)}}{\left(\Theta \times (v_{s(l)})_{avg} \times P_s \times \pi \times \left(\frac{D_{na}}{2} \times \frac{1}{12}\right)^2\right) \times \left(1 - \frac{B_{ws}}{100}\right)}$$

$$I\,(\%) = \frac{\frac{0.0945 \text{ min•in. Hg}}{\text{sec•°R}} \text{ x } (189.00 \text{ °F} + 460\text{ °R}) \text{ x } 8.32 \text{ dscf}}{22.00 \text{ min x } \frac{61.28 \text{ ft}}{\text{sec}} \text{ x } 30.05 \text{ in. Hg x } 3.14 \text{ x } \left(\frac{0.16 \text{ in.}}{2} \text{ x } \frac{\text{ft.}}{12 \text{ in.}}\right)^2 \text{ x } \left(1 - \frac{5.77\ \%}{100}\right)} = 100.69\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Isokinetic Sampling) [Values from Run 1 test]**

**Cumulative Percent Isokinetic (%)** (weighted average of all points)

$$I(\%) = \sum_{1-n} \frac{\left[I(\%) \times V_{m(std)}\right]_{1-n}}{V_{m(std)_{1-n}}}$$

Using Method 5, Eq 5-8 to determine intermediate isokinetics at each point, weighted averaging of the cumulative isokinetics is necessary since all points are not equal, and determined by using the dry standard meter volume collected at each point to weight the cumulative average. Intermediate isokinetics and dry standard meter volumes are found at each point. At each point the cumulative sum is found of each value and the quotient of the two used to determine the cumulative isokinetics for each residual point (n).

| Pt | In (%) | x | Vm(std)n | = | I (%)n | ∑(I (%)n) | / | ∑(Vm(std)n) | = | I (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| A-1 | 100.69 | x | 8.319 | = | 837.62 | 837.62 | / | 8.32 | = | 100.7 |
| A-2 | 94.90 | x | 8.408 | = | 797.87 | 1635.50 | / | 16.73 | = | 97.8 |
| A-3 | 99.71 | x | 8.238 | = | 821.46 | 2456.96 | / | 24.97 | = | 98.4 |
| B-1 | 99.62 | x | 8.225 | = | 819.34 | 3276.30 | / | 33.19 | = | 98.7 |
| B-2 | 100.03 | x | 8.876 | = | 887.85 | 4164.14 | / | 42.07 | = | 99.0 |
| B-3 | 106.51 | x | 8.793 | = | 936.59 | 5100.73 | / | 50.86 | = | 100.3 |
| C-1 | 106.60 | x | 9.460 | = | 1008.43 | 6109.16 | / | 60.32 | = | 101.3 |
| C-2 | 95.14 | x | 8.436 | = | 802.54 | 6911.70 | / | 68.75 | = | 100.5 |
| C-3 | 103.04 | x | 8.500 | = | 875.86 | 7787.57 | / | 77.25 | = | 100.8 |
| D-1 | 105.01 | x | 8.657 | = | 909.07 | 8696.64 | / | 85.91 | = | 101.2 |
| D-2 | 93.01 | x | 8.241 | = | 766.45 | 9463.09 | / | 94.15 | = | 100.5 |
| D-3 | 102.73 | x | 8.488 | = | 871.93 | 10335.02 | / | 102.64 | => | 100.7 |

Last Pt

**Percent Isokinetic (%)** (intermediate equation, all points)
[equivalent to taking an average of point-by-point isokinetics without weighting the average (e.g. all points equal)]

$$I(\%) = \frac{K_4 \times \left((t_s)_{avg} + T_u\right) \times V_{m(std)}}{\left(\Theta \times (v_{s(l)})_{avg} \times P_s \times \pi \times \left(\frac{D_{na}}{2} \times \frac{1}{12}\right)^2\right) \times \left(1 - \frac{B_{ws}}{100}\right)}$$

$$I(\%) = \frac{\frac{0.0945 \text{ min•in. Hg}}{\text{sec•}^{\circ}\text{R}} \times (189.58\ ^{\circ}\text{F} + 460\ ^{\circ}\text{R}) \times 102.65 \text{ dscf}}{267.75 \text{ min} \times \frac{62.27 \text{ ft}}{\text{sec}} \times 30.05 \text{ in. Hg} \times 3.14 \times \left(\frac{0.16 \text{ in.}}{2} \times \frac{\text{ft.}}{12 \text{ in.}}\right)^2 \times \left(1 - \frac{5.77\ \%}{100}\right)} = 100.54\ \%$$

**Raw Data Percent Isokinetic (%)**
[utilizes the raw data equation for isokinetics from Method 5]

$$I(\%) = \frac{100\left((t_s)_{avg} + T_u\right)\left[K_4 V_{1c} + \frac{V_m Y}{(t_m)_{avg} + T_u}\left(P_{bar} + \frac{\Delta H}{13.6}\right)\right]}{60\left(\Theta \times (v_{s(l)})_{avg} \times P_s \times \pi \times \left(\frac{D_{na}}{2} \times \frac{1}{12}\right)^2\right)}$$

$$I(\%) = \frac{100 \times (189.58\ ^{\circ}\text{F} + 460\ ^{\circ}\text{R}) \times \left[\frac{0.002669 \text{ ft}^3\text{•in. Hg}}{\text{ml•}^{\circ}\text{R}} \times 133.4 \text{ ml} + \frac{104.89 \text{ dcf} \times 0.974}{67.17\ ^{\circ}\text{F} + 460\ ^{\circ}\text{R}} \left(29.98 \text{ in Hg} + \frac{1.158}{13.6}\right)\right]}{60 \times 267.75 \text{ min} \times \frac{62.27 \text{ ft}}{\text{sec}} \times 30.05 \text{ in. Hg} \times 3.14 \times \left(\frac{0.16 \text{ in.}}{2} \times \frac{\text{ft.}}{12 \text{ in.}}\right)^2} = 100.65\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Gravimetric Analysis) [Values from Run 1 test]**

**Blank Concentration [Acetone Blank Weight of Solids] (mg/ml)**

$$C_x\,(mg/ml) = \frac{1000 \times w_x}{v_x}$$

$C_x$ (mg/ml) = $\frac{1000\ mg}{g}$ x $\frac{0.0000\ g}{200.60\ ml}$ = $\frac{0.0000\ mg}{ml}$ = $\frac{\quad mg}{ml}$

**Blank Adjustment [Acetone Blank Weight of Solids and Nozzle Wash PM>10] (mg)**

$$W_x\,(mg) = v_x \times C_x$$

$W_x$ (mg) = 100 ml x 0.0000 mg/ml = 0.00 mg < Sample Gain

**Sample Gain [Nozzle Wash PM>10] (mg)**

$$m_x\,(mg) = \left(m_{fx} - m_{tx}\right) \times 1000$$

$m_x$ (mg) = $\frac{1000\ mg}{g}$ x ( 0.0162 g - 0.00 g ) = 16.20 mg

**Adjusted Sample Gain [Nozzle Wash PM>10] (mg)**

$$m_{xadj}\,(mg) = m_x - W_x$$

$m_{xadj}$ (mg) = 16.2 mg - 0.00 mg = 16.20 mg

**0.1N $NH_4OH$ Correction (mg)**

$$m_c\,(mg) = 17.03 \times V_t \times N$$

$m_c$ (mg) = 17.03 x 0.00 ml x 0.1 N = 0.00 mg

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Analysis) [Values from Run 1 test - Total $PM_{10}$ Mass]**

**Stack Total Concentration (g/dscf)**

$$c_s(g/dscf) = 0.001 \times \frac{M_n}{V_{m(std)}}$$

$$c_s \text{ (g/dscf)} = \frac{\text{g}}{\text{1000 mg}} \times \frac{\text{7.50 mg}}{\text{102.65 dscf}} = \frac{\text{7.31E-05 g}}{\text{dscf}}$$

**Stack Total Concentration (gr/dscf)**

$$c_s'(gr/dscf) = 0.001 \times \frac{M_n}{V_{m(std)}} \times \frac{7000}{453.592}$$

$$c'_s \text{ (gr/dscf)} = \frac{\text{g}}{\text{1000 mg}} \times \frac{\text{7.50 mg}}{\text{102.65 dscf}} \times \frac{\text{7000 gr}}{\text{lb}} \times \frac{\text{lb}}{\text{453.592 g}} = \frac{\text{1.13E-03 gr}}{\text{dscf}}$$

**Total Emissions Rate (kg/hr)**

$$E(kg/hr) = c_s \times Q_{sd} \times \frac{kg}{1000\ g}$$

$$E \text{ (kg/hr)} = \frac{\text{kg}}{\text{1000 g}} \times \frac{\text{7.31E-05 g}}{\text{dscf}} \times \frac{\text{48,897,988 dscf}}{\text{hr}} = \frac{\text{3.57 kg}}{\text{hr}}$$

**Total Emissions Rate (lb/hr)**

$$E'(lb/hr) = \frac{M_n \times Q_{sd}}{V_{m(std)}} \times \frac{lb \times g}{453.592 g \times 1000 mg}$$

$$E' \text{ (lb/hr)} = \frac{\text{g}}{\text{1000 mg}} \times \frac{\text{lb}}{\text{453.592 g}} \times \frac{\text{7.50 mg}}{\text{102.65 dscf}} \times \frac{\text{48,897,988 dscf}}{\text{hr}} = \frac{\text{7.88 lb}}{\text{hr}}$$

**Total Emissions Rate (tpy)**

$$E''(ton/yr) = E' \times \frac{8760}{2000}$$

$$E'' \text{ (tpy)} = \frac{\text{ton}}{\text{2000 lb}} \times \frac{\text{8,760 hr}}{\text{yr}} \times \frac{\text{7.88 lb}}{\text{hr}} = \frac{\text{34.50 ton}}{\text{yr}}$$

**Total Emissions Rate (lb/MMBtu)**

Oxygen Based:

$$E'''(lb/MMBtu) = \frac{M_n \times F_d}{V_{m(std)} \times 1000 \times 453.592} \times \left(\frac{20.9}{20.9 - \%O_2}\right)$$

$$E''' \text{ (lb/MMBtu)} = \frac{\text{g}}{\text{1000 mg}} \times \frac{\text{lb}}{\text{453.592 g}} \times \frac{\text{7.50 mg}}{\text{102.65 dscf}} \times \frac{\text{8,643.54 dscf}}{\text{MMBtu}} \times \left(\frac{\text{20.9}}{\text{20.9 - 12.7 \%}}\right) = \frac{\text{0.0035 lb}}{\text{MMBtu}}$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Stack Gas Viscosity (μP) [based on preliminary data] [RM 201A, Eq. 3]**

$$\mu(\mu P) = C_1 + C_2\sqrt{T_s} + C_3 T_s^{-2} + C4(\%O_{2,wet}) - C_5 B_{ws} + C_6 B_{ws} T_s^2$$

μ (μP) = -150.3162 μP + 13.4622 $\sqrt{\quad 185 \quad + 460}$ + 3.86153x10$^{6}$ ( 185 + 460 )$^{-2}$ + 0.591123 ( 13.0 x (1 - 8.00 /100)
- 91.9723 ( 8.00 /100) + 1.51761x10$^{-5}$ ( 8.00 /100)( 185 + 460)$^2$ = 201.12 μP

**Cunningham Correction Factor [RM 201A, Eq. 4]**
**[based on preliminary data for a 2.25 micrometer diameter particle]**

$$C = 1 + 0.0057193\left[\frac{\mu}{P_s D_{50}}\right]\left[\frac{T_s}{M_w}\right]^{0.5}$$

$$C = 1 + 0.0057193 \times \left(\frac{201.12\ \mu P}{29.80\ \text{in Hg} \times 2.25\ \mu m}\right)\left(\frac{185 + 460\ ^{o}R}{28.40\ \text{lb / lb-mole}}\right)^{0.5} = 1.08$$

**First calculation set using Cyclone I or Cyclone I and IV, assuming $N_{re}$<3,162**

**Lower Limit Cut Diameter for Cyclone I (μm) [RM 201A, Eq. 5]**
**[assumes $N_{re}$<3,162]**

$$D_{50LL}(\mu m) = 9.507 C^{0.3007}\left[\frac{M_w P_s}{T_s}\right]^{0.1993}$$

$$D_{50LL}\ (\mu m) = 9.507 \times 1.08^{\,0.3007} \times \left(\frac{29.80\ \text{in Hg} \times 28.40\ \text{lb / lb-mole}}{185 + 460\ ^{o}R}\right)^{0.1993} = 10.28\ \mu m$$

**Cut Diameter for Cyclone I for the Middle of the Overlap Zone (μm) [RM 201A, Eq. 6]**
**[assumes $N_{re}$<3,162]**

$$D_{50T}(\mu m) = \left(\frac{11 + D_{50LL}}{2}\right)$$

$$D_{50T}\ (\mu m) = \frac{11 + 10.28\ \mu m}{2} = 10.64\ \mu m$$

**Sampling Rate Using Both $PM_{10}$ and $PM_{2.5}$ Cyclones (acfm) [RM 201A, Eq. 7]**
**[assumes $N_{re}$<3,162]**

$$Q_s(acfm) = Q_I(acfm) = 0.07296(\mu)\left[\frac{T_s}{M_w P_s}\right]^{0.2949}\left[\frac{1}{D_{50T}}\right]^{1.4102}$$

Qs (acfm) =

$$0.07296 \times 201.12\ \mu P \times \left(\frac{185 + 460\ ^{o}R}{29.80\ \text{in Hg} \times 28.40\ \text{lb / lb-mole}}\right)^{0.2949} \times \left(\frac{1}{10.64\ \mu m}\right)^{1.4102} = 0.48\ \text{acfm}$$

**Reynolds Number (dimensionless) [RM 201A, Eq. 10]**
**[verification of $N_{re}$<3,162, using Cyclone I and IV]**

$$N_{re} = 8.64 \times 10^5\left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

Correct

$$N_{re} = 8.64 \times 10^5 \times \frac{29.80\ \text{in Hg} \times 28.40\ \text{lb / lb-mole}}{185 + 460\ ^{o}R} \times \frac{0.48\ \text{acfm}}{201.12\ \mu P} = 2720.44 < 3{,}162$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Second calculation set using Cyclone IV, assuming $N_{re}$<3,162**

**Particle Cut Diameter for $N_{re}$ Less than 3,162 for Cyclone IV (μm) [RM 201A, Eq. 34]**
**[assumes $N_{re}$<3,162]**

$$D_{50}(\mu m) = 0.0024302 \left[\frac{\mu}{Q_s}\right]^{1.1791} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.6790}$$

$D_{50}$ (μm) =

0.0024302 x ( 201.12 μP / 0.48 acfm )$^{1.1791}$ x ( 1 / 1.08 )$^{0.5}$ x ( 185 + 460 °R / 29.80 in Hg x 28.40 lb / lb-mole )$^{0.6790}$ = 2.38 μm

**Sampling Rate Using Only $PM_{2.5}$ Cyclone for $N_{re}$ Less than 3,162 (acfm) [RM 201A, Eq. 8]**

$$Q_{IV}(acfm) = 0.0060639 \left(\frac{\mu}{C^{0.4242}}\right) \left[\frac{P_s M_w}{T_s}\right]^{-.05759} \left[\frac{1}{D_{50}}\right]^{0.8481}$$

$Q_{IV}$ (acfm) =

0.0060639 x ( 201.12 μP / 1.08 $^{0.4242}$ ) x ( 29.80 in Hg x 28.40 lb / lb-mole / 185 + 460 °R )$^{-0.5759}$ x ( 1 / 2.38 μm )$^{0.8481}$ = 0.48 acfm

**Reynolds Number (dimensionless) [RM 201A, Eq. 10]**
**[verification of $N_{re}$<3,162, using Cyclone IV only]**

$$N_{re} = 8.64 \times 10^5 \left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

Correct

$N_{re}$ = 8.64 x $10^5$ x 29.80 in Hg x 28.40 lb / lb-mole / 185 + 460 °R x 0.48 acfm / 201.12 μP = 2720.40 < 3,162

**Third calculation set using Cyclone I or Cyclone I and IV, assuming $N_{re}$≥3,162**

**Lower Limit Cut Diameter for Cyclone I (μm) [RM 201A, Eq. 12]**
**[assumes $N_{re}$≥3,162]**

$$D_{50LL}(\mu m) = 10.0959 C^{0.4400} \left[\frac{M_w P_s}{T_s}\right]^{0.0600}$$

$D_{50LL}$ (μm) = 10.0959 x 1.08 $^{0.4400}$ x ( 29.80 in Hg x 28.40 lb / lb-mole / 185 + 460 °R )$^{0.0600}$ = 10.62 μm

**Cut Diameter for Cyclone I for the Middle of the Overlap Zone (μm) [RM 201A, Eq. 6]**
**[assumes $N_{re}$≥3,162]**

$$D_{50T}(\mu m) = \left(\frac{11 + D_{50LL}}{2}\right)$$

$D_{50T}$ (μm) = ( 11 + 10.62 μm ) / 2 = 10.81 μm

**Sampling Rate Using Both $PM_{10}$ and $PM_{2.5}$ Cyclones (acfm) [RM 201A, Eq. 7]**
**[assumes $N_{re}$≥3,162]**

$$Q_s(acfm) = Q_I(acfm) = 0.07296(\mu) \left[\frac{T_s}{M_w P_s}\right]^{0.2949} \left[\frac{1}{D_{50T}}\right]^{1.4102}$$

Qs (acfm) =

0.07296 x 201.12 μP x ( 185 + 460 °R / 29.80 in Hg x 28.40 lb / lb-mole )$^{0.2949}$ x ( 1 / 10.81 μm )$^{1.4102}$ = 0.47 acfm

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Reynolds Number (dimensionless) [RM 201A, Eq. 10]**
**[verification of $N_{re}$≥3,162, using Cyclone I and IV]**

$$N_{re} = 8.64 \times 10^5 \left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

Wrong Assumption

$N_{re}$ = 8.64 x $10^5$ x ( 29.80 in Hg x 28.40 lb / lb-mole ) / ( 185 + 460 °R ) x ( 0.47 acfm ) / ( 201.12 µP ) = 2659.02 < 3,162

**Fourth calculation set using Cyclone IV, assuming $N_{re}$≥3,162**

**Particle Cut Diameter for $N_{re}$ Greater than or Equal to 3,162 for Cyclone IV (µm) [RM 201A, Eq. 35]**
**[assumes $N_{re}$≥3,162]**

$$D_{50}(\mu m) = 0.019723 \left[\frac{\mu}{Q_s}\right]^{0.8058} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.3058}$$

$D_{50}$ (µm) =

0.019723 x ( ( 201.12 µP ) / ( 0.47 acfm ) )$^{0.8058}$ x ( ( 1 ) / ( 1.08 ) )$^{0.5}$
x ( ( 185 + 460 °R ) / ( 29.80 in Hg x 28.40 lb / lb-mole ) )$^{0.3058}$ = 2.30 µm

**Sampling Rate Using Only $PM_{2.5}$ Cyclone for $N_{re}$ Greater than or Equal to 3,162 (acfm) [RM 201A, Eq. 9]**

$$Q_{IV}(acfm) = 0.007657 \left(\frac{\mu}{C^{0.6205}}\right)\left[\frac{P_s M_w}{T_s}\right]^{-0.3795}\left[\frac{1}{D_{50}}\right]^{1.241}$$

$Q_{IV}$ (acfm) =

0.007657 x ( ( 201.12 µP ) / ( 1.08 $^{0.6205}$ ) ) x ( ( 29.80 in Hg x 28.40 lb / lb-mole ) / ( 185 + 460 °R ) )$^{-0.3795}$
x ( ( 1 ) / ( 2.30 µm ) )$^{1.241}$ = 0.47 acfm

**Reynolds Number (dimensionless) [RM 201A, Eq. 10]**
**[verification of $N_{re}$≥3,162, using Cyclone IV only]**

$$N_{re} = 8.64 \times 10^5 \left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

Wrong Assumption

$N_{re}$ = 8.64 x $10^5$ x ( 29.80 in Hg x 28.40 lb / lb-mole ) / ( 185 + 460 °R ) x ( 0.48 acfm ) / ( 201.12 µP ) = 2720.44 < 3,162

**Meter Box Orifice Pressure Drop (in $H_2O$) [RM 201A, Eq. 11]**
**As calculated using applicable calculation set 1, 2, 3, or 4**

$$\Delta H(inH_2O) = \left[\frac{Q_s(1-B_{ws})P_s}{T_s}\right]^2\left[\frac{1.083 T_m M_d \Delta H_@}{P_{bar}}\right]$$

ΔH (in $H_2O$) = ( 0.48 acfm x ( 1 - 8.00 /100) x 29.80 in Hg ) / ( 185 + 460 °R )$^2$
x ( 1.083 x ( 85.00 + 460 °R) x 29.30 lb / lb-mole x 1.878 in $H_2O$ ) / ( 29.73 in Hg ) = 0.460 in $H_2O$

| | | | | |
|---|---|---|---|---|
| 50 °F above stack temperature | $T_{s+50}$ = | 235 | $\Delta H_{+50}$ = | 0.396 in $H_2O$ |
| 50 °F below stack temperature | $T_{s+50}$ = | 135 | $\Delta H_{+50}$ = | 0.540 in $H_2O$ |

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Adjusted Velocity Pressure (in $H_2O$) [point A-1] [RM201A, Eq. 25]**

$$\Delta p_s\,(inH_2O) = \Delta p_m \left[\frac{C_p}{C'_p}\right]^2$$

$\Delta p_s$ (in $H_2O$) = 1.50 in $H_2O$ x ( 0.7240 / 0.8198 )$^2$ = 1.17 in $H_2O$

**Average Probe Blockage Factor [RM201A, Eq. 26]**

$$b_f = \frac{22.0}{A}$$

$b_f$ = 22.0 / 40828.14 $in^2$ = 5.39E-04

**Velocity Pressure Adjusted for Blockage Factor (in $H_2O$) [point A-1] [RM201A, Eq. 27]**

Target PM and/or Stack Size Not Applicable to Blockage Factor Calculation

$$\Delta p_{s2}\,(inH_2O) = \Delta p_{s1}\left[\frac{1}{(1-b_f)}\right]^2$$

$\Delta p_s$ (in $H_2O$) = 1.17 in $H_2O$ x ( 1 / ( 1 - 0.00E+00 ) )$^2$ = 1.17 in $H_2O$

**Velocity of Stack Gas Adjusted for Blockage Factor and/or $C_p$ / $C'_p$ (ft/sec) [RM201A, Eq. 13]**

Target PM and/or Stack Size Not Applicable to Blockage Factor Calculation

$$v_s = K_p C_p \left(\sqrt{(\Delta p)}\right)_{avg}\left[\sqrt{\frac{T_s}{P_s M_w}}\right]$$

$v_s$ (ft/sec) =

85.49 ft/sec / lb/mole - °R x 0.7240 x 1.04 x ( 185 + 460 °R / 29.80 in Hg x 28.40 lb / lb-mole )$^{0.5}$ = 55.95 ft/sec

**Calculated Nozzle Diameter for Acceptable Sampling Rate (in) [RM201A, Eq. 14]**

$$D(in) = \left[\frac{3.056 Q_s}{v_s}\right]^{0.5}$$

D (in) = ( 3.056 x 0.48 acfm / 55.95 ft/sec )$^{0.5}$ = 0.162 in

Represents ideal diameter, which we then compare to capabilities of all nozzles from multiple sets

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Velocity of Gas in Nozzle 4b (diam. = 0.156 in), (ft/sec) [RM201A, Eq. 15]**

$$v_n = \frac{\left(\frac{Q_s}{60\ \frac{\text{min}}{\text{sec}}}\right)}{A_n}$$

$v_n$ (ft/sec) = $\frac{0.48 \text{ acfm}}{60 \text{ min / sec}}$ / 1.33E-04 $ft^2$ = 60.62 $\frac{ft}{sec}$

Example set of calculations for nozzle used with run 1

**Minimum Nozzle Velocity to Stack Velocity Ratio Parameter (dimensionless) [RM201A, Eq. 16]**

**Nozzle 4b (diam. = 0.156 in)**

$$R_{min} = \left[0.2457 + \left(0.3072 - \frac{0.2603\ (\mu)(Q_s)^{0.5}}{v_n^{1.5}}\right)^{0.5}\right]$$

$R_{min}$ =

$$0.2457 + \left(0.3072 - \frac{0.2603 \times 201.12\ \mu P \times (0.48\ \text{acfm})^{0.5}}{60.62\ in^{1.5}}\right)^{0.5} = 0.73$$

**Maximum Nozzle Velocity to Stack Velocity Ratio Parameter (dimensionless) [RM201A, Eq. 17]**

**Nozzle 4b (diam. = 0.156 in)**

$$R_{max} = \left[0.4457 + \left(0.5690 + \frac{0.2603\ (\mu)(Q_s)^{0.5}}{v_n^{1.5}}\right)^{0.5}\right]$$

$R_{max}$ =

$$0.4457 + \left(0.5690 + \frac{0.2603 \times 201.12\ \mu P \times (0.48\ \text{acfm})^{0.5}}{60.62\ in^{1.5}}\right)^{0.5} = 1.25$$

**Minimum Gas Velocity for $R_{min}$ Less than 0.5 (ft/sec)** **Nozzle 4b (diam. = 0.156 in)**

$v_{min}\ (ft/sec) = v_n(0.5)$ $v_{min}$ (ft/sec) = 0.5 x $\frac{ft}{sec}$ = $\frac{ft}{sec}$ **[RM201A, Eq. 18]**

Not Applicable

**Minimum Gas Velocity for $R_{min}$ Greater than or Equal to 0.5 (ft/sec)** **Nozzle 4b (diam. = 0.156 in)**

$v_{min}\ (ft/sec) = v_n R_{min}$ $v_{min}$ (ft/sec) = 60.62 $\frac{ft}{sec}$ x 0.73 = 43.97 $\frac{ft}{sec}$ **[RM201A, Eq. 19]**

**Maximum Gas Velocity for $R_{max}$ Less than 1.5 (ft/sec)** **Nozzle 4b (diam. = 0.156 in)**

$v_{max}\ (ft/sec) = v_n R_{max}$ $v_{max}$ (ft/sec) = 60.62 $\frac{ft}{sec}$ x 1.25 = 75.74 $\frac{ft}{sec}$ **[RM201A, Eq. 20]**

**Maximum Gas Velocity for $R_{max}$ Greater than or Equal to 1.5 (ft/sec)** **Nozzle 4b (diam. = 0.156 in)**

$v_{max}\ (ft/sec) = v_n(1.5)$ $v_{max}$ (ft/sec) = 1.5 x $\frac{ft}{sec}$ = $\frac{ft}{sec}$ **[RM201A, Eq. 21]**

Not Applicable

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Minimum Velocity Pressure (in $H_2O$) [RM201A, Eq. 22]** **Nozzle 4b (diam. = 0.156 in)**

Run 1 nozzle is able to achieve $\Delta p_{min}$ below preliminary data minimum

$$\Delta p_{min}\ (inH_2O) = 1.3686 \times 10^{-4}\left[\frac{P_s M_w}{T_s}\right]\left[\frac{v_{min}}{C_p}\right]^2$$

$\Delta p_{min}$ (in $H_2O$) =

$1.3686 \times 10^{-4} \times \left(\frac{29.80 \text{ in Hg} \times 28.40 \text{ lb / lb-mole}}{185 + 460\ ^{o}R}\right) \times \left(\frac{43.97 \text{ ft/sec}}{0.7240}\right)^2 =$ 0.66 in $H_2O$ vs. 1.01

**Maximum Velocity Pressure (in $H_2O$) [RM201A, Eq. 23]** **Nozzle 4b (diam. = 0.156 in)**

Run 1 nozzle is able to achieve $\Delta p_{max}$ above preliminary data maximum

$$\Delta p_{max}\ (inH_2O) = 1.3686 \times 10^{-4}\left[\frac{P_s M_w}{T_s}\right]\left[\frac{v_{max}}{C_p}\right]^2$$

$\Delta p_{max}$ (in $H_2O$) =

$1.3686 \times 10^{-4} \times \left(\frac{29.80 \text{ in Hg} \times 28.40 \text{ lb / lb-mole}}{185 + 460\ ^{o}R}\right) \times \left(\frac{75.74 \text{ ft/sec}}{0.7240}\right)^2 =$ 1.96 in $H_2O$ vs. 1.17

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Run 1 test]**

**Sampling Dwell Time at Each Point (minutes) [point A-1] [RM201A, Eq. 24]**

$$t_n(\text{min}) = \left[\frac{C_p\sqrt{\Delta p_n}}{C_p'\left(\sqrt{\Delta p_n}\right)_{avg}}\right]\left[\frac{t_r}{N_{tp}}\right]$$

$t_n$ (min) = $\left(\frac{0.7240 \times (1.30)^{0.5}}{0.7240 \times 1.04}\right) \times \left(\frac{240.00 \text{ min}}{12.00}\right) =$ 22.03 minutes

**Dry Gas Volume Sampled at Standard Conditions (dscf) [point A-1] [RM201A, Eq. 28]**

$$v_{ms}(dscf) = \left[\frac{528}{29.92}\right][\gamma \cdot v_m]\left[\frac{\left(P_{bar} + \frac{\Delta H}{13.6}\right)}{T_m}\right]$$

$v_{ms}$ (dscf) = $\left(\frac{528}{29.92}\right)$ ( 0.974 x 8.45 dcf ) x

$\left(\frac{29.98 \text{ in Hg} + 0.46 \text{ in } H_2O / 13.6}{64.00 + 460\ ^{o}R}\right) =$ 8.32 dscf

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Run 1 test]**

**Sample Flow Rate at Standard Conditions (dscfm) [RM201A, Eq. 29]**

$$Q_{sST}\,(dscfm) = \frac{v_{ms}}{\Theta}$$

$Q_{sST}$ (dscf) = $\frac{102.65 \text{ dscf}}{267.75 \text{ min}}$ = $\frac{0.38 \text{ dscf}}{\text{min}}$

**Sampling Rate (acfm) [e.g. cyclone flow rate] [RM201A, Eq. 32]**

$$Q_s(acfm) = \frac{29.92}{528} Q_{sST} \left[\frac{1}{(1 - B_{ws})}\right]\left[\frac{T_s}{P_s}\right]$$

$Q_s$ (acfm) = $\frac{29.92 \text{ in Hg}}{528\ ^{o}\text{R}}$ x $\frac{0.38 \text{ dscf}}{\text{min}}$ x $\frac{1}{(1 - 5.77 /100)}$ x $\frac{190 + 460\ ^{o}\text{R}}{30.05 \text{ in Hg}}$ = 0.50 acfm

**Actual Conditions Reynolds Number (dimensionless) [RM 201A, Eq. 10]**

$$N_{re} = 8.64 \times 10^5 \left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

$N_{re}$ = 8.64 x $10^5$ x $\frac{30.05 \text{ in Hg x } 28.64 \text{ lb / lb-mole}}{190 + 460\ ^{o}\text{R}}$ x $\frac{0.50 \text{ acfm}}{204.09 \text{ µP}}$ = 2795.22

**Actual Conditions Particle Cut Diameter for Cyclone I (µm) [RM201A, Eq. 33]**

$$D_{50}(\mu m) = 0.15625 \left[\frac{T_s}{M_w P_s}\right]^{0.2091} \left[\frac{\mu}{Q_s}\right]^{0.7091}$$

$D_{50}$ (µm) = 0.15625 x ( $\frac{190 + 460\ ^{o}\text{R}}{30.05 \text{ in Hg x } 28.64 \text{ lb / lb-mole}}$ )$^{0.2091}$ x ( $\frac{204.09 \text{ µP}}{0.50 \text{ acfm}}$ )$^{0.7091}$ = 10.49 µm

**Actual Particle Cut Diameter for Cyclone IV is determined by:**

**Actual Conditions Cunningham Correction Factor [RM 201A, Eq. 4]**
**[for a 2.5 micrometer diameter particle (estimated size)]**

$$C = 1 + 0.0057193 \left[\frac{\mu}{P_s D_{50}}\right]\left[\frac{T_s}{M_w}\right]^{0.5}$$

C = 1 + 0.0057193 x ( $\frac{204.09 \text{ µP}}{30.05 \text{ in Hg x } 2.5 \text{ µm}}$ )( $\frac{190 + 460\ ^{o}\text{R}}{28.64 \text{ lb / lb-mole}}$ )$^{0.5}$ = 1.07

**Actual Conditions Particle Cut Diameter for $N_{re}$ Less than 3,162 for Cyclone IV (µm) [RM 201A, Eq. 34]**

$$D_{50}(\mu m) = 0.0024302 \left[\frac{\mu}{Q_s}\right]^{1.1791} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.6790}$$

$D_{50}$ (µm) =

0.0024302 x ( $\frac{204.09 \text{ µP}}{0.50 \text{ acfm}}$ )$^{1.1791}$ x ( $\frac{1}{1.07}$ )$^{0.5}$

x ( $\frac{190 + 460\ ^{o}\text{R}}{30.05 \text{ in Hg x } 28.64 \text{ lb / lb-mole}}$ )$^{0.6790}$ = 2.33 µm

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Run 1 test]**

**Actual Conditions Particle Cut Diameter for $N_{re}$ Greater than or Equal to 3,162 for Cyclone IV (µm) [RM 201A, Eq. 35]**

$$D_{50}(\mu m) = 0.019723 \left[\frac{\mu}{Q_s}\right]^{0.8058} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.3058}$$

$D_{50}$ (µm) =

0.019723 x ( µP / acfm )$^{0.8058}$ x ( 1 )$^{0.5}$ x ( + 460 °R / in Hg x lb / lb-mole )$^{0.3058}$ = µm

**Re-calculated Cunningham Correction Factor (dimensionless) [RM 201A, Eq. 36]**

$$C_r = 1 + 0.0057193 \left[\frac{\mu}{P_s D_{50}}\right]\left[\frac{T_s}{M_w}\right]^{0.5}$$

C = 1 + 0.0057193 x ( 204.09 µP / 30.05 in Hg x 2.33 µm )( 190 + 460 °R / 28.64 lb / lb-mole )$^{0.5}$ = 1.08

**Re-calculated Particle Cut Diameter for $N_{re}$ Less than 3,162 for Cyclone IV (µm) [RM 201A, Eq. 37]**

$$D_{50-1}(\mu m) = 0.0024302 \left[\frac{\mu}{Q_s}\right]^{1.1791} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.6790}$$

$D_{50-1}$ (µm) =

0.0024302 x ( 204.09 µP / 0.50 acfm )$^{1.1791}$ x ( 1 / 1.08 )$^{0.5}$ x ( 190 + 460 °R / 30.05 in Hg x 28.64 lb / lb-mole )$^{0.6790}$ = 2.32 µm

**Re-Calculated Particle Cut Diameter for $N_{re}$ Greater than or Equal to 3,162 for Cyclone IV (µm) [RM 201A, Eq. 38]**

$$D_{50-1}(\mu m) = 0.019723 \left[\frac{\mu}{Q_s}\right]^{0.8058} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.3058}$$

$D_{50-1}$ (µm) =

0.019723 x ( µP / acfm )$^{0.8058}$ x ( 1 )$^{0.5}$ x ( + 460 °R / in Hg x lb / lb-mole )$^{0.3058}$ = µm

**Ratio (Z) Between $D_{50}$ and $D_{50-1}$ Values (dimensionless) [RM 201A, Eq. 39]**

$$Z = \frac{D_{50-1}}{D_{50}} \qquad 0.99 \le \left[Z = \left(\frac{D_{50}}{D_{50-1}}\right)\right] \le 1.01$$

Z = 2.32 µm / 2.32 µm = 1.00

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

# TEST RESULTS AND CALCULATIONS

## Emissions Results
## Base Load
## SAM

## METHOD 8A (CONTROLLED CONDENSATE) - RESULTS

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base |
| **Project #** | bec-19-cricketvalley.ny-start#1 |

| **Historical Data** | SAM U-00001 Base-1 | SAM U-00001 Base-2 | SAM U-00001 Base-3 | **Average** | **Units** | **Limits** |
|---|---|---|---|---|---|---|
| Run Start Time | 02:03 | 04:57 | 14:32 | | hh:mm | |
| Run Stop Time | 04:03 | 06:57 | 16:32 | | hh:mm | |
| Test Date | 02/18/20 | 02/18/20 | 02/19/20 | | mm/dd/yy | |
| Load | Base | Base | Base | | % or w/DB | -- |
| Meter Calibration Factor | 0.985 | 0.985 | 0.985 | | | |
| **Stack Test Data** | SAM U-00001 Base-1 | SAM U-00001 Base-2 | SAM U-00001 Base-3 | **Average** | **Units** | **Limits** |
| Initial Meter Volume | 564.120 | 617.900 | 837.110 | | $ft^3$ | |
| Final Meter Volume | 606.440 | 660.220 | 879.430 | | $ft^3$ | |
| Total Meter Volume | 42.320 | 42.320 | 42.320 | 42.320 | $ft^3$ | |
| Total Sampling Time | 120.00 | 120.00 | 120.00 | 120.00 | min | |
| Average Meter Temperature | 88.63 | 90.31 | 101.31 | 93.42 | °F | |
| Barometric Pressure | 29.98 | 29.88 | 30.12 | 29.99 | in Hg | |
| Stack Static Pressure | 0.95 | 0.95 | 0.95 | 0.95 | in $H_2O$ | |
| Absolute Stack Pressure | 30.05 | 29.95 | 30.19 | 30.06 | in Hg | |
| Average Orifice Pressure Drop | 0.34 | 0.34 | 0.34 | 0.34 | in $H_2O$ | |
| Absolute Meter Pressure | 30.11 | 30.01 | 30.25 | 30.12 | in Hg | |
| **Moisture Content Data** | SAM U-00001 Base-1 | SAM U-00001 Base-2 | SAM U-00001 Base-3 | **Average** | **Units** | **Limits** |
| Impinger Water Weight Gain | 71.70 | 73.80 | 59.20 | 68.23 | g | |
| Silica Gel Weight Gain | 5.90 | 5.30 | 6.10 | 5.77 | g | |
| Total Water Volume Collected | 77.74 | 79.24 | 65.42 | 74.13 | ml | |
| Standard Water Vapor Volume | 3.66 | 3.73 | 3.08 | 3.49 | scf | |
| Standard Meter Volume | 40.2 | 40.0 | 39.5 | 39.9 | dscf | |
| Standard Metric Meter Volume | 1.1 | 1.1 | 1.1 | 1.1 | dscm | |
| Calculated Stack Moisture | 8.34 | 8.53 | 7.23 | 8.03 | % | |
| **Gas Analysis Data** | SAM U-00001 Base-1 | SAM U-00001 Base-2 | SAM U-00001 Base-3 | **Average** | **Units** | **Limits** |
| Carbon Dioxide Content | 4.8 | 4.8 | 4.8 | 4.8 | % | |
| Oxygen Content | 12.7 | 12.7 | 12.7 | 12.7 | % | |
| Carbon Monoxide Content | 0.0 | 0.0 | 0.0 | 0.0 | ppm | |
| Nitrogen Content | 82.5 | 82.5 | 82.5 | 82.5 | % | |
| Stack Dry Molecular Weight | 29.28 | 29.28 | 29.28 | 29.28 | lb/lb-mole | |
| Calculated Fuel Factor | 1.708 | 1.708 | 1.708 | 1.708 | | |
| Fuel F-Factor | 8643.54 | 8643.54 | 8642.95 | 8643.34 | dscf/MMBtu | |
| **Sulfuric Acid Mist IC Analysis** | SAM U-00001 Base-1 | SAM U-00001 Base-2 | SAM U-00001 Base-3 | **Average** | **Units** | **Limits** |
| $H_2SO_4$ (IC) Sample Volume - Front Half Rinse | 191.0 | 197.0 | 232.0 | 206.67 | ml | -- |
| $H_2SO_4$ (IC) Sample - Mass Per Volume | 0.105 | 0.152 | 0.121 | 0.13 | mg/L | -- |
| $H_2SO_4$ (IC) Mass | 0.02 | 0.03 | 0.03 | 0.03 | mg | -- |
| $H_2SO_4$ (IC) Concentration | 4.97E-07 | 7.50E-07 | 7.09E-07 | 6.52E-07 | g/dscf | -- |
| | 7.67E-06 | 1.16E-05 | 1.09E-05 | 1.01E-05 | gr/dscf | -- |
| | 1.76E-08 | 2.65E-08 | 2.50E-08 | 2.30E-08 | g/L | -- |
| | 0.00 | 0.01 | 0.01 | 0.01 | ppmvd | -- |
| $H_2SO_4$ (IC) Emission Rate | 0.00002 | 0.00004 | 0.00003 | 0.00003 | lb/MMBtu | 0.00065 |

**EXAMPLE CALCULATIONS (Reference Method 1 - Circular Stack)**

**Diameter of Stack (in.)**

$$D(in.) = L_{fw} - L_{nw}$$

D (in.) = 236.00 in. - 8.00 in. = 228.00 in.

**Stack Diameters Downstream**

$$B_D\,(dia.) = \frac{B}{D}$$

$B_D$ (dia.) = $\frac{850.00 \text{ in.}}{228.00 \text{ in.}}$ = 3.73 diameters

**Area of Stack ($ft^2$)**

$$A_s\,(ft^2) = \pi \times \left(\frac{D}{2 \times 12}\right)^2$$

$A_s$ ($ft^2$) = 3.14 x ( $\frac{228.00 \text{ in.}}{2 \text{ x } 12\text{in./ft}}$ )$^2$ = 283.53 $ft^2$

**Stack Diameters Upstream**

$$A_D\,(dia.) = \frac{A}{D}$$

$A_D$ (dia.) = $\frac{200.40 \text{ in.}}{228.00 \text{ in.}}$ = 0.88 diameters

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Reference Method 4) [Values from Run 1 test]**

**Water Volume Weighed (scf)**

$$V_{wsg\ (std)}(scf) = W_t \times K_5$$

$V_{wsg(std)}$ = 77.60 g x 0.04715 $ft^3/g$ = 3.659 scf

**Standard Meter Volume (dscf)**

$$V_{m(std)}(dscf) = \frac{K_1 \times Y \times V_m \times \left(P_b + \frac{\Delta H_{avg}}{13.6}\right)}{(t_m)_{avg} + T_u}$$

$$V_{m(std)} = \frac{\frac{17.65\ ^\circ R}{in.\ Hg} \times 0.99 \times 42.32\ dcf \times \left(29.98\ in.\ Hg + \frac{0.34\ in.\ H_2O}{13.6\ in.\ H_2O / in.\ Hg}\right)}{88.63\ ^\circ F + 460\ ^\circ R} = 40.23\ dscf$$

**Calculated Moisture Content (%)**

$$B_{ws(calc)}(\%) = 100 \times \frac{V_{wsg(std)}}{V_{wsg(std)} + V_{m(std)}}$$

$$B_{ws(calc)} = 100 \times \frac{3.66\ dscf}{3.66\ dscf + 40.23\ dscf} = 8.34\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Analysis) [Values from Run 1 test - $H_2SO_4$ (IC)]**

**Stack $H_2SO_4$ Mass (mg)**

$$M_n(mg) = \frac{M_{n(lab)}}{V_{s(lab)}} \times V_{sample} \times \frac{L}{1000ml}$$

$M_n$ (mg) = $\frac{\text{L}}{\text{1000 ml}}$ x 0.10 $\frac{\text{mg}}{\text{L}}$ x 191.00 ml = 0.02 mg

**Stack $H_2SO_4$ Concentration (g/dscf)**

$$c_s(g/dscf) = 0.001 \times \frac{M_n}{V_{m(std)}}$$

$c_s$ (g/dscf) = $\frac{\text{g}}{\text{1000 mg}}$ x $\frac{\text{0.02 mg}}{\text{40.23 dscf}}$ = $\frac{\text{5.00E-07 g}}{\text{dscf}}$

**Stack $H_2SO_4$ Concentration (gr/dscf)**

$$c'_s(gr/dscf) = 0.001 \times \frac{M_n}{V_{m(std)}} \times \frac{7000}{453.592}$$

c'$_s$ (gr/dscf) = $\frac{\text{g}}{\text{1000 mg}}$ x $\frac{\text{0.02 mg}}{\text{40.23 dscf}}$ x $\frac{\text{7000 gr}}{\text{lb}}$ x $\frac{\text{lb}}{\text{453.592 g}}$ = $\frac{\text{7.67E-06 gr}}{\text{dscf}}$

**Stack $H_2SO_4$ Concentration (g/L)**

$$c''_s(g/L) = c'_s \times \frac{dscf}{28.31685 dsL}$$

c'$_s$ (gr/dscf) = 4.97E-07 $\frac{\text{g}}{\text{dscf}}$ x $\frac{\text{dscf}}{\text{28.31685 dsL}}$ = $\frac{\text{2.00E-08 g}}{\text{L}}$

**Stack $H_2SO_4$ Concentration (ppmvd)**

$$c'''_s(ppmvd) = \frac{M_n}{V_{m(std)}} \times Ideal\ Gas\ Constant \times \frac{10^6 parts}{million\ parts} \times \frac{1}{Mol\ Wt}$$

c'''$_s$ (ppmvd) = 1.76E-08 $\frac{\text{g}}{\text{L}}$ x $\frac{\text{24.04 L gas}}{\text{lb-mol}}$ x $\frac{10^6 \text{ parts}}{\text{MM parts}}$ x $\frac{\text{lb-mol}}{\text{98.0790 lb}}$ = 0.004 ppmvd

**$H_2SO_4$ Emissions Rate (lb/MMBtu)**

Oxygen Based:

$$E'''(lb/MMBtu) = \frac{M_n \times F_d}{V_{m(std)} \times 1000 \times 453.592} \times \left(\frac{20.9}{20.9 - \%O_2}\right)$$

E''' (lb/MMBtu) = $\frac{\text{g}}{\text{1000 mg}}$ x $\frac{\text{lb}}{\text{453.592 g}}$ x $\frac{\text{0.02 mg}}{\text{40.23 dscf}}$ x $\frac{\text{8,643.54 dscf}}{\text{MMBtu}}$ x ( $\frac{\text{20.9}}{\text{20.9 - 12.7 \%}}$ ) = $\frac{\text{0.00002 lb}}{\text{MMBtu}}$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

# TEST RESULTS AND CALCULATIONS

## Emissions Results
## Base+DB Load
## NOx, CO, VOC, and $NH_3$

## GENERAL ELECTRIC, 7F.05, UNIT #U-00001 BASE+DB LOAD DATA SUMMARY

| Parameter | Base+DB Load, Run - 2-1 | Base+DB Load, Run - 2-2 | Base+DB Load, Run - 2-3 | Average |
|---|---|---|---|---|
| **Date (mm/dd/yy)** | 02/19/20 | 02/19/20 | 02/19/20 | 02/19/20 |
| **Start Time (hh:mm:ss)** | 4:25:06 | 5:33:06 | 6:41:06 | 4:25:06 |
| **End Time (hh:mm:ss)** | 5:24:36 | 6:32:36 | 7:40:36 | 7:40:36 |
| **Run Duration (min / run)** | 60 | 60 | 60 | 60 |
| **Bar. Pressure (in. Hg)** | 30.07 | 30.11 | 30.15 | 30.11 |
| **Amb. Temp. (°F)** | 37 | 36 | 34 | 36 |
| **Rel. Humidity (%)** | 81 | 72 | 70 | 74 |
| **Spec. Humidity (lb water / lb air)** | 0.003714 | 0.003166 | 0.002837 | 0.003239 |
| **$NH_3$ Flow Rate (lb/hr)** | 199.8 | 204.9 | 206.9 | 203.8 |
| **Turbine Fuel Flow (lb/min)** | 1,668 | 1,669 | 1,673 | 1,670 |
| **Duct Burner Fuel Flow (lb/min)** | 158 | 158 | 158 | 158 |
| **Total Fuel Flow (SCFH)** | 2,468,984 | 2,469,676 | 2,474,805 | 2,471,155 |
| **Stack Flow (RM19) (SCFH)** | 49,278,069 | 49,219,375 | 48,739,716 | 49,079,054 |
| **Stack Moisture (% Method 4)** | 6.7 | 6.7 | 6.7 | 6.7 |
| **Heat Input (MMBtu/hr)** | 2,507.6 | 2,508.3 | 2,513.5 | 2,509.8 |
| **CT Power Output (megawatts)** | 240.9 | 241.2 | 241.5 | 241.2 |
| **NOx (ppmvd)** | 2.54 | 2.54 | 2.48 | 2.52 |
| **NOx (ppm@15%$O_2$)** | 1.63 | 1.63 | 1.57 | 1.61 |
| **CO (ppmvd)** | 0.00 | 0.00 | 0.25 | 0.08 |
| **CO (ppm@15%$O_2$)** | 0.00 | 0.00 | 0.16 | 0.05 |
| **VOC (as C1) (ppmvd)** | 0.00 | 0.00 | 0.00 | 0.00 |
| **VOC (as C1) (ppm@15%$O_2$)** | 0.00 | 0.00 | 0.00 | 0.00 |
| **Fuel Sulfur (grains / 100 scf)** | 0.11 | 0.11 | 0.11 | 0.11 |
| **$CO_2$ (%)** | 5.09 | 5.10 | 5.01 | 5.07 |
| **$O_2$ (%)** | 11.71 | 11.69 | 11.58 | 11.66 |

# TEST RESULTS AND CALCULATIONS

## Emissions Results
## Base+DB Load
## $PM_{10}$

## METHOD 201A (FRONT) AND 202 (BACK) - RESULTS

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#1 |

| **Historical Data** | PM U-00001 Base+DB-1 | PM U-00001 Base+DB-2 | PM U-00001 Base+DB-3 | **Average** | **Units** | **Limits** |
|---|---|---|---|---|---|---|
| Run Start Time | 14:55 | 04:24 | 09:14 | | hh:mm | |
| Run Stop Time | 19:04 | 08:15 | 13:51 | | hh:mm | |
| Test Date | 02/18/20 | 02/19/20 | 02/19/20 | | mm/dd/yy | |
| Load | Base+DB | Base+DB | Base+DB | | % or w/DB | -- |
| Meter Calibration Factor | 0.974 | 0.974 | 0.974 | | | |
| Pitot Tube Coefficient | 0.7240 | 0.7240 | 0.7240 | | | |
| Average Nozzle Diameter | 0.156 | 0.156 | 0.156 | | in | |
| **Stack Test Data** | PM U-00001 Base+DB-1 | PM U-00001 Base+DB-2 | PM U-00001 Base+DB-3 | **Average** | **Units** | **Limits** |
| Initial Meter Volume | 49.090 | 126.000 | 204.310 | | $ft^3$ | |
| Final Meter Volume | 149.780 | 227.550 | 307.440 | | $ft^3$ | |
| Total Meter Volume | 100.690 | 101.550 | 103.130 | 101.790 | $ft^3$ | |
| Total Sampling Time | 265.50 | 265.50 | 267.00 | 266.00 | min | |
| Average Meter Temperature | 70.08 | 68.08 | 73.58 | 70.58 | °F | |
| Average Stack Temperature | 177.08 | 173.58 | 171.75 | 174.14 | °F | |
| Barometric Pressure | 30.14 | 30.02 | 30.14 | 30.10 | in Hg | |
| Stack Static Pressure | 0.95 | 0.95 | 0.95 | 0.95 | in $H_2O$ | |
| Absolute Stack Pressure | 30.21 | 30.09 | 30.21 | 30.17 | in Hg | |
| Average Orifice Pressure Drop | 0.44 | 0.44 | 0.44 | 0.44 | in $H_2O$ | |
| Absolute Meter Pressure | 30.28 | 30.16 | 30.28 | 30.24 | in Hg | |
| Avg Square Root Pitot Pressure | 1.15 | 1.15 | 1.15 | 1.15 | $\sqrt{(in\ H_2O)}$ | |
| **Moisture Content Data** | PM U-00001 Base+DB-1 | PM U-00001 Base+DB-2 | PM U-00001 Base+DB-3 | **Average** | **Units** | **Limits** |
| Impinger Water Weight Gain | 140.20 | 132.90 | 140.60 | 137.90 | g | |
| Silica Gel Weight Gain | 15.60 | 17.30 | 18.00 | 16.97 | g | |
| Total Water Volume Collected | 156.08 | 150.47 | 158.89 | 155.15 | ml | |
| Standard Water Vapor Volume | 7.35 | 7.08 | 7.48 | 7.30 | scf | |
| Standard Meter Volume | 98.5 | 99.3 | 100.2 | 99.4 | dscf | |
| Standard Metric Meter Volume | 2.8 | 2.8 | 2.8 | 2.8 | dscm | |
| Calculated Stack Moisture | 6.94 | 6.66 | 6.94 | 6.85 | % | |
| Saturated Stack Moisture | 47.32 | 43.90 | 41.94 | 44.39 | % | |
| Reported Stack Moisture Content | 6.94 | 6.66 | 6.94 | 6.85 | % | |
| **Gas Analysis Data** | PM U-00001 Base+DB-1 | PM U-00001 Base+DB-2 | PM U-00001 Base+DB-3 | **Average** | **Units** | **Limits** |
| Carbon Dioxide Content | 5.3 | 5.3 | 5.3 | 5.3 | % | |
| Oxygen Content | 11.7 | 11.7 | 11.7 | 11.7 | % | |
| Carbon Monoxide Content | 0.0 | 0.0 | 0.0 | 0.0 | ppm | |
| Nitrogen Content | 83.0 | 83.0 | 83.0 | 83.0 | % | |
| Stack Dry Molecular Weight | 29.32 | 29.31 | 29.31 | 29.31 | lb/lb-mole | |
| Stack Wet Molecular Weight | 28.53 | 28.56 | 28.53 | 28.54 | lb/lb-mole | |
| Calculated Fuel Factor | 1.740 | 1.742 | 1.746 | 1.742 | | |
| Fuel F-Factor | 8643.54 | 8642.95 | 8642.95 | 8643.15 | dscf/MMBtu | |
| Percent Excess Air | 114.1 | 113.9 | 114.0 | 114.0 | % | |

## METHOD 201A (FRONT) AND 202 (BACK) - RESULTS

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#1 |

| **Volumetric Flow Rate Data** | PM U-00001 Base+DB-1 | PM U-00001 Base+DB-2 | PM U-00001 Base+DB-3 | **Average** | **Units** | **Limits** |
|---|---|---|---|---|---|---|
| Average Stack Gas Velocity | 61.04 | 60.96 | 61.18 | 61.06 | ft/sec | |
| Stack Cross-Sectional Area | 283.53 | 283.53 | 283.53 | 283.53 | ft² | |
| Actual Stack Flow Rate | 1,038,396 | 1,037,023 | 1,040,829 | 1,038,749 | acfm | |
| Wet Standard Stack Flow Rate | 52,136 | 52,147 | 52,699 | 52,327 | wkscfh | |
| Dry Standard Stack Flow Rate | 48,518,112 | 48,676,456 | 49,040,823 | 48,745,130 | dscfh | |
| Percent of Isokinetic Rate | 98.1 | 98.6 | 98.2 | 98.3 | % | |
| **Gravimetric Analysis** | PM U-00001 Base+DB-1 | PM U-00001 Base+DB-2 | PM U-00001 Base+DB-3 | **Average** | **Units** | **Limits** |
| $NH_4OH$ Correction | 0.0000 | 0.0000 | 0.0000 | 0.0000 | ml | |
| $NH_4OH$ Correction | 0.0000 | 0.0000 | 0.0000 | 0.0000 | mg | |
| **Emission Rate Data** | PM U-00001 Base+DB-1 | PM U-00001 Base+DB-2 | PM U-00001 Base+DB-3 | **Average** | **Units** | **Limits** |
| Total $PM_{10}$ Mass | 6.80 | 6.30 | 6.30 | 6.47 | mg | -- |
| Total $PM_{10}$ Concentration | 6.90E-05 | 6.34E-05 | 6.29E-05 | 6.51E-05 | g/dscf | -- |
| | 1.07E-03 | 9.79E-04 | 9.70E-04 | 1.00E-03 | gr/dscf | -- |
| Total $PM_{10}$ Emission Rate | 3.35 | 3.09 | 3.08 | 3.17 | kg/hr | -- |
| | 7.38 | 6.81 | 6.80 | 7.00 | lb/hr | -- |
| | 32.34 | 29.81 | 29.76 | 30.64 | tpy | -- |
| | 0.0030 | 0.0027 | 0.0027 | 0.0028 | lb/MMBtu | 0.006 |
| Filterable $PM_{10}$ Mass | 2.90 | 3.40 | 3.50 | 3.27 | mg | -- |
| Filterable $PM_{10}$ Concentration | 2.94E-05 | 3.42E-05 | 3.49E-05 | 3.29E-05 | g/dscf | -- |
| | 4.54E-04 | 5.28E-04 | 5.39E-04 | 5.07E-04 | gr/dscf | -- |
| Filterable $PM_{10}$ Emission Rate | 1.43 | 1.67 | 1.71 | 1.60 | kg/hr | -- |
| | 3.15 | 3.67 | 3.78 | 3.53 | lb/hr | -- |
| | 13.79 | 16.09 | 16.54 | 15.47 | tpy | -- |
| | 0.0013 | 0.0015 | 0.0015 | 0.0014 | lb/MMBtu | -- |
| Condensable $PM_{10}$ Mass | 3.90 | 2.90 | 2.80 | 3.20 | mg | -- |
| Condensable $PM_{10}$ Concentration | 3.96E-05 | 2.92E-05 | 2.79E-05 | 3.22E-05 | g/dscf | -- |
| | 6.11E-04 | 4.51E-04 | 4.31E-04 | 4.98E-04 | gr/dscf | -- |
| Condensable $PM_{10}$ Emission Rate | 1.92 | 1.42 | 1.37 | 1.57 | kg/hr | -- |
| | 4.23 | 3.13 | 3.02 | 3.46 | lb/hr | -- |
| | 18.55 | 13.72 | 13.23 | 15.17 | tpy | -- |
| | 0.0017 | 0.0013 | 0.0012 | 0.0014 | lb/MMBtu | -- |
| **RM 201A Quality Control** | PM U-00001 Base+DB-1 | PM U-00001 Base+DB-2 | PM U-00001 Base+DB-3 | **Average** | **Units** | **Limits** |
| Stack Viscosity | 199.46 | 198.89 | 198.19 | 198.84 | µP | |
| Cyclone Flow Rate | 0.476 | 0.478 | 0.478 | 0.478 | ft³/min | |
| Dry Gas Sampling Rate | 0.371 | 0.374 | 0.375 | 0.374 | dscfm | |
| Reynolds Number | 2792.15 | 2818.10 | 2843.00 | 2,817.75 | | |
| Recalculated Cunninham | 1.076 | 1.076 | 1.076 | 1.076 | | |
| Dia. of 50% Prob. (D50) CI | 10.61 | 10.55 | 10.51 | 10.56 | | |
| Recalculated D50-1 for CIV | 2.36 | 2.33 | 2.32 | 2.33 | | |
| Z | 1.00 | 1.00 | 1.00 | 1.00 | | |
| No. Sampling Pts. Outside Δp | 0 | 0 | 0 | 0 | points | |

**EXAMPLE CALCULATIONS (Reference Method 1 - Circular Stack)**

**Diameter of Stack (in.)**

$$D(in.) = L_{fw} - L_{nw}$$

D (in.) = 236.00 in. - 8.00 in. = 228.00 in.

**Stack Diameters Downstream**

$$B_D\,(dia.) = \frac{B}{D}$$

$B_D$ (dia.) = $\frac{850.00 \text{ in.}}{228.00 \text{ in.}}$ = 3.73 diameters

**Area of Stack ($ft^2$)**

$$A_s\,(ft^2) = \pi \times \left(\frac{D}{2 \times 12}\right)^2$$

$A_s$ ($ft^2$) = 3.14 x ( $\frac{228.00 \text{ in.}}{2 \text{ x } 12\text{in./ft}}$ )$^2$ = 283.53 $ft^2$

**Stack Diameters Upstream**

$$A_D\,(dia.) = \frac{A}{D}$$

$A_D$ (dia.) = $\frac{200.40 \text{ in.}}{228.00 \text{ in.}}$ = 0.88 diameters

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Reference Method 3a) [Values from Run 1 test]**

**Carbon Monoxide Concentration (%)**

$$\%CO = \frac{ppmCO}{10{,}000}$$

$$\%CO\ (\%) = \frac{0.00 \quad ppm}{10{,}000\ ppm/\%} = 0.0000\ \%$$

**Nitrogen Concentration (%)**

$$\%N_2 = 100 - \%CO_2 - \%O_2 - \%CO$$

$\%N_2$ (%) = 100 - 5.30 % - 11.68 % - 0.00 / 10,000 % = 83.02 %

**Stack Dry Molecular Weight (lb/lb-mole)**

$$M_d\,(lb/lb-mol) = \sum\left(\frac{MW_{comp}}{100} \times \%component\right)$$

$$M_d\ (lb/lb\text{-}mol) = \left(\frac{44\ lb/lb\text{-}mol}{100} \times 5.30\ \%\right) +$$

$$\left(\frac{32\ lb/lb\text{-}mol}{100} \times 11.68\ \%\right) + \left(\frac{28\ lb/lb\text{-}mol}{100} \times \left[\frac{0.00}{10{,}000} + 83.02\ \right]\right) = \frac{29.32\ lb}{lb\text{-}mol}$$

**Stack Wet Molecular Weight (lb/lb-mole)**

$$M_S\,(lb/lb-mol) = \left[M_d \times \left(1 - \frac{B_{WS}}{100}\right)\right] + \left[MW_{H_2O} \times \frac{B_{WS}}{100}\right]$$

$$M_S\ (lb/lb\text{-}mol) = \left\{\frac{29.32\ lb}{lb\text{-}mol} \times \left(1 - \frac{6.94\ \%}{100}\right)\right\} + \left\{\frac{18\ lb}{lb\text{-}mol} \times \frac{6.94\ \%}{100}\right\} = \frac{28.53\ lb}{lb\text{-}mol}$$

**Average Calculated Fuel Factor ($F_o$)**

$$F_{o(avg)} = \frac{\left[20.9 - (\%O_2)_{avg} - (0.5 \times (\%CO)_{avg})\right]}{(\%CO_2)_{avg} + (\%CO)_{avg}}$$

$$F_{o(avg)} = \frac{20.9\% - 11.68\ \% - (0.5 \times 0.000\ \%)}{5.30\ \% + 0.000\ \%} = 1.740$$

**Average Excess Air (%)**

$$\%EA_{avg}\,(\%) = \frac{100 \times \left[(\%O_2)_{avg} - (0.5 \times (\%CO)_{avg})\right]}{(0.264 \times (N_2)_{avg}) - \left[(\%O_2)_{avg} - (0.5 \times (\%CO)_{avg})\right]}$$

$$(\%EA)_{AVG} = \frac{100 \times \{\ 11.68\ \% - (0.5 \times 0.000\ \%)\ \}}{(\ 0.264 \times 83.02\ \%) - \{\ 11.68\ \% - (0.5 \times 0.000\ \%)\}} = 114.09\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Reference Method 2) [Values from Run 1 test]**

**Absolute Stack Pressure (in. Hg)**

$$P_S\,(in.Hg) = P_b + \frac{P_{static}}{13.6}$$

$P_s$ (in. Hg) = 30.14 in. Hg + $\frac{0.95 \text{ in. } H_2O}{13.6 \text{ in. } H_2O/\text{in. Hg}}$ = 30.21 in. Hg

**Average Stack Gas Velocity (ft/sec)**

$$v_s\,(ft/\sec) = K_p \times C_p \times \left(\sqrt{\Delta p}\right)_{avg} \times \sqrt{\frac{(t_s)_{avg} + T_u}{P_s \times M_s}}$$

$v_{sl}$ (ft/sec) =

$\left(\frac{85.49 \text{ ft (lb/lb-mol)(in. Hg)}}{\sec \quad (^oR)(\text{in. } H_2O)}\right)^{1/2}$ x 0.72 x 1.15 in.$H_2O^{1/2}$ x $\sqrt{\frac{177.08 + 460\ ^oR}{30.21 \text{ in. Hg x } 28.53 \text{ lb/lb-mol}}}$ = $\frac{61.0 \text{ ft}}{\sec}$

**Average Stack Dry Standard Flow Rate (dscfh)**

$$Q_{sd}\,(dscfh) = \frac{60 \times 60 \times \left(1 - \frac{B_{ws}}{100}\right) \times v_s \times A_s \times T_{std} \times P_s}{(t_s + T_u) \times P_{std}}$$

$Q_{sd}$ (dscf/hr) = $\frac{3600 \text{ sec}}{\text{hr}}$ x (1 - $\frac{6.94\ \%}{100}$) x $\frac{61.04 \text{ ft}}{\sec}$ x 283.53 $ft^2$ x $\frac{68.00 + 460\ ^oR}{177.08 + 460\ ^oR}$ x $\frac{30.21 \text{ in. Hg}}{29.92 \text{ in. Hg}}$ = $\frac{48{,}518{,}112.28 \text{ dscf}}{\text{hr}}$

**Average Stack Wet Flow Rate (acfm)**

$$Q_{aw}\,(acfm) = 60 \times v_s \times A_s$$

$Q_{aw}$ (acf/min) = $\frac{60 \text{ sec}}{\text{min}}$ x $\frac{61.04 \text{ ft}}{\sec}$ x 283.53 $ft^2$ = $\frac{1{,}038{,}395.55 \text{ acf}}{\text{min}}$

**Average Stack Wet Standard Flow Rate (ascfh)**

$$Q_{sw}\,(ascfh) = \frac{60 \times Q_{aw} \times T_{std} \times P_s}{(t_s + T_u) \times P_{std}}$$

$Q_{sw}$ (ascf/hr) = $\frac{60 \text{ min}}{\text{hr}}$ x $\frac{1{,}038{,}395.55 \text{ acf}}{\text{min}}$ x $\frac{68.00 + 460\ ^oR}{177.08 + 460\ ^oR}$ x $\frac{30.21 \text{ in. Hg}}{29.92 \text{ in. Hg}}$ = $\frac{52{,}136{,}127.46 \text{ ascf}}{\text{hr}}$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Reference Method 4) [Values from Run 1 test]**

**Water Volume Weighed (scf)**

$$V_{wsg\ (std)}(scf) = W_t \times K_5$$

$V_{wsg(std)}$ = 155.80 g x 0.04715 $ft^3/g$ = 7.346 scf

**Standard Meter Volume (dscf)**

$$V_{m(std)}(dscf) = \frac{K_1 \times Y \times V_m \times \left(P_b + \frac{\Delta H_{avg}}{13.6}\right)}{(t_m)_{avg} + T_u}$$

$$V_{m(std)} = \frac{\frac{17.65\ ^\circ R}{in.\ Hg} \times 0.97 \times 100.69\ dcf \times \left(30.14\ in.\ Hg + \frac{0.44\ in.\ H_2O}{13.6\ in.\ H_2O / in.\ Hg}\right)}{70.08\ ^\circ F + 460\ ^\circ R} = 98.51\ dscf$$

**Calculated Moisture Content (%)**

$$B_{ws(calc)}(\%) = 100 \times \frac{V_{wsg(std)}}{V_{wsg(std)} + V_{m(std)}}$$

$$B_{ws(calc)} = 100 \times \frac{7.35\ dscf}{7.35\ dscf + 98.51\ dscf} = 6.94\ \%$$

**Saturated Moisture Content (%)**

$$B_{ws(svp)}(\%) = 100 \times \frac{10^{\left(6.691 - \frac{3144}{t_{s(avg)} + 390.86}\right)}}{P_b + \frac{P_{static}}{13.6}} \leq 100$$

$$B_{ws(svp)} = 100 \times \frac{10^{\left(6.691 - \frac{3144}{177.08\ ^\circ F + 390.86}\right)}}{30.14\ in.\ Hg + \frac{0.95\ in.\ H_2O}{13.6\ in.\ H_2O / in.\ Hg}} \leq 100 = 47.32\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Isokinetic Sampling) [Values from Run 1 test]**

**Desired Orifice (in. $H_2O$)** (first point)

$$\Delta H_d(in.H_2O) = K \times \Delta p$$

$\Delta H_d$ (in. $H_2O$) = x

in. $H_2O$ = in. $H_2O$

**Absolute Meter Pressure (in. Hg)**

$$P_m(in.Hg) = P_b + \frac{\Delta H@}{13.6}$$

$P_m$ (in. Hg) = 30.14 in. Hg + $\frac{1.88 \text{ in. } H_2O}{13.6 \text{ in. } H_2O/\text{in. Hg}}$ = 30.28 in. Hg

**Recommended Nozzle Diameter (in.)**

$$D_{ni}(in.) = \sqrt{\frac{C_n \times Q_m \times P_m}{(t_m + T_u) \times C_p} \times \left(\frac{1 - \frac{B_{wm}}{100}}{1 - \frac{B_{ws}}{100}}\right)} \times \sqrt{(t_s + T_u) \times \left[\frac{M_d \times \left(1 - \frac{B_{ws}}{100}\right) + \left(18 \times \frac{B_{ws}}{100}\right)}{P_s \times \Delta p_{avg}}\right]}$$

$D_{ni}$ (in.) = $\sqrt{\frac{0.03575 \text{ (lb-mole•°R•in. } H_2O)^{1/2} \text{•min•in.}^2}{\text{acf•in. Hg}^{3/4} \text{•lb}^{1/2}} \text{ x } 0.75 \text{ acf x } 30.28 \text{ in. Hg } \left(1 - \frac{0.00\ \%}{100}\right) \text{ x } \left(\frac{1}{1 - \frac{6.94\ \%}{100}}\right) \text{ x}}$

$\sqrt{\left(70.08 \text{ °F} + 460\text{°R}\right) \text{x } 0.72 \text{ ( } 177.08 \text{ °F} + 460\text{°R ) x } \frac{\frac{29.32 \text{ lb}}{\text{lb-mole}} \text{ x } \left(1 - \frac{6.94\ \%}{100}\right) + \left(\frac{18 \text{ lb}}{\text{lb-mol}} \text{ x } \frac{6.94\ \%}{100}\right)}{30.21 \text{ in. Hg x } 1.15 \text{ in. } H_2O}}$ = 0.220 in.

**ΔP to ΔH Isokinetic Factor**

$$K = C_k \times C_p^2 \times \Delta H@ \times D_{na}^4 \times \left[\frac{M_d \times \left(1 - \frac{B_{wm}}{100}\right) + \left(18 \times \frac{B_{wm}}{100}\right)}{M_d \times \left(1 - \frac{B_{ws}}{100}\right) + \left(18 \times \frac{B_{ws}}{100}\right)}\right] \times \left(\frac{1 - \frac{B_{ws}}{100}}{1 - \frac{B_{wm}}{100}}\right)^2 \times \left(\frac{t_m + T_u}{ts + T_u}\right) \times \frac{P_s}{P_m}$$

K = $\frac{849.8}{\text{in. } H_2O\text{•in.}^4}$ x 0.72 $^2$ x 1.88 in. $H_2O$ x 0.16 $^4$ x $\left(\frac{1 - \frac{6.94\ \%}{100}}{1 - \frac{0.00\ \%}{100}}\right)^2$ x $\frac{70.08 \text{ °F} + 460\text{°R}}{177.08 \text{ °F} + 460\text{°R}}$ ) x

$\left(\frac{\frac{29.32 \text{ lb}}{\text{lb/mole}} \text{ x } \left(1 - \frac{0.00\ \%}{100}\right) + \left(\frac{18 \text{ lb}}{\text{lb-mol}} \text{ x } \frac{0.00\ \%}{100}\right)}{\frac{29.32 \text{ lb}}{\text{lb/mole}} \text{ x } \left(1 - \frac{6.94\ \%}{100}\right) + \left(\frac{18 \text{ lb}}{\text{lb-mol}} \text{ x } \frac{6.94\ \%}{100}\right)}\right) \text{ x } \frac{30.21 \text{ in. Hg}}{30.28 \text{ in. Hg}}$ = 0.37

**Percent Isokinetic (%)** (first point)

$$I(\%) = \frac{K_4 \times \left((t_s)_{avg} + T_u\right) \times V_{m(std)}}{\left(\Theta \times (v_{s(l)})_{avg} \times P_s \times \pi \times \left(\frac{D_{na}}{2} \times \frac{1}{12}\right)^2\right) \times \left(1 - \frac{B_{ws}}{100}\right)}$$

I (%) = $\frac{0.0945 \text{ min•in. Hg}}{\text{sec•°R}}$ x ( 175.00 °F + 460 °R) x 8.38 dscf

22.00 min x $\frac{60.57 \text{ ft}}{\text{sec}}$ x 30.21 in. Hg x 3.14 x $\left(\frac{0.16 \text{ in.}}{2} \text{ x } \frac{\text{ft.}}{12 \text{ in.}}\right)^2$ x $\left(1 - \frac{6.94\ \%}{100}\right)$ = 101.16 %

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Isokinetic Sampling) [Values from Run 1 test]**

**Cumulative Percent Isokinetic (%)** (weighted average of all points)

$$I(\%) = \sum_{1-n} \frac{\left[I(\%) \times V_{m(std)}\right]_{1-n}}{V_{m(std)_{1-n}}}$$

Using Method 5, Eq 5-8 to determine intermediate isokinetics at each point, weighted averaging of the cumulative isokinetics is necessary since all points are not equal, and determined by using the dry standard meter volume collected at each point to weight the cumulative average. Intermediate isokinetics and dry standard meter volumes are found at each point. At each point the cumulative sum is found of each value and the quotient of the two used to determine the cumulative isokinetics for each residual point (n).

| Pt | In (%) | x | Vm(std)n | = | I (%)n | ∑(I (%)n) | / | ∑(Vm(std)n) | = | I (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| A-1 | 101.16 | x | 8.383 | = | 847.99 | 847.99 | / | 8.38 | = | 101.2 |
| A-2 | 97.05 | x | 8.630 | = | 837.55 | 1685.54 | / | 17.01 | = | 99.1 |
| A-3 | 97.24 | x | 8.634 | = | 839.51 | 2525.06 | / | 25.65 | = | 98.5 |
| B-1 | 102.88 | x | 7.906 | = | 813.38 | 3338.43 | / | 33.55 | = | 99.5 |
| B-2 | 99.33 | x | 8.212 | = | 815.72 | 4154.15 | / | 41.76 | = | 99.5 |
| B-3 | 99.61 | x | 8.845 | = | 881.03 | 5035.18 | / | 50.61 | = | 99.5 |
| C-1 | 95.56 | x | 7.901 | = | 755.04 | 5790.22 | / | 58.51 | = | 99.0 |
| C-2 | 98.25 | x | 7.544 | = | 741.26 | 6531.48 | / | 66.05 | = | 98.9 |
| C-3 | 99.89 | x | 8.259 | = | 824.98 | 7356.46 | / | 74.31 | = | 99.0 |
| D-1 | 94.34 | x | 8.376 | = | 790.16 | 8146.61 | / | 82.69 | = | 98.5 |
| D-2 | 96.89 | x | 8.004 | = | 775.54 | 8922.15 | / | 90.69 | = | 98.4 |
| D-3 | 94.63 | x | 7.823 | = | 740.26 | 9662.42 | / | 98.52 | => | 98.1 |

Last Pt

**Percent Isokinetic (%)** (intermediate equation, all points)
[equivalent to taking an average of point-by-point isokinetics without weighting the average (e.g. all points equal)]

$$I(\%) = \frac{K_4 \times \left((t_s)_{avg} + T_u\right) \times V_{m(std)}}{\left(\Theta \times (v_{s(l)})_{avg} \times P_s \times \pi \times \left(\frac{D_{na}}{2} \times \frac{1}{12}\right)^2\right) \times \left(1 - \frac{B_{ws}}{100}\right)}$$

$$I(\%) = \frac{\frac{0.0945 \text{ min•in. Hg}}{\text{sec•}^{\circ}\text{R}} \times (177.08\ ^{\circ}\text{F} + 460\ ^{\circ}\text{R}) \times 98.51 \text{ dscf}}{265.50 \text{ min} \times \frac{61.04 \text{ ft}}{\text{sec}} \times 30.21 \text{ in. Hg} \times 3.14 \times \left(\frac{0.16 \text{ in.}}{2} \times \frac{\text{ft.}}{12 \text{ in.}}\right)^2 \times \left(1 - \frac{6.94\ \%}{100}\right)} = 98.07\ \%$$

**Raw Data Percent Isokinetic (%)**
[utilizes the raw data equation for isokinetics from Method 5]

$$I(\%) = \frac{100\left((t_s)_{avg} + T_u\right)\left[K_4 V_{1c} + \frac{V_m Y}{(t_m)_{avg} + T_u}\left(P_{bar} + \frac{\Delta H}{13.6}\right)\right]}{60\left(\Theta \times (v_{s(l)})_{avg} \times P_s \times \pi \times \left(\frac{D_{na}}{2} \times \frac{1}{12}\right)^2\right)}$$

$$I(\%) = \frac{100 \times (177.08\ ^{\circ}\text{F} + 460\ ^{\circ}\text{R}) \times \left[\frac{0.002669 \text{ ft}^3\text{•in. Hg}}{\text{ml•}^{\circ}\text{R}} \times 156.1 \text{ ml} + \frac{100.69 \text{ dcf} \times 0.974}{70.08\ ^{\circ}\text{F} + 460\ ^{\circ}\text{R}} \left(30.14 \text{ in Hg} + \frac{1.147}{13.6}\right)\right]}{60 \times 265.50 \text{ min} \times \frac{61.04 \text{ ft}}{\text{sec}} \times 30.21 \text{ in. Hg} \times 3.14 \times \left(\frac{0.16 \text{ in.}}{2} \times \frac{\text{ft.}}{12 \text{ in.}}\right)^2} = 98.18\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Gravimetric Analysis) [Values from Run 1 test]**

**Blank Concentration [Acetone Blank Weight of Solids] (mg/ml)**

$$C_x(mg/ml) = \frac{1000 \times w_x}{v_x}$$

$C_x$ (mg/ml) = $\frac{1000\ mg}{g}$ x $\frac{0.0000\ g}{200.60\ ml}$ = $\frac{0.0000\ mg}{ml}$ = $\frac{\quad mg}{ml}$

**Blank Adjustment [Acetone Blank Weight of Solids and Nozzle Wash PM>10] (mg)**

$$W_x(mg) = v_x \times C_x$$

$W_x$ (mg) = 140 ml x 0.0000 mg/ml = 0.00 mg < Sample Gain

**Sample Gain [Nozzle Wash PM>10] (mg)**

$$m_x(mg) = \left(m_{fx} - m_{tx}\right) \times 1000$$

$m_x$ (mg) = $\frac{1000\ mg}{g}$ x ( 0.0011 g - 0.00 g ) = 1.10 mg

**Adjusted Sample Gain [Nozzle Wash PM>10] (mg)**

$$m_{xadj}(mg) = m_x - W_x$$

$m_{xadj}$ (mg) = 1.1 mg - 0.00 mg = 1.10 mg

**0.1N $NH_4OH$ Correction (mg)**

$$m_c(mg) = 17.03 \times V_t \times N$$

$m_c$ (mg) = 17.03 x 0.00 ml x 0.1 N = 0.00 mg

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Analysis) [Values from Run 1 test - Total $PM_{10}$ Mass]**

**Stack Total Concentration (g/dscf)**

$$c_s(g/dscf) = 0.001 \times \frac{M_n}{V_{m(std)}}$$

$$c_s \text{ (g/dscf)} = \frac{\text{g}}{\text{1000 mg}} \times \frac{\text{6.80 mg}}{\text{98.51 dscf}} = \frac{\text{6.90E-05 g}}{\text{dscf}}$$

**Stack Total Concentration (gr/dscf)**

$$c_s'(gr/dscf) = 0.001 \times \frac{M_n}{V_{m(std)}} \times \frac{7000}{453.592}$$

$$c'_s \text{ (gr/dscf)} = \frac{\text{g}}{\text{1000 mg}} \times \frac{\text{6.80 mg}}{\text{98.51 dscf}} \times \frac{\text{7000 gr}}{\text{lb}} \times \frac{\text{lb}}{\text{453.592 g}} = \frac{\text{1.07E-03 gr}}{\text{dscf}}$$

**Total Emissions Rate (kg/hr)**

$$E(kg/hr) = c_s \times Q_{sd} \times \frac{kg}{1000\ g}$$

$$E \text{ (kg/hr)} = \frac{\text{kg}}{\text{1000 g}} \times \frac{\text{6.90E-05 g}}{\text{dscf}} \times \frac{\text{48,518,112 dscf}}{\text{hr}} = \frac{\text{3.35 kg}}{\text{hr}}$$

**Total Emissions Rate (lb/hr)**

$$E'(lb/hr) = \frac{M_n \times Q_{sd}}{V_{m(std)}} \times \frac{lb \times g}{453.592g \times 1000mg}$$

$$E' \text{ (lb/hr)} = \frac{\text{g}}{\text{1000 mg}} \times \frac{\text{lb}}{\text{453.592 g}} \times \frac{\text{6.80 mg}}{\text{98.51 dscf}} \times \frac{\text{48,518,112 dscf}}{\text{hr}} = \frac{\text{7.38 lb}}{\text{hr}}$$

**Total Emissions Rate (tpy)**

$$E''(ton/yr) = E' \times \frac{8760}{2000}$$

$$E'' \text{ (tpy)} = \frac{\text{ton}}{\text{2000 lb}} \times \frac{\text{8,760 hr}}{\text{yr}} \times \frac{\text{7.38 lb}}{\text{hr}} = \frac{\text{32.34 ton}}{\text{yr}}$$

**Total Emissions Rate (lb/MMBtu)**

Oxygen Based:

$$E'''(lb/MMBtu) = \frac{M_n \times F_d}{V_{m(std)} \times 1000 \times 453.592} \times \left(\frac{20.9}{20.9 - \%O_2}\right)$$

$$E''' \text{ (lb/MMBtu)} = \frac{\text{g}}{\text{1000 mg}} \times \frac{\text{lb}}{\text{453.592 g}} \times \frac{\text{6.80 mg}}{\text{98.51 dscf}} \times \frac{\text{8,643.54 dscf}}{\text{MMBtu}} \times \left(\frac{\text{20.9}}{\text{20.9 - 11.7 \%}}\right) = \frac{\text{0.0030 lb}}{\text{MMBtu}}$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Stack Gas Viscosity (μP) [based on preliminary data] [RM 201A, Eq. 3]**

$$\mu(\mu P) = C_1 + C_2\sqrt{T_s} + C_3 T_s^{-2} + C4(\%O_{2,wet}) - C_5 B_{ws} + C_6 B_{ws} T_s^2$$

μ (μP) = -150.3162 μP + 13.4622 $\sqrt{\quad 185 \quad + 460}$ + 3.86153x10$^{6}$ ( 185 + 460 )$^{-2}$ + 0.591123 ( 12.3 x (1 - 8.00 /100)
- 91.9723 ( 8.00 /100) + 1.51761x10$^{-5}$ ( 8.00 /100)( 185 + 460)$^2$ = 200.74 μP

**Cunningham Correction Factor [RM 201A, Eq. 4]**
**[based on preliminary data for a 2.25 micrometer diameter particle]**

$$C = 1 + 0.0057193\left[\frac{\mu}{P_s D_{50}}\right]\left[\frac{T_s}{M_w}\right]^{0.5}$$

$$C = 1 + 0.0057193 \times \left(\frac{200.74\ \mu P}{30.21\ \text{in Hg} \times 2.25\ \mu m}\right)\left(\frac{185 + 460\ ^{o}R}{28.40\ \text{lb / lb-mole}}\right)^{0.5} = 1.08$$

**First calculation set using Cyclone I or Cyclone I and IV, assuming $N_{re}$<3,162**

**Lower Limit Cut Diameter for Cyclone I (μm) [RM 201A, Eq. 5]**
**[assumes $N_{re}$<3,162]**

$$D_{50LL}(\mu m) = 9.507 C^{0.3007}\left[\frac{M_w P_s}{T_s}\right]^{0.1993}$$

$$D_{50LL}\ (\mu m) = 9.507 \times 1.08^{\ 0.3007} \times \left(\frac{30.21\ \text{in Hg} \times 28.40\ \text{lb / lb-mole}}{185 + 460\ ^{o}R}\right)^{0.1993} = 10.30\ \mu m$$

**Cut Diameter for Cyclone I for the Middle of the Overlap Zone (μm) [RM 201A, Eq. 6]**
**[assumes $N_{re}$<3,162]**

$$D_{50T}(\mu m) = \left(\frac{11 + D_{50LL}}{2}\right)$$

$$D_{50T}\ (\mu m) = \frac{11 + 10.30\ \mu m}{2} = 10.65\ \mu m$$

**Sampling Rate Using Both $PM_{10}$ and $PM_{2.5}$ Cyclones (acfm) [RM 201A, Eq. 7]**
**[assumes $N_{re}$<3,162]**

$$Q_s(acfm) = Q_I(acfm) = 0.07296(\mu)\left[\frac{T_s}{M_w P_s}\right]^{0.2949}\left[\frac{1}{D_{50T}}\right]^{1.4102}$$

Qs (acfm) =

$$0.07296 \times 200.74\ \mu P \times \left(\frac{185 + 460\ ^{o}R}{30.21\ \text{in Hg} \times 28.40\ \text{lb / lb-mole}}\right)^{0.2949} \times \left(\frac{1}{10.65\ \mu m}\right)^{1.4102} = 0.48\ acfm$$

**Reynolds Number (dimensionless) [RM 201A, Eq. 10]**
**[verification of $N_{re}$<3,162, using Cyclone I and IV]**

$$N_{re} = 8.64 \times 10^5\left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

Correct

$$N_{re} = 8.64 \times 10^5 \times \frac{30.21\ \text{in Hg} \times 28.40\ \text{lb / lb-mole}}{185 + 460\ ^{o}R} \times \frac{0.48\ acfm}{200.74\ \mu P} = 2742.55 < 3,162$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Second calculation set using Cyclone IV, assuming $N_{re}$<3,162**

**Particle Cut Diameter for $N_{re}$ Less than 3,162 for Cyclone IV (µm) [RM 201A, Eq. 34]**
**[assumes $N_{re}$<3,162]**

$D_{50}$ (µm) =

$$D_{50}(\mu m) = 0.0024302 \left[\frac{\mu}{Q_s}\right]^{1.1791} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.6790}$$

0.0024302 x ( 200.74 µP / 0.48 acfm )$^{1.1791}$ x ( 1 / 1.08 )$^{0.5}$ x ( 185 + 460 °R / 30.21 in Hg x 28.40 lb / lb-mole )$^{0.6790}$ = 2.38 µm

**Sampling Rate Using Only $PM_{2.5}$ Cyclone for $N_{re}$ Less than 3,162 (acfm) [RM 201A, Eq. 8]**

$Q_{IV}$ (acfm) =

$$Q_{IV}(acfm) = 0.0060639 \left(\frac{\mu}{C^{0.4242}}\right) \left[\frac{P_s M_w}{T_s}\right]^{-.05759} \left[\frac{1}{D_{50}}\right]^{0.8481}$$

0.0060639 x ( 200.74 µP / 1.08 $^{0.4242}$ ) x ( 30.21 in Hg x 28.40 lb / lb-mole / 185 + 460 °R )$^{-0.5759}$ x ( 1 / 2.38 µm )$^{0.8481}$ = 0.48 acfm

**Reynolds Number (dimensionless) [RM 201A, Eq. 10]**
**[verification of $N_{re}$<3,162, using Cyclone IV only]**

$$N_{re} = 8.64 \times 10^5 \left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

Correct

$N_{re}$ = 8.64 x $10^5$ x 30.21 in Hg x 28.40 lb / lb-mole / 185 + 460 °R x 0.48 acfm / 200.74 µP = 2742.50 < 3,162

**Third calculation set using Cyclone I or Cyclone I and IV, assuming $N_{re}$≥3,162**

**Lower Limit Cut Diameter for Cyclone I (µm) [RM 201A, Eq. 12]**
**[assumes $N_{re}$≥3,162]**

$$D_{50LL}(\mu m) = 10.0959 C^{0.4400} \left[\frac{M_w P_s}{T_s}\right]^{0.0600}$$

$D_{50LL}$ (µm) = 10.0959 x 1.08 $^{0.4400}$ x ( 30.21 in Hg x 28.40 lb / lb-mole / 185 + 460 °R )$^{0.0600}$ = 10.63 µm

**Cut Diameter for Cyclone I for the Middle of the Overlap Zone (µm) [RM 201A, Eq. 6]**
**[assumes $N_{re}$≥3,162]**

$$D_{50T}(\mu m) = \left(\frac{11 + D_{50LL}}{2}\right)$$

$D_{50T}$ (µm) = ( 11 + 10.63 µm ) / 2 = 10.81 µm

**Sampling Rate Using Both $PM_{10}$ and $PM_{2.5}$ Cyclones (acfm) [RM 201A, Eq. 7]**
**[assumes $N_{re}$≥3,162]**

Qs (acfm) =

$$Q_s(acfm) = Q_I(acfm) = 0.07296(\mu) \left[\frac{T_s}{M_w P_s}\right]^{0.2949} \left[\frac{1}{D_{50T}}\right]^{1.4102}$$

0.07296 x 200.74 µP x ( 185 + 460 °R / 30.21 in Hg x 28.40 lb / lb-mole )$^{0.2949}$ x ( 1 / 10.81 µm )$^{1.4102}$ = 0.47 acfm

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Reynolds Number (dimensionless) [RM 201A, Eq. 10]**
**[verification of $N_{re}$≥3,162, using Cyclone I and IV]**

$$N_{re} = 8.64 \times 10^5 \left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

Wrong Assumption

$N_{re}$ = 8.64 x $10^5$ x ( 30.21 in Hg x 28.40 lb / lb-mole ) / ( 185 + 460 °R ) x ( 0.47 acfm ) / ( 200.74 µP ) = 2684.42 < 3,162

**Fourth calculation set using Cyclone IV, assuming $N_{re}$≥3,162**

**Particle Cut Diameter for $N_{re}$ Greater than or Equal to 3,162 for Cyclone IV (µm) [RM 201A, Eq. 35]**
**[assumes $N_{re}$≥3,162]**

$$D_{50}(\mu m) = 0.019723 \left[\frac{\mu}{Q_s}\right]^{0.8058} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.3058}$$

$D_{50}$ (µm) =

0.019723 x ( ( 200.74 µP ) / ( 0.47 acfm ) )$^{0.8058}$ x ( ( 1 ) / ( 1.08 ) )$^{0.5}$
x ( ( 185 + 460 °R ) / ( 30.21 in Hg x 28.40 lb / lb-mole ) )$^{0.3058}$ = 2.29 µm

**Sampling Rate Using Only $PM_{2.5}$ Cyclone for $N_{re}$ Greater than or Equal to 3,162 (acfm) [RM 201A, Eq. 9]**

$$Q_{IV}(acfm) = 0.007657 \left(\frac{\mu}{C^{0.6205}}\right)\left[\frac{P_s M_w}{T_s}\right]^{-0.3795}\left[\frac{1}{D_{50}}\right]^{1.241}$$

$Q_{IV}$ (acfm) =

0.007657 x ( 200.74 µP ) / ( 1.08 $^{0.6205}$ ) x ( 30.21 in Hg x 28.40 lb / lb-mole ) / ( 185 + 460 °R )$^{-0.3795}$
x ( 1 ) / ( 2.29 µm )$^{1.241}$ = 0.47 acfm

**Reynolds Number (dimensionless) [RM 201A, Eq. 10]**
**[verification of $N_{re}$≥3,162, using Cyclone IV only]**

$$N_{re} = 8.64 \times 10^5 \left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

Wrong Assumption

$N_{re}$ = 8.64 x $10^5$ x ( 30.21 in Hg x 28.40 lb / lb-mole ) / ( 185 + 460 °R ) x ( 0.48 acfm ) / ( 200.74 µP ) = 2742.55 < 3,162

**Meter Box Orifice Pressure Drop (in $H_2O$) [RM 201A, Eq. 11]**
**As calculated using applicable calculation set 1, 2, 3, or 4**

$$\Delta H(inH_2O) = \left[\frac{Q_s(1 - B_{ws})P_s}{T_s}\right]^2 \left[\frac{1.083 T_m M_d \Delta H_@}{P_{bar}}\right]$$

ΔH (in $H_2O$) = ( 0.48 acfm x ( 1 - 8.00 /100) x 30.21 in Hg ) / ( 185 + 460 °R )$^2$
x ( 1.083 x ( 85.00 + 460 °R) x 29.31 lb / lb-mole x 1.878 in $H_2O$ ) / ( 30.14 in Hg ) = 0.459 in $H_2O$

| | | | | |
|---|---|---|---|---|
| 50 °F above stack temperature | $T_{s+50}$ = | 235 | $\Delta H_{+50}$ = | 0.395 in $H_2O$ |
| 50 °F below stack temperature | $T_{s+50}$ = | 135 | $\Delta H_{+50}$ = | 0.540 in $H_2O$ |

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Adjusted Velocity Pressure (in $H_2O$) [point A-1] [RM201A, Eq. 25]**

$$\Delta p_s(inH_2O) = \Delta p_m\left[\frac{C_p}{C'_p}\right]^2$$

$\Delta p_s$ (in $H_2O$) = 1.50 in $H_2O$ x ( 0.7240 / 0.8198 )$^2$ = 1.17 in $H_2O$

**Average Probe Blockage Factor [RM201A, Eq. 26]**

$$b_f = \frac{22.0}{A}$$

$b_f$ = 22.0 / 40828.14 $in^2$ = 5.39E-04

**Velocity Pressure Adjusted for Blockage Factor (in $H_2O$) [point A-1] [RM201A, Eq. 27]**

Target PM and/or Stack Size Not Applicable to Blockage Factor Calculation

$$\Delta p_{s2}(inH_2O) = \Delta p_{s1}\left[\frac{1}{(1-b_f)}\right]^2$$

$\Delta p_s$ (in $H_2O$) = 1.17 in $H_2O$ x ( 1 / ( 1 - 0.00E+00 ) )$^2$ = 1.17 in $H_2O$

**Velocity of Stack Gas Adjusted for Blockage Factor and/or $C_p$ / $C'_p$ (ft/sec) [RM201A, Eq. 13]**

Target PM and/or Stack Size Not Applicable to Blockage Factor Calculation

$$v_s = K_p C_p \left(\sqrt{(\Delta p)}\right)_{avg}\left[\sqrt{\frac{T_s}{P_s M_w}}\right]$$

$v_s$ (ft/sec) =

85.49 ft/sec / lb/mole - °R x 0.7240 x 1.04 x ( 185 + 460 °R / 30.21 in Hg x 28.40 lb / lb-mole )$^{0.5}$ = 55.57 ft/sec

**Calculated Nozzle Diameter for Acceptable Sampling Rate (in) [RM201A, Eq. 14]**

$$D(in) = \left[\frac{3.056 Q_s}{v_s}\right]^{0.5}$$

D (in) = ( 3.056 x 0.48 acfm / 55.57 ft/sec )$^{0.5}$ = 0.162 in

Represents ideal diameter, which we then compare to capabilities of all nozzles from multiple sets

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Velocity of Gas in Nozzle 4b (diam. = 0.156 in), (ft/sec) [RM201A, Eq. 15]**

$v_n$ (ft/sec) = $\frac{0.48 \text{ acfm}}{60 \text{ min/sec}} \div 1.33\text{E-}04 \text{ ft}^2$ = 60.16 $\frac{\text{ft}}{\text{sec}}$

Example set of calculations for nozzle used with run 1

$$v_n = \frac{\left(\frac{Q_s}{60\frac{\text{min}}{\text{sec}}}\right)}{A_n}$$

**Minimum Nozzle Velocity to Stack Velocity Ratio Parameter (dimensionless) [RM201A, Eq. 16]**

**Nozzle 4b (diam. = 0.156 in)**

$$R_{\min} = \left[0.2457 + \left(0.3072 - \frac{0.2603\,(\mu)(Q_s)^{0.5}}{v_n^{1.5}}\right)^{0.5}\right]$$

$R_{min}$ =

$0.2457 + (0.3072 - \frac{0.2603 \times 200.74 \text{ µP} \times (0.48 \text{ acfm})^{0.5}}{60.16 \text{ in}^{1.5}})^{0.5}$ = 0.72

**Maximum Nozzle Velocity to Stack Velocity Ratio Parameter (dimensionless) [RM201A, Eq. 17]**

**Nozzle 4b (diam. = 0.156 in)**

$$R_{\max} = \left[0.4457 + \left(0.5690 + \frac{0.2603\,(\mu)(Q_s)^{0.5}}{v_n^{1.5}}\right)^{0.5}\right]$$

$R_{max}$ =

$0.4457 + (0.5690 + \frac{0.2603 \times 200.74 \text{ µP} \times (0.48 \text{ acfm})^{0.5}}{60.16 \text{ in}^{1.5}})^{0.5}$ = 1.25

**Minimum Gas Velocity for $R_{min}$ Less than 0.5 (ft/sec)** **Nozzle 4b (diam. = 0.156 in)**

$v_{\min}\,(ft/\text{sec}) = v_n(0.5)$ $v_{min}$ (ft/sec) = 0.5 x $\frac{\text{ft}}{\text{sec}}$ = $\frac{\text{ft}}{\text{sec}}$ **[RM201A, Eq. 18]**

Not Applicable

**Minimum Gas Velocity for $R_{min}$ Greater than or Equal to 0.5 (ft/sec)** **Nozzle 4b (diam. = 0.156 in)**

$v_{\min}\,(ft/\text{sec}) = v_n R_{\min}$ $v_{min}$ (ft/sec) = 60.16 $\frac{\text{ft}}{\text{sec}}$ x 0.72 = 43.61 $\frac{\text{ft}}{\text{sec}}$ **[RM201A, Eq. 19]**

**Maximum Gas Velocity for $R_{max}$ Less than 1.5 (ft/sec)** **Nozzle 4b (diam. = 0.156 in)**

$v_{\max}\,(ft/\text{sec}) = v_n R_{\max}$ $v_{max}$ (ft/sec) = 60.16 $\frac{\text{ft}}{\text{sec}}$ x 1.25 = 75.18 $\frac{\text{ft}}{\text{sec}}$ **[RM201A, Eq. 20]**

**Maximum Gas Velocity for $R_{max}$ Greater than or Equal to 1.5 (ft/sec)** **Nozzle 4b (diam. = 0.156 in)**

$v_{\max}\,(ft/\text{sec}) = v_n(1.5)$ $v_{max}$ (ft/sec) = 1.5 x $\frac{\text{ft}}{\text{sec}}$ = $\frac{\text{ft}}{\text{sec}}$ **[RM201A, Eq. 21]**

Not Applicable

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Minimum Velocity Pressure (in $H_2O$) [RM201A, Eq. 22]** **Nozzle 4b (diam. = 0.156 in)**

Run 1 nozzle is able to achieve $\Delta p_{min}$ below preliminary data minimum

$$\Delta p_{min}\ (inH_2O) = 1.3686 \times 10^{-4}\left[\frac{P_s M_w}{T_s}\right]\left[\frac{v_{min}}{C_p}\right]^2$$

$\Delta p_{min}$ (in $H_2O$) =

$1.3686 \times 10^{-4} \times \left(\frac{30.21\ \text{in Hg} \times 28.40\ \text{lb / lb-mole}}{185 + 460\ ^{o}\text{R}}\right) \times \left(\frac{43.61\ \text{ft/sec}}{0.7240}\right)^2 =$ 0.66 in $H_2O$ vs. 1.01

**Maximum Velocity Pressure (in $H_2O$) [RM201A, Eq. 23]** **Nozzle 4b (diam. = 0.156 in)**

Run 1 nozzle is able to achieve $\Delta p_{max}$ above preliminary data maximum

$$\Delta p_{max}\ (inH_2O) = 1.3686 \times 10^{-4}\left[\frac{P_s M_w}{T_s}\right]\left[\frac{v_{max}}{C_p}\right]^2$$

$\Delta p_{max}$ (in $H_2O$) =

$1.3686 \times 10^{-4} \times \left(\frac{30.21\ \text{in Hg} \times 28.40\ \text{lb / lb-mole}}{185 + 460\ ^{o}\text{R}}\right) \times \left(\frac{75.18\ \text{ft/sec}}{0.7240}\right)^2 =$ 1.96 in $H_2O$ vs. 1.17

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Run 1 test]**

**Sampling Dwell Time at Each Point (minutes) [point A-1] [RM201A, Eq. 24]**

$$t_n\,(\text{min}) = \left[\frac{C_p\sqrt{\Delta p_n}}{C_p'\left(\sqrt{\Delta p_n}\right)_{avg}}\right]\left[\frac{t_r}{N_{tp}}\right]$$

$t_n$ (min) = $\left(\frac{0.7240 \times \left(\frac{1.30}{1.04}\right)^{0.5}}{0.7240}\right) \times \left(\frac{240.00\ \text{min}}{12.00}\right) =$ 22.03 minutes

**Dry Gas Volume Sampled at Standard Conditions (dscf) [point A-1] [RM201A, Eq. 28]**

$$v_{ms}\,(dscf) = \left[\frac{528}{29.92}\right]\left[\gamma \cdot v_m\right]\left[\frac{\left(P_{bar} + \frac{\Delta H}{13.6}\right)}{T_m}\right]$$

$v_{ms}$ (dscf) = $\left(\frac{528}{29.92}\right)$ ( 0.974 x 8.47 dcf ) x

$\left(\frac{30.14\ \text{in Hg} + 0.44\ \text{in } H_2O / 13.6}{64.00 + 460\ ^{o}\text{R}}\right) =$ 8.38 dscf

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Run 1 test]**

**Sample Flow Rate at Standard Conditions (dscfm) [RM201A, Eq. 29]**

$$Q_{sST}\,(dscfm) = \frac{v_{ms}}{\Theta}$$

$Q_{sST}$ (dscfm) = $\frac{98.51 \text{ dscf}}{265.50 \text{ min}}$ = $\frac{0.37 \text{ dscf}}{\text{min}}$

**Sampling Rate (acfm) [e.g. cyclone flow rate] [RM201A, Eq. 32]**

$$Q_s(acfm) = \frac{29.92}{528} Q_{sST} \left[\frac{1}{(1 - B_{ws})}\right]\left[\frac{T_s}{P_s}\right]$$

$Q_s$ (acfm) = $\frac{29.92 \text{ in Hg}}{528\ ^{o}\text{R}}$ x $\frac{0.37 \text{ dscf}}{\text{min}}$ x $\frac{1}{(1 - 6.94 /100)}$ x $\frac{177 + 460\ ^{o}\text{R}}{30.21 \text{ in Hg}}$ = 0.48 acfm

**Actual Conditions Reynolds Number (dimensionless) [RM 201A, Eq. 10]**

$$N_{re} = 8.64 \times 10^5 \left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

$N_{re}$ = 8.64 x $10^5$ x $\frac{30.21 \text{ in Hg x } 28.53 \text{ lb / lb-mole}}{177 + 460\ ^{o}\text{R}}$ x $\frac{0.48 \text{ acfm}}{199.46 \text{ µP}}$ = 2792.15

**Actual Conditions Particle Cut Diameter for Cyclone I (µm) [RM201A, Eq. 33]**

$$D_{50}(\mu m) = 0.15625 \left[\frac{T_s}{M_w P_s}\right]^{0.2091} \left[\frac{\mu}{Q_s}\right]^{0.7091}$$

$D_{50}$ (µm) = 0.15625 x ( $\frac{177 + 460\ ^{o}\text{R}}{30.21 \text{ in Hg x } 28.53 \text{ lb / lb-mole}}$ )$^{0.2091}$ x ( $\frac{199.46 \text{ µP}}{0.48 \text{ acfm}}$ )$^{0.7091}$ = 10.61 µm

**Actual Particle Cut Diameter for Cyclone IV is determined by:**

**Actual Conditions Cunningham Correction Factor [RM 201A, Eq. 4]**
**[for a 2.5 micrometer diameter particle (estimated size)]**

$$C = 1 + 0.0057193 \left[\frac{\mu}{P_s D_{50}}\right]\left[\frac{T_s}{M_w}\right]^{0.5}$$

C = 1 + 0.0057193 x ( $\frac{199.46 \text{ µP}}{30.21 \text{ in Hg x } 2.5 \text{ µm}}$ )( $\frac{177 + 460\ ^{o}\text{R}}{28.53 \text{ lb / lb-mole}}$ )$^{0.5}$ = 1.07

**Actual Conditions Particle Cut Diameter for $N_{re}$ Less than 3,162 for Cyclone IV (µm) [RM 201A, Eq. 34]**

$$D_{50}(\mu m) = 0.0024302 \left[\frac{\mu}{Q_s}\right]^{1.1791} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.6790}$$

$D_{50}$ (µm) =

0.0024302 x ( $\frac{199.46 \text{ µP}}{0.48 \text{ acfm}}$ )$^{1.1791}$ x ( $\frac{1}{1.07}$ )$^{0.5}$

x ( $\frac{177 + 460\ ^{o}\text{R}}{30.21 \text{ in Hg x } 28.53 \text{ lb / lb-mole}}$ )$^{0.6790}$ = 2.36 µm

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Run 1 test]**

**Actual Conditions Particle Cut Diameter for $N_{re}$ Greater than or Equal to 3,162 for Cyclone IV (µm) [RM 201A, Eq. 35]**

$$D_{50}(\mu m) = 0.019723 \left[\frac{\mu}{Q_s}\right]^{0.8058} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.3058}$$

$D_{50}$ (µm) =

0.019723 x ( µP / acfm )$^{0.8058}$ x ( 1 )$^{0.5}$ x ( + 460 °R / in Hg x lb / lb-mole )$^{0.3058}$ = µm

**Re-calculated Cunningham Correction Factor (dimensionless) [RM 201A, Eq. 36]**

$$C_r = 1 + 0.0057193 \left[\frac{\mu}{P_s D_{50}}\right]\left[\frac{T_s}{M_w}\right]^{0.5}$$

C = 1 + 0.0057193 x ( 199.46 µP / 30.21 in Hg x 2.36 µm )( 177 + 460 °R / 28.53 lb / lb-mole )$^{0.5}$ = 1.08

**Re-calculated Particle Cut Diameter for $N_{re}$ Less than 3,162 for Cyclone IV (µm) [RM 201A, Eq. 37]**

$$D_{50-1}(\mu m) = 0.0024302 \left[\frac{\mu}{Q_s}\right]^{1.1791} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.6790}$$

$D_{50-1}$ (µm) =

0.0024302 x ( 199.46 µP / 0.48 acfm )$^{1.1791}$ x ( 1 / 1.08 )$^{0.5}$ x ( 177 + 460 °R / 30.21 in Hg x 28.53 lb / lb-mole )$^{0.6790}$ = 2.36 µm

**Re-Calculated Particle Cut Diameter for $N_{re}$ Greater than or Equal to 3,162 for Cyclone IV (µm) [RM 201A, Eq. 38]**

$$D_{50-1}(\mu m) = 0.019723 \left[\frac{\mu}{Q_s}\right]^{0.8058} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.3058}$$

$D_{50-1}$ (µm) =

0.019723 x ( µP / acfm )$^{0.8058}$ x ( 1 )$^{0.5}$ x ( + 460 °R / in Hg x lb / lb-mole )$^{0.3058}$ = µm

**Ratio (Z) Between $D_{50}$ and $D_{50-1}$ Values (dimensionless) [RM 201A, Eq. 39]**

$$Z = \frac{D_{50-1}}{D_{50}} \qquad 0.99 \le \left[Z = \left(\frac{D_{50}}{D_{50-1}}\right)\right] \le 1.01$$

Z = 2.36 µm / 2.36 µm = 1.00

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

# TEST RESULTS AND CALCULATIONS

## Emissions Results
## Base+DB Load
## SAM

## METHOD 8A (CONTROLLED CONDENSATE) - RESULTS

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base+DB |
| **Project #** | U-00001 Base+DB |

| **Historical Data** | SAM U-00001 Base+DB-1 | SAM U-00001 Base+DB-2 | SAM U-00001 Base+DB-3 | **Average** | **Units** | **Limits** |
|---|---|---|---|---|---|---|
| Run Start Time | 14:40 | 04:09 | 07:26 | | hh:mm | |
| Run Stop Time | 16:40 | 06:09 | 09:26 | | hh:mm | |
| Test Date | 02/18/20 | 02/19/20 | 02/19/20 | | mm/dd/yy | |
| Load | Base+DB | Base+DB | Base+DB | | % or w/DB | -- |
| Meter Calibration Factor | 0.985 | 0.985 | 0.985 | | | |
| **Stack Test Data** | SAM U-00001 Base+DB-1 | SAM U-00001 Base+DB-2 | SAM U-00001 Base+DB-3 | **Average** | **Units** | **Limits** |
| Initial Meter Volume | 671.410 | SAM U-0001 Base+DB | 782.510 | | ft³ | |
| Final Meter Volume | 713.730 | 769.230 | 824.830 | | ft³ | |
| Total Meter Volume | 42.320 | 42.320 | 42.320 | 42.320 | ft³ | |
| Total Sampling Time | 120.00 | 120.00 | 120.00 | 120.00 | min | |
| Average Meter Temperature | 95.69 | 100.50 | 101.38 | 99.19 | °F | |
| Barometric Pressure | 30.14 | 30.02 | 30.14 | 30.10 | in Hg | |
| Stack Static Pressure | 0.95 | 0.95 | 0.95 | 0.95 | in $H_2O$ | |
| Absolute Stack Pressure | 30.21 | 43878.00 | 30.21 | 14646.14 | in Hg | |
| Average Orifice Pressure Drop | 0.34 | 0.34 | 0.34 | 0.34 | in $H_2O$ | |
| Absolute Meter Pressure | 30.27 | 30.15 | 30.27 | 30.23 | in Hg | |
| **Moisture Content Data** | SAM U-00001 Base+DB-1 | SAM U-00001 Base+DB-2 | SAM U-00001 Base+DB-3 | **Average** | **Units** | **Limits** |
| Impinger Water Weight Gain | 81.80 | 73.00 | 76.00 | 76.93 | g | |
| Silica Gel Weight Gain | 7.10 | 7.30 | 5.50 | 6.63 | g | |
| Total Water Volume Collected | 89.06 | 80.44 | 81.65 | 83.72 | ml | |
| Standard Water Vapor Volume | 4.19 | 3.79 | 3.84 | 3.94 | scf | |
| Standard Meter Volume | 39.9 | 39.4 | 39.5 | 39.6 | dscf | |
| Standard Metric Meter Volume | 1.1 | 1.1 | 1.1 | 1.1 | dscm | |
| Calculated Stack Moisture | 9.50 | 8.76 | 8.86 | 9.04 | % | |
| **Gas Analysis Data** | SAM U-00001 Base+DB-1 | SAM U-00001 Base+DB-2 | SAM U-00001 Base+DB-3 | **Average** | **Units** | **Limits** |
| Carbon Dioxide Content | 5.3 | 5.3 | 5.3 | 5.3 | % | |
| Oxygen Content | 11.7 | 11.7 | 11.7 | 11.7 | % | |
| Carbon Monoxide Content | 0.0 | 0.0 | 0.0 | 0.0 | ppm | |
| Nitrogen Content | 83.0 | 83.0 | 83.0 | 83.0 | % | |
| Stack Dry Molecular Weight | 29.32 | 29.32 | 29.32 | 29.32 | lb/lb-mole | |
| Calculated Fuel Factor | 1.736 | 1.736 | 1.736 | 1.736 | | |
| Fuel F-Factor | 8643.54 | 8642.95 | 8642.95 | 8643.15 | dscf/MMBtu | |
| **Sulfuric Acid Mist IC Analysis** | SAM U-00001 Base+DB-1 | SAM U-00001 Base+DB-2 | SAM U-00001 Base+DB-3 | **Average** | **Units** | **Limits** |
| $H_2SO_4$ (IC) Sample Volume - Front Half Rinse | 232.0 | 194.0 | 254.0 | 226.67 | ml | -- |
| $H_2SO_4$ (IC) Sample - Mass Per Volume | 0.103 | 0.206 | 0.220 | 0.18 | mg/L | -- |
| $H_2SO_4$ (IC) Mass | 0.02 | 0.04 | 0.06 | 0.04 | mg | -- |
| $H_2SO_4$ (IC) Concentration | 6.01E-07 | 1.01E-06 | 1.42E-06 | 1.01E-06 | g/dscf | -- |
| | 9.28E-06 | 1.57E-05 | 2.19E-05 | 1.56E-05 | gr/dscf | -- |
| | 2.12E-08 | 3.58E-08 | 5.00E-08 | 3.57E-08 | g/L | -- |
| | 0.01 | 0.01 | 0.01 | 0.01 | ppmvd | -- |
| $H_2SO_4$ (IC) Emission Rate | 0.00003 | 0.00004 | 0.00006 | 0.00004 | lb/MMBtu | 0.00065 |

Note: Run 1 reported at the RDL (0.024 mg)

**EXAMPLE CALCULATIONS (Reference Method 1 - Circular Stack)**

**Diameter of Stack (in.)**

$$D(in.) = L_{fw} - L_{nw}$$

D (in.) = 236.00 in. - 8.00 in. = 228.00 in.

**Stack Diameters Downstream**

$$B_D\,(dia.) = \frac{B}{D}$$

$B_D$ (dia.) = $\frac{850.00 \text{ in.}}{228.00 \text{ in.}}$ = 3.73 diameters

**Area of Stack ($ft^2$)**

$$A_s\,(ft^2) = \pi \times \left(\frac{D}{2 \times 12}\right)^2$$

$A_s$ ($ft^2$) = 3.14 x ( $\frac{228.00 \text{ in.}}{2 \text{ x } 12 \text{in./ft}}$ )$^2$ = 283.53 $ft^2$

**Stack Diameters Upstream**

$$A_D\,(dia.) = \frac{A}{D}$$

$A_D$ (dia.) = $\frac{200.40 \text{ in.}}{228.00 \text{ in.}}$ = 0.88 diameters

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Reference Method 4) [Values from Run 1 test]**

**Water Volume Weighed (scf)**

$$V_{wsg\ (std)}(scf) = W_t \times K_5$$

$V_{wsg(std)}$ = 88.90 g x 0.04715 $ft^3/g$ = 4.192 scf

**Standard Meter Volume (dscf)**

$$V_{m(std)}(dscf) = \frac{K_1 \times Y \times V_m \times \left(P_b + \frac{\Delta H_{avg}}{13.6}\right)}{(t_m)_{avg} + T_u}$$

$$V_{m(std)} = \frac{\frac{17.65\ ^\circ R}{in.\ Hg} \times 0.99 \times 42.32\ dcf \times \left(30.14\ in.\ Hg + \frac{0.34\ in.\ H_2O}{13.6\ in.\ H_2O / in.\ Hg}\right)}{95.69\ ^\circ F + 460\ ^\circ R} = 39.93\ dscf$$

**Calculated Moisture Content (%)**

$$B_{ws(calc)}(\%) = 100 \times \frac{V_{wsg(std)}}{V_{wsg(std)} + V_{m(std)}}$$

$$B_{ws(calc)} = 100 \times \frac{4.19\ dscf}{4.19\ dscf + 39.93\ dscf} = 9.50\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Analysis) [Values from Run 1 test - $H_2SO_4$ (IC)]**

**Stack $H_2SO_4$ Mass (mg)**

$$M_n(mg) = \frac{M_{n(lab)}}{V_{s(lab)}} \times V_{sample} \times \frac{L}{1000ml}$$

$M_n$ (mg) = $\frac{\text{L}}{\text{1000 ml}}$ x 0.10 $\frac{\text{mg}}{\text{L}}$ x 232.00 ml = 0.02 mg

**Stack $H_2SO_4$ Concentration (g/dscf)**

$$c_s(g/dscf) = 0.001 \times \frac{M_n}{V_{m(std)}}$$

$c_s$ (g/dscf) = $\frac{\text{g}}{\text{1000 mg}}$ x $\frac{\text{0.02 mg}}{\text{39.93 dscf}}$ = $\frac{\text{6.00E-07 g}}{\text{dscf}}$

**Stack $H_2SO_4$ Concentration (gr/dscf)**

$$c'_s(gr/dscf) = 0.001 \times \frac{M_n}{V_{m(std)}} \times \frac{7000}{453.592}$$

c'$_s$ (gr/dscf) = $\frac{\text{g}}{\text{1000 mg}}$ x $\frac{\text{0.02 mg}}{\text{39.93 dscf}}$ x $\frac{\text{7000 gr}}{\text{lb}}$ x $\frac{\text{lb}}{\text{453.592 g}}$ = $\frac{\text{9.28E-06 gr}}{\text{dscf}}$

**Stack $H_2SO_4$ Concentration (g/L)**

$$c''_s(g/L) = c'_s \times \frac{dscf}{28.31685 dsL}$$

c'$_s$ (gr/dscf) = 6.01E-07 $\frac{\text{g}}{\text{dscf}}$ x $\frac{\text{dscf}}{\text{28.31685 dsL}}$ = $\frac{\text{2.00E-08 g}}{\text{L}}$

**Stack $H_2SO_4$ Concentration (ppmvd)**

$$c'''_s(ppmvd) = \frac{M_n}{V_{m(std)}} \times Ideal\ Gas\ Constant \times \frac{10^6 parts}{million\ parts} \times \frac{1}{Mol\ Wt}$$

c'''$_s$ (ppmvd) = 2.12E-08 $\frac{\text{g}}{\text{L}}$ x $\frac{\text{24.04 L gas}}{\text{lb-mol}}$ x $\frac{10^6 \text{ parts}}{\text{MM parts}}$ x $\frac{\text{lb-mol}}{\text{98.0790 lb}}$ = 0.005 ppmvd

**$H_2SO_4$ Emissions Rate (lb/MMBtu)**

Oxygen Based:

$$E'''(lb/MMBtu) = \frac{M_n \times F_d}{V_{m(std)} \times 1000 \times 453.592} \times \left(\frac{20.9}{20.9 - \%O_2}\right)$$

E''' (lb/MMBtu) = $\frac{\text{g}}{\text{1000 mg}}$ x $\frac{\text{lb}}{\text{453.592 g}}$ x $\frac{\text{0.02 mg}}{\text{39.93 dscf}}$ x $\frac{\text{8,643.54 dscf}}{\text{MMBtu}}$ x ( $\frac{\text{20.9}}{\text{20.9 - 11.7 \%}}$ ) = $\frac{\text{0.00003 lb}}{\text{MMBtu}}$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

# APPENDIX B

# EMISSION DATA RECORDS

# Cricket Valley Energy Center LLC

| | |
|---|---|
| **Air Permit Number:** | 3-1326-00275/00009 |
| **Plant Name or Location:** | Cricket Valley Energy Center |
| **Date:** | February 17, 2020 |
| **Project Number:** | bec-19-cricketvalley.ny-start#1 |
| **Manufacturer & Equipment:** | General Electric |
| **Model:** | 7F.05 |
| **Unit Number:** | U-00001 |
| **Test Load:** | Multiiple |
| **Tester(s) / Test Unit(s):** | RW/AB/220/213 |

| | | RUN | | | | | |
|---|---|---|---|---|---|---|---|
| | **UNITS** | **1-1** | **1-2** | **1-3** | **2-1** | **2-2** | **2-3** |
| **Start Time** | hh:mm:ss | 13:35:04 | 14:50:04 | 16:00:04 | 04:25:06 | 05:33:06 | 06:41:06 |
| **End Time** | hh:mm:ss | 14:34:34 | 15:49:34 | 16:59:34 | 05:24:36 | 06:32:36 | 07:40:36 |
| **Bar. Pressure** | in. Hg | 30.28 | 30.28 | 30.30 | 30.07 | 30.11 | 30.15 |
| **Amb. Temp.** | °F | 43 | 43 | 45 | 37 | 36 | 34 |
| **Rel. Humidity** | % | 41 | 40 | 39 | 81 | 72 | 70 |
| **Spec. Humidity** | lb water / lb air | 0.002353 | 0.002295 | 0.002414 | 0.003714 | 0.003166 | 0.002837 |
| **Date** | mm/dd/yy | 02/17/20 | 02/17/20 | 02/17/20 | 02/19/20 | 02/19/20 | 02/19/20 |
| **Load Designator** | | Base | Base | Base | Base+DB | Base+DB | Base+DB |
| **$NH_3$ Flow Rate** | lb/hr | 169.8 | 164.8 | 172.3 | 199.8 | 204.9 | 206.9 |
| **Turbine Fuel Flow** | lb/min | 1,673 | 1,673 | 1,678 | 1,668 | 1,669 | 1,673 |
| **Duct Burner Fuel Flow** | lb/min | 0 | 0 | 0 | 158 | 158 | 158 |
| **Total Fuel Flow** | SCFH | 2,260,589 | 2,261,296 | 2,267,876 | 2,468,984 | 2,469,676 | 2,474,805 |
| **Stack Moisture** | % Method 4 | 5.77 | 5.77 | 5.77 | 6.66 | 6.66 | 6.66 |
| **Heat Input** | MMBtu/hr | 2303.3 | 2304.0 | 2310.7 | 2507.6 | 2508.3 | 2513.5 |
| **CT Power Output** | megawatts | 240.4 | 240.4 | 241.3 | 240.9 | 241.2 | 241.5 |

Note: Turbine fuel flow reduced by 1.5%, no change to duct burner fuel flow

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# EMISSION DATA RECORDS

## Operating Data Base Load
## (provided by Cricket Valley Energy Center LLC)
## NOx, CO, VOC, and $NH_3$

The U-00001 fuel flow rates (lbm/s) shown on the following pages are uncorrected values.

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/17 13:35 - 2/17 14:34) | 240.41 | 28.30 | 0.00 | 13.46 | 169.84 | 1166.47 |
| COUNT = 60 | | | | | | |

| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
|---|---|---|---|---|---|---|
| 2/17/20 13:35 | 240.85 | 28.35 | 0.00 | 13.45 | 180.02 | 1166.78 |
| 2/17/20 13:36 | 240.50 | 28.42 | 0.00 | 13.75 | 167.80 | 1166.89 |
| 2/17/20 13:37 | 240.59 | 28.25 | 0.00 | 13.43 | 163.91 | 1166.52 |
| 2/17/20 13:38 | 240.51 | 28.37 | 0.00 | 13.11 | 162.58 | 1166.43 |
| 2/17/20 13:39 | 240.28 | 28.46 | 0.00 | 13.47 | 163.85 | 1166.73 |
| 2/17/20 13:40 | 240.77 | 28.36 | 0.00 | 13.53 | 172.70 | 1166.80 |
| 2/17/20 13:41 | 240.28 | 28.16 | 0.00 | 13.26 | 170.20 | 1166.60 |
| 2/17/20 13:42 | 240.32 | 28.25 | 0.00 | 13.62 | 171.57 | 1166.24 |
| 2/17/20 13:43 | 240.87 | 28.30 | 0.00 | 13.42 | 174.44 | 1166.58 |
| 2/17/20 13:44 | 240.42 | 28.43 | 0.00 | 13.74 | 172.60 | 1166.63 |
| 2/17/20 13:45 | 240.14 | 28.34 | 0.00 | 13.12 | 169.26 | 1165.92 |
| 2/17/20 13:46 | 240.18 | 28.37 | 0.00 | 13.39 | 165.89 | 1166.43 |
| 2/17/20 13:47 | 240.29 | 28.33 | 0.00 | 13.79 | 163.65 | 1166.68 |
| 2/17/20 13:48 | 239.98 | 28.18 | 0.00 | 13.27 | 163.23 | 1165.44 |
| 2/17/20 13:49 | 240.34 | 28.21 | 0.00 | 13.42 | 167.55 | 1165.81 |
| 2/17/20 13:50 | 240.38 | 28.33 | 0.00 | 13.39 | 169.94 | 1165.77 |
| 2/17/20 13:51 | 240.36 | 28.20 | 0.00 | 13.48 | 169.17 | 1166.67 |
| 2/17/20 13:52 | 240.24 | 28.26 | 0.00 | 12.99 | 166.11 | 1165.86 |
| 2/17/20 13:53 | 240.02 | 28.30 | 0.00 | 13.45 | 168.25 | 1165.78 |
| 2/17/20 13:54 | 240.57 | 28.21 | 0.00 | 13.59 | 168.96 | 1166.08 |
| 2/17/20 13:55 | 239.89 | 28.37 | 0.00 | 13.36 | 171.72 | 1165.96 |
| 2/17/20 13:56 | 240.49 | 28.16 | 0.00 | 13.45 | 171.24 | 1166.65 |
| 2/17/20 13:57 | 240.35 | 28.20 | 0.00 | 13.52 | 176.20 | 1165.76 |
| 2/17/20 13:58 | 240.72 | 28.28 | 0.00 | 13.20 | 178.94 | 1166.85 |
| 2/17/20 13:59 | 240.15 | 28.10 | 0.00 | 13.43 | 180.49 | 1166.26 |
| 2/17/20 14:00 | 240.05 | 28.21 | 0.00 | 13.48 | 172.39 | 1166.19 |
| 2/17/20 14:01 | 240.38 | 28.34 | 0.00 | 13.46 | 163.05 | 1166.24 |
| 2/17/20 14:02 | 240.28 | 28.16 | 0.00 | 13.44 | 153.92 | 1166.62 |
| 2/17/20 14:03 | 240.53 | 28.51 | 0.00 | 13.70 | 155.73 | 1166.91 |
| 2/17/20 14:04 | 240.56 | 28.30 | 0.00 | 13.75 | 166.93 | 1167.75 |
| 2/17/20 14:05 | 240.53 | 28.41 | 0.00 | 13.44 | 175.29 | 1166.16 |
| 2/17/20 14:06 | 240.58 | 28.36 | 0.00 | 13.47 | 180.64 | 1167.15 |
| 2/17/20 14:07 | 240.89 | 28.37 | 0.00 | 13.32 | 180.48 | 1166.70 |
| 2/17/20 14:08 | 240.49 | 28.31 | 0.00 | 13.45 | 185.65 | 1166.65 |
| 2/17/20 14:09 | 240.39 | 28.17 | 0.00 | 13.40 | 177.23 | 1166.55 |
| 2/17/20 14:10 | 240.00 | 28.39 | 0.00 | 13.34 | 162.39 | 1166.32 |
| 2/17/20 14:11 | 240.16 | 28.26 | 0.00 | 13.25 | 150.38 | 1166.67 |
| 2/17/20 14:12 | 240.41 | 28.29 | 0.00 | 13.53 | 150.65 | 1165.95 |
| 2/17/20 14:13 | 240.27 | 28.23 | 0.00 | 13.75 | 159.72 | 1165.94 |
| 2/17/20 14:14 | 239.98 | 28.20 | 0.00 | 13.44 | 170.99 | 1166.02 |
| 2/17/20 14:15 | 240.37 | 28.28 | 0.00 | 13.51 | 182.39 | 1166.47 |
| 2/17/20 14:16 | 240.14 | 28.25 | 0.00 | 13.55 | 184.32 | 1165.87 |
| 2/17/20 14:17 | 240.55 | 28.14 | 0.00 | 13.79 | 184.28 | 1167.01 |
| 2/17/20 14:18 | 240.26 | 28.22 | 0.00 | 13.21 | 166.36 | 1166.33 |
| 2/17/20 14:19 | 240.52 | 28.50 | 0.00 | 13.31 | 148.80 | 1166.16 |
| 2/17/20 14:20 | 240.36 | 28.37 | 0.00 | 13.46 | 141.83 | 1166.54 |
| 2/17/20 14:21 | 240.52 | 28.06 | 0.00 | 13.68 | 147.32 | 1167.15 |
| 2/17/20 14:22 | 240.40 | 28.27 | 0.00 | 13.86 | 163.21 | 1166.74 |
| 2/17/20 14:23 | 240.46 | 28.28 | 0.00 | 13.86 | 178.54 | 1166.30 |
| 2/17/20 14:24 | 240.77 | 28.42 | 0.00 | 13.30 | 190.13 | 1166.68 |
| 2/17/20 14:25 | 240.76 | 28.18 | 0.00 | 13.31 | 193.53 | 1166.38 |
| 2/17/20 14:26 | 240.48 | 28.49 | 0.00 | 13.43 | 178.37 | 1166.53 |
| 2/17/20 14:27 | 240.54 | 28.21 | 0.00 | 13.64 | 155.73 | 1165.87 |
| 2/17/20 14:28 | 239.98 | 28.40 | 0.00 | 13.62 | 148.97 | 1167.34 |
| 2/17/20 14:29 | 240.41 | 28.42 | 0.00 | 13.37 | 152.87 | 1166.31 |
| 2/17/20 14:30 | 240.57 | 28.28 | 0.00 | 13.31 | 167.52 | 1167.10 |
| 2/17/20 14:31 | 240.42 | 28.44 | 0.00 | 13.39 | 183.94 | 1167.45 |
| 2/17/20 14:32 | 240.64 | 28.39 | 0.00 | 13.41 | 198.05 | 1166.58 |
| 2/17/20 14:33 | 240.74 | 28.34 | 0.00 | 13.37 | 188.93 | 1167.06 |
| 2/17/20 14:34 | 240.59 | 28.33 | 0.00 | 13.37 | 179.46 | 1166.54 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/17 14:50 - 2/17 15:49) | 240.38 | 28.31 | 0.00 | 13.43 | 164.81 | 1167.24 |
| COUNT = 60 | | | | | | |

| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
|---|---|---|---|---|---|---|
| 2/17/20 14:50 | 240.75 | 28.13 | 0.00 | 13.64 | 181.05 | 1168.05 |
| 2/17/20 14:51 | 240.38 | 28.24 | 0.00 | 13.35 | 172.31 | 1166.51 |
| 2/17/20 14:52 | 240.51 | 28.60 | 0.00 | 13.39 | 160.13 | 1166.96 |
| 2/17/20 14:53 | 240.30 | 28.24 | 0.00 | 13.46 | 154.25 | 1166.43 |
| 2/17/20 14:54 | 240.66 | 28.26 | 0.00 | 13.32 | 150.16 | 1167.57 |
| 2/17/20 14:55 | 239.91 | 28.36 | 0.00 | 13.42 | 158.48 | 1166.25 |
| 2/17/20 14:56 | 240.07 | 28.27 | 0.00 | 13.63 | 166.97 | 1167.48 |
| 2/17/20 14:57 | 240.60 | 28.16 | 0.00 | 13.63 | 173.03 | 1167.56 |
| 2/17/20 14:58 | 240.64 | 28.32 | 0.00 | 13.78 | 170.04 | 1167.90 |
| 2/17/20 14:59 | 240.36 | 28.32 | 0.00 | 13.43 | 173.62 | 1167.49 |
| 2/17/20 15:00 | 240.20 | 28.18 | 0.00 | 13.29 | 167.71 | 1166.93 |
| 2/17/20 15:01 | 240.29 | 28.37 | 0.00 | 13.67 | 164.87 | 1167.14 |
| 2/17/20 15:02 | 240.27 | 28.28 | 0.00 | 13.27 | 158.49 | 1166.37 |
| 2/17/20 15:03 | 239.64 | 28.37 | 0.00 | 13.40 | 161.23 | 1166.64 |
| 2/17/20 15:04 | 240.40 | 28.19 | 0.00 | 13.30 | 169.18 | 1168.09 |
| 2/17/20 15:05 | 239.93 | 28.32 | 0.00 | 13.46 | 164.44 | 1166.86 |
| 2/17/20 15:06 | 240.51 | 28.28 | 0.00 | 13.42 | 166.61 | 1166.69 |
| 2/17/20 15:07 | 240.48 | 28.31 | 0.00 | 13.32 | 165.60 | 1167.22 |
| 2/17/20 15:08 | 240.32 | 28.35 | 0.00 | 13.85 | 162.77 | 1167.44 |
| 2/17/20 15:09 | 240.15 | 28.30 | 0.00 | 13.24 | 163.13 | 1167.46 |
| 2/17/20 15:10 | 240.50 | 28.25 | 0.00 | 13.44 | 156.00 | 1167.46 |
| 2/17/20 15:11 | 240.25 | 28.35 | 0.00 | 13.22 | 154.94 | 1166.60 |
| 2/17/20 15:12 | 239.87 | 28.34 | 0.00 | 13.48 | 156.38 | 1166.66 |
| 2/17/20 15:13 | 240.18 | 28.13 | 0.00 | 13.48 | 165.17 | 1166.88 |
| 2/17/20 15:14 | 240.25 | 28.29 | 0.00 | 13.55 | 173.05 | 1167.29 |
| 2/17/20 15:15 | 240.45 | 28.27 | 0.00 | 13.68 | 181.03 | 1167.48 |
| 2/17/20 15:16 | 240.16 | 28.26 | 0.00 | 13.36 | 176.39 | 1166.77 |
| 2/17/20 15:17 | 240.10 | 28.21 | 0.00 | 13.19 | 168.79 | 1167.22 |
| 2/17/20 15:18 | 239.90 | 28.12 | 0.00 | 13.23 | 154.45 | 1167.03 |
| 2/17/20 15:19 | 240.09 | 28.27 | 0.00 | 13.55 | 150.45 | 1167.43 |
| 2/17/20 15:20 | 240.16 | 28.22 | 0.00 | 13.52 | 146.10 | 1167.39 |
| 2/17/20 15:21 | 239.74 | 28.45 | 0.00 | 13.53 | 149.91 | 1166.83 |
| 2/17/20 15:22 | 240.09 | 28.27 | 0.00 | 13.51 | 158.03 | 1167.62 |
| 2/17/20 15:23 | 240.06 | 28.33 | 0.00 | 13.56 | 163.68 | 1168.21 |
| 2/17/20 15:24 | 240.50 | 28.29 | 0.00 | 13.46 | 167.64 | 1167.55 |
| 2/17/20 15:25 | 240.76 | 28.32 | 0.00 | 13.48 | 170.84 | 1167.74 |
| 2/17/20 15:26 | 240.32 | 28.47 | 0.00 | 13.56 | 164.96 | 1167.54 |
| 2/17/20 15:27 | 240.49 | 28.37 | 0.00 | 13.31 | 158.96 | 1166.92 |
| 2/17/20 15:28 | 240.96 | 28.31 | 0.00 | 13.21 | 152.82 | 1167.40 |
| 2/17/20 15:29 | 240.81 | 28.30 | 0.00 | 13.53 | 146.28 | 1167.96 |
| 2/17/20 15:30 | 240.57 | 28.10 | 0.00 | 13.35 | 147.16 | 1167.08 |
| 2/17/20 15:31 | 240.27 | 28.56 | 0.00 | 13.41 | 161.50 | 1167.53 |
| 2/17/20 15:32 | 240.82 | 28.40 | 0.00 | 13.27 | 175.76 | 1167.35 |
| 2/17/20 15:33 | 240.18 | 28.17 | 0.00 | 13.46 | 186.50 | 1167.19 |
| 2/17/20 15:34 | 240.95 | 28.49 | 0.00 | 13.77 | 184.30 | 1168.32 |
| 2/17/20 15:35 | 240.89 | 28.31 | 0.00 | 13.40 | 173.98 | 1167.64 |
| 2/17/20 15:36 | 240.06 | 28.30 | 0.00 | 13.58 | 157.89 | 1167.23 |
| 2/17/20 15:37 | 240.39 | 28.21 | 0.00 | 13.41 | 142.03 | 1166.65 |
| 2/17/20 15:38 | 240.42 | 28.30 | 0.00 | 13.15 | 135.35 | 1167.42 |
| 2/17/20 15:39 | 240.77 | 28.43 | 0.00 | 13.50 | 140.96 | 1168.18 |
| 2/17/20 15:40 | 240.19 | 28.23 | 0.00 | 13.50 | 159.08 | 1166.45 |
| 2/17/20 15:41 | 240.82 | 28.45 | 0.00 | 13.23 | 192.90 | 1168.06 |
| 2/17/20 15:42 | 240.68 | 28.46 | 0.00 | 13.40 | 211.21 | 1167.38 |
| 2/17/20 15:43 | 240.45 | 28.40 | 0.00 | 13.49 | 205.09 | 1167.56 |
| 2/17/20 15:44 | 240.79 | 28.36 | 0.00 | 13.20 | 185.05 | 1167.31 |
| 2/17/20 15:45 | 240.16 | 28.41 | 0.00 | 13.47 | 161.20 | 1166.29 |
| 2/17/20 15:46 | 240.64 | 28.34 | 0.00 | 13.14 | 150.11 | 1166.57 |
| 2/17/20 15:47 | 240.52 | 28.40 | 0.00 | 13.22 | 146.35 | 1166.79 |
| 2/17/20 15:48 | 240.78 | 28.19 | 0.00 | 13.33 | 173.90 | 1166.71 |
| 2/17/20 15:49 | 240.53 | 28.38 | 0.00 | 13.38 | 178.06 | 1167.48 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/17 16:0 - 2/17 16:59) | 241.29 | 28.39 | 0.00 | 13.32 | 172.35 | 1167.99 |
| COUNT = 60 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/17/20 16:00 | 240.75 | 28.45 | 0.00 | 13.14 | 182.18 | 1166.82 |
| 2/17/20 16:01 | 240.62 | 28.46 | 0.00 | 13.10 | 177.82 | 1166.84 |
| 2/17/20 16:02 | 240.65 | 28.19 | 0.00 | 13.19 | 167.64 | 1167.68 |
| 2/17/20 16:03 | 241.18 | 28.37 | 0.00 | 13.34 | 168.67 | 1167.91 |
| 2/17/20 16:04 | 240.80 | 28.35 | 0.00 | 13.34 | 167.70 | 1167.38 |
| 2/17/20 16:05 | 241.02 | 28.32 | 0.00 | 13.50 | 164.91 | 1167.99 |
| 2/17/20 16:06 | 241.26 | 28.40 | 0.00 | 13.31 | 164.98 | 1167.70 |
| 2/17/20 16:07 | 240.88 | 28.34 | 0.00 | 13.37 | 166.54 | 1168.14 |
| 2/17/20 16:08 | 241.07 | 28.49 | 0.00 | 13.34 | 158.90 | 1167.93 |
| 2/17/20 16:09 | 241.07 | 28.39 | 0.00 | 13.46 | 162.54 | 1167.76 |
| 2/17/20 16:10 | 240.61 | 28.41 | 0.00 | 13.21 | 157.56 | 1166.90 |
| 2/17/20 16:11 | 240.89 | 28.39 | 0.00 | 13.19 | 156.86 | 1167.69 |
| 2/17/20 16:12 | 241.21 | 28.32 | 0.00 | 13.44 | 165.51 | 1167.79 |
| 2/17/20 16:13 | 241.41 | 28.53 | 0.00 | 13.48 | 176.71 | 1167.66 |
| 2/17/20 16:14 | 241.09 | 28.40 | 0.00 | 13.45 | 186.99 | 1167.99 |
| 2/17/20 16:15 | 241.04 | 28.29 | 0.00 | 13.23 | 187.18 | 1167.88 |
| 2/17/20 16:16 | 241.44 | 28.30 | 0.00 | 13.63 | 179.53 | 1168.27 |
| 2/17/20 16:17 | 240.70 | 28.17 | 0.00 | 13.38 | 164.06 | 1167.70 |
| 2/17/20 16:18 | 240.95 | 28.24 | 0.00 | 13.10 | 151.25 | 1167.04 |
| 2/17/20 16:19 | 241.07 | 28.23 | 0.00 | 13.26 | 154.91 | 1167.69 |
| 2/17/20 16:20 | 241.06 | 28.35 | 0.00 | 13.49 | 165.49 | 1167.80 |
| 2/17/20 16:21 | 241.01 | 28.40 | 0.00 | 13.06 | 179.29 | 1167.72 |
| 2/17/20 16:22 | 241.11 | 28.26 | 0.00 | 13.57 | 184.52 | 1168.33 |
| 2/17/20 16:23 | 241.05 | 28.33 | 0.00 | 13.31 | 187.59 | 1167.92 |
| 2/17/20 16:24 | 241.10 | 28.46 | 0.00 | 13.50 | 186.07 | 1168.35 |
| 2/17/20 16:25 | 241.12 | 28.33 | 0.00 | 13.30 | 173.20 | 1168.20 |
| 2/17/20 16:26 | 241.19 | 28.41 | 0.00 | 13.37 | 165.98 | 1167.76 |
| 2/17/20 16:27 | 241.28 | 28.47 | 0.00 | 13.29 | 162.09 | 1167.66 |
| 2/17/20 16:28 | 241.34 | 28.45 | 0.00 | 12.92 | 167.42 | 1167.77 |
| 2/17/20 16:29 | 241.59 | 28.30 | 0.00 | 13.28 | 178.57 | 1167.78 |
| 2/17/20 16:30 | 241.29 | 28.34 | 0.00 | 13.29 | 186.13 | 1167.30 |
| 2/17/20 16:31 | 241.49 | 28.32 | 0.00 | 13.33 | 180.47 | 1168.14 |
| 2/17/20 16:32 | 241.78 | 28.53 | 0.00 | 13.57 | 170.51 | 1168.14 |
| 2/17/20 16:33 | 241.54 | 28.39 | 0.00 | 13.15 | 161.31 | 1168.55 |
| 2/17/20 16:34 | 241.20 | 28.47 | 0.00 | 13.41 | 157.40 | 1167.23 |
| 2/17/20 16:35 | 241.33 | 28.48 | 0.00 | 13.39 | 163.18 | 1167.82 |
| 2/17/20 16:36 | 241.98 | 28.50 | 0.00 | 13.11 | 178.82 | 1168.90 |
| 2/17/20 16:37 | 241.61 | 28.49 | 0.00 | 13.51 | 194.94 | 1168.84 |
| 2/17/20 16:38 | 241.87 | 28.23 | 0.00 | 13.14 | 192.93 | 1168.52 |
| 2/17/20 16:39 | 241.39 | 28.65 | 0.00 | 13.38 | 183.09 | 1168.61 |
| 2/17/20 16:40 | 241.65 | 28.47 | 0.00 | 13.11 | 173.96 | 1167.61 |
| 2/17/20 16:41 | 241.97 | 28.36 | 0.00 | 13.39 | 167.06 | 1169.19 |
| 2/17/20 16:42 | 241.06 | 28.29 | 0.00 | 13.37 | 162.99 | 1167.66 |
| 2/17/20 16:43 | 241.17 | 28.37 | 0.00 | 13.25 | 165.15 | 1167.86 |
| 2/17/20 16:44 | 241.45 | 28.37 | 0.00 | 13.39 | 168.56 | 1167.71 |
| 2/17/20 16:45 | 241.78 | 28.38 | 0.00 | 13.40 | 171.89 | 1168.86 |
| 2/17/20 16:46 | 241.72 | 28.44 | 0.00 | 13.62 | 176.30 | 1169.42 |
| 2/17/20 16:47 | 241.42 | 28.34 | 0.00 | 13.14 | 181.04 | 1168.16 |
| 2/17/20 16:48 | 241.48 | 28.39 | 0.00 | 13.45 | 186.81 | 1168.52 |
| 2/17/20 16:49 | 241.37 | 28.39 | 0.00 | 13.35 | 180.18 | 1167.87 |
| 2/17/20 16:50 | 241.47 | 28.45 | 0.00 | 13.34 | 175.22 | 1168.71 |
| 2/17/20 16:51 | 241.49 | 28.39 | 0.00 | 13.36 | 165.90 | 1168.06 |
| 2/17/20 16:52 | 241.57 | 28.39 | 0.00 | 13.08 | 161.44 | 1167.98 |
| 2/17/20 16:53 | 241.38 | 28.40 | 0.00 | 13.29 | 161.18 | 1167.82 |
| 2/17/20 16:54 | 241.32 | 28.44 | 0.00 | 13.41 | 161.44 | 1168.24 |
| 2/17/20 16:55 | 241.49 | 28.26 | 0.00 | 13.40 | 172.29 | 1168.34 |
| 2/17/20 16:56 | 241.69 | 28.52 | 0.00 | 13.36 | 183.00 | 1167.62 |
| 2/17/20 16:57 | 241.74 | 28.47 | 0.00 | 13.14 | 186.04 | 1168.75 |
| 2/17/20 16:58 | 241.93 | 28.54 | 0.00 | 13.35 | 182.85 | 1168.84 |
| 2/17/20 16:59 | 241.39 | 28.57 | 0.00 | 13.39 | 176.24 | 1167.92 |

# EMISSION DATA RECORDS

## Operating Data Base Load
## (provided by Cricket Valley Energy Center LLC)
## $PM_{10}$

The U-00001 fuel flow rates (lbm/s) shown on the following pages are uncorrected values.

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/17 17:2 - 2/17 22:11) | 243.96 | 28.62 | 0.00 | 13.37 | 202.19 | 1171.09 |
| COUNT = 310 | | | | | | |

| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
|---|---|---|---|---|---|---|
| 2/17/20 17:02 | 242.07 | 28.42 | 0.00 | 13.15 | 167.39 | 1168.74 |
| 2/17/20 17:03 | 242.05 | 28.34 | 0.00 | 13.40 | 169.04 | 1169.15 |
| 2/17/20 17:04 | 241.75 | 28.36 | 0.00 | 13.67 | 177.64 | 1169.24 |
| 2/17/20 17:05 | 242.25 | 28.48 | 0.00 | 13.64 | 173.56 | 1169.66 |
| 2/17/20 17:06 | 242.12 | 28.60 | 0.00 | 13.39 | 170.73 | 1169.46 |
| 2/17/20 17:07 | 241.62 | 28.26 | 0.00 | 13.14 | 174.37 | 1168.15 |
| 2/17/20 17:08 | 241.60 | 28.41 | 0.00 | 13.29 | 180.88 | 1168.67 |
| 2/17/20 17:09 | 242.11 | 28.42 | 0.00 | 13.28 | 187.51 | 1169.75 |
| 2/17/20 17:10 | 242.11 | 28.36 | 0.00 | 13.49 | 190.39 | 1169.40 |
| 2/17/20 17:11 | 241.94 | 28.25 | 0.00 | 13.36 | 189.97 | 1168.31 |
| 2/17/20 17:12 | 241.94 | 28.26 | 0.00 | 13.51 | 188.19 | 1168.98 |
| 2/17/20 17:13 | 241.91 | 28.45 | 0.00 | 13.38 | 183.43 | 1169.04 |
| 2/17/20 17:14 | 242.35 | 28.42 | 0.00 | 13.29 | 187.65 | 1168.89 |
| 2/17/20 17:15 | 242.37 | 28.36 | 0.00 | 13.36 | 184.92 | 1169.09 |
| 2/17/20 17:16 | 241.98 | 28.36 | 0.00 | 13.29 | 182.25 | 1168.31 |
| 2/17/20 17:17 | 242.32 | 28.58 | 0.00 | 13.29 | 183.88 | 1169.86 |
| 2/17/20 17:18 | 242.15 | 28.48 | 0.00 | 13.36 | 176.03 | 1169.27 |
| 2/17/20 17:19 | 242.10 | 28.29 | 0.00 | 13.35 | 175.47 | 1168.36 |
| 2/17/20 17:20 | 242.51 | 28.46 | 0.00 | 13.40 | 176.40 | 1169.70 |
| 2/17/20 17:21 | 242.50 | 28.41 | 0.00 | 13.18 | 181.61 | 1169.62 |
| 2/17/20 17:22 | 242.01 | 28.45 | 0.00 | 13.19 | 185.77 | 1168.78 |
| 2/17/20 17:23 | 242.28 | 28.42 | 0.00 | 13.47 | 186.57 | 1169.82 |
| 2/17/20 17:24 | 242.33 | 28.48 | 0.00 | 13.18 | 175.89 | 1168.96 |
| 2/17/20 17:25 | 242.25 | 28.54 | 0.00 | 13.42 | 180.89 | 1169.36 |
| 2/17/20 17:26 | 242.30 | 28.49 | 0.00 | 13.66 | 184.79 | 1170.01 |
| 2/17/20 17:27 | 242.21 | 28.67 | 0.00 | 13.40 | 191.42 | 1169.40 |
| 2/17/20 17:28 | 242.43 | 28.56 | 0.00 | 13.38 | 200.32 | 1169.32 |
| 2/17/20 17:29 | 242.43 | 28.48 | 0.00 | 13.38 | 192.82 | 1169.22 |
| 2/17/20 17:30 | 242.62 | 28.49 | 0.00 | 12.98 | 189.58 | 1169.67 |
| 2/17/20 17:31 | 242.50 | 28.45 | 0.00 | 13.30 | 191.04 | 1169.63 |
| 2/17/20 17:32 | 242.48 | 28.52 | 0.00 | 13.27 | 196.38 | 1168.79 |
| 2/17/20 17:33 | 242.48 | 28.56 | 0.00 | 13.26 | 186.87 | 1168.84 |
| 2/17/20 17:34 | 242.59 | 28.59 | 0.00 | 13.11 | 180.74 | 1169.58 |
| 2/17/20 17:35 | 242.64 | 28.42 | 0.00 | 13.25 | 177.24 | 1169.64 |
| 2/17/20 17:36 | 242.16 | 28.54 | 0.00 | 13.64 | 180.37 | 1168.84 |
| 2/17/20 17:37 | 242.40 | 28.41 | 0.00 | 13.31 | 181.11 | 1168.31 |
| 2/17/20 17:38 | 242.94 | 28.50 | 0.00 | 13.33 | 180.04 | 1170.17 |
| 2/17/20 17:39 | 242.53 | 28.46 | 0.00 | 13.22 | 182.19 | 1169.60 |
| 2/17/20 17:40 | 242.67 | 28.41 | 0.00 | 13.52 | 188.03 | 1170.03 |
| 2/17/20 17:41 | 242.68 | 28.44 | 0.00 | 13.11 | 193.90 | 1169.47 |
| 2/17/20 17:42 | 243.21 | 28.40 | 0.00 | 13.27 | 201.30 | 1169.89 |
| 2/17/20 17:43 | 242.78 | 28.47 | 0.00 | 13.27 | 197.02 | 1170.54 |
| 2/17/20 17:44 | 242.38 | 28.44 | 0.00 | 13.37 | 182.43 | 1168.58 |
| 2/17/20 17:45 | 242.68 | 28.56 | 0.00 | 13.31 | 175.24 | 1170.14 |
| 2/17/20 17:46 | 243.17 | 28.64 | 0.00 | 13.37 | 173.75 | 1170.08 |
| 2/17/20 17:47 | 243.00 | 28.50 | 0.00 | 13.24 | 177.43 | 1169.79 |
| 2/17/20 17:48 | 242.66 | 28.43 | 0.00 | 13.16 | 194.25 | 1169.60 |
| 2/17/20 17:49 | 243.20 | 28.31 | 0.00 | 13.37 | 197.27 | 1169.84 |
| 2/17/20 17:50 | 242.44 | 28.35 | 0.00 | 13.12 | 201.11 | 1168.80 |
| 2/17/20 17:51 | 243.03 | 28.50 | 0.00 | 13.57 | 194.62 | 1170.03 |
| 2/17/20 17:52 | 242.95 | 28.57 | 0.00 | 13.11 | 186.49 | 1169.67 |
| 2/17/20 17:53 | 242.32 | 28.36 | 0.00 | 13.55 | 183.42 | 1169.22 |
| 2/17/20 17:54 | 242.78 | 28.47 | 0.00 | 13.41 | 181.63 | 1169.20 |
| 2/17/20 17:55 | 242.80 | 28.53 | 0.00 | 13.15 | 184.27 | 1169.20 |
| 2/17/20 17:56 | 243.23 | 28.42 | 0.00 | 13.25 | 183.66 | 1169.89 |
| 2/17/20 17:57 | 243.04 | 28.57 | 0.00 | 13.19 | 181.81 | 1170.18 |
| 2/17/20 17:58 | 242.58 | 28.58 | 0.00 | 13.46 | 185.56 | 1169.18 |
| 2/17/20 17:59 | 242.96 | 28.54 | 0.00 | 13.38 | 189.62 | 1169.25 |
| 2/17/20 18:00 | 242.97 | 28.63 | 0.00 | 13.34 | 193.33 | 1170.53 |
| 2/17/20 18:01 | 243.01 | 28.51 | 0.00 | 13.40 | 191.53 | 1169.34 |
| 2/17/20 18:02 | 242.38 | 28.62 | 0.00 | 13.34 | 191.84 | 1169.88 |
| 2/17/20 18:03 | 243.10 | 28.48 | 0.00 | 13.24 | 178.98 | 1169.48 |
| 2/17/20 18:04 | 243.15 | 28.52 | 0.00 | 13.22 | 175.60 | 1169.68 |
| 2/17/20 18:05 | 242.90 | 28.62 | 0.00 | 13.25 | 182.78 | 1170.15 |
| 2/17/20 18:06 | 243.03 | 28.38 | 0.00 | 13.26 | 188.01 | 1169.88 |
| 2/17/20 18:07 | 243.12 | 28.50 | 0.00 | 13.37 | 192.69 | 1170.26 |
| 2/17/20 18:08 | 242.99 | 28.48 | 0.00 | 13.42 | 194.08 | 1169.96 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/17 17:2 - 2/17 22:11) | 243.96 | 28.62 | 0.00 | 13.37 | 202.19 | 1171.09 |
| COUNT = 310 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/17/20 18:09 | 242.97 | 28.63 | 0.00 | 13.48 | 196.39 | 1170.20 |
| 2/17/20 18:10 | 242.71 | 28.58 | 0.00 | 13.41 | 192.70 | 1169.54 |
| 2/17/20 18:11 | 242.91 | 28.64 | 0.00 | 13.50 | 182.24 | 1170.67 |
| 2/17/20 18:12 | 242.75 | 28.56 | 0.00 | 13.56 | 184.91 | 1169.63 |
| 2/17/20 18:13 | 243.15 | 28.55 | 0.00 | 13.33 | 177.20 | 1169.89 |
| 2/17/20 18:14 | 243.25 | 28.57 | 0.00 | 13.42 | 176.92 | 1170.59 |
| 2/17/20 18:15 | 243.38 | 28.40 | 0.00 | 13.20 | 181.45 | 1170.17 |
| 2/17/20 18:16 | 243.18 | 28.45 | 0.00 | 13.32 | 188.55 | 1170.04 |
| 2/17/20 18:17 | 243.31 | 28.47 | 0.00 | 13.49 | 189.41 | 1170.07 |
| 2/17/20 18:18 | 242.63 | 28.42 | 0.00 | 13.67 | 195.06 | 1169.43 |
| 2/17/20 18:19 | 243.29 | 28.57 | 0.00 | 13.51 | 188.70 | 1169.84 |
| 2/17/20 18:20 | 243.34 | 28.46 | 0.00 | 13.17 | 184.73 | 1169.89 |
| 2/17/20 18:21 | 243.23 | 28.67 | 0.00 | 13.62 | 191.47 | 1170.60 |
| 2/17/20 18:22 | 243.10 | 28.75 | 0.00 | 13.27 | 195.13 | 1169.72 |
| 2/17/20 18:23 | 243.54 | 28.53 | 0.00 | 13.19 | 197.61 | 1170.54 |
| 2/17/20 18:24 | 243.24 | 28.43 | 0.00 | 13.40 | 196.66 | 1170.30 |
| 2/17/20 18:25 | 243.41 | 28.59 | 0.00 | 13.32 | 194.46 | 1170.14 |
| 2/17/20 18:26 | 243.53 | 28.61 | 0.00 | 13.35 | 191.91 | 1171.17 |
| 2/17/20 18:27 | 243.27 | 28.53 | 0.00 | 13.21 | 193.18 | 1169.57 |
| 2/17/20 18:28 | 243.02 | 28.54 | 0.00 | 13.44 | 202.24 | 1169.42 |
| 2/17/20 18:29 | 243.68 | 28.59 | 0.00 | 13.27 | 196.50 | 1170.78 |
| 2/17/20 18:30 | 243.74 | 28.55 | 0.00 | 13.20 | 190.79 | 1170.13 |
| 2/17/20 18:31 | 243.28 | 28.53 | 0.00 | 13.38 | 181.24 | 1169.65 |
| 2/17/20 18:32 | 243.44 | 28.48 | 0.00 | 13.34 | 180.23 | 1170.91 |
| 2/17/20 18:33 | 243.25 | 28.48 | 0.00 | 13.51 | 178.13 | 1170.23 |
| 2/17/20 18:34 | 243.31 | 28.66 | 0.00 | 13.32 | 188.40 | 1170.54 |
| 2/17/20 18:35 | 243.18 | 28.50 | 0.00 | 13.20 | 193.94 | 1170.12 |
| 2/17/20 18:36 | 243.59 | 28.59 | 0.00 | 13.35 | 207.68 | 1169.91 |
| 2/17/20 18:37 | 243.30 | 28.57 | 0.00 | 13.20 | 213.53 | 1169.63 |
| 2/17/20 18:38 | 243.30 | 28.56 | 0.00 | 13.31 | 206.12 | 1169.85 |
| 2/17/20 18:39 | 243.11 | 28.63 | 0.00 | 13.39 | 191.56 | 1169.12 |
| 2/17/20 18:40 | 243.64 | 28.49 | 0.00 | 13.51 | 190.12 | 1171.30 |
| 2/17/20 18:41 | 243.75 | 28.63 | 0.00 | 13.36 | 192.51 | 1170.86 |
| 2/17/20 18:42 | 243.07 | 28.50 | 0.00 | 13.34 | 189.05 | 1169.94 |
| 2/17/20 18:43 | 243.72 | 28.58 | 0.00 | 13.22 | 194.10 | 1170.96 |
| 2/17/20 18:44 | 243.81 | 28.43 | 0.00 | 13.38 | 203.06 | 1171.04 |
| 2/17/20 18:45 | 243.59 | 28.53 | 0.00 | 13.35 | 209.90 | 1169.53 |
| 2/17/20 18:46 | 243.44 | 28.69 | 0.00 | 13.42 | 205.18 | 1170.68 |
| 2/17/20 18:47 | 244.14 | 28.66 | 0.00 | 13.52 | 196.14 | 1171.37 |
| 2/17/20 18:48 | 243.39 | 28.91 | 0.00 | 13.24 | 189.93 | 1170.79 |
| 2/17/20 18:49 | 243.61 | 28.40 | 0.00 | 13.31 | 188.46 | 1170.66 |
| 2/17/20 18:50 | 243.77 | 28.55 | 0.00 | 13.51 | 183.65 | 1170.44 |
| 2/17/20 18:51 | 243.58 | 28.62 | 0.00 | 13.26 | 193.41 | 1170.04 |
| 2/17/20 18:52 | 243.74 | 28.56 | 0.00 | 13.39 | 202.58 | 1171.29 |
| 2/17/20 18:53 | 243.70 | 28.55 | 0.00 | 13.44 | 213.63 | 1171.20 |
| 2/17/20 18:54 | 243.57 | 28.52 | 0.00 | 13.50 | 216.85 | 1170.61 |
| 2/17/20 18:55 | 243.59 | 28.66 | 0.00 | 13.34 | 213.97 | 1171.06 |
| 2/17/20 18:56 | 243.79 | 28.38 | 0.00 | 13.61 | 207.90 | 1171.25 |
| 2/17/20 18:57 | 243.80 | 28.58 | 0.00 | 13.38 | 195.43 | 1170.49 |
| 2/17/20 18:58 | 243.79 | 28.38 | 0.00 | 13.13 | 189.25 | 1170.91 |
| 2/17/20 18:59 | 243.48 | 28.65 | 0.00 | 13.34 | 190.61 | 1170.41 |
| 2/17/20 19:00 | 243.79 | 28.56 | 0.00 | 13.10 | 192.78 | 1169.87 |
| 2/17/20 19:01 | 244.12 | 28.63 | 0.00 | 13.24 | 198.55 | 1170.71 |
| 2/17/20 19:02 | 243.79 | 28.59 | 0.00 | 13.40 | 201.63 | 1170.38 |
| 2/17/20 19:03 | 244.07 | 28.69 | 0.00 | 13.53 | 209.59 | 1171.09 |
| 2/17/20 19:04 | 243.85 | 28.65 | 0.00 | 13.21 | 211.13 | 1170.67 |
| 2/17/20 19:05 | 243.94 | 28.67 | 0.00 | 13.64 | 204.77 | 1171.36 |
| 2/17/20 19:06 | 243.73 | 28.38 | 0.00 | 13.20 | 201.56 | 1170.36 |
| 2/17/20 19:07 | 243.99 | 28.58 | 0.00 | 13.62 | 207.43 | 1171.78 |
| 2/17/20 19:08 | 244.05 | 28.54 | 0.00 | 13.51 | 211.14 | 1171.06 |
| 2/17/20 19:09 | 244.05 | 28.71 | 0.00 | 13.42 | 210.44 | 1171.42 |
| 2/17/20 19:10 | 244.13 | 28.75 | 0.00 | 13.59 | 201.05 | 1170.61 |
| 2/17/20 19:11 | 244.09 | 28.69 | 0.00 | 13.19 | 190.89 | 1171.40 |
| 2/17/20 19:12 | 243.98 | 28.66 | 0.00 | 13.47 | 191.06 | 1171.60 |
| 2/17/20 19:13 | 244.08 | 28.69 | 0.00 | 13.24 | 190.06 | 1171.01 |
| 2/17/20 19:14 | 243.70 | 28.62 | 0.00 | 13.50 | 193.25 | 1171.82 |
| 2/17/20 19:15 | 244.14 | 28.60 | 0.00 | 13.31 | 205.03 | 1170.57 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/17 17:2 - 2/17 22:11) | 243.96 | 28.62 | 0.00 | 13.37 | 202.19 | 1171.09 |
| COUNT = 310 | | | | | | |

| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
|---|---|---|---|---|---|---|
| 2/17/20 19:16 | 243.64 | 28.59 | 0.00 | 13.42 | 213.69 | 1170.39 |
| 2/17/20 19:17 | 243.59 | 28.71 | 0.00 | 13.36 | 215.20 | 1170.25 |
| 2/17/20 19:18 | 244.27 | 28.49 | 0.00 | 13.60 | 214.39 | 1170.84 |
| 2/17/20 19:19 | 243.56 | 28.66 | 0.00 | 13.83 | 214.18 | 1170.52 |
| 2/17/20 19:20 | 243.57 | 28.51 | 0.00 | 13.31 | 213.96 | 1170.42 |
| 2/17/20 19:21 | 243.62 | 28.64 | 0.00 | 13.35 | 211.84 | 1170.86 |
| 2/17/20 19:22 | 243.82 | 28.65 | 0.00 | 13.72 | 211.49 | 1171.15 |
| 2/17/20 19:23 | 244.29 | 28.60 | 0.00 | 13.41 | 211.12 | 1171.47 |
| 2/17/20 19:24 | 244.13 | 28.46 | 0.00 | 13.34 | 203.86 | 1170.94 |
| 2/17/20 19:25 | 244.00 | 28.77 | 0.00 | 13.18 | 204.20 | 1171.39 |
| 2/17/20 19:26 | 243.84 | 28.49 | 0.00 | 13.22 | 200.40 | 1170.67 |
| 2/17/20 19:27 | 243.80 | 28.58 | 0.00 | 13.75 | 205.65 | 1170.83 |
| 2/17/20 19:28 | 244.12 | 28.85 | 0.00 | 13.43 | 205.12 | 1170.48 |
| 2/17/20 19:29 | 244.39 | 28.59 | 0.00 | 13.42 | 200.69 | 1171.89 |
| 2/17/20 19:30 | 243.53 | 28.59 | 0.00 | 13.41 | 194.28 | 1170.85 |
| 2/17/20 19:31 | 243.77 | 28.76 | 0.00 | 13.46 | 201.47 | 1171.53 |
| 2/17/20 19:32 | 243.90 | 28.76 | 0.00 | 13.42 | 204.03 | 1170.26 |
| 2/17/20 19:33 | 243.86 | 28.71 | 0.00 | 13.45 | 210.79 | 1171.30 |
| 2/17/20 19:34 | 243.99 | 28.61 | 0.00 | 13.45 | 212.77 | 1171.40 |
| 2/17/20 19:35 | 244.17 | 28.52 | 0.00 | 13.28 | 202.89 | 1170.29 |
| 2/17/20 19:36 | 244.14 | 28.63 | 0.00 | 13.38 | 197.58 | 1170.87 |
| 2/17/20 19:37 | 243.83 | 28.57 | 0.00 | 13.30 | 186.88 | 1171.30 |
| 2/17/20 19:38 | 243.76 | 28.60 | 0.00 | 13.42 | 185.90 | 1171.21 |
| 2/17/20 19:39 | 243.81 | 28.58 | 0.00 | 13.31 | 190.08 | 1171.70 |
| 2/17/20 19:40 | 244.10 | 28.68 | 0.00 | 13.21 | 200.56 | 1170.94 |
| 2/17/20 19:41 | 243.98 | 28.47 | 0.00 | 13.14 | 204.10 | 1171.00 |
| 2/17/20 19:42 | 244.18 | 28.61 | 0.00 | 13.35 | 205.51 | 1170.87 |
| 2/17/20 19:43 | 243.60 | 28.61 | 0.00 | 13.25 | 203.43 | 1170.24 |
| 2/17/20 19:44 | 244.34 | 28.68 | 0.00 | 13.32 | 195.98 | 1170.29 |
| 2/17/20 19:45 | 244.26 | 28.59 | 0.00 | 13.16 | 197.42 | 1170.58 |
| 2/17/20 19:46 | 244.08 | 28.47 | 0.00 | 13.18 | 193.14 | 1170.61 |
| 2/17/20 19:47 | 244.04 | 28.67 | 0.00 | 13.30 | 202.60 | 1171.82 |
| 2/17/20 19:48 | 244.14 | 28.80 | 0.00 | 13.38 | 203.32 | 1171.84 |
| 2/17/20 19:49 | 244.02 | 28.54 | 0.00 | 13.57 | 204.03 | 1171.16 |
| 2/17/20 19:50 | 244.00 | 28.51 | 0.00 | 13.44 | 204.76 | 1171.65 |
| 2/17/20 19:51 | 244.18 | 28.49 | 0.00 | 13.14 | 202.15 | 1170.70 |
| 2/17/20 19:52 | 244.20 | 28.57 | 0.00 | 13.56 | 196.64 | 1171.63 |
| 2/17/20 19:53 | 244.38 | 28.55 | 0.00 | 13.50 | 197.65 | 1170.99 |
| 2/17/20 19:54 | 244.30 | 28.63 | 0.00 | 13.32 | 202.03 | 1171.47 |
| 2/17/20 19:55 | 243.99 | 28.57 | 0.00 | 13.17 | 202.15 | 1171.28 |
| 2/17/20 19:56 | 244.10 | 28.81 | 0.00 | 13.32 | 207.92 | 1170.65 |
| 2/17/20 19:57 | 244.08 | 28.70 | 0.00 | 13.38 | 206.17 | 1171.02 |
| 2/17/20 19:58 | 244.65 | 28.68 | 0.00 | 13.34 | 203.54 | 1171.58 |
| 2/17/20 19:59 | 244.00 | 28.62 | 0.00 | 13.21 | 200.27 | 1170.33 |
| 2/17/20 20:00 | 244.34 | 28.91 | 0.00 | 13.24 | 196.97 | 1171.45 |
| 2/17/20 20:01 | 244.10 | 28.65 | 0.00 | 13.77 | 200.29 | 1171.02 |
| 2/17/20 20:02 | 244.64 | 28.60 | 0.00 | 13.24 | 202.60 | 1171.63 |
| 2/17/20 20:03 | 244.27 | 28.68 | 0.00 | 13.43 | 203.27 | 1172.06 |
| 2/17/20 20:04 | 244.58 | 28.65 | 0.00 | 13.54 | 212.45 | 1172.45 |
| 2/17/20 20:05 | 244.40 | 28.83 | 0.00 | 13.25 | 224.12 | 1171.29 |
| 2/17/20 20:06 | 244.66 | 28.69 | 0.00 | 13.55 | 234.64 | 1172.25 |
| 2/17/20 20:07 | 244.87 | 28.48 | 0.00 | 13.58 | 224.82 | 1172.55 |
| 2/17/20 20:08 | 244.33 | 28.67 | 0.00 | 13.32 | 214.01 | 1171.99 |
| 2/17/20 20:09 | 244.76 | 28.78 | 0.00 | 13.18 | 211.79 | 1172.68 |
| 2/17/20 20:10 | 244.57 | 28.83 | 0.00 | 13.34 | 209.85 | 1171.63 |
| 2/17/20 20:11 | 244.11 | 28.74 | 0.00 | 13.41 | 209.55 | 1170.58 |
| 2/17/20 20:12 | 244.39 | 28.61 | 0.00 | 13.86 | 208.15 | 1172.20 |
| 2/17/20 20:13 | 244.26 | 28.70 | 0.00 | 13.18 | 208.45 | 1171.83 |
| 2/17/20 20:14 | 244.13 | 28.75 | 0.00 | 13.19 | 211.45 | 1171.72 |
| 2/17/20 20:15 | 244.87 | 28.74 | 0.00 | 13.41 | 212.87 | 1173.05 |
| 2/17/20 20:16 | 244.54 | 28.93 | 0.00 | 13.35 | 208.14 | 1170.24 |
| 2/17/20 20:17 | 244.33 | 28.61 | 0.00 | 13.17 | 206.50 | 1171.13 |
| 2/17/20 20:18 | 244.41 | 28.51 | 0.00 | 13.31 | 204.92 | 1171.25 |
| 2/17/20 20:19 | 244.67 | 28.76 | 0.00 | 13.36 | 199.53 | 1171.92 |
| 2/17/20 20:20 | 244.62 | 28.52 | 0.00 | 13.63 | 193.31 | 1172.29 |
| 2/17/20 20:21 | 244.65 | 28.65 | 0.00 | 13.36 | 199.74 | 1171.95 |
| 2/17/20 20:22 | 244.64 | 28.52 | 0.00 | 13.29 | 193.82 | 1171.57 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/17 17:2 - 2/17 22:11) | 243.96 | 28.62 | 0.00 | 13.37 | 202.19 | 1171.09 |
| COUNT = 310 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/17/20 20:23 | 244.72 | 28.62 | 0.00 | 13.39 | 204.34 | 1171.91 |
| 2/17/20 20:24 | 244.79 | 28.73 | 0.00 | 13.48 | 208.20 | 1171.37 |
| 2/17/20 20:25 | 245.05 | 28.60 | 0.00 | 13.36 | 210.02 | 1171.93 |
| 2/17/20 20:26 | 244.33 | 28.64 | 0.00 | 13.24 | 213.05 | 1171.01 |
| 2/17/20 20:27 | 244.60 | 28.64 | 0.00 | 13.35 | 214.85 | 1171.47 |
| 2/17/20 20:28 | 244.52 | 28.70 | 0.00 | 13.42 | 219.55 | 1171.80 |
| 2/17/20 20:29 | 245.07 | 28.72 | 0.00 | 13.32 | 217.09 | 1172.69 |
| 2/17/20 20:30 | 245.05 | 28.55 | 0.00 | 13.13 | 209.86 | 1172.13 |
| 2/17/20 20:31 | 244.63 | 28.82 | 0.00 | 13.34 | 197.56 | 1171.83 |
| 2/17/20 20:32 | 244.44 | 28.68 | 0.00 | 13.26 | 198.88 | 1171.70 |
| 2/17/20 20:33 | 244.01 | 28.71 | 0.00 | 13.23 | 201.87 | 1171.33 |
| 2/17/20 20:34 | 244.74 | 28.60 | 0.00 | 13.32 | 204.86 | 1171.78 |
| 2/17/20 20:35 | 245.12 | 28.51 | 0.00 | 13.37 | 212.76 | 1172.36 |
| 2/17/20 20:36 | 245.13 | 28.79 | 0.00 | 13.20 | 217.97 | 1171.95 |
| 2/17/20 20:37 | 244.14 | 28.67 | 0.00 | 13.36 | 216.72 | 1170.94 |
| 2/17/20 20:38 | 245.08 | 28.75 | 0.00 | 13.57 | 214.55 | 1172.19 |
| 2/17/20 20:39 | 244.50 | 28.73 | 0.00 | 13.29 | 211.33 | 1171.70 |
| 2/17/20 20:40 | 244.61 | 28.91 | 0.00 | 13.60 | 200.99 | 1172.27 |
| 2/17/20 20:41 | 244.63 | 28.83 | 0.00 | 13.46 | 194.33 | 1172.44 |
| 2/17/20 20:42 | 244.68 | 28.59 | 0.00 | 13.30 | 192.53 | 1172.08 |
| 2/17/20 20:43 | 244.56 | 28.77 | 0.00 | 13.53 | 198.61 | 1172.40 |
| 2/17/20 20:44 | 245.08 | 28.67 | 0.00 | 13.60 | 195.51 | 1172.74 |
| 2/17/20 20:45 | 244.67 | 28.54 | 0.00 | 13.07 | 205.54 | 1171.33 |
| 2/17/20 20:46 | 244.44 | 28.85 | 0.00 | 13.52 | 214.13 | 1172.46 |
| 2/17/20 20:47 | 244.85 | 28.67 | 0.00 | 13.35 | 222.19 | 1172.12 |
| 2/17/20 20:48 | 244.43 | 28.82 | 0.00 | 13.24 | 231.97 | 1171.15 |
| 2/17/20 20:49 | 244.89 | 28.76 | 0.00 | 13.68 | 236.38 | 1172.54 |
| 2/17/20 20:50 | 245.18 | 28.79 | 0.00 | 13.18 | 233.54 | 1171.99 |
| 2/17/20 20:51 | 244.62 | 28.66 | 0.00 | 13.50 | 218.76 | 1172.29 |
| 2/17/20 20:52 | 244.64 | 28.68 | 0.00 | 13.36 | 206.72 | 1172.21 |
| 2/17/20 20:53 | 244.70 | 28.53 | 0.00 | 13.49 | 202.11 | 1171.86 |
| 2/17/20 20:54 | 244.89 | 28.92 | 0.00 | 13.45 | 198.50 | 1171.30 |
| 2/17/20 20:55 | 245.10 | 28.66 | 0.00 | 13.42 | 205.99 | 1172.04 |
| 2/17/20 20:56 | 244.27 | 28.77 | 0.00 | 13.35 | 209.18 | 1170.91 |
| 2/17/20 20:57 | 244.85 | 28.85 | 0.00 | 13.28 | 210.92 | 1171.92 |
| 2/17/20 20:58 | 245.02 | 28.82 | 0.00 | 13.15 | 210.39 | 1172.01 |
| 2/17/20 20:59 | 245.05 | 28.74 | 0.00 | 13.52 | 215.23 | 1172.09 |
| 2/17/20 21:00 | 245.30 | 28.68 | 0.00 | 13.36 | 218.98 | 1172.83 |
| 2/17/20 21:01 | 244.90 | 28.70 | 0.00 | 13.36 | 212.71 | 1172.37 |
| 2/17/20 21:02 | 244.94 | 28.65 | 0.00 | 13.53 | 207.79 | 1172.83 |
| 2/17/20 21:03 | 245.16 | 28.55 | 0.00 | 13.28 | 206.88 | 1172.06 |
| 2/17/20 21:04 | 244.87 | 28.65 | 0.00 | 13.51 | 201.60 | 1171.55 |
| 2/17/20 21:05 | 244.58 | 28.70 | 0.00 | 13.39 | 209.01 | 1172.70 |
| 2/17/20 21:06 | 244.69 | 28.68 | 0.00 | 13.22 | 211.97 | 1171.93 |
| 2/17/20 21:07 | 244.87 | 28.86 | 0.00 | 13.21 | 214.99 | 1171.87 |
| 2/17/20 21:08 | 244.75 | 28.73 | 0.00 | 13.22 | 215.85 | 1172.03 |
| 2/17/20 21:09 | 245.19 | 28.76 | 0.00 | 13.64 | 209.74 | 1172.82 |
| 2/17/20 21:10 | 245.07 | 28.64 | 0.00 | 13.21 | 206.46 | 1172.47 |
| 2/17/20 21:11 | 244.93 | 28.69 | 0.00 | 13.37 | 212.34 | 1171.91 |
| 2/17/20 21:12 | 245.26 | 28.55 | 0.00 | 13.27 | 223.11 | 1172.63 |
| 2/17/20 21:13 | 244.87 | 28.56 | 0.00 | 13.44 | 228.00 | 1172.64 |
| 2/17/20 21:14 | 245.23 | 28.64 | 0.00 | 13.33 | 226.51 | 1172.91 |
| 2/17/20 21:15 | 244.79 | 28.62 | 0.00 | 13.19 | 224.81 | 1172.12 |
| 2/17/20 21:16 | 244.99 | 28.89 | 0.00 | 13.35 | 221.89 | 1172.99 |
| 2/17/20 21:17 | 245.36 | 28.67 | 0.00 | 13.26 | 217.37 | 1172.06 |
| 2/17/20 21:18 | 244.74 | 28.85 | 0.00 | 13.43 | 216.10 | 1172.48 |
| 2/17/20 21:19 | 245.34 | 28.75 | 0.00 | 13.59 | 213.58 | 1172.55 |
| 2/17/20 21:20 | 244.59 | 28.44 | 0.00 | 13.39 | 215.97 | 1171.48 |
| 2/17/20 21:21 | 245.34 | 28.98 | 0.00 | 13.43 | 219.73 | 1172.78 |
| 2/17/20 21:22 | 245.33 | 28.67 | 0.00 | 13.33 | 213.51 | 1171.97 |
| 2/17/20 21:23 | 244.94 | 28.80 | 0.00 | 13.28 | 207.25 | 1172.36 |
| 2/17/20 21:24 | 245.09 | 28.68 | 0.00 | 13.23 | 206.20 | 1172.40 |
| 2/17/20 21:25 | 245.14 | 28.61 | 0.00 | 13.84 | 206.54 | 1172.28 |
| 2/17/20 21:26 | 244.91 | 28.70 | 0.00 | 13.23 | 210.13 | 1171.46 |
| 2/17/20 21:27 | 244.38 | 28.81 | 0.00 | 13.49 | 215.88 | 1171.78 |
| 2/17/20 21:28 | 244.90 | 28.85 | 0.00 | 13.63 | 219.66 | 1173.12 |
| 2/17/20 21:29 | 245.61 | 28.74 | 0.00 | 13.43 | 225.11 | 1172.61 |

| Description | | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/17 17:2 - 2/17 22:11) | | 243.96 | 28.62 | 0.00 | 13.37 | 202.19 | 1171.09 |
| COUNT = 310 | | | | | | | |
| Signal Tagname | | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| | 2/17/20 21:30 | 244.87 | 29.01 | 0.00 | 13.44 | 231.37 | 1172.33 |
| | 2/17/20 21:31 | 244.72 | 28.81 | 0.00 | 13.36 | 231.71 | 1172.68 |
| | 2/17/20 21:32 | 244.82 | 28.66 | 0.00 | 13.49 | 228.14 | 1172.30 |
| | 2/17/20 21:33 | 245.43 | 28.80 | 0.00 | 13.60 | 218.87 | 1173.05 |
| | 2/17/20 21:34 | 244.82 | 28.78 | 0.00 | 13.31 | 209.77 | 1172.30 |
| | 2/17/20 21:35 | 244.84 | 28.67 | 0.00 | 13.40 | 203.56 | 1172.36 |
| | 2/17/20 21:36 | 244.72 | 28.75 | 0.00 | 13.55 | 197.39 | 1172.93 |
| | 2/17/20 21:37 | 244.89 | 28.78 | 0.00 | 13.26 | 197.97 | 1172.38 |
| | 2/17/20 21:38 | 244.73 | 28.80 | 0.00 | 13.27 | 202.35 | 1172.19 |
| | 2/17/20 21:39 | 245.06 | 28.89 | 0.00 | 13.48 | 206.21 | 1172.79 |
| | 2/17/20 21:40 | 245.00 | 28.81 | 0.00 | 13.47 | 210.38 | 1173.03 |
| | 2/17/20 21:41 | 245.13 | 28.69 | 0.00 | 13.31 | 212.19 | 1172.32 |
| | 2/17/20 21:42 | 244.90 | 28.76 | 0.00 | 13.33 | 213.78 | 1172.24 |
| | 2/17/20 21:43 | 245.11 | 28.85 | 0.00 | 13.33 | 214.61 | 1172.47 |
| | 2/17/20 21:44 | 245.20 | 28.83 | 0.00 | 13.65 | 215.04 | 1173.16 |
| | 2/17/20 21:45 | 244.94 | 28.64 | 0.00 | 13.47 | 213.57 | 1172.95 |
| | 2/17/20 21:46 | 245.29 | 28.66 | 0.00 | 13.47 | 214.72 | 1173.03 |
| | 2/17/20 21:47 | 245.12 | 28.93 | 0.00 | 13.30 | 219.54 | 1172.38 |
| | 2/17/20 21:48 | 244.89 | 28.76 | 0.00 | 13.38 | 217.00 | 1171.91 |
| | 2/17/20 21:49 | 245.26 | 28.77 | 0.00 | 13.45 | 219.13 | 1172.73 |
| | 2/17/20 21:50 | 244.81 | 28.65 | 0.00 | 13.32 | 214.11 | 1172.37 |
| | 2/17/20 21:51 | 245.03 | 28.70 | 0.00 | 13.39 | 209.33 | 1172.53 |
| | 2/17/20 21:52 | 245.00 | 28.74 | 0.00 | 13.33 | 204.29 | 1172.60 |
| | 2/17/20 21:53 | 245.02 | 28.80 | 0.00 | 13.32 | 207.03 | 1172.47 |
| | 2/17/20 21:54 | 245.20 | 28.77 | 0.00 | 13.77 | 209.64 | 1172.75 |
| | 2/17/20 21:55 | 245.13 | 28.66 | 0.00 | 13.66 | 213.20 | 1173.11 |
| | 2/17/20 21:56 | 244.87 | 28.72 | 0.00 | 13.41 | 222.76 | 1172.82 |
| | 2/17/20 21:57 | 245.35 | 28.65 | 0.00 | 13.29 | 230.77 | 1173.17 |
| | 2/17/20 21:58 | 244.85 | 28.66 | 0.00 | 13.49 | 238.36 | 1173.36 |
| | 2/17/20 21:59 | 245.34 | 28.54 | 0.00 | 13.53 | 231.07 | 1173.23 |
| | 2/17/20 22:00 | 245.46 | 28.88 | 0.00 | 13.53 | 226.48 | 1173.12 |
| | 2/17/20 22:01 | 245.31 | 28.75 | 0.00 | 13.45 | 220.51 | 1173.41 |
| | 2/17/20 22:02 | 246.00 | 28.67 | 0.00 | 13.47 | 221.53 | 1173.72 |
| | 2/17/20 22:03 | 245.69 | 28.68 | 0.00 | 13.53 | 227.02 | 1174.00 |
| | 2/17/20 22:04 | 245.74 | 28.59 | 0.00 | 13.42 | 229.88 | 1172.90 |
| | 2/17/20 22:05 | 245.45 | 28.85 | 0.00 | 13.42 | 233.33 | 1172.08 |
| | 2/17/20 22:06 | 245.55 | 28.96 | 0.00 | 13.63 | 231.46 | 1173.16 |
| | 2/17/20 22:07 | 245.93 | 28.70 | 0.00 | 13.47 | 235.90 | 1173.46 |
| | 2/17/20 22:08 | 245.85 | 28.91 | 0.00 | 13.68 | 234.03 | 1173.47 |
| | 2/17/20 22:09 | 245.55 | 28.85 | 0.00 | 13.24 | 235.37 | 1173.08 |
| | 2/17/20 22:10 | 245.62 | 28.82 | 0.00 | 13.39 | 235.66 | 1172.68 |
| | 2/17/20 22:11 | 245.90 | 28.65 | 0.00 | 13.39 | 234.77 | 1173.09 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/17 23:5 - 2/18 4:5) | 245.71 | 28.75 | 0.00 | 13.42 | 225.55 | 1172.81 |
| COUNT = 301 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/17/20 23:05 | 246.29 | 28.70 | 0.00 | 13.32 | 232.74 | 1173.25 |
| 2/17/20 23:06 | 245.59 | 28.61 | 0.00 | 13.35 | 232.95 | 1172.31 |
| 2/17/20 23:07 | 245.54 | 28.77 | 0.00 | 13.62 | 231.80 | 1173.00 |
| 2/17/20 23:08 | 245.98 | 28.75 | 0.00 | 13.48 | 233.26 | 1173.50 |
| 2/17/20 23:09 | 246.01 | 28.83 | 0.00 | 13.40 | 233.21 | 1173.05 |
| 2/17/20 23:10 | 246.16 | 28.76 | 0.00 | 13.38 | 233.31 | 1172.99 |
| 2/17/20 23:11 | 245.68 | 28.74 | 0.00 | 13.54 | 231.62 | 1172.82 |
| 2/17/20 23:12 | 245.99 | 28.68 | 0.00 | 13.38 | 229.73 | 1172.03 |
| 2/17/20 23:13 | 246.24 | 28.83 | 0.00 | 13.48 | 227.94 | 1173.67 |
| 2/17/20 23:14 | 246.17 | 28.46 | 0.00 | 13.29 | 228.40 | 1173.93 |
| 2/17/20 23:15 | 246.13 | 28.61 | 0.00 | 13.15 | 229.09 | 1172.78 |
| 2/17/20 23:16 | 246.21 | 28.78 | 0.00 | 13.57 | 229.64 | 1173.96 |
| 2/17/20 23:17 | 245.91 | 28.85 | 0.00 | 13.28 | 230.21 | 1172.57 |
| 2/17/20 23:18 | 245.92 | 28.63 | 0.00 | 13.41 | 230.86 | 1173.29 |
| 2/17/20 23:19 | 245.54 | 28.65 | 0.00 | 13.46 | 225.83 | 1172.32 |
| 2/17/20 23:20 | 246.13 | 28.60 | 0.00 | 13.43 | 231.79 | 1173.30 |
| 2/17/20 23:21 | 246.30 | 28.70 | 0.00 | 13.77 | 227.73 | 1174.19 |
| 2/17/20 23:22 | 245.16 | 28.60 | 0.00 | 13.34 | 229.39 | 1172.56 |
| 2/17/20 23:23 | 245.78 | 28.88 | 0.00 | 13.44 | 229.38 | 1174.29 |
| 2/17/20 23:24 | 245.61 | 28.80 | 0.00 | 13.49 | 233.72 | 1172.65 |
| 2/17/20 23:25 | 245.83 | 28.81 | 0.00 | 13.65 | 234.27 | 1172.87 |
| 2/17/20 23:26 | 246.34 | 28.69 | 0.00 | 13.19 | 234.76 | 1174.00 |
| 2/17/20 23:27 | 246.08 | 28.73 | 0.00 | 13.50 | 236.05 | 1173.01 |
| 2/17/20 23:28 | 245.88 | 28.52 | 0.00 | 13.52 | 235.28 | 1172.77 |
| 2/17/20 23:29 | 245.81 | 28.87 | 0.00 | 13.57 | 237.42 | 1173.01 |
| 2/17/20 23:30 | 246.13 | 28.78 | 0.00 | 13.40 | 232.19 | 1173.27 |
| 2/17/20 23:31 | 246.07 | 28.55 | 0.00 | 13.55 | 228.96 | 1173.08 |
| 2/17/20 23:32 | 245.77 | 28.80 | 0.00 | 13.47 | 228.06 | 1172.54 |
| 2/17/20 23:33 | 245.80 | 28.69 | 0.00 | 13.39 | 234.50 | 1174.06 |
| 2/17/20 23:34 | 246.14 | 28.73 | 0.00 | 13.36 | 237.00 | 1173.39 |
| 2/17/20 23:35 | 245.74 | 28.93 | 0.00 | 13.34 | 240.34 | 1172.92 |
| 2/17/20 23:36 | 246.22 | 28.79 | 0.00 | 13.68 | 240.45 | 1174.19 |
| 2/17/20 23:37 | 245.86 | 28.66 | 0.00 | 13.61 | 238.21 | 1173.13 |
| 2/17/20 23:38 | 246.30 | 28.87 | 0.00 | 13.51 | 237.13 | 1173.67 |
| 2/17/20 23:39 | 245.60 | 28.63 | 0.00 | 13.33 | 231.57 | 1172.93 |
| 2/17/20 23:40 | 245.74 | 28.71 | 0.00 | 13.43 | 225.42 | 1173.52 |
| 2/17/20 23:41 | 245.58 | 28.77 | 0.00 | 13.42 | 221.14 | 1172.65 |
| 2/17/20 23:42 | 245.85 | 28.74 | 0.00 | 13.26 | 218.89 | 1173.62 |
| 2/17/20 23:43 | 245.86 | 28.81 | 0.00 | 13.39 | 212.17 | 1172.57 |
| 2/17/20 23:44 | 246.23 | 28.96 | 0.00 | 13.17 | 214.32 | 1173.20 |
| 2/17/20 23:45 | 245.86 | 28.53 | 0.00 | 13.45 | 220.20 | 1173.58 |
| 2/17/20 23:46 | 246.09 | 28.84 | 0.00 | 13.43 | 225.72 | 1174.03 |
| 2/17/20 23:47 | 246.38 | 28.76 | 0.00 | 13.14 | 230.23 | 1173.09 |
| 2/17/20 23:48 | 246.35 | 28.82 | 0.00 | 13.49 | 235.68 | 1173.38 |
| 2/17/20 23:49 | 245.92 | 28.90 | 0.00 | 13.33 | 236.95 | 1173.91 |
| 2/17/20 23:50 | 245.62 | 28.65 | 0.00 | 13.27 | 235.66 | 1172.58 |
| 2/17/20 23:51 | 246.34 | 28.69 | 0.00 | 13.73 | 229.10 | 1173.81 |
| 2/17/20 23:52 | 245.60 | 28.63 | 0.00 | 13.54 | 226.28 | 1172.49 |
| 2/17/20 23:53 | 245.99 | 28.96 | 0.00 | 13.25 | 220.83 | 1173.30 |
| 2/17/20 23:54 | 245.88 | 29.00 | 0.00 | 13.33 | 220.96 | 1172.88 |
| 2/17/20 23:55 | 245.88 | 28.77 | 0.00 | 13.22 | 225.04 | 1173.63 |
| 2/17/20 23:56 | 246.11 | 28.74 | 0.00 | 13.55 | 231.86 | 1174.62 |
| 2/17/20 23:57 | 245.96 | 28.61 | 0.00 | 13.51 | 235.47 | 1173.67 |
| 2/17/20 23:58 | 245.91 | 28.80 | 0.00 | 13.53 | 236.47 | 1172.81 |
| 2/17/20 23:59 | 246.12 | 28.89 | 0.00 | 13.37 | 236.32 | 1173.12 |
| 2/18/20 0:00 | 245.71 | 28.87 | 0.00 | 13.50 | 232.71 | 1172.80 |
| 2/18/20 0:01 | 246.72 | 28.68 | 0.00 | 13.71 | 228.75 | 1174.12 |
| 2/18/20 0:02 | 246.55 | 28.87 | 0.00 | 13.16 | 226.22 | 1173.24 |
| 2/18/20 0:03 | 246.05 | 28.95 | 0.00 | 13.45 | 228.23 | 1172.61 |
| 2/18/20 0:04 | 245.89 | 28.80 | 0.00 | 13.38 | 233.87 | 1173.18 |
| 2/18/20 0:05 | 246.21 | 28.78 | 0.00 | 13.71 | 234.64 | 1173.86 |
| 2/18/20 0:06 | 246.18 | 28.63 | 0.00 | 13.43 | 233.86 | 1173.02 |
| 2/18/20 0:07 | 245.84 | 28.80 | 0.00 | 13.27 | 231.49 | 1173.05 |
| 2/18/20 0:08 | 246.16 | 28.99 | 0.00 | 13.35 | 229.19 | 1173.14 |
| 2/18/20 0:09 | 246.30 | 28.80 | 0.00 | 13.34 | 228.27 | 1172.83 |
| 2/18/20 0:10 | 246.67 | 28.71 | 0.00 | 13.75 | 232.68 | 1174.80 |
| 2/18/20 0:11 | 245.61 | 28.77 | 0.00 | 13.51 | 232.48 | 1172.48 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/17 23:5 - 2/18 4:5) | 245.71 | 28.75 | 0.00 | 13.42 | 225.55 | 1172.81 |
| COUNT = 301 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/18/20 0:12 | 246.30 | 28.80 | 0.00 | 13.17 | 233.96 | 1173.99 |
| 2/18/20 0:13 | 246.52 | 28.94 | 0.00 | 13.37 | 234.51 | 1173.69 |
| 2/18/20 0:14 | 246.17 | 28.78 | 0.00 | 13.27 | 231.64 | 1173.75 |
| 2/18/20 0:15 | 245.81 | 28.74 | 0.00 | 13.48 | 234.86 | 1172.48 |
| 2/18/20 0:16 | 246.15 | 28.70 | 0.00 | 13.32 | 236.23 | 1173.08 |
| 2/18/20 0:17 | 246.76 | 28.59 | 0.00 | 13.48 | 238.79 | 1173.39 |
| 2/18/20 0:18 | 245.59 | 28.86 | 0.00 | 13.25 | 243.92 | 1172.47 |
| 2/18/20 0:19 | 246.13 | 28.65 | 0.00 | 13.30 | 247.90 | 1173.04 |
| 2/18/20 0:20 | 246.28 | 28.93 | 0.00 | 13.34 | 245.52 | 1173.13 |
| 2/18/20 0:21 | 246.52 | 28.76 | 0.00 | 13.47 | 236.17 | 1173.37 |
| 2/18/20 0:22 | 246.10 | 28.73 | 0.00 | 13.56 | 231.29 | 1173.65 |
| 2/18/20 0:23 | 245.96 | 28.84 | 0.00 | 13.54 | 231.30 | 1173.08 |
| 2/18/20 0:24 | 246.57 | 28.83 | 0.00 | 13.34 | 226.45 | 1173.12 |
| 2/18/20 0:25 | 245.98 | 28.64 | 0.00 | 13.33 | 226.37 | 1172.40 |
| 2/18/20 0:26 | 246.48 | 28.83 | 0.00 | 13.70 | 234.34 | 1174.07 |
| 2/18/20 0:27 | 245.68 | 28.76 | 0.00 | 13.24 | 237.37 | 1172.43 |
| 2/18/20 0:28 | 246.47 | 28.77 | 0.00 | 13.68 | 239.01 | 1173.17 |
| 2/18/20 0:29 | 246.28 | 28.80 | 0.00 | 13.80 | 240.92 | 1173.30 |
| 2/18/20 0:30 | 246.36 | 28.82 | 0.00 | 13.49 | 239.69 | 1173.61 |
| 2/18/20 0:31 | 246.21 | 28.99 | 0.00 | 13.52 | 232.01 | 1173.49 |
| 2/18/20 0:32 | 246.56 | 28.62 | 0.00 | 13.39 | 227.53 | 1173.53 |
| 2/18/20 0:33 | 245.71 | 28.64 | 0.00 | 13.34 | 231.71 | 1173.12 |
| 2/18/20 0:34 | 246.42 | 28.75 | 0.00 | 13.38 | 234.41 | 1174.01 |
| 2/18/20 0:35 | 246.18 | 28.86 | 0.00 | 13.37 | 237.00 | 1172.54 |
| 2/18/20 0:36 | 245.85 | 28.65 | 0.00 | 13.51 | 237.35 | 1173.32 |
| 2/18/20 0:37 | 246.51 | 28.69 | 0.00 | 13.36 | 241.35 | 1173.93 |
| 2/18/20 0:38 | 246.31 | 29.01 | 0.00 | 13.52 | 236.73 | 1173.21 |
| 2/18/20 0:39 | 245.76 | 28.75 | 0.00 | 13.50 | 234.88 | 1172.54 |
| 2/18/20 0:40 | 246.72 | 28.64 | 0.00 | 13.32 | 228.23 | 1172.13 |
| 2/18/20 0:41 | 246.34 | 28.67 | 0.00 | 13.49 | 228.41 | 1173.81 |
| 2/18/20 0:42 | 246.09 | 28.92 | 0.00 | 13.94 | 223.68 | 1173.09 |
| 2/18/20 0:43 | 245.88 | 28.85 | 0.00 | 13.45 | 226.34 | 1172.86 |
| 2/18/20 0:44 | 246.40 | 28.91 | 0.00 | 13.48 | 225.96 | 1174.00 |
| 2/18/20 0:45 | 246.27 | 28.81 | 0.00 | 13.46 | 222.82 | 1173.12 |
| 2/18/20 0:46 | 245.94 | 28.81 | 0.00 | 13.54 | 223.01 | 1172.31 |
| 2/18/20 0:47 | 246.25 | 28.79 | 0.00 | 13.71 | 228.87 | 1172.51 |
| 2/18/20 0:48 | 246.62 | 28.84 | 0.00 | 13.80 | 235.27 | 1173.96 |
| 2/18/20 0:49 | 246.17 | 28.82 | 0.00 | 13.47 | 243.09 | 1172.64 |
| 2/18/20 0:50 | 245.97 | 28.93 | 0.00 | 13.42 | 246.75 | 1172.12 |
| 2/18/20 0:51 | 246.37 | 28.77 | 0.00 | 13.32 | 245.72 | 1172.30 |
| 2/18/20 0:52 | 246.52 | 28.66 | 0.00 | 13.24 | 239.31 | 1172.78 |
| 2/18/20 0:53 | 245.93 | 28.92 | 0.00 | 13.27 | 237.43 | 1172.79 |
| 2/18/20 0:54 | 246.15 | 28.99 | 0.00 | 13.50 | 236.85 | 1173.82 |
| 2/18/20 0:55 | 246.02 | 28.75 | 0.00 | 13.44 | 239.18 | 1172.77 |
| 2/18/20 0:56 | 246.11 | 28.91 | 0.00 | 13.53 | 245.44 | 1173.47 |
| 2/18/20 0:57 | 246.65 | 28.89 | 0.00 | 13.36 | 247.78 | 1173.20 |
| 2/18/20 0:58 | 246.03 | 28.75 | 0.00 | 13.53 | 242.34 | 1173.47 |
| 2/18/20 0:59 | 245.78 | 28.53 | 0.00 | 13.44 | 239.25 | 1173.04 |
| 2/18/20 1:00 | 246.00 | 28.87 | 0.00 | 13.34 | 231.56 | 1173.41 |
| 2/18/20 1:01 | 245.88 | 28.90 | 0.00 | 13.86 | 236.00 | 1173.31 |
| 2/18/20 1:02 | 246.18 | 28.76 | 0.00 | 13.24 | 235.85 | 1173.02 |
| 2/18/20 1:03 | 246.38 | 28.81 | 0.00 | 13.22 | 230.80 | 1173.14 |
| 2/18/20 1:04 | 245.67 | 28.72 | 0.00 | 13.40 | 229.26 | 1172.91 |
| 2/18/20 1:05 | 246.53 | 28.94 | 0.00 | 13.22 | 226.59 | 1173.29 |
| 2/18/20 1:06 | 246.22 | 28.74 | 0.00 | 13.56 | 229.57 | 1174.36 |
| 2/18/20 1:07 | 246.21 | 28.88 | 0.00 | 13.55 | 233.69 | 1174.12 |
| 2/18/20 1:08 | 246.27 | 28.80 | 0.00 | 13.34 | 233.74 | 1173.68 |
| 2/18/20 1:09 | 246.31 | 28.59 | 0.00 | 13.26 | 234.92 | 1172.77 |
| 2/18/20 1:10 | 245.96 | 28.88 | 0.00 | 13.14 | 233.68 | 1172.94 |
| 2/18/20 1:11 | 245.57 | 28.67 | 0.00 | 13.32 | 228.65 | 1173.27 |
| 2/18/20 1:12 | 246.40 | 28.97 | 0.00 | 13.44 | 223.91 | 1174.04 |
| 2/18/20 1:13 | 246.41 | 28.74 | 0.00 | 13.34 | 222.14 | 1173.08 |
| 2/18/20 1:14 | 246.36 | 28.61 | 0.00 | 13.51 | 228.57 | 1173.43 |
| 2/18/20 1:15 | 245.99 | 28.83 | 0.00 | 13.26 | 234.13 | 1172.96 |
| 2/18/20 1:16 | 246.81 | 28.80 | 0.00 | 13.30 | 236.14 | 1173.04 |
| 2/18/20 1:17 | 246.33 | 28.68 | 0.00 | 13.38 | 238.67 | 1173.45 |
| 2/18/20 1:18 | 245.97 | 28.67 | 0.00 | 13.57 | 233.45 | 1172.49 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/17 23:5 - 2/18 4:5) | 245.71 | 28.75 | 0.00 | 13.42 | 225.55 | 1172.81 |
| COUNT = 301 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/18/20 1:19 | 245.85 | 28.69 | 0.00 | 13.36 | 231.39 | 1173.10 |
| 2/18/20 1:20 | 246.10 | 28.66 | 0.00 | 13.64 | 233.48 | 1174.82 |
| 2/18/20 1:21 | 246.25 | 28.79 | 0.00 | 13.46 | 232.79 | 1174.09 |
| 2/18/20 1:22 | 246.08 | 28.83 | 0.00 | 13.36 | 236.65 | 1173.04 |
| 2/18/20 1:23 | 246.21 | 29.14 | 0.00 | 13.33 | 241.64 | 1173.30 |
| 2/18/20 1:24 | 245.80 | 28.62 | 0.00 | 13.36 | 245.83 | 1172.80 |
| 2/18/20 1:25 | 246.55 | 28.62 | 0.00 | 13.31 | 245.14 | 1172.70 |
| 2/18/20 1:26 | 246.59 | 28.76 | 0.00 | 13.46 | 237.55 | 1174.00 |
| 2/18/20 1:27 | 246.34 | 28.66 | 0.00 | 13.29 | 228.23 | 1173.33 |
| 2/18/20 1:28 | 245.92 | 28.62 | 0.00 | 13.48 | 229.84 | 1172.90 |
| 2/18/20 1:29 | 245.91 | 28.90 | 0.00 | 13.31 | 232.06 | 1173.70 |
| 2/18/20 1:30 | 245.65 | 28.73 | 0.00 | 13.32 | 234.08 | 1172.58 |
| 2/18/20 1:31 | 246.26 | 28.77 | 0.00 | 13.23 | 235.42 | 1173.41 |
| 2/18/20 1:32 | 245.91 | 28.78 | 0.00 | 13.76 | 237.66 | 1173.65 |
| 2/18/20 1:33 | 245.74 | 28.72 | 0.00 | 13.53 | 237.32 | 1173.05 |
| 2/18/20 1:34 | 245.77 | 28.72 | 0.00 | 13.78 | 237.44 | 1172.39 |
| 2/18/20 1:35 | 246.56 | 28.87 | 0.00 | 13.26 | 243.14 | 1173.09 |
| 2/18/20 1:36 | 246.40 | 29.03 | 0.00 | 13.34 | 250.32 | 1172.90 |
| 2/18/20 1:37 | 246.49 | 28.77 | 0.00 | 13.41 | 248.25 | 1173.18 |
| 2/18/20 1:38 | 246.11 | 28.99 | 0.00 | 13.38 | 242.39 | 1173.35 |
| 2/18/20 1:39 | 245.97 | 28.62 | 0.00 | 13.15 | 238.16 | 1172.10 |
| 2/18/20 1:40 | 246.50 | 28.67 | 0.00 | 13.20 | 232.61 | 1173.22 |
| 2/18/20 1:41 | 246.56 | 28.95 | 0.00 | 13.42 | 232.36 | 1172.69 |
| 2/18/20 1:42 | 246.19 | 28.69 | 0.00 | 13.51 | 226.62 | 1172.97 |
| 2/18/20 1:43 | 246.11 | 28.87 | 0.00 | 13.57 | 229.28 | 1173.80 |
| 2/18/20 1:44 | 246.02 | 29.03 | 0.00 | 13.36 | 234.49 | 1172.41 |
| 2/18/20 1:45 | 245.97 | 28.79 | 0.00 | 13.31 | 241.50 | 1172.93 |
| 2/18/20 1:46 | 246.24 | 28.89 | 0.00 | 13.46 | 245.20 | 1173.42 |
| 2/18/20 1:47 | 246.28 | 28.84 | 0.00 | 13.45 | 242.97 | 1173.61 |
| 2/18/20 1:48 | 246.13 | 28.71 | 0.00 | 13.31 | 237.98 | 1173.05 |
| 2/18/20 1:49 | 246.02 | 28.85 | 0.00 | 13.54 | 235.63 | 1173.45 |
| 2/18/20 1:50 | 246.07 | 28.72 | 0.00 | 13.41 | 234.43 | 1173.89 |
| 2/18/20 1:51 | 246.27 | 28.67 | 0.00 | 13.21 | 236.89 | 1172.56 |
| 2/18/20 1:52 | 245.71 | 28.77 | 0.00 | 13.28 | 235.49 | 1172.01 |
| 2/18/20 1:53 | 245.51 | 28.77 | 0.00 | 13.19 | 228.81 | 1172.20 |
| 2/18/20 1:54 | 246.01 | 28.92 | 0.00 | 13.34 | 223.41 | 1173.08 |
| 2/18/20 1:55 | 246.14 | 28.93 | 0.00 | 13.53 | 217.44 | 1174.00 |
| 2/18/20 1:56 | 246.04 | 28.69 | 0.00 | 13.61 | 215.76 | 1173.70 |
| 2/18/20 1:57 | 245.90 | 28.80 | 0.00 | 13.40 | 221.37 | 1173.27 |
| 2/18/20 1:58 | 245.28 | 28.72 | 0.00 | 13.30 | 221.34 | 1173.07 |
| 2/18/20 1:59 | 245.74 | 28.79 | 0.00 | 13.45 | 227.44 | 1173.60 |
| 2/18/20 2:00 | 245.43 | 28.80 | 0.00 | 13.40 | 232.51 | 1172.94 |
| 2/18/20 2:01 | 245.42 | 28.83 | 0.00 | 13.36 | 229.03 | 1172.08 |
| 2/18/20 2:02 | 245.87 | 28.76 | 0.00 | 13.22 | 221.58 | 1173.07 |
| 2/18/20 2:03 | 245.23 | 28.79 | 0.00 | 13.41 | 212.09 | 1172.98 |
| 2/18/20 2:04 | 245.45 | 28.75 | 0.00 | 13.34 | 208.42 | 1173.67 |
| 2/18/20 2:05 | 245.49 | 28.73 | 0.00 | 13.55 | 205.78 | 1172.59 |
| 2/18/20 2:06 | 245.96 | 28.95 | 0.00 | 13.31 | 206.85 | 1172.62 |
| 2/18/20 2:07 | 245.85 | 28.70 | 0.00 | 13.32 | 206.98 | 1172.47 |
| 2/18/20 2:08 | 245.62 | 28.87 | 0.00 | 13.37 | 218.99 | 1172.92 |
| 2/18/20 2:09 | 245.37 | 28.67 | 0.00 | 13.29 | 230.60 | 1172.93 |
| 2/18/20 2:10 | 246.13 | 28.72 | 0.00 | 13.44 | 238.82 | 1173.50 |
| 2/18/20 2:11 | 245.76 | 28.86 | 0.00 | 13.65 | 236.32 | 1173.53 |
| 2/18/20 2:12 | 245.11 | 28.61 | 0.00 | 13.72 | 234.02 | 1172.37 |
| 2/18/20 2:13 | 245.61 | 29.06 | 0.00 | 13.41 | 229.84 | 1173.01 |
| 2/18/20 2:14 | 245.08 | 28.48 | 0.00 | 13.65 | 226.53 | 1172.51 |
| 2/18/20 2:15 | 245.64 | 28.89 | 0.00 | 13.22 | 213.23 | 1172.86 |
| 2/18/20 2:16 | 245.66 | 28.74 | 0.00 | 13.41 | 206.79 | 1172.80 |
| 2/18/20 2:17 | 245.03 | 28.94 | 0.00 | 13.45 | 205.63 | 1172.90 |
| 2/18/20 2:18 | 245.07 | 28.82 | 0.00 | 13.38 | 208.63 | 1172.68 |
| 2/18/20 2:19 | 245.47 | 28.69 | 0.00 | 13.36 | 210.16 | 1172.70 |
| 2/18/20 2:20 | 245.63 | 28.61 | 0.00 | 13.32 | 215.71 | 1172.57 |
| 2/18/20 2:21 | 245.64 | 28.95 | 0.00 | 13.21 | 220.24 | 1173.25 |
| 2/18/20 2:22 | 245.50 | 28.62 | 0.00 | 13.36 | 216.07 | 1172.42 |
| 2/18/20 2:23 | 246.17 | 28.54 | 0.00 | 13.82 | 221.39 | 1173.32 |
| 2/18/20 2:24 | 245.57 | 28.71 | 0.00 | 13.38 | 216.47 | 1172.97 |
| 2/18/20 2:25 | 245.28 | 28.84 | 0.00 | 13.85 | 217.45 | 1173.45 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/17 23:5 - 2/18 4:5) | 245.71 | 28.75 | 0.00 | 13.42 | 225.55 | 1172.81 |
| COUNT = 301 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/18/20 2:26 | 245.00 | 28.59 | 0.00 | 13.31 | 217.56 | 1171.66 |
| 2/18/20 2:27 | 245.91 | 28.67 | 0.00 | 13.41 | 218.84 | 1173.25 |
| 2/18/20 2:28 | 245.64 | 28.78 | 0.00 | 13.29 | 225.89 | 1172.35 |
| 2/18/20 2:29 | 245.24 | 28.76 | 0.00 | 13.43 | 226.27 | 1172.90 |
| 2/18/20 2:30 | 245.67 | 29.09 | 0.00 | 13.11 | 223.53 | 1172.06 |
| 2/18/20 2:31 | 245.38 | 28.38 | 0.00 | 13.45 | 220.56 | 1172.67 |
| 2/18/20 2:32 | 245.50 | 28.64 | 0.00 | 13.44 | 222.54 | 1172.61 |
| 2/18/20 2:33 | 245.44 | 28.66 | 0.00 | 13.22 | 223.90 | 1171.93 |
| 2/18/20 2:34 | 245.85 | 28.75 | 0.00 | 13.52 | 224.53 | 1172.47 |
| 2/18/20 2:35 | 244.85 | 28.81 | 0.00 | 13.49 | 223.27 | 1171.88 |
| 2/18/20 2:36 | 245.46 | 28.69 | 0.00 | 13.57 | 226.81 | 1172.12 |
| 2/18/20 2:37 | 245.56 | 28.67 | 0.00 | 13.57 | 228.67 | 1172.46 |
| 2/18/20 2:38 | 245.40 | 28.64 | 0.00 | 13.27 | 226.94 | 1172.85 |
| 2/18/20 2:39 | 245.07 | 28.65 | 0.00 | 13.32 | 220.96 | 1172.24 |
| 2/18/20 2:40 | 244.99 | 28.58 | 0.00 | 13.36 | 217.60 | 1172.17 |
| 2/18/20 2:41 | 245.55 | 28.65 | 0.00 | 13.42 | 216.59 | 1172.24 |
| 2/18/20 2:42 | 245.33 | 28.69 | 0.00 | 13.38 | 220.83 | 1172.25 |
| 2/18/20 2:43 | 245.66 | 28.81 | 0.00 | 13.45 | 219.61 | 1172.98 |
| 2/18/20 2:44 | 245.61 | 28.61 | 0.00 | 13.67 | 210.53 | 1173.07 |
| 2/18/20 2:45 | 245.29 | 28.68 | 0.00 | 13.43 | 213.87 | 1172.59 |
| 2/18/20 2:46 | 245.21 | 28.73 | 0.00 | 13.32 | 212.54 | 1172.04 |
| 2/18/20 2:47 | 245.24 | 28.76 | 0.00 | 13.31 | 214.01 | 1172.43 |
| 2/18/20 2:48 | 244.97 | 28.68 | 0.00 | 13.49 | 215.03 | 1172.48 |
| 2/18/20 2:49 | 245.16 | 28.73 | 0.00 | 13.32 | 209.66 | 1172.61 |
| 2/18/20 2:50 | 244.60 | 28.75 | 0.00 | 13.36 | 208.46 | 1172.14 |
| 2/18/20 2:51 | 245.33 | 28.67 | 0.00 | 13.86 | 206.97 | 1173.20 |
| 2/18/20 2:52 | 245.19 | 28.66 | 0.00 | 13.27 | 215.05 | 1173.35 |
| 2/18/20 2:53 | 244.62 | 28.74 | 0.00 | 13.38 | 217.73 | 1171.72 |
| 2/18/20 2:54 | 245.08 | 28.73 | 0.00 | 13.47 | 225.71 | 1172.27 |
| 2/18/20 2:55 | 245.08 | 28.41 | 0.00 | 13.57 | 228.50 | 1172.63 |
| 2/18/20 2:56 | 244.86 | 28.53 | 0.00 | 13.39 | 222.20 | 1171.17 |
| 2/18/20 2:57 | 245.12 | 28.79 | 0.00 | 13.44 | 219.23 | 1172.67 |
| 2/18/20 2:58 | 244.82 | 28.76 | 0.00 | 13.59 | 211.09 | 1172.60 |
| 2/18/20 2:59 | 245.04 | 28.88 | 0.00 | 13.79 | 206.94 | 1172.62 |
| 2/18/20 3:00 | 244.85 | 28.61 | 0.00 | 13.37 | 209.13 | 1171.80 |
| 2/18/20 3:01 | 245.35 | 28.81 | 0.00 | 13.33 | 205.04 | 1172.96 |
| 2/18/20 3:02 | 245.21 | 28.83 | 0.00 | 13.44 | 205.13 | 1172.77 |
| 2/18/20 3:03 | 244.93 | 28.74 | 0.00 | 13.49 | 209.35 | 1171.98 |
| 2/18/20 3:04 | 245.30 | 28.71 | 0.00 | 13.52 | 215.79 | 1173.65 |
| 2/18/20 3:05 | 245.58 | 28.69 | 0.00 | 13.27 | 219.88 | 1172.13 |
| 2/18/20 3:06 | 245.02 | 28.89 | 0.00 | 13.29 | 213.34 | 1171.86 |
| 2/18/20 3:07 | 245.75 | 28.65 | 0.00 | 13.63 | 209.66 | 1172.71 |
| 2/18/20 3:08 | 245.88 | 28.78 | 0.00 | 13.37 | 208.52 | 1171.98 |
| 2/18/20 3:09 | 244.95 | 28.63 | 0.00 | 13.43 | 209.87 | 1171.98 |
| 2/18/20 3:10 | 245.05 | 28.70 | 0.00 | 13.30 | 216.60 | 1171.91 |
| 2/18/20 3:11 | 244.55 | 28.96 | 0.00 | 13.48 | 218.10 | 1172.28 |
| 2/18/20 3:12 | 245.38 | 28.86 | 0.00 | 13.32 | 218.53 | 1172.14 |
| 2/18/20 3:13 | 244.75 | 28.70 | 0.00 | 13.30 | 217.45 | 1170.92 |
| 2/18/20 3:14 | 245.43 | 28.56 | 0.00 | 13.42 | 217.72 | 1172.80 |
| 2/18/20 3:15 | 245.20 | 28.77 | 0.00 | 13.25 | 214.16 | 1172.22 |
| 2/18/20 3:16 | 244.71 | 28.65 | 0.00 | 13.53 | 215.28 | 1172.14 |
| 2/18/20 3:17 | 245.15 | 28.72 | 0.00 | 13.37 | 213.46 | 1171.15 |
| 2/18/20 3:18 | 245.10 | 28.77 | 0.00 | 13.40 | 216.66 | 1172.26 |
| 2/18/20 3:19 | 245.51 | 28.76 | 0.00 | 13.45 | 218.84 | 1171.84 |
| 2/18/20 3:20 | 245.00 | 28.61 | 0.00 | 13.36 | 215.88 | 1172.30 |
| 2/18/20 3:21 | 245.41 | 28.72 | 0.00 | 13.38 | 212.55 | 1172.42 |
| 2/18/20 3:22 | 245.13 | 28.75 | 0.00 | 13.37 | 206.59 | 1172.22 |
| 2/18/20 3:23 | 244.36 | 28.87 | 0.00 | 13.26 | 204.42 | 1171.73 |
| 2/18/20 3:24 | 245.12 | 28.62 | 0.00 | 13.39 | 204.11 | 1171.50 |
| 2/18/20 3:25 | 244.70 | 28.78 | 0.00 | 13.40 | 206.73 | 1172.86 |
| 2/18/20 3:26 | 244.67 | 28.66 | 0.00 | 13.58 | 211.59 | 1172.11 |
| 2/18/20 3:27 | 245.26 | 28.53 | 0.00 | 13.40 | 220.61 | 1172.17 |
| 2/18/20 3:28 | 244.74 | 28.75 | 0.00 | 13.18 | 224.43 | 1170.52 |
| 2/18/20 3:29 | 245.03 | 28.61 | 0.00 | 13.43 | 223.71 | 1171.93 |
| 2/18/20 3:30 | 244.48 | 28.67 | 0.00 | 13.62 | 214.16 | 1171.74 |
| 2/18/20 3:31 | 244.69 | 28.85 | 0.00 | 13.41 | 209.13 | 1172.17 |
| 2/18/20 3:32 | 244.91 | 28.86 | 0.00 | 13.28 | 207.82 | 1171.24 |

| Description | | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/17 23:5 - 2/18 4:5)<br>COUNT = 301 | | 245.71 | 28.75 | 0.00 | 13.42 | 225.55 | 1172.81 |
| Signal Tagname | | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| | 2/18/20 3:33 | 244.96 | 28.74 | 0.00 | 13.34 | 210.34 | 1171.89 |
| | 2/18/20 3:34 | 244.79 | 28.71 | 0.00 | 13.38 | 208.77 | 1171.55 |
| | 2/18/20 3:35 | 245.22 | 28.79 | 0.00 | 13.74 | 208.37 | 1172.31 |
| | 2/18/20 3:36 | 245.08 | 28.85 | 0.00 | 13.34 | 205.79 | 1172.12 |
| | 2/18/20 3:37 | 245.05 | 28.50 | 0.00 | 13.24 | 209.37 | 1171.92 |
| | 2/18/20 3:38 | 245.00 | 28.70 | 0.00 | 13.54 | 205.44 | 1172.06 |
| | 2/18/20 3:39 | 244.95 | 28.63 | 0.00 | 13.66 | 207.12 | 1172.03 |
| | 2/18/20 3:40 | 244.67 | 28.51 | 0.00 | 13.26 | 212.91 | 1171.29 |
| | 2/18/20 3:41 | 244.88 | 28.75 | 0.00 | 13.54 | 218.98 | 1172.25 |
| | 2/18/20 3:42 | 245.15 | 28.56 | 0.00 | 13.52 | 219.42 | 1172.24 |
| | 2/18/20 3:43 | 245.69 | 28.76 | 0.00 | 13.60 | 218.42 | 1173.05 |
| | 2/18/20 3:44 | 244.84 | 28.79 | 0.00 | 13.48 | 215.98 | 1171.97 |
| | 2/18/20 3:45 | 244.80 | 28.45 | 0.00 | 13.48 | 213.92 | 1171.43 |
| | 2/18/20 3:46 | 244.66 | 28.65 | 0.00 | 13.28 | 215.07 | 1171.26 |
| | 2/18/20 3:47 | 245.04 | 28.64 | 0.00 | 13.47 | 213.01 | 1171.85 |
| | 2/18/20 3:48 | 244.56 | 28.64 | 0.00 | 13.32 | 212.01 | 1170.93 |
| | 2/18/20 3:49 | 245.38 | 28.68 | 0.00 | 13.28 | 209.76 | 1172.17 |
| | 2/18/20 3:50 | 244.90 | 28.53 | 0.00 | 13.44 | 210.99 | 1171.09 |
| | 2/18/20 3:51 | 244.77 | 28.47 | 0.00 | 13.42 | 213.79 | 1172.04 |
| | 2/18/20 3:52 | 244.71 | 28.68 | 0.00 | 13.26 | 214.50 | 1170.96 |
| | 2/18/20 3:53 | 244.98 | 28.78 | 0.00 | 13.42 | 220.32 | 1172.11 |
| | 2/18/20 3:54 | 244.89 | 28.58 | 0.00 | 13.33 | 214.70 | 1171.36 |
| | 2/18/20 3:55 | 244.81 | 28.59 | 0.00 | 13.79 | 204.14 | 1172.07 |
| | 2/18/20 3:56 | 245.14 | 28.68 | 0.00 | 13.52 | 198.82 | 1171.99 |
| | 2/18/20 3:57 | 244.77 | 28.74 | 0.00 | 13.35 | 195.48 | 1171.97 |
| | 2/18/20 3:58 | 244.61 | 28.67 | 0.00 | 13.41 | 200.81 | 1171.39 |
| | 2/18/20 3:59 | 245.30 | 28.65 | 0.00 | 13.36 | 202.54 | 1172.36 |
| | 2/18/20 4:00 | 244.95 | 28.63 | 0.00 | 13.62 | 203.94 | 1171.07 |
| | 2/18/20 4:01 | 245.24 | 28.67 | 0.00 | 13.48 | 207.75 | 1171.92 |
| | 2/18/20 4:02 | 244.42 | 28.66 | 0.00 | 13.36 | 213.41 | 1171.42 |
| | 2/18/20 4:03 | 244.84 | 28.54 | 0.00 | 13.27 | 213.92 | 1172.10 |
| | 2/18/20 4:04 | 244.87 | 28.67 | 0.00 | 13.44 | 213.96 | 1171.29 |
| | 2/18/20 4:05 | 244.55 | 28.59 | 0.00 | 13.51 | 209.07 | 1171.85 |

| Description | | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/19 14:25 - 2/19 18:27) | | 242.72 | 28.40 | 1.99 | 13.37 | 194.48 | 1168.05 |
| COUNT = 243 | | | | | | | |
| Signal Tagname | | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| | 2/19/20 14:25 | 242.07 | 28.32 | 4.39 | 13.43 | 190.66 | 1167.02 |
| | 2/19/20 14:26 | 242.07 | 28.32 | 4.37 | 13.43 | 190.69 | 1167.03 |
| | 2/19/20 14:27 | 242.08 | 28.32 | 4.35 | 13.43 | 190.72 | 1167.03 |
| | 2/19/20 14:28 | 242.08 | 28.32 | 4.33 | 13.43 | 190.75 | 1167.04 |
| | 2/19/20 14:29 | 242.09 | 28.32 | 4.31 | 13.43 | 190.78 | 1167.05 |
| | 2/19/20 14:30 | 242.09 | 28.32 | 4.29 | 13.43 | 190.81 | 1167.06 |
| | 2/19/20 14:31 | 242.10 | 28.32 | 4.27 | 13.43 | 190.84 | 1167.07 |
| | 2/19/20 14:32 | 242.10 | 28.32 | 4.25 | 13.43 | 190.87 | 1167.08 |
| | 2/19/20 14:33 | 242.11 | 28.32 | 4.23 | 13.43 | 190.90 | 1167.09 |
| | 2/19/20 14:34 | 242.12 | 28.32 | 4.21 | 13.43 | 190.93 | 1167.10 |
| | 2/19/20 14:35 | 242.12 | 28.32 | 4.19 | 13.43 | 190.96 | 1167.11 |
| | 2/19/20 14:36 | 242.13 | 28.32 | 4.17 | 13.43 | 190.99 | 1167.12 |
| | 2/19/20 14:37 | 242.13 | 28.33 | 4.15 | 13.43 | 191.02 | 1167.12 |
| | 2/19/20 14:38 | 242.14 | 28.33 | 4.13 | 13.43 | 191.05 | 1167.13 |
| | 2/19/20 14:39 | 242.14 | 28.33 | 4.11 | 13.43 | 191.08 | 1167.14 |
| | 2/19/20 14:40 | 242.15 | 28.33 | 4.09 | 13.43 | 191.11 | 1167.15 |
| | 2/19/20 14:41 | 242.15 | 28.33 | 4.07 | 13.43 | 191.14 | 1167.16 |
| | 2/19/20 14:42 | 242.16 | 28.33 | 4.05 | 13.43 | 191.17 | 1167.17 |
| | 2/19/20 14:43 | 242.16 | 28.33 | 4.03 | 13.43 | 191.20 | 1167.18 |
| | 2/19/20 14:44 | 242.17 | 28.33 | 4.01 | 13.43 | 191.23 | 1167.19 |
| | 2/19/20 14:45 | 242.17 | 28.33 | 3.99 | 13.43 | 191.26 | 1167.20 |
| | 2/19/20 14:46 | 242.18 | 28.33 | 3.97 | 13.42 | 191.29 | 1167.20 |
| | 2/19/20 14:47 | 242.18 | 28.33 | 3.95 | 13.42 | 191.32 | 1167.21 |
| | 2/19/20 14:48 | 242.19 | 28.33 | 3.93 | 13.42 | 191.35 | 1167.22 |
| | 2/19/20 14:49 | 242.19 | 28.33 | 3.91 | 13.42 | 191.38 | 1167.23 |
| | 2/19/20 14:50 | 242.20 | 28.33 | 3.89 | 13.42 | 191.41 | 1167.24 |
| | 2/19/20 14:51 | 242.20 | 28.33 | 3.87 | 13.42 | 191.45 | 1167.25 |
| | 2/19/20 14:52 | 242.21 | 28.33 | 3.85 | 13.42 | 191.48 | 1167.26 |
| | 2/19/20 14:53 | 242.22 | 28.33 | 3.83 | 13.42 | 191.51 | 1167.27 |
| | 2/19/20 14:54 | 242.22 | 28.34 | 3.81 | 13.42 | 191.54 | 1167.28 |
| | 2/19/20 14:55 | 242.23 | 28.34 | 3.79 | 13.42 | 191.57 | 1167.28 |
| | 2/19/20 14:56 | 242.23 | 28.34 | 3.77 | 13.42 | 191.60 | 1167.29 |
| | 2/19/20 14:57 | 242.24 | 28.34 | 3.75 | 13.42 | 191.63 | 1167.30 |
| | 2/19/20 14:58 | 242.24 | 28.34 | 3.73 | 13.42 | 191.66 | 1167.31 |
| | 2/19/20 14:59 | 242.25 | 28.34 | 3.71 | 13.42 | 191.69 | 1167.32 |
| | 2/19/20 15:00 | 242.25 | 28.34 | 3.69 | 13.42 | 191.72 | 1167.33 |
| | 2/19/20 15:01 | 242.26 | 28.34 | 3.67 | 13.42 | 191.75 | 1167.34 |
| | 2/19/20 15:02 | 242.26 | 28.34 | 3.65 | 13.42 | 191.78 | 1167.35 |
| | 2/19/20 15:03 | 242.27 | 28.34 | 3.63 | 13.42 | 191.81 | 1167.36 |
| | 2/19/20 15:04 | 242.27 | 28.34 | 3.61 | 13.42 | 191.84 | 1167.36 |
| | 2/19/20 15:05 | 242.28 | 28.34 | 3.59 | 13.42 | 191.87 | 1167.37 |
| | 2/19/20 15:06 | 242.28 | 28.34 | 3.57 | 13.42 | 191.90 | 1167.38 |
| | 2/19/20 15:07 | 242.29 | 28.34 | 3.55 | 13.42 | 191.93 | 1167.39 |
| | 2/19/20 15:08 | 242.29 | 28.34 | 3.53 | 13.41 | 191.96 | 1167.40 |
| | 2/19/20 15:09 | 242.30 | 28.34 | 3.51 | 13.41 | 191.99 | 1167.41 |
| | 2/19/20 15:10 | 242.31 | 28.34 | 3.49 | 13.41 | 192.02 | 1167.42 |
| | 2/19/20 15:11 | 242.31 | 28.35 | 3.47 | 13.41 | 192.05 | 1167.43 |
| | 2/19/20 15:12 | 242.32 | 28.35 | 3.45 | 13.41 | 192.08 | 1167.44 |
| | 2/19/20 15:13 | 242.32 | 28.35 | 3.43 | 13.41 | 192.11 | 1167.45 |
| | 2/19/20 15:14 | 242.33 | 28.35 | 3.41 | 13.41 | 192.14 | 1167.45 |
| | 2/19/20 15:15 | 242.33 | 28.35 | 3.39 | 13.41 | 192.17 | 1167.46 |
| | 2/19/20 15:16 | 242.34 | 28.35 | 3.37 | 13.41 | 192.20 | 1167.47 |
| | 2/19/20 15:17 | 242.34 | 28.35 | 3.35 | 13.41 | 192.23 | 1167.48 |
| | 2/19/20 15:18 | 242.35 | 28.35 | 3.33 | 13.41 | 192.26 | 1167.49 |
| | 2/19/20 15:19 | 242.35 | 28.35 | 3.31 | 13.41 | 192.29 | 1167.50 |
| | 2/19/20 15:20 | 242.36 | 28.35 | 3.29 | 13.41 | 192.32 | 1167.51 |
| | 2/19/20 15:21 | 242.36 | 28.35 | 3.27 | 13.41 | 192.36 | 1167.52 |
| | 2/19/20 15:22 | 242.37 | 28.35 | 3.25 | 13.41 | 192.39 | 1167.53 |
| | 2/19/20 15:23 | 242.37 | 28.35 | 3.23 | 13.41 | 192.42 | 1167.53 |
| | 2/19/20 15:24 | 242.38 | 28.35 | 3.21 | 13.41 | 192.45 | 1167.54 |
| | 2/19/20 15:25 | 242.38 | 28.35 | 3.19 | 13.41 | 192.48 | 1167.55 |
| | 2/19/20 15:26 | 242.39 | 28.35 | 3.17 | 13.41 | 192.51 | 1167.56 |
| | 2/19/20 15:27 | 242.40 | 28.36 | 3.15 | 13.41 | 192.54 | 1167.57 |
| | 2/19/20 15:28 | 242.40 | 28.36 | 3.13 | 13.41 | 192.57 | 1167.58 |
| | 2/19/20 15:29 | 242.41 | 28.36 | 3.11 | 13.41 | 192.60 | 1167.59 |
| | 2/19/20 15:30 | 242.41 | 28.36 | 3.09 | 13.40 | 192.63 | 1167.60 |
| | 2/19/20 15:31 | 242.42 | 28.36 | 3.07 | 13.40 | 192.66 | 1167.61 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/19 14:25 - 2/19 18:27) | 242.72 | 28.40 | 1.99 | 13.37 | 194.48 | 1168.05 |
| COUNT = 243 | | | | | | |

| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
|---|---|---|---|---|---|---|
| 2/19/20 15:32 | 242.42 | 28.36 | 3.05 | 13.40 | 192.69 | 1167.61 |
| 2/19/20 15:33 | 242.43 | 28.36 | 3.03 | 13.40 | 192.72 | 1167.62 |
| 2/19/20 15:34 | 242.43 | 28.36 | 3.01 | 13.40 | 192.75 | 1167.63 |
| 2/19/20 15:35 | 242.44 | 28.36 | 2.99 | 13.40 | 192.78 | 1167.64 |
| 2/19/20 15:36 | 242.44 | 28.36 | 2.97 | 13.40 | 192.81 | 1167.65 |
| 2/19/20 15:37 | 242.45 | 28.36 | 2.95 | 13.40 | 192.84 | 1167.66 |
| 2/19/20 15:38 | 242.45 | 28.36 | 2.93 | 13.40 | 192.87 | 1167.67 |
| 2/19/20 15:39 | 242.46 | 28.36 | 2.91 | 13.40 | 192.90 | 1167.68 |
| 2/19/20 15:40 | 242.46 | 28.36 | 2.89 | 13.40 | 192.93 | 1167.69 |
| 2/19/20 15:41 | 242.47 | 28.36 | 2.87 | 13.40 | 192.96 | 1167.69 |
| 2/19/20 15:42 | 242.47 | 28.36 | 2.85 | 13.40 | 192.99 | 1167.70 |
| 2/19/20 15:43 | 242.48 | 28.36 | 2.83 | 13.40 | 193.02 | 1167.71 |
| 2/19/20 15:44 | 242.49 | 28.37 | 2.81 | 13.40 | 193.05 | 1167.72 |
| 2/19/20 15:45 | 242.49 | 28.37 | 2.79 | 13.40 | 193.08 | 1167.73 |
| 2/19/20 15:46 | 242.50 | 28.37 | 2.77 | 13.40 | 193.11 | 1167.74 |
| 2/19/20 15:47 | 242.50 | 28.37 | 2.75 | 13.40 | 193.14 | 1167.75 |
| 2/19/20 15:48 | 242.51 | 28.37 | 2.73 | 13.40 | 193.17 | 1167.76 |
| 2/19/20 15:49 | 242.51 | 28.37 | 2.71 | 13.40 | 193.20 | 1167.77 |
| 2/19/20 15:50 | 242.52 | 28.37 | 2.69 | 13.40 | 193.23 | 1167.78 |
| 2/19/20 15:51 | 242.52 | 28.37 | 2.67 | 13.40 | 193.27 | 1167.78 |
| 2/19/20 15:52 | 242.53 | 28.37 | 2.65 | 13.39 | 193.30 | 1167.79 |
| 2/19/20 15:53 | 242.53 | 28.37 | 2.63 | 13.39 | 193.33 | 1167.80 |
| 2/19/20 15:54 | 242.54 | 28.37 | 2.61 | 13.39 | 193.36 | 1167.81 |
| 2/19/20 15:55 | 242.54 | 28.37 | 2.59 | 13.39 | 193.39 | 1167.82 |
| 2/19/20 15:56 | 242.55 | 28.37 | 2.57 | 13.39 | 193.42 | 1167.83 |
| 2/19/20 15:57 | 242.55 | 28.37 | 2.55 | 13.39 | 193.45 | 1167.84 |
| 2/19/20 15:58 | 242.56 | 28.37 | 2.53 | 13.39 | 193.48 | 1167.85 |
| 2/19/20 15:59 | 242.56 | 28.37 | 2.51 | 13.39 | 193.51 | 1167.86 |
| 2/19/20 16:00 | 242.57 | 28.37 | 2.49 | 13.39 | 193.54 | 1167.86 |
| 2/19/20 16:01 | 242.58 | 28.38 | 2.47 | 13.39 | 193.57 | 1167.87 |
| 2/19/20 16:02 | 242.58 | 28.38 | 2.45 | 13.39 | 193.60 | 1167.88 |
| 2/19/20 16:03 | 242.59 | 28.38 | 2.43 | 13.39 | 193.63 | 1167.89 |
| 2/19/20 16:04 | 242.59 | 28.38 | 2.41 | 13.39 | 193.66 | 1167.90 |
| 2/19/20 16:05 | 242.60 | 28.38 | 2.39 | 13.39 | 193.69 | 1167.91 |
| 2/19/20 16:06 | 242.60 | 28.38 | 2.37 | 13.39 | 193.72 | 1167.92 |
| 2/19/20 16:07 | 242.61 | 28.38 | 2.35 | 13.39 | 193.75 | 1167.93 |
| 2/19/20 16:08 | 242.61 | 28.38 | 2.33 | 13.39 | 193.78 | 1167.94 |
| 2/19/20 16:09 | 242.62 | 28.38 | 2.31 | 13.39 | 193.81 | 1167.94 |
| 2/19/20 16:10 | 242.62 | 28.38 | 2.29 | 13.39 | 193.84 | 1167.95 |
| 2/19/20 16:11 | 242.63 | 28.38 | 2.27 | 13.39 | 193.87 | 1167.96 |
| 2/19/20 16:12 | 242.63 | 28.38 | 2.25 | 13.39 | 193.90 | 1167.97 |
| 2/19/20 16:13 | 242.64 | 28.38 | 2.23 | 13.39 | 193.93 | 1167.98 |
| 2/19/20 16:14 | 242.64 | 28.38 | 2.21 | 13.38 | 193.96 | 1167.99 |
| 2/19/20 16:15 | 242.65 | 28.38 | 2.19 | 13.38 | 193.99 | 1168.00 |
| 2/19/20 16:16 | 242.65 | 28.38 | 2.17 | 13.38 | 194.02 | 1168.01 |
| 2/19/20 16:17 | 242.66 | 28.38 | 2.15 | 13.38 | 194.05 | 1168.02 |
| 2/19/20 16:18 | 242.67 | 28.39 | 2.13 | 13.38 | 194.08 | 1168.03 |
| 2/19/20 16:19 | 242.67 | 28.39 | 2.11 | 13.38 | 194.11 | 1168.03 |
| 2/19/20 16:20 | 242.68 | 28.39 | 2.09 | 13.38 | 194.14 | 1168.04 |
| 2/19/20 16:21 | 242.68 | 28.39 | 2.07 | 13.38 | 194.18 | 1168.05 |
| 2/19/20 16:22 | 242.69 | 28.39 | 2.05 | 13.38 | 194.21 | 1168.06 |
| 2/19/20 16:23 | 242.69 | 28.39 | 2.03 | 13.38 | 194.24 | 1168.07 |
| 2/19/20 16:24 | 242.70 | 28.39 | 2.01 | 13.38 | 194.27 | 1168.08 |
| 2/19/20 16:25 | 242.70 | 28.39 | 1.99 | 13.38 | 194.30 | 1168.09 |
| 2/19/20 16:26 | 242.71 | 28.39 | 1.97 | 13.38 | 194.33 | 1168.10 |
| 2/19/20 16:27 | 242.71 | 28.39 | 1.95 | 13.38 | 194.36 | 1168.11 |
| 2/19/20 16:28 | 242.72 | 28.39 | 1.93 | 13.38 | 194.39 | 1168.11 |
| 2/19/20 16:29 | 242.72 | 28.39 | 1.91 | 13.38 | 194.42 | 1168.12 |
| 2/19/20 16:30 | 242.73 | 28.39 | 1.89 | 13.38 | 194.45 | 1168.13 |
| 2/19/20 16:31 | 242.73 | 28.39 | 1.87 | 13.38 | 194.48 | 1168.14 |
| 2/19/20 16:32 | 242.74 | 28.39 | 1.85 | 13.38 | 194.51 | 1168.15 |
| 2/19/20 16:33 | 242.74 | 28.39 | 1.83 | 13.38 | 194.54 | 1168.16 |
| 2/19/20 16:34 | 242.75 | 28.40 | 1.81 | 13.38 | 194.57 | 1168.17 |
| 2/19/20 16:35 | 242.76 | 28.40 | 1.79 | 13.38 | 194.60 | 1168.18 |
| 2/19/20 16:36 | 242.76 | 28.40 | 1.77 | 13.37 | 194.63 | 1168.19 |
| 2/19/20 16:37 | 242.77 | 28.40 | 1.75 | 13.37 | 194.66 | 1168.19 |
| 2/19/20 16:38 | 242.77 | 28.40 | 1.73 | 13.37 | 194.69 | 1168.20 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/19 14:25 - 2/19 18:27) | 242.72 | 28.40 | 1.99 | 13.37 | 194.48 | 1168.05 |
| COUNT = 243 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/19/20 16:39 | 242.78 | 28.40 | 1.71 | 13.37 | 194.72 | 1168.21 |
| 2/19/20 16:40 | 242.78 | 28.40 | 1.69 | 13.37 | 194.75 | 1168.22 |
| 2/19/20 16:41 | 242.79 | 28.40 | 1.67 | 13.37 | 194.78 | 1168.23 |
| 2/19/20 16:42 | 242.79 | 28.40 | 1.65 | 13.37 | 194.81 | 1168.24 |
| 2/19/20 16:43 | 242.80 | 28.40 | 1.63 | 13.37 | 194.84 | 1168.25 |
| 2/19/20 16:44 | 242.80 | 28.40 | 1.61 | 13.37 | 194.87 | 1168.26 |
| 2/19/20 16:45 | 242.81 | 28.40 | 1.59 | 13.37 | 194.90 | 1168.27 |
| 2/19/20 16:46 | 242.81 | 28.40 | 1.57 | 13.37 | 194.93 | 1168.27 |
| 2/19/20 16:47 | 242.82 | 28.40 | 1.55 | 13.37 | 194.96 | 1168.28 |
| 2/19/20 16:48 | 242.82 | 28.40 | 1.53 | 13.37 | 194.99 | 1168.29 |
| 2/19/20 16:49 | 242.83 | 28.40 | 1.51 | 13.37 | 195.02 | 1168.30 |
| 2/19/20 16:50 | 242.83 | 28.40 | 1.49 | 13.37 | 195.05 | 1168.31 |
| 2/19/20 16:51 | 242.84 | 28.41 | 1.47 | 13.37 | 195.08 | 1168.32 |
| 2/19/20 16:52 | 242.85 | 28.41 | 1.45 | 13.37 | 195.12 | 1168.33 |
| 2/19/20 16:53 | 242.85 | 28.41 | 1.43 | 13.37 | 195.15 | 1168.34 |
| 2/19/20 16:54 | 242.86 | 28.41 | 1.41 | 13.37 | 195.18 | 1168.35 |
| 2/19/20 16:55 | 242.86 | 28.41 | 1.39 | 13.37 | 195.21 | 1168.36 |
| 2/19/20 16:56 | 242.87 | 28.41 | 1.37 | 13.37 | 195.24 | 1168.36 |
| 2/19/20 16:57 | 242.87 | 28.41 | 1.35 | 13.37 | 195.27 | 1168.37 |
| 2/19/20 16:58 | 242.88 | 28.41 | 1.33 | 13.37 | 195.30 | 1168.38 |
| 2/19/20 16:59 | 242.88 | 28.41 | 1.31 | 13.36 | 195.33 | 1168.39 |
| 2/19/20 17:00 | 242.89 | 28.41 | 1.29 | 13.36 | 195.36 | 1168.40 |
| 2/19/20 17:01 | 242.89 | 28.41 | 1.27 | 13.36 | 195.39 | 1168.41 |
| 2/19/20 17:02 | 242.90 | 28.41 | 1.25 | 13.36 | 195.42 | 1168.42 |
| 2/19/20 17:03 | 242.90 | 28.41 | 1.23 | 13.36 | 195.45 | 1168.43 |
| 2/19/20 17:04 | 242.91 | 28.41 | 1.21 | 13.36 | 195.48 | 1168.44 |
| 2/19/20 17:05 | 242.91 | 28.41 | 1.19 | 13.36 | 195.51 | 1168.44 |
| 2/19/20 17:06 | 242.92 | 28.41 | 1.17 | 13.36 | 195.54 | 1168.45 |
| 2/19/20 17:07 | 242.92 | 28.41 | 1.15 | 13.36 | 195.57 | 1168.46 |
| 2/19/20 17:08 | 242.93 | 28.42 | 1.13 | 13.36 | 195.60 | 1168.47 |
| 2/19/20 17:09 | 242.93 | 28.42 | 1.11 | 13.36 | 195.63 | 1168.48 |
| 2/19/20 17:10 | 242.94 | 28.42 | 1.09 | 13.36 | 195.66 | 1168.49 |
| 2/19/20 17:11 | 242.95 | 28.42 | 1.07 | 13.36 | 195.69 | 1168.50 |
| 2/19/20 17:12 | 242.95 | 28.42 | 1.05 | 13.36 | 195.72 | 1168.51 |
| 2/19/20 17:13 | 242.96 | 28.42 | 1.03 | 13.36 | 195.75 | 1168.52 |
| 2/19/20 17:14 | 242.96 | 28.42 | 1.01 | 13.36 | 195.78 | 1168.52 |
| 2/19/20 17:15 | 242.97 | 28.42 | 0.99 | 13.36 | 195.81 | 1168.53 |
| 2/19/20 17:16 | 242.97 | 28.42 | 0.97 | 13.36 | 195.84 | 1168.54 |
| 2/19/20 17:17 | 242.98 | 28.42 | 0.95 | 13.36 | 195.87 | 1168.55 |
| 2/19/20 17:18 | 242.98 | 28.42 | 0.93 | 13.36 | 195.90 | 1168.56 |
| 2/19/20 17:19 | 242.99 | 28.42 | 0.91 | 13.36 | 195.93 | 1168.57 |
| 2/19/20 17:20 | 242.99 | 28.42 | 0.89 | 13.36 | 195.96 | 1168.58 |
| 2/19/20 17:21 | 243.00 | 28.42 | 0.87 | 13.35 | 195.99 | 1168.59 |
| 2/19/20 17:22 | 243.00 | 28.42 | 0.85 | 13.35 | 196.03 | 1168.60 |
| 2/19/20 17:23 | 243.01 | 28.42 | 0.83 | 13.35 | 196.06 | 1168.60 |
| 2/19/20 17:24 | 243.01 | 28.42 | 0.81 | 13.35 | 196.09 | 1168.61 |
| 2/19/20 17:25 | 243.02 | 28.43 | 0.79 | 13.35 | 196.12 | 1168.62 |
| 2/19/20 17:26 | 243.02 | 28.43 | 0.77 | 13.35 | 196.15 | 1168.63 |
| 2/19/20 17:27 | 243.03 | 28.43 | 0.75 | 13.35 | 196.18 | 1168.64 |
| 2/19/20 17:28 | 243.04 | 28.43 | 0.73 | 13.35 | 196.21 | 1168.65 |
| 2/19/20 17:29 | 243.04 | 28.43 | 0.71 | 13.35 | 196.24 | 1168.66 |
| 2/19/20 17:30 | 243.05 | 28.43 | 0.69 | 13.35 | 196.27 | 1168.67 |
| 2/19/20 17:31 | 243.05 | 28.43 | 0.67 | 13.35 | 196.30 | 1168.68 |
| 2/19/20 17:32 | 243.06 | 28.43 | 0.65 | 13.35 | 196.33 | 1168.69 |
| 2/19/20 17:33 | 243.06 | 28.43 | 0.63 | 13.35 | 196.36 | 1168.69 |
| 2/19/20 17:34 | 243.07 | 28.43 | 0.61 | 13.35 | 196.39 | 1168.70 |
| 2/19/20 17:35 | 243.07 | 28.43 | 0.59 | 13.35 | 196.42 | 1168.71 |
| 2/19/20 17:36 | 243.08 | 28.43 | 0.57 | 13.35 | 196.45 | 1168.72 |
| 2/19/20 17:37 | 243.08 | 28.43 | 0.55 | 13.35 | 196.48 | 1168.73 |
| 2/19/20 17:38 | 243.09 | 28.43 | 0.53 | 13.35 | 196.51 | 1168.74 |
| 2/19/20 17:39 | 243.09 | 28.43 | 0.51 | 13.35 | 196.54 | 1168.75 |
| 2/19/20 17:40 | 243.10 | 28.43 | 0.49 | 13.35 | 196.57 | 1168.76 |
| 2/19/20 17:41 | 243.10 | 28.44 | 0.47 | 13.35 | 196.60 | 1168.77 |
| 2/19/20 17:42 | 243.11 | 28.44 | 0.45 | 13.35 | 196.63 | 1168.77 |
| 2/19/20 17:43 | 243.11 | 28.44 | 0.43 | 13.34 | 196.66 | 1168.78 |
| 2/19/20 17:44 | 243.12 | 28.44 | 0.41 | 13.34 | 196.69 | 1168.79 |
| 2/19/20 17:45 | 243.13 | 28.44 | 0.39 | 13.34 | 196.72 | 1168.80 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/19 14:25 - 2/19 18:27) | 242.72 | 28.40 | 1.99 | 13.37 | 194.48 | 1168.05 |
| COUNT = 243 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/19/20 17:46 | 243.13 | 28.44 | 0.37 | 13.34 | 196.75 | 1168.81 |
| 2/19/20 17:47 | 243.14 | 28.44 | 0.35 | 13.34 | 196.78 | 1168.82 |
| 2/19/20 17:48 | 243.14 | 28.44 | 0.33 | 13.34 | 196.81 | 1168.83 |
| 2/19/20 17:49 | 243.15 | 28.44 | 0.31 | 13.34 | 196.84 | 1168.84 |
| 2/19/20 17:50 | 243.15 | 28.44 | 0.29 | 13.34 | 196.87 | 1168.85 |
| 2/19/20 17:51 | 243.16 | 28.44 | 0.27 | 13.34 | 196.90 | 1168.85 |
| 2/19/20 17:52 | 243.16 | 28.44 | 0.25 | 13.34 | 196.94 | 1168.86 |
| 2/19/20 17:53 | 243.17 | 28.44 | 0.23 | 13.34 | 196.97 | 1168.87 |
| 2/19/20 17:54 | 243.17 | 28.44 | 0.21 | 13.34 | 197.00 | 1168.88 |
| 2/19/20 17:55 | 243.18 | 28.44 | 0.19 | 13.34 | 197.03 | 1168.89 |
| 2/19/20 17:56 | 243.18 | 28.44 | 0.17 | 13.34 | 197.06 | 1168.90 |
| 2/19/20 17:57 | 243.19 | 28.44 | 0.15 | 13.34 | 197.09 | 1168.91 |
| 2/19/20 17:58 | 243.19 | 28.45 | 0.13 | 13.34 | 197.12 | 1168.92 |
| 2/19/20 17:59 | 243.20 | 28.45 | 0.11 | 13.34 | 197.15 | 1168.93 |
| 2/19/20 18:00 | 243.20 | 28.45 | 0.09 | 13.34 | 197.18 | 1168.93 |
| 2/19/20 18:01 | 243.21 | 28.45 | 0.07 | 13.34 | 197.21 | 1168.94 |
| 2/19/20 18:02 | 243.22 | 28.45 | 0.05 | 13.34 | 197.24 | 1168.95 |
| 2/19/20 18:03 | 243.22 | 28.45 | 0.03 | 13.34 | 197.27 | 1168.96 |
| 2/19/20 18:04 | 243.23 | 28.45 | 0.01 | 13.34 | 197.30 | 1168.97 |
| 2/19/20 18:05 | 243.23 | 28.45 | 0.00 | 13.33 | 197.33 | 1168.98 |
| 2/19/20 18:06 | 243.24 | 28.45 | 0.00 | 13.33 | 197.36 | 1168.99 |
| 2/19/20 18:07 | 243.24 | 28.45 | 0.00 | 13.33 | 197.39 | 1169.00 |
| 2/19/20 18:08 | 243.25 | 28.45 | 0.00 | 13.33 | 197.42 | 1169.01 |
| 2/19/20 18:09 | 243.25 | 28.45 | 0.00 | 13.33 | 197.45 | 1169.02 |
| 2/19/20 18:10 | 243.26 | 28.45 | 0.00 | 13.33 | 197.48 | 1169.02 |
| 2/19/20 18:11 | 242.83 | 28.36 | 0.00 | 13.09 | 198.53 | 1167.30 |
| 2/19/20 18:12 | 243.45 | 28.54 | 0.00 | 13.05 | 198.29 | 1168.17 |
| 2/19/20 18:13 | 243.43 | 28.74 | 0.00 | 13.21 | 191.20 | 1168.55 |
| 2/19/20 18:14 | 243.67 | 28.42 | 0.00 | 13.26 | 190.86 | 1168.46 |
| 2/19/20 18:15 | 243.33 | 28.60 | 0.00 | 13.22 | 196.30 | 1167.89 |
| 2/19/20 18:16 | 243.43 | 28.38 | 0.00 | 13.35 | 202.09 | 1168.12 |
| 2/19/20 18:17 | 243.38 | 28.66 | 0.00 | 13.58 | 205.17 | 1168.71 |
| 2/19/20 18:18 | 243.75 | 28.61 | 0.00 | 13.20 | 203.97 | 1168.76 |
| 2/19/20 18:19 | 243.55 | 28.61 | 0.00 | 13.27 | 201.38 | 1167.82 |
| 2/19/20 18:20 | 243.35 | 28.54 | 0.00 | 13.19 | 192.58 | 1168.62 |
| 2/19/20 18:21 | 243.70 | 28.71 | 0.00 | 13.40 | 188.89 | 1169.23 |
| 2/19/20 18:22 | 243.72 | 28.53 | 0.00 | 13.27 | 195.37 | 1168.88 |
| 2/19/20 18:23 | 243.56 | 28.51 | 0.00 | 13.39 | 195.69 | 1168.56 |
| 2/19/20 18:24 | 243.82 | 28.54 | 0.00 | 13.32 | 201.39 | 1168.71 |
| 2/19/20 18:25 | 243.48 | 28.44 | 0.00 | 13.25 | 206.32 | 1169.39 |
| 2/19/20 18:26 | 243.72 | 28.48 | 0.00 | 13.12 | 211.43 | 1168.67 |
| 2/19/20 18:27 | 243.72 | 28.55 | 0.00 | 13.10 | 219.63 | 1168.22 |

# EMISSION DATA RECORDS

## Operating Data Base Load
## (provided by Cricket Valley Energy Center LLC)
## SAM

The U-00001 fuel flow rates (lbm/s) shown on the following pages are uncorrected values.

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/18 2:3 - 2/18 4:3) | 245.18 | 28.71 | 0.00 | 13.43 | 214.90 | 1172.27 |
| COUNT = 121 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/18/20 2:03 | 245.23 | 28.79 | 0.00 | 13.41 | 212.09 | 1172.98 |
| 2/18/20 2:04 | 245.45 | 28.75 | 0.00 | 13.34 | 208.42 | 1173.67 |
| 2/18/20 2:05 | 245.49 | 28.73 | 0.00 | 13.55 | 205.78 | 1172.59 |
| 2/18/20 2:06 | 245.96 | 28.95 | 0.00 | 13.31 | 206.85 | 1172.62 |
| 2/18/20 2:07 | 245.85 | 28.70 | 0.00 | 13.32 | 206.98 | 1172.47 |
| 2/18/20 2:08 | 245.62 | 28.87 | 0.00 | 13.37 | 218.99 | 1172.92 |
| 2/18/20 2:09 | 245.37 | 28.67 | 0.00 | 13.29 | 230.60 | 1172.93 |
| 2/18/20 2:10 | 246.13 | 28.72 | 0.00 | 13.44 | 238.82 | 1173.50 |
| 2/18/20 2:11 | 245.76 | 28.86 | 0.00 | 13.65 | 236.32 | 1173.53 |
| 2/18/20 2:12 | 245.11 | 28.61 | 0.00 | 13.72 | 234.02 | 1172.37 |
| 2/18/20 2:13 | 245.61 | 29.06 | 0.00 | 13.41 | 229.84 | 1173.01 |
| 2/18/20 2:14 | 245.08 | 28.48 | 0.00 | 13.65 | 226.53 | 1172.51 |
| 2/18/20 2:15 | 245.64 | 28.89 | 0.00 | 13.22 | 213.23 | 1172.86 |
| 2/18/20 2:16 | 245.66 | 28.74 | 0.00 | 13.41 | 206.79 | 1172.80 |
| 2/18/20 2:17 | 245.03 | 28.94 | 0.00 | 13.45 | 205.63 | 1172.90 |
| 2/18/20 2:18 | 245.07 | 28.82 | 0.00 | 13.38 | 208.63 | 1172.68 |
| 2/18/20 2:19 | 245.47 | 28.69 | 0.00 | 13.36 | 210.16 | 1172.70 |
| 2/18/20 2:20 | 245.63 | 28.61 | 0.00 | 13.32 | 215.71 | 1172.57 |
| 2/18/20 2:21 | 245.64 | 28.95 | 0.00 | 13.21 | 220.24 | 1173.25 |
| 2/18/20 2:22 | 245.50 | 28.62 | 0.00 | 13.36 | 216.07 | 1172.42 |
| 2/18/20 2:23 | 246.17 | 28.54 | 0.00 | 13.82 | 221.39 | 1173.32 |
| 2/18/20 2:24 | 245.57 | 28.71 | 0.00 | 13.38 | 216.47 | 1172.97 |
| 2/18/20 2:25 | 245.28 | 28.84 | 0.00 | 13.85 | 217.45 | 1173.45 |
| 2/18/20 2:26 | 245.00 | 28.59 | 0.00 | 13.31 | 217.56 | 1171.66 |
| 2/18/20 2:27 | 245.91 | 28.67 | 0.00 | 13.41 | 218.84 | 1173.25 |
| 2/18/20 2:28 | 245.64 | 28.78 | 0.00 | 13.29 | 225.89 | 1172.35 |
| 2/18/20 2:29 | 245.24 | 28.76 | 0.00 | 13.43 | 226.27 | 1172.90 |
| 2/18/20 2:30 | 245.67 | 29.09 | 0.00 | 13.11 | 223.53 | 1172.06 |
| 2/18/20 2:31 | 245.38 | 28.38 | 0.00 | 13.45 | 220.56 | 1172.67 |
| 2/18/20 2:32 | 245.50 | 28.64 | 0.00 | 13.44 | 222.54 | 1172.61 |
| 2/18/20 2:33 | 245.44 | 28.66 | 0.00 | 13.22 | 223.90 | 1171.93 |
| 2/18/20 2:34 | 245.85 | 28.75 | 0.00 | 13.52 | 224.53 | 1172.47 |
| 2/18/20 2:35 | 244.85 | 28.81 | 0.00 | 13.49 | 223.27 | 1171.88 |
| 2/18/20 2:36 | 245.46 | 28.69 | 0.00 | 13.57 | 226.81 | 1172.12 |
| 2/18/20 2:37 | 245.56 | 28.67 | 0.00 | 13.57 | 228.67 | 1172.46 |
| 2/18/20 2:38 | 245.40 | 28.64 | 0.00 | 13.27 | 226.94 | 1172.85 |
| 2/18/20 2:39 | 245.07 | 28.65 | 0.00 | 13.32 | 220.96 | 1172.24 |
| 2/18/20 2:40 | 244.99 | 28.58 | 0.00 | 13.36 | 217.60 | 1172.17 |
| 2/18/20 2:41 | 245.55 | 28.65 | 0.00 | 13.42 | 216.59 | 1172.24 |
| 2/18/20 2:42 | 245.33 | 28.69 | 0.00 | 13.38 | 220.83 | 1172.25 |
| 2/18/20 2:43 | 245.66 | 28.81 | 0.00 | 13.45 | 219.61 | 1172.98 |
| 2/18/20 2:44 | 245.61 | 28.61 | 0.00 | 13.67 | 210.53 | 1173.07 |
| 2/18/20 2:45 | 245.29 | 28.68 | 0.00 | 13.43 | 213.87 | 1172.59 |
| 2/18/20 2:46 | 245.21 | 28.73 | 0.00 | 13.32 | 212.54 | 1172.04 |
| 2/18/20 2:47 | 245.24 | 28.76 | 0.00 | 13.31 | 214.01 | 1172.43 |
| 2/18/20 2:48 | 244.97 | 28.68 | 0.00 | 13.49 | 215.03 | 1172.48 |
| 2/18/20 2:49 | 245.16 | 28.73 | 0.00 | 13.32 | 209.66 | 1172.61 |
| 2/18/20 2:50 | 244.60 | 28.75 | 0.00 | 13.36 | 208.46 | 1172.14 |
| 2/18/20 2:51 | 245.33 | 28.67 | 0.00 | 13.86 | 206.97 | 1173.20 |
| 2/18/20 2:52 | 245.19 | 28.66 | 0.00 | 13.27 | 215.05 | 1173.35 |
| 2/18/20 2:53 | 244.62 | 28.74 | 0.00 | 13.38 | 217.73 | 1171.72 |
| 2/18/20 2:54 | 245.08 | 28.73 | 0.00 | 13.47 | 225.71 | 1172.27 |
| 2/18/20 2:55 | 245.08 | 28.41 | 0.00 | 13.57 | 228.50 | 1172.63 |
| 2/18/20 2:56 | 244.86 | 28.53 | 0.00 | 13.39 | 222.20 | 1171.17 |
| 2/18/20 2:57 | 245.12 | 28.79 | 0.00 | 13.44 | 219.23 | 1172.67 |
| 2/18/20 2:58 | 244.82 | 28.76 | 0.00 | 13.59 | 211.09 | 1172.60 |
| 2/18/20 2:59 | 245.04 | 28.88 | 0.00 | 13.79 | 206.94 | 1172.62 |
| 2/18/20 3:00 | 244.85 | 28.61 | 0.00 | 13.37 | 209.13 | 1171.80 |
| 2/18/20 3:01 | 245.35 | 28.81 | 0.00 | 13.33 | 205.04 | 1172.96 |
| 2/18/20 3:02 | 245.21 | 28.83 | 0.00 | 13.44 | 205.13 | 1172.77 |
| 2/18/20 3:03 | 244.93 | 28.74 | 0.00 | 13.49 | 209.35 | 1171.98 |
| 2/18/20 3:04 | 245.30 | 28.71 | 0.00 | 13.52 | 215.79 | 1173.65 |
| 2/18/20 3:05 | 245.58 | 28.69 | 0.00 | 13.27 | 219.88 | 1172.13 |
| 2/18/20 3:06 | 245.02 | 28.89 | 0.00 | 13.29 | 213.34 | 1171.86 |
| 2/18/20 3:07 | 245.75 | 28.65 | 0.00 | 13.63 | 209.66 | 1172.71 |
| 2/18/20 3:08 | 245.88 | 28.78 | 0.00 | 13.37 | 208.52 | 1171.98 |
| 2/18/20 3:09 | 244.95 | 28.63 | 0.00 | 13.43 | 209.87 | 1171.98 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/18 2:3 - 2/18 4:3) | 245.18 | 28.71 | 0.00 | 13.43 | 214.90 | 1172.27 |
| COUNT = 121 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/18/20 3:10 | 245.05 | 28.70 | 0.00 | 13.30 | 216.60 | 1171.91 |
| 2/18/20 3:11 | 244.55 | 28.96 | 0.00 | 13.48 | 218.10 | 1172.28 |
| 2/18/20 3:12 | 245.38 | 28.86 | 0.00 | 13.32 | 218.53 | 1172.14 |
| 2/18/20 3:13 | 244.75 | 28.70 | 0.00 | 13.30 | 217.45 | 1170.92 |
| 2/18/20 3:14 | 245.43 | 28.56 | 0.00 | 13.42 | 217.72 | 1172.80 |
| 2/18/20 3:15 | 245.20 | 28.77 | 0.00 | 13.25 | 214.16 | 1172.22 |
| 2/18/20 3:16 | 244.71 | 28.65 | 0.00 | 13.53 | 215.28 | 1172.14 |
| 2/18/20 3:17 | 245.15 | 28.72 | 0.00 | 13.37 | 213.46 | 1171.15 |
| 2/18/20 3:18 | 245.10 | 28.77 | 0.00 | 13.40 | 216.66 | 1172.26 |
| 2/18/20 3:19 | 245.51 | 28.76 | 0.00 | 13.45 | 218.84 | 1171.84 |
| 2/18/20 3:20 | 245.00 | 28.61 | 0.00 | 13.36 | 215.88 | 1172.30 |
| 2/18/20 3:21 | 245.41 | 28.72 | 0.00 | 13.38 | 212.55 | 1172.42 |
| 2/18/20 3:22 | 245.13 | 28.75 | 0.00 | 13.37 | 206.59 | 1172.22 |
| 2/18/20 3:23 | 244.36 | 28.87 | 0.00 | 13.26 | 204.42 | 1171.73 |
| 2/18/20 3:24 | 245.12 | 28.62 | 0.00 | 13.39 | 204.11 | 1171.50 |
| 2/18/20 3:25 | 244.70 | 28.78 | 0.00 | 13.40 | 206.73 | 1172.86 |
| 2/18/20 3:26 | 244.67 | 28.66 | 0.00 | 13.58 | 211.59 | 1172.11 |
| 2/18/20 3:27 | 245.26 | 28.53 | 0.00 | 13.40 | 220.61 | 1172.17 |
| 2/18/20 3:28 | 244.74 | 28.75 | 0.00 | 13.18 | 224.43 | 1170.52 |
| 2/18/20 3:29 | 245.03 | 28.61 | 0.00 | 13.43 | 223.71 | 1171.93 |
| 2/18/20 3:30 | 244.48 | 28.67 | 0.00 | 13.62 | 214.16 | 1171.74 |
| 2/18/20 3:31 | 244.69 | 28.85 | 0.00 | 13.41 | 209.13 | 1172.17 |
| 2/18/20 3:32 | 244.91 | 28.86 | 0.00 | 13.28 | 207.82 | 1171.24 |
| 2/18/20 3:33 | 244.96 | 28.74 | 0.00 | 13.34 | 210.34 | 1171.89 |
| 2/18/20 3:34 | 244.79 | 28.71 | 0.00 | 13.38 | 208.77 | 1171.55 |
| 2/18/20 3:35 | 245.22 | 28.79 | 0.00 | 13.74 | 208.37 | 1172.31 |
| 2/18/20 3:36 | 245.08 | 28.85 | 0.00 | 13.34 | 205.79 | 1172.12 |
| 2/18/20 3:37 | 245.05 | 28.50 | 0.00 | 13.24 | 209.37 | 1171.92 |
| 2/18/20 3:38 | 245.00 | 28.70 | 0.00 | 13.54 | 205.44 | 1172.06 |
| 2/18/20 3:39 | 244.95 | 28.63 | 0.00 | 13.66 | 207.12 | 1172.03 |
| 2/18/20 3:40 | 244.67 | 28.51 | 0.00 | 13.26 | 212.91 | 1171.29 |
| 2/18/20 3:41 | 244.88 | 28.75 | 0.00 | 13.54 | 218.98 | 1172.25 |
| 2/18/20 3:42 | 245.15 | 28.56 | 0.00 | 13.52 | 219.42 | 1172.24 |
| 2/18/20 3:43 | 245.69 | 28.76 | 0.00 | 13.60 | 218.42 | 1173.05 |
| 2/18/20 3:44 | 244.84 | 28.79 | 0.00 | 13.48 | 215.98 | 1171.97 |
| 2/18/20 3:45 | 244.80 | 28.45 | 0.00 | 13.48 | 213.92 | 1171.43 |
| 2/18/20 3:46 | 244.66 | 28.65 | 0.00 | 13.28 | 215.07 | 1171.26 |
| 2/18/20 3:47 | 245.04 | 28.64 | 0.00 | 13.47 | 213.01 | 1171.85 |
| 2/18/20 3:48 | 244.56 | 28.64 | 0.00 | 13.32 | 212.01 | 1170.93 |
| 2/18/20 3:49 | 245.38 | 28.68 | 0.00 | 13.28 | 209.76 | 1172.17 |
| 2/18/20 3:50 | 244.90 | 28.53 | 0.00 | 13.44 | 210.99 | 1171.09 |
| 2/18/20 3:51 | 244.77 | 28.47 | 0.00 | 13.42 | 213.79 | 1172.04 |
| 2/18/20 3:52 | 244.71 | 28.68 | 0.00 | 13.26 | 214.50 | 1170.96 |
| 2/18/20 3:53 | 244.98 | 28.78 | 0.00 | 13.42 | 220.32 | 1172.11 |
| 2/18/20 3:54 | 244.89 | 28.58 | 0.00 | 13.33 | 214.70 | 1171.36 |
| 2/18/20 3:55 | 244.81 | 28.59 | 0.00 | 13.79 | 204.14 | 1172.07 |
| 2/18/20 3:56 | 245.14 | 28.68 | 0.00 | 13.52 | 198.82 | 1171.99 |
| 2/18/20 3:57 | 244.77 | 28.74 | 0.00 | 13.35 | 195.48 | 1171.97 |
| 2/18/20 3:58 | 244.61 | 28.67 | 0.00 | 13.41 | 200.81 | 1171.39 |
| 2/18/20 3:59 | 245.30 | 28.65 | 0.00 | 13.36 | 202.54 | 1172.36 |
| 2/18/20 4:00 | 244.95 | 28.63 | 0.00 | 13.62 | 203.94 | 1171.07 |
| 2/18/20 4:01 | 245.24 | 28.67 | 0.00 | 13.48 | 207.75 | 1171.92 |
| 2/18/20 4:02 | 244.42 | 28.66 | 0.00 | 13.36 | 213.41 | 1171.42 |
| 2/18/20 4:03 | 244.84 | 28.54 | 0.00 | 13.27 | 213.92 | 1172.10 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/18 4:57 - 2/18 6:57) | 244.65 | 28.64 | 0.10 | 13.31 | 206.46 | 1171.18 |
| COUNT = 121 | | | | | | |

| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
|---|---|---|---|---|---|---|
| 2/18/20 4:57 | 244.47 | 28.84 | 0.00 | 13.24 | 214.04 | 1170.81 |
| 2/18/20 4:58 | 244.93 | 28.49 | 0.00 | 13.25 | 211.85 | 1171.50 |
| 2/18/20 4:59 | 244.50 | 28.63 | 0.00 | 13.13 | 202.84 | 1171.12 |
| 2/18/20 5:00 | 244.56 | 28.60 | 0.00 | 13.54 | 195.66 | 1171.37 |
| 2/18/20 5:01 | 244.68 | 28.63 | 0.00 | 13.22 | 190.16 | 1171.16 |
| 2/18/20 5:02 | 244.93 | 28.63 | 0.00 | 13.54 | 197.15 | 1171.14 |
| 2/18/20 5:03 | 244.99 | 28.67 | 0.00 | 13.17 | 200.13 | 1171.05 |
| 2/18/20 5:04 | 244.47 | 28.70 | 0.00 | 13.33 | 209.04 | 1170.73 |
| 2/18/20 5:05 | 244.25 | 28.66 | 0.00 | 13.31 | 212.84 | 1170.44 |
| 2/18/20 5:06 | 244.55 | 28.55 | 0.00 | 13.08 | 215.44 | 1170.50 |
| 2/18/20 5:07 | 243.90 | 28.67 | 0.00 | 13.01 | 213.75 | 1169.13 |
| 2/18/20 5:08 | 244.44 | 28.80 | 0.00 | 13.11 | 208.17 | 1170.58 |
| 2/18/20 5:09 | 244.06 | 28.68 | 0.00 | 13.30 | 201.48 | 1170.18 |
| 2/18/20 5:10 | 244.71 | 28.75 | 0.00 | 13.14 | 201.32 | 1171.21 |
| 2/18/20 5:11 | 244.20 | 28.72 | 0.00 | 13.33 | 206.73 | 1171.36 |
| 2/18/20 5:12 | 244.61 | 28.48 | 0.00 | 13.71 | 210.55 | 1171.67 |
| 2/18/20 5:13 | 244.84 | 28.80 | 0.00 | 13.60 | 215.88 | 1171.30 |
| 2/18/20 5:14 | 245.01 | 28.50 | 0.00 | 13.50 | 214.18 | 1171.86 |
| 2/18/20 5:15 | 244.74 | 28.75 | 0.00 | 13.32 | 214.23 | 1171.18 |
| 2/18/20 5:16 | 244.39 | 28.65 | 0.00 | 13.39 | 208.31 | 1170.73 |
| 2/18/20 5:17 | 244.86 | 28.63 | 0.00 | 13.19 | 206.50 | 1171.54 |
| 2/18/20 5:18 | 244.29 | 28.87 | 0.00 | 13.32 | 201.96 | 1170.77 |
| 2/18/20 5:19 | 244.93 | 28.53 | 0.00 | 13.36 | 200.41 | 1171.21 |
| 2/18/20 5:20 | 245.01 | 28.78 | 0.00 | 13.32 | 198.02 | 1171.99 |
| 2/18/20 5:21 | 244.13 | 28.55 | 0.00 | 13.22 | 197.14 | 1170.41 |
| 2/18/20 5:22 | 244.51 | 28.77 | 0.00 | 13.06 | 198.74 | 1171.83 |
| 2/18/20 5:23 | 244.27 | 28.56 | 0.00 | 13.40 | 205.92 | 1171.29 |
| 2/18/20 5:24 | 244.64 | 28.76 | 0.00 | 13.51 | 212.33 | 1171.38 |
| 2/18/20 5:25 | 244.65 | 28.50 | 0.00 | 13.46 | 212.98 | 1171.71 |
| 2/18/20 5:26 | 244.65 | 28.81 | 0.00 | 13.22 | 208.21 | 1171.50 |
| 2/18/20 5:27 | 245.11 | 28.63 | 0.00 | 13.69 | 202.12 | 1171.93 |
| 2/18/20 5:28 | 244.68 | 28.44 | 0.00 | 12.99 | 198.22 | 1171.86 |
| 2/18/20 5:29 | 244.67 | 28.81 | 0.00 | 13.42 | 196.38 | 1171.14 |
| 2/18/20 5:30 | 244.44 | 28.77 | 0.00 | 13.29 | 196.37 | 1170.90 |
| 2/18/20 5:31 | 244.48 | 28.80 | 0.00 | 13.25 | 196.41 | 1171.07 |
| 2/18/20 5:32 | 244.76 | 28.48 | 0.00 | 13.32 | 195.81 | 1171.54 |
| 2/18/20 5:33 | 245.01 | 28.77 | 0.00 | 13.29 | 202.15 | 1171.72 |
| 2/18/20 5:34 | 244.32 | 28.57 | 0.00 | 13.29 | 207.75 | 1171.05 |
| 2/18/20 5:35 | 244.60 | 28.73 | 0.00 | 13.30 | 216.34 | 1171.79 |
| 2/18/20 5:36 | 244.83 | 28.84 | 0.00 | 13.26 | 219.71 | 1171.58 |
| 2/18/20 5:37 | 245.07 | 28.57 | 0.00 | 13.40 | 219.00 | 1171.84 |
| 2/18/20 5:38 | 244.81 | 28.55 | 0.00 | 13.13 | 211.69 | 1171.30 |
| 2/18/20 5:39 | 244.56 | 28.76 | 0.00 | 13.20 | 202.92 | 1171.52 |
| 2/18/20 5:40 | 244.81 | 28.62 | 0.00 | 13.58 | 196.27 | 1171.60 |
| 2/18/20 5:41 | 244.67 | 28.69 | 0.00 | 13.19 | 193.05 | 1171.05 |
| 2/18/20 5:42 | 243.97 | 28.68 | 0.00 | 13.39 | 191.53 | 1171.31 |
| 2/18/20 5:43 | 244.60 | 28.84 | 0.00 | 13.48 | 194.54 | 1171.57 |
| 2/18/20 5:44 | 244.10 | 28.56 | 0.00 | 13.43 | 196.55 | 1170.68 |
| 2/18/20 5:45 | 244.78 | 28.47 | 0.00 | 13.38 | 202.22 | 1171.82 |
| 2/18/20 5:46 | 244.67 | 28.54 | 0.00 | 13.45 | 206.92 | 1172.39 |
| 2/18/20 5:47 | 244.24 | 28.67 | 0.00 | 13.29 | 208.71 | 1171.24 |
| 2/18/20 5:48 | 245.24 | 28.67 | 0.00 | 13.36 | 210.41 | 1172.19 |
| 2/18/20 5:49 | 244.15 | 28.61 | 0.00 | 13.25 | 207.46 | 1169.93 |
| 2/18/20 5:50 | 244.37 | 28.84 | 0.00 | 13.43 | 206.58 | 1171.03 |
| 2/18/20 5:51 | 244.59 | 28.70 | 0.00 | 13.40 | 204.32 | 1171.53 |
| 2/18/20 5:52 | 244.59 | 28.53 | 0.00 | 13.46 | 206.55 | 1171.82 |
| 2/18/20 5:53 | 244.20 | 28.77 | 0.00 | 13.29 | 207.34 | 1170.15 |
| 2/18/20 5:54 | 244.38 | 28.35 | 0.00 | 13.32 | 203.20 | 1170.16 |
| 2/18/20 5:55 | 244.20 | 28.54 | 0.00 | 13.19 | 203.33 | 1170.40 |
| 2/18/20 5:56 | 244.52 | 28.67 | 0.00 | 13.31 | 206.51 | 1170.78 |
| 2/18/20 5:57 | 243.94 | 28.63 | 0.00 | 13.29 | 209.47 | 1169.50 |
| 2/18/20 5:58 | 244.49 | 28.86 | 0.00 | 13.42 | 213.46 | 1171.43 |
| 2/18/20 5:59 | 244.93 | 28.61 | 0.00 | 13.22 | 213.85 | 1171.02 |
| 2/18/20 6:00 | 244.48 | 28.88 | 0.00 | 13.42 | 214.64 | 1170.75 |
| 2/18/20 6:01 | 244.81 | 28.61 | 0.00 | 13.34 | 211.10 | 1170.92 |
| 2/18/20 6:02 | 244.37 | 28.49 | 0.00 | 13.21 | 211.77 | 1170.39 |
| 2/18/20 6:03 | 244.60 | 28.32 | 0.00 | 13.25 | 206.53 | 1170.32 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/18 4:57 - 2/18 6:57) | 244.65 | 28.64 | 0.10 | 13.31 | 206.46 | 1171.18 |
| COUNT = 121 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/18/20 6:04 | 244.80 | 28.56 | 0.00 | 13.25 | 207.35 | 1171.37 |
| 2/18/20 6:05 | 244.62 | 28.53 | 0.00 | 13.25 | 207.14 | 1171.08 |
| 2/18/20 6:06 | 245.05 | 28.91 | 0.00 | 13.22 | 209.87 | 1171.41 |
| 2/18/20 6:07 | 244.80 | 28.48 | 0.00 | 13.26 | 213.25 | 1171.23 |
| 2/18/20 6:08 | 244.99 | 28.70 | 0.00 | 13.20 | 213.67 | 1172.35 |
| 2/18/20 6:09 | 244.97 | 28.56 | 0.00 | 13.42 | 206.84 | 1171.62 |
| 2/18/20 6:10 | 244.85 | 28.91 | 0.00 | 13.41 | 202.96 | 1171.63 |
| 2/18/20 6:11 | 244.77 | 28.74 | 0.00 | 13.60 | 201.43 | 1172.20 |
| 2/18/20 6:12 | 244.38 | 28.63 | 0.00 | 13.40 | 195.21 | 1171.35 |
| 2/18/20 6:13 | 244.64 | 28.55 | 0.00 | 13.25 | 202.99 | 1171.13 |
| 2/18/20 6:14 | 244.81 | 28.81 | 0.00 | 13.33 | 206.99 | 1171.22 |
| 2/18/20 6:15 | 244.64 | 28.56 | 0.00 | 13.25 | 209.47 | 1171.38 |
| 2/18/20 6:16 | 244.89 | 28.37 | 0.00 | 13.13 | 210.43 | 1171.70 |
| 2/18/20 6:17 | 244.76 | 28.57 | 0.00 | 13.50 | 207.96 | 1171.56 |
| 2/18/20 6:18 | 244.98 | 28.35 | 0.00 | 13.26 | 207.60 | 1170.70 |
| 2/18/20 6:19 | 244.89 | 28.64 | 0.00 | 13.46 | 201.97 | 1171.92 |
| 2/18/20 6:20 | 245.22 | 28.67 | 0.02 | 13.07 | 204.18 | 1171.24 |
| 2/18/20 6:21 | 244.44 | 28.53 | 0.03 | 13.19 | 203.96 | 1170.43 |
| 2/18/20 6:22 | 244.19 | 28.50 | 0.05 | 13.10 | 202.14 | 1170.14 |
| 2/18/20 6:23 | 244.56 | 28.63 | 0.07 | 13.24 | 202.09 | 1170.89 |
| 2/18/20 6:24 | 244.58 | 28.46 | 0.08 | 13.45 | 205.57 | 1170.16 |
| 2/18/20 6:25 | 245.07 | 28.62 | 0.10 | 13.01 | 210.69 | 1170.83 |
| 2/18/20 6:26 | 244.94 | 28.57 | 0.11 | 13.21 | 214.53 | 1171.23 |
| 2/18/20 6:27 | 244.25 | 28.69 | 0.13 | 13.20 | 217.95 | 1170.00 |
| 2/18/20 6:28 | 244.82 | 29.03 | 0.15 | 13.38 | 215.17 | 1171.81 |
| 2/18/20 6:29 | 244.33 | 28.52 | 0.16 | 13.24 | 210.40 | 1170.42 |
| 2/18/20 6:30 | 244.48 | 28.78 | 0.18 | 13.12 | 204.89 | 1170.99 |
| 2/18/20 6:31 | 245.07 | 28.60 | 0.20 | 13.48 | 198.86 | 1171.48 |
| 2/18/20 6:32 | 244.36 | 28.88 | 0.21 | 13.26 | 201.87 | 1170.62 |
| 2/18/20 6:33 | 244.51 | 28.73 | 0.23 | 13.08 | 209.08 | 1170.90 |
| 2/18/20 6:34 | 245.07 | 28.71 | 0.24 | 13.52 | 216.63 | 1171.43 |
| 2/18/20 6:35 | 244.63 | 28.58 | 0.26 | 13.51 | 221.19 | 1171.80 |
| 2/18/20 6:36 | 245.15 | 28.70 | 0.28 | 13.25 | 217.02 | 1171.62 |
| 2/18/20 6:37 | 244.59 | 28.60 | 0.29 | 13.10 | 213.23 | 1170.66 |
| 2/18/20 6:38 | 244.62 | 28.58 | 0.31 | 13.47 | 204.73 | 1171.64 |
| 2/18/20 6:39 | 244.37 | 28.74 | 0.32 | 13.13 | 200.27 | 1171.07 |
| 2/18/20 6:40 | 244.84 | 28.66 | 0.34 | 13.82 | 200.99 | 1172.37 |
| 2/18/20 6:41 | 244.98 | 28.58 | 0.36 | 13.47 | 205.87 | 1171.08 |
| 2/18/20 6:42 | 244.79 | 28.50 | 0.37 | 13.33 | 215.26 | 1171.41 |
| 2/18/20 6:43 | 244.94 | 28.56 | 0.39 | 13.25 | 217.21 | 1171.74 |
| 2/18/20 6:44 | 244.57 | 28.66 | 0.41 | 13.45 | 215.89 | 1170.84 |
| 2/18/20 6:45 | 244.69 | 28.57 | 0.42 | 13.50 | 207.97 | 1171.16 |
| 2/18/20 6:46 | 244.81 | 28.58 | 0.44 | 13.27 | 198.77 | 1171.02 |
| 2/18/20 6:47 | 245.13 | 28.55 | 0.45 | 13.11 | 197.42 | 1170.65 |
| 2/18/20 6:48 | 244.74 | 28.57 | 0.47 | 13.08 | 196.60 | 1171.22 |
| 2/18/20 6:49 | 245.07 | 28.56 | 0.49 | 13.56 | 201.89 | 1171.95 |
| 2/18/20 6:50 | 244.80 | 28.74 | 0.50 | 13.32 | 211.10 | 1170.97 |
| 2/18/20 6:51 | 244.63 | 28.56 | 0.52 | 13.40 | 215.48 | 1171.07 |
| 2/18/20 6:52 | 244.95 | 28.61 | 0.53 | 13.47 | 217.18 | 1171.71 |
| 2/18/20 6:53 | 245.29 | 28.82 | 0.55 | 13.16 | 208.71 | 1171.17 |
| 2/18/20 6:54 | 244.29 | 28.63 | 0.57 | 13.18 | 204.44 | 1171.22 |
| 2/18/20 6:55 | 244.52 | 28.63 | 0.58 | 13.25 | 202.89 | 1171.34 |
| 2/18/20 6:56 | 244.63 | 28.47 | 0.60 | 13.20 | 202.50 | 1171.29 |
| 2/18/20 6:57 | 244.52 | 28.54 | 0.62 | 13.25 | 205.17 | 1171.82 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/19 14:32 - 2/19 16:32) | 242.42 | 28.36 | 3.05 | 13.40 | 192.69 | 1167.61 |
| COUNT = 121 | | | | | | |

| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
|---|---|---|---|---|---|---|
| 2/19/20 14:32 | 242.10 | 28.32 | 4.25 | 13.43 | 190.87 | 1167.08 |
| 2/19/20 14:33 | 242.11 | 28.32 | 4.23 | 13.43 | 190.90 | 1167.09 |
| 2/19/20 14:34 | 242.12 | 28.32 | 4.21 | 13.43 | 190.93 | 1167.10 |
| 2/19/20 14:35 | 242.12 | 28.32 | 4.19 | 13.43 | 190.96 | 1167.11 |
| 2/19/20 14:36 | 242.13 | 28.32 | 4.17 | 13.43 | 190.99 | 1167.12 |
| 2/19/20 14:37 | 242.13 | 28.33 | 4.15 | 13.43 | 191.02 | 1167.12 |
| 2/19/20 14:38 | 242.14 | 28.33 | 4.13 | 13.43 | 191.05 | 1167.13 |
| 2/19/20 14:39 | 242.14 | 28.33 | 4.11 | 13.43 | 191.08 | 1167.14 |
| 2/19/20 14:40 | 242.15 | 28.33 | 4.09 | 13.43 | 191.11 | 1167.15 |
| 2/19/20 14:41 | 242.15 | 28.33 | 4.07 | 13.43 | 191.14 | 1167.16 |
| 2/19/20 14:42 | 242.16 | 28.33 | 4.05 | 13.43 | 191.17 | 1167.17 |
| 2/19/20 14:43 | 242.16 | 28.33 | 4.03 | 13.43 | 191.20 | 1167.18 |
| 2/19/20 14:44 | 242.17 | 28.33 | 4.01 | 13.43 | 191.23 | 1167.19 |
| 2/19/20 14:45 | 242.17 | 28.33 | 3.99 | 13.43 | 191.26 | 1167.20 |
| 2/19/20 14:46 | 242.18 | 28.33 | 3.97 | 13.42 | 191.29 | 1167.20 |
| 2/19/20 14:47 | 242.18 | 28.33 | 3.95 | 13.42 | 191.32 | 1167.21 |
| 2/19/20 14:48 | 242.19 | 28.33 | 3.93 | 13.42 | 191.35 | 1167.22 |
| 2/19/20 14:49 | 242.19 | 28.33 | 3.91 | 13.42 | 191.38 | 1167.23 |
| 2/19/20 14:50 | 242.20 | 28.33 | 3.89 | 13.42 | 191.41 | 1167.24 |
| 2/19/20 14:51 | 242.20 | 28.33 | 3.87 | 13.42 | 191.45 | 1167.25 |
| 2/19/20 14:52 | 242.21 | 28.33 | 3.85 | 13.42 | 191.48 | 1167.26 |
| 2/19/20 14:53 | 242.22 | 28.33 | 3.83 | 13.42 | 191.51 | 1167.27 |
| 2/19/20 14:54 | 242.22 | 28.34 | 3.81 | 13.42 | 191.54 | 1167.28 |
| 2/19/20 14:55 | 242.23 | 28.34 | 3.79 | 13.42 | 191.57 | 1167.28 |
| 2/19/20 14:56 | 242.23 | 28.34 | 3.77 | 13.42 | 191.60 | 1167.29 |
| 2/19/20 14:57 | 242.24 | 28.34 | 3.75 | 13.42 | 191.63 | 1167.30 |
| 2/19/20 14:58 | 242.24 | 28.34 | 3.73 | 13.42 | 191.66 | 1167.31 |
| 2/19/20 14:59 | 242.25 | 28.34 | 3.71 | 13.42 | 191.69 | 1167.32 |
| 2/19/20 15:00 | 242.25 | 28.34 | 3.69 | 13.42 | 191.72 | 1167.33 |
| 2/19/20 15:01 | 242.26 | 28.34 | 3.67 | 13.42 | 191.75 | 1167.34 |
| 2/19/20 15:02 | 242.26 | 28.34 | 3.65 | 13.42 | 191.78 | 1167.35 |
| 2/19/20 15:03 | 242.27 | 28.34 | 3.63 | 13.42 | 191.81 | 1167.36 |
| 2/19/20 15:04 | 242.27 | 28.34 | 3.61 | 13.42 | 191.84 | 1167.36 |
| 2/19/20 15:05 | 242.28 | 28.34 | 3.59 | 13.42 | 191.87 | 1167.37 |
| 2/19/20 15:06 | 242.28 | 28.34 | 3.57 | 13.42 | 191.90 | 1167.38 |
| 2/19/20 15:07 | 242.29 | 28.34 | 3.55 | 13.42 | 191.93 | 1167.39 |
| 2/19/20 15:08 | 242.29 | 28.34 | 3.53 | 13.41 | 191.96 | 1167.40 |
| 2/19/20 15:09 | 242.30 | 28.34 | 3.51 | 13.41 | 191.99 | 1167.41 |
| 2/19/20 15:10 | 242.31 | 28.34 | 3.49 | 13.41 | 192.02 | 1167.42 |
| 2/19/20 15:11 | 242.31 | 28.35 | 3.47 | 13.41 | 192.05 | 1167.43 |
| 2/19/20 15:12 | 242.32 | 28.35 | 3.45 | 13.41 | 192.08 | 1167.44 |
| 2/19/20 15:13 | 242.32 | 28.35 | 3.43 | 13.41 | 192.11 | 1167.45 |
| 2/19/20 15:14 | 242.33 | 28.35 | 3.41 | 13.41 | 192.14 | 1167.45 |
| 2/19/20 15:15 | 242.33 | 28.35 | 3.39 | 13.41 | 192.17 | 1167.46 |
| 2/19/20 15:16 | 242.34 | 28.35 | 3.37 | 13.41 | 192.20 | 1167.47 |
| 2/19/20 15:17 | 242.34 | 28.35 | 3.35 | 13.41 | 192.23 | 1167.48 |
| 2/19/20 15:18 | 242.35 | 28.35 | 3.33 | 13.41 | 192.26 | 1167.49 |
| 2/19/20 15:19 | 242.35 | 28.35 | 3.31 | 13.41 | 192.29 | 1167.50 |
| 2/19/20 15:20 | 242.36 | 28.35 | 3.29 | 13.41 | 192.32 | 1167.51 |
| 2/19/20 15:21 | 242.36 | 28.35 | 3.27 | 13.41 | 192.36 | 1167.52 |
| 2/19/20 15:22 | 242.37 | 28.35 | 3.25 | 13.41 | 192.39 | 1167.53 |
| 2/19/20 15:23 | 242.37 | 28.35 | 3.23 | 13.41 | 192.42 | 1167.53 |
| 2/19/20 15:24 | 242.38 | 28.35 | 3.21 | 13.41 | 192.45 | 1167.54 |
| 2/19/20 15:25 | 242.38 | 28.35 | 3.19 | 13.41 | 192.48 | 1167.55 |
| 2/19/20 15:26 | 242.39 | 28.35 | 3.17 | 13.41 | 192.51 | 1167.56 |
| 2/19/20 15:27 | 242.40 | 28.36 | 3.15 | 13.41 | 192.54 | 1167.57 |
| 2/19/20 15:28 | 242.40 | 28.36 | 3.13 | 13.41 | 192.57 | 1167.58 |
| 2/19/20 15:29 | 242.41 | 28.36 | 3.11 | 13.41 | 192.60 | 1167.59 |
| 2/19/20 15:30 | 242.41 | 28.36 | 3.09 | 13.40 | 192.63 | 1167.60 |
| 2/19/20 15:31 | 242.42 | 28.36 | 3.07 | 13.40 | 192.66 | 1167.61 |
| 2/19/20 15:32 | 242.42 | 28.36 | 3.05 | 13.40 | 192.69 | 1167.61 |
| 2/19/20 15:33 | 242.43 | 28.36 | 3.03 | 13.40 | 192.72 | 1167.62 |
| 2/19/20 15:34 | 242.43 | 28.36 | 3.01 | 13.40 | 192.75 | 1167.63 |
| 2/19/20 15:35 | 242.44 | 28.36 | 2.99 | 13.40 | 192.78 | 1167.64 |
| 2/19/20 15:36 | 242.44 | 28.36 | 2.97 | 13.40 | 192.81 | 1167.65 |
| 2/19/20 15:37 | 242.45 | 28.36 | 2.95 | 13.40 | 192.84 | 1167.66 |
| 2/19/20 15:38 | 242.45 | 28.36 | 2.93 | 13.40 | 192.87 | 1167.67 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/19 14:32 - 2/19 16:32) | 242.42 | 28.36 | 3.05 | 13.40 | 192.69 | 1167.61 |
| COUNT = 121 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/19/20 15:39 | 242.46 | 28.36 | 2.91 | 13.40 | 192.90 | 1167.68 |
| 2/19/20 15:40 | 242.46 | 28.36 | 2.89 | 13.40 | 192.93 | 1167.69 |
| 2/19/20 15:41 | 242.47 | 28.36 | 2.87 | 13.40 | 192.96 | 1167.69 |
| 2/19/20 15:42 | 242.47 | 28.36 | 2.85 | 13.40 | 192.99 | 1167.70 |
| 2/19/20 15:43 | 242.48 | 28.36 | 2.83 | 13.40 | 193.02 | 1167.71 |
| 2/19/20 15:44 | 242.49 | 28.37 | 2.81 | 13.40 | 193.05 | 1167.72 |
| 2/19/20 15:45 | 242.49 | 28.37 | 2.79 | 13.40 | 193.08 | 1167.73 |
| 2/19/20 15:46 | 242.50 | 28.37 | 2.77 | 13.40 | 193.11 | 1167.74 |
| 2/19/20 15:47 | 242.50 | 28.37 | 2.75 | 13.40 | 193.14 | 1167.75 |
| 2/19/20 15:48 | 242.51 | 28.37 | 2.73 | 13.40 | 193.17 | 1167.76 |
| 2/19/20 15:49 | 242.51 | 28.37 | 2.71 | 13.40 | 193.20 | 1167.77 |
| 2/19/20 15:50 | 242.52 | 28.37 | 2.69 | 13.40 | 193.23 | 1167.78 |
| 2/19/20 15:51 | 242.52 | 28.37 | 2.67 | 13.40 | 193.27 | 1167.78 |
| 2/19/20 15:52 | 242.53 | 28.37 | 2.65 | 13.39 | 193.30 | 1167.79 |
| 2/19/20 15:53 | 242.53 | 28.37 | 2.63 | 13.39 | 193.33 | 1167.80 |
| 2/19/20 15:54 | 242.54 | 28.37 | 2.61 | 13.39 | 193.36 | 1167.81 |
| 2/19/20 15:55 | 242.54 | 28.37 | 2.59 | 13.39 | 193.39 | 1167.82 |
| 2/19/20 15:56 | 242.55 | 28.37 | 2.57 | 13.39 | 193.42 | 1167.83 |
| 2/19/20 15:57 | 242.55 | 28.37 | 2.55 | 13.39 | 193.45 | 1167.84 |
| 2/19/20 15:58 | 242.56 | 28.37 | 2.53 | 13.39 | 193.48 | 1167.85 |
| 2/19/20 15:59 | 242.56 | 28.37 | 2.51 | 13.39 | 193.51 | 1167.86 |
| 2/19/20 16:00 | 242.57 | 28.37 | 2.49 | 13.39 | 193.54 | 1167.86 |
| 2/19/20 16:01 | 242.58 | 28.38 | 2.47 | 13.39 | 193.57 | 1167.87 |
| 2/19/20 16:02 | 242.58 | 28.38 | 2.45 | 13.39 | 193.60 | 1167.88 |
| 2/19/20 16:03 | 242.59 | 28.38 | 2.43 | 13.39 | 193.63 | 1167.89 |
| 2/19/20 16:04 | 242.59 | 28.38 | 2.41 | 13.39 | 193.66 | 1167.90 |
| 2/19/20 16:05 | 242.60 | 28.38 | 2.39 | 13.39 | 193.69 | 1167.91 |
| 2/19/20 16:06 | 242.60 | 28.38 | 2.37 | 13.39 | 193.72 | 1167.92 |
| 2/19/20 16:07 | 242.61 | 28.38 | 2.35 | 13.39 | 193.75 | 1167.93 |
| 2/19/20 16:08 | 242.61 | 28.38 | 2.33 | 13.39 | 193.78 | 1167.94 |
| 2/19/20 16:09 | 242.62 | 28.38 | 2.31 | 13.39 | 193.81 | 1167.94 |
| 2/19/20 16:10 | 242.62 | 28.38 | 2.29 | 13.39 | 193.84 | 1167.95 |
| 2/19/20 16:11 | 242.63 | 28.38 | 2.27 | 13.39 | 193.87 | 1167.96 |
| 2/19/20 16:12 | 242.63 | 28.38 | 2.25 | 13.39 | 193.90 | 1167.97 |
| 2/19/20 16:13 | 242.64 | 28.38 | 2.23 | 13.39 | 193.93 | 1167.98 |
| 2/19/20 16:14 | 242.64 | 28.38 | 2.21 | 13.38 | 193.96 | 1167.99 |
| 2/19/20 16:15 | 242.65 | 28.38 | 2.19 | 13.38 | 193.99 | 1168.00 |
| 2/19/20 16:16 | 242.65 | 28.38 | 2.17 | 13.38 | 194.02 | 1168.01 |
| 2/19/20 16:17 | 242.66 | 28.38 | 2.15 | 13.38 | 194.05 | 1168.02 |
| 2/19/20 16:18 | 242.67 | 28.39 | 2.13 | 13.38 | 194.08 | 1168.03 |
| 2/19/20 16:19 | 242.67 | 28.39 | 2.11 | 13.38 | 194.11 | 1168.03 |
| 2/19/20 16:20 | 242.68 | 28.39 | 2.09 | 13.38 | 194.14 | 1168.04 |
| 2/19/20 16:21 | 242.68 | 28.39 | 2.07 | 13.38 | 194.18 | 1168.05 |
| 2/19/20 16:22 | 242.69 | 28.39 | 2.05 | 13.38 | 194.21 | 1168.06 |
| 2/19/20 16:23 | 242.69 | 28.39 | 2.03 | 13.38 | 194.24 | 1168.07 |
| 2/19/20 16:24 | 242.70 | 28.39 | 2.01 | 13.38 | 194.27 | 1168.08 |
| 2/19/20 16:25 | 242.70 | 28.39 | 1.99 | 13.38 | 194.30 | 1168.09 |
| 2/19/20 16:26 | 242.71 | 28.39 | 1.97 | 13.38 | 194.33 | 1168.10 |
| 2/19/20 16:27 | 242.71 | 28.39 | 1.95 | 13.38 | 194.36 | 1168.11 |
| 2/19/20 16:28 | 242.72 | 28.39 | 1.93 | 13.38 | 194.39 | 1168.11 |
| 2/19/20 16:29 | 242.72 | 28.39 | 1.91 | 13.38 | 194.42 | 1168.12 |
| 2/19/20 16:30 | 242.73 | 28.39 | 1.89 | 13.38 | 194.45 | 1168.13 |
| 2/19/20 16:31 | 242.73 | 28.39 | 1.87 | 13.38 | 194.48 | 1168.14 |
| 2/19/20 16:32 | 242.74 | 28.39 | 1.85 | 13.38 | 194.51 | 1168.15 |

# EMISSION DATA RECORDS

## Operating Data Base Load
## (provided by Cricket Valley Energy Center LLC)
## Opacity

The U-00001 fuel flow rates (lbm/s) shown on the following pages are uncorrected values.

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/17 12:30 - 2/17 13:30) | 240.76 | 28.31 | 0.00 | 13.41 | 172.67 | 1166.35 |
| COUNT = 61 | | | | | | |

| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
|---|---|---|---|---|---|---|
| 2/17/20 12:30 | 240.67 | 28.37 | 0.00 | 13.33 | 194.44 | 1166.05 |
| 2/17/20 12:31 | 240.75 | 28.34 | 0.00 | 13.47 | 192.38 | 1166.64 |
| 2/17/20 12:32 | 241.22 | 28.31 | 0.00 | 13.27 | 180.61 | 1166.83 |
| 2/17/20 12:33 | 241.24 | 28.24 | 0.00 | 13.49 | 162.25 | 1167.14 |
| 2/17/20 12:34 | 241.33 | 28.25 | 0.00 | 13.46 | 159.46 | 1166.86 |
| 2/17/20 12:35 | 240.97 | 28.30 | 0.00 | 13.34 | 159.67 | 1166.17 |
| 2/17/20 12:36 | 241.02 | 28.33 | 0.00 | 13.50 | 177.19 | 1167.84 |
| 2/17/20 12:37 | 240.80 | 28.29 | 0.00 | 13.46 | 182.06 | 1166.39 |
| 2/17/20 12:38 | 241.18 | 28.38 | 0.00 | 13.64 | 189.33 | 1167.03 |
| 2/17/20 12:39 | 240.59 | 28.40 | 0.00 | 13.54 | 186.44 | 1166.31 |
| 2/17/20 12:40 | 240.73 | 28.33 | 0.00 | 13.32 | 172.27 | 1167.23 |
| 2/17/20 12:41 | 240.71 | 28.23 | 0.00 | 13.29 | 166.11 | 1167.11 |
| 2/17/20 12:42 | 240.62 | 28.28 | 0.00 | 13.57 | 156.94 | 1166.52 |
| 2/17/20 12:43 | 240.86 | 28.30 | 0.00 | 13.40 | 158.51 | 1167.14 |
| 2/17/20 12:44 | 240.72 | 28.25 | 0.00 | 13.47 | 166.87 | 1166.74 |
| 2/17/20 12:45 | 240.78 | 28.43 | 0.00 | 13.52 | 175.05 | 1166.35 |
| 2/17/20 12:46 | 240.33 | 28.40 | 0.00 | 13.75 | 181.62 | 1165.76 |
| 2/17/20 12:47 | 241.04 | 28.30 | 0.00 | 13.11 | 184.64 | 1166.52 |
| 2/17/20 12:48 | 240.87 | 28.34 | 0.00 | 13.28 | 172.23 | 1166.27 |
| 2/17/20 12:49 | 241.33 | 28.21 | 0.00 | 13.59 | 171.26 | 1166.80 |
| 2/17/20 12:50 | 240.75 | 28.24 | 0.00 | 13.34 | 172.64 | 1166.37 |
| 2/17/20 12:51 | 241.44 | 28.10 | 0.00 | 13.39 | 173.93 | 1166.79 |
| 2/17/20 12:52 | 240.80 | 28.35 | 0.00 | 13.46 | 176.20 | 1165.72 |
| 2/17/20 12:53 | 241.27 | 28.48 | 0.00 | 13.46 | 178.60 | 1166.00 |
| 2/17/20 12:54 | 241.41 | 28.41 | 0.00 | 13.40 | 176.88 | 1167.08 |
| 2/17/20 12:55 | 241.25 | 28.45 | 0.00 | 13.71 | 176.16 | 1167.03 |
| 2/17/20 12:56 | 241.03 | 28.37 | 0.00 | 13.42 | 179.87 | 1166.18 |
| 2/17/20 12:57 | 240.43 | 28.25 | 0.00 | 13.38 | 173.63 | 1166.22 |
| 2/17/20 12:58 | 241.03 | 28.31 | 0.00 | 13.14 | 167.37 | 1166.02 |
| 2/17/20 12:59 | 240.62 | 28.38 | 0.00 | 13.26 | 157.78 | 1165.86 |
| 2/17/20 13:00 | 240.67 | 28.20 | 0.00 | 13.39 | 159.08 | 1166.13 |
| 2/17/20 13:01 | 240.78 | 28.51 | 0.00 | 13.15 | 172.03 | 1166.29 |
| 2/17/20 13:02 | 240.71 | 28.27 | 0.00 | 13.56 | 186.00 | 1166.09 |
| 2/17/20 13:03 | 240.63 | 28.41 | 0.00 | 13.50 | 194.64 | 1166.47 |
| 2/17/20 13:04 | 240.79 | 28.32 | 0.00 | 13.23 | 177.44 | 1166.46 |
| 2/17/20 13:05 | 240.76 | 28.47 | 0.00 | 13.48 | 166.84 | 1165.82 |
| 2/17/20 13:06 | 240.80 | 28.30 | 0.00 | 13.53 | 164.95 | 1165.40 |
| 2/17/20 13:07 | 240.59 | 28.45 | 0.00 | 13.25 | 177.13 | 1165.82 |
| 2/17/20 13:08 | 240.91 | 28.29 | 0.00 | 13.41 | 183.60 | 1166.42 |
| 2/17/20 13:09 | 240.93 | 28.31 | 0.00 | 13.42 | 176.86 | 1166.19 |
| 2/17/20 13:10 | 240.45 | 28.26 | 0.00 | 13.17 | 167.09 | 1166.07 |
| 2/17/20 13:11 | 241.13 | 28.39 | 0.00 | 13.47 | 164.46 | 1166.08 |
| 2/17/20 13:12 | 240.33 | 28.19 | 0.00 | 13.41 | 159.89 | 1165.50 |
| 2/17/20 13:13 | 240.76 | 28.11 | 0.00 | 13.26 | 160.85 | 1165.54 |
| 2/17/20 13:14 | 240.36 | 28.33 | 0.00 | 13.46 | 170.93 | 1166.04 |
| 2/17/20 13:15 | 240.42 | 28.37 | 0.00 | 13.39 | 175.51 | 1165.99 |
| 2/17/20 13:16 | 240.56 | 28.25 | 0.00 | 13.17 | 184.26 | 1166.96 |
| 2/17/20 13:17 | 240.23 | 28.38 | 0.00 | 13.28 | 182.09 | 1165.56 |
| 2/17/20 13:18 | 240.09 | 28.31 | 0.00 | 13.40 | 173.76 | 1165.54 |
| 2/17/20 13:19 | 240.67 | 28.25 | 0.00 | 13.34 | 159.67 | 1165.35 |
| 2/17/20 13:20 | 240.79 | 28.30 | 0.00 | 13.36 | 149.85 | 1165.76 |
| 2/17/20 13:21 | 240.32 | 28.17 | 0.00 | 13.23 | 152.03 | 1165.74 |
| 2/17/20 13:22 | 240.52 | 28.25 | 0.00 | 13.48 | 159.76 | 1166.34 |
| 2/17/20 13:23 | 240.49 | 28.25 | 0.00 | 13.46 | 172.36 | 1166.60 |
| 2/17/20 13:24 | 240.90 | 28.15 | 0.00 | 13.62 | 182.92 | 1166.73 |
| 2/17/20 13:25 | 240.73 | 28.31 | 0.00 | 13.37 | 187.47 | 1167.14 |
| 2/17/20 13:26 | 240.73 | 28.19 | 0.00 | 13.72 | 185.96 | 1167.09 |
| 2/17/20 13:27 | 240.49 | 28.35 | 0.00 | 13.44 | 174.87 | 1166.69 |
| 2/17/20 13:28 | 240.57 | 28.29 | 0.00 | 13.23 | 167.59 | 1166.04 |
| 2/17/20 13:29 | 240.11 | 28.15 | 0.00 | 13.37 | 159.11 | 1165.83 |
| 2/17/20 13:30 | 240.42 | 28.25 | 0.00 | 13.65 | 161.26 | 1166.81 |

| Description | | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/17 13:32 - 2/17 14:32) | | 240.40 | 28.30 | 0.00 | 13.47 | 169.80 | 1166.47 |
| COUNT = 61 | | | | | | | |
| Signal Tagname | | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| | 2/17/20 13:32 | 240.13 | 28.38 | 0.00 | 13.66 | 177.42 | 1166.51 |
| | 2/17/20 13:33 | 240.29 | 28.23 | 0.00 | 13.59 | 182.03 | 1166.45 |
| | 2/17/20 13:34 | 240.73 | 28.25 | 0.00 | 13.43 | 176.72 | 1167.05 |
| | 2/17/20 13:35 | 240.85 | 28.35 | 0.00 | 13.45 | 180.02 | 1166.78 |
| | 2/17/20 13:36 | 240.50 | 28.42 | 0.00 | 13.75 | 167.80 | 1166.89 |
| | 2/17/20 13:37 | 240.59 | 28.25 | 0.00 | 13.43 | 163.91 | 1166.52 |
| | 2/17/20 13:38 | 240.51 | 28.37 | 0.00 | 13.11 | 162.58 | 1166.43 |
| | 2/17/20 13:39 | 240.28 | 28.46 | 0.00 | 13.47 | 163.85 | 1166.73 |
| | 2/17/20 13:40 | 240.77 | 28.36 | 0.00 | 13.53 | 172.70 | 1166.80 |
| | 2/17/20 13:41 | 240.28 | 28.16 | 0.00 | 13.26 | 170.20 | 1166.60 |
| | 2/17/20 13:42 | 240.32 | 28.25 | 0.00 | 13.62 | 171.57 | 1166.24 |
| | 2/17/20 13:43 | 240.87 | 28.30 | 0.00 | 13.42 | 174.44 | 1166.58 |
| | 2/17/20 13:44 | 240.42 | 28.43 | 0.00 | 13.74 | 172.60 | 1166.63 |
| | 2/17/20 13:45 | 240.14 | 28.34 | 0.00 | 13.12 | 169.26 | 1165.92 |
| | 2/17/20 13:46 | 240.18 | 28.37 | 0.00 | 13.39 | 165.89 | 1166.43 |
| | 2/17/20 13:47 | 240.29 | 28.33 | 0.00 | 13.79 | 163.65 | 1166.68 |
| | 2/17/20 13:48 | 239.98 | 28.18 | 0.00 | 13.27 | 163.23 | 1165.44 |
| | 2/17/20 13:49 | 240.34 | 28.21 | 0.00 | 13.42 | 167.55 | 1165.81 |
| | 2/17/20 13:50 | 240.38 | 28.33 | 0.00 | 13.39 | 169.94 | 1165.77 |
| | 2/17/20 13:51 | 240.36 | 28.20 | 0.00 | 13.48 | 169.17 | 1166.67 |
| | 2/17/20 13:52 | 240.24 | 28.26 | 0.00 | 12.99 | 166.11 | 1165.86 |
| | 2/17/20 13:53 | 240.02 | 28.30 | 0.00 | 13.45 | 168.25 | 1165.78 |
| | 2/17/20 13:54 | 240.57 | 28.21 | 0.00 | 13.59 | 168.96 | 1166.08 |
| | 2/17/20 13:55 | 239.89 | 28.37 | 0.00 | 13.36 | 171.72 | 1165.96 |
| | 2/17/20 13:56 | 240.49 | 28.16 | 0.00 | 13.45 | 171.24 | 1166.65 |
| | 2/17/20 13:57 | 240.35 | 28.20 | 0.00 | 13.52 | 176.20 | 1165.76 |
| | 2/17/20 13:58 | 240.72 | 28.28 | 0.00 | 13.20 | 178.94 | 1166.85 |
| | 2/17/20 13:59 | 240.15 | 28.10 | 0.00 | 13.43 | 180.49 | 1166.26 |
| | 2/17/20 14:00 | 240.05 | 28.21 | 0.00 | 13.48 | 172.39 | 1166.19 |
| | 2/17/20 14:01 | 240.38 | 28.34 | 0.00 | 13.46 | 163.05 | 1166.24 |
| | 2/17/20 14:02 | 240.28 | 28.16 | 0.00 | 13.44 | 153.92 | 1166.62 |
| | 2/17/20 14:03 | 240.53 | 28.51 | 0.00 | 13.70 | 155.73 | 1166.91 |
| | 2/17/20 14:04 | 240.56 | 28.30 | 0.00 | 13.75 | 166.93 | 1167.75 |
| | 2/17/20 14:05 | 240.53 | 28.41 | 0.00 | 13.44 | 175.29 | 1166.16 |
| | 2/17/20 14:06 | 240.58 | 28.36 | 0.00 | 13.47 | 180.64 | 1167.15 |
| | 2/17/20 14:07 | 240.89 | 28.37 | 0.00 | 13.32 | 180.48 | 1166.70 |
| | 2/17/20 14:08 | 240.49 | 28.31 | 0.00 | 13.45 | 185.65 | 1166.65 |
| | 2/17/20 14:09 | 240.39 | 28.17 | 0.00 | 13.40 | 177.23 | 1166.55 |
| | 2/17/20 14:10 | 240.00 | 28.39 | 0.00 | 13.34 | 162.39 | 1166.32 |
| | 2/17/20 14:11 | 240.16 | 28.26 | 0.00 | 13.25 | 150.38 | 1166.67 |
| | 2/17/20 14:12 | 240.41 | 28.29 | 0.00 | 13.53 | 150.65 | 1165.95 |
| | 2/17/20 14:13 | 240.27 | 28.23 | 0.00 | 13.75 | 159.72 | 1165.94 |
| | 2/17/20 14:14 | 239.98 | 28.20 | 0.00 | 13.44 | 170.99 | 1166.02 |
| | 2/17/20 14:15 | 240.37 | 28.28 | 0.00 | 13.51 | 182.39 | 1166.47 |
| | 2/17/20 14:16 | 240.14 | 28.25 | 0.00 | 13.55 | 184.32 | 1165.87 |
| | 2/17/20 14:17 | 240.55 | 28.14 | 0.00 | 13.79 | 184.28 | 1167.01 |
| | 2/17/20 14:18 | 240.26 | 28.22 | 0.00 | 13.21 | 166.36 | 1166.33 |
| | 2/17/20 14:19 | 240.52 | 28.50 | 0.00 | 13.31 | 148.80 | 1166.16 |
| | 2/17/20 14:20 | 240.36 | 28.37 | 0.00 | 13.46 | 141.83 | 1166.54 |
| | 2/17/20 14:21 | 240.52 | 28.06 | 0.00 | 13.68 | 147.32 | 1167.15 |
| | 2/17/20 14:22 | 240.40 | 28.27 | 0.00 | 13.86 | 163.21 | 1166.74 |
| | 2/17/20 14:23 | 240.46 | 28.28 | 0.00 | 13.86 | 178.54 | 1166.30 |
| | 2/17/20 14:24 | 240.77 | 28.42 | 0.00 | 13.30 | 190.13 | 1166.68 |
| | 2/17/20 14:25 | 240.76 | 28.18 | 0.00 | 13.31 | 193.53 | 1166.38 |
| | 2/17/20 14:26 | 240.48 | 28.49 | 0.00 | 13.43 | 178.37 | 1166.53 |
| | 2/17/20 14:27 | 240.54 | 28.21 | 0.00 | 13.64 | 155.73 | 1165.87 |
| | 2/17/20 14:28 | 239.98 | 28.40 | 0.00 | 13.62 | 148.97 | 1167.34 |
| | 2/17/20 14:29 | 240.41 | 28.42 | 0.00 | 13.37 | 152.87 | 1166.31 |
| | 2/17/20 14:30 | 240.57 | 28.28 | 0.00 | 13.31 | 167.52 | 1167.10 |
| | 2/17/20 14:31 | 240.42 | 28.44 | 0.00 | 13.39 | 183.94 | 1167.45 |
| | 2/17/20 14:32 | 240.64 | 28.39 | 0.00 | 13.41 | 198.05 | 1166.58 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/17 14:35 - 2/17 15:35) | 240.33 | 28.30 | 0.00 | 13.43 | 164.87 | 1167.10 |
| COUNT = 61 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/17/20 14:35 | 239.98 | 28.13 | 0.00 | 13.44 | 162.96 | 1165.93 |
| 2/17/20 14:36 | 240.61 | 28.35 | 0.00 | 13.25 | 152.60 | 1166.14 |
| 2/17/20 14:37 | 240.14 | 28.29 | 0.00 | 13.47 | 155.00 | 1166.98 |
| 2/17/20 14:38 | 240.23 | 28.26 | 0.00 | 13.47 | 159.57 | 1166.53 |
| 2/17/20 14:39 | 240.14 | 28.29 | 0.00 | 13.13 | 163.79 | 1167.01 |
| 2/17/20 14:40 | 240.25 | 28.32 | 0.00 | 13.60 | 179.81 | 1166.42 |
| 2/17/20 14:41 | 240.71 | 28.42 | 0.00 | 13.36 | 189.43 | 1167.12 |
| 2/17/20 14:42 | 240.35 | 28.25 | 0.00 | 13.44 | 188.42 | 1166.65 |
| 2/17/20 14:43 | 240.09 | 28.55 | 0.00 | 13.20 | 174.54 | 1166.63 |
| 2/17/20 14:44 | 240.76 | 28.27 | 0.00 | 13.34 | 163.56 | 1166.85 |
| 2/17/20 14:45 | 240.41 | 28.28 | 0.00 | 13.51 | 158.00 | 1166.72 |
| 2/17/20 14:46 | 240.76 | 28.27 | 0.00 | 13.15 | 154.74 | 1166.69 |
| 2/17/20 14:47 | 239.86 | 28.11 | 0.00 | 13.21 | 159.73 | 1165.85 |
| 2/17/20 14:48 | 240.16 | 28.29 | 0.00 | 13.39 | 170.18 | 1166.85 |
| 2/17/20 14:49 | 240.25 | 28.46 | 0.00 | 13.43 | 175.47 | 1166.29 |
| 2/17/20 14:50 | 240.75 | 28.13 | 0.00 | 13.64 | 181.05 | 1168.05 |
| 2/17/20 14:51 | 240.38 | 28.24 | 0.00 | 13.35 | 172.31 | 1166.51 |
| 2/17/20 14:52 | 240.51 | 28.60 | 0.00 | 13.39 | 160.13 | 1166.96 |
| 2/17/20 14:53 | 240.30 | 28.24 | 0.00 | 13.46 | 154.25 | 1166.43 |
| 2/17/20 14:54 | 240.66 | 28.26 | 0.00 | 13.32 | 150.16 | 1167.57 |
| 2/17/20 14:55 | 239.91 | 28.36 | 0.00 | 13.42 | 158.48 | 1166.25 |
| 2/17/20 14:56 | 240.07 | 28.27 | 0.00 | 13.63 | 166.97 | 1167.48 |
| 2/17/20 14:57 | 240.60 | 28.16 | 0.00 | 13.63 | 173.03 | 1167.56 |
| 2/17/20 14:58 | 240.64 | 28.32 | 0.00 | 13.78 | 170.04 | 1167.90 |
| 2/17/20 14:59 | 240.36 | 28.32 | 0.00 | 13.43 | 173.62 | 1167.49 |
| 2/17/20 15:00 | 240.20 | 28.18 | 0.00 | 13.29 | 167.71 | 1166.93 |
| 2/17/20 15:01 | 240.29 | 28.37 | 0.00 | 13.67 | 164.87 | 1167.14 |
| 2/17/20 15:02 | 240.27 | 28.28 | 0.00 | 13.27 | 158.49 | 1166.37 |
| 2/17/20 15:03 | 239.64 | 28.37 | 0.00 | 13.40 | 161.23 | 1166.64 |
| 2/17/20 15:04 | 240.40 | 28.19 | 0.00 | 13.30 | 169.18 | 1168.09 |
| 2/17/20 15:05 | 239.93 | 28.32 | 0.00 | 13.46 | 164.44 | 1166.86 |
| 2/17/20 15:06 | 240.51 | 28.28 | 0.00 | 13.42 | 166.61 | 1166.69 |
| 2/17/20 15:07 | 240.48 | 28.31 | 0.00 | 13.32 | 165.60 | 1167.22 |
| 2/17/20 15:08 | 240.32 | 28.35 | 0.00 | 13.85 | 162.77 | 1167.44 |
| 2/17/20 15:09 | 240.15 | 28.30 | 0.00 | 13.24 | 163.13 | 1167.46 |
| 2/17/20 15:10 | 240.50 | 28.25 | 0.00 | 13.44 | 156.00 | 1167.46 |
| 2/17/20 15:11 | 240.25 | 28.35 | 0.00 | 13.22 | 154.94 | 1166.60 |
| 2/17/20 15:12 | 239.87 | 28.34 | 0.00 | 13.48 | 156.38 | 1166.66 |
| 2/17/20 15:13 | 240.18 | 28.13 | 0.00 | 13.48 | 165.17 | 1166.88 |
| 2/17/20 15:14 | 240.25 | 28.29 | 0.00 | 13.55 | 173.05 | 1167.29 |
| 2/17/20 15:15 | 240.45 | 28.27 | 0.00 | 13.68 | 181.03 | 1167.48 |
| 2/17/20 15:16 | 240.16 | 28.26 | 0.00 | 13.36 | 176.39 | 1166.77 |
| 2/17/20 15:17 | 240.10 | 28.21 | 0.00 | 13.19 | 168.79 | 1167.22 |
| 2/17/20 15:18 | 239.90 | 28.12 | 0.00 | 13.23 | 154.45 | 1167.03 |
| 2/17/20 15:19 | 240.09 | 28.27 | 0.00 | 13.55 | 150.45 | 1167.43 |
| 2/17/20 15:20 | 240.16 | 28.22 | 0.00 | 13.52 | 146.10 | 1167.39 |
| 2/17/20 15:21 | 239.74 | 28.45 | 0.00 | 13.53 | 149.91 | 1166.83 |
| 2/17/20 15:22 | 240.09 | 28.27 | 0.00 | 13.51 | 158.03 | 1167.62 |
| 2/17/20 15:23 | 240.06 | 28.33 | 0.00 | 13.56 | 163.68 | 1168.21 |
| 2/17/20 15:24 | 240.50 | 28.29 | 0.00 | 13.46 | 167.64 | 1167.55 |
| 2/17/20 15:25 | 240.76 | 28.32 | 0.00 | 13.48 | 170.84 | 1167.74 |
| 2/17/20 15:26 | 240.32 | 28.47 | 0.00 | 13.56 | 164.96 | 1167.54 |
| 2/17/20 15:27 | 240.49 | 28.37 | 0.00 | 13.31 | 158.96 | 1166.92 |
| 2/17/20 15:28 | 240.96 | 28.31 | 0.00 | 13.21 | 152.82 | 1167.40 |
| 2/17/20 15:29 | 240.81 | 28.30 | 0.00 | 13.53 | 146.28 | 1167.96 |
| 2/17/20 15:30 | 240.57 | 28.10 | 0.00 | 13.35 | 147.16 | 1167.08 |
| 2/17/20 15:31 | 240.27 | 28.56 | 0.00 | 13.41 | 161.50 | 1167.53 |
| 2/17/20 15:32 | 240.82 | 28.40 | 0.00 | 13.27 | 175.76 | 1167.35 |
| 2/17/20 15:33 | 240.18 | 28.17 | 0.00 | 13.46 | 186.50 | 1167.19 |
| 2/17/20 15:34 | 240.95 | 28.49 | 0.00 | 13.77 | 184.30 | 1168.32 |
| 2/17/20 15:35 | 240.89 | 28.31 | 0.00 | 13.40 | 173.98 | 1167.64 |

# EMISSION DATA RECORDS

## Operating Data Base+DB Load
## (provided by Cricket Valley Energy Center LLC)
## NOx, CO, VOC, and $NH_3$

The U-00001 fuel flow rates (lbm/s) shown on the following pages are uncorrected values.

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/19 4:25 - 2/19 5:24) | 240.87 | 28.23 | 9.49 | 13.56 | 199.76 | 1159.30 |
| COUNT = 60 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/19/20 4:25 | 240.66 | 28.40 | 9.49 | 13.54 | 197.10 | 1158.57 |
| 2/19/20 4:26 | 240.50 | 28.16 | 9.49 | 13.27 | 200.55 | 1159.07 |
| 2/19/20 4:27 | 241.11 | 28.36 | 9.49 | 13.53 | 201.59 | 1158.82 |
| 2/19/20 4:28 | 240.29 | 28.53 | 9.49 | 13.55 | 203.16 | 1157.94 |
| 2/19/20 4:29 | 241.28 | 28.03 | 9.49 | 13.33 | 198.93 | 1158.74 |
| 2/19/20 4:30 | 240.36 | 28.14 | 9.49 | 13.38 | 201.38 | 1157.96 |
| 2/19/20 4:31 | 240.64 | 28.26 | 9.49 | 13.94 | 201.35 | 1158.66 |
| 2/19/20 4:32 | 240.87 | 28.22 | 9.49 | 13.29 | 202.89 | 1158.19 |
| 2/19/20 4:33 | 241.02 | 27.90 | 9.49 | 13.35 | 198.59 | 1158.77 |
| 2/19/20 4:34 | 240.31 | 28.09 | 9.49 | 13.38 | 202.83 | 1158.64 |
| 2/19/20 4:35 | 240.89 | 28.17 | 9.49 | 13.99 | 198.78 | 1159.56 |
| 2/19/20 4:36 | 241.17 | 28.13 | 9.49 | 13.89 | 198.70 | 1158.90 |
| 2/19/20 4:37 | 240.74 | 28.21 | 9.49 | 13.68 | 198.66 | 1158.79 |
| 2/19/20 4:38 | 240.78 | 28.04 | 9.49 | 13.61 | 197.53 | 1158.82 |
| 2/19/20 4:39 | 240.60 | 28.26 | 9.49 | 13.64 | 200.11 | 1158.90 |
| 2/19/20 4:40 | 240.82 | 28.15 | 9.49 | 13.67 | 202.61 | 1159.26 |
| 2/19/20 4:41 | 240.82 | 28.29 | 9.49 | 13.38 | 200.17 | 1158.67 |
| 2/19/20 4:42 | 241.41 | 28.27 | 9.49 | 13.49 | 200.40 | 1159.02 |
| 2/19/20 4:43 | 240.93 | 28.28 | 9.49 | 13.45 | 201.18 | 1158.67 |
| 2/19/20 4:44 | 240.50 | 28.24 | 9.49 | 13.37 | 203.20 | 1158.37 |
| 2/19/20 4:45 | 241.27 | 28.31 | 9.49 | 13.42 | 202.06 | 1159.12 |
| 2/19/20 4:46 | 240.88 | 28.07 | 9.49 | 13.69 | 202.51 | 1159.86 |
| 2/19/20 4:47 | 240.51 | 28.38 | 9.49 | 13.52 | 204.26 | 1159.02 |
| 2/19/20 4:48 | 240.87 | 28.05 | 9.49 | 13.82 | 201.89 | 1159.21 |
| 2/19/20 4:49 | 240.90 | 28.24 | 9.49 | 13.73 | 192.21 | 1159.20 |
| 2/19/20 4:50 | 240.88 | 28.20 | 9.49 | 13.64 | 195.61 | 1158.71 |
| 2/19/20 4:51 | 240.92 | 28.48 | 9.49 | 13.52 | 195.93 | 1159.36 |
| 2/19/20 4:52 | 240.43 | 28.15 | 9.49 | 13.70 | 191.80 | 1158.96 |
| 2/19/20 4:53 | 241.13 | 28.11 | 9.49 | 13.50 | 196.95 | 1159.26 |
| 2/19/20 4:54 | 241.02 | 28.24 | 9.49 | 13.77 | 196.12 | 1160.02 |
| 2/19/20 4:55 | 240.73 | 28.19 | 9.49 | 13.52 | 194.10 | 1159.37 |
| 2/19/20 4:56 | 240.73 | 28.23 | 9.49 | 13.33 | 193.63 | 1158.85 |
| 2/19/20 4:57 | 241.02 | 28.28 | 9.49 | 13.46 | 194.81 | 1160.21 |
| 2/19/20 4:58 | 240.84 | 28.30 | 9.49 | 13.97 | 195.51 | 1159.54 |
| 2/19/20 4:59 | 241.17 | 28.19 | 9.49 | 13.52 | 197.80 | 1160.06 |
| 2/19/20 5:00 | 240.84 | 28.28 | 9.49 | 13.27 | 200.95 | 1160.45 |
| 2/19/20 5:01 | 240.81 | 28.23 | 9.49 | 13.27 | 203.35 | 1159.38 |
| 2/19/20 5:02 | 241.00 | 28.40 | 9.49 | 13.60 | 198.75 | 1159.36 |
| 2/19/20 5:03 | 240.59 | 28.31 | 9.49 | 13.65 | 201.61 | 1159.00 |
| 2/19/20 5:04 | 241.06 | 28.51 | 9.49 | 13.49 | 201.74 | 1159.78 |
| 2/19/20 5:05 | 241.37 | 28.33 | 9.49 | 13.64 | 197.50 | 1160.22 |
| 2/19/20 5:06 | 240.80 | 28.07 | 9.49 | 13.51 | 192.35 | 1159.07 |
| 2/19/20 5:07 | 241.24 | 28.08 | 9.49 | 13.64 | 189.82 | 1160.38 |
| 2/19/20 5:08 | 240.68 | 28.13 | 9.49 | 13.40 | 191.88 | 1159.25 |
| 2/19/20 5:09 | 240.71 | 28.15 | 9.49 | 13.52 | 196.47 | 1159.17 |
| 2/19/20 5:10 | 240.88 | 28.15 | 9.49 | 13.86 | 197.81 | 1159.87 |
| 2/19/20 5:11 | 240.84 | 28.43 | 9.49 | 13.53 | 209.86 | 1159.51 |
| 2/19/20 5:12 | 241.07 | 28.34 | 9.49 | 13.43 | 202.33 | 1159.52 |
| 2/19/20 5:13 | 240.98 | 28.43 | 9.49 | 13.62 | 192.02 | 1159.80 |
| 2/19/20 5:14 | 240.46 | 27.97 | 9.49 | 13.21 | 192.02 | 1158.73 |
| 2/19/20 5:15 | 241.30 | 28.15 | 9.49 | 13.67 | 190.38 | 1160.14 |
| 2/19/20 5:16 | 240.96 | 28.24 | 9.49 | 13.63 | 197.56 | 1159.50 |
| 2/19/20 5:17 | 240.68 | 28.28 | 9.49 | 13.65 | 208.36 | 1160.09 |
| 2/19/20 5:18 | 240.83 | 28.15 | 9.49 | 13.61 | 217.47 | 1158.97 |
| 2/19/20 5:19 | 241.07 | 28.35 | 9.49 | 13.50 | 220.17 | 1160.26 |
| 2/19/20 5:20 | 240.83 | 28.10 | 9.49 | 13.76 | 215.82 | 1159.82 |
| 2/19/20 5:21 | 240.89 | 28.24 | 9.49 | 13.70 | 203.41 | 1159.98 |
| 2/19/20 5:22 | 241.22 | 28.48 | 9.49 | 13.65 | 198.61 | 1159.86 |
| 2/19/20 5:23 | 240.95 | 28.21 | 9.49 | 13.42 | 200.32 | 1160.44 |
| 2/19/20 5:24 | 241.09 | 28.33 | 9.49 | 13.74 | 200.00 | 1160.38 |

| Description | | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/19 5:33 - 2/19 6:32) | | 241.20 | 28.24 | 9.50 | 13.59 | 204.90 | 1160.27 |
| COUNT = 60 | | | | | | | |
| Signal Tagname | | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| | 2/19/20 5:33 | 241.01 | 28.34 | 9.50 | 13.57 | 198.16 | 1160.15 |
| | 2/19/20 5:34 | 240.89 | 28.07 | 9.50 | 13.49 | 200.44 | 1159.56 |
| | 2/19/20 5:35 | 241.51 | 28.32 | 9.50 | 13.57 | 206.34 | 1159.91 |
| | 2/19/20 5:36 | 241.43 | 28.09 | 9.50 | 13.77 | 200.84 | 1161.24 |
| | 2/19/20 5:37 | 240.83 | 28.38 | 9.50 | 13.70 | 198.29 | 1159.42 |
| | 2/19/20 5:38 | 241.14 | 28.11 | 9.50 | 13.67 | 200.03 | 1160.54 |
| | 2/19/20 5:39 | 240.91 | 28.24 | 9.50 | 13.49 | 191.49 | 1159.43 |
| | 2/19/20 5:40 | 240.79 | 28.39 | 9.50 | 13.51 | 194.51 | 1160.25 |
| | 2/19/20 5:41 | 241.58 | 28.31 | 9.50 | 13.89 | 197.51 | 1160.55 |
| | 2/19/20 5:42 | 241.22 | 28.24 | 9.50 | 13.60 | 202.12 | 1159.80 |
| | 2/19/20 5:43 | 241.09 | 28.25 | 9.50 | 13.41 | 209.53 | 1160.48 |
| | 2/19/20 5:44 | 240.88 | 28.19 | 9.50 | 13.41 | 208.57 | 1159.21 |
| | 2/19/20 5:45 | 241.40 | 28.16 | 9.50 | 13.35 | 203.93 | 1160.34 |
| | 2/19/20 5:46 | 240.61 | 28.05 | 9.50 | 13.81 | 200.65 | 1159.77 |
| | 2/19/20 5:47 | 241.22 | 28.26 | 9.50 | 13.18 | 196.89 | 1159.87 |
| | 2/19/20 5:48 | 241.12 | 28.22 | 9.50 | 13.58 | 208.99 | 1159.48 |
| | 2/19/20 5:49 | 240.97 | 28.30 | 9.50 | 13.58 | 218.56 | 1160.26 |
| | 2/19/20 5:50 | 240.82 | 28.21 | 9.50 | 13.43 | 220.27 | 1159.45 |
| | 2/19/20 5:51 | 240.86 | 28.30 | 9.50 | 13.86 | 210.82 | 1160.81 |
| | 2/19/20 5:52 | 240.66 | 28.12 | 9.50 | 13.59 | 204.55 | 1159.76 |
| | 2/19/20 5:53 | 241.02 | 28.17 | 9.50 | 13.68 | 184.02 | 1159.85 |
| | 2/19/20 5:54 | 241.03 | 28.53 | 9.50 | 13.47 | 181.84 | 1159.99 |
| | 2/19/20 5:55 | 241.16 | 28.21 | 9.50 | 13.68 | 190.34 | 1160.69 |
| | 2/19/20 5:56 | 241.04 | 28.25 | 9.50 | 13.59 | 205.19 | 1160.60 |
| | 2/19/20 5:57 | 241.15 | 28.09 | 9.50 | 13.74 | 214.41 | 1161.02 |
| | 2/19/20 5:58 | 241.12 | 28.38 | 9.50 | 13.49 | 214.54 | 1160.40 |
| | 2/19/20 5:59 | 241.39 | 28.09 | 9.50 | 13.68 | 204.76 | 1161.73 |
| | 2/19/20 6:00 | 241.50 | 28.21 | 9.50 | 13.88 | 201.13 | 1161.04 |
| | 2/19/20 6:01 | 241.31 | 28.30 | 9.50 | 13.61 | 200.43 | 1159.86 |
| | 2/19/20 6:02 | 241.22 | 28.11 | 9.50 | 13.52 | 193.57 | 1160.72 |
| | 2/19/20 6:03 | 241.13 | 28.26 | 9.50 | 13.50 | 204.80 | 1159.54 |
| | 2/19/20 6:04 | 241.13 | 28.22 | 9.50 | 13.65 | 213.40 | 1160.83 |
| | 2/19/20 6:05 | 241.11 | 28.10 | 9.50 | 13.54 | 213.82 | 1159.61 |
| | 2/19/20 6:06 | 241.15 | 28.26 | 9.50 | 13.54 | 208.16 | 1159.77 |
| | 2/19/20 6:07 | 241.15 | 28.42 | 9.50 | 13.58 | 203.94 | 1160.04 |
| | 2/19/20 6:08 | 240.93 | 28.03 | 9.50 | 13.76 | 195.81 | 1160.13 |
| | 2/19/20 6:09 | 240.84 | 28.18 | 9.50 | 13.57 | 191.64 | 1160.08 |
| | 2/19/20 6:10 | 241.36 | 28.34 | 9.50 | 13.34 | 202.31 | 1160.22 |
| | 2/19/20 6:11 | 241.37 | 28.06 | 9.50 | 13.66 | 207.29 | 1160.57 |
| | 2/19/20 6:12 | 241.24 | 27.98 | 9.50 | 13.67 | 216.89 | 1160.90 |
| | 2/19/20 6:13 | 241.05 | 28.11 | 9.50 | 13.44 | 216.57 | 1159.64 |
| | 2/19/20 6:14 | 241.04 | 28.15 | 9.50 | 13.61 | 205.89 | 1160.43 |
| | 2/19/20 6:15 | 241.50 | 28.17 | 9.50 | 13.82 | 192.92 | 1160.40 |
| | 2/19/20 6:16 | 241.10 | 28.56 | 9.50 | 13.44 | 192.11 | 1159.62 |
| | 2/19/20 6:17 | 241.06 | 28.13 | 9.50 | 13.63 | 199.93 | 1160.38 |
| | 2/19/20 6:18 | 241.54 | 28.42 | 9.50 | 13.50 | 211.23 | 1160.50 |
| | 2/19/20 6:19 | 241.35 | 28.34 | 9.50 | 13.72 | 222.51 | 1160.37 |
| | 2/19/20 6:20 | 241.53 | 28.30 | 9.50 | 13.76 | 225.21 | 1160.86 |
| | 2/19/20 6:21 | 241.45 | 28.20 | 9.50 | 13.82 | 218.83 | 1160.96 |
| | 2/19/20 6:22 | 241.62 | 28.17 | 9.50 | 13.53 | 211.04 | 1160.63 |
| | 2/19/20 6:23 | 241.49 | 28.35 | 9.50 | 13.61 | 199.73 | 1160.35 |
| | 2/19/20 6:24 | 241.50 | 28.34 | 9.50 | 13.52 | 193.62 | 1160.75 |
| | 2/19/20 6:25 | 241.57 | 28.29 | 9.50 | 13.65 | 203.08 | 1160.16 |
| | 2/19/20 6:26 | 241.49 | 28.43 | 9.50 | 13.48 | 214.62 | 1160.69 |
| | 2/19/20 6:27 | 241.39 | 28.31 | 9.50 | 13.65 | 224.92 | 1160.25 |
| | 2/19/20 6:28 | 241.16 | 28.14 | 9.50 | 13.76 | 227.57 | 1159.41 |
| | 2/19/20 6:29 | 241.28 | 28.42 | 9.50 | 13.33 | 223.33 | 1160.61 |
| | 2/19/20 6:30 | 241.66 | 28.42 | 9.50 | 13.67 | 208.20 | 1161.29 |
| | 2/19/20 6:31 | 241.21 | 28.03 | 9.50 | 13.45 | 194.63 | 1160.66 |
| | 2/19/20 6:32 | 241.63 | 28.32 | 9.50 | 13.40 | 187.39 | 1160.47 |

| Description | | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/19 6:41 - 2/19 7:40) | | 241.54 | 28.30 | 9.50 | 13.52 | 206.89 | 1161.26 |
| COUNT = 60 | | | | | | | |
| Signal Tagname | | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| | 2/19/20 6:41 | 241.84 | 28.15 | 9.50 | 13.64 | 203.36 | 1161.32 |
| | 2/19/20 6:42 | 241.55 | 28.36 | 9.50 | 13.38 | 205.17 | 1160.73 |
| | 2/19/20 6:43 | 241.74 | 28.03 | 9.50 | 13.64 | 204.46 | 1160.98 |
| | 2/19/20 6:44 | 241.54 | 28.35 | 9.50 | 13.43 | 205.80 | 1160.97 |
| | 2/19/20 6:45 | 241.66 | 28.21 | 9.50 | 13.43 | 208.05 | 1160.40 |
| | 2/19/20 6:46 | 241.38 | 28.29 | 9.50 | 13.62 | 211.45 | 1160.36 |
| | 2/19/20 6:47 | 241.49 | 28.30 | 9.50 | 13.41 | 213.17 | 1160.97 |
| | 2/19/20 6:48 | 241.38 | 28.42 | 9.50 | 13.32 | 211.50 | 1159.96 |
| | 2/19/20 6:49 | 241.62 | 28.37 | 9.50 | 13.35 | 202.97 | 1160.61 |
| | 2/19/20 6:50 | 241.65 | 28.22 | 9.50 | 13.36 | 204.12 | 1160.53 |
| | 2/19/20 6:51 | 241.40 | 28.27 | 9.50 | 13.31 | 200.14 | 1160.01 |
| | 2/19/20 6:52 | 241.23 | 28.38 | 9.50 | 13.38 | 206.52 | 1160.22 |
| | 2/19/20 6:53 | 241.41 | 28.33 | 9.50 | 13.29 | 206.63 | 1160.07 |
| | 2/19/20 6:54 | 241.54 | 28.43 | 9.50 | 13.85 | 208.23 | 1160.88 |
| | 2/19/20 6:55 | 241.67 | 28.41 | 9.50 | 13.60 | 204.84 | 1160.46 |
| | 2/19/20 6:56 | 241.83 | 28.35 | 9.50 | 13.50 | 201.92 | 1160.18 |
| | 2/19/20 6:57 | 241.52 | 28.42 | 9.50 | 13.46 | 206.85 | 1161.04 |
| | 2/19/20 6:58 | 241.84 | 28.34 | 9.50 | 13.45 | 206.81 | 1160.83 |
| | 2/19/20 6:59 | 241.86 | 28.38 | 9.50 | 13.61 | 209.40 | 1160.88 |
| | 2/19/20 7:00 | 241.65 | 28.27 | 9.50 | 13.38 | 210.79 | 1161.11 |
| | 2/19/20 7:01 | 241.34 | 28.19 | 9.50 | 13.40 | 204.88 | 1160.35 |
| | 2/19/20 7:02 | 241.11 | 28.18 | 9.50 | 13.73 | 208.34 | 1160.72 |
| | 2/19/20 7:03 | 241.34 | 28.21 | 9.50 | 13.50 | 203.70 | 1160.74 |
| | 2/19/20 7:04 | 241.45 | 28.36 | 9.50 | 13.33 | 201.99 | 1160.67 |
| | 2/19/20 7:05 | 241.38 | 28.13 | 9.50 | 13.51 | 201.02 | 1161.18 |
| | 2/19/20 7:06 | 241.34 | 28.31 | 9.50 | 13.53 | 207.34 | 1161.50 |
| | 2/19/20 7:07 | 241.85 | 28.20 | 9.50 | 13.69 | 200.97 | 1161.73 |
| | 2/19/20 7:08 | 241.33 | 28.32 | 9.50 | 13.46 | 201.11 | 1161.52 |
| | 2/19/20 7:09 | 241.63 | 28.27 | 9.50 | 13.37 | 199.37 | 1161.15 |
| | 2/19/20 7:10 | 241.48 | 28.56 | 9.50 | 13.52 | 198.75 | 1160.59 |
| | 2/19/20 7:11 | 241.67 | 28.29 | 9.50 | 13.50 | 203.77 | 1161.72 |
| | 2/19/20 7:12 | 241.51 | 28.06 | 9.50 | 13.81 | 212.79 | 1161.69 |
| | 2/19/20 7:13 | 241.66 | 28.35 | 9.50 | 13.88 | 216.89 | 1162.33 |
| | 2/19/20 7:14 | 241.74 | 28.44 | 9.50 | 13.79 | 220.52 | 1161.69 |
| | 2/19/20 7:15 | 241.64 | 28.23 | 9.50 | 13.39 | 214.70 | 1161.88 |
| | 2/19/20 7:16 | 241.17 | 28.24 | 9.50 | 13.55 | 208.01 | 1161.04 |
| | 2/19/20 7:17 | 241.87 | 28.42 | 9.50 | 13.50 | 202.55 | 1161.88 |
| | 2/19/20 7:18 | 241.23 | 28.30 | 9.50 | 13.47 | 208.45 | 1161.16 |
| | 2/19/20 7:19 | 241.85 | 28.33 | 9.50 | 13.50 | 209.38 | 1161.83 |
| | 2/19/20 7:20 | 241.32 | 28.34 | 9.50 | 13.76 | 208.90 | 1161.29 |
| | 2/19/20 7:21 | 241.56 | 28.28 | 9.50 | 13.58 | 206.68 | 1161.79 |
| | 2/19/20 7:22 | 241.53 | 28.20 | 9.50 | 13.71 | 207.12 | 1161.43 |
| | 2/19/20 7:23 | 241.27 | 28.21 | 9.50 | 13.68 | 209.84 | 1161.96 |
| | 2/19/20 7:24 | 241.63 | 28.35 | 9.50 | 13.53 | 208.62 | 1160.95 |
| | 2/19/20 7:25 | 241.91 | 28.37 | 9.50 | 13.57 | 209.80 | 1162.23 |
| | 2/19/20 7:26 | 241.28 | 28.34 | 9.50 | 13.43 | 207.84 | 1161.46 |
| | 2/19/20 7:27 | 241.50 | 28.31 | 9.50 | 13.66 | 208.29 | 1161.60 |
| | 2/19/20 7:28 | 241.44 | 28.43 | 9.50 | 13.44 | 212.68 | 1161.82 |
| | 2/19/20 7:29 | 241.36 | 28.34 | 9.50 | 13.60 | 213.08 | 1162.36 |
| | 2/19/20 7:30 | 241.59 | 28.34 | 9.50 | 13.46 | 212.17 | 1161.79 |
| | 2/19/20 7:31 | 241.30 | 28.45 | 9.50 | 13.58 | 208.52 | 1161.93 |
| | 2/19/20 7:32 | 241.66 | 28.06 | 9.50 | 13.56 | 205.66 | 1162.62 |
| | 2/19/20 7:33 | 241.87 | 28.37 | 9.50 | 13.56 | 195.90 | 1161.87 |
| | 2/19/20 7:34 | 241.44 | 28.14 | 9.50 | 13.57 | 196.03 | 1161.81 |
| | 2/19/20 7:35 | 241.77 | 28.20 | 9.50 | 13.32 | 204.28 | 1161.73 |
| | 2/19/20 7:36 | 241.77 | 28.34 | 9.50 | 13.54 | 209.93 | 1162.19 |
| | 2/19/20 7:37 | 241.66 | 28.28 | 9.50 | 13.57 | 212.14 | 1161.85 |
| | 2/19/20 7:38 | 241.31 | 28.29 | 9.50 | 13.40 | 212.54 | 1161.77 |
| | 2/19/20 7:39 | 241.66 | 28.37 | 9.50 | 13.43 | 208.61 | 1161.87 |
| | 2/19/20 7:40 | 241.13 | 28.46 | 9.50 | 13.53 | 197.81 | 1161.19 |

# EMISSION DATA RECORDS

## Operating Data Base+DB Load
## (provided by Cricket Valley Energy Center LLC)
## $PM_{10}$

The U-00001 fuel flow rates (lbm/s) shown on the following pages are uncorrected values.

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/18 14:55 - 2/18 19:4) | 240.69 | 28.26 | 9.56 | 13.59 | 192.08 | 1158.39 |
| COUNT = 250 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/18/20 14:55 | 240.74 | 28.41 | 9.63 | 13.52 | 181.40 | 1160.47 |
| 2/18/20 14:56 | 240.83 | 28.29 | 9.63 | 13.87 | 181.53 | 1160.50 |
| 2/18/20 14:57 | 240.78 | 28.51 | 9.63 | 13.79 | 201.33 | 1159.58 |
| 2/18/20 14:58 | 240.61 | 28.37 | 9.63 | 13.29 | 207.73 | 1160.63 |
| 2/18/20 14:59 | 241.35 | 28.29 | 9.63 | 13.58 | 204.59 | 1161.06 |
| 2/18/20 15:00 | 241.30 | 28.27 | 9.63 | 13.55 | 189.41 | 1160.29 |
| 2/18/20 15:01 | 241.23 | 28.33 | 9.63 | 13.93 | 177.01 | 1161.43 |
| 2/18/20 15:02 | 240.91 | 28.25 | 9.63 | 13.77 | 178.37 | 1160.44 |
| 2/18/20 15:03 | 241.21 | 28.48 | 9.63 | 13.62 | 183.60 | 1161.54 |
| 2/18/20 15:04 | 241.03 | 28.31 | 9.63 | 13.62 | 199.15 | 1160.71 |
| 2/18/20 15:05 | 240.81 | 28.09 | 9.63 | 13.46 | 207.52 | 1160.64 |
| 2/18/20 15:06 | 241.28 | 28.43 | 9.63 | 13.81 | 201.39 | 1161.34 |
| 2/18/20 15:07 | 241.09 | 28.35 | 9.63 | 13.61 | 190.01 | 1160.68 |
| 2/18/20 15:08 | 240.64 | 28.41 | 9.63 | 13.35 | 182.64 | 1160.30 |
| 2/18/20 15:09 | 241.41 | 28.27 | 9.63 | 13.81 | 182.92 | 1160.76 |
| 2/18/20 15:10 | 241.43 | 28.31 | 9.62 | 13.62 | 196.27 | 1160.90 |
| 2/18/20 15:11 | 241.05 | 28.22 | 9.62 | 13.76 | 211.40 | 1160.52 |
| 2/18/20 15:12 | 241.30 | 28.41 | 9.62 | 13.31 | 211.27 | 1160.58 |
| 2/18/20 15:13 | 241.13 | 28.30 | 9.62 | 13.55 | 200.07 | 1160.90 |
| 2/18/20 15:14 | 240.93 | 28.34 | 9.62 | 13.71 | 186.93 | 1160.35 |
| 2/18/20 15:15 | 240.99 | 28.55 | 9.62 | 13.72 | 187.63 | 1160.61 |
| 2/18/20 15:16 | 240.78 | 28.20 | 9.62 | 13.59 | 183.63 | 1160.04 |
| 2/18/20 15:17 | 241.08 | 28.19 | 9.62 | 13.55 | 198.09 | 1159.68 |
| 2/18/20 15:18 | 240.91 | 28.19 | 9.62 | 13.78 | 195.21 | 1160.01 |
| 2/18/20 15:19 | 241.27 | 28.36 | 9.62 | 13.65 | 194.06 | 1160.41 |
| 2/18/20 15:20 | 240.77 | 28.38 | 9.62 | 13.59 | 191.84 | 1160.21 |
| 2/18/20 15:21 | 240.51 | 28.34 | 9.62 | 13.54 | 188.91 | 1160.14 |
| 2/18/20 15:22 | 240.82 | 28.28 | 9.62 | 14.02 | 186.78 | 1160.27 |
| 2/18/20 15:23 | 241.16 | 28.22 | 9.62 | 13.53 | 189.81 | 1160.03 |
| 2/18/20 15:24 | 240.73 | 28.33 | 9.62 | 13.64 | 190.23 | 1159.95 |
| 2/18/20 15:25 | 240.77 | 28.18 | 9.62 | 13.56 | 191.24 | 1159.24 |
| 2/18/20 15:26 | 241.35 | 28.42 | 9.62 | 13.45 | 192.26 | 1161.38 |
| 2/18/20 15:27 | 240.78 | 28.28 | 9.61 | 13.44 | 196.76 | 1160.36 |
| 2/18/20 15:28 | 240.62 | 28.22 | 9.61 | 13.38 | 202.53 | 1159.05 |
| 2/18/20 15:29 | 240.89 | 28.31 | 9.61 | 13.76 | 204.47 | 1159.52 |
| 2/18/20 15:30 | 241.04 | 28.35 | 9.61 | 13.83 | 204.28 | 1160.92 |
| 2/18/20 15:31 | 241.06 | 28.33 | 9.61 | 13.79 | 192.71 | 1161.47 |
| 2/18/20 15:32 | 240.75 | 28.54 | 9.61 | 13.67 | 180.49 | 1160.27 |
| 2/18/20 15:33 | 240.92 | 28.22 | 9.61 | 13.61 | 178.31 | 1160.08 |
| 2/18/20 15:34 | 240.90 | 28.33 | 9.61 | 13.51 | 187.66 | 1160.00 |
| 2/18/20 15:35 | 241.18 | 28.30 | 9.61 | 13.52 | 200.31 | 1160.43 |
| 2/18/20 15:36 | 240.62 | 28.26 | 9.61 | 13.54 | 205.97 | 1159.51 |
| 2/18/20 15:37 | 240.69 | 28.24 | 9.61 | 13.34 | 198.74 | 1159.36 |
| 2/18/20 15:38 | 241.21 | 28.36 | 9.61 | 13.43 | 185.75 | 1160.07 |
| 2/18/20 15:39 | 240.61 | 28.08 | 9.61 | 13.74 | 180.33 | 1159.65 |
| 2/18/20 15:40 | 240.43 | 28.24 | 9.61 | 13.53 | 182.20 | 1158.99 |
| 2/18/20 15:41 | 241.16 | 28.17 | 9.61 | 13.65 | 186.18 | 1160.17 |
| 2/18/20 15:42 | 240.68 | 28.25 | 9.61 | 13.49 | 193.53 | 1159.18 |
| 2/18/20 15:43 | 240.91 | 28.29 | 9.61 | 13.51 | 203.85 | 1160.01 |
| 2/18/20 15:44 | 240.49 | 28.21 | 9.60 | 13.45 | 205.07 | 1158.50 |
| 2/18/20 15:45 | 241.31 | 28.23 | 9.60 | 13.90 | 200.68 | 1160.18 |
| 2/18/20 15:46 | 240.66 | 28.14 | 9.60 | 13.56 | 193.71 | 1159.12 |
| 2/18/20 15:47 | 241.08 | 28.66 | 9.60 | 13.46 | 182.32 | 1160.33 |
| 2/18/20 15:48 | 241.05 | 28.27 | 9.60 | 13.63 | 183.97 | 1159.94 |
| 2/18/20 15:49 | 240.87 | 28.49 | 9.60 | 13.61 | 183.20 | 1159.42 |
| 2/18/20 15:50 | 240.58 | 28.27 | 9.60 | 13.42 | 187.49 | 1158.83 |
| 2/18/20 15:51 | 240.98 | 28.32 | 9.60 | 13.58 | 190.00 | 1159.35 |
| 2/18/20 15:52 | 240.75 | 28.07 | 9.60 | 13.54 | 186.74 | 1159.61 |
| 2/18/20 15:53 | 240.30 | 28.37 | 9.60 | 13.60 | 188.50 | 1159.54 |
| 2/18/20 15:54 | 240.91 | 28.31 | 9.60 | 13.60 | 185.42 | 1159.77 |
| 2/18/20 15:55 | 241.08 | 28.39 | 9.60 | 13.73 | 188.98 | 1159.88 |
| 2/18/20 15:56 | 240.97 | 28.35 | 9.60 | 13.42 | 189.42 | 1159.26 |
| 2/18/20 15:57 | 241.01 | 28.26 | 9.60 | 13.51 | 189.06 | 1159.67 |
| 2/18/20 15:58 | 241.06 | 28.25 | 9.60 | 13.82 | 187.29 | 1159.73 |
| 2/18/20 15:59 | 240.82 | 28.28 | 9.60 | 13.47 | 187.80 | 1159.06 |
| 2/18/20 16:00 | 240.53 | 28.52 | 9.60 | 13.79 | 195.29 | 1159.24 |
| 2/18/20 16:01 | 240.82 | 28.19 | 9.59 | 13.70 | 201.40 | 1158.99 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/18 14:55 - 2/18 19:4) | 240.69 | 28.26 | 9.56 | 13.59 | 192.08 | 1158.39 |
| COUNT = 250 | | | | | | |

| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
|---|---|---|---|---|---|---|
| 2/18/20 16:02 | 240.89 | 28.43 | 9.59 | 13.79 | 205.92 | 1159.15 |
| 2/18/20 16:03 | 240.75 | 28.37 | 9.59 | 13.41 | 203.41 | 1159.21 |
| 2/18/20 16:04 | 240.54 | 28.30 | 9.59 | 13.59 | 195.69 | 1159.27 |
| 2/18/20 16:05 | 240.45 | 28.19 | 9.59 | 13.36 | 187.96 | 1159.17 |
| 2/18/20 16:06 | 240.67 | 28.17 | 9.59 | 13.63 | 189.53 | 1160.16 |
| 2/18/20 16:07 | 240.67 | 28.40 | 9.59 | 13.49 | 191.59 | 1159.46 |
| 2/18/20 16:08 | 240.75 | 28.24 | 9.59 | 13.43 | 193.88 | 1158.80 |
| 2/18/20 16:09 | 240.59 | 28.27 | 9.59 | 13.61 | 196.99 | 1159.83 |
| 2/18/20 16:10 | 241.13 | 28.17 | 9.59 | 13.45 | 200.53 | 1160.19 |
| 2/18/20 16:11 | 241.34 | 28.24 | 9.59 | 13.76 | 198.64 | 1159.73 |
| 2/18/20 16:12 | 241.01 | 28.25 | 9.59 | 13.43 | 197.62 | 1158.45 |
| 2/18/20 16:13 | 240.10 | 28.27 | 9.59 | 13.65 | 189.23 | 1158.42 |
| 2/18/20 16:14 | 240.96 | 28.42 | 9.59 | 13.64 | 184.30 | 1159.44 |
| 2/18/20 16:15 | 240.39 | 28.46 | 9.59 | 13.76 | 184.04 | 1158.71 |
| 2/18/20 16:16 | 240.85 | 28.25 | 9.59 | 13.66 | 187.62 | 1158.76 |
| 2/18/20 16:17 | 240.87 | 28.30 | 9.59 | 13.50 | 190.27 | 1158.35 |
| 2/18/20 16:18 | 240.55 | 28.41 | 9.58 | 13.44 | 192.77 | 1158.35 |
| 2/18/20 16:19 | 240.89 | 28.34 | 9.58 | 13.81 | 193.29 | 1159.31 |
| 2/18/20 16:20 | 240.74 | 28.27 | 9.58 | 13.82 | 191.38 | 1159.52 |
| 2/18/20 16:21 | 240.40 | 28.38 | 9.58 | 13.71 | 190.51 | 1159.39 |
| 2/18/20 16:22 | 240.56 | 28.08 | 9.58 | 13.78 | 196.37 | 1159.51 |
| 2/18/20 16:23 | 240.92 | 28.36 | 9.58 | 13.50 | 198.89 | 1158.44 |
| 2/18/20 16:24 | 240.27 | 28.40 | 9.58 | 13.65 | 199.62 | 1158.25 |
| 2/18/20 16:25 | 241.14 | 28.34 | 9.58 | 13.67 | 193.80 | 1159.04 |
| 2/18/20 16:26 | 240.69 | 28.09 | 9.58 | 13.37 | 195.69 | 1158.07 |
| 2/18/20 16:27 | 240.29 | 28.38 | 9.58 | 13.43 | 191.35 | 1157.92 |
| 2/18/20 16:28 | 240.37 | 28.34 | 9.58 | 13.68 | 192.11 | 1158.57 |
| 2/18/20 16:29 | 240.59 | 28.42 | 9.58 | 13.54 | 189.90 | 1158.18 |
| 2/18/20 16:30 | 240.62 | 28.37 | 9.58 | 13.51 | 186.52 | 1158.57 |
| 2/18/20 16:31 | 240.47 | 28.40 | 9.58 | 13.46 | 189.41 | 1158.69 |
| 2/18/20 16:32 | 240.35 | 28.23 | 9.58 | 13.67 | 190.87 | 1157.90 |
| 2/18/20 16:33 | 241.01 | 28.12 | 9.58 | 13.64 | 196.76 | 1158.27 |
| 2/18/20 16:34 | 240.83 | 28.38 | 9.58 | 13.64 | 191.19 | 1158.82 |
| 2/18/20 16:35 | 240.90 | 28.24 | 9.57 | 13.59 | 192.85 | 1159.05 |
| 2/18/20 16:36 | 240.78 | 28.39 | 9.57 | 13.55 | 191.43 | 1158.51 |
| 2/18/20 16:37 | 240.55 | 28.25 | 9.57 | 13.87 | 195.05 | 1158.60 |
| 2/18/20 16:38 | 240.69 | 28.49 | 9.57 | 13.52 | 199.27 | 1158.41 |
| 2/18/20 16:39 | 240.49 | 28.09 | 9.57 | 13.52 | 202.39 | 1157.51 |
| 2/18/20 16:40 | 240.70 | 28.18 | 9.57 | 13.52 | 195.89 | 1158.07 |
| 2/18/20 16:41 | 240.91 | 28.14 | 9.57 | 13.43 | 188.08 | 1159.46 |
| 2/18/20 16:42 | 240.52 | 28.14 | 9.57 | 13.63 | 185.50 | 1158.18 |
| 2/18/20 16:43 | 241.12 | 28.12 | 9.57 | 13.48 | 182.04 | 1157.94 |
| 2/18/20 16:44 | 240.56 | 28.41 | 9.57 | 13.58 | 188.80 | 1158.16 |
| 2/18/20 16:45 | 240.45 | 28.14 | 9.57 | 13.68 | 195.98 | 1157.87 |
| 2/18/20 16:46 | 240.53 | 28.27 | 9.57 | 13.84 | 197.85 | 1158.32 |
| 2/18/20 16:47 | 240.60 | 28.14 | 9.57 | 13.53 | 194.81 | 1158.48 |
| 2/18/20 16:48 | 240.41 | 28.23 | 9.57 | 13.62 | 184.19 | 1158.36 |
| 2/18/20 16:49 | 240.67 | 28.26 | 9.57 | 13.47 | 183.03 | 1158.16 |
| 2/18/20 16:50 | 240.54 | 28.30 | 9.57 | 13.55 | 185.10 | 1158.20 |
| 2/18/20 16:51 | 240.95 | 28.08 | 9.57 | 13.45 | 203.50 | 1158.27 |
| 2/18/20 16:52 | 240.66 | 28.12 | 9.56 | 13.58 | 208.31 | 1158.43 |
| 2/18/20 16:53 | 240.17 | 28.30 | 9.56 | 13.40 | 193.33 | 1157.78 |
| 2/18/20 16:54 | 240.35 | 28.24 | 9.56 | 13.68 | 187.11 | 1157.23 |
| 2/18/20 16:55 | 240.63 | 28.51 | 9.56 | 13.55 | 179.03 | 1158.49 |
| 2/18/20 16:56 | 240.38 | 28.49 | 9.56 | 13.48 | 178.42 | 1158.13 |
| 2/18/20 16:57 | 240.15 | 28.13 | 9.56 | 13.58 | 193.44 | 1158.27 |
| 2/18/20 16:58 | 240.66 | 28.31 | 9.56 | 13.57 | 209.28 | 1157.82 |
| 2/18/20 16:59 | 240.85 | 28.26 | 9.56 | 13.60 | 209.95 | 1158.04 |
| 2/18/20 17:00 | 240.62 | 28.28 | 9.56 | 13.73 | 199.09 | 1158.02 |
| 2/18/20 17:01 | 240.70 | 28.24 | 9.56 | 13.47 | 192.53 | 1158.14 |
| 2/18/20 17:02 | 240.32 | 28.31 | 9.56 | 13.98 | 186.97 | 1158.16 |
| 2/18/20 17:03 | 241.13 | 28.20 | 9.56 | 13.57 | 187.72 | 1158.40 |
| 2/18/20 17:04 | 240.60 | 28.40 | 9.56 | 13.78 | 197.96 | 1158.58 |
| 2/18/20 17:05 | 240.99 | 28.11 | 9.56 | 13.81 | 206.39 | 1158.68 |
| 2/18/20 17:06 | 240.71 | 28.29 | 9.56 | 13.38 | 206.41 | 1157.69 |
| 2/18/20 17:07 | 240.33 | 28.27 | 9.56 | 13.75 | 201.01 | 1158.32 |
| 2/18/20 17:08 | 240.82 | 28.26 | 9.56 | 13.72 | 196.37 | 1157.86 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/18 14:55 - 2/18 19:4) | 240.69 | 28.26 | 9.56 | 13.59 | 192.08 | 1158.39 |
| COUNT = 250 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/18/20 17:09 | 240.61 | 28.17 | 9.55 | 13.60 | 190.75 | 1158.32 |
| 2/18/20 17:10 | 240.12 | 28.47 | 9.55 | 13.55 | 189.71 | 1157.14 |
| 2/18/20 17:11 | 240.49 | 28.22 | 9.55 | 13.56 | 191.40 | 1157.86 |
| 2/18/20 17:12 | 240.67 | 28.36 | 9.55 | 13.63 | 200.07 | 1158.06 |
| 2/18/20 17:13 | 240.30 | 28.34 | 9.55 | 13.54 | 198.17 | 1156.68 |
| 2/18/20 17:14 | 240.63 | 28.40 | 9.55 | 13.48 | 196.49 | 1158.05 |
| 2/18/20 17:15 | 240.45 | 28.23 | 9.55 | 13.34 | 192.94 | 1157.21 |
| 2/18/20 17:16 | 240.00 | 28.39 | 9.55 | 13.36 | 194.51 | 1156.87 |
| 2/18/20 17:17 | 240.44 | 28.09 | 9.55 | 13.38 | 189.08 | 1157.59 |
| 2/18/20 17:18 | 240.74 | 28.44 | 9.55 | 13.52 | 188.18 | 1157.80 |
| 2/18/20 17:19 | 240.48 | 28.28 | 9.55 | 13.32 | 188.20 | 1157.81 |
| 2/18/20 17:20 | 240.69 | 28.41 | 9.55 | 13.61 | 186.88 | 1158.09 |
| 2/18/20 17:21 | 240.92 | 28.15 | 9.55 | 13.61 | 183.77 | 1158.60 |
| 2/18/20 17:22 | 240.52 | 28.30 | 9.55 | 13.78 | 182.97 | 1158.27 |
| 2/18/20 17:23 | 240.67 | 28.15 | 9.55 | 13.41 | 183.45 | 1157.57 |
| 2/18/20 17:24 | 240.48 | 28.23 | 9.55 | 13.55 | 184.08 | 1157.90 |
| 2/18/20 17:25 | 240.72 | 28.30 | 9.55 | 13.67 | 185.12 | 1158.64 |
| 2/18/20 17:26 | 240.57 | 28.20 | 9.54 | 13.34 | 182.70 | 1157.67 |
| 2/18/20 17:27 | 240.42 | 28.25 | 9.54 | 13.60 | 182.85 | 1157.48 |
| 2/18/20 17:28 | 240.62 | 28.31 | 9.54 | 13.49 | 184.86 | 1157.47 |
| 2/18/20 17:29 | 240.68 | 28.11 | 9.54 | 13.63 | 188.17 | 1158.32 |
| 2/18/20 17:30 | 240.67 | 28.17 | 9.54 | 13.66 | 183.81 | 1158.06 |
| 2/18/20 17:31 | 240.49 | 28.13 | 9.54 | 13.66 | 181.48 | 1156.58 |
| 2/18/20 17:32 | 240.59 | 28.40 | 9.54 | 13.64 | 186.68 | 1157.72 |
| 2/18/20 17:33 | 240.81 | 28.31 | 9.54 | 13.42 | 181.34 | 1157.31 |
| 2/18/20 17:34 | 240.58 | 28.24 | 9.54 | 13.75 | 187.77 | 1158.11 |
| 2/18/20 17:35 | 240.46 | 28.21 | 9.54 | 13.43 | 187.41 | 1157.65 |
| 2/18/20 17:36 | 240.34 | 28.34 | 9.54 | 13.45 | 186.40 | 1156.42 |
| 2/18/20 17:37 | 240.81 | 28.20 | 9.54 | 13.44 | 185.26 | 1157.31 |
| 2/18/20 17:38 | 240.69 | 28.23 | 9.54 | 13.48 | 181.49 | 1157.15 |
| 2/18/20 17:39 | 240.66 | 28.01 | 9.54 | 13.57 | 187.01 | 1157.23 |
| 2/18/20 17:40 | 240.71 | 28.26 | 9.54 | 13.46 | 187.77 | 1157.50 |
| 2/18/20 17:41 | 240.78 | 28.39 | 9.54 | 13.73 | 182.92 | 1158.23 |
| 2/18/20 17:42 | 239.93 | 28.04 | 9.54 | 13.49 | 187.15 | 1156.77 |
| 2/18/20 17:43 | 240.53 | 28.35 | 9.53 | 13.72 | 186.72 | 1158.94 |
| 2/18/20 17:44 | 240.83 | 28.18 | 9.53 | 13.42 | 183.03 | 1158.72 |
| 2/18/20 17:45 | 240.47 | 28.57 | 9.53 | 13.37 | 186.72 | 1157.16 |
| 2/18/20 17:46 | 240.72 | 28.57 | 9.53 | 13.67 | 182.03 | 1158.11 |
| 2/18/20 17:47 | 241.07 | 28.32 | 9.53 | 13.37 | 186.38 | 1157.57 |
| 2/18/20 17:48 | 240.71 | 28.14 | 9.53 | 13.60 | 188.30 | 1157.34 |
| 2/18/20 17:49 | 240.61 | 28.19 | 9.53 | 13.53 | 183.64 | 1157.10 |
| 2/18/20 17:50 | 240.28 | 28.24 | 9.53 | 13.38 | 187.10 | 1157.03 |
| 2/18/20 17:51 | 240.32 | 28.14 | 9.53 | 13.52 | 181.93 | 1156.92 |
| 2/18/20 17:52 | 240.76 | 28.29 | 9.53 | 13.40 | 185.70 | 1157.45 |
| 2/18/20 17:53 | 240.68 | 28.29 | 9.53 | 13.37 | 184.23 | 1157.75 |
| 2/18/20 17:54 | 241.05 | 28.43 | 9.53 | 13.91 | 185.78 | 1158.65 |
| 2/18/20 17:55 | 240.84 | 28.24 | 9.53 | 13.53 | 187.42 | 1158.04 |
| 2/18/20 17:56 | 240.51 | 28.14 | 9.53 | 13.58 | 186.21 | 1157.51 |
| 2/18/20 17:57 | 240.66 | 28.17 | 9.53 | 13.97 | 187.29 | 1158.35 |
| 2/18/20 17:58 | 240.59 | 28.05 | 9.53 | 13.56 | 181.49 | 1157.63 |
| 2/18/20 17:59 | 241.19 | 28.17 | 9.53 | 13.67 | 180.83 | 1158.88 |
| 2/18/20 18:00 | 241.02 | 28.26 | 9.52 | 13.62 | 185.34 | 1157.84 |
| 2/18/20 18:01 | 240.73 | 28.21 | 9.52 | 13.48 | 188.21 | 1158.10 |
| 2/18/20 18:02 | 240.92 | 28.45 | 9.52 | 13.44 | 188.08 | 1158.12 |
| 2/18/20 18:03 | 240.74 | 28.31 | 9.52 | 13.70 | 182.23 | 1157.88 |
| 2/18/20 18:04 | 240.52 | 28.34 | 9.52 | 13.47 | 187.31 | 1157.64 |
| 2/18/20 18:05 | 240.53 | 28.35 | 9.52 | 13.41 | 187.27 | 1157.17 |
| 2/18/20 18:06 | 240.29 | 27.95 | 9.52 | 13.80 | 182.18 | 1157.50 |
| 2/18/20 18:07 | 240.90 | 28.25 | 9.52 | 13.80 | 185.60 | 1158.01 |
| 2/18/20 18:08 | 240.55 | 27.96 | 9.52 | 13.50 | 187.25 | 1157.09 |
| 2/18/20 18:09 | 240.80 | 28.31 | 9.52 | 13.42 | 189.75 | 1156.82 |
| 2/18/20 18:10 | 240.53 | 28.39 | 9.52 | 13.47 | 197.75 | 1156.88 |
| 2/18/20 18:11 | 240.51 | 28.06 | 9.52 | 13.58 | 208.57 | 1157.11 |
| 2/18/20 18:12 | 240.46 | 28.17 | 9.52 | 13.45 | 206.40 | 1157.14 |
| 2/18/20 18:13 | 240.50 | 28.17 | 9.52 | 13.55 | 197.07 | 1156.54 |
| 2/18/20 18:14 | 240.36 | 28.14 | 9.52 | 13.59 | 186.89 | 1156.71 |
| 2/18/20 18:15 | 240.48 | 28.02 | 9.52 | 13.34 | 182.45 | 1156.95 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/18 14:55 - 2/18 19:4) | 240.69 | 28.26 | 9.56 | 13.59 | 192.08 | 1158.39 |
| COUNT = 250 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/18/20 18:16 | 240.30 | 28.01 | 9.51 | 13.95 | 186.79 | 1157.65 |
| 2/18/20 18:17 | 241.02 | 28.17 | 9.51 | 13.65 | 198.85 | 1156.92 |
| 2/18/20 18:18 | 240.41 | 28.22 | 9.51 | 13.80 | 204.26 | 1156.85 |
| 2/18/20 18:19 | 240.51 | 27.99 | 9.51 | 13.79 | 200.77 | 1156.77 |
| 2/18/20 18:20 | 241.00 | 28.07 | 9.51 | 13.69 | 195.52 | 1157.36 |
| 2/18/20 18:21 | 240.85 | 28.25 | 9.51 | 13.40 | 188.79 | 1157.57 |
| 2/18/20 18:22 | 240.31 | 27.97 | 9.51 | 13.44 | 190.47 | 1156.09 |
| 2/18/20 18:23 | 241.01 | 28.05 | 9.51 | 13.95 | 194.42 | 1156.77 |
| 2/18/20 18:24 | 240.40 | 28.01 | 9.51 | 13.60 | 199.91 | 1156.85 |
| 2/18/20 18:25 | 240.34 | 28.12 | 9.51 | 13.65 | 207.05 | 1156.45 |
| 2/18/20 18:26 | 240.60 | 28.33 | 9.51 | 13.78 | 211.06 | 1157.47 |
| 2/18/20 18:27 | 240.30 | 28.27 | 9.51 | 13.56 | 203.10 | 1156.79 |
| 2/18/20 18:28 | 241.05 | 28.12 | 9.51 | 13.49 | 191.98 | 1157.36 |
| 2/18/20 18:29 | 240.64 | 28.30 | 9.51 | 13.54 | 190.46 | 1156.88 |
| 2/18/20 18:30 | 240.37 | 28.34 | 9.51 | 13.59 | 190.56 | 1156.55 |
| 2/18/20 18:31 | 240.38 | 28.25 | 9.51 | 13.46 | 196.86 | 1156.53 |
| 2/18/20 18:32 | 240.77 | 28.17 | 9.51 | 13.64 | 203.94 | 1156.50 |
| 2/18/20 18:33 | 240.41 | 28.21 | 9.51 | 13.77 | 207.41 | 1156.76 |
| 2/18/20 18:34 | 240.92 | 28.07 | 9.51 | 13.57 | 203.77 | 1157.04 |
| 2/18/20 18:35 | 239.91 | 28.31 | 9.51 | 13.45 | 198.33 | 1155.81 |
| 2/18/20 18:36 | 241.01 | 28.22 | 9.51 | 13.40 | 193.78 | 1157.48 |
| 2/18/20 18:37 | 240.55 | 28.27 | 9.51 | 13.62 | 190.28 | 1156.84 |
| 2/18/20 18:38 | 240.07 | 28.09 | 9.51 | 13.51 | 195.73 | 1156.60 |
| 2/18/20 18:39 | 240.29 | 28.29 | 9.51 | 13.68 | 201.96 | 1157.24 |
| 2/18/20 18:40 | 240.98 | 28.20 | 9.51 | 13.45 | 204.54 | 1156.93 |
| 2/18/20 18:41 | 240.69 | 28.33 | 9.51 | 13.70 | 199.17 | 1156.77 |
| 2/18/20 18:42 | 240.52 | 28.35 | 9.51 | 13.91 | 199.12 | 1156.80 |
| 2/18/20 18:43 | 240.18 | 28.00 | 9.51 | 13.63 | 190.08 | 1156.66 |
| 2/18/20 18:44 | 240.50 | 28.09 | 9.51 | 13.65 | 189.12 | 1157.64 |
| 2/18/20 18:45 | 240.86 | 28.13 | 9.51 | 13.77 | 186.73 | 1157.07 |
| 2/18/20 18:46 | 240.48 | 28.36 | 9.51 | 13.74 | 185.94 | 1156.75 |
| 2/18/20 18:47 | 240.46 | 28.36 | 9.51 | 13.74 | 196.18 | 1157.53 |
| 2/18/20 18:48 | 240.57 | 28.28 | 9.51 | 13.62 | 195.83 | 1158.07 |
| 2/18/20 18:49 | 240.23 | 28.05 | 9.51 | 13.63 | 196.07 | 1156.98 |
| 2/18/20 18:50 | 240.41 | 28.20 | 9.51 | 13.52 | 196.63 | 1157.11 |
| 2/18/20 18:51 | 240.55 | 28.24 | 9.51 | 13.53 | 194.81 | 1157.32 |
| 2/18/20 18:52 | 240.68 | 28.25 | 9.51 | 13.48 | 190.79 | 1156.78 |
| 2/18/20 18:53 | 240.72 | 27.98 | 9.51 | 13.64 | 189.89 | 1157.31 |
| 2/18/20 18:54 | 240.82 | 28.17 | 9.51 | 13.60 | 189.98 | 1157.29 |
| 2/18/20 18:55 | 240.27 | 28.08 | 9.51 | 13.79 | 192.54 | 1157.16 |
| 2/18/20 18:56 | 240.72 | 28.23 | 9.51 | 13.55 | 188.68 | 1156.75 |
| 2/18/20 18:57 | 240.66 | 28.10 | 9.51 | 13.78 | 194.43 | 1156.81 |
| 2/18/20 18:58 | 240.39 | 28.22 | 9.51 | 13.50 | 200.87 | 1156.81 |
| 2/18/20 18:59 | 240.12 | 28.17 | 9.51 | 13.40 | 200.02 | 1156.10 |
| 2/18/20 19:00 | 240.04 | 28.08 | 9.51 | 13.44 | 198.49 | 1155.79 |
| 2/18/20 19:01 | 240.95 | 28.24 | 9.51 | 13.63 | 199.88 | 1157.38 |
| 2/18/20 19:02 | 240.35 | 28.17 | 9.51 | 13.54 | 193.28 | 1156.46 |
| 2/18/20 19:03 | 240.24 | 28.30 | 9.51 | 13.71 | 195.39 | 1157.43 |
| 2/18/20 19:04 | 240.98 | 28.07 | 9.51 | 13.63 | 197.15 | 1157.14 |

| Description | | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/19 4:24 - 2/19 8:15) | | 241.27 | 28.26 | 9.50 | 13.56 | 204.38 | 1160.59 |
| COUNT = 232 | | | | | | | |
| Signal Tagname | | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| | 2/19/20 4:24 | 240.84 | 28.23 | 9.49 | 13.38 | 202.74 | 1158.93 |
| | 2/19/20 4:25 | 240.66 | 28.40 | 9.49 | 13.54 | 197.10 | 1158.57 |
| | 2/19/20 4:26 | 240.50 | 28.16 | 9.49 | 13.27 | 200.55 | 1159.07 |
| | 2/19/20 4:27 | 241.11 | 28.36 | 9.49 | 13.53 | 201.59 | 1158.82 |
| | 2/19/20 4:28 | 240.29 | 28.53 | 9.49 | 13.55 | 203.16 | 1157.94 |
| | 2/19/20 4:29 | 241.28 | 28.03 | 9.49 | 13.33 | 198.93 | 1158.74 |
| | 2/19/20 4:30 | 240.36 | 28.14 | 9.49 | 13.38 | 201.38 | 1157.96 |
| | 2/19/20 4:31 | 240.64 | 28.26 | 9.49 | 13.94 | 201.35 | 1158.66 |
| | 2/19/20 4:32 | 240.87 | 28.22 | 9.49 | 13.29 | 202.89 | 1158.19 |
| | 2/19/20 4:33 | 241.02 | 27.90 | 9.49 | 13.35 | 198.59 | 1158.77 |
| | 2/19/20 4:34 | 240.31 | 28.09 | 9.49 | 13.38 | 202.83 | 1158.64 |
| | 2/19/20 4:35 | 240.89 | 28.17 | 9.49 | 13.99 | 198.78 | 1159.56 |
| | 2/19/20 4:36 | 241.17 | 28.13 | 9.49 | 13.89 | 198.70 | 1158.90 |
| | 2/19/20 4:37 | 240.74 | 28.21 | 9.49 | 13.68 | 198.66 | 1158.79 |
| | 2/19/20 4:38 | 240.78 | 28.04 | 9.49 | 13.61 | 197.53 | 1158.82 |
| | 2/19/20 4:39 | 240.60 | 28.26 | 9.49 | 13.64 | 200.11 | 1158.90 |
| | 2/19/20 4:40 | 240.82 | 28.15 | 9.49 | 13.67 | 202.61 | 1159.26 |
| | 2/19/20 4:41 | 240.82 | 28.29 | 9.49 | 13.38 | 200.17 | 1158.67 |
| | 2/19/20 4:42 | 241.41 | 28.27 | 9.49 | 13.49 | 200.40 | 1159.02 |
| | 2/19/20 4:43 | 240.93 | 28.28 | 9.49 | 13.45 | 201.18 | 1158.67 |
| | 2/19/20 4:44 | 240.50 | 28.24 | 9.49 | 13.37 | 203.20 | 1158.37 |
| | 2/19/20 4:45 | 241.27 | 28.31 | 9.49 | 13.42 | 202.06 | 1159.12 |
| | 2/19/20 4:46 | 240.88 | 28.07 | 9.49 | 13.69 | 202.51 | 1159.86 |
| | 2/19/20 4:47 | 240.51 | 28.38 | 9.49 | 13.52 | 204.26 | 1159.02 |
| | 2/19/20 4:48 | 240.87 | 28.05 | 9.49 | 13.82 | 201.89 | 1159.21 |
| | 2/19/20 4:49 | 240.90 | 28.24 | 9.49 | 13.73 | 192.21 | 1159.20 |
| | 2/19/20 4:50 | 240.88 | 28.20 | 9.49 | 13.64 | 195.61 | 1158.71 |
| | 2/19/20 4:51 | 240.92 | 28.48 | 9.49 | 13.52 | 195.93 | 1159.36 |
| | 2/19/20 4:52 | 240.43 | 28.15 | 9.49 | 13.70 | 191.80 | 1158.96 |
| | 2/19/20 4:53 | 241.13 | 28.11 | 9.49 | 13.50 | 196.95 | 1159.26 |
| | 2/19/20 4:54 | 241.02 | 28.24 | 9.49 | 13.77 | 196.12 | 1160.02 |
| | 2/19/20 4:55 | 240.73 | 28.19 | 9.49 | 13.52 | 194.10 | 1159.37 |
| | 2/19/20 4:56 | 240.73 | 28.23 | 9.49 | 13.33 | 193.63 | 1158.85 |
| | 2/19/20 4:57 | 241.02 | 28.28 | 9.49 | 13.46 | 194.81 | 1160.21 |
| | 2/19/20 4:58 | 240.84 | 28.30 | 9.49 | 13.97 | 195.51 | 1159.54 |
| | 2/19/20 4:59 | 241.17 | 28.19 | 9.49 | 13.52 | 197.80 | 1160.06 |
| | 2/19/20 5:00 | 240.84 | 28.28 | 9.49 | 13.27 | 200.95 | 1160.45 |
| | 2/19/20 5:01 | 240.81 | 28.23 | 9.49 | 13.27 | 203.35 | 1159.38 |
| | 2/19/20 5:02 | 241.00 | 28.40 | 9.49 | 13.60 | 198.75 | 1159.36 |
| | 2/19/20 5:03 | 240.59 | 28.31 | 9.49 | 13.65 | 201.61 | 1159.00 |
| | 2/19/20 5:04 | 241.06 | 28.51 | 9.49 | 13.49 | 201.74 | 1159.78 |
| | 2/19/20 5:05 | 241.37 | 28.33 | 9.49 | 13.64 | 197.50 | 1160.22 |
| | 2/19/20 5:06 | 240.80 | 28.07 | 9.49 | 13.51 | 192.35 | 1159.07 |
| | 2/19/20 5:07 | 241.24 | 28.08 | 9.49 | 13.64 | 189.82 | 1160.38 |
| | 2/19/20 5:08 | 240.68 | 28.13 | 9.49 | 13.40 | 191.88 | 1159.25 |
| | 2/19/20 5:09 | 240.71 | 28.15 | 9.49 | 13.52 | 196.47 | 1159.17 |
| | 2/19/20 5:10 | 240.88 | 28.15 | 9.49 | 13.86 | 197.81 | 1159.87 |
| | 2/19/20 5:11 | 240.84 | 28.43 | 9.49 | 13.53 | 209.86 | 1159.51 |
| | 2/19/20 5:12 | 241.07 | 28.34 | 9.49 | 13.43 | 202.33 | 1159.52 |
| | 2/19/20 5:13 | 240.98 | 28.43 | 9.49 | 13.62 | 192.02 | 1159.80 |
| | 2/19/20 5:14 | 240.46 | 27.97 | 9.49 | 13.21 | 192.02 | 1158.73 |
| | 2/19/20 5:15 | 241.30 | 28.15 | 9.49 | 13.67 | 190.38 | 1160.14 |
| | 2/19/20 5:16 | 240.96 | 28.24 | 9.49 | 13.63 | 197.56 | 1159.50 |
| | 2/19/20 5:17 | 240.68 | 28.28 | 9.49 | 13.65 | 208.36 | 1160.09 |
| | 2/19/20 5:18 | 240.83 | 28.15 | 9.49 | 13.61 | 217.47 | 1158.97 |
| | 2/19/20 5:19 | 241.07 | 28.35 | 9.49 | 13.50 | 220.17 | 1160.26 |
| | 2/19/20 5:20 | 240.83 | 28.10 | 9.49 | 13.76 | 215.82 | 1159.82 |
| | 2/19/20 5:21 | 240.89 | 28.24 | 9.49 | 13.70 | 203.41 | 1159.98 |
| | 2/19/20 5:22 | 241.22 | 28.48 | 9.49 | 13.65 | 198.61 | 1159.86 |
| | 2/19/20 5:23 | 240.95 | 28.21 | 9.49 | 13.42 | 200.32 | 1160.44 |
| | 2/19/20 5:24 | 241.09 | 28.33 | 9.49 | 13.74 | 200.00 | 1160.38 |
| | 2/19/20 5:25 | 240.53 | 28.25 | 9.49 | 13.34 | 208.98 | 1159.48 |
| | 2/19/20 5:26 | 241.34 | 28.20 | 9.49 | 13.50 | 210.52 | 1159.92 |
| | 2/19/20 5:27 | 241.07 | 28.23 | 9.49 | 13.61 | 213.65 | 1160.04 |
| | 2/19/20 5:28 | 240.79 | 28.10 | 9.49 | 13.47 | 211.06 | 1159.03 |
| | 2/19/20 5:29 | 241.45 | 28.15 | 9.49 | 13.64 | 201.91 | 1160.17 |
| | 2/19/20 5:30 | 241.21 | 28.30 | 9.49 | 13.71 | 197.97 | 1159.92 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/19 4:24 - 2/19 8:15) | 241.27 | 28.26 | 9.50 | 13.56 | 204.38 | 1160.59 |
| COUNT = 232 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/19/20 5:31 | 241.18 | 28.15 | 9.49 | 13.63 | 190.09 | 1159.43 |
| 2/19/20 5:32 | 241.22 | 28.36 | 9.49 | 13.58 | 196.91 | 1159.98 |
| 2/19/20 5:33 | 241.01 | 28.34 | 9.50 | 13.57 | 198.16 | 1160.15 |
| 2/19/20 5:34 | 240.89 | 28.07 | 9.50 | 13.49 | 200.44 | 1159.56 |
| 2/19/20 5:35 | 241.51 | 28.32 | 9.50 | 13.57 | 206.34 | 1159.91 |
| 2/19/20 5:36 | 241.43 | 28.09 | 9.50 | 13.77 | 200.84 | 1161.24 |
| 2/19/20 5:37 | 240.83 | 28.38 | 9.50 | 13.70 | 198.29 | 1159.42 |
| 2/19/20 5:38 | 241.14 | 28.11 | 9.50 | 13.67 | 200.03 | 1160.54 |
| 2/19/20 5:39 | 240.91 | 28.24 | 9.50 | 13.49 | 191.49 | 1159.43 |
| 2/19/20 5:40 | 240.79 | 28.39 | 9.50 | 13.51 | 194.51 | 1160.25 |
| 2/19/20 5:41 | 241.58 | 28.31 | 9.50 | 13.89 | 197.51 | 1160.55 |
| 2/19/20 5:42 | 241.22 | 28.24 | 9.50 | 13.60 | 202.12 | 1159.80 |
| 2/19/20 5:43 | 241.09 | 28.25 | 9.50 | 13.41 | 209.53 | 1160.48 |
| 2/19/20 5:44 | 240.88 | 28.19 | 9.50 | 13.41 | 208.57 | 1159.21 |
| 2/19/20 5:45 | 241.40 | 28.16 | 9.50 | 13.35 | 203.93 | 1160.34 |
| 2/19/20 5:46 | 240.61 | 28.05 | 9.50 | 13.81 | 200.65 | 1159.77 |
| 2/19/20 5:47 | 241.22 | 28.26 | 9.50 | 13.18 | 196.89 | 1159.87 |
| 2/19/20 5:48 | 241.12 | 28.22 | 9.50 | 13.58 | 208.99 | 1159.48 |
| 2/19/20 5:49 | 240.97 | 28.30 | 9.50 | 13.58 | 218.56 | 1160.26 |
| 2/19/20 5:50 | 240.82 | 28.21 | 9.50 | 13.43 | 220.27 | 1159.45 |
| 2/19/20 5:51 | 240.86 | 28.30 | 9.50 | 13.86 | 210.82 | 1160.81 |
| 2/19/20 5:52 | 240.66 | 28.12 | 9.50 | 13.59 | 204.55 | 1159.76 |
| 2/19/20 5:53 | 241.02 | 28.17 | 9.50 | 13.68 | 184.02 | 1159.85 |
| 2/19/20 5:54 | 241.03 | 28.53 | 9.50 | 13.47 | 181.84 | 1159.99 |
| 2/19/20 5:55 | 241.16 | 28.21 | 9.50 | 13.68 | 190.34 | 1160.69 |
| 2/19/20 5:56 | 241.04 | 28.25 | 9.50 | 13.59 | 205.19 | 1160.60 |
| 2/19/20 5:57 | 241.15 | 28.09 | 9.50 | 13.74 | 214.41 | 1161.02 |
| 2/19/20 5:58 | 241.12 | 28.38 | 9.50 | 13.49 | 214.54 | 1160.40 |
| 2/19/20 5:59 | 241.39 | 28.09 | 9.50 | 13.68 | 204.76 | 1161.73 |
| 2/19/20 6:00 | 241.50 | 28.21 | 9.50 | 13.88 | 201.13 | 1161.04 |
| 2/19/20 6:01 | 241.31 | 28.30 | 9.50 | 13.61 | 200.43 | 1159.86 |
| 2/19/20 6:02 | 241.22 | 28.11 | 9.50 | 13.52 | 193.57 | 1160.72 |
| 2/19/20 6:03 | 241.13 | 28.26 | 9.50 | 13.50 | 204.80 | 1159.54 |
| 2/19/20 6:04 | 241.13 | 28.22 | 9.50 | 13.65 | 213.40 | 1160.83 |
| 2/19/20 6:05 | 241.11 | 28.10 | 9.50 | 13.54 | 213.82 | 1159.61 |
| 2/19/20 6:06 | 241.15 | 28.26 | 9.50 | 13.54 | 208.16 | 1159.77 |
| 2/19/20 6:07 | 241.15 | 28.42 | 9.50 | 13.58 | 203.94 | 1160.04 |
| 2/19/20 6:08 | 240.93 | 28.03 | 9.50 | 13.76 | 195.81 | 1160.13 |
| 2/19/20 6:09 | 240.84 | 28.18 | 9.50 | 13.57 | 191.64 | 1160.08 |
| 2/19/20 6:10 | 241.36 | 28.34 | 9.50 | 13.34 | 202.31 | 1160.22 |
| 2/19/20 6:11 | 241.37 | 28.06 | 9.50 | 13.66 | 207.29 | 1160.57 |
| 2/19/20 6:12 | 241.24 | 27.98 | 9.50 | 13.67 | 216.89 | 1160.90 |
| 2/19/20 6:13 | 241.05 | 28.11 | 9.50 | 13.44 | 216.57 | 1159.64 |
| 2/19/20 6:14 | 241.04 | 28.15 | 9.50 | 13.61 | 205.89 | 1160.43 |
| 2/19/20 6:15 | 241.50 | 28.17 | 9.50 | 13.82 | 192.92 | 1160.40 |
| 2/19/20 6:16 | 241.10 | 28.56 | 9.50 | 13.44 | 192.11 | 1159.62 |
| 2/19/20 6:17 | 241.06 | 28.13 | 9.50 | 13.63 | 199.93 | 1160.38 |
| 2/19/20 6:18 | 241.54 | 28.42 | 9.50 | 13.50 | 211.23 | 1160.50 |
| 2/19/20 6:19 | 241.35 | 28.34 | 9.50 | 13.72 | 222.51 | 1160.37 |
| 2/19/20 6:20 | 241.53 | 28.30 | 9.50 | 13.76 | 225.21 | 1160.86 |
| 2/19/20 6:21 | 241.45 | 28.20 | 9.50 | 13.82 | 218.83 | 1160.96 |
| 2/19/20 6:22 | 241.62 | 28.17 | 9.50 | 13.53 | 211.04 | 1160.63 |
| 2/19/20 6:23 | 241.49 | 28.35 | 9.50 | 13.61 | 199.73 | 1160.35 |
| 2/19/20 6:24 | 241.50 | 28.34 | 9.50 | 13.52 | 193.62 | 1160.75 |
| 2/19/20 6:25 | 241.57 | 28.29 | 9.50 | 13.65 | 203.08 | 1160.16 |
| 2/19/20 6:26 | 241.49 | 28.43 | 9.50 | 13.48 | 214.62 | 1160.69 |
| 2/19/20 6:27 | 241.39 | 28.31 | 9.50 | 13.65 | 224.92 | 1160.25 |
| 2/19/20 6:28 | 241.16 | 28.14 | 9.50 | 13.76 | 227.57 | 1159.41 |
| 2/19/20 6:29 | 241.28 | 28.42 | 9.50 | 13.33 | 223.33 | 1160.61 |
| 2/19/20 6:30 | 241.66 | 28.42 | 9.50 | 13.67 | 208.20 | 1161.29 |
| 2/19/20 6:31 | 241.21 | 28.03 | 9.50 | 13.45 | 194.63 | 1160.66 |
| 2/19/20 6:32 | 241.63 | 28.32 | 9.50 | 13.40 | 187.39 | 1160.47 |
| 2/19/20 6:33 | 241.64 | 28.27 | 9.50 | 13.72 | 191.69 | 1160.65 |
| 2/19/20 6:34 | 241.18 | 28.30 | 9.50 | 13.58 | 204.22 | 1159.61 |
| 2/19/20 6:35 | 242.05 | 28.12 | 9.50 | 13.63 | 215.74 | 1161.01 |
| 2/19/20 6:36 | 242.13 | 28.36 | 9.50 | 13.61 | 225.14 | 1160.66 |
| 2/19/20 6:37 | 241.84 | 28.07 | 9.50 | 13.31 | 220.27 | 1160.25 |

| Description | | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/19 4:24 - 2/19 8:15) | | 241.27 | 28.26 | 9.50 | 13.56 | 204.38 | 1160.59 |
| COUNT = 232 | | | | | | | |
| Signal Tagname | | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| | 2/19/20 6:38 | 241.86 | 28.22 | 9.50 | 13.75 | 211.06 | 1161.38 |
| | 2/19/20 6:39 | 241.75 | 28.24 | 9.50 | 13.57 | 205.59 | 1161.01 |
| | 2/19/20 6:40 | 241.10 | 28.31 | 9.50 | 13.53 | 203.72 | 1160.43 |
| | 2/19/20 6:41 | 241.84 | 28.15 | 9.50 | 13.64 | 203.36 | 1161.32 |
| | 2/19/20 6:42 | 241.55 | 28.36 | 9.50 | 13.38 | 205.17 | 1160.73 |
| | 2/19/20 6:43 | 241.74 | 28.03 | 9.50 | 13.64 | 204.46 | 1160.98 |
| | 2/19/20 6:44 | 241.54 | 28.35 | 9.50 | 13.43 | 205.80 | 1160.97 |
| | 2/19/20 6:45 | 241.66 | 28.21 | 9.50 | 13.43 | 208.05 | 1160.40 |
| | 2/19/20 6:46 | 241.38 | 28.29 | 9.50 | 13.62 | 211.45 | 1160.36 |
| | 2/19/20 6:47 | 241.49 | 28.30 | 9.50 | 13.41 | 213.17 | 1160.97 |
| | 2/19/20 6:48 | 241.38 | 28.42 | 9.50 | 13.32 | 211.50 | 1159.96 |
| | 2/19/20 6:49 | 241.62 | 28.37 | 9.50 | 13.35 | 202.97 | 1160.61 |
| | 2/19/20 6:50 | 241.65 | 28.22 | 9.50 | 13.36 | 204.12 | 1160.53 |
| | 2/19/20 6:51 | 241.40 | 28.27 | 9.50 | 13.31 | 200.14 | 1160.01 |
| | 2/19/20 6:52 | 241.23 | 28.38 | 9.50 | 13.38 | 206.52 | 1160.22 |
| | 2/19/20 6:53 | 241.41 | 28.33 | 9.50 | 13.29 | 206.63 | 1160.07 |
| | 2/19/20 6:54 | 241.54 | 28.43 | 9.50 | 13.85 | 208.23 | 1160.88 |
| | 2/19/20 6:55 | 241.67 | 28.41 | 9.50 | 13.60 | 204.84 | 1160.46 |
| | 2/19/20 6:56 | 241.83 | 28.35 | 9.50 | 13.50 | 201.92 | 1160.18 |
| | 2/19/20 6:57 | 241.52 | 28.42 | 9.50 | 13.46 | 206.85 | 1161.04 |
| | 2/19/20 6:58 | 241.84 | 28.34 | 9.50 | 13.45 | 206.81 | 1160.83 |
| | 2/19/20 6:59 | 241.86 | 28.38 | 9.50 | 13.61 | 209.40 | 1160.88 |
| | 2/19/20 7:00 | 241.65 | 28.27 | 9.50 | 13.38 | 210.79 | 1161.11 |
| | 2/19/20 7:01 | 241.34 | 28.19 | 9.50 | 13.40 | 204.88 | 1160.35 |
| | 2/19/20 7:02 | 241.11 | 28.18 | 9.50 | 13.73 | 208.34 | 1160.72 |
| | 2/19/20 7:03 | 241.34 | 28.21 | 9.50 | 13.50 | 203.70 | 1160.74 |
| | 2/19/20 7:04 | 241.45 | 28.36 | 9.50 | 13.33 | 201.99 | 1160.67 |
| | 2/19/20 7:05 | 241.38 | 28.13 | 9.50 | 13.51 | 201.02 | 1161.18 |
| | 2/19/20 7:06 | 241.34 | 28.31 | 9.50 | 13.53 | 207.34 | 1161.50 |
| | 2/19/20 7:07 | 241.85 | 28.20 | 9.50 | 13.69 | 200.97 | 1161.73 |
| | 2/19/20 7:08 | 241.33 | 28.32 | 9.50 | 13.46 | 201.11 | 1161.52 |
| | 2/19/20 7:09 | 241.63 | 28.27 | 9.50 | 13.37 | 199.37 | 1161.15 |
| | 2/19/20 7:10 | 241.48 | 28.56 | 9.50 | 13.52 | 198.75 | 1160.59 |
| | 2/19/20 7:11 | 241.67 | 28.29 | 9.50 | 13.50 | 203.77 | 1161.72 |
| | 2/19/20 7:12 | 241.51 | 28.06 | 9.50 | 13.81 | 212.79 | 1161.69 |
| | 2/19/20 7:13 | 241.66 | 28.35 | 9.50 | 13.88 | 216.89 | 1162.33 |
| | 2/19/20 7:14 | 241.74 | 28.44 | 9.50 | 13.79 | 220.52 | 1161.69 |
| | 2/19/20 7:15 | 241.64 | 28.23 | 9.50 | 13.39 | 214.70 | 1161.88 |
| | 2/19/20 7:16 | 241.17 | 28.24 | 9.50 | 13.55 | 208.01 | 1161.04 |
| | 2/19/20 7:17 | 241.87 | 28.42 | 9.50 | 13.50 | 202.55 | 1161.88 |
| | 2/19/20 7:18 | 241.23 | 28.30 | 9.50 | 13.47 | 208.45 | 1161.16 |
| | 2/19/20 7:19 | 241.85 | 28.33 | 9.50 | 13.50 | 209.38 | 1161.83 |
| | 2/19/20 7:20 | 241.32 | 28.34 | 9.50 | 13.76 | 208.90 | 1161.29 |
| | 2/19/20 7:21 | 241.56 | 28.28 | 9.50 | 13.58 | 206.68 | 1161.79 |
| | 2/19/20 7:22 | 241.53 | 28.20 | 9.50 | 13.71 | 207.12 | 1161.43 |
| | 2/19/20 7:23 | 241.27 | 28.21 | 9.50 | 13.68 | 209.84 | 1161.96 |
| | 2/19/20 7:24 | 241.63 | 28.35 | 9.50 | 13.53 | 208.62 | 1160.95 |
| | 2/19/20 7:25 | 241.91 | 28.37 | 9.50 | 13.57 | 209.80 | 1162.23 |
| | 2/19/20 7:26 | 241.28 | 28.34 | 9.50 | 13.43 | 207.84 | 1161.46 |
| | 2/19/20 7:27 | 241.50 | 28.31 | 9.50 | 13.66 | 208.29 | 1161.60 |
| | 2/19/20 7:28 | 241.44 | 28.43 | 9.50 | 13.44 | 212.68 | 1161.82 |
| | 2/19/20 7:29 | 241.36 | 28.34 | 9.50 | 13.60 | 213.08 | 1162.36 |
| | 2/19/20 7:30 | 241.59 | 28.34 | 9.50 | 13.46 | 212.17 | 1161.79 |
| | 2/19/20 7:31 | 241.30 | 28.45 | 9.50 | 13.58 | 208.52 | 1161.93 |
| | 2/19/20 7:32 | 241.66 | 28.06 | 9.50 | 13.56 | 205.66 | 1162.62 |
| | 2/19/20 7:33 | 241.87 | 28.37 | 9.50 | 13.56 | 195.90 | 1161.87 |
| | 2/19/20 7:34 | 241.44 | 28.14 | 9.50 | 13.57 | 196.03 | 1161.81 |
| | 2/19/20 7:35 | 241.77 | 28.20 | 9.50 | 13.32 | 204.28 | 1161.73 |
| | 2/19/20 7:36 | 241.77 | 28.34 | 9.50 | 13.54 | 209.93 | 1162.19 |
| | 2/19/20 7:37 | 241.66 | 28.28 | 9.50 | 13.57 | 212.14 | 1161.85 |
| | 2/19/20 7:38 | 241.31 | 28.29 | 9.50 | 13.40 | 212.54 | 1161.77 |
| | 2/19/20 7:39 | 241.66 | 28.37 | 9.50 | 13.43 | 208.61 | 1161.87 |
| | 2/19/20 7:40 | 241.13 | 28.46 | 9.50 | 13.53 | 197.81 | 1161.19 |
| | 2/19/20 7:41 | 241.46 | 27.99 | 9.50 | 13.50 | 199.36 | 1161.93 |
| | 2/19/20 7:42 | 241.59 | 28.15 | 9.50 | 13.46 | 204.99 | 1162.02 |
| | 2/19/20 7:43 | 241.75 | 28.33 | 9.50 | 13.68 | 212.34 | 1162.46 |
| | 2/19/20 7:44 | 241.31 | 28.40 | 9.50 | 13.40 | 214.35 | 1161.90 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/19 4:24 - 2/19 8:15) | 241.27 | 28.26 | 9.50 | 13.56 | 204.38 | 1160.59 |
| COUNT = 232 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/19/20 7:45 | 241.50 | 28.13 | 9.50 | 13.58 | 206.01 | 1161.74 |
| 2/19/20 7:46 | 241.75 | 27.94 | 9.50 | 13.47 | 201.96 | 1162.65 |
| 2/19/20 7:47 | 241.70 | 28.22 | 9.50 | 13.72 | 200.54 | 1161.82 |
| 2/19/20 7:48 | 241.39 | 28.51 | 9.50 | 13.54 | 200.18 | 1161.61 |
| 2/19/20 7:49 | 241.95 | 28.22 | 9.50 | 13.79 | 210.77 | 1163.14 |
| 2/19/20 7:50 | 241.61 | 28.36 | 9.50 | 13.42 | 214.10 | 1162.09 |
| 2/19/20 7:51 | 241.73 | 28.39 | 9.50 | 13.49 | 209.45 | 1162.48 |
| 2/19/20 7:52 | 241.31 | 28.42 | 9.50 | 13.49 | 199.49 | 1162.03 |
| 2/19/20 7:53 | 241.24 | 28.34 | 9.50 | 13.52 | 200.16 | 1161.91 |
| 2/19/20 7:54 | 241.75 | 28.46 | 9.50 | 13.22 | 200.34 | 1161.97 |
| 2/19/20 7:55 | 241.71 | 28.22 | 9.50 | 13.44 | 210.48 | 1162.99 |
| 2/19/20 7:56 | 241.72 | 28.38 | 9.50 | 13.78 | 213.15 | 1162.65 |
| 2/19/20 7:57 | 241.16 | 28.44 | 9.50 | 13.88 | 200.81 | 1162.55 |
| 2/19/20 7:58 | 241.48 | 28.09 | 9.50 | 13.57 | 201.69 | 1162.10 |
| 2/19/20 7:59 | 241.66 | 28.33 | 9.50 | 13.77 | 199.64 | 1162.75 |
| 2/19/20 8:00 | 241.71 | 28.01 | 9.50 | 13.69 | 207.44 | 1162.54 |
| 2/19/20 8:01 | 241.62 | 28.09 | 9.50 | 13.54 | 211.56 | 1162.59 |
| 2/19/20 8:02 | 241.61 | 28.08 | 9.50 | 13.41 | 210.17 | 1162.18 |
| 2/19/20 8:03 | 241.46 | 28.26 | 9.50 | 13.64 | 202.12 | 1162.31 |
| 2/19/20 8:04 | 241.39 | 28.40 | 9.50 | 13.47 | 198.49 | 1162.67 |
| 2/19/20 8:05 | 241.65 | 28.56 | 9.50 | 13.40 | 196.92 | 1162.82 |
| 2/19/20 8:06 | 241.70 | 28.47 | 9.50 | 13.50 | 209.17 | 1162.45 |
| 2/19/20 8:07 | 241.37 | 28.14 | 9.50 | 13.73 | 216.29 | 1162.22 |
| 2/19/20 8:08 | 241.65 | 28.26 | 9.50 | 13.53 | 220.10 | 1162.21 |
| 2/19/20 8:09 | 241.65 | 28.17 | 9.51 | 14.00 | 214.66 | 1163.00 |
| 2/19/20 8:10 | 241.56 | 28.49 | 9.51 | 13.47 | 207.77 | 1162.81 |
| 2/19/20 8:11 | 241.48 | 28.30 | 9.51 | 13.82 | 206.92 | 1162.79 |
| 2/19/20 8:12 | 241.34 | 28.44 | 9.51 | 13.52 | 205.37 | 1162.38 |
| 2/19/20 8:13 | 241.66 | 28.25 | 9.51 | 13.78 | 202.19 | 1164.02 |
| 2/19/20 8:14 | 241.51 | 28.31 | 9.51 | 13.50 | 198.51 | 1162.91 |
| 2/19/20 8:15 | 241.45 | 28.08 | 9.51 | 13.43 | 204.02 | 1162.06 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/19 9:14 - 2/19 13:51) | 241.24 | 28.24 | 7.73 | 13.52 | 188.50 | 1165.39 |
| COUNT = 278 | | | | | | |

| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
|---|---|---|---|---|---|---|
| 2/19/20 9:14 | 240.89 | 28.32 | 9.51 | 13.64 | 198.23 | 1163.69 |
| 2/19/20 9:15 | 240.98 | 28.39 | 9.51 | 13.40 | 196.64 | 1164.31 |
| 2/19/20 9:16 | 241.21 | 28.34 | 9.51 | 13.45 | 196.90 | 1164.08 |
| 2/19/20 9:17 | 240.87 | 28.33 | 9.51 | 13.64 | 196.12 | 1162.73 |
| 2/19/20 9:18 | 240.98 | 28.47 | 9.51 | 13.26 | 195.77 | 1162.73 |
| 2/19/20 9:19 | 240.71 | 28.22 | 9.51 | 13.68 | 204.38 | 1163.32 |
| 2/19/20 9:20 | 240.89 | 28.28 | 9.51 | 13.66 | 202.19 | 1163.63 |
| 2/19/20 9:21 | 240.83 | 28.38 | 9.51 | 13.30 | 196.47 | 1162.89 |
| 2/19/20 9:22 | 240.98 | 28.27 | 9.51 | 13.51 | 193.56 | 1163.72 |
| 2/19/20 9:23 | 240.88 | 28.21 | 9.51 | 13.77 | 187.97 | 1163.28 |
| 2/19/20 9:24 | 241.11 | 28.06 | 9.51 | 13.56 | 189.72 | 1163.43 |
| 2/19/20 9:25 | 241.14 | 28.23 | 9.51 | 13.56 | 197.37 | 1163.94 |
| 2/19/20 9:26 | 241.34 | 28.45 | 9.51 | 13.47 | 206.19 | 1163.73 |
| 2/19/20 9:27 | 241.24 | 28.44 | 9.51 | 13.43 | 206.69 | 1164.86 |
| 2/19/20 9:28 | 241.25 | 28.19 | 9.51 | 13.68 | 205.76 | 1164.45 |
| 2/19/20 9:29 | 240.93 | 28.49 | 9.51 | 14.03 | 203.01 | 1164.19 |
| 2/19/20 9:30 | 240.90 | 28.24 | 9.51 | 13.45 | 197.64 | 1164.19 |
| 2/19/20 9:31 | 241.19 | 28.17 | 9.51 | 13.70 | 194.33 | 1164.29 |
| 2/19/20 9:32 | 241.02 | 28.18 | 9.51 | 13.41 | 184.74 | 1163.62 |
| 2/19/20 9:33 | 240.89 | 28.47 | 9.51 | 13.50 | 185.91 | 1163.39 |
| 2/19/20 9:34 | 241.15 | 28.34 | 9.51 | 13.74 | 196.98 | 1164.72 |
| 2/19/20 9:35 | 241.10 | 28.16 | 9.51 | 13.60 | 203.33 | 1164.80 |
| 2/19/20 9:36 | 241.01 | 28.42 | 9.51 | 13.39 | 204.80 | 1164.10 |
| 2/19/20 9:37 | 240.93 | 28.43 | 9.51 | 13.67 | 205.62 | 1163.61 |
| 2/19/20 9:38 | 241.08 | 28.26 | 9.51 | 13.61 | 201.32 | 1164.29 |
| 2/19/20 9:39 | 240.76 | 28.12 | 9.51 | 13.35 | 197.91 | 1163.51 |
| 2/19/20 9:40 | 240.96 | 28.21 | 9.51 | 13.60 | 193.97 | 1164.07 |
| 2/19/20 9:41 | 241.16 | 28.37 | 9.51 | 13.59 | 196.25 | 1164.58 |
| 2/19/20 9:42 | 241.09 | 28.23 | 9.51 | 13.62 | 193.77 | 1164.42 |
| 2/19/20 9:43 | 241.05 | 28.26 | 9.51 | 13.49 | 196.98 | 1164.09 |
| 2/19/20 9:44 | 241.08 | 28.44 | 9.51 | 13.77 | 197.76 | 1164.56 |
| 2/19/20 9:45 | 240.98 | 28.17 | 9.51 | 13.50 | 206.41 | 1164.79 |
| 2/19/20 9:46 | 240.61 | 28.26 | 9.51 | 13.53 | 200.44 | 1163.99 |
| 2/19/20 9:47 | 240.98 | 28.31 | 9.51 | 13.55 | 194.01 | 1164.26 |
| 2/19/20 9:48 | 240.87 | 28.22 | 9.51 | 13.56 | 186.43 | 1163.83 |
| 2/19/20 9:49 | 241.02 | 28.19 | 9.51 | 13.49 | 183.10 | 1163.80 |
| 2/19/20 9:50 | 241.41 | 28.36 | 9.51 | 13.81 | 189.59 | 1164.92 |
| 2/19/20 9:51 | 241.29 | 28.28 | 9.51 | 13.72 | 198.75 | 1164.63 |
| 2/19/20 9:52 | 240.75 | 28.13 | 9.51 | 13.75 | 205.79 | 1163.96 |
| 2/19/20 9:53 | 240.19 | 27.87 | 9.51 | 13.66 | 206.80 | 1163.88 |
| 2/19/20 9:54 | 241.08 | 28.10 | 9.51 | 13.52 | 192.24 | 1165.00 |
| 2/19/20 9:55 | 240.86 | 28.34 | 9.51 | 13.61 | 180.81 | 1164.53 |
| 2/19/20 9:56 | 240.92 | 28.45 | 9.51 | 13.44 | 171.14 | 1163.91 |
| 2/19/20 9:57 | 240.82 | 28.03 | 9.51 | 13.64 | 190.27 | 1164.00 |
| 2/19/20 9:58 | 240.96 | 28.23 | 9.51 | 13.47 | 208.23 | 1164.46 |
| 2/19/20 9:59 | 240.68 | 28.32 | 9.51 | 13.72 | 220.82 | 1163.77 |
| 2/19/20 10:00 | 241.05 | 28.09 | 9.51 | 13.25 | 214.14 | 1164.43 |
| 2/19/20 10:01 | 240.79 | 28.23 | 9.51 | 13.68 | 193.76 | 1164.27 |
| 2/19/20 10:02 | 241.03 | 28.26 | 9.51 | 13.75 | 185.70 | 1165.08 |
| 2/19/20 10:03 | 241.02 | 28.40 | 9.51 | 13.41 | 190.57 | 1163.73 |
| 2/19/20 10:04 | 240.69 | 28.19 | 9.51 | 13.54 | 200.51 | 1164.35 |
| 2/19/20 10:05 | 240.94 | 28.47 | 9.51 | 13.84 | 212.80 | 1164.71 |
| 2/19/20 10:06 | 241.32 | 28.38 | 9.51 | 13.57 | 212.01 | 1164.38 |
| 2/19/20 10:07 | 241.09 | 28.33 | 9.51 | 13.72 | 203.78 | 1164.15 |
| 2/19/20 10:08 | 240.45 | 28.31 | 9.51 | 13.52 | 190.25 | 1164.07 |
| 2/19/20 10:09 | 241.29 | 28.07 | 9.50 | 13.47 | 182.51 | 1164.47 |
| 2/19/20 10:10 | 240.80 | 27.92 | 9.48 | 13.67 | 183.17 | 1164.27 |
| 2/19/20 10:11 | 240.72 | 28.17 | 9.46 | 13.55 | 182.95 | 1164.75 |
| 2/19/20 10:12 | 240.73 | 28.17 | 9.44 | 13.55 | 182.98 | 1164.76 |
| 2/19/20 10:13 | 240.73 | 28.17 | 9.42 | 13.55 | 183.01 | 1164.77 |
| 2/19/20 10:14 | 240.74 | 28.17 | 9.40 | 13.55 | 183.04 | 1164.78 |
| 2/19/20 10:15 | 240.74 | 28.17 | 9.38 | 13.55 | 183.07 | 1164.79 |
| 2/19/20 10:16 | 240.75 | 28.17 | 9.36 | 13.55 | 183.10 | 1164.80 |
| 2/19/20 10:17 | 240.76 | 28.17 | 9.34 | 13.55 | 183.13 | 1164.80 |
| 2/19/20 10:18 | 240.76 | 28.17 | 9.32 | 13.55 | 183.16 | 1164.81 |
| 2/19/20 10:19 | 240.77 | 28.17 | 9.30 | 13.54 | 183.19 | 1164.82 |
| 2/19/20 10:20 | 240.77 | 28.17 | 9.28 | 13.54 | 183.22 | 1164.83 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/19 9:14 - 2/19 13:51) | 241.24 | 28.24 | 7.73 | 13.52 | 188.50 | 1165.39 |
| COUNT = 278 | | | | | | |

| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
|---|---|---|---|---|---|---|
| 2/19/20 10:21 | 240.78 | 28.17 | 9.26 | 13.54 | 183.26 | 1164.84 |
| 2/19/20 10:22 | 240.78 | 28.17 | 9.24 | 13.54 | 183.29 | 1164.85 |
| 2/19/20 10:23 | 240.79 | 28.17 | 9.22 | 13.54 | 183.32 | 1164.86 |
| 2/19/20 10:24 | 240.79 | 28.17 | 9.20 | 13.54 | 183.35 | 1164.87 |
| 2/19/20 10:25 | 240.80 | 28.17 | 9.18 | 13.54 | 183.38 | 1164.88 |
| 2/19/20 10:26 | 240.80 | 28.18 | 9.16 | 13.54 | 183.41 | 1164.88 |
| 2/19/20 10:27 | 240.81 | 28.18 | 9.14 | 13.54 | 183.44 | 1164.89 |
| 2/19/20 10:28 | 240.81 | 28.18 | 9.12 | 13.54 | 183.47 | 1164.90 |
| 2/19/20 10:29 | 240.82 | 28.18 | 9.10 | 13.54 | 183.50 | 1164.91 |
| 2/19/20 10:30 | 240.82 | 28.18 | 9.08 | 13.54 | 183.53 | 1164.92 |
| 2/19/20 10:31 | 240.83 | 28.18 | 9.06 | 13.54 | 183.56 | 1164.93 |
| 2/19/20 10:32 | 240.83 | 28.18 | 9.04 | 13.54 | 183.59 | 1164.94 |
| 2/19/20 10:33 | 240.84 | 28.18 | 9.02 | 13.54 | 183.62 | 1164.95 |
| 2/19/20 10:34 | 240.85 | 28.18 | 9.00 | 13.54 | 183.65 | 1164.96 |
| 2/19/20 10:35 | 240.85 | 28.18 | 8.98 | 13.54 | 183.68 | 1164.97 |
| 2/19/20 10:36 | 240.86 | 28.18 | 8.96 | 13.54 | 183.71 | 1164.97 |
| 2/19/20 10:37 | 240.86 | 28.18 | 8.94 | 13.54 | 183.74 | 1164.98 |
| 2/19/20 10:38 | 240.87 | 28.18 | 8.92 | 13.54 | 183.77 | 1164.99 |
| 2/19/20 10:39 | 240.87 | 28.18 | 8.91 | 13.54 | 183.80 | 1165.00 |
| 2/19/20 10:40 | 240.88 | 28.18 | 8.89 | 13.54 | 183.83 | 1165.01 |
| 2/19/20 10:41 | 240.88 | 28.18 | 8.87 | 13.54 | 183.86 | 1165.02 |
| 2/19/20 10:42 | 240.89 | 28.18 | 8.85 | 13.53 | 183.89 | 1165.03 |
| 2/19/20 10:43 | 240.89 | 28.19 | 8.83 | 13.53 | 183.92 | 1165.04 |
| 2/19/20 10:44 | 240.90 | 28.19 | 8.81 | 13.53 | 183.95 | 1165.05 |
| 2/19/20 10:45 | 240.90 | 28.19 | 8.79 | 13.53 | 183.98 | 1165.05 |
| 2/19/20 10:46 | 240.91 | 28.19 | 8.77 | 13.53 | 184.01 | 1165.06 |
| 2/19/20 10:47 | 240.91 | 28.19 | 8.75 | 13.53 | 184.04 | 1165.07 |
| 2/19/20 10:48 | 240.92 | 28.19 | 8.73 | 13.53 | 184.07 | 1165.08 |
| 2/19/20 10:49 | 240.92 | 28.19 | 8.71 | 13.53 | 184.10 | 1165.09 |
| 2/19/20 10:50 | 240.93 | 28.19 | 8.69 | 13.53 | 184.13 | 1165.10 |
| 2/19/20 10:51 | 240.94 | 28.19 | 8.67 | 13.53 | 184.17 | 1165.11 |
| 2/19/20 10:52 | 240.94 | 28.19 | 8.65 | 13.53 | 184.20 | 1165.12 |
| 2/19/20 10:53 | 240.95 | 28.19 | 8.63 | 13.53 | 184.23 | 1165.13 |
| 2/19/20 10:54 | 240.95 | 28.19 | 8.61 | 13.53 | 184.26 | 1165.13 |
| 2/19/20 10:55 | 240.96 | 28.19 | 8.59 | 13.53 | 184.29 | 1165.14 |
| 2/19/20 10:56 | 240.96 | 28.19 | 8.57 | 13.53 | 184.32 | 1165.15 |
| 2/19/20 10:57 | 240.97 | 28.19 | 8.55 | 13.53 | 184.35 | 1165.16 |
| 2/19/20 10:58 | 240.97 | 28.19 | 8.53 | 13.53 | 184.38 | 1165.17 |
| 2/19/20 10:59 | 240.98 | 28.20 | 8.51 | 13.53 | 184.41 | 1165.18 |
| 2/19/20 11:00 | 240.98 | 28.20 | 8.49 | 13.53 | 184.44 | 1165.19 |
| 2/19/20 11:01 | 240.99 | 28.20 | 8.47 | 13.53 | 184.47 | 1165.20 |
| 2/19/20 11:02 | 240.99 | 28.20 | 8.45 | 13.53 | 184.50 | 1165.21 |
| 2/19/20 11:03 | 241.00 | 28.20 | 8.43 | 13.53 | 184.53 | 1165.21 |
| 2/19/20 11:04 | 241.00 | 28.20 | 8.41 | 13.52 | 184.56 | 1165.22 |
| 2/19/20 11:05 | 241.01 | 28.20 | 8.39 | 13.52 | 184.59 | 1165.23 |
| 2/19/20 11:06 | 241.01 | 28.20 | 8.37 | 13.52 | 184.62 | 1165.24 |
| 2/19/20 11:07 | 241.02 | 28.20 | 8.35 | 13.52 | 184.65 | 1165.25 |
| 2/19/20 11:08 | 241.03 | 28.20 | 8.33 | 13.52 | 184.68 | 1165.26 |
| 2/19/20 11:09 | 241.03 | 28.20 | 8.31 | 13.52 | 184.71 | 1165.27 |
| 2/19/20 11:10 | 241.04 | 28.20 | 8.29 | 13.52 | 184.74 | 1165.28 |
| 2/19/20 11:11 | 241.04 | 28.20 | 8.27 | 13.52 | 184.77 | 1165.29 |
| 2/19/20 11:12 | 241.05 | 28.20 | 8.25 | 13.52 | 184.80 | 1165.30 |
| 2/19/20 11:13 | 241.05 | 28.20 | 8.23 | 13.52 | 184.83 | 1165.30 |
| 2/19/20 11:14 | 241.06 | 28.20 | 8.21 | 13.52 | 184.86 | 1165.31 |
| 2/19/20 11:15 | 241.06 | 28.20 | 8.19 | 13.52 | 184.89 | 1165.32 |
| 2/19/20 11:16 | 241.07 | 28.21 | 8.17 | 13.52 | 184.92 | 1165.33 |
| 2/19/20 11:17 | 241.07 | 28.21 | 8.15 | 13.52 | 184.95 | 1165.34 |
| 2/19/20 11:18 | 241.08 | 28.21 | 8.13 | 13.52 | 184.98 | 1165.35 |
| 2/19/20 11:19 | 241.08 | 28.21 | 8.11 | 13.52 | 185.01 | 1165.36 |
| 2/19/20 11:20 | 241.09 | 28.21 | 8.09 | 13.52 | 185.04 | 1165.37 |
| 2/19/20 11:21 | 241.09 | 28.21 | 8.07 | 13.52 | 185.08 | 1165.38 |
| 2/19/20 11:22 | 241.10 | 28.21 | 8.05 | 13.52 | 185.11 | 1165.38 |
| 2/19/20 11:23 | 241.10 | 28.21 | 8.03 | 13.52 | 185.14 | 1165.39 |
| 2/19/20 11:24 | 241.11 | 28.21 | 8.01 | 13.52 | 185.17 | 1165.40 |
| 2/19/20 11:25 | 241.12 | 28.21 | 7.99 | 13.52 | 185.20 | 1165.41 |
| 2/19/20 11:26 | 241.12 | 28.21 | 7.97 | 13.51 | 185.23 | 1165.42 |
| 2/19/20 11:27 | 241.13 | 28.21 | 7.95 | 13.51 | 185.26 | 1165.43 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/19 9:14 - 2/19 13:51) | 241.24 | 28.24 | 7.73 | 13.52 | 188.50 | 1165.39 |
| COUNT = 278 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/19/20 11:28 | 241.13 | 28.21 | 7.93 | 13.51 | 185.29 | 1165.44 |
| 2/19/20 11:29 | 241.14 | 28.21 | 7.91 | 13.51 | 185.32 | 1165.45 |
| 2/19/20 11:30 | 241.14 | 28.21 | 7.89 | 13.51 | 185.35 | 1165.46 |
| 2/19/20 11:31 | 241.15 | 28.21 | 7.87 | 13.51 | 185.38 | 1165.46 |
| 2/19/20 11:32 | 241.15 | 28.21 | 7.85 | 13.51 | 185.41 | 1165.47 |
| 2/19/20 11:33 | 241.16 | 28.22 | 7.83 | 13.51 | 185.44 | 1165.48 |
| 2/19/20 11:34 | 241.16 | 28.22 | 7.81 | 13.51 | 185.47 | 1165.49 |
| 2/19/20 11:35 | 241.17 | 28.22 | 7.79 | 13.51 | 185.50 | 1165.50 |
| 2/19/20 11:36 | 241.17 | 28.22 | 7.77 | 13.51 | 185.53 | 1165.51 |
| 2/19/20 11:37 | 241.18 | 28.22 | 7.75 | 13.51 | 185.56 | 1165.52 |
| 2/19/20 11:38 | 241.18 | 28.22 | 7.73 | 13.51 | 185.59 | 1165.53 |
| 2/19/20 11:39 | 241.19 | 28.22 | 7.71 | 13.51 | 185.62 | 1165.54 |
| 2/19/20 11:40 | 241.19 | 28.22 | 7.69 | 13.51 | 185.65 | 1165.55 |
| 2/19/20 11:41 | 241.20 | 28.22 | 7.67 | 13.51 | 185.68 | 1165.55 |
| 2/19/20 11:42 | 241.21 | 28.22 | 7.65 | 13.51 | 185.71 | 1165.56 |
| 2/19/20 11:43 | 241.21 | 28.22 | 7.63 | 13.51 | 185.74 | 1165.57 |
| 2/19/20 11:44 | 241.22 | 28.22 | 7.61 | 13.51 | 185.77 | 1165.58 |
| 2/19/20 11:45 | 241.22 | 28.22 | 7.59 | 13.51 | 185.80 | 1165.59 |
| 2/19/20 11:46 | 241.23 | 28.22 | 7.57 | 13.51 | 185.83 | 1165.60 |
| 2/19/20 11:47 | 241.23 | 28.22 | 7.55 | 13.51 | 185.86 | 1165.61 |
| 2/19/20 11:48 | 241.24 | 28.22 | 7.53 | 13.50 | 185.89 | 1165.62 |
| 2/19/20 11:49 | 241.24 | 28.22 | 7.51 | 13.50 | 185.92 | 1165.63 |
| 2/19/20 11:50 | 241.25 | 28.23 | 7.49 | 13.50 | 185.95 | 1165.63 |
| 2/19/20 11:51 | 241.25 | 28.23 | 7.47 | 13.50 | 185.99 | 1165.64 |
| 2/19/20 11:52 | 241.26 | 28.23 | 7.45 | 13.50 | 186.02 | 1165.65 |
| 2/19/20 11:53 | 241.26 | 28.23 | 7.43 | 13.50 | 186.05 | 1165.66 |
| 2/19/20 11:54 | 241.27 | 28.23 | 7.41 | 13.50 | 186.08 | 1165.67 |
| 2/19/20 11:55 | 241.27 | 28.23 | 7.39 | 13.50 | 186.11 | 1165.68 |
| 2/19/20 11:56 | 241.28 | 28.23 | 7.37 | 13.50 | 186.14 | 1165.69 |
| 2/19/20 11:57 | 241.28 | 28.23 | 7.35 | 13.50 | 186.17 | 1165.70 |
| 2/19/20 11:58 | 241.29 | 28.23 | 7.33 | 13.50 | 186.20 | 1165.71 |
| 2/19/20 11:59 | 241.30 | 28.23 | 7.31 | 13.50 | 186.23 | 1165.71 |
| 2/19/20 12:00 | 241.30 | 28.23 | 7.29 | 13.50 | 186.26 | 1165.72 |
| 2/19/20 12:01 | 241.31 | 28.23 | 7.27 | 13.50 | 186.29 | 1165.73 |
| 2/19/20 12:02 | 241.31 | 28.23 | 7.25 | 13.50 | 186.32 | 1165.74 |
| 2/19/20 12:03 | 241.32 | 28.23 | 7.23 | 13.50 | 186.35 | 1165.75 |
| 2/19/20 12:04 | 241.32 | 28.23 | 7.21 | 13.50 | 186.38 | 1165.76 |
| 2/19/20 12:05 | 241.33 | 28.23 | 7.19 | 13.50 | 186.41 | 1165.77 |
| 2/19/20 12:06 | 241.33 | 28.24 | 7.17 | 13.50 | 186.44 | 1165.78 |
| 2/19/20 12:07 | 241.34 | 28.24 | 7.15 | 13.50 | 186.47 | 1165.79 |
| 2/19/20 12:08 | 241.34 | 28.24 | 7.13 | 13.50 | 186.50 | 1165.79 |
| 2/19/20 12:09 | 241.35 | 28.24 | 7.11 | 13.50 | 186.53 | 1165.80 |
| 2/19/20 12:10 | 241.35 | 28.24 | 7.09 | 13.49 | 186.56 | 1165.81 |
| 2/19/20 12:11 | 241.36 | 28.24 | 7.07 | 13.49 | 186.59 | 1165.82 |
| 2/19/20 12:12 | 241.36 | 28.24 | 7.05 | 13.49 | 186.62 | 1165.83 |
| 2/19/20 12:13 | 241.37 | 28.24 | 7.03 | 13.49 | 186.65 | 1165.84 |
| 2/19/20 12:14 | 241.37 | 28.24 | 7.01 | 13.49 | 186.68 | 1165.85 |
| 2/19/20 12:15 | 241.38 | 28.24 | 6.99 | 13.49 | 186.71 | 1165.86 |
| 2/19/20 12:16 | 241.38 | 28.24 | 6.97 | 13.49 | 186.74 | 1165.87 |
| 2/19/20 12:17 | 241.39 | 28.24 | 6.95 | 13.49 | 186.77 | 1165.88 |
| 2/19/20 12:18 | 241.40 | 28.24 | 6.93 | 13.49 | 186.80 | 1165.88 |
| 2/19/20 12:19 | 241.40 | 28.24 | 6.91 | 13.49 | 186.83 | 1165.89 |
| 2/19/20 12:20 | 241.41 | 28.24 | 6.89 | 13.49 | 186.86 | 1165.90 |
| 2/19/20 12:21 | 241.41 | 28.24 | 6.87 | 13.49 | 186.90 | 1165.91 |
| 2/19/20 12:22 | 241.42 | 28.24 | 6.85 | 13.49 | 186.93 | 1165.92 |
| 2/19/20 12:23 | 241.42 | 28.25 | 6.83 | 13.49 | 186.96 | 1165.93 |
| 2/19/20 12:24 | 241.43 | 28.25 | 6.81 | 13.49 | 186.99 | 1165.94 |
| 2/19/20 12:25 | 241.43 | 28.25 | 6.79 | 13.49 | 187.02 | 1165.95 |
| 2/19/20 12:26 | 241.44 | 28.25 | 6.77 | 13.49 | 187.05 | 1165.96 |
| 2/19/20 12:27 | 241.44 | 28.25 | 6.75 | 13.49 | 187.08 | 1165.96 |
| 2/19/20 12:28 | 241.45 | 28.25 | 6.73 | 13.49 | 187.11 | 1165.97 |
| 2/19/20 12:29 | 241.45 | 28.25 | 6.71 | 13.49 | 187.14 | 1165.98 |
| 2/19/20 12:30 | 241.46 | 28.25 | 6.69 | 13.49 | 187.17 | 1165.99 |
| 2/19/20 12:31 | 241.46 | 28.25 | 6.67 | 13.49 | 187.20 | 1166.00 |
| 2/19/20 12:32 | 241.47 | 28.25 | 6.65 | 13.49 | 187.23 | 1166.01 |
| 2/19/20 12:33 | 241.47 | 28.25 | 6.63 | 13.48 | 187.26 | 1166.02 |
| 2/19/20 12:34 | 241.48 | 28.25 | 6.61 | 13.48 | 187.29 | 1166.03 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/19 9:14 - 2/19 13:51) | 241.24 | 28.24 | 7.73 | 13.52 | 188.50 | 1165.39 |
| COUNT = 278 | | | | | | |

| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
|---|---|---|---|---|---|---|
| 2/19/20 12:35 | 241.49 | 28.25 | 6.59 | 13.48 | 187.32 | 1166.04 |
| 2/19/20 12:36 | 241.49 | 28.25 | 6.57 | 13.48 | 187.35 | 1166.04 |
| 2/19/20 12:37 | 241.50 | 28.25 | 6.55 | 13.48 | 187.38 | 1166.05 |
| 2/19/20 12:38 | 241.50 | 28.25 | 6.53 | 13.48 | 187.41 | 1166.06 |
| 2/19/20 12:39 | 241.51 | 28.25 | 6.51 | 13.48 | 187.44 | 1166.07 |
| 2/19/20 12:40 | 241.51 | 28.26 | 6.49 | 13.48 | 187.47 | 1166.08 |
| 2/19/20 12:41 | 241.52 | 28.26 | 6.47 | 13.48 | 187.50 | 1166.09 |
| 2/19/20 12:42 | 241.52 | 28.26 | 6.45 | 13.48 | 187.53 | 1166.10 |
| 2/19/20 12:43 | 241.53 | 28.26 | 6.43 | 13.48 | 187.56 | 1166.11 |
| 2/19/20 12:44 | 241.53 | 28.26 | 6.41 | 13.48 | 187.59 | 1166.12 |
| 2/19/20 12:45 | 241.54 | 28.26 | 6.39 | 13.48 | 187.62 | 1166.12 |
| 2/19/20 12:46 | 241.54 | 28.26 | 6.37 | 13.48 | 187.65 | 1166.13 |
| 2/19/20 12:47 | 241.55 | 28.26 | 6.35 | 13.48 | 187.68 | 1166.14 |
| 2/19/20 12:48 | 241.55 | 28.26 | 6.33 | 13.48 | 187.71 | 1166.15 |
| 2/19/20 12:49 | 241.56 | 28.26 | 6.31 | 13.48 | 187.74 | 1166.16 |
| 2/19/20 12:50 | 241.56 | 28.26 | 6.29 | 13.48 | 187.77 | 1166.17 |
| 2/19/20 12:51 | 241.57 | 28.26 | 6.27 | 13.48 | 187.81 | 1166.18 |
| 2/19/20 12:52 | 241.58 | 28.26 | 6.25 | 13.48 | 187.84 | 1166.19 |
| 2/19/20 12:53 | 241.58 | 28.26 | 6.23 | 13.48 | 187.87 | 1166.20 |
| 2/19/20 12:54 | 241.59 | 28.26 | 6.21 | 13.48 | 187.90 | 1166.21 |
| 2/19/20 12:55 | 241.59 | 28.26 | 6.19 | 13.47 | 187.93 | 1166.21 |
| 2/19/20 12:56 | 241.60 | 28.26 | 6.17 | 13.47 | 187.96 | 1166.22 |
| 2/19/20 12:57 | 241.60 | 28.27 | 6.15 | 13.47 | 187.99 | 1166.23 |
| 2/19/20 12:58 | 241.61 | 28.27 | 6.13 | 13.47 | 188.02 | 1166.24 |
| 2/19/20 12:59 | 241.61 | 28.27 | 6.11 | 13.47 | 188.05 | 1166.25 |
| 2/19/20 13:00 | 241.62 | 28.27 | 6.09 | 13.47 | 188.08 | 1166.26 |
| 2/19/20 13:01 | 241.62 | 28.27 | 6.07 | 13.47 | 188.11 | 1166.27 |
| 2/19/20 13:02 | 241.63 | 28.27 | 6.05 | 13.47 | 188.14 | 1166.28 |
| 2/19/20 13:03 | 241.63 | 28.27 | 6.03 | 13.47 | 188.17 | 1166.29 |
| 2/19/20 13:04 | 241.64 | 28.27 | 6.01 | 13.47 | 188.20 | 1166.29 |
| 2/19/20 13:05 | 241.64 | 28.27 | 5.99 | 13.47 | 188.23 | 1166.30 |
| 2/19/20 13:06 | 241.65 | 28.27 | 5.97 | 13.47 | 188.26 | 1166.31 |
| 2/19/20 13:07 | 241.65 | 28.27 | 5.95 | 13.47 | 188.29 | 1166.32 |
| 2/19/20 13:08 | 241.66 | 28.27 | 5.93 | 13.47 | 188.32 | 1166.33 |
| 2/19/20 13:09 | 241.67 | 28.27 | 5.91 | 13.47 | 188.35 | 1166.34 |
| 2/19/20 13:10 | 241.67 | 28.27 | 5.89 | 13.47 | 188.38 | 1166.35 |
| 2/19/20 13:11 | 241.68 | 28.27 | 5.87 | 13.47 | 188.41 | 1166.36 |
| 2/19/20 13:12 | 241.68 | 28.27 | 5.85 | 13.47 | 188.44 | 1166.37 |
| 2/19/20 13:13 | 241.69 | 28.28 | 5.83 | 13.47 | 188.47 | 1166.37 |
| 2/19/20 13:14 | 241.69 | 28.28 | 5.81 | 13.47 | 188.50 | 1166.38 |
| 2/19/20 13:15 | 241.70 | 28.28 | 5.79 | 13.47 | 188.53 | 1166.39 |
| 2/19/20 13:16 | 241.70 | 28.28 | 5.77 | 13.47 | 188.56 | 1166.40 |
| 2/19/20 13:17 | 241.71 | 28.28 | 5.75 | 13.46 | 188.59 | 1166.41 |
| 2/19/20 13:18 | 241.71 | 28.28 | 5.73 | 13.46 | 188.62 | 1166.42 |
| 2/19/20 13:19 | 241.72 | 28.28 | 5.71 | 13.46 | 188.65 | 1166.43 |
| 2/19/20 13:20 | 241.72 | 28.28 | 5.69 | 13.46 | 188.68 | 1166.44 |
| 2/19/20 13:21 | 241.73 | 28.28 | 5.67 | 13.46 | 188.72 | 1166.45 |
| 2/19/20 13:22 | 241.73 | 28.28 | 5.65 | 13.46 | 188.75 | 1166.45 |
| 2/19/20 13:23 | 241.74 | 28.28 | 5.63 | 13.46 | 188.78 | 1166.46 |
| 2/19/20 13:24 | 241.74 | 28.28 | 5.61 | 13.46 | 188.81 | 1166.47 |
| 2/19/20 13:25 | 241.75 | 28.28 | 5.59 | 13.46 | 188.84 | 1166.48 |
| 2/19/20 13:26 | 241.76 | 28.28 | 5.57 | 13.46 | 188.87 | 1166.49 |
| 2/19/20 13:27 | 241.76 | 28.28 | 5.55 | 13.46 | 188.90 | 1166.50 |
| 2/19/20 13:28 | 241.77 | 28.28 | 5.53 | 13.46 | 188.93 | 1166.51 |
| 2/19/20 13:29 | 241.77 | 28.28 | 5.51 | 13.46 | 188.96 | 1166.52 |
| 2/19/20 13:30 | 241.78 | 28.29 | 5.49 | 13.46 | 188.99 | 1166.53 |
| 2/19/20 13:31 | 241.78 | 28.29 | 5.47 | 13.46 | 189.02 | 1166.54 |
| 2/19/20 13:32 | 241.79 | 28.29 | 5.45 | 13.46 | 189.05 | 1166.54 |
| 2/19/20 13:33 | 241.79 | 28.29 | 5.43 | 13.46 | 189.08 | 1166.55 |
| 2/19/20 13:34 | 241.80 | 28.29 | 5.41 | 13.46 | 189.11 | 1166.56 |
| 2/19/20 13:35 | 241.80 | 28.29 | 5.39 | 13.46 | 189.14 | 1166.57 |
| 2/19/20 13:36 | 241.81 | 28.29 | 5.37 | 13.46 | 189.17 | 1166.58 |
| 2/19/20 13:37 | 241.81 | 28.29 | 5.35 | 13.46 | 189.20 | 1166.59 |
| 2/19/20 13:38 | 241.82 | 28.29 | 5.33 | 13.46 | 189.23 | 1166.60 |
| 2/19/20 13:39 | 241.82 | 28.29 | 5.31 | 13.45 | 189.26 | 1166.61 |
| 2/19/20 13:40 | 241.83 | 28.29 | 5.29 | 13.45 | 189.29 | 1166.62 |
| 2/19/20 13:41 | 241.83 | 28.29 | 5.27 | 13.45 | 189.32 | 1166.62 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/19 9:14 - 2/19 13:51) | 241.24 | 28.24 | 7.73 | 13.52 | 188.50 | 1165.39 |
| COUNT = 278 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/19/20 13:42 | 241.84 | 28.29 | 5.25 | 13.45 | 189.35 | 1166.63 |
| 2/19/20 13:43 | 241.85 | 28.29 | 5.23 | 13.45 | 189.38 | 1166.64 |
| 2/19/20 13:44 | 241.85 | 28.29 | 5.21 | 13.45 | 189.41 | 1166.65 |
| 2/19/20 13:45 | 241.86 | 28.29 | 5.19 | 13.45 | 189.44 | 1166.66 |
| 2/19/20 13:46 | 241.86 | 28.29 | 5.17 | 13.45 | 189.47 | 1166.67 |
| 2/19/20 13:47 | 241.87 | 28.30 | 5.15 | 13.45 | 189.50 | 1166.68 |
| 2/19/20 13:48 | 241.87 | 28.30 | 5.13 | 13.45 | 189.53 | 1166.69 |
| 2/19/20 13:49 | 241.88 | 28.30 | 5.11 | 13.45 | 189.56 | 1166.70 |
| 2/19/20 13:50 | 241.88 | 28.30 | 5.09 | 13.45 | 189.59 | 1166.70 |
| 2/19/20 13:51 | 241.89 | 28.30 | 5.07 | 13.45 | 189.63 | 1166.71 |

# EMISSION DATA RECORDS

## Operating Data Base+DB Load
## (provided by Cricket Valley Energy Center LLC)
## SAM

The U-00001 fuel flow rates (lbm/s) shown on the following pages are uncorrected values.

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/18 14:40 - 2/18 16:40) | 240.86 | 28.30 | 9.61 | 13.60 | 192.60 | 1159.76 |
| COUNT = 121 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/18/20 14:40 | 241.02 | 28.34 | 9.64 | 13.52 | 185.72 | 1160.51 |
| 2/18/20 14:41 | 240.91 | 28.03 | 9.64 | 13.61 | 178.60 | 1160.70 |
| 2/18/20 14:42 | 241.06 | 28.37 | 9.64 | 13.83 | 180.67 | 1161.11 |
| 2/18/20 14:43 | 241.21 | 28.28 | 9.64 | 13.66 | 190.73 | 1161.31 |
| 2/18/20 14:44 | 241.33 | 28.40 | 9.64 | 13.46 | 204.69 | 1161.25 |
| 2/18/20 14:45 | 240.80 | 28.37 | 9.64 | 13.87 | 208.27 | 1161.16 |
| 2/18/20 14:46 | 240.96 | 28.35 | 9.64 | 13.34 | 196.76 | 1160.64 |
| 2/18/20 14:47 | 240.86 | 28.35 | 9.64 | 13.45 | 185.20 | 1160.25 |
| 2/18/20 14:48 | 241.07 | 28.30 | 9.64 | 13.68 | 180.37 | 1160.71 |
| 2/18/20 14:49 | 241.36 | 28.37 | 9.64 | 13.46 | 176.77 | 1160.68 |
| 2/18/20 14:50 | 240.99 | 28.24 | 9.64 | 13.34 | 193.84 | 1160.00 |
| 2/18/20 14:51 | 241.39 | 28.28 | 9.64 | 13.57 | 206.21 | 1161.30 |
| 2/18/20 14:52 | 240.98 | 28.18 | 9.64 | 13.58 | 206.41 | 1161.00 |
| 2/18/20 14:53 | 240.89 | 28.44 | 9.63 | 13.41 | 193.76 | 1161.01 |
| 2/18/20 14:54 | 240.96 | 28.18 | 9.63 | 13.63 | 187.66 | 1160.44 |
| 2/18/20 14:55 | 240.74 | 28.41 | 9.63 | 13.52 | 181.40 | 1160.47 |
| 2/18/20 14:56 | 240.83 | 28.29 | 9.63 | 13.87 | 181.53 | 1160.50 |
| 2/18/20 14:57 | 240.78 | 28.51 | 9.63 | 13.79 | 201.33 | 1159.58 |
| 2/18/20 14:58 | 240.61 | 28.37 | 9.63 | 13.29 | 207.73 | 1160.63 |
| 2/18/20 14:59 | 241.35 | 28.29 | 9.63 | 13.58 | 204.59 | 1161.06 |
| 2/18/20 15:00 | 241.30 | 28.27 | 9.63 | 13.55 | 189.41 | 1160.29 |
| 2/18/20 15:01 | 241.23 | 28.33 | 9.63 | 13.93 | 177.01 | 1161.43 |
| 2/18/20 15:02 | 240.91 | 28.25 | 9.63 | 13.77 | 178.37 | 1160.44 |
| 2/18/20 15:03 | 241.21 | 28.48 | 9.63 | 13.62 | 183.60 | 1161.54 |
| 2/18/20 15:04 | 241.03 | 28.31 | 9.63 | 13.62 | 199.15 | 1160.71 |
| 2/18/20 15:05 | 240.81 | 28.09 | 9.63 | 13.46 | 207.52 | 1160.64 |
| 2/18/20 15:06 | 241.28 | 28.43 | 9.63 | 13.81 | 201.39 | 1161.34 |
| 2/18/20 15:07 | 241.09 | 28.35 | 9.63 | 13.61 | 190.01 | 1160.68 |
| 2/18/20 15:08 | 240.64 | 28.41 | 9.63 | 13.35 | 182.64 | 1160.30 |
| 2/18/20 15:09 | 241.41 | 28.27 | 9.63 | 13.81 | 182.92 | 1160.76 |
| 2/18/20 15:10 | 241.43 | 28.31 | 9.62 | 13.62 | 196.27 | 1160.90 |
| 2/18/20 15:11 | 241.05 | 28.22 | 9.62 | 13.76 | 211.40 | 1160.52 |
| 2/18/20 15:12 | 241.30 | 28.41 | 9.62 | 13.31 | 211.27 | 1160.58 |
| 2/18/20 15:13 | 241.13 | 28.30 | 9.62 | 13.55 | 200.07 | 1160.90 |
| 2/18/20 15:14 | 240.93 | 28.34 | 9.62 | 13.71 | 186.93 | 1160.35 |
| 2/18/20 15:15 | 240.99 | 28.55 | 9.62 | 13.72 | 187.63 | 1160.61 |
| 2/18/20 15:16 | 240.78 | 28.20 | 9.62 | 13.59 | 183.63 | 1160.04 |
| 2/18/20 15:17 | 241.08 | 28.19 | 9.62 | 13.55 | 198.09 | 1159.68 |
| 2/18/20 15:18 | 240.91 | 28.19 | 9.62 | 13.78 | 195.21 | 1160.01 |
| 2/18/20 15:19 | 241.27 | 28.36 | 9.62 | 13.65 | 194.06 | 1160.41 |
| 2/18/20 15:20 | 240.77 | 28.38 | 9.62 | 13.59 | 191.84 | 1160.21 |
| 2/18/20 15:21 | 240.51 | 28.34 | 9.62 | 13.54 | 188.91 | 1160.14 |
| 2/18/20 15:22 | 240.82 | 28.28 | 9.62 | 14.02 | 186.78 | 1160.27 |
| 2/18/20 15:23 | 241.16 | 28.22 | 9.62 | 13.53 | 189.81 | 1160.03 |
| 2/18/20 15:24 | 240.73 | 28.33 | 9.62 | 13.64 | 190.23 | 1159.95 |
| 2/18/20 15:25 | 240.77 | 28.18 | 9.62 | 13.56 | 191.24 | 1159.24 |
| 2/18/20 15:26 | 241.35 | 28.42 | 9.62 | 13.45 | 192.26 | 1161.38 |
| 2/18/20 15:27 | 240.78 | 28.28 | 9.61 | 13.44 | 196.76 | 1160.36 |
| 2/18/20 15:28 | 240.62 | 28.22 | 9.61 | 13.38 | 202.53 | 1159.05 |
| 2/18/20 15:29 | 240.89 | 28.31 | 9.61 | 13.76 | 204.47 | 1159.52 |
| 2/18/20 15:30 | 241.04 | 28.35 | 9.61 | 13.83 | 204.28 | 1160.92 |
| 2/18/20 15:31 | 241.06 | 28.33 | 9.61 | 13.79 | 192.71 | 1161.47 |
| 2/18/20 15:32 | 240.75 | 28.54 | 9.61 | 13.67 | 180.49 | 1160.27 |
| 2/18/20 15:33 | 240.92 | 28.22 | 9.61 | 13.61 | 178.31 | 1160.08 |
| 2/18/20 15:34 | 240.90 | 28.33 | 9.61 | 13.51 | 187.66 | 1160.00 |
| 2/18/20 15:35 | 241.18 | 28.30 | 9.61 | 13.52 | 200.31 | 1160.43 |
| 2/18/20 15:36 | 240.62 | 28.26 | 9.61 | 13.54 | 205.97 | 1159.51 |
| 2/18/20 15:37 | 240.69 | 28.24 | 9.61 | 13.34 | 198.74 | 1159.36 |
| 2/18/20 15:38 | 241.21 | 28.36 | 9.61 | 13.43 | 185.75 | 1160.07 |
| 2/18/20 15:39 | 240.61 | 28.08 | 9.61 | 13.74 | 180.33 | 1159.65 |
| 2/18/20 15:40 | 240.43 | 28.24 | 9.61 | 13.53 | 182.20 | 1158.99 |
| 2/18/20 15:41 | 241.16 | 28.17 | 9.61 | 13.65 | 186.18 | 1160.17 |
| 2/18/20 15:42 | 240.68 | 28.25 | 9.61 | 13.49 | 193.53 | 1159.18 |
| 2/18/20 15:43 | 240.91 | 28.29 | 9.61 | 13.51 | 203.85 | 1160.01 |
| 2/18/20 15:44 | 240.49 | 28.21 | 9.60 | 13.45 | 205.07 | 1158.50 |
| 2/18/20 15:45 | 241.31 | 28.23 | 9.60 | 13.90 | 200.68 | 1160.18 |
| 2/18/20 15:46 | 240.66 | 28.14 | 9.60 | 13.56 | 193.71 | 1159.12 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/18 14:40 - 2/18 16:40) | 240.86 | 28.30 | 9.61 | 13.60 | 192.60 | 1159.76 |
| COUNT = 121 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/18/20 15:47 | 241.08 | 28.66 | 9.60 | 13.46 | 182.32 | 1160.33 |
| 2/18/20 15:48 | 241.05 | 28.27 | 9.60 | 13.63 | 183.97 | 1159.94 |
| 2/18/20 15:49 | 240.87 | 28.49 | 9.60 | 13.61 | 183.20 | 1159.42 |
| 2/18/20 15:50 | 240.58 | 28.27 | 9.60 | 13.42 | 187.49 | 1158.83 |
| 2/18/20 15:51 | 240.98 | 28.32 | 9.60 | 13.58 | 190.00 | 1159.35 |
| 2/18/20 15:52 | 240.75 | 28.07 | 9.60 | 13.54 | 186.74 | 1159.61 |
| 2/18/20 15:53 | 240.30 | 28.37 | 9.60 | 13.60 | 188.50 | 1159.54 |
| 2/18/20 15:54 | 240.91 | 28.31 | 9.60 | 13.60 | 185.42 | 1159.77 |
| 2/18/20 15:55 | 241.08 | 28.39 | 9.60 | 13.73 | 188.98 | 1159.88 |
| 2/18/20 15:56 | 240.97 | 28.35 | 9.60 | 13.42 | 189.42 | 1159.26 |
| 2/18/20 15:57 | 241.01 | 28.26 | 9.60 | 13.51 | 189.06 | 1159.67 |
| 2/18/20 15:58 | 241.06 | 28.25 | 9.60 | 13.82 | 187.29 | 1159.73 |
| 2/18/20 15:59 | 240.82 | 28.28 | 9.60 | 13.47 | 187.80 | 1159.06 |
| 2/18/20 16:00 | 240.53 | 28.52 | 9.60 | 13.79 | 195.29 | 1159.24 |
| 2/18/20 16:01 | 240.82 | 28.19 | 9.59 | 13.70 | 201.40 | 1158.99 |
| 2/18/20 16:02 | 240.89 | 28.43 | 9.59 | 13.79 | 205.92 | 1159.15 |
| 2/18/20 16:03 | 240.75 | 28.37 | 9.59 | 13.41 | 203.41 | 1159.21 |
| 2/18/20 16:04 | 240.54 | 28.30 | 9.59 | 13.59 | 195.69 | 1159.27 |
| 2/18/20 16:05 | 240.45 | 28.19 | 9.59 | 13.36 | 187.96 | 1159.17 |
| 2/18/20 16:06 | 240.67 | 28.17 | 9.59 | 13.63 | 189.53 | 1160.16 |
| 2/18/20 16:07 | 240.67 | 28.40 | 9.59 | 13.49 | 191.59 | 1159.46 |
| 2/18/20 16:08 | 240.75 | 28.24 | 9.59 | 13.43 | 193.88 | 1158.80 |
| 2/18/20 16:09 | 240.59 | 28.27 | 9.59 | 13.61 | 196.99 | 1159.83 |
| 2/18/20 16:10 | 241.13 | 28.17 | 9.59 | 13.45 | 200.53 | 1160.19 |
| 2/18/20 16:11 | 241.34 | 28.24 | 9.59 | 13.76 | 198.64 | 1159.73 |
| 2/18/20 16:12 | 241.01 | 28.25 | 9.59 | 13.43 | 197.62 | 1158.45 |
| 2/18/20 16:13 | 240.10 | 28.27 | 9.59 | 13.65 | 189.23 | 1158.42 |
| 2/18/20 16:14 | 240.96 | 28.42 | 9.59 | 13.64 | 184.30 | 1159.44 |
| 2/18/20 16:15 | 240.39 | 28.46 | 9.59 | 13.76 | 184.04 | 1158.71 |
| 2/18/20 16:16 | 240.85 | 28.25 | 9.59 | 13.66 | 187.62 | 1158.76 |
| 2/18/20 16:17 | 240.87 | 28.30 | 9.59 | 13.50 | 190.27 | 1158.35 |
| 2/18/20 16:18 | 240.55 | 28.41 | 9.58 | 13.44 | 192.77 | 1158.35 |
| 2/18/20 16:19 | 240.89 | 28.34 | 9.58 | 13.81 | 193.29 | 1159.31 |
| 2/18/20 16:20 | 240.74 | 28.27 | 9.58 | 13.82 | 191.38 | 1159.52 |
| 2/18/20 16:21 | 240.40 | 28.38 | 9.58 | 13.71 | 190.51 | 1159.39 |
| 2/18/20 16:22 | 240.56 | 28.08 | 9.58 | 13.78 | 196.37 | 1159.51 |
| 2/18/20 16:23 | 240.92 | 28.36 | 9.58 | 13.50 | 198.89 | 1158.44 |
| 2/18/20 16:24 | 240.27 | 28.40 | 9.58 | 13.65 | 199.62 | 1158.25 |
| 2/18/20 16:25 | 241.14 | 28.34 | 9.58 | 13.67 | 193.80 | 1159.04 |
| 2/18/20 16:26 | 240.69 | 28.09 | 9.58 | 13.37 | 195.69 | 1158.07 |
| 2/18/20 16:27 | 240.29 | 28.38 | 9.58 | 13.43 | 191.35 | 1157.92 |
| 2/18/20 16:28 | 240.37 | 28.34 | 9.58 | 13.68 | 192.11 | 1158.57 |
| 2/18/20 16:29 | 240.59 | 28.42 | 9.58 | 13.54 | 189.90 | 1158.18 |
| 2/18/20 16:30 | 240.62 | 28.37 | 9.58 | 13.51 | 186.52 | 1158.57 |
| 2/18/20 16:31 | 240.47 | 28.40 | 9.58 | 13.46 | 189.41 | 1158.69 |
| 2/18/20 16:32 | 240.35 | 28.23 | 9.58 | 13.67 | 190.87 | 1157.90 |
| 2/18/20 16:33 | 241.01 | 28.12 | 9.58 | 13.64 | 196.76 | 1158.27 |
| 2/18/20 16:34 | 240.83 | 28.38 | 9.58 | 13.64 | 191.19 | 1158.82 |
| 2/18/20 16:35 | 240.90 | 28.24 | 9.57 | 13.59 | 192.85 | 1159.05 |
| 2/18/20 16:36 | 240.78 | 28.39 | 9.57 | 13.55 | 191.43 | 1158.51 |
| 2/18/20 16:37 | 240.55 | 28.25 | 9.57 | 13.87 | 195.05 | 1158.60 |
| 2/18/20 16:38 | 240.69 | 28.49 | 9.57 | 13.52 | 199.27 | 1158.41 |
| 2/18/20 16:39 | 240.49 | 28.09 | 9.57 | 13.52 | 202.39 | 1157.51 |
| 2/18/20 16:40 | 240.70 | 28.18 | 9.57 | 13.52 | 195.89 | 1158.07 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/19 4:9 - 2/19 6:9) | 240.93 | 28.22 | 9.49 | 13.57 | 200.92 | 1159.48 |
| COUNT = 121 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/19/20 4:09 | 240.45 | 28.14 | 9.49 | 13.63 | 191.62 | 1157.58 |
| 2/19/20 4:10 | 240.61 | 28.04 | 9.49 | 13.58 | 194.21 | 1157.89 |
| 2/19/20 4:11 | 241.09 | 27.97 | 9.49 | 13.61 | 202.03 | 1158.89 |
| 2/19/20 4:12 | 240.89 | 28.38 | 9.49 | 13.44 | 201.54 | 1158.20 |
| 2/19/20 4:13 | 240.48 | 28.33 | 9.49 | 13.48 | 207.33 | 1158.10 |
| 2/19/20 4:14 | 241.10 | 28.22 | 9.49 | 13.31 | 207.06 | 1158.41 |
| 2/19/20 4:15 | 240.61 | 28.13 | 9.49 | 13.63 | 197.29 | 1158.23 |
| 2/19/20 4:16 | 241.08 | 28.21 | 9.49 | 13.56 | 197.12 | 1160.06 |
| 2/19/20 4:17 | 240.76 | 28.01 | 9.49 | 13.91 | 198.90 | 1158.80 |
| 2/19/20 4:18 | 241.03 | 28.33 | 9.49 | 13.43 | 198.44 | 1159.20 |
| 2/19/20 4:19 | 240.91 | 28.14 | 9.49 | 13.64 | 199.86 | 1158.64 |
| 2/19/20 4:20 | 240.87 | 28.02 | 9.49 | 13.73 | 200.27 | 1157.70 |
| 2/19/20 4:21 | 240.30 | 28.31 | 9.49 | 13.56 | 202.60 | 1157.14 |
| 2/19/20 4:22 | 240.34 | 28.17 | 9.49 | 13.52 | 199.37 | 1157.95 |
| 2/19/20 4:23 | 240.33 | 28.08 | 9.49 | 13.37 | 199.75 | 1158.62 |
| 2/19/20 4:24 | 240.84 | 28.23 | 9.49 | 13.38 | 202.74 | 1158.93 |
| 2/19/20 4:25 | 240.66 | 28.40 | 9.49 | 13.54 | 197.10 | 1158.57 |
| 2/19/20 4:26 | 240.50 | 28.16 | 9.49 | 13.27 | 200.55 | 1159.07 |
| 2/19/20 4:27 | 241.11 | 28.36 | 9.49 | 13.53 | 201.59 | 1158.82 |
| 2/19/20 4:28 | 240.29 | 28.53 | 9.49 | 13.55 | 203.16 | 1157.94 |
| 2/19/20 4:29 | 241.28 | 28.03 | 9.49 | 13.33 | 198.93 | 1158.74 |
| 2/19/20 4:30 | 240.36 | 28.14 | 9.49 | 13.38 | 201.38 | 1157.96 |
| 2/19/20 4:31 | 240.64 | 28.26 | 9.49 | 13.94 | 201.35 | 1158.66 |
| 2/19/20 4:32 | 240.87 | 28.22 | 9.49 | 13.29 | 202.89 | 1158.19 |
| 2/19/20 4:33 | 241.02 | 27.90 | 9.49 | 13.35 | 198.59 | 1158.77 |
| 2/19/20 4:34 | 240.31 | 28.09 | 9.49 | 13.38 | 202.83 | 1158.64 |
| 2/19/20 4:35 | 240.89 | 28.17 | 9.49 | 13.99 | 198.78 | 1159.56 |
| 2/19/20 4:36 | 241.17 | 28.13 | 9.49 | 13.89 | 198.70 | 1158.90 |
| 2/19/20 4:37 | 240.74 | 28.21 | 9.49 | 13.68 | 198.66 | 1158.79 |
| 2/19/20 4:38 | 240.78 | 28.04 | 9.49 | 13.61 | 197.53 | 1158.82 |
| 2/19/20 4:39 | 240.60 | 28.26 | 9.49 | 13.64 | 200.11 | 1158.90 |
| 2/19/20 4:40 | 240.82 | 28.15 | 9.49 | 13.67 | 202.61 | 1159.26 |
| 2/19/20 4:41 | 240.82 | 28.29 | 9.49 | 13.38 | 200.17 | 1158.67 |
| 2/19/20 4:42 | 241.41 | 28.27 | 9.49 | 13.49 | 200.40 | 1159.02 |
| 2/19/20 4:43 | 240.93 | 28.28 | 9.49 | 13.45 | 201.18 | 1158.67 |
| 2/19/20 4:44 | 240.50 | 28.24 | 9.49 | 13.37 | 203.20 | 1158.37 |
| 2/19/20 4:45 | 241.27 | 28.31 | 9.49 | 13.42 | 202.06 | 1159.12 |
| 2/19/20 4:46 | 240.88 | 28.07 | 9.49 | 13.69 | 202.51 | 1159.86 |
| 2/19/20 4:47 | 240.51 | 28.38 | 9.49 | 13.52 | 204.26 | 1159.02 |
| 2/19/20 4:48 | 240.87 | 28.05 | 9.49 | 13.82 | 201.89 | 1159.21 |
| 2/19/20 4:49 | 240.90 | 28.24 | 9.49 | 13.73 | 192.21 | 1159.20 |
| 2/19/20 4:50 | 240.88 | 28.20 | 9.49 | 13.64 | 195.61 | 1158.71 |
| 2/19/20 4:51 | 240.92 | 28.48 | 9.49 | 13.52 | 195.93 | 1159.36 |
| 2/19/20 4:52 | 240.43 | 28.15 | 9.49 | 13.70 | 191.80 | 1158.96 |
| 2/19/20 4:53 | 241.13 | 28.11 | 9.49 | 13.50 | 196.95 | 1159.26 |
| 2/19/20 4:54 | 241.02 | 28.24 | 9.49 | 13.77 | 196.12 | 1160.02 |
| 2/19/20 4:55 | 240.73 | 28.19 | 9.49 | 13.52 | 194.10 | 1159.37 |
| 2/19/20 4:56 | 240.73 | 28.23 | 9.49 | 13.33 | 193.63 | 1158.85 |
| 2/19/20 4:57 | 241.02 | 28.28 | 9.49 | 13.46 | 194.81 | 1160.21 |
| 2/19/20 4:58 | 240.84 | 28.30 | 9.49 | 13.97 | 195.51 | 1159.54 |
| 2/19/20 4:59 | 241.17 | 28.19 | 9.49 | 13.52 | 197.80 | 1160.06 |
| 2/19/20 5:00 | 240.84 | 28.28 | 9.49 | 13.27 | 200.95 | 1160.45 |
| 2/19/20 5:01 | 240.81 | 28.23 | 9.49 | 13.27 | 203.35 | 1159.38 |
| 2/19/20 5:02 | 241.00 | 28.40 | 9.49 | 13.60 | 198.75 | 1159.36 |
| 2/19/20 5:03 | 240.59 | 28.31 | 9.49 | 13.65 | 201.61 | 1159.00 |
| 2/19/20 5:04 | 241.06 | 28.51 | 9.49 | 13.49 | 201.74 | 1159.78 |
| 2/19/20 5:05 | 241.37 | 28.33 | 9.49 | 13.64 | 197.50 | 1160.22 |
| 2/19/20 5:06 | 240.80 | 28.07 | 9.49 | 13.51 | 192.35 | 1159.07 |
| 2/19/20 5:07 | 241.24 | 28.08 | 9.49 | 13.64 | 189.82 | 1160.38 |
| 2/19/20 5:08 | 240.68 | 28.13 | 9.49 | 13.40 | 191.88 | 1159.25 |
| 2/19/20 5:09 | 240.71 | 28.15 | 9.49 | 13.52 | 196.47 | 1159.17 |
| 2/19/20 5:10 | 240.88 | 28.15 | 9.49 | 13.86 | 197.81 | 1159.87 |
| 2/19/20 5:11 | 240.84 | 28.43 | 9.49 | 13.53 | 209.86 | 1159.51 |
| 2/19/20 5:12 | 241.07 | 28.34 | 9.49 | 13.43 | 202.33 | 1159.52 |
| 2/19/20 5:13 | 240.98 | 28.43 | 9.49 | 13.62 | 192.02 | 1159.80 |
| 2/19/20 5:14 | 240.46 | 27.97 | 9.49 | 13.21 | 192.02 | 1158.73 |
| 2/19/20 5:15 | 241.30 | 28.15 | 9.49 | 13.67 | 190.38 | 1160.14 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/19 4:9 - 2/19 6:9) | 240.93 | 28.22 | 9.49 | 13.57 | 200.92 | 1159.48 |
| COUNT = 121 | | | | | | |
| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| 2/19/20 5:16 | 240.96 | 28.24 | 9.49 | 13.63 | 197.56 | 1159.50 |
| 2/19/20 5:17 | 240.68 | 28.28 | 9.49 | 13.65 | 208.36 | 1160.09 |
| 2/19/20 5:18 | 240.83 | 28.15 | 9.49 | 13.61 | 217.47 | 1158.97 |
| 2/19/20 5:19 | 241.07 | 28.35 | 9.49 | 13.50 | 220.17 | 1160.26 |
| 2/19/20 5:20 | 240.83 | 28.10 | 9.49 | 13.76 | 215.82 | 1159.82 |
| 2/19/20 5:21 | 240.89 | 28.24 | 9.49 | 13.70 | 203.41 | 1159.98 |
| 2/19/20 5:22 | 241.22 | 28.48 | 9.49 | 13.65 | 198.61 | 1159.86 |
| 2/19/20 5:23 | 240.95 | 28.21 | 9.49 | 13.42 | 200.32 | 1160.44 |
| 2/19/20 5:24 | 241.09 | 28.33 | 9.49 | 13.74 | 200.00 | 1160.38 |
| 2/19/20 5:25 | 240.53 | 28.25 | 9.49 | 13.34 | 208.98 | 1159.48 |
| 2/19/20 5:26 | 241.34 | 28.20 | 9.49 | 13.50 | 210.52 | 1159.92 |
| 2/19/20 5:27 | 241.07 | 28.23 | 9.49 | 13.61 | 213.65 | 1160.04 |
| 2/19/20 5:28 | 240.79 | 28.10 | 9.49 | 13.47 | 211.06 | 1159.03 |
| 2/19/20 5:29 | 241.45 | 28.15 | 9.49 | 13.64 | 201.91 | 1160.17 |
| 2/19/20 5:30 | 241.21 | 28.30 | 9.49 | 13.71 | 197.97 | 1159.92 |
| 2/19/20 5:31 | 241.18 | 28.15 | 9.49 | 13.63 | 190.09 | 1159.43 |
| 2/19/20 5:32 | 241.22 | 28.36 | 9.49 | 13.58 | 196.91 | 1159.98 |
| 2/19/20 5:33 | 241.01 | 28.34 | 9.50 | 13.57 | 198.16 | 1160.15 |
| 2/19/20 5:34 | 240.89 | 28.07 | 9.50 | 13.49 | 200.44 | 1159.56 |
| 2/19/20 5:35 | 241.51 | 28.32 | 9.50 | 13.57 | 206.34 | 1159.91 |
| 2/19/20 5:36 | 241.43 | 28.09 | 9.50 | 13.77 | 200.84 | 1161.24 |
| 2/19/20 5:37 | 240.83 | 28.38 | 9.50 | 13.70 | 198.29 | 1159.42 |
| 2/19/20 5:38 | 241.14 | 28.11 | 9.50 | 13.67 | 200.03 | 1160.54 |
| 2/19/20 5:39 | 240.91 | 28.24 | 9.50 | 13.49 | 191.49 | 1159.43 |
| 2/19/20 5:40 | 240.79 | 28.39 | 9.50 | 13.51 | 194.51 | 1160.25 |
| 2/19/20 5:41 | 241.58 | 28.31 | 9.50 | 13.89 | 197.51 | 1160.55 |
| 2/19/20 5:42 | 241.22 | 28.24 | 9.50 | 13.60 | 202.12 | 1159.80 |
| 2/19/20 5:43 | 241.09 | 28.25 | 9.50 | 13.41 | 209.53 | 1160.48 |
| 2/19/20 5:44 | 240.88 | 28.19 | 9.50 | 13.41 | 208.57 | 1159.21 |
| 2/19/20 5:45 | 241.40 | 28.16 | 9.50 | 13.35 | 203.93 | 1160.34 |
| 2/19/20 5:46 | 240.61 | 28.05 | 9.50 | 13.81 | 200.65 | 1159.77 |
| 2/19/20 5:47 | 241.22 | 28.26 | 9.50 | 13.18 | 196.89 | 1159.87 |
| 2/19/20 5:48 | 241.12 | 28.22 | 9.50 | 13.58 | 208.99 | 1159.48 |
| 2/19/20 5:49 | 240.97 | 28.30 | 9.50 | 13.58 | 218.56 | 1160.26 |
| 2/19/20 5:50 | 240.82 | 28.21 | 9.50 | 13.43 | 220.27 | 1159.45 |
| 2/19/20 5:51 | 240.86 | 28.30 | 9.50 | 13.86 | 210.82 | 1160.81 |
| 2/19/20 5:52 | 240.66 | 28.12 | 9.50 | 13.59 | 204.55 | 1159.76 |
| 2/19/20 5:53 | 241.02 | 28.17 | 9.50 | 13.68 | 184.02 | 1159.85 |
| 2/19/20 5:54 | 241.03 | 28.53 | 9.50 | 13.47 | 181.84 | 1159.99 |
| 2/19/20 5:55 | 241.16 | 28.21 | 9.50 | 13.68 | 190.34 | 1160.69 |
| 2/19/20 5:56 | 241.04 | 28.25 | 9.50 | 13.59 | 205.19 | 1160.60 |
| 2/19/20 5:57 | 241.15 | 28.09 | 9.50 | 13.74 | 214.41 | 1161.02 |
| 2/19/20 5:58 | 241.12 | 28.38 | 9.50 | 13.49 | 214.54 | 1160.40 |
| 2/19/20 5:59 | 241.39 | 28.09 | 9.50 | 13.68 | 204.76 | 1161.73 |
| 2/19/20 6:00 | 241.50 | 28.21 | 9.50 | 13.88 | 201.13 | 1161.04 |
| 2/19/20 6:01 | 241.31 | 28.30 | 9.50 | 13.61 | 200.43 | 1159.86 |
| 2/19/20 6:02 | 241.22 | 28.11 | 9.50 | 13.52 | 193.57 | 1160.72 |
| 2/19/20 6:03 | 241.13 | 28.26 | 9.50 | 13.50 | 204.80 | 1159.54 |
| 2/19/20 6:04 | 241.13 | 28.22 | 9.50 | 13.65 | 213.40 | 1160.83 |
| 2/19/20 6:05 | 241.11 | 28.10 | 9.50 | 13.54 | 213.82 | 1159.61 |
| 2/19/20 6:06 | 241.15 | 28.26 | 9.50 | 13.54 | 208.16 | 1159.77 |
| 2/19/20 6:07 | 241.15 | 28.42 | 9.50 | 13.58 | 203.94 | 1160.04 |
| 2/19/20 6:08 | 240.93 | 28.03 | 9.50 | 13.76 | 195.81 | 1160.13 |
| 2/19/20 6:09 | 240.84 | 28.18 | 9.50 | 13.57 | 191.64 | 1160.08 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/19 7:26 - 2/19 9:26) | 241.38 | 28.28 | 9.51 | 13.55 | 203.78 | 1162.85 |
| COUNT = 121 | | | | | | |

| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
|---|---|---|---|---|---|---|
| 2/19/20 7:26 | 241.28 | 28.34 | 9.50 | 13.43 | 207.84 | 1161.46 |
| 2/19/20 7:27 | 241.50 | 28.31 | 9.50 | 13.66 | 208.29 | 1161.60 |
| 2/19/20 7:28 | 241.44 | 28.43 | 9.50 | 13.44 | 212.68 | 1161.82 |
| 2/19/20 7:29 | 241.36 | 28.34 | 9.50 | 13.60 | 213.08 | 1162.36 |
| 2/19/20 7:30 | 241.59 | 28.34 | 9.50 | 13.46 | 212.17 | 1161.79 |
| 2/19/20 7:31 | 241.30 | 28.45 | 9.50 | 13.58 | 208.52 | 1161.93 |
| 2/19/20 7:32 | 241.66 | 28.06 | 9.50 | 13.56 | 205.66 | 1162.62 |
| 2/19/20 7:33 | 241.87 | 28.37 | 9.50 | 13.56 | 195.90 | 1161.87 |
| 2/19/20 7:34 | 241.44 | 28.14 | 9.50 | 13.57 | 196.03 | 1161.81 |
| 2/19/20 7:35 | 241.77 | 28.20 | 9.50 | 13.32 | 204.28 | 1161.73 |
| 2/19/20 7:36 | 241.77 | 28.34 | 9.50 | 13.54 | 209.93 | 1162.19 |
| 2/19/20 7:37 | 241.66 | 28.28 | 9.50 | 13.57 | 212.14 | 1161.85 |
| 2/19/20 7:38 | 241.31 | 28.29 | 9.50 | 13.40 | 212.54 | 1161.77 |
| 2/19/20 7:39 | 241.66 | 28.37 | 9.50 | 13.43 | 208.61 | 1161.87 |
| 2/19/20 7:40 | 241.13 | 28.46 | 9.50 | 13.53 | 197.81 | 1161.19 |
| 2/19/20 7:41 | 241.46 | 27.99 | 9.50 | 13.50 | 199.36 | 1161.93 |
| 2/19/20 7:42 | 241.59 | 28.15 | 9.50 | 13.46 | 204.99 | 1162.02 |
| 2/19/20 7:43 | 241.75 | 28.33 | 9.50 | 13.68 | 212.34 | 1162.46 |
| 2/19/20 7:44 | 241.31 | 28.40 | 9.50 | 13.40 | 214.35 | 1161.90 |
| 2/19/20 7:45 | 241.50 | 28.13 | 9.50 | 13.58 | 206.01 | 1161.74 |
| 2/19/20 7:46 | 241.75 | 27.94 | 9.50 | 13.47 | 201.96 | 1162.65 |
| 2/19/20 7:47 | 241.70 | 28.22 | 9.50 | 13.72 | 200.54 | 1161.82 |
| 2/19/20 7:48 | 241.39 | 28.51 | 9.50 | 13.54 | 200.18 | 1161.61 |
| 2/19/20 7:49 | 241.95 | 28.22 | 9.50 | 13.79 | 210.77 | 1163.14 |
| 2/19/20 7:50 | 241.61 | 28.36 | 9.50 | 13.42 | 214.10 | 1162.09 |
| 2/19/20 7:51 | 241.73 | 28.39 | 9.50 | 13.49 | 209.45 | 1162.48 |
| 2/19/20 7:52 | 241.31 | 28.42 | 9.50 | 13.49 | 199.49 | 1162.03 |
| 2/19/20 7:53 | 241.24 | 28.34 | 9.50 | 13.52 | 200.16 | 1161.91 |
| 2/19/20 7:54 | 241.75 | 28.46 | 9.50 | 13.22 | 200.34 | 1161.97 |
| 2/19/20 7:55 | 241.71 | 28.22 | 9.50 | 13.44 | 210.48 | 1162.99 |
| 2/19/20 7:56 | 241.72 | 28.38 | 9.50 | 13.78 | 213.15 | 1162.65 |
| 2/19/20 7:57 | 241.16 | 28.44 | 9.50 | 13.88 | 200.81 | 1162.55 |
| 2/19/20 7:58 | 241.48 | 28.09 | 9.50 | 13.57 | 201.69 | 1162.10 |
| 2/19/20 7:59 | 241.66 | 28.33 | 9.50 | 13.77 | 199.64 | 1162.75 |
| 2/19/20 8:00 | 241.71 | 28.01 | 9.50 | 13.69 | 207.44 | 1162.54 |
| 2/19/20 8:01 | 241.62 | 28.09 | 9.50 | 13.54 | 211.56 | 1162.59 |
| 2/19/20 8:02 | 241.61 | 28.08 | 9.50 | 13.41 | 210.17 | 1162.18 |
| 2/19/20 8:03 | 241.46 | 28.26 | 9.50 | 13.64 | 202.12 | 1162.31 |
| 2/19/20 8:04 | 241.39 | 28.40 | 9.50 | 13.47 | 198.49 | 1162.67 |
| 2/19/20 8:05 | 241.65 | 28.56 | 9.50 | 13.40 | 196.92 | 1162.82 |
| 2/19/20 8:06 | 241.70 | 28.47 | 9.50 | 13.50 | 209.17 | 1162.45 |
| 2/19/20 8:07 | 241.37 | 28.14 | 9.50 | 13.73 | 216.29 | 1162.22 |
| 2/19/20 8:08 | 241.65 | 28.26 | 9.50 | 13.53 | 220.10 | 1162.21 |
| 2/19/20 8:09 | 241.65 | 28.17 | 9.51 | 14.00 | 214.66 | 1163.00 |
| 2/19/20 8:10 | 241.56 | 28.49 | 9.51 | 13.47 | 207.77 | 1162.81 |
| 2/19/20 8:11 | 241.48 | 28.30 | 9.51 | 13.82 | 206.92 | 1162.79 |
| 2/19/20 8:12 | 241.34 | 28.44 | 9.51 | 13.52 | 205.37 | 1162.38 |
| 2/19/20 8:13 | 241.66 | 28.25 | 9.51 | 13.78 | 202.19 | 1164.02 |
| 2/19/20 8:14 | 241.51 | 28.31 | 9.51 | 13.50 | 198.51 | 1162.91 |
| 2/19/20 8:15 | 241.45 | 28.08 | 9.51 | 13.43 | 204.02 | 1162.06 |
| 2/19/20 8:16 | 241.72 | 28.20 | 9.51 | 13.39 | 204.79 | 1162.22 |
| 2/19/20 8:17 | 241.48 | 28.33 | 9.51 | 13.25 | 215.17 | 1162.65 |
| 2/19/20 8:18 | 241.41 | 28.35 | 9.51 | 13.97 | 220.32 | 1163.21 |
| 2/19/20 8:19 | 241.45 | 28.06 | 9.51 | 13.49 | 209.15 | 1162.70 |
| 2/19/20 8:20 | 241.91 | 28.28 | 9.51 | 13.38 | 200.31 | 1163.93 |
| 2/19/20 8:21 | 241.29 | 28.43 | 9.51 | 13.66 | 192.96 | 1163.18 |
| 2/19/20 8:22 | 241.78 | 28.51 | 9.51 | 13.34 | 194.40 | 1163.13 |
| 2/19/20 8:23 | 241.62 | 28.48 | 9.51 | 13.88 | 198.30 | 1163.33 |
| 2/19/20 8:24 | 241.37 | 28.10 | 9.51 | 13.84 | 201.00 | 1163.35 |
| 2/19/20 8:25 | 241.43 | 28.27 | 9.51 | 13.42 | 207.22 | 1162.90 |
| 2/19/20 8:26 | 241.11 | 28.35 | 9.51 | 13.39 | 206.28 | 1162.49 |
| 2/19/20 8:27 | 241.95 | 28.29 | 9.51 | 13.64 | 204.23 | 1163.60 |
| 2/19/20 8:28 | 241.47 | 28.45 | 9.51 | 13.66 | 193.74 | 1163.25 |
| 2/19/20 8:29 | 241.00 | 28.27 | 9.51 | 13.51 | 196.66 | 1162.39 |
| 2/19/20 8:30 | 241.29 | 28.38 | 9.51 | 13.43 | 206.04 | 1162.46 |
| 2/19/20 8:31 | 241.67 | 28.15 | 9.51 | 13.35 | 219.07 | 1162.87 |
| 2/19/20 8:32 | 241.33 | 28.11 | 9.51 | 13.32 | 224.89 | 1162.91 |

| Description | | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/19 7:26 - 2/19 9:26) | | 241.38 | 28.28 | 9.51 | 13.55 | 203.78 | 1162.85 |
| COUNT = 121 | | | | | | | |
| Signal Tagname | | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| | 2/19/20 8:33 | 241.47 | 28.39 | 9.51 | 13.61 | 217.97 | 1162.84 |
| | 2/19/20 8:34 | 241.48 | 28.19 | 9.51 | 13.71 | 208.36 | 1162.99 |
| | 2/19/20 8:35 | 241.56 | 28.35 | 9.51 | 13.42 | 197.57 | 1162.18 |
| | 2/19/20 8:36 | 241.47 | 28.36 | 9.51 | 13.53 | 196.40 | 1162.63 |
| | 2/19/20 8:37 | 241.11 | 28.26 | 9.51 | 13.44 | 205.52 | 1163.00 |
| | 2/19/20 8:38 | 241.24 | 28.54 | 9.51 | 13.57 | 207.39 | 1162.59 |
| | 2/19/20 8:39 | 241.78 | 28.42 | 9.51 | 13.45 | 205.71 | 1163.35 |
| | 2/19/20 8:40 | 241.44 | 27.90 | 9.51 | 13.66 | 200.20 | 1163.73 |
| | 2/19/20 8:41 | 241.37 | 28.33 | 9.51 | 13.82 | 198.00 | 1162.99 |
| | 2/19/20 8:42 | 241.25 | 28.08 | 9.51 | 13.62 | 194.17 | 1163.49 |
| | 2/19/20 8:43 | 241.14 | 28.26 | 9.51 | 13.69 | 201.25 | 1162.95 |
| | 2/19/20 8:44 | 241.59 | 28.28 | 9.51 | 13.82 | 207.95 | 1163.71 |
| | 2/19/20 8:45 | 241.06 | 28.24 | 9.51 | 13.42 | 216.01 | 1162.64 |
| | 2/19/20 8:46 | 241.27 | 28.18 | 9.51 | 13.56 | 221.99 | 1162.97 |
| | 2/19/20 8:47 | 241.14 | 28.23 | 9.51 | 13.83 | 217.08 | 1163.71 |
| | 2/19/20 8:48 | 241.16 | 28.42 | 9.51 | 13.53 | 208.36 | 1163.37 |
| | 2/19/20 8:49 | 241.41 | 28.34 | 9.51 | 13.49 | 197.72 | 1163.70 |
| | 2/19/20 8:50 | 241.12 | 28.24 | 9.51 | 13.43 | 196.40 | 1162.18 |
| | 2/19/20 8:51 | 241.19 | 28.22 | 9.51 | 13.28 | 196.57 | 1163.20 |
| | 2/19/20 8:52 | 241.27 | 28.34 | 9.51 | 13.45 | 201.35 | 1163.45 |
| | 2/19/20 8:53 | 241.31 | 28.19 | 9.51 | 13.40 | 206.15 | 1162.69 |
| | 2/19/20 8:54 | 241.11 | 28.14 | 9.51 | 13.39 | 200.31 | 1163.42 |
| | 2/19/20 8:55 | 241.10 | 28.28 | 9.51 | 13.58 | 200.94 | 1163.36 |
| | 2/19/20 8:56 | 241.11 | 28.18 | 9.51 | 13.41 | 203.62 | 1162.82 |
| | 2/19/20 8:57 | 241.60 | 28.41 | 9.51 | 13.53 | 202.19 | 1164.07 |
| | 2/19/20 8:58 | 241.01 | 28.18 | 9.51 | 13.64 | 210.61 | 1163.44 |
| | 2/19/20 8:59 | 241.34 | 28.23 | 9.51 | 13.27 | 211.61 | 1163.24 |
| | 2/19/20 9:00 | 240.87 | 28.06 | 9.51 | 13.33 | 205.47 | 1162.92 |
| | 2/19/20 9:01 | 241.35 | 28.26 | 9.51 | 13.59 | 189.99 | 1163.37 |
| | 2/19/20 9:02 | 241.62 | 28.11 | 9.51 | 13.59 | 179.94 | 1164.10 |
| | 2/19/20 9:03 | 241.04 | 28.61 | 9.51 | 13.52 | 185.44 | 1163.80 |
| | 2/19/20 9:04 | 241.44 | 28.59 | 9.51 | 13.59 | 200.43 | 1163.68 |
| | 2/19/20 9:05 | 241.20 | 28.12 | 9.51 | 13.77 | 209.64 | 1164.20 |
| | 2/19/20 9:06 | 241.05 | 28.09 | 9.51 | 13.68 | 212.01 | 1164.54 |
| | 2/19/20 9:07 | 240.87 | 28.35 | 9.51 | 13.44 | 199.06 | 1163.32 |
| | 2/19/20 9:08 | 240.93 | 28.30 | 9.51 | 13.58 | 186.57 | 1163.88 |
| | 2/19/20 9:09 | 241.04 | 28.29 | 9.51 | 13.52 | 184.23 | 1162.95 |
| | 2/19/20 9:10 | 241.18 | 28.45 | 9.51 | 13.71 | 190.03 | 1164.24 |
| | 2/19/20 9:11 | 241.06 | 28.18 | 9.51 | 13.61 | 200.46 | 1163.74 |
| | 2/19/20 9:12 | 241.19 | 28.30 | 9.51 | 13.96 | 206.47 | 1163.75 |
| | 2/19/20 9:13 | 241.20 | 28.28 | 9.51 | 13.67 | 202.95 | 1163.41 |
| | 2/19/20 9:14 | 240.89 | 28.32 | 9.51 | 13.64 | 198.23 | 1163.69 |
| | 2/19/20 9:15 | 240.98 | 28.39 | 9.51 | 13.40 | 196.64 | 1164.31 |
| | 2/19/20 9:16 | 241.21 | 28.34 | 9.51 | 13.45 | 196.90 | 1164.08 |
| | 2/19/20 9:17 | 240.87 | 28.33 | 9.51 | 13.64 | 196.12 | 1162.73 |
| | 2/19/20 9:18 | 240.98 | 28.47 | 9.51 | 13.26 | 195.77 | 1162.73 |
| | 2/19/20 9:19 | 240.71 | 28.22 | 9.51 | 13.68 | 204.38 | 1163.32 |
| | 2/19/20 9:20 | 240.89 | 28.28 | 9.51 | 13.66 | 202.19 | 1163.63 |
| | 2/19/20 9:21 | 240.83 | 28.38 | 9.51 | 13.30 | 196.47 | 1162.89 |
| | 2/19/20 9:22 | 240.98 | 28.27 | 9.51 | 13.51 | 193.56 | 1163.72 |
| | 2/19/20 9:23 | 240.88 | 28.21 | 9.51 | 13.77 | 187.97 | 1163.28 |
| | 2/19/20 9:24 | 241.11 | 28.06 | 9.51 | 13.56 | 189.72 | 1163.43 |
| | 2/19/20 9:25 | 241.14 | 28.23 | 9.51 | 13.56 | 197.37 | 1163.94 |
| | 2/19/20 9:26 | 241.34 | 28.45 | 9.51 | 13.47 | 206.19 | 1163.73 |

# EMISSION DATA RECORDS

## Operating Data Base+DB Load
## (provided by Cricket Valley Energy Center LLC)
## Opacity

The U-00001 fuel flow rates (lbm/s) shown on the following pages are uncorrected values.

| Description | | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/19 11:0 - 2/19 12:0) | | 241.14 | 28.21 | 7.89 | 13.51 | 185.35 | 1165.46 |
| COUNT = 61 | | | | | | | |
| Signal Tagname | | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| | 2/19/20 11:00 | 240.98 | 28.20 | 8.49 | 13.53 | 184.44 | 1165.19 |
| | 2/19/20 11:01 | 240.99 | 28.20 | 8.47 | 13.53 | 184.47 | 1165.20 |
| | 2/19/20 11:02 | 240.99 | 28.20 | 8.45 | 13.53 | 184.50 | 1165.21 |
| | 2/19/20 11:03 | 241.00 | 28.20 | 8.43 | 13.53 | 184.53 | 1165.21 |
| | 2/19/20 11:04 | 241.00 | 28.20 | 8.41 | 13.52 | 184.56 | 1165.22 |
| | 2/19/20 11:05 | 241.01 | 28.20 | 8.39 | 13.52 | 184.59 | 1165.23 |
| | 2/19/20 11:06 | 241.01 | 28.20 | 8.37 | 13.52 | 184.62 | 1165.24 |
| | 2/19/20 11:07 | 241.02 | 28.20 | 8.35 | 13.52 | 184.65 | 1165.25 |
| | 2/19/20 11:08 | 241.03 | 28.20 | 8.33 | 13.52 | 184.68 | 1165.26 |
| | 2/19/20 11:09 | 241.03 | 28.20 | 8.31 | 13.52 | 184.71 | 1165.27 |
| | 2/19/20 11:10 | 241.04 | 28.20 | 8.29 | 13.52 | 184.74 | 1165.28 |
| | 2/19/20 11:11 | 241.04 | 28.20 | 8.27 | 13.52 | 184.77 | 1165.29 |
| | 2/19/20 11:12 | 241.05 | 28.20 | 8.25 | 13.52 | 184.80 | 1165.30 |
| | 2/19/20 11:13 | 241.05 | 28.20 | 8.23 | 13.52 | 184.83 | 1165.30 |
| | 2/19/20 11:14 | 241.06 | 28.20 | 8.21 | 13.52 | 184.86 | 1165.31 |
| | 2/19/20 11:15 | 241.06 | 28.20 | 8.19 | 13.52 | 184.89 | 1165.32 |
| | 2/19/20 11:16 | 241.07 | 28.21 | 8.17 | 13.52 | 184.92 | 1165.33 |
| | 2/19/20 11:17 | 241.07 | 28.21 | 8.15 | 13.52 | 184.95 | 1165.34 |
| | 2/19/20 11:18 | 241.08 | 28.21 | 8.13 | 13.52 | 184.98 | 1165.35 |
| | 2/19/20 11:19 | 241.08 | 28.21 | 8.11 | 13.52 | 185.01 | 1165.36 |
| | 2/19/20 11:20 | 241.09 | 28.21 | 8.09 | 13.52 | 185.04 | 1165.37 |
| | 2/19/20 11:21 | 241.09 | 28.21 | 8.07 | 13.52 | 185.08 | 1165.38 |
| | 2/19/20 11:22 | 241.10 | 28.21 | 8.05 | 13.52 | 185.11 | 1165.38 |
| | 2/19/20 11:23 | 241.10 | 28.21 | 8.03 | 13.52 | 185.14 | 1165.39 |
| | 2/19/20 11:24 | 241.11 | 28.21 | 8.01 | 13.52 | 185.17 | 1165.40 |
| | 2/19/20 11:25 | 241.12 | 28.21 | 7.99 | 13.52 | 185.20 | 1165.41 |
| | 2/19/20 11:26 | 241.12 | 28.21 | 7.97 | 13.51 | 185.23 | 1165.42 |
| | 2/19/20 11:27 | 241.13 | 28.21 | 7.95 | 13.51 | 185.26 | 1165.43 |
| | 2/19/20 11:28 | 241.13 | 28.21 | 7.93 | 13.51 | 185.29 | 1165.44 |
| | 2/19/20 11:29 | 241.14 | 28.21 | 7.91 | 13.51 | 185.32 | 1165.45 |
| | 2/19/20 11:30 | 241.14 | 28.21 | 7.89 | 13.51 | 185.35 | 1165.46 |
| | 2/19/20 11:31 | 241.15 | 28.21 | 7.87 | 13.51 | 185.38 | 1165.46 |
| | 2/19/20 11:32 | 241.15 | 28.21 | 7.85 | 13.51 | 185.41 | 1165.47 |
| | 2/19/20 11:33 | 241.16 | 28.22 | 7.83 | 13.51 | 185.44 | 1165.48 |
| | 2/19/20 11:34 | 241.16 | 28.22 | 7.81 | 13.51 | 185.47 | 1165.49 |
| | 2/19/20 11:35 | 241.17 | 28.22 | 7.79 | 13.51 | 185.50 | 1165.50 |
| | 2/19/20 11:36 | 241.17 | 28.22 | 7.77 | 13.51 | 185.53 | 1165.51 |
| | 2/19/20 11:37 | 241.18 | 28.22 | 7.75 | 13.51 | 185.56 | 1165.52 |
| | 2/19/20 11:38 | 241.18 | 28.22 | 7.73 | 13.51 | 185.59 | 1165.53 |
| | 2/19/20 11:39 | 241.19 | 28.22 | 7.71 | 13.51 | 185.62 | 1165.54 |
| | 2/19/20 11:40 | 241.19 | 28.22 | 7.69 | 13.51 | 185.65 | 1165.55 |
| | 2/19/20 11:41 | 241.20 | 28.22 | 7.67 | 13.51 | 185.68 | 1165.55 |
| | 2/19/20 11:42 | 241.21 | 28.22 | 7.65 | 13.51 | 185.71 | 1165.56 |
| | 2/19/20 11:43 | 241.21 | 28.22 | 7.63 | 13.51 | 185.74 | 1165.57 |
| | 2/19/20 11:44 | 241.22 | 28.22 | 7.61 | 13.51 | 185.77 | 1165.58 |
| | 2/19/20 11:45 | 241.22 | 28.22 | 7.59 | 13.51 | 185.80 | 1165.59 |
| | 2/19/20 11:46 | 241.23 | 28.22 | 7.57 | 13.51 | 185.83 | 1165.60 |
| | 2/19/20 11:47 | 241.23 | 28.22 | 7.55 | 13.51 | 185.86 | 1165.61 |
| | 2/19/20 11:48 | 241.24 | 28.22 | 7.53 | 13.50 | 185.89 | 1165.62 |
| | 2/19/20 11:49 | 241.24 | 28.22 | 7.51 | 13.50 | 185.92 | 1165.63 |
| | 2/19/20 11:50 | 241.25 | 28.23 | 7.49 | 13.50 | 185.95 | 1165.63 |
| | 2/19/20 11:51 | 241.25 | 28.23 | 7.47 | 13.50 | 185.99 | 1165.64 |
| | 2/19/20 11:52 | 241.26 | 28.23 | 7.45 | 13.50 | 186.02 | 1165.65 |
| | 2/19/20 11:53 | 241.26 | 28.23 | 7.43 | 13.50 | 186.05 | 1165.66 |
| | 2/19/20 11:54 | 241.27 | 28.23 | 7.41 | 13.50 | 186.08 | 1165.67 |
| | 2/19/20 11:55 | 241.27 | 28.23 | 7.39 | 13.50 | 186.11 | 1165.68 |
| | 2/19/20 11:56 | 241.28 | 28.23 | 7.37 | 13.50 | 186.14 | 1165.69 |
| | 2/19/20 11:57 | 241.28 | 28.23 | 7.35 | 13.50 | 186.17 | 1165.70 |
| | 2/19/20 11:58 | 241.29 | 28.23 | 7.33 | 13.50 | 186.20 | 1165.71 |
| | 2/19/20 11:59 | 241.30 | 28.23 | 7.31 | 13.50 | 186.23 | 1165.71 |
| | 2/19/20 12:00 | 241.30 | 28.23 | 7.29 | 13.50 | 186.26 | 1165.72 |

| Description | | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/19 12:2 - 2/19 13:2) | | 241.47 | 28.25 | 6.65 | 13.49 | 187.23 | 1166.01 |
| COUNT = 61 | | | | | | | |
| Signal Tagname | | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
| | 2/19/20 12:02 | 241.31 | 28.23 | 7.25 | 13.50 | 186.32 | 1165.74 |
| | 2/19/20 12:03 | 241.32 | 28.23 | 7.23 | 13.50 | 186.35 | 1165.75 |
| | 2/19/20 12:04 | 241.32 | 28.23 | 7.21 | 13.50 | 186.38 | 1165.76 |
| | 2/19/20 12:05 | 241.33 | 28.23 | 7.19 | 13.50 | 186.41 | 1165.77 |
| | 2/19/20 12:06 | 241.33 | 28.24 | 7.17 | 13.50 | 186.44 | 1165.78 |
| | 2/19/20 12:07 | 241.34 | 28.24 | 7.15 | 13.50 | 186.47 | 1165.79 |
| | 2/19/20 12:08 | 241.34 | 28.24 | 7.13 | 13.50 | 186.50 | 1165.79 |
| | 2/19/20 12:09 | 241.35 | 28.24 | 7.11 | 13.50 | 186.53 | 1165.80 |
| | 2/19/20 12:10 | 241.35 | 28.24 | 7.09 | 13.49 | 186.56 | 1165.81 |
| | 2/19/20 12:11 | 241.36 | 28.24 | 7.07 | 13.49 | 186.59 | 1165.82 |
| | 2/19/20 12:12 | 241.36 | 28.24 | 7.05 | 13.49 | 186.62 | 1165.83 |
| | 2/19/20 12:13 | 241.37 | 28.24 | 7.03 | 13.49 | 186.65 | 1165.84 |
| | 2/19/20 12:14 | 241.37 | 28.24 | 7.01 | 13.49 | 186.68 | 1165.85 |
| | 2/19/20 12:15 | 241.38 | 28.24 | 6.99 | 13.49 | 186.71 | 1165.86 |
| | 2/19/20 12:16 | 241.38 | 28.24 | 6.97 | 13.49 | 186.74 | 1165.87 |
| | 2/19/20 12:17 | 241.39 | 28.24 | 6.95 | 13.49 | 186.77 | 1165.88 |
| | 2/19/20 12:18 | 241.40 | 28.24 | 6.93 | 13.49 | 186.80 | 1165.88 |
| | 2/19/20 12:19 | 241.40 | 28.24 | 6.91 | 13.49 | 186.83 | 1165.89 |
| | 2/19/20 12:20 | 241.41 | 28.24 | 6.89 | 13.49 | 186.86 | 1165.90 |
| | 2/19/20 12:21 | 241.41 | 28.24 | 6.87 | 13.49 | 186.90 | 1165.91 |
| | 2/19/20 12:22 | 241.42 | 28.24 | 6.85 | 13.49 | 186.93 | 1165.92 |
| | 2/19/20 12:23 | 241.42 | 28.25 | 6.83 | 13.49 | 186.96 | 1165.93 |
| | 2/19/20 12:24 | 241.43 | 28.25 | 6.81 | 13.49 | 186.99 | 1165.94 |
| | 2/19/20 12:25 | 241.43 | 28.25 | 6.79 | 13.49 | 187.02 | 1165.95 |
| | 2/19/20 12:26 | 241.44 | 28.25 | 6.77 | 13.49 | 187.05 | 1165.96 |
| | 2/19/20 12:27 | 241.44 | 28.25 | 6.75 | 13.49 | 187.08 | 1165.96 |
| | 2/19/20 12:28 | 241.45 | 28.25 | 6.73 | 13.49 | 187.11 | 1165.97 |
| | 2/19/20 12:29 | 241.45 | 28.25 | 6.71 | 13.49 | 187.14 | 1165.98 |
| | 2/19/20 12:30 | 241.46 | 28.25 | 6.69 | 13.49 | 187.17 | 1165.99 |
| | 2/19/20 12:31 | 241.46 | 28.25 | 6.67 | 13.49 | 187.20 | 1166.00 |
| | 2/19/20 12:32 | 241.47 | 28.25 | 6.65 | 13.49 | 187.23 | 1166.01 |
| | 2/19/20 12:33 | 241.47 | 28.25 | 6.63 | 13.48 | 187.26 | 1166.02 |
| | 2/19/20 12:34 | 241.48 | 28.25 | 6.61 | 13.48 | 187.29 | 1166.03 |
| | 2/19/20 12:35 | 241.49 | 28.25 | 6.59 | 13.48 | 187.32 | 1166.04 |
| | 2/19/20 12:36 | 241.49 | 28.25 | 6.57 | 13.48 | 187.35 | 1166.04 |
| | 2/19/20 12:37 | 241.50 | 28.25 | 6.55 | 13.48 | 187.38 | 1166.05 |
| | 2/19/20 12:38 | 241.50 | 28.25 | 6.53 | 13.48 | 187.41 | 1166.06 |
| | 2/19/20 12:39 | 241.51 | 28.25 | 6.51 | 13.48 | 187.44 | 1166.07 |
| | 2/19/20 12:40 | 241.51 | 28.26 | 6.49 | 13.48 | 187.47 | 1166.08 |
| | 2/19/20 12:41 | 241.52 | 28.26 | 6.47 | 13.48 | 187.50 | 1166.09 |
| | 2/19/20 12:42 | 241.52 | 28.26 | 6.45 | 13.48 | 187.53 | 1166.10 |
| | 2/19/20 12:43 | 241.53 | 28.26 | 6.43 | 13.48 | 187.56 | 1166.11 |
| | 2/19/20 12:44 | 241.53 | 28.26 | 6.41 | 13.48 | 187.59 | 1166.12 |
| | 2/19/20 12:45 | 241.54 | 28.26 | 6.39 | 13.48 | 187.62 | 1166.12 |
| | 2/19/20 12:46 | 241.54 | 28.26 | 6.37 | 13.48 | 187.65 | 1166.13 |
| | 2/19/20 12:47 | 241.55 | 28.26 | 6.35 | 13.48 | 187.68 | 1166.14 |
| | 2/19/20 12:48 | 241.55 | 28.26 | 6.33 | 13.48 | 187.71 | 1166.15 |
| | 2/19/20 12:49 | 241.56 | 28.26 | 6.31 | 13.48 | 187.74 | 1166.16 |
| | 2/19/20 12:50 | 241.56 | 28.26 | 6.29 | 13.48 | 187.77 | 1166.17 |
| | 2/19/20 12:51 | 241.57 | 28.26 | 6.27 | 13.48 | 187.81 | 1166.18 |
| | 2/19/20 12:52 | 241.58 | 28.26 | 6.25 | 13.48 | 187.84 | 1166.19 |
| | 2/19/20 12:53 | 241.58 | 28.26 | 6.23 | 13.48 | 187.87 | 1166.20 |
| | 2/19/20 12:54 | 241.59 | 28.26 | 6.21 | 13.48 | 187.90 | 1166.21 |
| | 2/19/20 12:55 | 241.59 | 28.26 | 6.19 | 13.47 | 187.93 | 1166.21 |
| | 2/19/20 12:56 | 241.60 | 28.26 | 6.17 | 13.47 | 187.96 | 1166.22 |
| | 2/19/20 12:57 | 241.60 | 28.27 | 6.15 | 13.47 | 187.99 | 1166.23 |
| | 2/19/20 12:58 | 241.61 | 28.27 | 6.13 | 13.47 | 188.02 | 1166.24 |
| | 2/19/20 12:59 | 241.61 | 28.27 | 6.11 | 13.47 | 188.05 | 1166.25 |
| | 2/19/20 13:00 | 241.62 | 28.27 | 6.09 | 13.47 | 188.08 | 1166.26 |
| | 2/19/20 13:01 | 241.62 | 28.27 | 6.07 | 13.47 | 188.11 | 1166.27 |
| | 2/19/20 13:02 | 241.63 | 28.27 | 6.05 | 13.47 | 188.14 | 1166.28 |

| Description | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow |
|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s |
| AVERAGE (2/19 13:4 - 2/19 14:2) | 241.79 | 28.29 | 5.43 | 13.46 | 189.08 | 1166.55 |
| COUNT = 59 | | | | | | |

| Signal Tagname | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH |
|---|---|---|---|---|---|---|
| 2/19/20 13:04 | 241.64 | 28.27 | 6.01 | 13.47 | 188.20 | 1166.29 |
| 2/19/20 13:05 | 241.64 | 28.27 | 5.99 | 13.47 | 188.23 | 1166.30 |
| 2/19/20 13:06 | 241.65 | 28.27 | 5.97 | 13.47 | 188.26 | 1166.31 |
| 2/19/20 13:07 | 241.65 | 28.27 | 5.95 | 13.47 | 188.29 | 1166.32 |
| 2/19/20 13:08 | 241.66 | 28.27 | 5.93 | 13.47 | 188.32 | 1166.33 |
| 2/19/20 13:09 | 241.67 | 28.27 | 5.91 | 13.47 | 188.35 | 1166.34 |
| 2/19/20 13:10 | 241.67 | 28.27 | 5.89 | 13.47 | 188.38 | 1166.35 |
| 2/19/20 13:11 | 241.68 | 28.27 | 5.87 | 13.47 | 188.41 | 1166.36 |
| 2/19/20 13:12 | 241.68 | 28.27 | 5.85 | 13.47 | 188.44 | 1166.37 |
| 2/19/20 13:13 | 241.69 | 28.28 | 5.83 | 13.47 | 188.47 | 1166.37 |
| 2/19/20 13:14 | 241.69 | 28.28 | 5.81 | 13.47 | 188.50 | 1166.38 |
| 2/19/20 13:15 | 241.70 | 28.28 | 5.79 | 13.47 | 188.53 | 1166.39 |
| 2/19/20 13:16 | 241.70 | 28.28 | 5.77 | 13.47 | 188.56 | 1166.40 |
| 2/19/20 13:17 | 241.71 | 28.28 | 5.75 | 13.46 | 188.59 | 1166.41 |
| 2/19/20 13:18 | 241.71 | 28.28 | 5.73 | 13.46 | 188.62 | 1166.42 |
| 2/19/20 13:19 | 241.72 | 28.28 | 5.71 | 13.46 | 188.65 | 1166.43 |
| 2/19/20 13:20 | 241.72 | 28.28 | 5.69 | 13.46 | 188.68 | 1166.44 |
| 2/19/20 13:21 | 241.73 | 28.28 | 5.67 | 13.46 | 188.72 | 1166.45 |
| 2/19/20 13:22 | 241.73 | 28.28 | 5.65 | 13.46 | 188.75 | 1166.45 |
| 2/19/20 13:23 | 241.74 | 28.28 | 5.63 | 13.46 | 188.78 | 1166.46 |
| 2/19/20 13:24 | 241.74 | 28.28 | 5.61 | 13.46 | 188.81 | 1166.47 |
| 2/19/20 13:25 | 241.75 | 28.28 | 5.59 | 13.46 | 188.84 | 1166.48 |
| 2/19/20 13:26 | 241.76 | 28.28 | 5.57 | 13.46 | 188.87 | 1166.49 |
| 2/19/20 13:27 | 241.76 | 28.28 | 5.55 | 13.46 | 188.90 | 1166.50 |
| 2/19/20 13:28 | 241.77 | 28.28 | 5.53 | 13.46 | 188.93 | 1166.51 |
| 2/19/20 13:29 | 241.77 | 28.28 | 5.51 | 13.46 | 188.96 | 1166.52 |
| 2/19/20 13:30 | 241.78 | 28.29 | 5.49 | 13.46 | 188.99 | 1166.53 |
| 2/19/20 13:31 | 241.78 | 28.29 | 5.47 | 13.46 | 189.02 | 1166.54 |
| 2/19/20 13:32 | 241.79 | 28.29 | 5.45 | 13.46 | 189.05 | 1166.54 |
| 2/19/20 13:33 | 241.79 | 28.29 | 5.43 | 13.46 | 189.08 | 1166.55 |
| 2/19/20 13:34 | 241.80 | 28.29 | 5.41 | 13.46 | 189.11 | 1166.56 |
| 2/19/20 13:35 | 241.80 | 28.29 | 5.39 | 13.46 | 189.14 | 1166.57 |
| 2/19/20 13:36 | 241.81 | 28.29 | 5.37 | 13.46 | 189.17 | 1166.58 |
| 2/19/20 13:37 | 241.81 | 28.29 | 5.35 | 13.46 | 189.20 | 1166.59 |
| 2/19/20 13:38 | 241.82 | 28.29 | 5.33 | 13.46 | 189.23 | 1166.60 |
| 2/19/20 13:39 | 241.82 | 28.29 | 5.31 | 13.45 | 189.26 | 1166.61 |
| 2/19/20 13:40 | 241.83 | 28.29 | 5.29 | 13.45 | 189.29 | 1166.62 |
| 2/19/20 13:41 | 241.83 | 28.29 | 5.27 | 13.45 | 189.32 | 1166.62 |
| 2/19/20 13:42 | 241.84 | 28.29 | 5.25 | 13.45 | 189.35 | 1166.63 |
| 2/19/20 13:43 | 241.85 | 28.29 | 5.23 | 13.45 | 189.38 | 1166.64 |
| 2/19/20 13:44 | 241.85 | 28.29 | 5.21 | 13.45 | 189.41 | 1166.65 |
| 2/19/20 13:45 | 241.86 | 28.29 | 5.19 | 13.45 | 189.44 | 1166.66 |
| 2/19/20 13:46 | 241.86 | 28.29 | 5.17 | 13.45 | 189.47 | 1166.67 |
| 2/19/20 13:47 | 241.87 | 28.30 | 5.15 | 13.45 | 189.50 | 1166.68 |
| 2/19/20 13:48 | 241.87 | 28.30 | 5.13 | 13.45 | 189.53 | 1166.69 |
| 2/19/20 13:49 | 241.88 | 28.30 | 5.11 | 13.45 | 189.56 | 1166.70 |
| 2/19/20 13:50 | 241.88 | 28.30 | 5.09 | 13.45 | 189.59 | 1166.70 |
| 2/19/20 13:51 | 241.89 | 28.30 | 5.07 | 13.45 | 189.63 | 1166.71 |
| 2/19/20 13:52 | 241.89 | 28.30 | 5.05 | 13.45 | 189.66 | 1166.72 |
| 2/19/20 13:53 | 241.90 | 28.30 | 5.03 | 13.45 | 189.69 | 1166.73 |
| 2/19/20 13:54 | 241.90 | 28.30 | 5.01 | 13.45 | 189.72 | 1166.74 |
| 2/19/20 13:55 | 241.91 | 28.30 | 4.99 | 13.45 | 189.75 | 1166.75 |
| 2/19/20 13:56 | 241.91 | 28.30 | 4.97 | 13.45 | 189.78 | 1166.76 |
| 2/19/20 13:57 | 241.92 | 28.30 | 4.95 | 13.45 | 189.81 | 1166.77 |
| 2/19/20 13:58 | 241.92 | 28.30 | 4.93 | 13.45 | 189.84 | 1166.78 |
| 2/19/20 13:59 | 241.93 | 28.30 | 4.91 | 13.45 | 189.87 | 1166.79 |
| 2/19/20 14:00 | 241.94 | 28.30 | 4.89 | 13.45 | 189.90 | 1166.79 |
| 2/19/20 14:01 | 241.94 | 28.30 | 4.87 | 13.44 | 189.93 | 1166.80 |
| 2/19/20 14:02 | 241.95 | 28.30 | 4.85 | 13.44 | 189.96 | 1166.81 |

# EMISSION DATA RECORDS

## Operating Data Base+DB Load and Auxiliary Boiler (provided by Cricket Valley Energy Center LLC) Opacity

Opacity testing was pursued after the fuel gas flow meter mode of operation was corrected to Mode 1 (natural gas). No corrections necessary for measured fuel flow rate values.

| Description | | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/6 12:50 - 3/6 13:50) | | 236.93 | 27.44 | 7.05 | 13.61 | 165.62 | 1154.20 | 1453.41 |
| COUNT = 61 | | | | | | | | |
| Signal Tagname | | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH | BOPC2.00SBFY061 |
| | 3/6/20 12:50 | 236.89 | 27.44 | 5.56 | 13.78 | 165.20 | 1154.52 | 1567.70 |
| | 3/6/20 12:51 | 237.12 | 27.52 | 5.61 | 13.58 | 164.59 | 1154.57 | 1610.60 |
| | 3/6/20 12:52 | 237.37 | 27.54 | 5.67 | 13.86 | 166.01 | 1155.33 | 1420.15 |
| | 3/6/20 12:53 | 237.30 | 27.73 | 5.73 | 13.59 | 168.86 | 1154.22 | 1358.27 |
| | 3/6/20 12:54 | 237.10 | 27.28 | 5.79 | 13.38 | 167.59 | 1153.74 | 1305.52 |
| | 3/6/20 12:55 | 237.35 | 27.22 | 5.85 | 13.65 | 169.52 | 1154.63 | 1275.00 |
| | 3/6/20 12:56 | 237.41 | 27.39 | 5.91 | 13.41 | 168.84 | 1155.15 | 1206.54 |
| | 3/6/20 12:57 | 237.07 | 27.33 | 5.96 | 13.63 | 169.54 | 1154.48 | 1136.69 |
| | 3/6/20 12:58 | 236.95 | 27.16 | 6.02 | 13.48 | 169.58 | 1154.03 | 1256.71 |
| | 3/6/20 12:59 | 237.00 | 27.32 | 6.08 | 13.74 | 169.50 | 1153.96 | 1318.34 |
| | 3/6/20 13:00 | 236.82 | 27.60 | 6.14 | 14.02 | 169.67 | 1153.74 | 1399.26 |
| | 3/6/20 13:01 | 237.17 | 27.66 | 6.20 | 13.78 | 169.21 | 1154.78 | 1443.68 |
| | 3/6/20 13:02 | 236.66 | 27.47 | 6.26 | 13.61 | 168.49 | 1153.96 | 1483.50 |
| | 3/6/20 13:03 | 236.61 | 27.53 | 6.31 | 13.53 | 167.11 | 1153.78 | 1462.16 |
| | 3/6/20 13:04 | 237.01 | 27.39 | 6.37 | 13.73 | 167.10 | 1154.46 | 1421.55 |
| | 3/6/20 13:05 | 236.78 | 27.41 | 6.43 | 13.81 | 167.52 | 1154.55 | 1349.85 |
| | 3/6/20 13:06 | 237.05 | 27.50 | 6.49 | 13.55 | 162.45 | 1154.14 | 1350.79 |
| | 3/6/20 13:07 | 237.02 | 27.52 | 6.55 | 13.62 | 165.83 | 1153.66 | 1335.16 |
| | 3/6/20 13:08 | 236.87 | 27.40 | 6.61 | 13.46 | 166.87 | 1153.85 | 1375.63 |
| | 3/6/20 13:09 | 237.18 | 27.45 | 6.66 | 13.60 | 166.64 | 1153.58 | 1352.80 |
| | 3/6/20 13:10 | 236.89 | 27.54 | 6.72 | 13.56 | 167.34 | 1154.63 | 1354.24 |
| | 3/6/20 13:11 | 236.97 | 27.20 | 6.78 | 13.54 | 166.16 | 1153.67 | 1371.20 |
| | 3/6/20 13:12 | 237.14 | 27.45 | 6.84 | 13.54 | 166.76 | 1153.93 | 1382.20 |
| | 3/6/20 13:13 | 236.80 | 27.46 | 6.90 | 13.56 | 167.28 | 1153.87 | 1357.03 |
| | 3/6/20 13:14 | 236.71 | 27.44 | 6.96 | 13.58 | 164.13 | 1155.11 | 1366.82 |
| | 3/6/20 13:15 | 236.84 | 27.49 | 7.01 | 13.49 | 163.65 | 1154.00 | 1372.85 |
| | 3/6/20 13:16 | 237.07 | 27.39 | 7.07 | 13.62 | 165.18 | 1154.57 | 1343.49 |
| | 3/6/20 13:17 | 237.04 | 27.56 | 7.13 | 13.99 | 164.63 | 1154.83 | 1374.69 |
| | 3/6/20 13:18 | 236.88 | 27.55 | 7.19 | 13.99 | 163.88 | 1155.03 | 1368.06 |
| | 3/6/20 13:19 | 236.59 | 27.59 | 7.25 | 13.66 | 161.01 | 1154.23 | 1344.18 |
| | 3/6/20 13:20 | 236.70 | 27.56 | 7.31 | 13.59 | 161.28 | 1154.39 | 1363.85 |
| | 3/6/20 13:21 | 236.95 | 27.56 | 7.36 | 13.67 | 164.57 | 1154.45 | 1464.87 |
| | 3/6/20 13:22 | 237.12 | 27.25 | 7.42 | 13.75 | 165.10 | 1154.20 | 1493.21 |
| | 3/6/20 13:23 | 236.67 | 27.34 | 7.48 | 13.61 | 162.53 | 1153.25 | 1544.09 |
| | 3/6/20 13:24 | 236.63 | 27.28 | 7.54 | 13.61 | 164.94 | 1154.55 | 1578.78 |
| | 3/6/20 13:25 | 236.93 | 27.48 | 7.60 | 13.71 | 163.05 | 1154.33 | 1542.49 |
| | 3/6/20 13:26 | 236.79 | 27.32 | 7.66 | 13.20 | 165.72 | 1153.65 | 1562.23 |
| | 3/6/20 13:27 | 236.74 | 27.51 | 7.71 | 13.67 | 166.53 | 1154.17 | 1551.00 |
| | 3/6/20 13:28 | 236.73 | 27.40 | 7.73 | 13.54 | 164.63 | 1153.39 | 1567.78 |
| | 3/6/20 13:29 | 237.16 | 27.43 | 7.73 | 13.52 | 166.03 | 1153.31 | 1552.55 |
| | 3/6/20 13:30 | 237.33 | 27.47 | 7.73 | 13.74 | 167.06 | 1154.60 | 1517.80 |
| | 3/6/20 13:31 | 236.57 | 27.41 | 7.73 | 13.77 | 167.80 | 1153.66 | 1518.78 |
| | 3/6/20 13:32 | 237.01 | 27.50 | 7.73 | 13.77 | 167.08 | 1154.99 | 1570.09 |
| | 3/6/20 13:33 | 236.64 | 27.33 | 7.73 | 13.70 | 167.41 | 1153.68 | 1526.05 |
| | 3/6/20 13:34 | 237.23 | 27.38 | 7.73 | 13.38 | 162.35 | 1154.69 | 1527.35 |
| | 3/6/20 13:35 | 237.17 | 27.44 | 7.73 | 13.80 | 166.83 | 1153.82 | 1558.37 |
| | 3/6/20 13:36 | 236.84 | 27.30 | 7.73 | 13.48 | 163.46 | 1154.57 | 1547.52 |
| | 3/6/20 13:37 | 236.80 | 27.59 | 7.73 | 13.48 | 165.69 | 1154.05 | 1563.25 |
| | 3/6/20 13:38 | 236.70 | 27.47 | 7.73 | 13.61 | 164.12 | 1154.12 | 1526.21 |
| | 3/6/20 13:39 | 236.71 | 27.48 | 7.73 | 13.41 | 162.57 | 1154.32 | 1532.59 |
| | 3/6/20 13:40 | 236.77 | 27.45 | 7.73 | 13.64 | 163.57 | 1153.88 | 1561.51 |
| | 3/6/20 13:41 | 237.05 | 27.52 | 7.73 | 13.51 | 161.50 | 1155.18 | 1530.66 |
| | 3/6/20 13:42 | 236.73 | 27.40 | 7.73 | 13.52 | 162.05 | 1154.11 | 1564.81 |
| | 3/6/20 13:43 | 236.93 | 27.36 | 7.73 | 13.52 | 161.21 | 1154.31 | 1526.04 |
| | 3/6/20 13:44 | 237.04 | 27.44 | 7.73 | 13.59 | 163.97 | 1154.50 | 1548.29 |
| | 3/6/20 13:45 | 236.71 | 27.35 | 7.73 | 13.53 | 164.56 | 1153.42 | 1565.93 |
| | 3/6/20 13:46 | 236.90 | 27.63 | 7.73 | 13.65 | 164.62 | 1154.87 | 1528.97 |
| | 3/6/20 13:47 | 236.82 | 27.55 | 7.72 | 13.46 | 162.04 | 1153.96 | 1555.57 |
| | 3/6/20 13:48 | 236.62 | 27.40 | 7.72 | 13.53 | 167.83 | 1153.04 | 1525.03 |
| | 3/6/20 13:49 | 236.81 | 27.47 | 7.72 | 13.56 | 165.54 | 1153.28 | 1521.90 |
| | 3/6/20 13:50 | 237.13 | 27.41 | 7.72 | 13.44 | 166.85 | 1154.75 | 1556.00 |

| Description | | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/6 13:50 - 3/6 14:50) | | 236.02 | 27.36 | 7.71 | 13.63 | 161.06 | 1153.84 | 1552.31 |
| COUNT = 61 | | | | | | | | |
| Signal Tagname | | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH | BOPC2.00SBFY061 |
| | 3/6/20 13:50 | 237.13 | 27.41 | 7.72 | 13.44 | 166.85 | 1154.75 | 1556.00 |
| | 3/6/20 13:51 | 237.01 | 27.31 | 7.72 | 13.56 | 164.34 | 1154.13 | 1558.38 |
| | 3/6/20 13:52 | 236.89 | 27.50 | 7.72 | 13.56 | 167.52 | 1153.35 | 1587.38 |
| | 3/6/20 13:53 | 236.73 | 27.53 | 7.72 | 13.64 | 167.07 | 1153.28 | 1535.65 |
| | 3/6/20 13:54 | 237.24 | 27.26 | 7.72 | 14.14 | 167.23 | 1154.32 | 1572.04 |
| | 3/6/20 13:55 | 236.97 | 27.41 | 7.72 | 13.55 | 166.83 | 1154.43 | 1534.44 |
| | 3/6/20 13:56 | 236.63 | 27.35 | 7.72 | 13.52 | 166.85 | 1152.59 | 1562.48 |
| | 3/6/20 13:57 | 236.91 | 27.55 | 7.72 | 13.77 | 167.84 | 1153.73 | 1549.45 |
| | 3/6/20 13:58 | 236.66 | 27.31 | 7.72 | 13.55 | 169.63 | 1153.87 | 1537.73 |
| | 3/6/20 13:59 | 236.50 | 27.28 | 7.72 | 13.59 | 167.36 | 1153.44 | 1538.19 |
| | 3/6/20 14:00 | 237.19 | 27.55 | 7.72 | 13.48 | 167.38 | 1153.93 | 1560.38 |
| | 3/6/20 14:01 | 236.88 | 27.46 | 7.72 | 13.72 | 167.69 | 1153.76 | 1545.39 |
| | 3/6/20 14:02 | 236.57 | 27.34 | 7.72 | 13.63 | 166.18 | 1153.13 | 1553.82 |
| | 3/6/20 14:03 | 236.58 | 27.45 | 7.72 | 13.53 | 164.07 | 1153.28 | 1543.44 |
| | 3/6/20 14:04 | 236.66 | 27.47 | 7.72 | 13.51 | 167.01 | 1153.47 | 1558.18 |
| | 3/6/20 14:05 | 236.95 | 27.38 | 7.71 | 13.50 | 166.26 | 1153.46 | 1541.24 |
| | 3/6/20 14:06 | 236.39 | 27.64 | 7.71 | 13.65 | 165.16 | 1153.09 | 1564.89 |
| | 3/6/20 14:07 | 236.18 | 27.33 | 7.71 | 13.55 | 163.32 | 1152.61 | 1527.62 |
| | 3/6/20 14:08 | 236.72 | 27.29 | 7.71 | 13.66 | 162.27 | 1153.50 | 1556.46 |
| | 3/6/20 14:09 | 236.54 | 27.37 | 7.71 | 13.54 | 162.19 | 1153.45 | 1542.90 |
| | 3/6/20 14:10 | 236.39 | 27.35 | 7.71 | 13.53 | 161.25 | 1152.74 | 1563.22 |
| | 3/6/20 14:11 | 236.69 | 27.45 | 7.71 | 13.61 | 164.12 | 1153.21 | 1548.86 |
| | 3/6/20 14:12 | 236.61 | 27.27 | 7.71 | 13.54 | 166.34 | 1153.11 | 1584.11 |
| | 3/6/20 14:13 | 236.50 | 27.50 | 7.71 | 13.59 | 166.35 | 1153.04 | 1538.08 |
| | 3/6/20 14:14 | 236.83 | 27.35 | 7.71 | 13.86 | 164.94 | 1153.81 | 1555.70 |
| | 3/6/20 14:15 | 236.51 | 27.65 | 7.71 | 13.37 | 167.39 | 1153.37 | 1551.40 |
| | 3/6/20 14:16 | 236.57 | 27.47 | 7.71 | 13.59 | 162.84 | 1153.97 | 1522.72 |
| | 3/6/20 14:17 | 236.67 | 27.33 | 7.71 | 13.55 | 164.47 | 1153.63 | 1564.93 |
| | 3/6/20 14:18 | 236.46 | 27.35 | 7.71 | 13.59 | 163.09 | 1153.25 | 1585.72 |
| | 3/6/20 14:19 | 236.77 | 27.32 | 7.71 | 13.72 | 165.14 | 1154.13 | 1531.74 |
| | 3/6/20 14:20 | 236.29 | 27.41 | 7.71 | 13.73 | 160.83 | 1152.93 | 1564.06 |
| | 3/6/20 14:21 | 236.75 | 27.28 | 7.71 | 13.95 | 163.97 | 1153.23 | 1554.78 |
| | 3/6/20 14:22 | 236.57 | 27.42 | 7.71 | 13.72 | 163.88 | 1152.58 | 1557.39 |
| | 3/6/20 14:23 | 236.52 | 27.38 | 7.71 | 13.60 | 163.06 | 1152.64 | 1545.52 |
| | 3/6/20 14:24 | 236.24 | 27.49 | 7.70 | 13.73 | 162.02 | 1153.51 | 1558.09 |
| | 3/6/20 14:25 | 236.44 | 27.58 | 7.70 | 13.43 | 163.94 | 1151.88 | 1576.93 |
| | 3/6/20 14:26 | 236.50 | 27.29 | 7.70 | 13.17 | 165.03 | 1152.84 | 1528.05 |
| | 3/6/20 14:27 | 231.82 | 26.95 | 7.70 | 13.61 | 161.76 | 1153.41 | 1551.65 |
| | 3/6/20 14:28 | 229.75 | 26.56 | 7.70 | 13.13 | 144.15 | 1144.10 | 1560.85 |
| | 3/6/20 14:29 | 231.08 | 26.92 | 7.70 | 14.05 | 147.81 | 1153.31 | 1532.29 |
| | 3/6/20 14:30 | 231.86 | 26.91 | 7.70 | 13.65 | 143.47 | 1155.52 | 1537.03 |
| | 3/6/20 14:31 | 233.20 | 27.01 | 7.70 | 13.88 | 140.04 | 1160.74 | 1574.25 |
| | 3/6/20 14:32 | 233.81 | 27.10 | 7.70 | 14.09 | 138.82 | 1160.48 | 1545.90 |
| | 3/6/20 14:33 | 233.59 | 27.16 | 7.70 | 13.81 | 131.34 | 1159.66 | 1551.29 |
| | 3/6/20 14:34 | 233.92 | 27.16 | 7.70 | 13.85 | 124.02 | 1159.80 | 1567.05 |
| | 3/6/20 14:35 | 233.47 | 27.13 | 7.70 | 13.82 | 119.46 | 1160.11 | 1526.58 |
| | 3/6/20 14:36 | 236.69 | 27.46 | 7.70 | 13.50 | 114.66 | 1157.24 | 1547.96 |
| | 3/6/20 14:37 | 236.32 | 27.31 | 7.70 | 13.36 | 128.96 | 1152.84 | 1560.77 |
| | 3/6/20 14:38 | 236.31 | 27.14 | 7.70 | 13.97 | 155.70 | 1152.99 | 1551.48 |
| | 3/6/20 14:39 | 236.41 | 27.49 | 7.70 | 13.43 | 169.36 | 1153.44 | 1570.94 |
| | 3/6/20 14:40 | 236.64 | 27.41 | 7.70 | 13.62 | 171.05 | 1153.97 | 1560.03 |
| | 3/6/20 14:41 | 236.55 | 27.45 | 7.70 | 13.65 | 171.11 | 1152.88 | 1530.95 |
| | 3/6/20 14:42 | 237.05 | 27.44 | 7.70 | 13.61 | 174.78 | 1153.48 | 1569.82 |
| | 3/6/20 14:43 | 236.41 | 27.51 | 7.69 | 13.66 | 174.40 | 1153.14 | 1542.69 |
| | 3/6/20 14:44 | 236.60 | 27.65 | 7.69 | 13.65 | 178.04 | 1153.45 | 1548.10 |
| | 3/6/20 14:45 | 236.45 | 27.27 | 7.69 | 13.54 | 175.11 | 1152.92 | 1562.57 |
| | 3/6/20 14:46 | 236.61 | 27.51 | 7.69 | 13.80 | 176.99 | 1153.10 | 1536.38 |
| | 3/6/20 14:47 | 236.27 | 27.42 | 7.69 | 13.42 | 171.17 | 1152.95 | 1555.83 |
| | 3/6/20 14:48 | 236.64 | 27.53 | 7.69 | 13.55 | 167.87 | 1152.73 | 1572.11 |
| | 3/6/20 14:49 | 236.52 | 27.66 | 7.69 | 13.53 | 165.69 | 1152.80 | 1527.46 |
| | 3/6/20 14:50 | 236.38 | 27.56 | 7.69 | 13.57 | 166.92 | 1153.69 | 1549.50 |

| Description | | CTG1 Gross output | CT1 gas flow | U1 duct burner gas flow | HRSG1 duct inlet pressure | SCR NH3 flow rate | CT1 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/6 14:50 - 3/6 15:50) | | 236.24 | 27.41 | 7.67 | 13.60 | 163.97 | 1152.59 | 1408.50 |
| COUNT = 61 | | | | | | | | |
| Signal Tagname | | G1.DWATT | G1.FQG | H1.SF_DctBrnrGas FuelMassFlw | H1.01BAPT001 | H1.01BSFIT500 | G1.WEXH | BOPC2.00SBFY061 |
| | 3/6/20 14:50 | 236.38 | 27.56 | 7.69 | 13.57 | 166.92 | 1153.69 | 1549.50 |
| | 3/6/20 14:51 | 236.46 | 27.42 | 7.69 | 13.63 | 162.27 | 1152.89 | 1556.75 |
| | 3/6/20 14:52 | 236.77 | 27.32 | 7.69 | 13.54 | 160.00 | 1153.65 | 1563.14 |
| | 3/6/20 14:53 | 236.66 | 27.51 | 7.69 | 13.91 | 158.33 | 1153.23 | 1556.22 |
| | 3/6/20 14:54 | 236.59 | 27.43 | 7.69 | 13.47 | 160.33 | 1153.13 | 1559.53 |
| | 3/6/20 14:55 | 236.98 | 27.40 | 7.69 | 13.57 | 164.29 | 1154.13 | 1559.07 |
| | 3/6/20 14:56 | 236.41 | 27.53 | 7.69 | 13.54 | 165.24 | 1152.88 | 1567.61 |
| | 3/6/20 14:57 | 236.49 | 27.43 | 7.69 | 13.69 | 162.70 | 1152.37 | 1537.82 |
| | 3/6/20 14:58 | 233.64 | 27.05 | 7.69 | 13.46 | 168.14 | 1154.35 | 1551.96 |
| | 3/6/20 14:59 | 229.26 | 26.50 | 7.69 | 13.45 | 146.73 | 1145.34 | 1566.19 |
| | 3/6/20 15:00 | 236.41 | 27.68 | 7.69 | 13.41 | 149.94 | 1152.67 | 1507.21 |
| | 3/6/20 15:01 | 236.42 | 27.30 | 7.68 | 13.55 | 152.18 | 1152.85 | 1410.43 |
| | 3/6/20 15:02 | 236.41 | 27.55 | 7.68 | 13.64 | 153.48 | 1152.95 | 1406.53 |
| | 3/6/20 15:03 | 236.58 | 27.39 | 7.68 | 13.55 | 155.23 | 1152.99 | 1388.63 |
| | 3/6/20 15:04 | 236.48 | 27.33 | 7.68 | 13.70 | 161.02 | 1153.03 | 1419.91 |
| | 3/6/20 15:05 | 235.86 | 27.31 | 7.68 | 13.29 | 164.95 | 1152.24 | 1390.96 |
| | 3/6/20 15:06 | 236.06 | 27.45 | 7.68 | 13.57 | 165.79 | 1152.13 | 1410.70 |
| | 3/6/20 15:07 | 236.68 | 27.36 | 7.68 | 13.79 | 170.06 | 1153.50 | 1409.81 |
| | 3/6/20 15:08 | 236.25 | 27.43 | 7.68 | 13.70 | 169.11 | 1153.15 | 1386.11 |
| | 3/6/20 15:09 | 236.71 | 27.51 | 7.68 | 13.61 | 171.59 | 1153.04 | 1396.65 |
| | 3/6/20 15:10 | 236.29 | 27.56 | 7.68 | 13.50 | 171.60 | 1152.03 | 1404.69 |
| | 3/6/20 15:11 | 236.48 | 27.42 | 7.68 | 13.46 | 171.09 | 1151.93 | 1380.56 |
| | 3/6/20 15:12 | 236.55 | 27.49 | 7.68 | 13.75 | 169.62 | 1152.90 | 1387.88 |
| | 3/6/20 15:13 | 236.36 | 27.57 | 7.68 | 13.82 | 165.53 | 1152.72 | 1386.00 |
| | 3/6/20 15:14 | 236.77 | 27.27 | 7.68 | 13.77 | 164.85 | 1153.78 | 1409.50 |
| | 3/6/20 15:15 | 236.40 | 27.49 | 7.68 | 13.53 | 165.47 | 1153.02 | 1384.22 |
| | 3/6/20 15:16 | 236.42 | 27.43 | 7.68 | 13.54 | 164.65 | 1153.05 | 1368.51 |
| | 3/6/20 15:17 | 236.81 | 27.32 | 7.68 | 13.75 | 165.35 | 1153.86 | 1395.39 |
| | 3/6/20 15:18 | 236.67 | 27.38 | 7.68 | 13.95 | 166.17 | 1153.07 | 1362.97 |
| | 3/6/20 15:19 | 236.55 | 27.48 | 7.68 | 13.50 | 165.77 | 1153.04 | 1357.44 |
| | 3/6/20 15:20 | 236.34 | 27.53 | 7.67 | 13.75 | 165.25 | 1153.02 | 1358.24 |
| | 3/6/20 15:21 | 236.57 | 27.36 | 7.67 | 13.62 | 165.96 | 1152.73 | 1386.07 |
| | 3/6/20 15:22 | 236.37 | 27.45 | 7.67 | 13.52 | 166.69 | 1153.05 | 1370.07 |
| | 3/6/20 15:23 | 236.36 | 27.53 | 7.67 | 13.61 | 162.74 | 1152.39 | 1376.30 |
| | 3/6/20 15:24 | 236.33 | 27.39 | 7.67 | 13.81 | 165.40 | 1153.05 | 1360.54 |
| | 3/6/20 15:25 | 236.71 | 27.42 | 7.67 | 13.43 | 165.03 | 1152.61 | 1383.58 |
| | 3/6/20 15:26 | 236.20 | 27.51 | 7.67 | 13.30 | 165.63 | 1152.03 | 1382.34 |
| | 3/6/20 15:27 | 236.62 | 27.44 | 7.67 | 13.66 | 165.25 | 1152.79 | 1364.12 |
| | 3/6/20 15:28 | 236.49 | 27.23 | 7.67 | 13.54 | 164.52 | 1153.05 | 1347.60 |
| | 3/6/20 15:29 | 236.44 | 27.43 | 7.67 | 13.97 | 166.18 | 1153.20 | 1357.78 |
| | 3/6/20 15:30 | 236.18 | 27.54 | 7.67 | 13.95 | 165.78 | 1152.16 | 1375.46 |
| | 3/6/20 15:31 | 236.28 | 27.41 | 7.67 | 13.42 | 165.67 | 1151.61 | 1379.78 |
| | 3/6/20 15:32 | 236.07 | 27.59 | 7.67 | 13.51 | 164.82 | 1152.86 | 1370.03 |
| | 3/6/20 15:33 | 236.16 | 27.23 | 7.67 | 13.75 | 165.08 | 1152.68 | 1358.66 |
| | 3/6/20 15:34 | 236.56 | 27.16 | 7.67 | 13.74 | 159.96 | 1152.36 | 1388.18 |
| | 3/6/20 15:35 | 236.27 | 27.52 | 7.67 | 13.42 | 160.21 | 1152.32 | 1366.79 |
| | 3/6/20 15:36 | 236.09 | 27.44 | 7.67 | 13.35 | 164.64 | 1152.08 | 1356.59 |
| | 3/6/20 15:37 | 236.23 | 27.35 | 7.67 | 13.83 | 165.19 | 1152.74 | 1363.95 |
| | 3/6/20 15:38 | 236.51 | 27.41 | 7.67 | 13.31 | 163.91 | 1152.97 | 1368.01 |
| | 3/6/20 15:39 | 236.28 | 27.50 | 7.66 | 13.78 | 164.30 | 1152.07 | 1382.92 |
| | 3/6/20 15:40 | 235.93 | 27.46 | 7.66 | 13.47 | 164.62 | 1151.72 | 1370.12 |
| | 3/6/20 15:41 | 236.53 | 27.42 | 7.66 | 13.85 | 162.20 | 1152.34 | 1368.38 |
| | 3/6/20 15:42 | 236.23 | 27.39 | 7.66 | 13.51 | 164.18 | 1152.00 | 1351.73 |
| | 3/6/20 15:43 | 236.29 | 27.40 | 7.66 | 13.91 | 165.47 | 1152.33 | 1353.79 |
| | 3/6/20 15:44 | 236.12 | 27.39 | 7.66 | 13.37 | 165.07 | 1152.80 | 1366.01 |
| | 3/6/20 15:45 | 236.47 | 27.49 | 7.66 | 13.55 | 165.40 | 1152.39 | 1362.67 |
| | 3/6/20 15:46 | 236.11 | 27.64 | 7.66 | 13.52 | 165.78 | 1151.94 | 1376.52 |
| | 3/6/20 15:47 | 236.33 | 27.37 | 7.66 | 13.50 | 162.57 | 1151.55 | 1370.18 |
| | 3/6/20 15:48 | 236.62 | 27.49 | 7.66 | 13.61 | 165.72 | 1153.06 | 1378.59 |
| | 3/6/20 15:49 | 236.25 | 27.36 | 7.66 | 13.54 | 164.80 | 1151.44 | 1341.75 |
| | 3/6/20 15:50 | 236.02 | 27.22 | 7.66 | 13.47 | 165.75 | 1150.98 | 1349.74 |

# EMISSION DATA RECORDS

## Reference Method Data
## Base Load
## NOx, CO, VOC, and $NH_3$

Following completion of the stack emission test program for Unit #U-00001, it was discovered that the U-00001 fuel gas flow meter operation was tied to a “test mode” (Mode 0) setting, and not the expected “natural gas mode” setting (Mode 1). Further investigations of the impact of this setting, indicate that the initial Mode 0 fuel gas flow results have a positive bias of 1.5%. Consequently, the original fuel gas flow results (see U-00001-supplied operational fuel gas data) have been reduced by 1.5%. The operating mode of the Unit 1 gas flowmeter has been reset to the correct Mode 1 (natural gas).

**Cricket Valley Energy Center LLC**
**February 17, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,644 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,019 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,673 | lb/min |
| Duct Burner Fuel Flow | 0 | lb/min |
| Total Fuel Flow | 2,260,589 | SCFH |

Note: Turbine fuel flow reduced by 1.5%, no change to duct burner fuel flow

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.28 | in. Hg |
| Relative Humidity | 41 | % |
| Ambient Temperature | 43 | ° F |
| Specific Humidity | 0.002353 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 240.4 | megawatts |
| Heat Input | 2,303 | MMBtu/hr |
| $NH_3$ Flow Rate | 170 | lb/hr |
| Meas. Stack Moisture | 5.8 | % |
| Stack Exhaust Flow (M19) | 51,893,455 | SCFH |

Data from: From PM Run PM U-00001 Base-1

Base Load, Run - 1-1

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 02/17/20 13:35:04 | 3500 | 12.90 | 2.59 | 0.04 | 0.59 | 4.84 | 1.52 |
| 02/17/20 13:35:34 | 3530 | 12.91 | 2.61 | 0.07 | 0.82 | 4.83 | 1.32 |
| 02/17/20 13:36:04 | 3560 | 12.92 | 2.62 | 0.06 | 0.77 | 4.83 | 1.25 |
| 02/17/20 13:36:34 | 3590 | 12.90 | 2.50 | 0.09 | 0.46 | 4.83 | 1.41 |
| 02/17/20 13:37:04 | 3620 | 12.92 | 2.50 | 0.00 | 0.04 | 4.83 | 1.41 |
| 02/17/20 13:37:34 | 3650 | 12.91 | 2.57 | 0.07 | 0.40 | 4.82 | 1.45 |
| 02/17/20 13:38:04 | 3680 | 12.91 | 2.49 | 0.02 | 0.69 | 4.83 | 1.51 |
| 02/17/20 13:38:34 | 3710 | 12.89 | 2.41 | 0.04 | 0.41 | 4.83 | 1.56 |
| 02/17/20 13:39:04 | 3740 | 12.91 | 2.36 | 0.03 | 0.87 | 4.82 | 1.68 |
| 02/17/20 13:39:34 | 3770 | 12.92 | 2.53 | 0.09 | 1.09 | 4.82 | 1.58 |
| 02/17/20 13:40:04 | 3800 | 12.93 | 2.41 | 0.09 | 1.20 | 4.83 | 1.49 |
| 02/17/20 13:40:34 | 3830 | 12.92 | 2.28 | 0.09 | 1.27 | 4.82 | 1.55 |
| 02/17/20 13:41:04 | 3860 | 12.93 | 2.33 | 0.09 | 0.60 | 4.83 | 1.63 |
| 02/17/20 13:41:34 | 3890 | 12.93 | 2.37 | 0.06 | 0.56 | 4.82 | 1.89 |
| 02/17/20 13:42:04 | 3920 | 12.91 | 2.41 | 0.15 | 0.64 | 4.82 | 1.81 |
| 02/17/20 13:42:34 | 3950 | 12.92 | 2.53 | 0.07 | 0.65 | 4.82 | 1.81 |
| 02/17/20 13:43:04 | 3980 | 12.93 | 2.64 | 0.09 | 0.71 | 4.82 | 1.75 |
| 02/17/20 13:43:34 | 4010 | 12.92 | 2.58 | 0.06 | 0.77 | 4.82 | 1.69 |
| 02/17/20 13:44:04 | 4040 | 12.92 | 2.58 | 0.13 | 0.66 | 4.82 | 1.70 |
| 02/17/20 13:44:34 | 4070 | 12.92 | 2.67 | 0.17 | 0.62 | 4.82 | 1.69 |
| 02/17/20 13:45:04 | 4100 | 12.90 | 2.60 | 0.06 | 0.71 | 4.82 | 1.61 |
| 02/17/20 13:45:34 | 4130 | 12.88 | 2.53 | 0.14 | 0.12 | 4.83 | 1.69 |
| 02/17/20 13:46:04 | 4160 | 12.90 | 2.60 | 0.21 | 0.00 | 4.81 | 1.66 |
| 02/17/20 13:46:34 | 4190 | 12.91 | 2.70 | 0.17 | 0.21 | 4.81 | 1.64 |
| 02/17/20 13:47:04 | 4220 | 12.92 | 2.52 | 0.16 | 0.34 | 4.82 | 1.63 |
| 02/17/20 13:47:34 | 4250 | 12.92 | 2.40 | 0.25 | 0.40 | 4.81 | 1.62 |
| 02/17/20 13:48:04 | 4280 | 12.92 | 2.38 | 0.15 | 0.88 | 4.81 | 1.51 |
| 02/17/20 13:48:34 | 4310 | 12.92 | 2.44 | 0.12 | 0.87 | 4.81 | 1.51 |
| 02/17/20 13:49:04 | 4340 | 12.90 | 2.46 | 0.15 | 0.59 | 4.81 | 1.20 |
| 02/17/20 13:49:34 | 4370 | 12.91 | 2.56 | 0.06 | 0.22 | 4.81 | 1.45 |
| 02/17/20 13:50:04 | 4400 | 12.90 | 2.58 | 0.09 | 0.67 | 4.81 | 1.60 |
| 02/17/20 13:50:34 | 4430 | 12.91 | 2.54 | 0.09 | 0.44 | 4.82 | 1.57 |
| 02/17/20 13:51:04 | 4460 | 12.86 | 2.68 | 0.26 | 0.49 | 4.81 | 1.39 |
| 02/17/20 13:51:34 | 4490 | 12.90 | 2.72 | 0.36 | 0.44 | 4.82 | 1.29 |
| 02/17/20 13:52:04 | 4520 | 12.88 | 2.70 | 0.36 | 0.71 | 4.82 | 1.40 |
| 02/17/20 13:52:34 | 4550 | 12.88 | 2.55 | 0.41 | 0.91 | 4.82 | 1.45 |
| 02/17/20 13:53:04 | 4580 | 12.90 | 2.62 | 0.40 | 0.98 | 4.82 | 1.27 |
| 02/17/20 13:53:34 | 4610 | 12.91 | 2.66 | 0.47 | 0.88 | 4.82 | 1.39 |
| 02/17/20 13:54:04 | 4640 | 12.92 | 2.49 | 0.37 | 0.56 | 4.82 | 1.41 |
| 02/17/20 13:54:34 | 4670 | 12.93 | 2.50 | 0.25 | 0.71 | 4.82 | 1.38 |
| 02/17/20 13:55:04 | 4700 | 12.90 | 2.48 | 0.28 | 0.18 | 4.82 | 1.41 |
| 02/17/20 13:55:34 | 4730 | 12.92 | 2.53 | 0.22 | 0.46 | 4.81 | 1.34 |
| 02/17/20 13:56:04 | 4760 | 12.92 | 2.52 | 0.38 | 0.91 | 4.82 | 1.47 |
| 02/17/20 13:56:34 | 4790 | 12.92 | 2.39 | 0.33 | 0.10 | 4.82 | 1.62 |
| 02/17/20 13:57:04 | 4820 | 12.93 | 2.31 | 0.30 | 0.18 | 4.81 | 1.83 |
| 02/17/20 13:57:34 | 4850 | 12.92 | 2.33 | 0.33 | 0.60 | 4.82 | 1.55 |
| 02/17/20 13:58:04 | 4880 | 12.92 | 2.32 | 0.38 | 0.69 | 4.81 | 1.55 |
| 02/17/20 13:58:34 | 4910 | 12.92 | 2.32 | 0.25 | 0.87 | 4.81 | 1.80 |
| 02/17/20 13:59:04 | 4940 | 12.93 | 2.39 | 0.29 | 0.63 | 4.81 | 1.87 |
| 02/17/20 13:59:34 | 4970 | 12.85 | 2.49 | 0.36 | 0.70 | 4.81 | 2.03 |
| 02/17/20 14:00:04 | 5000 | 12.88 | 2.72 | 0.33 | 0.70 | 4.82 | 2.00 |
| 02/17/20 14:00:34 | 5030 | 12.89 | 2.95 | 0.32 | 0.55 | 4.81 | 2.05 |
| 02/17/20 14:01:04 | 5060 | 12.90 | 2.95 | 0.51 | 0.64 | 4.81 | 2.23 |
| 02/17/20 14:01:34 | 5090 | 12.89 | 2.89 | 0.59 | 0.70 | 4.81 | 2.40 |
| 02/17/20 14:02:04 | 5120 | 12.91 | 2.72 | 0.62 | 0.78 | 4.81 | 2.10 |
| 02/17/20 14:02:34 | 5150 | 12.90 | 2.48 | 0.50 | 0.73 | 4.81 | 2.15 |
| 02/17/20 14:03:04 | 5180 | 12.90 | 2.27 | 0.51 | 0.64 | 4.81 | 2.29 |
| 02/17/20 14:03:34 | 5210 | 12.88 | 2.34 | 0.45 | 0.18 | 4.81 | 2.08 |
| 02/17/20 14:04:04 | 5240 | 12.89 | 2.44 | 0.32 | 0.48 | 4.80 | 1.87 |
| 02/17/20 14:04:34 | 5270 | 12.89 | 2.50 | 0.35 | 0.74 | 4.81 | 1.56 |
| 02/17/20 14:05:04 | 5300 | 12.89 | 2.52 | 0.39 | 0.75 | 4.81 | 1.64 |
| 02/17/20 14:05:34 | 5330 | 12.89 | 2.61 | 0.42 | 0.55 | 4.81 | 1.62 |
| 02/17/20 14:06:04 | 5360 | 12.90 | 2.71 | 0.32 | 0.50 | 4.81 | 1.63 |
| 02/17/20 14:06:34 | 5390 | 12.91 | 2.65 | 0.29 | 0.42 | 4.81 | 1.62 |
| 02/17/20 14:07:04 | 5420 | 12.92 | 2.50 | 0.28 | 0.04 | 4.81 | 1.48 |
| 02/17/20 14:07:34 | 5450 | 12.92 | 2.43 | 0.25 | 0.28 | 4.80 | 1.45 |
| 02/17/20 14:08:04 | 5480 | 12.91 | 2.36 | 0.30 | 0.73 | 4.81 | 1.41 |
| 02/17/20 14:08:34 | 5510 | 12.93 | 2.33 | 0.38 | 0.57 | 4.81 | 1.38 |
| 02/17/20 14:09:04 | 5540 | 12.88 | 2.32 | 0.36 | 0.57 | 4.81 | 1.31 |
| 02/17/20 14:09:34 | 5570 | 12.90 | 2.40 | 0.39 | 0.63 | 4.81 | 1.36 |
| 02/17/20 14:10:04 | 5600 | 12.92 | 2.44 | 0.41 | 0.98 | 4.81 | 1.45 |
| 02/17/20 14:10:34 | 5630 | 12.88 | 2.36 | 0.42 | 0.82 | 4.81 | 1.45 |
| 02/17/20 14:11:04 | 5660 | 12.89 | 2.37 | 0.37 | 0.56 | 4.81 | 1.44 |
| 02/17/20 14:11:34 | 5690 | 12.90 | 2.47 | 0.32 | 0.44 | 4.81 | 1.42 |

**Cricket Valley Energy Center LLC**
**February 17, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,644 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,019 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,673 | lb/min |
| Duct Burner Fuel Flow | 0 | lb/min |
| Total Fuel Flow | 2,260,589 | SCFH |

Note: Turbine fuel flow reduced by 1.5%, no change to duct burner fuel flow

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.28 | in. Hg |
| Relative Humidity | 41 | % |
| Ambient Temperature | 43 | ° F |
| Specific Humidity | 0.002353 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 240.4 | megawatts |
| Heat Input | 2,303 | MMBtu/hr |
| $NH_3$ Flow Rate | 170 | lb/hr |
| Meas. Stack Moisture | 5.8 | % |
| Stack Exhaust Flow (M19) | 51,893,455 | SCFH |

Data from: From PM Run PM U-00001 Base-1

Base Load, Run - 1-1

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 02/17/20 14:12:04 | 5720 | 12.90 | 2.47 | 0.29 | 0.62 | 4.81 | 1.49 |
| 02/17/20 14:12:34 | 5750 | 12.91 | 2.52 | 0.29 | 0.79 | 4.81 | 1.50 |
| 02/17/20 14:13:04 | 5780 | 12.91 | 2.53 | 0.24 | 0.82 | 4.81 | 1.48 |
| 02/17/20 14:13:34 | 5810 | 12.92 | 2.58 | 0.39 | 0.42 | 4.82 | 1.89 |
| 02/17/20 14:14:04 | 5840 | 12.92 | 2.59 | 0.37 | 0.55 | 4.81 | 1.64 |
| 02/17/20 14:14:34 | 5870 | 12.91 | 2.56 | 0.33 | 0.62 | 4.82 | 1.57 |
| 02/17/20 14:15:04 | 5900 | 12.93 | 2.53 | 0.45 | 0.72 | 4.81 | 1.67 |
| 02/17/20 14:15:34 | 5930 | 12.93 | 2.46 | 0.37 | 0.76 | 4.82 | 1.77 |
| 02/17/20 14:16:04 | 5960 | 12.94 | 2.37 | 0.42 | 0.53 | 4.81 | 1.87 |
| 02/17/20 14:16:34 | 5990 | 12.93 | 2.31 | 0.43 | 0.60 | 4.81 | 1.82 |
| 02/17/20 14:17:04 | 6020 | 12.92 | 2.30 | 0.48 | 0.74 | 4.81 | 1.86 |
| 02/17/20 14:17:34 | 6050 | 12.92 | 2.26 | 0.50 | 0.85 | 4.82 | 1.85 |
| 02/17/20 14:18:04 | 6080 | 12.92 | 2.31 | 0.41 | 0.13 | 4.82 | 1.87 |
| 02/17/20 14:18:34 | 6110 | 12.93 | 2.29 | 0.41 | 0.39 | 4.81 | 1.88 |
| 02/17/20 14:19:04 | 6140 | 12.93 | 2.27 | 0.38 | 0.50 | 4.81 | 1.80 |
| 02/17/20 14:19:34 | 6170 | 12.94 | 2.33 | 0.44 | 0.58 | 4.81 | 1.68 |
| 02/17/20 14:20:04 | 6200 | 12.94 | 2.39 | 0.48 | 0.18 | 4.82 | 1.65 |
| 02/17/20 14:20:34 | 6230 | 12.92 | 2.47 | 0.48 | 0.34 | 4.81 | 1.64 |
| 02/17/20 14:21:04 | 6260 | 12.90 | 2.54 | 0.49 | 0.56 | 4.81 | 1.70 |
| 02/17/20 14:21:34 | 6290 | 12.92 | 2.61 | 0.44 | 0.70 | 4.82 | 1.56 |
| 02/17/20 14:22:04 | 6320 | 12.93 | 2.69 | 0.42 | 0.35 | 4.82 | 1.59 |
| 02/17/20 14:22:34 | 6350 | 12.90 | 2.67 | 0.38 | 0.49 | 4.81 | 1.17 |
| 02/17/20 14:23:04 | 6380 | 12.93 | 2.65 | 0.44 | 0.52 | 4.81 | 1.34 |
| 02/17/20 14:23:34 | 6410 | 12.92 | 2.60 | 0.49 | 0.73 | 4.82 | 1.44 |
| 02/17/20 14:24:04 | 6440 | 12.93 | 2.52 | 0.40 | 0.63 | 4.82 | 1.43 |
| 02/17/20 14:24:34 | 6470 | 12.93 | 2.43 | 0.38 | 0.45 | 4.82 | 1.42 |
| 02/17/20 14:25:04 | 6500 | 12.92 | 2.36 | 0.34 | 0.27 | 4.82 | 1.20 |
| 02/17/20 14:25:34 | 6530 | 12.92 | 2.34 | 0.35 | 0.29 | 4.81 | 1.22 |
| 02/17/20 14:26:04 | 6560 | 12.94 | 2.29 | 0.42 | 0.00 | 4.82 | 1.29 |
| 02/17/20 14:26:34 | 6590 | 12.94 | 2.27 | 0.45 | 0.27 | 4.81 | 1.37 |
| 02/17/20 14:27:04 | 6620 | 12.93 | 2.23 | 0.55 | 0.57 | 4.82 | 1.36 |
| 02/17/20 14:27:34 | 6650 | 12.93 | 2.21 | 0.46 | 0.23 | 4.82 | 1.40 |
| 02/17/20 14:28:04 | 6680 | 12.92 | 2.28 | 0.41 | 0.47 | 4.81 | 1.30 |
| 02/17/20 14:28:34 | 6710 | 12.93 | 2.35 | 0.36 | 0.69 | 4.82 | 1.45 |
| 02/17/20 14:29:04 | 6740 | 12.94 | 2.41 | 0.27 | 0.01 | 4.82 | 1.35 |
| 02/17/20 14:29:34 | 6770 | 12.94 | 2.45 | 0.41 | 0.08 | 4.81 | 1.57 |
| 02/17/20 14:30:04 | 6800 | 12.94 | 2.54 | 0.47 | 0.31 | 4.81 | 1.54 |
| 02/17/20 14:30:34 | 6830 | 12.95 | 2.54 | 0.49 | 0.45 | 4.81 | 1.51 |
| 02/17/20 14:31:04 | 6860 | 12.95 | 2.48 | 0.56 | 0.31 | 4.81 | 1.56 |
| 02/17/20 14:31:34 | 6890 | 12.95 | 2.48 | 0.44 | 0.23 | 4.81 | 1.74 |
| 02/17/20 14:32:04 | 6920 | 12.92 | 2.47 | 0.48 | 0.02 | 4.82 | 1.45 |
| 02/17/20 14:32:34 | 6950 | 12.94 | 2.45 | 0.55 | 0.05 | 4.81 | 1.40 |
| 02/17/20 14:33:04 | 6980 | 12.93 | 2.47 | 0.49 | 0.12 | 4.81 | 1.72 |
| 02/17/20 14:33:34 | 7010 | 12.95 | 2.40 | 0.48 | 0.31 | 4.81 | 1.78 |
| 02/17/20 14:34:04 | 7040 | 12.91 | 2.36 | 0.45 | 0.44 | 4.81 | 1.89 |
| 02/17/20 14:34:34 | 7070 | 12.94 | 2.32 | 0.50 | 0.62 | 4.81 | 1.55 |
| **RAW AVERAGE** | | **12.91** | **2.48** | **0.32** | **0.54** | **4.82** | **1.60** |

| | | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|---|
| | **Serial Number:** | inst-02-0014 | inst-nx-0020 | inst-co-0045 | inst-th-0010 | inst-c2-0023 | inst-ir-0004 |
| | | (%) | (ppmvd) | (ppmvd) | (ppmvw) | (%) | |
| Bias | **Initial Zero** | 0.03 | 0.01 | 0.00 | 0.01 | 0.00 | |
| Bias | **Final Zero** | 0.10 | 0.02 | 0.01 | 0.01 | 0.03 | |
| Bias | **Avg. Zero** | 0.07 | 0.02 | 0.01 | 0.01 | 0.02 | |
| Bias | **Initial UpScale** | 11.99 | 8.91 | 9.08 | 3.29 | 8.94 | |
| Bias | **Final UpScale** | 12.10 | 9.06 | 9.15 | 3.30 | 8.91 | |
| Bias | **Avg. UpScale** | 12.05 | 8.99 | 9.12 | 3.30 | 8.93 | |
| **Upscale Cal Gas** | | 12.01 | 8.90 | 9.10 | 3.37 | 8.95 | |

| **EMISSIONS DATA** | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 12.88 | 2.45 | 0.31 | 0.57 | 4.82 | 1.69 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.80 | 0.23 | 0.42 | N/A | 1.25 |

Non-Bias Adjusted Averages Include: *

**Cricket Valley Energy Center LLC**
**February 17, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,644 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,019 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,673 | lb/min |
| Duct Burner Fuel Flow | 0 | lb/min |
| Total Fuel Flow | 2,261,296 | SCFH |

Note: Turbine fuel flow reduced by 1.5%, no change to duct burner fuel flow

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.28 | in. Hg |
| Relative Humidity | 40 | % |
| Ambient Temperature | 43 | ° F |
| Specific Humidity | 0.002295 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 240.4 | megawatts |
| Heat Input | 2,304 | MMBtu/hr |
| $NH_3$ Flow Rate | 165 | lb/hr |
| Meas. Stack Moisture | 5.8 | % |
| Stack Exhaust Flow (M19) | 51,868,559 | SCFH |

Data from: From PM Run PM U-00001 Base-1

Base Load, Run - 1-2

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 02/17/20 14:50:04 | 800 | 12.96 | 2.40 | 0.48 | 0.79 | 4.81 | 0.90 |
| 02/17/20 14:50:34 | 830 | 12.96 | 2.38 | 0.47 | 0.77 | 4.82 | 1.21 |
| 02/17/20 14:51:04 | 860 | 12.96 | 2.34 | 0.46 | 0.71 | 4.82 | 1.37 |
| 02/17/20 14:51:34 | 890 | 12.96 | 2.36 | 0.36 | 0.72 | 4.82 | 1.36 |
| 02/17/20 14:52:04 | 920 | 12.92 | 2.39 | 0.23 | 0.26 | 4.82 | 1.58 |
| 02/17/20 14:52:34 | 950 | 12.96 | 2.44 | 0.26 | 0.24 | 4.81 | 1.28 |
| 02/17/20 14:53:04 | 980 | 12.91 | 2.46 | 0.25 | 0.05 | 4.82 | 1.60 |
| 02/17/20 14:53:34 | 1010 | 12.94 | 2.49 | 0.25 | 0.18 | 4.81 | 1.09 |
| 02/17/20 14:54:04 | 1040 | 12.95 | 2.48 | 0.41 | 0.62 | 4.82 | 1.59 |
| 02/17/20 14:54:34 | 1070 | 12.92 | 2.47 | 0.44 | 0.36 | 4.82 | 1.42 |
| 02/17/20 14:55:04 | 1100 | 12.94 | 2.47 | 0.41 | 0.17 | 4.81 | 1.16 |
| 02/17/20 14:55:34 | 1130 | 12.95 | 2.48 | 0.41 | 0.46 | 4.82 | 1.03 |
| 02/17/20 14:56:04 | 1160 | 12.95 | 2.44 | 0.50 | 0.79 | 4.82 | 0.91 |
| 02/17/20 14:56:34 | 1190 | 12.96 | 2.45 | 0.40 | 0.79 | 4.81 | 0.82 |
| 02/17/20 14:57:04 | 1220 | 12.96 | 2.45 | 0.52 | 0.66 | 4.81 | 0.77 |
| 02/17/20 14:57:34 | 1250 | 12.96 | 2.45 | 0.54 | 0.66 | 4.81 | 0.86 |
| 02/17/20 14:58:04 | 1280 | 12.96 | 2.40 | 0.54 | 0.51 | 4.81 | 0.83 |
| 02/17/20 14:58:34 | 1310 | 12.96 | 2.37 | 0.52 | 0.57 | 4.81 | 0.84 |
| 02/17/20 14:59:04 | 1340 | 12.95 | 2.34 | 0.56 | 0.23 | 4.82 | 0.82 |
| 02/17/20 14:59:34 | 1370 | 12.94 | 2.30 | 0.60 | 0.09 | 4.81 | 0.68 |
| 02/17/20 15:00:04 | 1400 | 12.95 | 2.27 | 0.51 | 0.24 | 4.81 | 0.74 |
| 02/17/20 15:00:34 | 1430 | 12.95 | 2.25 | 0.48 | 0.52 | 4.81 | 0.87 |
| 02/17/20 15:01:04 | 1460 | 12.93 | 2.30 | 0.53 | 0.20 | 4.82 | 0.71 |
| 02/17/20 15:01:34 | 1490 | 12.95 | 2.35 | 0.41 | 0.18 | 4.81 | 0.66 |
| 02/17/20 15:02:04 | 1520 | 12.94 | 2.45 | 0.48 | 0.31 | 4.81 | 0.66 |
| 02/17/20 15:02:34 | 1550 | 12.95 | 2.52 | 0.40 | 0.50 | 4.82 | 0.72 |
| 02/17/20 15:03:04 | 1580 | 12.95 | 2.56 | 0.35 | 0.59 | 4.82 | 0.70 |
| 02/17/20 15:03:34 | 1610 | 12.96 | 2.53 | 0.37 | 0.60 | 4.82 | 0.73 |
| 02/17/20 15:04:04 | 1640 | 12.96 | 2.50 | 0.33 | 0.47 | 4.82 | 0.65 |
| 02/17/20 15:04:34 | 1670 | 12.96 | 2.55 | 0.20 | 0.53 | 4.82 | 0.70 |
| 02/17/20 15:05:04 | 1700 | 12.93 | 2.53 | 0.33 | 0.07 | 4.82 | 0.73 |
| 02/17/20 15:05:34 | 1730 | 12.95 | 2.48 | 0.34 | 0.26 | 4.81 | 0.70 |
| 02/17/20 15:06:04 | 1760 | 12.95 | 2.46 | 0.37 | 0.46 | 4.82 | 0.68 |
| 02/17/20 15:06:34 | 1790 | 12.94 | 2.46 | 0.46 | 0.36 | 4.81 | 0.66 |
| 02/17/20 15:07:04 | 1820 | 12.95 | 2.44 | 0.44 | 0.41 | 4.82 | 0.67 |
| 02/17/20 15:07:34 | 1850 | 12.96 | 2.39 | 0.47 | 0.61 | 4.82 | 0.60 |
| 02/17/20 15:08:04 | 1880 | 12.93 | 2.31 | 0.51 | 0.29 | 4.81 | 0.63 |
| 02/17/20 15:08:34 | 1910 | 12.95 | 2.26 | 0.56 | 0.45 | 4.81 | 0.59 |
| 02/17/20 15:09:04 | 1940 | 12.95 | 2.22 | 0.39 | 0.52 | 4.81 | 0.61 |
| 02/17/20 15:09:34 | 1970 | 12.94 | 2.18 | 0.37 | 0.49 | 4.81 | 0.57 |
| 02/17/20 15:10:04 | 2000 | 12.95 | 2.21 | 0.37 | 0.28 | 4.81 | 0.58 |
| 02/17/20 15:10:34 | 2030 | 12.95 | 2.30 | 0.42 | 0.33 | 4.82 | 0.58 |
| 02/17/20 15:11:04 | 2060 | 12.96 | 2.35 | 0.37 | 0.55 | 4.82 | 0.71 |
| 02/17/20 15:11:34 | 2090 | 12.91 | 2.41 | 0.43 | 0.15 | 4.82 | 0.96 |
| 02/17/20 15:12:04 | 2120 | 12.93 | 2.51 | 0.40 | 0.06 | 4.82 | 1.05 |
| 02/17/20 15:12:34 | 2150 | 12.94 | 2.61 | 0.49 | 0.46 | 4.81 | 0.95 |
| 02/17/20 15:13:04 | 2180 | 12.94 | 2.63 | 0.38 | 0.62 | 4.81 | 0.97 |
| 02/17/20 15:13:34 | 2210 | 12.95 | 2.64 | 0.40 | 0.56 | 4.81 | 1.20 |
| 02/17/20 15:14:04 | 2240 | 12.95 | 2.61 | 0.34 | 0.57 | 4.81 | 1.07 |
| 02/17/20 15:14:34 | 2270 | 12.96 | 2.59 | 0.40 | 0.70 | 4.81 | 0.81 |
| 02/17/20 15:15:04 | 2300 | 12.93 | 2.60 | 0.44 | 0.20 | 4.81 | 1.37 |
| 02/17/20 15:15:34 | 2330 | 12.96 | 2.49 | 0.40 | 0.42 | 4.81 | 1.49 |
| 02/17/20 15:16:04 | 2360 | 12.91 | 2.35 | 0.47 | 0.04 | 4.81 | 1.69 |
| 02/17/20 15:16:34 | 2390 | 12.92 | 2.27 | 0.37 | 0.16 | 4.81 | 1.64 |
| 02/17/20 15:17:04 | 2420 | 12.94 | 2.22 | 0.38 | 0.29 | 4.81 | 1.58 |
| 02/17/20 15:17:34 | 2450 | 12.95 | 2.16 | 0.42 | 0.48 | 4.81 | 1.43 |
| 02/17/20 15:18:04 | 2480 | 12.95 | 2.20 | 0.27 | 0.51 | 4.82 | 1.66 |
| 02/17/20 15:18:34 | 2510 | 12.94 | 2.24 | 0.32 | 0.28 | 4.81 | 1.04 |
| 02/17/20 15:19:04 | 2540 | 12.95 | 2.28 | 0.31 | 0.28 | 4.81 | 1.49 |
| 02/17/20 15:19:34 | 2570 | 12.94 | 2.36 | 0.34 | 0.21 | 4.81 | 1.58 |
| 02/17/20 15:20:04 | 2600 | 12.95 | 2.50 | 0.35 | 0.10 | 4.81 | 1.24 |
| 02/17/20 15:20:34 | 2630 | 12.95 | 2.61 | 0.38 | 0.08 | 4.81 | 1.03 |
| 02/17/20 15:21:04 | 2660 | 12.95 | 2.70 | 0.42 | 0.21 | 4.82 | 2.28 |
| 02/17/20 15:21:34 | 2690 | 12.94 | 2.77 | 0.39 | 0.08 | 4.81 | 1.83 |
| 02/17/20 15:22:04 | 2720 | 12.95 | 2.81 | 0.41 | 0.13 | 4.81 | 1.84 |
| 02/17/20 15:22:34 | 2750 | 12.96 | 2.73 | 0.42 | 0.29 | 4.81 | 1.83 |
| 02/17/20 15:23:04 | 2780 | 12.93 | 2.62 | 0.46 | 0.00 | 4.81 | 1.73 |
| 02/17/20 15:23:34 | 2810 | 12.95 | 2.54 | 0.49 | 0.06 | 4.81 | 1.86 |
| 02/17/20 15:24:04 | 2840 | 12.91 | 2.45 | 0.53 | 0.00 | 4.81 | 1.36 |
| 02/17/20 15:24:34 | 2870 | 12.94 | 2.34 | 0.61 | 0.06 | 4.82 | 1.95 |
| 02/17/20 15:25:04 | 2900 | 12.95 | 2.24 | 0.47 | 0.30 | 4.81 | 1.42 |
| 02/17/20 15:25:34 | 2930 | 12.95 | 2.17 | 0.40 | 0.39 | 4.81 | 1.16 |
| 02/17/20 15:26:04 | 2960 | 12.96 | 2.14 | 0.39 | 0.34 | 4.82 | 1.26 |
| 02/17/20 15:26:34 | 2990 | 12.93 | 2.14 | 0.39 | 0.10 | 4.82 | 1.25 |

**Cricket Valley Energy Center LLC**
**February 17, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,644 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,019 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,673 | lb/min |
| Duct Burner Fuel Flow | 0 | lb/min |
| Total Fuel Flow | 2,261,296 | SCFH |

Note: Turbine fuel flow reduced by 1.5%, no change to duct burner fuel flow

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.28 | in. Hg |
| Relative Humidity | 40 | % |
| Ambient Temperature | 43 | ° F |
| Specific Humidity | 0.002295 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 240.4 | megawatts |
| Heat Input | 2,304 | MMBtu/hr |
| $NH_3$ Flow Rate | 165 | lb/hr |
| Meas. Stack Moisture | 5.8 | % |
| Stack Exhaust Flow (M19) | 51,868,559 | SCFH |

Data from: From PM Run PM U-00001 Base-1

Base Load, Run - 1-2

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 02/17/20 15:27:04 | 3020 | 12.95 | 2.22 | 0.34 | 0.00 | 4.82 | 1.66 |
| 02/17/20 15:27:34 | 3050 | 12.95 | 2.35 | 0.42 | 0.16 | 4.82 | 1.63 |
| 02/17/20 15:28:04 | 3080 | 12.95 | 2.48 | 0.41 | 0.21 | 4.82 | 1.42 |
| 02/17/20 15:28:34 | 3110 | 12.91 | 2.62 | 0.38 | 0.01 | 4.81 | 1.72 |
| 02/17/20 15:29:04 | 3140 | 12.93 | 2.74 | 0.35 | 0.01 | 4.82 | 1.39 |
| 02/17/20 15:29:34 | 3170 | 12.93 | 2.84 | 0.41 | 0.13 | 4.81 | 1.54 |
| 02/17/20 15:30:04 | 3200 | 12.94 | 2.76 | 0.43 | 0.36 | 4.82 | 1.78 |
| 02/17/20 15:30:34 | 3230 | 12.95 | 2.65 | 0.41 | 0.46 | 4.82 | 1.75 |
| 02/17/20 15:31:04 | 3260 | 12.94 | 2.55 | 0.50 | 0.39 | 4.82 | 1.56 |
| 02/17/20 15:31:34 | 3290 | 12.94 | 2.47 | 0.42 | 0.19 | 4.82 | 1.19 |
| 02/17/20 15:32:04 | 3320 | 12.95 | 2.37 | 0.47 | 0.22 | 4.82 | 1.42 |
| 02/17/20 15:32:34 | 3350 | 12.93 | 2.27 | 0.45 | 0.09 | 4.82 | 1.28 |
| 02/17/20 15:33:04 | 3380 | 12.95 | 2.23 | 0.42 | 0.21 | 4.82 | 1.77 |
| 02/17/20 15:33:34 | 3410 | 12.96 | 2.17 | 0.37 | 0.28 | 4.82 | 1.44 |
| 02/17/20 15:34:04 | 3440 | 12.97 | 2.12 | 0.20 | 0.30 | 4.82 | 1.15 |
| 02/17/20 15:34:34 | 3470 | 12.95 | 2.13 | 0.40 | 0.04 | 4.83 | 1.02 |
| 02/17/20 15:35:04 | 3500 | 12.97 | 2.19 | 0.34 | 0.06 | 4.82 | 0.99 |
| 02/17/20 15:35:34 | 3530 | 12.97 | 2.23 | 0.40 | 0.12 | 4.82 | 1.14 |
| 02/17/20 15:36:04 | 3560 | 12.98 | 2.20 | 0.44 | 0.13 | 4.83 | 1.32 |
| 02/17/20 15:36:34 | 3590 | 12.96 | 2.22 | 0.40 | 0.13 | 4.82 | 1.27 |
| 02/17/20 15:37:04 | 3620 | 12.91 | 2.33 | 0.47 | 0.00 | 4.83 | 1.38 |
| 02/17/20 15:37:34 | 3650 | 12.93 | 2.09 | 0.37 | 0.00 | 4.81 | 1.09 |
| 02/17/20 15:38:04 | 3680 | 12.94 | 2.33 | 0.38 | 0.00 | 4.82 | 0.99 |
| 02/17/20 15:38:34 | 3710 | 12.94 | 2.37 | 0.42 | 0.00 | 4.83 | 1.48 |
| 02/17/20 15:39:04 | 3740 | 12.95 | 2.35 | 0.27 | 0.00 | 4.83 | 1.26 |
| 02/17/20 15:39:34 | 3770 | 12.95 | 2.39 | 0.32 | 0.00 | 4.83 | 1.02 |
| 02/17/20 15:40:04 | 3800 | 12.96 | 2.34 | 0.31 | 0.00 | 4.82 | 1.43 |
| 02/17/20 15:40:34 | 3830 | 12.93 | 2.25 | 0.34 | 0.00 | 4.82 | 1.28 |
| 02/17/20 15:41:04 | 3860 | 12.96 | 2.19 | 0.35 | 0.00 | 4.83 | 1.33 |
| 02/17/20 15:41:34 | 3890 | 12.91 | 2.14 | 0.38 | 0.00 | 4.83 | 1.11 |
| 02/17/20 15:42:04 | 3920 | 12.92 | 2.14 | 0.42 | 0.00 | 4.82 | 1.14 |
| 02/17/20 15:42:34 | 3950 | 12.94 | 2.13 | 0.39 | 0.00 | 4.82 | 1.35 |
| 02/17/20 15:43:04 | 3980 | 12.95 | 2.12 | 0.41 | 0.00 | 4.83 | 2.75 |
| 02/17/20 15:43:34 | 4010 | 12.95 | 2.14 | 0.42 | 0.00 | 4.83 | 1.93 |
| 02/17/20 15:44:04 | 4040 | 12.94 | 2.17 | 0.46 | 0.00 | 4.83 | 1.73 |
| 02/17/20 15:44:34 | 4070 | 12.95 | 2.23 | 0.49 | 0.00 | 4.83 | 1.81 |
| 02/17/20 15:45:04 | 4100 | 12.94 | 2.28 | 0.53 | 0.00 | 4.83 | 1.54 |
| 02/17/20 15:45:34 | 4130 | 12.95 | 2.29 | 0.61 | 0.00 | 4.83 | 1.22 |
| 02/17/20 15:46:04 | 4160 | 12.95 | 2.30 | 0.32 | 0.00 | 4.82 | 1.38 |
| 02/17/20 15:46:34 | 4190 | 12.95 | 2.32 | 0.37 | 0.00 | 4.83 | 1.42 |
| 02/17/20 15:47:04 | 4220 | 12.94 | 2.32 | 0.20 | 0.00 | 4.82 | 1.50 |
| 02/17/20 15:47:34 | 4250 | 12.95 | 2.31 | 0.40 | 0.00 | 4.83 | 1.36 |
| 02/17/20 15:48:04 | 4280 | 12.96 | 2.31 | 0.34 | 0.00 | 4.82 | 1.42 |
| 02/17/20 15:48:34 | 4310 | 12.93 | 2.27 | 0.40 | 0.00 | 4.82 | 1.16 |
| 02/17/20 15:49:04 | 4340 | 12.97 | 2.26 | 0.44 | 0.00 | 4.82 | 1.27 |
| 02/17/20 15:49:34 | 4370 | 12.97 | 2.25 | 0.40 | 0.00 | 4.82 | 1.08 |
| **RAW AVERAGE** | | **12.95** | **2.38** | **0.41** | **0.25** | **4.82** | **1.22** |

| | | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ |
|---|---|---|---|---|---|---|---|
| | **Serial Number:** | inst-02-0014 | inst-nx-0020 | inst-co-0045 | inst-th-0010 | inst-c2-0023 | inst-ir-0004 |
| **Bias** | **Initial Zero** | 0.10 | 0.02 | 0.01 | 0.01 | 0.03 | |
| | **Final Zero** | 0.03 | 0.02 | 0.00 | 0.00 | 0.02 | |
| | **Avg. Zero** | 0.07 | 0.02 | 0.01 | 0.01 | 0.03 | |
| | **Initial UpScale** | 12.10 | 9.06 | 9.15 | 3.30 | 8.91 | |
| | **Final UpScale** | 12.06 | 8.94 | 9.07 | 3.28 | 8.99 | |
| | **Avg. UpScale** | 12.08 | 9.00 | 9.11 | 3.29 | 8.95 | |
| **Upscale Cal Gas** | | 12.01 | 8.90 | 9.10 | 3.37 | 8.95 | |

| **EMISSIONS DATA** | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 12.88 | 2.34 | 0.40 | 0.27 | 4.81 | 1.30 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.72 | 0.30 | 0.20 | N/A | 0.95 |

Non-Bias Adjusted Averages Include: *

**Cricket Valley Energy Center LLC**
**February 17, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,644 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,019 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,678 | lb/min |
| Duct Burner Fuel Flow | 0 | lb/min |
| Total Fuel Flow | 2,267,876 | SCFH |

Note: Turbine fuel flow reduced by 1.5%, no change to duct burner fuel flow

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.30 | in. Hg |
| Relative Humidity | 39 | % |
| Ambient Temperature | 45 | ° F |
| Specific Humidity | 0.002414 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 241.3 | megawatts |
| Heat Input | 2,311 | MMBtu/hr |
| $NH_3$ Flow Rate | 172 | lb/hr |
| Meas. Stack Moisture | 5.8 | % |
| Stack Exhaust Flow (M19) | 52,178,300 | SCFH |

Data from: From PM Run PM U-00001 Base-1

Base Load, Run - 1-3

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 02/17/20 16:00:04 | 1400 | 12.96 | 2.42 | 0.00 | 0.00 | 4.81 | 1.23 |
| 02/17/20 16:00:34 | 1430 | 12.96 | 2.38 | 0.00 | 0.00 | 4.81 | 1.30 |
| 02/17/20 16:01:04 | 1460 | 12.96 | 2.39 | 0.00 | 0.00 | 4.82 | 1.10 |
| 02/17/20 16:01:34 | 1490 | 12.96 | 2.47 | 0.01 | 0.00 | 4.82 | 0.94 |
| 02/17/20 16:02:04 | 1520 | 12.96 | 2.44 | 0.01 | 0.00 | 4.82 | 1.08 |
| 02/17/20 16:02:34 | 1550 | 12.96 | 2.45 | 0.00 | 0.00 | 4.82 | 1.24 |
| 02/17/20 16:03:04 | 1580 | 12.96 | 2.48 | 0.00 | 0.00 | 4.82 | 1.12 |
| 02/17/20 16:03:34 | 1610 | 12.96 | 2.45 | 0.00 | 0.00 | 4.82 | 1.42 |
| 02/17/20 16:04:04 | 1640 | 12.96 | 2.45 | 0.00 | 0.00 | 4.82 | 1.41 |
| 02/17/20 16:04:34 | 1670 | 12.96 | 2.43 | 0.00 | 0.00 | 4.82 | 1.16 |
| 02/17/20 16:05:04 | 1700 | 12.96 | 2.43 | 0.00 | 0.00 | 4.82 | 1.51 |
| 02/17/20 16:05:34 | 1730 | 12.96 | 2.46 | 0.00 | 0.00 | 4.82 | 1.21 |
| 02/17/20 16:06:04 | 1760 | 12.96 | 2.48 | 0.00 | 0.00 | 4.82 | 1.06 |
| 02/17/20 16:06:34 | 1790 | 12.96 | 2.50 | 0.02 | 0.00 | 4.82 | 1.47 |
| 02/17/20 16:07:04 | 1820 | 12.96 | 2.50 | 0.01 | 0.00 | 4.82 | 1.35 |
| 02/17/20 16:07:34 | 1850 | 12.96 | 2.45 | 0.01 | 0.00 | 4.82 | 1.11 |
| 02/17/20 16:08:04 | 1880 | 12.96 | 2.39 | 0.00 | 0.00 | 4.82 | 1.37 |
| 02/17/20 16:08:34 | 1910 | 12.96 | 2.39 | 0.01 | 0.00 | 4.82 | 1.40 |
| 02/17/20 16:09:04 | 1940 | 12.96 | 2.37 | 0.00 | 0.00 | 4.82 | 1.32 |
| 02/17/20 16:09:34 | 1970 | 12.96 | 2.37 | 0.01 | 0.00 | 4.82 | 1.07 |
| 02/17/20 16:10:04 | 2000 | 12.96 | 2.40 | 0.00 | 0.00 | 4.82 | 0.95 |
| 02/17/20 16:10:34 | 2030 | 12.93 | 2.44 | 0.00 | 0.00 | 4.82 | 0.84 |
| 02/17/20 16:11:04 | 2060 | 12.95 | 2.53 | 0.02 | 0.00 | 4.81 | 0.83 |
| 02/17/20 16:11:34 | 2090 | 12.95 | 2.60 | 0.00 | 0.00 | 4.82 | 0.74 |
| 02/17/20 16:12:04 | 2120 | 12.96 | 2.64 | 0.03 | 0.00 | 4.82 | 0.68 |
| 02/17/20 16:12:34 | 2150 | 12.93 | 2.71 | 0.02 | 0.02 | 4.82 | 0.88 |
| 02/17/20 16:13:04 | 2180 | 12.96 | 2.71 | 0.04 | 0.00 | 4.82 | 1.02 |
| 02/17/20 16:13:34 | 2210 | 12.96 | 2.65 | 0.10 | 0.00 | 4.82 | 1.28 |
| 02/17/20 16:14:04 | 2240 | 12.93 | 2.58 | 0.01 | 0.05 | 4.82 | 1.13 |
| 02/17/20 16:14:34 | 2270 | 12.95 | 2.51 | 0.05 | 0.00 | 4.82 | 0.85 |
| 02/17/20 16:15:04 | 2300 | 12.95 | 2.41 | 0.04 | 0.02 | 4.82 | 0.69 |
| 02/17/20 16:15:34 | 2330 | 12.94 | 2.38 | 0.02 | 0.12 | 4.82 | 0.70 |
| 02/17/20 16:16:04 | 2360 | 12.95 | 2.27 | 0.08 | 0.00 | 4.82 | 0.71 |
| 02/17/20 16:16:34 | 2390 | 12.94 | 2.23 | 0.03 | 0.10 | 4.82 | 0.71 |
| 02/17/20 16:17:04 | 2420 | 12.93 | 2.25 | 0.08 | 0.00 | 4.82 | 0.73 |
| 02/17/20 16:17:34 | 2450 | 12.94 | 2.34 | 0.05 | 0.00 | 4.81 | 1.13 |
| 02/17/20 16:18:04 | 2480 | 12.95 | 2.41 | 0.02 | 0.10 | 4.82 | 0.85 |
| 02/17/20 16:18:34 | 2510 | 12.96 | 2.40 | 0.06 | 0.12 | 4.82 | 1.24 |
| 02/17/20 16:19:04 | 2540 | 12.96 | 2.44 | 0.02 | 0.24 | 4.82 | 0.98 |
| 02/17/20 16:19:34 | 2570 | 12.91 | 2.44 | 0.01 | 0.14 | 4.82 | 0.77 |
| 02/17/20 16:20:04 | 2600 | 12.93 | 2.48 | 0.10 | 0.00 | 4.82 | 1.41 |
| 02/17/20 16:20:34 | 2630 | 12.94 | 2.52 | 0.03 | 0.00 | 4.82 | 0.91 |
| 02/17/20 16:21:04 | 2660 | 12.95 | 2.57 | 0.03 | 0.19 | 4.82 | 1.06 |
| 02/17/20 16:21:34 | 2690 | 12.94 | 2.62 | 0.07 | 0.18 | 4.82 | 0.96 |
| 02/17/20 16:22:04 | 2720 | 12.94 | 2.56 | 0.02 | 0.15 | 4.82 | 1.38 |
| 02/17/20 16:22:34 | 2750 | 12.95 | 2.55 | 0.03 | 0.00 | 4.82 | 1.17 |
| 02/17/20 16:23:04 | 2780 | 12.95 | 2.57 | 0.03 | 0.14 | 4.82 | 0.84 |
| 02/17/20 16:23:34 | 2810 | 12.96 | 2.53 | 0.06 | 0.26 | 4.82 | 0.71 |
| 02/17/20 16:24:04 | 2840 | 12.96 | 2.52 | 0.04 | 0.27 | 4.82 | 0.73 |
| 02/17/20 16:24:34 | 2870 | 12.97 | 2.49 | 0.05 | 0.27 | 4.82 | 1.02 |
| 02/17/20 16:25:04 | 2900 | 12.95 | 2.43 | 0.01 | 0.05 | 4.82 | 1.02 |
| 02/17/20 16:25:34 | 2930 | 12.95 | 2.40 | 0.01 | 0.03 | 4.82 | 2.06 |
| 02/17/20 16:26:04 | 2960 | 12.95 | 2.36 | 0.00 | 0.05 | 4.82 | 1.58 |
| 02/17/20 16:26:34 | 2990 | 12.96 | 2.30 | 0.03 | 0.10 | 4.82 | 1.72 |
| 02/17/20 16:27:04 | 3020 | 12.93 | 2.33 | 0.03 | 0.12 | 4.82 | 2.25 |
| 02/17/20 16:27:34 | 3050 | 12.94 | 2.35 | 0.00 | 0.00 | 4.82 | 2.36 |
| 02/17/20 16:28:04 | 3080 | 12.94 | 2.43 | 0.01 | 0.00 | 4.82 | 2.21 |
| 02/17/20 16:28:34 | 3110 | 12.95 | 2.49 | 0.01 | 0.00 | 4.82 | 1.88 |
| 02/17/20 16:29:04 | 3140 | 12.94 | 2.48 | 0.04 | 0.00 | 4.82 | 2.01 |
| 02/17/20 16:29:34 | 3170 | 12.96 | 2.57 | 0.03 | 0.01 | 4.82 | 1.70 |
| 02/17/20 16:30:04 | 3200 | 12.93 | 2.62 | 0.03 | 0.02 | 4.83 | 1.87 |
| 02/17/20 16:30:34 | 3230 | 12.95 | 2.69 | 0.00 | 0.00 | 4.82 | 1.85 |
| 02/17/20 16:31:04 | 3260 | 12.94 | 2.77 | 0.04 | 0.00 | 4.82 | 1.65 |
| 02/17/20 16:31:34 | 3290 | 12.95 | 2.78 | 0.03 | 0.00 | 4.82 | 1.36 |
| 02/17/20 16:32:04 | 3320 | 12.95 | 2.77 | 0.00 | 0.00 | 4.82 | 1.27 |
| 02/17/20 16:32:34 | 3350 | 12.96 | 2.62 | 0.03 | 0.00 | 4.82 | 1.60 |
| 02/17/20 16:33:04 | 3380 | 12.96 | 2.49 | 0.00 | 0.00 | 4.82 | 1.40 |
| 02/17/20 16:33:34 | 3410 | 12.96 | 2.37 | 0.02 | 0.00 | 4.82 | 1.41 |
| 02/17/20 16:34:04 | 3440 | 12.94 | 2.27 | 0.03 | 0.00 | 4.82 | 1.75 |
| 02/17/20 16:34:34 | 3470 | 12.95 | 2.25 | 0.00 | 0.00 | 4.82 | 1.60 |
| 02/17/20 16:35:04 | 3500 | 12.95 | 2.24 | 0.01 | 0.00 | 4.82 | 1.92 |
| 02/17/20 16:35:34 | 3530 | 12.95 | 2.19 | 0.03 | 0.01 | 4.82 | 1.71 |
| 02/17/20 16:36:04 | 3560 | 12.94 | 2.20 | 0.01 | 0.00 | 4.82 | 1.37 |
| 02/17/20 16:36:34 | 3590 | 12.95 | 2.25 | 0.00 | 0.00 | 4.82 | 1.93 |

**Cricket Valley Energy Center LLC**
**February 17, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,644 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,019 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,678 | lb/min |
| Duct Burner Fuel Flow | 0 | lb/min |
| Total Fuel Flow | 2,267,876 | SCFH |

Note: Turbine fuel flow reduced by 1.5%, no change to duct burner fuel flow

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.30 | in. Hg |
| Relative Humidity | 39 | % |
| Ambient Temperature | 45 | ° F |
| Specific Humidity | 0.002414 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 241.3 | megawatts |
| Heat Input | 2,311 | MMBtu/hr |
| $NH_3$ Flow Rate | 172 | lb/hr |
| Meas. Stack Moisture | 5.8 | % |
| Stack Exhaust Flow (M19) | 52,178,300 | SCFH |

Data from: From PM Run PM U-00001 Base-1

Base Load, Run - 1-3

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 02/17/20 16:37:04 | 3620 | 12.95 | 2.37 | 0.00 | 0.00 | 4.82 | 1.79 |
| 02/17/20 16:37:34 | 3650 | 12.93 | 2.39 | 0.00 | 0.00 | 4.82 | 2.13 |
| 02/17/20 16:38:04 | 3680 | 12.95 | 2.55 | 0.01 | 0.00 | 4.82 | 1.54 |
| 02/17/20 16:38:34 | 3710 | 12.95 | 2.75 | 0.00 | 0.00 | 4.82 | 1.55 |
| 02/17/20 16:39:04 | 3740 | 12.95 | 2.91 | 0.00 | 0.00 | 4.82 | 1.33 |
| 02/17/20 16:39:34 | 3770 | 12.94 | 2.95 | 0.04 | 0.00 | 4.82 | 1.57 |
| 02/17/20 16:40:04 | 3800 | 12.94 | 2.94 | 0.00 | 0.00 | 4.82 | 1.36 |
| 02/17/20 16:40:34 | 3830 | 12.93 | 2.94 | 0.01 | 0.00 | 4.82 | 1.70 |
| 02/17/20 16:41:04 | 3860 | 12.94 | 2.82 | 0.03 | 0.00 | 4.82 | 1.34 |
| 02/17/20 16:41:34 | 3890 | 12.91 | 2.64 | 0.00 | 0.00 | 4.83 | 1.53 |
| 02/17/20 16:42:04 | 3920 | 12.92 | 2.41 | 0.00 | 0.00 | 4.82 | 2.09 |
| 02/17/20 16:42:34 | 3950 | 12.93 | 2.32 | 0.02 | 0.00 | 4.82 | 1.79 |
| 02/17/20 16:43:04 | 3980 | 12.94 | 2.20 | 0.01 | 0.00 | 4.82 | 1.86 |
| 02/17/20 16:43:34 | 4010 | 12.93 | 2.12 | 0.00 | 0.00 | 4.82 | 2.17 |
| 02/17/20 16:44:04 | 4040 | 12.94 | 2.10 | 0.00 | 0.00 | 4.82 | 1.09 |
| 02/17/20 16:44:34 | 4070 | 12.93 | 2.14 | 0.00 | 0.00 | 4.83 | 0.96 |
| 02/17/20 16:45:04 | 4100 | 12.94 | 2.21 | 0.00 | 0.00 | 4.83 | 0.98 |
| 02/17/20 16:45:34 | 4130 | 12.95 | 2.33 | 0.00 | 0.00 | 4.82 | 0.90 |
| 02/17/20 16:46:04 | 4160 | 12.94 | 2.38 | 0.00 | 0.00 | 4.83 | 1.61 |
| 02/17/20 16:46:34 | 4190 | 12.94 | 2.41 | 0.00 | 0.00 | 4.83 | 1.26 |
| 02/17/20 16:47:04 | 4220 | 12.95 | 2.51 | 0.00 | 0.00 | 4.83 | 1.61 |
| 02/17/20 16:47:34 | 4250 | 12.95 | 2.57 | 0.00 | 0.00 | 4.83 | 1.48 |
| 02/17/20 16:48:04 | 4280 | 12.94 | 2.49 | 0.00 | 0.00 | 4.83 | 1.70 |
| 02/17/20 16:48:34 | 4310 | 12.93 | 2.44 | 0.00 | 0.00 | 4.83 | 1.19 |
| 02/17/20 16:49:04 | 4340 | 12.94 | 2.38 | 0.00 | 0.00 | 4.83 | 1.33 |
| 02/17/20 16:49:34 | 4370 | 12.95 | 2.39 | 0.00 | 0.00 | 4.83 | 1.22 |
| 02/17/20 16:50:04 | 4400 | 12.94 | 2.38 | 0.01 | 0.00 | 4.83 | 1.18 |
| 02/17/20 16:50:34 | 4430 | 12.94 | 2.38 | 0.00 | 0.00 | 4.83 | 0.86 |
| 02/17/20 16:51:04 | 4460 | 12.95 | 2.37 | 0.01 | 0.00 | 4.83 | 0.72 |
| 02/17/20 16:51:34 | 4490 | 12.94 | 2.20 | 0.01 | 0.00 | 4.82 | 0.67 |
| 02/17/20 16:52:04 | 4520 | 12.93 | 2.12 | 0.00 | 0.00 | 4.82 | 1.21 |
| 02/17/20 16:52:34 | 4550 | 12.94 | 2.10 | 0.00 | 0.00 | 4.82 | 1.21 |
| 02/17/20 16:53:04 | 4580 | 12.93 | 2.14 | 0.00 | 0.00 | 4.83 | 1.35 |
| 02/17/20 16:53:34 | 4610 | 12.94 | 2.21 | 0.00 | 0.00 | 4.83 | 1.30 |
| 02/17/20 16:54:04 | 4640 | 12.95 | 2.33 | 0.00 | 0.00 | 4.82 | 1.32 |
| 02/17/20 16:54:34 | 4670 | 12.94 | 2.38 | 0.00 | 0.00 | 4.83 | 1.39 |
| 02/17/20 16:55:04 | 4700 | 12.94 | 2.41 | 0.00 | 0.00 | 4.83 | 1.61 |
| 02/17/20 16:55:34 | 4730 | 12.95 | 2.51 | 0.00 | 0.00 | 4.83 | 1.16 |
| 02/17/20 16:56:04 | 4760 | 12.95 | 2.57 | 0.00 | 0.00 | 4.83 | 1.34 |
| 02/17/20 16:56:34 | 4790 | 12.94 | 2.49 | 0.00 | 0.00 | 4.83 | 0.91 |
| 02/17/20 16:57:04 | 4820 | 12.93 | 2.44 | 0.00 | 0.00 | 4.83 | 0.78 |
| 02/17/20 16:57:34 | 4850 | 12.94 | 2.38 | 0.00 | 0.00 | 4.83 | 1.25 |
| 02/17/20 16:58:04 | 4880 | 12.95 | 2.39 | 0.00 | 0.00 | 4.83 | 1.28 |
| 02/17/20 16:58:34 | 4910 | 12.94 | 2.38 | 0.01 | 0.00 | 4.83 | 1.15 |
| 02/17/20 16:59:04 | 4940 | 12.94 | 2.38 | 0.00 | 0.00 | 4.83 | 0.76 |
| 02/17/20 16:59:34 | 4970 | 12.95 | 2.37 | 0.01 | 0.00 | 4.83 | 1.17 |
| **RAW AVERAGE** | | **12.95** | **2.45** | **0.02** | **0.02** | **4.82** | **1.30** |

| | | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|---|
| | **Serial Number:** | inst-02-0014 | inst-nx-0020 | inst-co-0045 | inst-th-0010 | inst-c2-0023 | inst-ir-0004 |
| | | (%) | (ppmvd) | (ppmvd) | (ppmvw) | (%) | |
| Bias | **Initial Zero** | 0.03 | 0.02 | 0.00 | 0.00 | 0.02 | |
| Bias | **Final Zero** | 0.01 | 0.00 | 0.00 | 0.00 | 0.02 | |
| Bias | **Avg. Zero** | 0.02 | 0.01 | 0.00 | 0.00 | 0.02 | |
| Bias | **Initial UpScale** | 12.06 | 8.94 | 9.07 | 3.28 | 8.99 | |
| Bias | **Final UpScale** | 12.05 | 8.96 | 9.11 | 3.33 | 9.01 | |
| Bias | **Avg. UpScale** | 12.06 | 8.95 | 9.09 | 3.31 | 9.00 | |
| **Upscale Cal Gas** | | 12.01 | 8.90 | 9.10 | 3.37 | 8.95 | |

| **EMISSIONS DATA** | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 12.90 | 2.43 | 0.02 | 0.02 | 4.79 | 1.38 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.79 | 0.01 | 0.02 | N/A | 1.02 |

Non-Bias Adjusted Averages Include: *

# EMISSION DATA RECORDS

## Reference Method Data
## Base Load
## $PM_{10}$

Following completion of the stack emission test program for Unit #U-00001, it was discovered that the U-00001 fuel gas flow meter operation was tied to a “test mode” (Mode 0) setting, and not the expected “natural gas mode” setting (Mode 1). Further investigations of the impact of this setting, indicate that the initial Mode 0 fuel gas flow results have a positive bias of 1.5%. Consequently, the original fuel gas flow results (see U-00001-supplied operational fuel gas data) have been reduced by 1.5%. The operating mode of the Unit 1 gas flowmeter has been reset to the correct Mode 1 (natural gas).

## METHOD 201A (FRONT) AND 202 (BACK) SOURCE SAMPLING TITLE PAGE

| Source Information | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base |
| **Fuel Type** | Gas, Natural |

| Test Information | | | |
|---|---|---|---|
| **Project #** | | bec-19-cricketvalley.ny-start#1 | |
| **Operator** | | Aaron Blum | |
| **Date for Preliminary Run** | (mm/dd/yy) | 02/16/20 | |
| **Standard Temperature** | | 68 | °F |
| **Standard Pressure** | | 29.92 | in Hg |
| **Required Sample Vol.** | indust. spec. | 50 | scf |
| **Run Duration** | chk Subpart | 240 | minutes |
| **Unit Number** | | U-00001 | |
| **Base Run Number** | | PM U-00001 Base | |
| **Number of Ports Available** | | 4 | |
| **Number of Ports Used** | | 4 | |
| **Port Inside Diameter** | | 6.00 | in |
| **Stack Shape** | | Circular | |

| Test Equipment Information | | | | | |
|---|---|---|---|---|---|
| **Run** | | **1** | **2** | **3** | |
| **Test Date** | (mm/dd/yy) | 02/17/20 | 02/17/20 | 02/19/20 | |
| **Load** | | Base | Base | Base | % or w/DB |
| **Fuel F-Factor** | | 8643.54 | 8643.54 | 8642.95 | dscf/MMBtu |
| **Meter Box Number** | from ACS | Samp-cp-0030 | Samp-cp-0030 | Samp-cp-0030 | |
| **Meter Calibration Factor** | (Y) | 0.974 | 0.974 | 0.974 | |
| **Orifice Meter Coefficient** | ($\Delta H_@$) | 1.878 | 1.878 | 1.878 | in $H_2O$ |
| **Non-Console Manometer Used** | | No | No | No | |
| **Pitot Identification** | from ACS | 4187/10 | 4187/10 | 4187/10 | |
| **Pitot Tube Coefficient** | ($C_p$) | 0.7240 | 0.7240 | 0.7240 | |
| **Nozzle Number** | from ACS | 4b | 4b | 4b | must match cyc nozz tab (e.g. 3a, 4b, etc.) |
| **Nozzle Diameter** | ($D_n$) | 0.156 | 0.156 | 0.156 | in |
| **Probe Number** | from ACS | SAMP-PR-0133 | SAMP-PR-0133 | SAMP-PR-0133 | |
| **Probe Length** | | 120.0 | 120.0 | 120.0 | in |
| **(SS, Glass …. ) Liner Material** | from list | glass | glass | glass | |
| **Sample Case / Oven Number** | from ACS | SAMP-BH-0039 | SAMP-BH-0039 | SAMP-BH-0039 | |
| **Impinger Case Number** | from ACS | SAMP-SBC-0099 | SAMP-SBC-0099 | SAMP-SBC-0099 | |

| Testing Company Information | |
|---|---|
| **Company Name** | Air Hygiene International, Inc. (Tulsa, Oklahoma) |
| **Address** | 1600 W Tacoma Street |
| **City, State Zip** | Broken Arrow, Oklahoma 74012 |
| **Project Manager** | Rob White |
| **Phone Number** | (918) 307-8865 |
| **Fax Number** | (918) 307-9131 |

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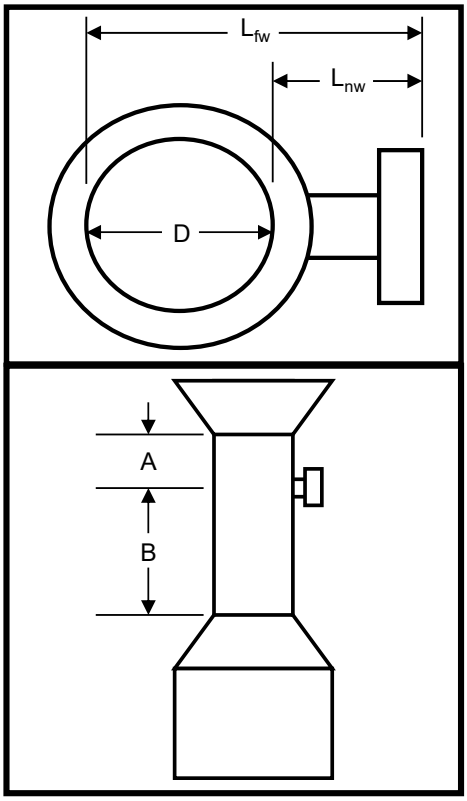
## METHOD 1 - SAMPLE AND VELOCITY TRAVERSES FOR CIRCULAR SOURCES

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Date** | 02/16/20 |
| **Sampling Location** | U-00001 Base | **Stack Type** | Circular |
| **Operator** | Aaron Blum | **Ports Available** | 4 |
| **Project #** | bec-19-cricketvalley.ny-start#1 | **Ports Used** | 4 |
| **Stack Size** | Large (>24 inch diameter) | **Port ID (inches)** | 6.00 |

| **Circular Stack or Duct Diameter** | | | |
|---|---|---|---|
| **Distance to Far Wall of Stack** | ($L_{fw}$) | 236.00 | in |
| **Distance to Near Wall of Stack** | ($L_{nw}$) | 8.00 | in |
| **Diameter of Stack** | (D) | 228.00 | in |
| **Area of Stack** | ($A_s$) | 283.53 | ft² |

| **Distance from Port to Disturbances** | | | |
|---|---|---|---|
| **Distance Upstream** | (A) | 200.40 | in |
| **Diameters Upstream** | ($A_D$) | 0.88 | diameters |
| **Distance Downstream** | (B) | 850.00 | in |
| **Diameters Downstream** | ($B_D$) | 3.73 | diameters |




| **Number of Traverse Points Required** | | | |
|---|---|---|---|
| **Diameters to Flow Disturbance** | | **Minimum Number of[1] Traverse Points** | |
| **Down Stream** | **Up Stream** | **Particulate Points** | **Velocity Points** |
| 2.00-4.99 | 0.50-1.24 | 24 | 16 |
| 5.00-5.99 | 1.25-1.49 | 20 | 16 |
| 6.00-6.99 | 1.50-1.74 | 16 | 12 |
| 7.00-7.99 | 1.75-1.99 | 12 | 12 |
| >= 8.00 | >=2.00 | 8 or 12[2] | 8 or 12[2] |
| **Upstream Spec** | | 24 | 16 |
| **Downstream Spec** | | 24 | 16 |
| **Traverse Pts Required** | | 24 | 16 |

[1] Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.

[2] 8 for Circular Stacks 12 to 24 inches
12 for Circular Stacks over 24 inches

○ Method 1 Trav

◉ 12 Point PM Trav (M201a ONLY)

○ Velocity

| **Number of Traverse Points Used** | | | |
|---|---|---|---|
| 4 | **Ports by** | 3 | **Across** |
| 12 | **Pts Used** | 12 | **Required** |

| **Location of Traverse Points in Circular Stacks** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point Number** | (Fraction of Stack Dimension from Inside Wall to Traverse Point) Number of Traverse Points Across the Stack | | | | | | | | |
| | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 |
| 1 | .146 | .067 | .044 | .032 | .026 | .021 | .018 | .016 | .014 |
| 2 | .854 | .250 | .146 | .105 | .082 | .067 | .057 | .049 | .044 |
| 3 | | .750 | .296 | .194 | .146 | .118 | .099 | .085 | .075 |
| 4 | | .933 | .704 | .323 | .226 | .177 | .146 | .125 | .109 |
| 5 | | | .854 | .677 | .342 | .250 | .201 | .169 | .146 |
| 6 | | | .956 | .806 | .658 | .356 | .269 | .220 | .188 |
| 7 | | | | .895 | .774 | .644 | .366 | .283 | .236 |
| 8 | | | | .968 | .854 | .750 | .634 | .375 | .296 |
| 9 | | | | | .918 | .823 | .731 | .625 | .382 |
| 10 | | | | | .974 | .882 | .799 | .717 | .618 |
| 11 | | | | | | .933 | .854 | .780 | .704 |
| 12 | | | | | | .979 | .901 | .831 | .764 |

| **Traverse Point Number** | **Fraction of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
|---|---|---|---|
| | | in | in |
| **1** | 0.044 | 10 | 18 |
| **2** | 0.146 | 33 2/8 | 41 2/8 |
| **3** | 0.296 | 67 4/8 | 75 4/8 |
| **4** | | | |
| **5** | | | |
| **6** | | | |
| **7** | | | |
| **8** | | | |
| **9** | | | |

## METHOD 2 - DETERMINATION OF STACK GAS VELOCITY AND VOLUMETRIC FLOW RATE

| | | | | |
|---|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | | | |
| **Sampling Location** | U-00001 Base | | | |
| **Operator** | Aaron Blum | | | |
| **Project #** | bec-19-cricketvalley.ny-start#1 | | | |
| **Pitot Leak Check** | x | **PreTest** | x | **PostTest** |

| | | | |
|---|---|---|---|
| **Preliminary Run Date** | 02/16/20 | | |
| **Stack Type** | Circular | | |
| **Ports Available** | 4 | | |
| **Thermocouple ID** | SAMP-PR-0133 | | |
| **Pitot Coefficient** | 0.8198 | **Pitot Identification** | A4187 |

| **RM 201A or OTM 27 Blckag.** | **RM 201A or OTM 27 Pitot Coeff.** |
|---|---|
| 5.39E-04 | 0.7240 |

| **Stack Dimensions** | | | |
|---|---|---|---|
| **Area of Stack** | ($A_s$) | 283.53 | ft² |
| **Diameter of Stack** | (D) | 228.00 | in |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 29.73 | in Hg |
| **Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 29.80 | in Hg |

| **Stack Gas Composition** | | | |
|---|---|---|---|
| **Composition Data:** | **Estimated Composition** | | |
| **Carbon Dioxide Concentration** | (%$CO_2$) | 4.90 | %vd |
| **Oxygen Concentration** | (%$O_2$) | 13.00 | %vd |
| **Carbon Monoxide Concentration** | (ppmCO) | 0.00 | ppmvd |
| **Nitrogen Concentration** | (%$N_2$) | 82.10 | %vd |
| **Stack Moisture Content** | ($B_{ws}$) | 8.00 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.30 | lb/lb-mole |
| **Stack Wet Molecular Weight** | ($M_w$) | 28.40 | lb/lb-mole |

| **Results** | | | |
|---|---|---|---|
| **Avg Stack Gas Velocity** | ($v_s$) | 55.95 | ft/sec |
| **Avg Stack Dry Std Flow Rate** | ($Q_{sd}$) | 42,826,096 | dscf/hr |
| **Avg Stack Dry Std Flow Rate** | ($Q_{sd}$) | 713,768 | dscf/min |
| **Avg Stack Wet Flow Rate** | ($Q_{aw}$) | 951,820 | acf/min |
| **Avg Stack Wet Std Flow Rate** | ($Q_{sw}$) | 46,550,104 | ascf/hr |

**40 CFR 60, Method 2G, Section 8.11.1 (but applies to all Method 2 type static pressure measurements):**
If a Type S probe is used for this measurement, position the probe at or between any traverse point(s) and rotate the probe until a null differential pressure reading is obtained. Disconnect the tubing from one of the pressure ports; read and record the ΔP. For pressure devices with one-directional scales, if a deflection in the positive direction is noted with the negative side disconnected, then the static pressure is positive. Likewise, if a deflection in the positive direction is noted with the positive side disconnected, then the static pressure is negative.

**Stack Cross Section Schematic**

**Velocity Traverse Data**

| **Run Number** | PM U-00001 Base-V1 | | | | |
|---|---|---|---|---|---|
| **Run Time** | 08:00 | **Start** | 08:41 | **End** | |

| **Traverse Point** | **Velocity Head** ($\Delta p$) | **Null Angle** ($N_a$) | **Zero Deg Pressure** ($0°_a$) | **Stack Temp** ($t_s$) | **Local Velocity** ($v_{s(l)}$) | **Adjusted Velocity Pressure** | **Adjusted Velocity Pressure w/BF, if app** |
|---|---|---|---|---|---|---|---|
| | in $H_2O$ | deg | in $H_2O$ | °F | ft/sec | in $H_2O$ | in $H_2O$ |
| A-1 | 1.50 | 5 | 0.04 | 186 | 74.99 | 1.17 | 1.17 |
| A-2 | 1.40 | 5 | 0.10 | 184 | 72.34 | 1.09 | 1.09 |
| A-3 | 1.40 | 10 | 0.07 | 185 | 72.39 | 1.09 | 1.09 |
| B-1 | 1.30 | 5 | 0.11 | 186 | 69.81 | 1.01 | 1.01 |
| B-2 | 1.40 | 5 | 0.02 | 184 | 72.34 | 1.09 | 1.09 |
| B-3 | 1.30 | -5 | -0.02 | 187 | 69.87 | 1.01 | 1.01 |
| C-1 | 1.40 | 0 | 0.00 | 186 | 72.45 | 1.09 | 1.09 |
| C-2 | 1.40 | -5 | 0.10 | 183 | 72.28 | 1.09 | 1.09 |
| C-3 | 1.30 | 5 | 0.11 | 185 | 69.76 | 1.01 | 1.01 |
| D-1 | 1.40 | 0 | 0.00 | 187 | 72.51 | 1.09 | 1.09 |
| D-2 | 1.40 | -5 | 0.06 | 185 | 72.39 | 1.09 | 1.09 |
| D-3 | 1.30 | -5 | 0.10 | 184 | 69.71 | 1.01 | 1.01 |
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| | | | | | | | |
| **Average** | 1.38 | 5 | | 185 | | 1.07 | 1.07 |
| | 1.17 | **= Square roots of Δp** | | | | | 1.04 |
| **Standard deviation of null angles =** | | | | 2.6 | | | |

## METHOD 201A and OTM 27 - DETERMINATION OF NOZZLE SIZE AND POST RUN QUALITY CONTROL

| Gas Analysis | Prelim | PM U-00001 Base-1 | PM U-00001 Base-2 | PM U-00001 Base-3 | PM U-00001 Base-4 | PM U-00001 Base-5 | PM U-00001 Base-6 | |
|---|---|---|---|---|---|---|---|---|
| Carbon Dioxide Content | 4.9 | 4.9 | 4.8 | 4.8 | | | | % |
| Oxygen Content | 13.0 | 12.7 | 12.8 | 12.8 | | | | % |
| Stack Moisture Content | 8.0 | 5.8 | 6.7 | 6.6 | | | | % |
| Nitrogen plus CO Content | 82.1 | 82.4 | 82.4 | 82.4 | | | | % |

| Corrected Velocity Head, $\Delta p_{2.5}$ (in $H_2O$) | Min. | 1.01 | Max. | 1.17 |
|---|---|---|---|---|

| Stack and Equipment Information | Prelim | PM U-00001 Base-1 | PM U-00001 Base-2 | PM U-00001 Base-3 | PM U-00001 Base-4 | PM U-00001 Base-5 | PM U-00001 Base-6 | |
|---|---|---|---|---|---|---|---|---|
| Barometric Pressure | 29.73 | 29.98 | 29.88 | 30.12 | | | | in Hg |
| Stack Static Pressure | 0.95 | 0.95 | 0.95 | 0.95 | | | | in $H_2O$ |
| Absolute Stack Pressure | 29.80 | 30.05 | 29.95 | 30.19 | | | | in Hg |
| Average Stack Temp | 185 | 190 | 190 | 184 | | | | 0.00 |
| Average Stack Temp | 645 | 650 | 650 | 644 | | | | °R |
| Average Meter Temp | 85 | 67 | 65 | 75 | | | | 0.00 |
| Orifice Meter Coefficient | 1.878 | 1.878 | 1.878 | 1.878 | | | | in $H_2O$ |
| Pitot Coefficient | 0.724 | 0.724 | 0.724 | 0.724 | | | | |
| Stack Dry Molecular Weight | 29.30 | 29.29 | 29.28 | 29.28 | | | | lb/lb mole |
| Stack Wet Molecular Weight | 28.40 | 28.64 | 28.53 | 28.54 | | | | lb/lb mole |
| Stack Viscosity | 201.12 | 204.09 | 203.35 | 202.01 | | | | µP |
| Cunningham Correction Factor, for a 2.25 µm particle | 1.08 | | | | | | | |
| Cunningham Correction Factor, for a 2.5 µm particle | | 1.07 | 1.07 | 1.07 | | | | |
| Prelim Cut Dia., Cyclone I, $D_{50LL}$, $N_{re}$<3162 | 10.28 | 2.32 | 2.33 | 2.35 | | | | µm |
| Middle Zone Dia., Cyclone I, $D_{50T}$, $N_{re}$<3162 | 10.64 | | | | | | | µm |
| Sampling Rate ($PM_{10}$ & $PM_{2.5}$ Cyc.), $N_{re}$<3162 | 0.48 | | | | | | | dscfm |
| Reynolds Number, Cyc I & IV, $N_{re}$<3162 | 2720.44 | 2795.22 | 2776.75 | 2786.81 | | | | |
| Dia. of 50% Prob. ($D_{50}$) Cyc IV ($N_{re}$<3162) | 2.38 | 2.33 | 2.34 | 2.35 | | | | µm |
| Sampling Rate, Cyc IV, $N_{re}$<3,162 | 0.48 | | | | | | | dscfm |
| Reynolds Number, Cyc IV, $N_{re}$<3162 | 2720.40 | 2795.22 | 2776.75 | 2786.81 | | | | |
| Prelim Cut Dia., Cyclone I, $D_{50LL\geq3162}$ | 10.62 | | | | | | | µm |
| Middle Zone Dia., Cyclone I, $D_{50T\geq3162}$ | 10.81 | | | | | | | µm |
| Sampling Rate ($PM_{10}$ & $PM_{2.5}$ Cyc.)≥3162 | 0.47 | | | | | | | dscfm |
| Reynolds Number, Cyc I & IV, $N_{re}$≥3162 | 2659.02 | | | | | | | |
| Dia. of 50% Prob. ($D_{50}$) CIV ($N_{re}$≥3162) | 2.30 | | | | | | | µm |
| Sampling Rate, Cyc IV, $N_{re}$≥3,162 | 4.72 | | | | | | | dscfm |
| Reynolds Number ≥ 3162 | 26590.32 | | | | | | | |
| Cyclone Flow Rate | 0.48 | 0.50 | 0.50 | 0.49 | | | | ft³/min |
| Recalculated $D_{50-1}$ for $C_{IV}$ | | 2.32 | 2.33 | 2.35 | | | | |
| Recalculated Cunninham | | 1.08 | 1.08 | 1.08 | | | | |
| Z | | 1.00 | 1.00 | 1.00 | | | | |
| Isokinetics | | 100.69 | 99.60 | 100.81 | | | | % |
| No. Sampling Pts. Outside Δp | | 0 | 0 | 0 | | | | |
| Sample Nozzle Diameter | | 0.156 | 0.156 | 0.156 | | | | in |

| Orifice Head and Nozzle Selection Calculation | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nozzle No. | 2a | 2b | 3a | 3b | 4a | 4b | 5a | 5b | 6a | 6b | 7a |
| Nozzle diameter, $D_n$, in. | 0.119 | 0.130 | 0.130 | 0.143 | 0.155 | 0.156 | 0.175 | 0.172 | 0.197 | 0.192 | 0.212 |
| Nozzle velocity, $v_n$, ft/sec | 104.17 | 87.29 | 87.29 | 72.14 | 61.67 | 60.62 | 48.17 | 49.86 | 38.01 | 40.02 | 32.82 |
| $R_{min}$ | 0.77 | 0.76 | 0.76 | 0.74 | 0.73 | 0.73 | 0.69 | 0.70 | 0.64 | 0.65 | 0.58 |
| $v_{min}$, ft/sec | 80.02 | 66.18 | 66.18 | 53.64 | 44.86 | 43.97 | 33.29 | 34.77 | 24.16 | 26.01 | 19.14 |
| $R_{max}$ | 1.22 | 1.23 | 1.23 | 1.24 | 1.25 | 1.25 | 1.27 | 1.27 | 1.30 | 1.29 | 1.32 |
| $v_{max}$, ft/sec | 127.34 | 107.28 | 107.28 | 89.34 | 76.98 | 75.74 | 61.13 | 63.11 | 49.29 | 51.62 | 43.29 |
| $\Delta p_{min}$, in. $H_2O$ @ $t_{s-50}{}^oF$ | 2.38 | 1.63 | 1.63 | 1.07 | 0.75 | 0.72 | 0.41 | 0.45 | 0.22 | 0.25 | 0.14 |
| $\Delta p_{min}$, in. $H_2O$ @ $t_s$ | 2.19 | 1.50 | 1.50 | 0.99 | 0.69 | 0.66 | 0.38 | 0.41 | 0.20 | 0.23 | 0.13 |
| $\Delta p_{max}$, in. $H_2O$ @ $t_s$ | 5.55 | 3.94 | 3.94 | 2.73 | 2.03 | 1.96 | 1.28 | 1.36 | 0.83 | 0.91 | 0.64 |
| $\Delta p_{min}$, in. $H_2O$ @ $t_{s+50}{}^oF$ | 5.15 | 3.66 | 3.66 | 2.54 | 1.88 | 1.82 | 1.19 | 1.27 | 0.77 | 0.85 | 0.60 |
| ΔH, in. $H_2O$ @ $t_s$+50°F | 0.396 | | | | | | | | | | |
| **ΔH, in. $H_2O$ @ $t_s$** | **0.460** | | | | | | | | | | |
| ΔH, in. $H_2O$ @ $t_s$-50°F | 0.540 | | | | | | | | | | |

## METHOD 3a - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

| | | | | | |
|---|---|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Preliminary Run Date** | 02/16/20 | | |
| **Sampling Location** | U-00001 Base | **Operator** | Aaron Blum | | |
| **Project #** | bec-19-cricketvalley.ny-start#1 | **# of Ports Used** | 1 (gas probe) | | |
| **Fuel Type** | Gas, Natural | **Min. Fuel Factor** | 1.600 | **Max. Fuel Factor** | 1.836 |

**Gas Analysis Data**

| **Run Number** | PM U-00001 Base-1 | | **Date** | 02/17/20 | **Run Start Time** | 17:02 | **Run Stop Time** | 22:11 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 05:09 | 4.9 | 12.7 | 0.0 | 82.4 | 29.29 | 1.673 | 140.3 | YES |

**Gas Analysis Data**

| **Run Number** | PM U-00001 Base-2 | | **Date** | 02/17/20 | **Run Start Time** | 23:05 | **Run Stop Time** | 04:05 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 05:00 | 4.8 | 12.8 | 0.0 | 82.4 | 29.28 | 1.688 | 143.0 | YES |

**Gas Analysis Data**

| **Run Number** | PM U-00001 Base-3 | | **Date** | 02/19/20 | **Run Start Time** | 14:25 | **Run Stop Time** | 18:27 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 04:02 | 4.8 | 12.8 | 0.0 | 82.4 | 29.28 | 1.688 | 143.0 | YES |

## METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Preliminary Run Date** | 02/16/20 |
| **Sampling Location** | U-00001 Base | **Operator** | Aaron Blum |
| **Project #** | bec-19-cricketvalley.ny-start#1 | **Ports Used** | 4 |

| **Scale Daily Calibration** | | | | | |
|---|---|---|---|---|---|
| **Scale Number** | SAMP-SC-0028 | **Standard** | **Result** | **Difference** | **Pass/Fail** |
| **Date** | | (g) | (g) | (g) | (± 0.5 g) |
| **Preliminary Date** | 02/16/20 | 500 | 499.7 | -0.3 | Pass |
| **Test Day 1** | 02/17/20 | 500 | 499.7 | -0.3 | Pass |
| **Test Day 2** | 02/19/20 | 500 | 499.7 | -0.3 | Pass |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | PM U-00001 Base-1 | | **Date** | 02/17/20 | **Start Time** | 17:02 | **Stop Time** | 22:11 |
| **Meter Box Number** | | Samp-cp-0030 | | | | **Meter Cal Factor** | (Y) | 0.974 | |
| **Total Meter Volume** | ($V_m$) | 104.890 | dcf | | | **Barometric Pressure** | ($P_b$) | 29.98 | in Hg |
| **Average Stack Temp** | $(t_s)_{avg}$ | 190 | °F | | | **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Average Meter Temp** | $(t_m)_{avg}$ | 67 | °F | | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.46 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | Dry | Dry | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 471.90 | 555.10 | 716.00 | 859.00 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 357.70 | 552.90 | 715.80 | 842.40 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 114.2 | 2.2 | 0.2 | 16.6 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | ($W_t$) | 133.20 | g | | | **Water Vol Weighed** | ($V_{wsg(std)}$) | 6.280 | scf |
| **Std Meter Volume** | ($V_{m(std)}$) | 102.645 | dscf | | | **Sat. Moisture Content** | ($B_{ws(svp)}$) | 62.60 | % |
| **Calc Moisture Content** | ($B_{ws(calc)}$) | 5.77 | % | | | **Final Moisture Content** | ($B_{ws}$) | 5.77 | % |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | PM U-00001 Base-2 | | **Date** | 02/17/20 | **Start Time** | 23:05 | **Stop Time** | 04:05 |
| **Meter Box Number** | | Samp-cp-0030 | | | | **Meter Cal Factor** | (Y) | 0.974 | |
| **Total Meter Volume** | ($V_m$) | 103.580 | dcf | | | **Barometric Pressure** | ($P_b$) | 29.88 | in Hg |
| **Average Stack Temp** | $(t_s)_{avg}$ | 190 | °F | | | **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Average Meter Temp** | $(t_m)_{avg}$ | 65 | °F | | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.46 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | Dry | Dry | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 509.50 | 583.10 | 728.80 | 901.30 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 374.00 | 581.70 | 724.60 | 889.00 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 135.5 | 1.4 | 4.2 | 12.3 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | ($W_t$) | 153.40 | g | | | **Water Vol Weighed** | ($V_{wsg(std)}$) | 7.233 | scf |
| **Std Meter Volume** | ($V_{m(std)}$) | 101.410 | dscf | | | **Sat. Moisture Content** | ($B_{ws(svp)}$) | 63.04 | % |
| **Calc Moisture Content** | ($B_{ws(calc)}$) | 6.66 | % | | | **Final Moisture Content** | ($B_{ws}$) | 6.66 | % |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | PM U-00001 Base-3 | | **Date** | 02/19/20 | **Start Time** | 14:25 | **Stop Time** | 18:27 |
| **Meter Box Number** | | Samp-cp-0030 | | | | **Meter Cal Factor** | (Y) | 0.974 | |
| **Total Meter Volume** | ($V_m$) | 102.290 | dcf | | | **Barometric Pressure** | ($P_b$) | 30.12 | in Hg |
| **Average Stack Temp** | $(t_s)_{avg}$ | 184 | °F | | | **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Average Meter Temp** | $(t_m)_{avg}$ | 75 | °F | | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.46 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | Dry | Dry | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 507.70 | 584.10 | 733.70 | 930.10 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 374.80 | 584.00 | 729.90 | 918.60 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 132.9 | 0.1 | 3.8 | 11.5 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | ($W_t$) | 148.30 | g | | | **Water Vol Weighed** | ($V_{wsg(std)}$) | 6.992 | scf |
| **Std Meter Volume** | ($V_{m(std)}$) | 99.080 | dscf | | | **Sat. Moisture Content** | ($B_{ws(svp)}$) | 55.00 | % |
| **Calc Moisture Content** | ($B_{ws(calc)}$) | 6.59 | % | | | **Final Moisture Content** | ($B_{ws}$) | 6.59 | % |

## METHOD 201A (FRONT) AND 202 (BACK) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base |
| **Project #** | bec-19-cricketvalley.ny-start#1 |

| | |
|---|---|
| **Date** | 02/17/20 |
| **Operator** | Aaron Blum |
| **Run Number** | PM U-00001 Base-1 |

| **Filter #** |
|---|
| 18082942 |
| PM U-00001 Base-1-CPM |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | 0.7240 | 4187/10 |
| **Average Stack Temp** | ($t_s$) | 189.6 | °F |
| **Average Meter Temp** | ($t_m$) | 67.2 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.878 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | 1.16 | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | 5.77 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.29 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.75 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | 0.36 | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | 0.00 | in $H_2O$ | 3.6 | in $H_2O$ for | 15.0 | sec [≥15] |
| PASS | **Pre (-)** | 0.00 | in $H_2O$ | 3.9 | in $H_2O$ for | 15.0 | sec [≥15] |
| | **Post (+)** | 0.00 | in $H_2O$ | 3.8 | in $H_2O$ for | 15.0 | sec [≥15] |
| | **Post (-)** | 0.00 | in $H_2O$ | 4.1 | in $H_2O$ for | 15.0 | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | Samp-cp-0030 | | |
| **Meter Cal Factor** | (Y) | 0.974 | |
| **Nozzle Number** | 4b | | |
| **Average Nozzle Diameter** | ($D_{na}$) | 0.1560 | in |
| **Suggested Nozzle Diameter** | ($D_n$) | 0.2212 | in |
| **Probe Number** | SAMP-PR-0133 | | in |
| **Probe Length** | 120 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | SAMP-BH-0039 | | |
| **Impinger Case Number** | SAMP-SBC-0099 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 29.98 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.05 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.12 | in Hg |

| **Nozzle Measurements** | | | **ID: 4b** | |
|---|---|---|---|---|
| **Pre** | 0.156 | 0.156 | 0.156 | **PASS** |
| **Post** | 0.156 | 0.156 | 0.156 | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 17:02 | **End** | 22:11 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 357.7 | 552.9 | 715.8 | 842.4 | | | | |
| **Post** | 471.9 | 555.1 | 716.0 | 859.0 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Wash Volumes** | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | Samp-cp-0030 | Samp-cp-0030 | Samp-cp-0030 | | | SAMP-PR-0133 | SAMP-PR-0133 | SAMP-BH-0039 | SAMP-SBC-0099 | 1048 | 1018 | Samp-cp-0030 | | Samp-cp-0030 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head ($\Delta p$)** | **Desired Orifice ΔH ($\Delta H_@$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (248±25°F)** | **Filter Temp (248±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤85°F)** | **CPM Filter Temp (76.5±8.5°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 328.160 | 1.30 | 0.460 | 0.46 | 189 | 255 | 254 | 48 | 66 | 74 | 64 | 64 | 2.5 | 1.14 | 61.28 | 8.319 | 100.7 | 101.248 |
| A-2 | 22.0 | 00:22:00 | 336.610 | 1.40 | 0.460 | 0.46 | 190 | 250 | 262 | 45 | 66 | 75 | 64 | 64 | 2.5 | 1.18 | 63.64 | 16.727 | 97.8 | 100.081 |
| A-3 | 44.8 | 00:44:45 | 345.150 | 1.30 | 0.460 | 0.46 | 189 | 251 | 250 | 45 | 67 | 76 | 66 | 66 | 2.5 | 1.14 | 61.28 | 24.965 | 98.4 | 100.142 |
| B-1 | 66.8 | 01:06:45 | 353.550 | 1.30 | 0.460 | 0.46 | 190 | 252 | 251 | 46 | 68 | 77 | 65 | 65 | 2.5 | 1.14 | 61.33 | 33.190 | 98.7 | 100.131 |
| B-2 | 88.8 | 01:28:45 | 361.920 | 1.40 | 0.460 | 0.46 | 188 | 251 | 252 | 49 | 70 | 78 | 66 | 66 | 2.5 | 1.18 | 63.55 | 42.066 | 99.0 | 101.015 |
| B-3 | 111.5 | 01:51:30 | 370.970 | 1.30 | 0.460 | 0.46 | 190 | 250 | 252 | 46 | 71 | 76 | 68 | 68 | 2.5 | 1.14 | 61.33 | 50.859 | 100.3 | 102.005 |
| C-1 | 133.5 | 02:13:30 | 379.970 | 1.40 | 0.460 | 0.46 | 188 | 251 | 254 | 43 | 67 | 77 | 69 | 69 | 2.5 | 1.18 | 63.55 | 60.319 | 101.3 | 103.363 |
| C-2 | 156.3 | 02:36:15 | 389.670 | 1.40 | 0.460 | 0.46 | 189 | 250 | 256 | 43 | 68 | 77 | 69 | 69 | 2.5 | 1.18 | 63.60 | 68.755 | 100.5 | 102.844 |
| C-3 | 179.0 | 02:59:00 | 398.320 | 1.30 | 0.460 | 0.46 | 191 | 249 | 246 | 44 | 67 | 77 | 68 | 68 | 2.5 | 1.14 | 61.38 | 77.255 | 100.8 | 102.910 |
| D-1 | 201.0 | 03:21:00 | 407.020 | 1.30 | 0.460 | 0.46 | 192 | 250 | 247 | 45 | 66 | 78 | 68 | 68 | 2.5 | 1.14 | 61.42 | 85.912 | 101.2 | 103.152 |
| D-2 | 223.0 | 03:43:00 | 415.880 | 1.40 | 0.460 | 0.46 | 190 | 250 | 252 | 44 | 63 | 76 | 69 | 69 | 2.5 | 1.18 | 63.64 | 94.152 | 100.5 | 102.581 |
| D-3 | 245.8 | 04:05:45 | 424.330 | 1.30 | 0.460 | 0.46 | 189 | 252 | 254 | 45 | 64 | 77 | 70 | 70 | 2.5 | 1.14 | 61.28 | 102.640 | 100.7 | 102.640 |
| Last Pt | 267.8 | 04:27:45 | 433.050 | | | | | | | | | | | | | | | | | |
| **Final Val** | 267.8 | 04:27:45 | 433.050 | | | | | | | | | | | **Max Vac** | 2.5 | **Final Values** | | 102.640 | 100.7 | |
| **Average Values** | | | | | 1.34 | | 0.46 | 190 | 251 | 253 | 45 | 67 | 77 | 67 | 67 | | 1.16 | 62.27 | | | |
| | | | | | | | | | | | | | 67 | | | | | | | |

| **Actual** | **DP to** | **Point-by-point** | **Point-by-point** | **Point** |
|---|---|---|---|---|
| **Actual Nozzle Diameter ($D_{na}$)** | **DP to DH Iso Factor (K)** | **Point-by-point Meter Volume ($V_m$)$_{std}$** | **Point-by-point Percent IsoKinetic (I)** | **Point Weighted Average Isokinetics** |
| in | | dscf | % | ($V_m$)$_{std}$ x (I) |
| 0.156 | 0.36 | 8.319 | 100.7 | 837.6 |
| 0.156 | 0.36 | 8.408 | 94.9 | 797.9 |
| 0.156 | 0.36 | 8.238 | 99.7 | 821.5 |
| 0.156 | 0.36 | 8.225 | 99.6 | 819.3 |
| 0.156 | 0.36 | 8.876 | 100.0 | 887.8 |
| 0.156 | 0.36 | 8.793 | 106.5 | 936.6 |
| 0.156 | 0.36 | 9.460 | 106.6 | 1008.4 |
| 0.156 | 0.36 | 8.436 | 95.1 | 802.5 |
| 0.156 | 0.36 | 8.500 | 103.0 | 875.9 |
| 0.156 | 0.36 | 8.657 | 105.0 | 909.1 |
| 0.156 | 0.36 | 8.241 | 93.0 | 766.4 |
| 0.156 | 0.36 | 8.488 | 102.7 | 871.9 |
| | | | | |
| 0.156 | 0.36 | 102.640 | | |

**RM 201A Calculations**

| **Trav. Point** | **First Point** | **First Point** | **Subs. Point** | **Velocity** | |
|---|---|---|---|---|---|
| **Trav. Point Estimated Dwell Times ($t_1$), ($t_n$)** | **First Point Dwell Times ($t_1$)** | **First Point Vel. Head Prelim. Trav. ($\Delta p_{RM2}$)** | **Subs. Point Dwell Times Current Trav. ($t_n$)** | **Velocity Head Current Trav. ($\Delta p_{201A}$)** | **Violations** |
| min | min | in $H_2O$ | min | in $H_2O$ | |
| 22.00 | 22.03 | 1.30 | | 1.30 | 0 |
| 22.75 | 22.86 | 1.40 | 22.86 | 1.40 | 0 |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 |
| 22.00 | 22.03 | 1.30 | | 1.30 | 0 |
| 22.75 | 22.86 | 1.40 | 22.86 | 1.40 | 0 |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 |
| 22.75 | 22.86 | 1.40 | | 1.40 | 0 |
| 22.75 | 22.86 | 1.40 | 22.86 | 1.40 | 0 |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 |
| 22.00 | 22.03 | 1.30 | | 1.30 | 0 |
| 22.75 | 22.86 | 1.40 | 22.86 | 1.40 | 0 |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 |
| | | | | | |

Z must be between 0.99 and 1.01, but the initial calculation is based on assumptions of the Cunniham Correction Factor and the Reynolds Number. In cases where your Z value is not between the limits and is producing an error, you need to run a second iteration based on the re-calculated numbers. To do this, copy the value in "Recalculated Cunninham, C =" [BH189] and do a "paste special value only" into "Calculated Cunninham, C =" [BH174]. This sets the initially calculated C equal to the C determined during this test run. At this point the program may recognize the second iteration and your error may go away. If it doesn't it is probably because it is having difficulties deciding between the Reynolds number at the threshold.

| | | | |
|---|---|---|---|
| | Stack Gas Viscosity (μs) | 204.09 | μP |
| | Cyclone Flow Rate ($Q_a$) | 0.50 | ft³/min |
| | Dia. of 50% Prob. ($D_{50}$) CI | 10.49 | μm |
| >> | Calculated Cunninham, C | 1.08 | |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{re}$<3162) | 10.29 | μm |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{re}$≥3162) | | μm |
| | Middle of Zone Dia. ($D_{50T}$) CI | 10.64 | μm |
| | Sampling Rate ($PM_{10}$ and $PM_{2.5}$ Cyc.) | 0.49 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$<3162) | 2.32 | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{re}$<3162) | 0.50 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$≥3162) | | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{re}$≥3162) | | dscfm |
| | Actual Test Run C (2.5 μm) | 1.07 | |
| | Actual Test Run $N_{RE}$ | 2795.22 | |
| | Actual Particle Cut Diameter for CI | 10.49 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$<3162) | 2.33 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$≥3162) | | μm |
| << | Recalculated Cunninham, C = | 1.08 | |
| | Recalculated $D_{50-1}$ for $C_{IV}$ = | 2.32 | |
| >> | Z (limits 0.99 to 1.01) = | 1.00 | |
| | Isokinetics (I) (80 to 120%) = | 100.69 | % |
| | No. Sampling Pts. Outside Δp = | 0 | |
| | Sample Nozzle Diameter = | 0.156 | in |
| | $\Delta p_{min}$ | 0.662 | in $H_2O$ |
| | $\Delta p_{max}$ | 1.965 | in $H_2O$ |

Notes:

## METHOD 201A (FRONT) AND 202 (BACK) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base |
| **Project #** | bec-19-cricketvalley.ny-start#1 |

| | |
|---|---|
| **Date** | 02/17/20 |
| **Operator** | Aaron Blum |
| **Run Number** | PM U-00001 Base-2 |

| **Filter #** |
|---|
| 18092937 |
| PM U-00001 Base-2-CPM |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | 0.7240 | 4187/10 |
| **Average Stack Temp** | ($t_s$) | 189.8 | °F |
| **Average Meter Temp** | ($t_m$) | 65.2 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.878 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | 1.16 | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | 6.66 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.28 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.38 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | 0.36 | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec (≥60) |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec (≥60) |
| **Pitot** | **Pre (+)** | 0.000 | in $H_2O$ | 3.7 | in $H_2O$ for | 15.0 | sec (≥15) |
| PASS | **Pre (-)** | 0.000 | in $H_2O$ | 4.0 | in $H_2O$ for | 15.0 | sec (≥15) |
| | **Post (+)** | 0.000 | in $H_2O$ | 3.7 | in $H_2O$ for | 15.0 | sec (≥15) |
| | **Post (-)** | 0.000 | in $H_2O$ | 4.3 | in $H_2O$ for | 15.0 | sec (≥15) |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | Samp-cp-0030 | | |
| **Meter Cal Factor** | (Y) | 0.974 | |
| **Nozzle Number** | 4b | | |
| **Average Nozzle Diameter** | ($D_{ns}$) | 0.1560 | in |
| **Suggested Nozzle Diameter** | ($D_n$) | 0.1580 | in |
| **Probe Number** | SAMP-PR-0133 | | in |
| **Probe Length** | 120 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | SAMP-BH-0039 | | |
| **Impinger Case Number** | SAMP-SBC-0099 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 29.88 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 29.95 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.02 | in Hg |

| **Nozzle Measurements** | | | | **ID: 4b** |
|---|---|---|---|---|
| **Pre** | 0.156 | 0.156 | 0.156 | **PASS** |
| **Post** | 0.156 | 0.156 | 0.156 | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 23:05 | **End** | 04:05 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 374.0 | 581.7 | 724.6 | 889.0 | | | | |
| **Post** | 509.5 | 583.1 | 728.8 | 901.3 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Wash Volumes** | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | Samp-cp-0030 | Samp-cp-0030 | Samp-cp-0030 | | | SAMP-PR-0133 | SAMP-PR-0133 | SAMP-BH-0039 | SAMP-SBC-0099 | 1026 | 8082 | Samp-cp-0030 | | Samp-cp-0030 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head ($\Delta p$)** | **Desired Orifice ΔH ($\Delta H_@$)** | **Actual Orifice ΔH ($\Delta H_@$)** | **Stack Temp ($t_s$)** | **Probe Temp (248±25°F)** | **Filter Temp (248±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤85°F)** | **CPM Filter Temp (76.5±8.5°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 469.310 | 1.30 | 0.460 | 0.46 | 193 | 250 | 255 | 42 | 67 | 77 | 62 | 62 | 2.5 | 1.14 | 61.69 | 8.116 | 99.4 | 99.148 |
| A-2 | 22.0 | 00:22:00 | 477.550 | 1.40 | 0.460 | 0.46 | 190 | 254 | 255 | 45 | 66 | 74 | 64 | 64 | 2.5 | 1.18 | 63.88 | 16.849 | 99.5 | 101.190 |
| A-3 | 44.8 | 00:44:45 | 486.450 | 1.50 | 0.460 | 0.46 | 191 | 249 | 252 | 46 | 66 | 75 | 63 | 63 | 2.5 | 1.22 | 66.17 | 26.120 | 98.9 | 102.478 |
| B-1 | 68.5 | 01:08:30 | 495.880 | 1.40 | 0.460 | 0.46 | 190 | 251 | 253 | 44 | 65 | 75 | 66 | 66 | 2.5 | 1.18 | 63.88 | 34.585 | 98.3 | 101.860 |
| B-2 | 91.3 | 01:31:15 | 504.540 | 1.30 | 0.460 | 0.46 | 189 | 255 | 248 | 43 | 63 | 77 | 60 | 60 | 2.5 | 1.14 | 61.50 | 42.713 | 98.5 | 101.361 |
| B-3 | 113.3 | 01:53:15 | 512.760 | 1.40 | 0.460 | 0.46 | 190 | 254 | 249 | 44 | 65 | 78 | 63 | 63 | 2.5 | 1.18 | 63.88 | 51.256 | 98.3 | 101.287 |
| C-1 | 136.0 | 02:16:00 | 521.450 | 1.30 | 0.460 | 0.46 | 188 | 252 | 251 | 45 | 64 | 78 | 65 | 65 | 2.5 | 1.14 | 61.46 | 59.737 | 99.0 | 101.610 |
| C-2 | 158.0 | 02:38:00 | 530.110 | 1.40 | 0.460 | 0.46 | 189 | 254 | 247 | 45 | 65 | 78 | 66 | 66 | 2.5 | 1.18 | 63.83 | 68.427 | 99.0 | 101.742 |
| C-3 | 180.8 | 03:00:45 | 539.000 | 1.40 | 0.460 | 0.46 | 190 | 251 | 250 | 44 | 66 | 77 | 67 | 67 | 2.5 | 1.18 | 63.88 | 77.228 | 99.1 | 101.990 |
| D-1 | 203.5 | 03:23:30 | 548.020 | 1.20 | 0.460 | 0.46 | 188 | 250 | 253 | 45 | 67 | 78 | 68 | 68 | 2.5 | 1.10 | 59.05 | 85.223 | 99.7 | 101.907 |
| D-2 | 224.8 | 03:44:45 | 556.230 | 1.30 | 0.460 | 0.46 | 189 | 250 | 250 | 46 | 66 | 78 | 69 | 69 | 2.5 | 1.14 | 61.50 | 93.533 | 99.9 | 101.872 |
| D-3 | 246.8 | 04:06:45 | 564.780 | 1.30 | 0.460 | 0.46 | 190 | 250 | 249 | 47 | 67 | 78 | 69 | 69 | 2.5 | 1.14 | 61.55 | 101.415 | 99.6 | 101.415 |
| Last Pt | 268.8 | 04:28:45 | 572.890 | | | | | | | | | | | | | | | | | |
| **Final Val** | 268.8 | 04:28:45 | 572.890 | | | | | | | | | | | **Max Vac** | 2.5 | **Final Values** | | 101.415 | 99.6 | |
| **Average Values** | | | | 1.35 | | 0.46 | 190 | 252 | 251 | 45 | 66 | 77 | 65 | 65 | | 1.16 | 62.69 | | | |
| | | | | | | | | | | | | | 65 | | | | | | | |

| **Actual** | **DP to** | **Point-by-point** | **Point-by-point** | **Point** |
|---|---|---|---|---|
| **Actual Nozzle Diameter ($D_{na}$)** | **DP to DH Iso Factor (K)** | **Point-by-point Meter Volume ($V_m$)$_{std}$** | **Point-by-point Percent IsoKinetic (I)** | **Point Weighted Average Isokinetics** |
| in | | dscf | % | ($V_m$)$_{std}$ x (I) |
| 0.156 | 0.36 | 8.116 | 99.4 | 807.1 |
| 0.156 | 0.36 | 8.733 | 99.5 | 868.8 |
| 0.156 | 0.36 | 9.271 | 97.8 | 906.7 |
| 0.156 | 0.36 | 8.465 | 96.4 | 816.3 |
| 0.156 | 0.36 | 8.128 | 99.3 | 806.9 |
| 0.156 | 0.36 | 8.543 | 97.3 | 831.4 |
| 0.156 | 0.36 | 8.481 | 103.5 | 878.0 |
| 0.156 | 0.36 | 8.690 | 98.9 | 859.6 |
| 0.156 | 0.36 | 8.800 | 100.2 | 882.2 |
| 0.156 | 0.36 | 7.995 | 105.2 | 840.7 |
| 0.156 | 0.36 | 8.310 | 101.5 | 843.6 |
| 0.156 | 0.36 | 7.883 | 96.4 | 759.6 |
| | | | | |
| 0.156 | 0.36 | 101.415 | | |

**RM 201A Calculations**

| **Trav. Point** | **First Point** | **First Point** | **Subs. Point** | **Velocity** | |
|---|---|---|---|---|---|
| **Trav. Point Estimated Dwell Times ($t_1$), ($t_n$)** | **First Point Dwell Times ($t_1$)** | **First Point Vel. Head Current Trav. ($\Delta p_{RM2}$)** | **Subs. Point Dwell Times Current Trav. ($t_n$)** | **Velocity Head Current Trav. ($\Delta p_{201A}$)** | **Violations** |
| min | min | in $H_2O$ | min | in $H_2O$ | |
| 22.00 | 22.03 | 1.30 | | 1.30 | 0 |
| 22.75 | 22.86 | 1.40 | 22.86 | 1.40 | 0 |
| 23.75 | 23.66 | 1.50 | 23.66 | 1.50 | 0 |
| 22.75 | 22.86 | 1.40 | | 1.40 | 0 |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 |
| 22.75 | 22.86 | 1.40 | 22.86 | 1.40 | 0 |
| 22.00 | 22.03 | 1.30 | | 1.30 | 0 |
| 22.75 | 22.86 | 1.40 | 22.86 | 1.40 | 0 |
| 22.75 | 22.86 | 1.40 | 22.86 | 1.40 | 0 |
| 21.25 | 21.16 | 1.20 | | 1.20 | 0 |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 |
| | | | | | |

Notes:

Z must be between 0.99 and 1.01, but the initial calculation is based on assumptions of the Cunniham Correction Factor and the Reynolds Number. In cases where your Z value is not between the limits and is producing an error, you need to run a second iteration based on the re-calculated numbers. To do this, copy the value in "Recalculated Cunninham, C =" [BH189] and do a "paste special value only" into "Calculated Cunninham, C =" [BH174]. This sets the initially calculated C equal to the C determined during this test run. At this point the program may recognize the second iteration and your error may go away. If it doesn't it is probably because it is having difficulties deciding between the Reynolds number at the threshold.

| | | | |
|---|---|---|---|
| | Stack Gas Viscosity (μs) | 203.35 | μP |
| | Cyclone Flow Rate ($Q_a$) | 0.50 | ft³/min |
| | Dia. of 50% Prob. ($D_{50}$) CI | 10.50 | μm |
| >> | Calculated Cunninham, C | 1.08 | |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{re}$<3162) | 10.27 | μm |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{re}$≥3162) | | μm |
| | Middle of Zone Dia. ($D_{50T}$) CI | 10.64 | μm |
| | Sampling Rate ($PM_{10}$ and $PM_{2.5}$ Cyc.) | 0.49 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$<3162) | 2.33 | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{re}$<3162) | 0.50 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$≥3162) | | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{re}$≥3162) | | dscfm |
| | Actual Test Run C (2.5 μm) | 1.07 | |
| | Actual Test Run $N_{RE}$ | 2776.75 | |
| | Actual Particle Cut Diameter for CI | 10.50 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$<3162) | 2.34 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$≥3162) | | μm |
| << | Recalculated Cunninham, C = | 1.08 | |
| | Recalculated $D_{50-1}$ for $C_{IV}$ = | 2.33 | |
| >> | Z (limits 0.99 to 1.01) = | 1.00 | |
| | Isokinetics (I) (80 to 120%) = | 99.60 | % |
| | No. Sampling Pts. Outside Δp = | 0 | |
| | Sample Nozzle Diameter = | 0.156 | in |
| | $\Delta p_{min}$ | 0.662 | in $H_2O$ |
| | $\Delta p_{max}$ | 1.965 | in $H_2O$ |

## METHOD 201A (FRONT) AND 202 (BACK) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base |
| **Project #** | bec-19-cricketvalley.ny-start#1 |

| | |
|---|---|
| **Date** | 02/19/20 |
| **Operator** | Aaron Blum |
| **Run Number** | PM U-00001 Base-3 |

| **Filter #** |
|---|
| 18082945 |
| PM U-00001 Base-3-CPM |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | 0.7240 | 4187/10 |
| **Average Stack Temp** | ($t_s$) | 183.8 | °F |
| **Average Meter Temp** | ($t_m$) | 75.1 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.878 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | 1.14 | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | 6.59 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.28 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.38 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | 0.37 | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec ≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec ≥60] |
| **Pitot** | **Pre (+)** | 0.00 | in $H_2O$ | 3.7 | in $H_2O$ for | 15.0 | sec ≥15] |
| PASS | **Pre (-)** | 0.00 | in $H_2O$ | 4.0 | in $H_2O$ for | 15.0 | sec ≥15] |
| | **Post (+)** | 0.00 | in $H_2O$ | 3.6 | in $H_2O$ for | 15.0 | sec ≥15] |
| | **Post (-)** | 0.00 | in $H_2O$ | 4.2 | in $H_2O$ for | 15.0 | sec ≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | Samp-cp-0030 | | |
| **Meter Cal Factor** | (Y) | 0.974 | |
| **Nozzle Number** | 4b | | |
| **Average Nozzle Diameter** | ($D_{ns}$) | 0.1560 | in |
| **Suggested Nozzle Diameter** | ($D_n$) | 0.1562 | in |
| **Probe Number** | SAMP-PR-0133 | | in |
| **Probe Length** | 120 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | SAMP-BH-0039 | | |
| **Impinger Case Number** | SAMP-SBC-0099 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.12 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.19 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.26 | in Hg |

| **Nozzle Measurements** | | | **ID: 4b** | |
|---|---|---|---|---|
| **Pre** | 0.156 | 0.156 | 0.156 | **PASS** |
| **Post** | 0.156 | 0.156 | 0.156 | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 14:25 | **End** | 18:27 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 374.8 | 584.0 | 729.9 | 918.6 | | | | |
| **Post** | 507.7 | 584.1 | 733.7 | 930.1 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | Samp-cp-0030 | Samp-cp-0030 | Samp-cp-0030 | | | SAMP-PR-0133 | SAMP-PR-0133 | SAMP-BH-0039 | SAMP-SBC-0099 | 1048 | 1018 | Samp-cp-0030 | | Samp-cp-0030 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head ($\Delta p$)** | **Desired Orifice ΔH ($\Delta H_a$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (248±25°F)** | **Filter Temp (248±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤85°F)** | **CPM Filter Temp (76.5±8.5°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 283.800 | 1.30 | 0.460 | 0.46 | 185 | 250 | 257 | 55 | 51 | 73 | 70 | 70 | 2.5 | 1.14 | 61.06 | 8.459 | 102.5 | 101.218 |
| A-2 | 22.0 | 00:22:00 | 292.450 | 1.30 | 0.460 | 0.46 | 184 | 251 | 258 | 53 | 49 | 74 | 72 | 72 | 2.5 | 1.14 | 61.02 | 16.896 | 102.4 | 101.086 |
| A-3 | 44.0 | 00:44:00 | 301.110 | 1.40 | 0.460 | 0.46 | 183 | 254 | 255 | 54 | 51 | 75 | 72 | 72 | 2.5 | 1.18 | 63.27 | 25.235 | 99.6 | 99.523 |
| B-1 | 66.8 | 01:06:45 | 309.670 | 1.20 | 0.460 | 0.46 | 183 | 255 | 252 | 55 | 55 | 74 | 74 | 74 | 2.5 | 1.10 | 58.58 | 33.301 | 101.0 | 99.618 |
| B-2 | 88.0 | 01:28:00 | 317.980 | 1.30 | 0.460 | 0.46 | 184 | 249 | 249 | 55 | 57 | 76 | 77 | 77 | 2.5 | 1.14 | 61.02 | 41.254 | 100.1 | 98.727 |
| B-3 | 110.0 | 01:50:00 | 326.220 | 1.20 | 0.460 | 0.46 | 183 | 248 | 251 | 51 | 59 | 77 | 78 | 78 | 2.5 | 1.10 | 58.58 | 49.490 | 101.3 | 99.264 |
| C-1 | 131.3 | 02:11:15 | 334.770 | 1.30 | 0.460 | 0.46 | 184 | 250 | 252 | 52 | 60 | 76 | 78 | 78 | 2.5 | 1.14 | 61.02 | 57.737 | 101.1 | 99.179 |
| C-2 | 153.3 | 02:33:15 | 343.330 | 1.40 | 0.460 | 0.46 | 185 | 254 | 251 | 53 | 61 | 77 | 75 | 75 | 2.5 | 1.18 | 63.37 | 66.359 | 100.6 | 99.256 |
| C-3 | 176.0 | 02:56:00 | 352.230 | 1.30 | 0.460 | 0.46 | 183 | 250 | 248 | 54 | 64 | 77 | 76 | 76 | 2.5 | 1.14 | 60.97 | 74.307 | 100.1 | 98.795 |
| D-1 | 198.0 | 03:18:00 | 360.450 | 1.20 | 0.460 | 0.46 | 184 | 255 | 253 | 56 | 66 | 76 | 76 | 76 | 2.5 | 1.10 | 58.62 | 82.343 | 100.6 | 98.868 |
| D-2 | 219.3 | 03:39:15 | 368.760 | 1.30 | 0.460 | 0.46 | 183 | 256 | 254 | 57 | 67 | 76 | 76 | 76 | 2.5 | 1.14 | 60.97 | 90.185 | 100.1 | 98.409 |
| D-3 | 241.3 | 04:01:15 | 376.870 | 1.30 | 0.460 | 0.46 | 185 | 257 | 255 | 58 | 68 | 77 | 77 | 77 | 2.5 | 1.14 | 61.06 | 99.084 | 100.8 | 99.084 |
| Last Pt | 263.3 | 04:23:15 | 386.090 | | | | | | | | | | | | | | | | | |
| **Final Val** | 263.3 | 04:23:15 | 386.090 | | | | | | | | | | | **Max Vac** | 2.5 | **Final Values** | | 99.084 | 100.8 | |
| **Average Values** | | | | 1.29 | | 0.46 | 184 | 252 | 253 | 54 | 59 | 76 | 75 | 75 | | 1.14 | 60.79 | | | |
| | | | | | | | | | | | | | 75 | | | | | | | |

| **Actual Nozzle Diameter ($D_{na}$)** | **DP to Actual DP to DH Iso Factor (K)** | **Point-by-point Meter Volume ($V_m$)$_{std}$** | **Point-by-point Percent IsoKinetic (I)** | **Point Point Weighted Average Isokinetics** |
|---|---|---|---|---|
| in | | dscf | % | ($V_m$)$_{std}$ x (I) |
| 0.156 | 0.37 | 8.459 | 102.5 | 867.4 |
| 0.156 | 0.37 | 8.437 | 102.2 | 862.2 |
| 0.156 | 0.37 | 8.339 | 94.1 | 784.4 |
| 0.156 | 0.37 | 8.066 | 105.2 | 848.4 |
| 0.156 | 0.37 | 7.953 | 96.3 | 766.1 |
| 0.156 | 0.37 | 8.237 | 107.4 | 884.8 |
| 0.156 | 0.37 | 8.246 | 99.9 | 823.7 |
| 0.156 | 0.37 | 8.622 | 97.4 | 839.7 |
| 0.156 | 0.37 | 7.948 | 96.2 | 764.6 |
| 0.156 | 0.37 | 8.035 | 104.9 | 842.8 |
| 0.156 | 0.37 | 7.842 | 94.9 | 744.3 |
| 0.156 | 0.37 | 8.899 | 107.9 | 959.9 |
| | | | | |
| 0.156 | 0.37 | 99.084 | | |

| **RM 201A Calculations** | | | | | | |
|---|---|---|---|---|---|---|
| **Trav. Point Estimated Dwell Times ($t_1$), ($t_n$)** | **First Point Dwell Times Prelim. Trav. ($t_1$)** | **First Point Vel. Head Current Trav. ($\Delta p_{RM2}$)** | **Subs. Point Dwell Times Current Trav. ($t_n$)** | **Velocity Velocity Head Current Trav. ($\Delta p_{201A}$)** | **Violations** |
| min | min | in $H_2O$ | min | in $H_2O$ | |
| 22.00 | 22.03 | 1.30 | | 1.30 | 0 |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 |
| 22.75 | 22.86 | 1.40 | 22.86 | 1.40 | 0 |
| 21.25 | 21.16 | 1.20 | | 1.20 | 0 |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 |
| 21.25 | 21.16 | 1.20 | 21.16 | 1.20 | 0 |
| 22.00 | 22.03 | 1.30 | | 1.30 | 0 |
| 22.75 | 22.86 | 1.40 | 22.86 | 1.40 | 0 |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 |
| 21.25 | 21.16 | 1.20 | | 1.20 | 0 |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 |
| | | | | | |

Z must be between 0.99 and 1.01, but the initial calculation is based on assumptions of the Cunniham Correction Factor and the Reynolds Number. In cases where your Z value is not between the limits and is producing an error, you need to run a second iteration based on the re-calculated numbers. To do this, copy the value in "Recalculated Cunninham, C =" [BH189] and do a "paste special value only" into "Calculated Cunninham, C =" [BH174]. This sets the initially calculated C equal to the C determined during this test run. At this point the program may recognize the second iteration and your error may go away. If it doesn't it is probably because it is having difficulties deciding between the Reynolds number at the threshold.

| | | | |
|---|---|---|---|
| | Stack Gas Viscosity (μs) | 202.01 | μP |
| | Cyclone Flow Rate ($Q_s$) | 0.49 | ft³/min |
| | Dia. of 50% Prob. ($D_{50}$) CI | 10.56 | μm |
| >> | Calculated Cunninham, C | 1.08 | |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{Re}$<3162) | 10.30 | μm |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{Re}$≥3162) | | μm |
| | Middle of Zone Dia. ($D_{50T}$) CI | 10.65 | μm |
| | Sampling Rate ($PM_{10}$ and $PM_{2.5}$ Cyc.) | 0.48 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$<3162) | 2.35 | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{Re}$<3162) | 0.49 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$≥3162) | | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{Re}$≥3162) | | dscfm |
| | Actual Test Run C (2.5 μm) | 1.07 | |
| | Actual Test Run $N_{RE}$ | 2786.81 | |
| | Actual Particle Cut Diameter for CI | 10.56 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$<3162) | 2.35 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$≥3162) | | μm |
| << | Recalculated Cunninham, C = | 1.08 | |
| | Recalculated $D_{50-1}$ for $C_{IV}$ = | 2.35 | |
| >> | Z (limits 0.99 to 1.01) = | 1.00 | |
| | Isokinetics (I) (80 to 120%) = | 100.81 | % |
| | No. Sampling Pts. Outside Δp = | 0 | |
| | Sample Nozzle Diameter = | 0.156 | in |
| | $\Delta p_{min}$ | 0.662 | in $H_2O$ |
| | $\Delta p_{max}$ | 1.965 | in $H_2O$ |

Notes:

# EMISSION DATA RECORDS

## Reference Method Data
## Base Load
## SAM

Following completion of the stack emission test program for Unit #U-00001, it was discovered that the U-00001 fuel gas flow meter operation was tied to a “test mode” (Mode 0) setting, and not the expected “natural gas mode” setting (Mode 1). Further investigations of the impact of this setting, indicate that the initial Mode 0 fuel gas flow results have a positive bias of 1.5%. Consequently, the original fuel gas flow results (see U-00001-supplied operational fuel gas data) have been reduced by 1.5%. The operating mode of the Unit 1 gas flowmeter has been reset to the correct Mode 1 (natural gas).

## METHOD 8A (CONTROLLED CONDENSATE) SOURCE SAMPLING TITLE PAGE

| Source Information | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base |
| **Fuel Type** | Gas, Natural |

| Test Information | | | |
|---|---|---|---|
| **Project #** | | bec-19-cricketvalley.ny-start#1 | |
| **Operator** | | Atlas Melchert | |
| **Date for Preliminary Run** | (mm/dd/yy) | 02/17/20 | |
| **Standard Temperature** | | 68 | °F |
| **Standard Pressure** | | 29.92 | in Hg |
| **Required Sample Vol.** | 10 L/min | 10.6 | scf |
| **Run Duration** | 8a, 2.4.1.3 | 120 | minutes |
| **Unit Number** | | U-00001 | |
| **Base Run Number** | | SAM U-00001 Base | |
| **Number of Ports Available** | | 4 | |
| **Number of Ports Used** | | 1 | |
| **Port Inside Diameter** | | 6.00 | in |
| **Stack Shape** | | Circular | |

| Test Equipment Information | | | | | |
|---|---|---|---|---|---|
| **Run** | | **1** | **2** | **3** | |
| **Test Date** | (mm/dd/yy) | 02/18/20 | 02/18/20 | 02/19/20 | |
| **Load** | | Base | Base | Base | % or w/DB |
| **Fuel F-Factor** | | 8643.54 | 8643.54 | 8642.95 | dscf/MMBtu |
| **Meter Box Number** | from ACS | samp-cp-0007 | samp-cp-0007 | samp-cp-0007 | |
| **Meter Calibration Factor** | (Y) | 0.985 | 0.985 | 0.985 | |
| **Orifice Meter Coefficient** | ($\Delta H_@$) | 1.731 | 1.731 | 1.731 | in $H_2O$ |
| **Non-Console Manometer Used** | | No | No | No | |
| **Probe Number** | from ACS | SAMP-SAM-01 | SAMP-SAM-01 | SAMP-SAM-01 | |
| **Probe Length** | | 72.0 | 72.0 | 72.0 | in |
| **(SS, Glass …. ) Liner Material** | from list | glass | glass | glass | |
| **Sample Case / Oven Number** | from ACS | samp-ha-0005 | samp-ha-0005 | samp-ha-0005 | |
| **Impinger Case Number** | from ACS | samp-bc-0032 | samp-bc-0032 | samp-bc-0032 | |

| Testing Company Information | |
|---|---|
| **Company Name** | Air Hygiene International, Inc. (Tulsa, Oklahoma) |
| **Address** | 1600 W Tacoma Street |
| **City, State Zip** | Broken Arrow, Oklahoma 74012 |
| **Project Manager** | Rob White |
| **Phone Number** | (918) 307-8865 |
| **Fax Number** | (918) 307-9131 |

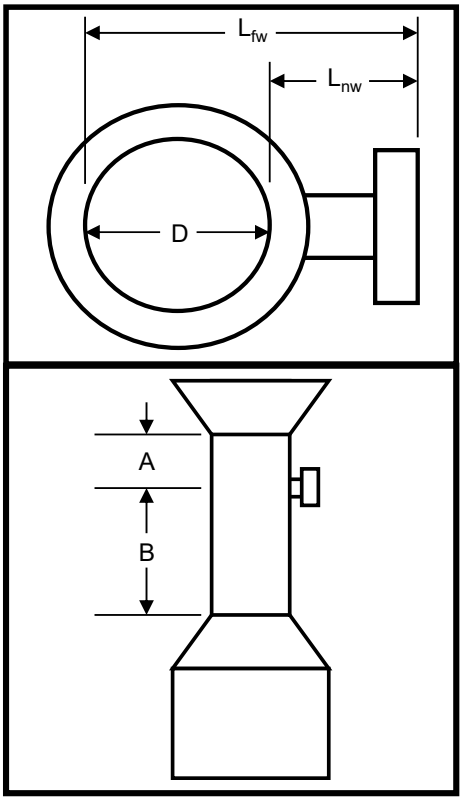
Created with Isocalc-AHI v20190830

## METHOD 1 - SAMPLE AND VELOCITY TRAVERSES FOR CIRCULAR SOURCES

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Date** | 02/17/20 |
| **Sampling Location** | U-00001 Base | **Stack Type** | Circular |
| **Operator** | Atlas Melchert | **Ports Available** | 4 |
| **Project #** | bec-19-cricketvalley.ny-start#1 | **Ports Used** | 1 |
| **Stack Size** | Large (>24 inch diameter) | **Port ID (inches)** | 6.00 |

| **Circular Stack or Duct Diameter** | | | |
|---|---|---|---|
| **Distance to Far Wall of Stack** | ($L_{fw}$) | 236.00 | in |
| **Distance to Near Wall of Stack** | ($L_{nw}$) | 8.00 | in |
| **Diameter of Stack** | (D) | 228.00 | in |
| **Area of Stack** | ($A_s$) | 283.53 | ft² |

| **Distance from Port to Disturbances** | | | |
|---|---|---|---|
| **Distance Upstream** | (A) | 200.40 | in |
| **Diameters Upstream** | ($A_D$) | 0.88 | diameters |
| **Distance Downstream** | (B) | 850.00 | in |
| **Diameters Downstream** | ($B_D$) | 3.73 | diameters |




| **Number of Traverse Points Required** | | | |
|---|---|---|---|
| **Diameters to Flow Disturbance** | | **Minimum Number of[1] Traverse Points** | |
| **Down Stream** | **Up Stream** | **Particulate Points** | **Velocity Points** |
| 2.00-4.99 | 0.50-1.24 | 24 | 16 |
| 5.00-5.99 | 1.25-1.49 | 20 | 16 |
| 6.00-6.99 | 1.50-1.74 | 16 | 12 |
| 7.00-7.99 | 1.75-1.99 | 12 | 12 |
| >= 8.00 | >=2.00 | 8 or 12[2] | 8 or 12[2] |
| **Upstream Spec** | | 24 | 16 |
| **Downstream Spec** | | 24 | 16 |
| **Traverse Pts Required** | | 24 | 16 |

[1] Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.

[2] 8 for Circular Stacks 12 to 24 inches
12 for Circular Stacks over 24 inches

◉ Method 1 Trav

○ 12 Point PM Trav (M201a ONLY)

○ Velocity

| **Number of Traverse Points Used** | | | |
|---|---|---|---|
| 1 | **Ports by** | 1 | **Across** |
| 1 | **Pts Used** | 1 | **Required** |

| Location of Traverse Points in Circular Stacks | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Traverse Point | (Fraction of Stack Dimension from Inside Wall to Traverse Point) Number of Traverse Points Across the Stack | | | | | | | | |
| Number | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 |
| 1 | .146 | .067 | .044 | .032 | .026 | .021 | .018 | .016 | .014 |
| 2 | .854 | .250 | .146 | .105 | .082 | .067 | .057 | .049 | .044 |
| 3 | | .750 | .296 | .194 | .146 | .118 | .099 | .085 | .075 |
| 4 | | .933 | .704 | .323 | .226 | .177 | .146 | .125 | .109 |
| 5 | | | .854 | .677 | .342 | .250 | .201 | .169 | .146 |
| 6 | | | .956 | .806 | .658 | .356 | .269 | .220 | .188 |
| 7 | | | | .895 | .774 | .644 | .366 | .283 | .236 |
| 8 | | | | .968 | .854 | .750 | .634 | .375 | .296 |
| 9 | | | | | .918 | .823 | .731 | .625 | .382 |
| 10 | | | | | .974 | .882 | .799 | .717 | .618 |
| 11 | | | | | | .933 | .854 | .780 | .704 |
| 12 | | | | | | .979 | .901 | .831 | .764 |

| **Traverse Point Locations** | | | |
|---|---|---|---|
| **Traverse Point Number** | **Fraction of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
| | | in | in |
| **1** | 0.275 | 62 6/8 | 70 6/8 |
| **2** | | | |
| **3** | | | |
| **4** | | | |
| **5** | | | |
| **6** | | | |
| **7** | | | |
| **8** | | | |
| **9** | | | |

## METHOD 3a - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

| | | | | | |
|---|---|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Preliminary Run Date** | 02/17/20 | | |
| **Sampling Location** | U-00001 Base | **Operator** | Atlas Melchert | | |
| **Project #** | bec-19-cricketvalley.ny-start#1 | **# of Ports Used** | 1 (gas probe) | | |
| **Fuel Type** | Gas, Natural | **Min. Fuel Factor** | 1.600 | **Max. Fuel Factor** | 1.836 |

**Gas Analysis Data**

| **Run Number** | SAM U-00001 Base-1 | | **Date** | 02/18/20 | **Run Start Time** | 02:03 | **Run Stop Time** | 04:03 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 02:00 | 4.8 | 12.7 | 0.0 | 82.5 | 29.28 | 1.708 | 139.9 | YES |

**Gas Analysis Data**

| **Run Number** | SAM U-00001 Base-2 | | **Date** | 02/18/20 | **Run Start Time** | 04:57 | **Run Stop Time** | 06:57 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 02:00 | 4.8 | 12.7 | 0.0 | 82.5 | 29.28 | 1.708 | 139.9 | YES |

**Gas Analysis Data**

| **Run Number** | SAM U-00001 Base-3 | | **Date** | 02/19/20 | **Run Start Time** | 14:32 | **Run Stop Time** | 16:32 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 02:00 | 4.8 | 12.7 | 0.0 | 82.5 | 29.28 | 1.708 | 139.9 | YES |

## METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Preliminary Run Date** | 02/17/20 |
| **Sampling Location** | U-00001 Base | **Operator** | Atlas Melchert |
| **Project #** | bec-19-cricketvalley.ny-start#1 | **Ports Used** | 1 |

| **Scale Daily Calibration** | | | | | |
|---|---|---|---|---|---|
| **Scale Number** | SAMP-SC-0028 | **Standard** | **Result** | **Difference** | **Pass/Fail** |
| **Date** | | (g) | (g) | (g) | (± 0.5 g) |
| **Test Day 1** | 02/17/20 | 500 | 499.7 | -0.3 | Pass |
| **Test Day 2** | 02/18/20 | 500 | 499.7 | -0.3 | Pass |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | SAM U-00001 Base-1 | | **Date** | 02/18/20 | **Start Time** | 02:03 | **Stop Time** | 04:03 |
| **Meter Box Number** | | samp-cp-0007 | | | | **Meter Cal Factor** | (Y) | 0.985 | |
| **Total Meter Volume** | | ($V_m$) | 42.320 | dcf | | **Barometric Pressure** | ($P_b$) | 29.98 | in Hg |
| **Average Stack Temp** | | $(t_s)_{avg}$ | | °F | | **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Average Meter Temp** | | $(t_m)_{avg}$ | 89 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.34 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | $H_2O_2$ | $H_2O_2$ | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 784.40 | 711.30 | 616.50 | 932.20 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 716.30 | 708.00 | 616.20 | 926.30 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 68.1 | 3.3 | 0.3 | 5.9 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | | ($W_t$) | 77.60 | g | | **Water Vol Weighed** | ($V_{wsg(std)}$) | 3.659 | scf |
| **Std Meter Volume** | | ($V_{m(std)}$) | 40.232 | dscf | | **Sat. Moisture Content** | ($B_{ws(svp)}$) | | % |
| **Calc Moisture Content** | | ($B_{ws(calc)}$) | 8.34 | % | | **Final Moisture Content** | ($B_{ws}$) | | % |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | SAM U-00001 Base-2 | | **Date** | 02/18/20 | **Start Time** | 04:57 | **Stop Time** | 06:57 |
| **Meter Box Number** | | samp-cp-0007 | | | | **Meter Cal Factor** | (Y) | 0.985 | |
| **Total Meter Volume** | | ($V_m$) | 42.320 | dcf | | **Barometric Pressure** | ($P_b$) | 29.88 | in Hg |
| **Average Stack Temp** | | $(t_s)_{avg}$ | | °F | | **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Average Meter Temp** | | $(t_m)_{avg}$ | 90 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.34 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | $H_2O_2$ | $H_2O_2$ | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 856.70 | 712.70 | 616.60 | 937.50 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 784.40 | 711.30 | 616.50 | 932.20 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 72.3 | 1.4 | 0.1 | 5.3 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | | ($W_t$) | 79.10 | g | | **Water Vol Weighed** | ($V_{wsg(std)}$) | 3.730 | scf |
| **Std Meter Volume** | | ($V_{m(std)}$) | 39.975 | dscf | | **Sat. Moisture Content** | ($B_{ws(svp)}$) | | % |
| **Calc Moisture Content** | | ($B_{ws(calc)}$) | 8.53 | % | | **Final Moisture Content** | ($B_{ws}$) | | % |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | SAM U-00001 Base-3 | | **Date** | 02/19/20 | **Start Time** | 14:32 | **Stop Time** | 16:32 |
| **Meter Box Number** | | samp-cp-0007 | | | | **Meter Cal Factor** | (Y) | 0.985 | |
| **Total Meter Volume** | | ($V_m$) | 42.320 | dcf | | **Barometric Pressure** | ($P_b$) | 30.12 | in Hg |
| **Average Stack Temp** | | $(t_s)_{avg}$ | | °F | | **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Average Meter Temp** | | $(t_m)_{avg}$ | 101 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.34 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | $H_2O_2$ | $H_2O_2$ | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 788.70 | 734.50 | 614.50 | 963.50 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 732.80 | 731.30 | 614.40 | 957.40 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 55.9 | 3.2 | 0.1 | 6.1 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | | ($W_t$) | 65.30 | g | | **Water Vol Weighed** | ($V_{wsg(std)}$) | 3.079 | scf |
| **Std Meter Volume** | | ($V_{m(std)}$) | 39.506 | dscf | | **Sat. Moisture Content** | ($B_{ws(svp)}$) | | % |
| **Calc Moisture Content** | | ($B_{ws(calc)}$) | 7.23 | % | | **Final Moisture Content** | ($B_{ws}$) | | % |

**METHOD 8A (CONTROLLED CONDENSATE) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA**

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base |
| **Project #** | bec-19-cricketvalley.ny-start#1 |

| | |
|---|---|
| **Date** | 02/18/20 |
| **Operator** | Atlas Melchert |
| **Run Number** | SAM U-00001 Base-1 |

| |
|---|
| **Filter #** |
| R0001 |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | | |
| **Average Stack Temp** | ($t_s$) | | °F |
| **Average Meter Temp** | ($t_m$) | 88.6 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.731 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.28 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.75 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Pre (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | samp-cp-0007 | | |
| **Meter Cal Factor** | (Y) | 0.985 | |
| **Nozzle Number** | NA | | |
| **Average Nozzle Diameter** | ($D_{na}$) | | in |
| **Suggested Nozzle Diameter** | ($D_{ni}$) | | in |
| **Probe Number** | SAMP-SAM-01 | | in |
| **Probe Length** | 72 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | samp-ha-0005 | | |
| **Impinger Case Number** | samp-bc-0032 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 29.98 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.05 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.11 | in Hg |

| **Nozzle Measurements** | | | **ID: NA** |
|---|---|---|---|
| **Pre** | | | **PASS** |
| **Post** | | | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 02:03 | **End** | 04:03 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 716.3 | 708.0 | 616.2 | 926.3 | | | | |
| **Post** | 784.4 | 711.3 | 616.5 | 932.2 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | samp-cp-0007 | samp-cp-0007 | samp-cp-0007 | | | SAMP-SAM-01 | SAMP-SAM-01 | samp-ha-0005 | samp-bc-0032 | TCSAM1 | | samp-cp-0007 | | samp-cp-0007 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head (Δp)** | **Desired Orifice ΔH ($\Delta H_d$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (375±25°F)** | **Filter Temp (525±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤185°F)** | **CPM Filter Temp (--±--°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)$_l$** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 564.120 | -- | 0.342 | 0.34 | -- | 350 | 500 | 44 | 62 | -- | 80 | 80 | 1.5 | | | 1.781 | | 42.751 |
| A-2 | 5.0 | 00:05:00 | 565.964 | -- | 0.342 | 0.34 | -- | 350 | 511 | 43 | 77 | -- | 83 | 79 | 1.3 | | | 3.533 | | 42.401 |
| A-3 | 10.0 | 00:10:00 | 567.782 | -- | 0.342 | 0.34 | -- | 350 | 522 | 42 | 92 | -- | 86 | 78 | 1.1 | | | 5.351 | | 42.810 |
| A-4 | 15.0 | 00:15:00 | 569.671 | -- | 0.342 | 0.34 | -- | 350 | 533 | 42 | 107 | -- | 91 | 79 | 1.0 | | | 7.030 | | 42.183 |
| A-5 | 20.0 | 00:20:00 | 571.426 | -- | 0.342 | 0.34 | -- | 350 | 531 | 42 | 109 | -- | 92 | 79 | 1.0 | | | 8.700 | | 41.758 |
| A-6 | 25.0 | 00:25:00 | 573.171 | -- | 0.342 | 0.34 | -- | 350 | 529 | 42 | 111 | -- | 93 | 79 | 1.0 | | | 10.393 | | 41.572 |
| A-7 | 30.0 | 00:30:00 | 574.944 | -- | 0.342 | 0.34 | -- | 350 | 527 | 42 | 114 | -- | 94 | 81 | 1.0 | | | 12.048 | | 41.306 |
| A-8 | 35.0 | 00:35:00 | 576.681 | -- | 0.342 | 0.34 | -- | 350 | 526 | 41 | 111 | -- | 94 | 81 | 1.0 | | | 13.702 | | 41.106 |
| A-9 | 40.0 | 00:40:00 | 578.418 | -- | 0.342 | 0.34 | -- | 350 | 525 | 40 | 108 | -- | 94 | 81 | 1.0 | | | 15.374 | | 40.996 |
| A-10 | 45.0 | 00:45:00 | 580.172 | -- | 0.342 | 0.34 | -- | 350 | 526 | 39 | 106 | -- | 96 | 82 | 1.0 | | | 17.015 | | 40.836 |
| A-11 | 50.0 | 00:50:00 | 581.900 | -- | 0.342 | 0.34 | -- | 350 | 524 | 39 | 106 | -- | 96 | 82 | 1.0 | | | 18.665 | | 40.724 |
| A-12 | 55.0 | 00:55:00 | 583.637 | -- | 0.342 | 0.34 | -- | 350 | 522 | 39 | 106 | -- | 96 | 82 | 1.0 | | | 20.298 | | 40.596 |
| A-13 | 60.0 | 01:00:00 | 585.356 | -- | 0.342 | 0.34 | -- | 350 | 522 | 40 | 108 | -- | 97 | 84 | 1.0 | | | 21.961 | | 40.543 |
| A-14 | 65.0 | 01:05:00 | 587.111 | -- | 0.342 | 0.34 | -- | 350 | 526 | 40 | 107 | -- | 97 | 84 | 1.0 | | | 23.623 | | 40.497 |
| A-15 | 70.0 | 01:10:00 | 588.866 | -- | 0.342 | 0.34 | -- | 350 | 530 | 40 | 106 | -- | 97 | 84 | 1.0 | | | 25.303 | | 40.484 |
| A-16 | 75.0 | 01:15:00 | 590.638 | -- | 0.342 | 0.34 | -- | 350 | 536 | 40 | 107 | -- | 99 | 85 | 1.0 | | | 26.961 | | 40.441 |
| A-17 | 80.0 | 01:20:00 | 592.393 | -- | 0.342 | 0.34 | -- | 350 | 535 | 40 | 106 | -- | 98 | 85 | 1.0 | | | 28.620 | | 40.405 |
| A-18 | 85.0 | 01:25:00 | 594.148 | -- | 0.342 | 0.34 | -- | 350 | 534 | 40 | 105 | -- | 97 | 85 | 1.0 | | | 30.298 | | 40.397 |
| A-19 | 90.0 | 01:30:00 | 595.920 | -- | 0.342 | 0.34 | -- | 350 | 533 | 40 | 106 | -- | 98 | 86 | 1.0 | | | 31.948 | | 40.355 |
| A-20 | 95.0 | 01:35:00 | 597.666 | -- | 0.342 | 0.34 | -- | 350 | 528 | 40 | 106 | -- | 98 | 86 | 1.0 | | | 33.597 | | 40.317 |
| A-21 | 100.0 | 01:40:00 | 599.412 | -- | 0.342 | 0.34 | -- | 350 | 523 | 40 | 106 | -- | 98 | 86 | 1.0 | | | 35.255 | | 40.292 |
| A-22 | 105.0 | 01:45:00 | 601.167 | -- | 0.342 | 0.34 | -- | 350 | 520 | 40 | 107 | -- | 98 | 86 | 1.0 | | | 36.913 | | 40.269 |
| A-23 | 110.0 | 01:50:00 | 602.922 | -- | 0.342 | 0.34 | -- | 350 | 520 | 40 | 107 | -- | 98 | 86 | 1.0 | | | 38.571 | | 40.248 |
| A-24 | 115.0 | 01:55:00 | 604.676 | -- | 0.342 | 0.34 | -- | 350 | 520 | 40 | 107 | -- | 98 | 86 | 1.0 | | | 40.238 | | 40.238 |
| Last Pt | 120.0 | 02:00:00 | 606.440 | | | | | | | | | | | | | | | | | |
| **Final Val** | 120.0 | 02:00:00 | 606.440 | | | | | | | | | | | **Max Vac** | 1.5 | **Final Values** | | 40.238 | | |
| **Average Values** | | | | | | 0.34 | | 350 | 525 | 41 | 104 | | 95 | 83 | | | | | | |
| | | | | | | | | | | | | | 89 | | | | | | | |

Notes:

**METHOD 8A (CONTROLLED CONDENSATE) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA**

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base |
| **Project #** | bec-19-cricketvalley.ny-start#1 |

| | |
|---|---|
| **Date** | 02/18/20 |
| **Operator** | Atlas Melchert |
| **Run Number** | SAM U-00001 Base-2 |

| |
|---|
| **Filter #** |
| R0001 |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | | |
| **Average Stack Temp** | ($t_s$) | | °F |
| **Average Meter Temp** | ($t_m$) | 90.3 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.731 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.28 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.34 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Pre (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | samp-cp-0007 | | |
| **Meter Cal Factor** | (Y) | 0.985 | |
| **Nozzle Number** | NA | | |
| **Average Nozzle Diameter** | ($D_{na}$) | | in |
| **Suggested Nozzle Diameter** | ($D_{ni}$) | | in |
| **Probe Number** | SAMP-SAM-01 | | in |
| **Probe Length** | 72 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | samp-ha-0005 | | |
| **Impinger Case Number** | samp-bc-0032 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 29.88 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 29.95 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.01 | in Hg |

| **Nozzle Measurements** | | | **ID: NA** |
|---|---|---|---|
| **Pre** | | | **PASS** |
| **Post** | | | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 04:57 | **End** | 06:57 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 784.4 | 711.3 | 616.5 | 932.2 | | | | |
| **Post** | 856.7 | 712.7 | 616.6 | 937.5 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | samp-cp-0007 | samp-cp-0007 | samp-cp-0007 | | | SAMP-SAM-01 | SAMP-SAM-01 | samp-ha-0005 | samp-bc-0032 | TCSAM1 | | samp-cp-0007 | | samp-cp-0007 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head (Δp)** | **Desired Orifice ΔH ($\Delta H_d$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (375±25°F)** | **Filter Temp (525±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤185°F)** | **CPM Filter Temp (--±--°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)$_l$** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 617.900 | -- | 0.342 | 0.34 | -- | 350 | 511 | 38 | 62 | -- | 84 | 83 | 1.5 | | | 1.681 | | 40.338 |
| A-2 | 5.0 | 00:05:00 | 619.657 | -- | 0.342 | 0.34 | -- | 350 | 510 | 37 | 70 | -- | 87 | 83 | 1.3 | | | 3.357 | | 40.283 |
| A-3 | 10.0 | 00:10:00 | 621.415 | -- | 0.342 | 0.34 | -- | 350 | 509 | 36 | 78 | -- | 90 | 83 | 1.1 | | | 5.046 | | 40.365 |
| A-4 | 15.0 | 00:15:00 | 623.190 | -- | 0.342 | 0.34 | -- | 350 | 509 | 36 | 88 | -- | 94 | 83 | 1.0 | | | 6.702 | | 40.215 |
| A-5 | 20.0 | 00:20:00 | 624.938 | -- | 0.342 | 0.34 | -- | 350 | 506 | 36 | 89 | -- | 94 | 83 | 1.0 | | | 8.368 | | 40.166 |
| A-6 | 25.0 | 00:25:00 | 626.696 | -- | 0.342 | 0.34 | -- | 350 | 503 | 36 | 90 | -- | 94 | 83 | 1.0 | | | 10.033 | | 40.133 |
| A-7 | 30.0 | 00:30:00 | 628.453 | -- | 0.342 | 0.34 | -- | 350 | 502 | 36 | 92 | -- | 96 | 84 | 1.0 | | | 11.694 | | 40.094 |
| A-8 | 35.0 | 00:35:00 | 630.210 | -- | 0.342 | 0.34 | -- | 350 | 504 | 36 | 91 | -- | 96 | 84 | 1.0 | | | 13.355 | | 40.065 |
| A-9 | 40.0 | 00:40:00 | 631.968 | -- | 0.342 | 0.34 | -- | 350 | 506 | 36 | 90 | -- | 96 | 84 | 1.0 | | | 15.025 | | 40.065 |
| A-10 | 45.0 | 00:45:00 | 633.734 | -- | 0.342 | 0.34 | -- | 350 | 508 | 36 | 89 | -- | 97 | 84 | 1.0 | | | 16.684 | | 40.041 |
| A-11 | 50.0 | 00:50:00 | 635.491 | -- | 0.342 | 0.34 | -- | 350 | 510 | 36 | 90 | -- | 97 | 84 | 1.0 | | | 18.343 | | 40.022 |
| A-12 | 55.0 | 00:55:00 | 637.249 | -- | 0.342 | 0.34 | -- | 350 | 512 | 36 | 91 | -- | 97 | 84 | 1.0 | | | 20.011 | | 40.022 |
| A-13 | 60.0 | 01:00:00 | 639.015 | -- | 0.342 | 0.34 | -- | 350 | 514 | 36 | 92 | -- | 98 | 85 | 1.0 | | | 21.668 | | 40.002 |
| A-14 | 65.0 | 01:05:00 | 640.772 | -- | 0.342 | 0.34 | -- | 350 | 509 | 36 | 92 | -- | 98 | 85 | 1.0 | | | 23.332 | | 39.998 |
| A-15 | 70.0 | 01:10:00 | 642.539 | -- | 0.342 | 0.34 | -- | 350 | 504 | 36 | 92 | -- | 98 | 85 | 1.0 | | | 24.980 | | 39.969 |
| A-16 | 75.0 | 01:15:00 | 644.287 | -- | 0.342 | 0.34 | -- | 350 | 501 | 36 | 93 | -- | 98 | 86 | 1.0 | | | 26.661 | | 39.991 |
| A-17 | 80.0 | 01:20:00 | 646.071 | -- | 0.342 | 0.34 | -- | 350 | 509 | 36 | 92 | -- | 98 | 86 | 1.0 | | | 28.333 | | 39.999 |
| A-18 | 85.0 | 01:25:00 | 647.847 | -- | 0.342 | 0.34 | -- | 350 | 517 | 36 | 91 | -- | 98 | 86 | 1.0 | | | 30.021 | | 40.028 |
| A-19 | 90.0 | 01:30:00 | 649.640 | -- | 0.342 | 0.34 | -- | 350 | 527 | 36 | 90 | -- | 99 | 86 | 1.0 | | | 31.675 | | 40.010 |
| A-20 | 95.0 | 01:35:00 | 651.397 | -- | 0.342 | 0.34 | -- | 350 | 524 | 36 | 91 | -- | 99 | 86 | 1.0 | | | 33.328 | | 39.994 |
| A-21 | 100.0 | 01:40:00 | 653.155 | -- | 0.342 | 0.34 | -- | 350 | 521 | 36 | 92 | -- | 99 | 86 | 1.0 | | | 34.981 | | 39.979 |
| A-22 | 105.0 | 01:45:00 | 654.912 | -- | 0.342 | 0.34 | -- | 350 | 520 | 36 | 93 | -- | 99 | 86 | 1.0 | | | 36.643 | | 39.975 |
| A-23 | 110.0 | 01:50:00 | 656.678 | -- | 0.342 | 0.34 | -- | 350 | 520 | 36 | 93 | -- | 99 | 86 | 1.0 | | | 38.305 | | 39.971 |
| A-24 | 115.0 | 01:55:00 | 658.445 | -- | 0.342 | 0.34 | -- | 350 | 520 | 36 | 93 | -- | 99 | 86 | 1.0 | | | 39.976 | | 39.976 |
| Last Pt | 120.0 | 02:00:00 | 660.220 | | | | | | | | | | | | | | | | | |
| **Final Val** | 120.0 | 02:00:00 | 660.220 | | | | | | | | | | | **Max Vac** | 1.5 | **Final Values** | | 39.976 | | |
| **Average Values** | | | | | | 0.34 | | 350 | 512 | 36 | 89 | | 96 | 85 | | | | | | |
| | | | | | | | | | | | | | 90 | | | | | | | |

Notes:

**METHOD 8A (CONTROLLED CONDENSATE) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA**

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base |
| **Project #** | bec-19-cricketvalley.ny-start#1 |

| | |
|---|---|
| **Date** | 02/19/20 |
| **Operator** | Atlas Melchert |
| **Run Number** | SAM U-00001 Base-3 |

| |
|---|
| **Filter #** |
| R0001 |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | | |
| **Average Stack Temp** | ($t_s$) | | °F |
| **Average Meter Temp** | ($t_m$) | 101.3 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.731 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.28 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.33 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Pre (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | samp-cp-0007 | | |
| **Meter Cal Factor** | (Y) | 0.985 | |
| **Nozzle Number** | NA | | |
| **Average Nozzle Diameter** | ($D_{na}$) | | in |
| **Suggested Nozzle Diameter** | ($D_{ni}$) | | in |
| **Probe Number** | SAMP-SAM-01 | | in |
| **Probe Length** | 72 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | samp-ha-0005 | | |
| **Impinger Case Number** | samp-bc-0032 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.12 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.19 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.25 | in Hg |

| **Nozzle Measurements** | | | **ID: NA** |
|---|---|---|---|
| **Pre** | | | **PASS** |
| **Post** | | | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 14:32 | **End** | 16:32 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 732.8 | 731.3 | 614.4 | 957.4 | | | | |
| **Post** | 788.7 | 734.5 | 614.5 | 963.5 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | samp-cp-0007 | samp-cp-0007 | samp-cp-0007 | | | SAMP-SAM-01 | SAMP-SAM-01 | samp-ha-0005 | samp-bc-0032 | TCSAM1 | | samp-cp-0007 | | samp-cp-0007 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head (Δp)** | **Desired Orifice ΔH ($\Delta H_d$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (375±25°F)** | **Filter Temp (525±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤185°F)** | **CPM Filter Temp (--±--°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)$_l$** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 837.110 | -- | 0.342 | 0.34 | -- | 350 | 500 | 46 | 71 | -- | 93 | 92 | 1.5 | | | 1.675 | | 40.203 |
| A-2 | 5.0 | 00:05:00 | 838.876 | -- | 0.342 | 0.34 | -- | 350 | 515 | 48 | 80 | -- | 95 | 92 | 1.5 | | | 3.339 | | 40.067 |
| A-3 | 10.0 | 00:10:00 | 840.634 | -- | 0.342 | 0.34 | -- | 350 | 530 | 50 | 89 | -- | 97 | 92 | 1.5 | | | 5.025 | | 40.197 |
| A-4 | 15.0 | 00:15:00 | 842.418 | -- | 0.342 | 0.34 | -- | 350 | 547 | 54 | 100 | -- | 101 | 92 | 1.5 | | | 6.663 | | 39.977 |
| A-5 | 20.0 | 00:20:00 | 844.157 | -- | 0.342 | 0.34 | -- | 350 | 544 | 54 | 102 | -- | 102 | 92 | 1.5 | | | 8.308 | | 39.877 |
| A-6 | 25.0 | 00:25:00 | 845.906 | -- | 0.342 | 0.34 | -- | 350 | 541 | 54 | 104 | -- | 103 | 92 | 1.5 | | | 9.951 | | 39.805 |
| A-7 | 30.0 | 00:30:00 | 847.655 | -- | 0.342 | 0.34 | -- | 350 | 538 | 56 | 108 | -- | 106 | 94 | 1.5 | | | 11.604 | | 39.785 |
| A-8 | 35.0 | 00:35:00 | 849.421 | -- | 0.342 | 0.34 | -- | 350 | 538 | 55 | 107 | -- | 106 | 94 | 1.5 | | | 13.248 | | 39.745 |
| A-9 | 40.0 | 00:40:00 | 851.178 | -- | 0.342 | 0.34 | -- | 350 | 538 | 54 | 106 | -- | 106 | 94 | 1.5 | | | 14.909 | | 39.758 |
| A-10 | 45.0 | 00:45:00 | 852.954 | -- | 0.342 | 0.34 | -- | 350 | 540 | 55 | 105 | -- | 108 | 96 | 1.5 | | | 16.548 | | 39.715 |
| A-11 | 50.0 | 00:50:00 | 854.711 | -- | 0.342 | 0.34 | -- | 350 | 538 | 56 | 108 | -- | 108 | 96 | 1.5 | | | 18.187 | | 39.680 |
| A-12 | 55.0 | 00:55:00 | 856.468 | -- | 0.342 | 0.34 | -- | 350 | 536 | 57 | 111 | -- | 108 | 96 | 1.5 | | | 19.833 | | 39.667 |
| A-13 | 60.0 | 01:00:00 | 858.235 | -- | 0.342 | 0.34 | -- | 350 | 534 | 60 | 115 | -- | 110 | 97 | 1.5 | | | 21.476 | | 39.648 |
| A-14 | 65.0 | 01:05:00 | 860.001 | -- | 0.342 | 0.34 | -- | 350 | 534 | 59 | 115 | -- | 110 | 97 | 1.5 | | | 23.110 | | 39.617 |
| A-15 | 70.0 | 01:10:00 | 861.758 | -- | 0.342 | 0.34 | -- | 350 | 534 | 58 | 115 | -- | 110 | 97 | 1.5 | | | 24.761 | | 39.617 |
| A-16 | 75.0 | 01:15:00 | 863.534 | -- | 0.342 | 0.34 | -- | 350 | 536 | 59 | 115 | -- | 111 | 98 | 1.5 | | | 26.392 | | 39.588 |
| A-17 | 80.0 | 01:20:00 | 865.291 | -- | 0.342 | 0.34 | -- | 350 | 535 | 59 | 116 | -- | 111 | 98 | 1.5 | | | 28.032 | | 39.574 |
| A-18 | 85.0 | 01:25:00 | 867.057 | -- | 0.342 | 0.34 | -- | 350 | 534 | 59 | 117 | -- | 111 | 98 | 1.5 | | | 29.671 | | 39.561 |
| A-19 | 90.0 | 01:30:00 | 868.824 | -- | 0.342 | 0.34 | -- | 350 | 535 | 60 | 120 | -- | 111 | 99 | 1.5 | | | 31.309 | | 39.548 |
| A-20 | 95.0 | 01:35:00 | 870.590 | -- | 0.342 | 0.34 | -- | 350 | 535 | 60 | 119 | -- | 111 | 99 | 1.5 | | | 32.947 | | 39.537 |
| A-21 | 100.0 | 01:40:00 | 872.356 | -- | 0.342 | 0.34 | -- | 350 | 535 | 60 | 118 | -- | 111 | 99 | 1.5 | | | 34.594 | | 39.535 |
| A-22 | 105.0 | 01:45:00 | 874.131 | -- | 0.342 | 0.34 | -- | 350 | 535 | 61 | 119 | -- | 111 | 99 | 1.5 | | | 36.232 | | 39.525 |
| A-23 | 110.0 | 01:50:00 | 875.897 | -- | 0.342 | 0.34 | -- | 350 | 535 | 61 | 119 | -- | 111 | 99 | 1.5 | | | 37.870 | | 39.516 |
| A-24 | 115.0 | 01:55:00 | 877.664 | -- | 0.342 | 0.34 | -- | 350 | 535 | 61 | 119 | -- | 111 | 99 | 1.5 | | | 39.508 | | 39.508 |
| Last Pt | 120.0 | 02:00:00 | 879.430 | | | | | | | | | | | | | | | | | |
| **Final Val** | 120.0 | 02:00:00 | 879.430 | | | | | | | | | | | **Max Vac** | 1.5 | **Final Values** | | 39.508 | | |
| **Average Values** | | | | | | 0.34 | | 350 | 534 | 57 | 108 | | 107 | 96 | | | | | | |
| | | | | | | | | | | | | | 101 | | | | | | | |

Notes:

# EMISSION DATA RECORDS

## Reference Method Data
## Base Load
## Opacity

Following completion of the stack emission test program for Unit #U-00001, it was discovered that the U-00001 fuel gas flow meter operation was tied to a “test mode” (Mode 0) setting, and not the expected “natural gas mode” setting (Mode 1). Further investigations of the impact of this setting, indicate that the initial Mode 0 fuel gas flow results have a positive bias of 1.5%. Consequently, the original fuel gas flow results (see U-00001-supplied operational fuel gas data) have been reduced by 1.5%. The operating mode of the Unit 1 gas flowmeter has been reset to the correct Mode 1 (natural gas).

Duct Burners

Method Used (Circle One): Method 9 | 203A | 203B | Other: _____

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code): bcc-19-cricketvalley.ny Start #1 | Page 1 of 2

Continued on Form Number (AHI Project Code): bcc-19-cricketvalley.ny-Start #1

| | |
|---|---|
| Company Name | Bechtel corporation |
| Facility Name | Cricket valley Energy center |
| Street Address | 2241 NY-22 |
| City | Wingdale |
| State | NY |
| Zip | 12594 |

| | |
|---|---|
| Process | Combined Cycle |
| Unit # | 1 |
| Operating Mode | |
| Control Equipment | |
| Operating Mode | |

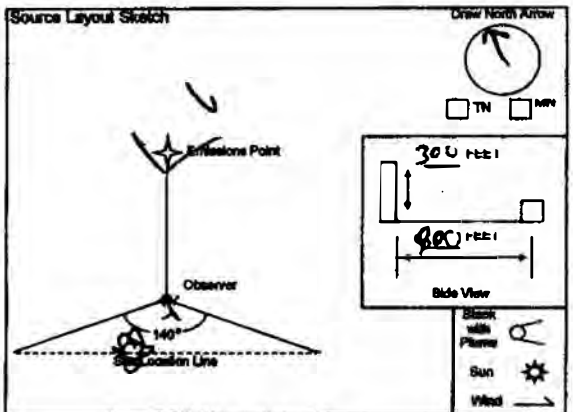
Describe Emissions Point: top of unit one

| | | | |
|---|---|---|---|
| Height of Emiss. Pt. Start | 300 ft | End 300 ft | Height of Emiss. Pt. Rel. to Observer Start 300 ft End 300 ft |
| Distance to Emiss. Pt. Start | 900 ft | End 900 ft | Direction to Emiss. Pt. (Degrees) Start 7° N End 7° N |
| Vetical Angle to Obs. Pt. Start | 30° | End 30° | Direction to Obs. Pt. (Degrees) Start 189°S End 189°S |
| Distance and Direction to Observation Point from Emission Point Start | 900 ft 189°S | End | 900 ft 189°S |

| | | | |
|---|---|---|---|
| Describe Emissions Start | N/A | End N/A | |
| Emission Color Start | N/A | End N/A | Water Droplet Plume Start N/A End N/A |

| | | | |
|---|---|---|---|
| Describe Plume Background Start | blue | End blue | |
| Background Color Start | blue | End blue | Sky Conditions Start clear End clear |
| Wind Speed Start | 1-4 mph | End 1-5mph | Wind Direction Start SSE End SSE |
| Ambient Temp. Start | 49.6 | End 49.8 | Wet Bulb Temp. 40.5 RH Percent 39.3 |

Source Layout Sketch




| Latitude | Longitude | Declination |
|---|---|---|
| 41.6711 | -73.5790 | |

Additional Information:

| Min \ Sec | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

| | |
|---|---|
| Observer's Name (Print) | Matt Jones |
| Observer's Signature | Matt Jones — Date 2/17/20 |
| Organization | Air Hygiene |
| Certified By | CAA — Date 1/3/20 |

3

Duct Burners

# VISUAL EMISSIONS OBSERVATION FORM

Method Used (Circle One): Method 9 | 203A | 203B | Other: _____

Company Name: Bechtel Corporation
Facility Name: Cricket Valley Energy Center
Street Address: 2241 NY-22
City: Wingdale | State: NY | Zip: 12594

Process: combined cycle | Unit #: 1 | Operating Mode:
Control Equipment: | Operating Mode:

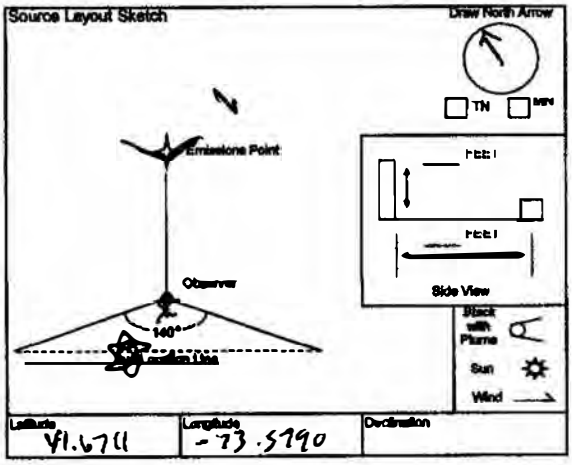
Describe Emissions Point: top of unit one
Height of Emiss. Pt. Start: 300 ft End: 300 ft | Height of Emiss. Pt. Rel. to Observer Start: 300 ft End: 300 ft
Distance to Emiss. Pt. Start: 900 ft End: 900 ft | Direction to Emiss. Pt. (Degrees) Start: 70° N End: 70° N

Vertical Angle to Obs. Pt. Start: 30° End: 30° | Direction to Obs. Pt. (Degrees) Start: 189°S End: 189°S
Distance and Direction to Observation Point from Emission Point Start: 900 ft 189°S End: 900 ft 189°S

Describe Emissions Start: N/A End: N/A
Emission Color Start: N/A End: N/A | Water Droplet Plume Start: N/A End: N/A

Describe Plume Background Start: blue End: blue
Background Color Start: blue End: blue | Sky Conditions Start: clear End: clear
Wind Speed Start: 1.5 mph End: 2 mph | Wind Direction Start: SSE End: SSE
Ambient Temp. Start: 49.6 End: 48.2 | Wet Bulb Temp.: 40.6 | RH Percent: 41.9

Source Layout Sketch




Latitude: 41.6711 | Longitude: -73.5790 | Declination:

Additional Information:

Form Number (AHI Project Code): bec-19-cricketvalley,NY-start#1 | Page 2 of 2
Continued on Form Number (AHI Project Code): bec-19-cricketvalley,NY-start#1
Observation Date: 02/17/2020 | Time Zone: EST | Start Time: 1300 | End Time: 1330

| Min. \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print): matt Jones
Observer's Signature: [signature] | Date: 2/17/20
Organization: Air Hygiene
Certified By: CAA | Date: 1/3/20

Duct Burners

# VISUAL EMISSIONS OBSERVATION FORM

Method Used (Circle One): Method 9 | 203A | 203B | Other: _____

Company Name: Bechtel Corporation
Facility Name: Cricket Valley Energy Center
Street Address: 2241 NY-22
City: Wingdale State: NY Zip: 12594

Process: Combined Cycle Unit #: 1 Operating Mode:
Control Equipment: Operating Mode:

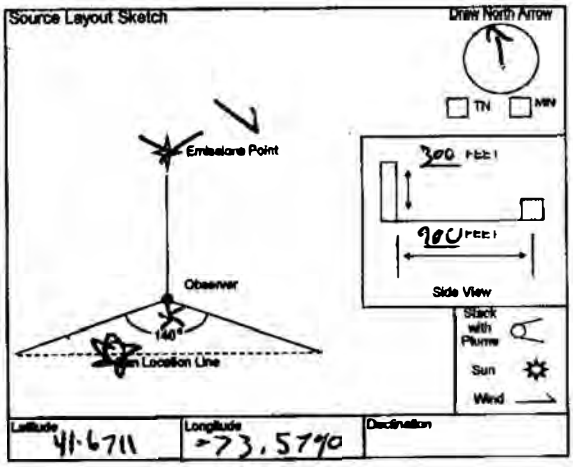
Describe Emissions Point: Top of unit one
Height of Emiss. Pt. Start: 300 ft End: 300 ft
Height of Emiss. Pt. Rel. to Observer Start: 300 ft End: 300 ft
Distance to Emiss. Pt. Start: 900 ft End: 900 ft
Direction to Emiss. Pt. (Degrees) Start: 70W End: 70W

Vertical Angle to Obs. Pt. Start: 30° End: 30°
Direction to Obs. Pt. (Degrees) Start: 189°S End: 189°S
Distance and Direction to Observation Point from Emission Point Start: 900 ft 189°S End: 900 ft 189°S

Describe Emissions Start: N/A End: N/A
Emission Color Start: N/A End: N/A
Water Droplet Plume Start: N/A End: N/A

Describe Plume Background Start: blue End: blue
Background Color Start: blue End: blue
Sky Conditions Start: clear End: clear
Wind Speed Start: 3mph End: 3mph
Wind Direction Start: SSE End: SSE
Ambient Temp. Start: 44.9 End: 45.2
Wet Bulb Temp.: 40.3
RH Percent: 32.0

Source Layout Sketch




Latitude: 41.6711 Longitude: -73.5790 Declination:

Additional Information:

Form Number (AHI Project Code): bec-19 cricketValley, NY-Start #1 Page 1 of 2
Continued on Form Number (AHI Project Code): bec-19-cricket valley, NY-Start #1
Observation Date: 07/17/2020 Time Zone: EST Start Time: 1332 End Time: 1402

| Sec / Min. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print): Matt Jones
Observer's Signature: Date: 7/17/20
Organization: Air Hygiene
Certified By: CAA Date: 1/3/20

Duct Burners

# VISUAL EMISSIONS OBSERVATION FORM

Method Used (Circle One): Method 9 | 203A | 203B | Other: _____

Company Name: Bechtel Corporation
Facility Name: Cricket Valley Energy Center
Street Address: 2241 NY-22
City: Wingdale | State: NY | Zip: 12594

Process: Combined Cycle | Unit #: 1 | Operating Mode:
Control Equipment: | Operating Mode:

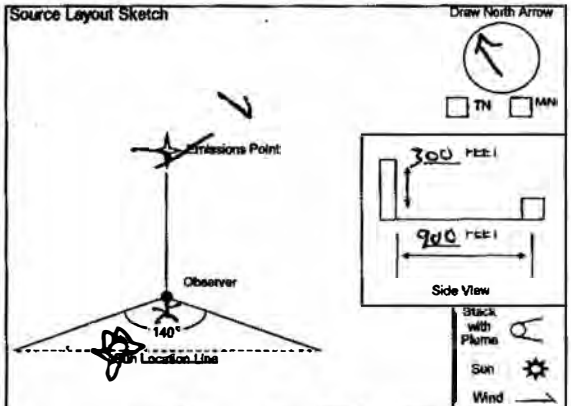
Describe Emissions Point: Top of unit 1
Height of Emiss. Pt. Start: 300 Ft End: 300 ft
Height of Emiss. Pt. Rel. to Observer Start: 300 ft End: 300 ft
Distance to Emiss. Pt. Start: 900 ft End: 900 ft
Direction to Emiss. Pt. (Degrees) Start: 70°N End: 70°N

Vertical Angle to Obs. Pt. Start: 30° End: 30°
Direction to Obs. Pt. (Degrees) Start: 189°S End: 189°S
Distance and Direction to Observation Point from Emission Point Start: 900 ft 189°S End: 900 ft 189°S

Describe Emissions Start: N/A End: N/A
Emission Color Start: N/A End: N/A
Water Droplet Plume Start: N/A End: N/A

Describe Plume Background Start: blue End: blue
Background Color Start: blue End: blue
Sky Conditions Start: clear End: clear
Wind Speed Start: 3.5 mph End: 4 mph
Wind Direction Start: SSE End: SSE
Ambient Temp. Start: 47.2 End: 45.6
Wet Bulb Temp.: 41.5
RH Percent: 29.2

Source Layout Sketch




Latitude: 41.671 | Longitude: -73.579 | Declination:

Additional Information:

Form Number (AHI Project Code): bec-19-cricketValley, NY-Stack #1 | Page 2 of 2
Continued on Form Number (AHI Project Code): bec-19-cricketValley, NY-Stack #1
Observation Date: 08/17/2020 | Time Zone: EST | Start Time: 1402 | End Time: 1432

| Sec. / Min. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print): Matt Jones
Observer's Signature: [signature] | Date: 2/17/20
Organization: Air Hygiene
Certified By: CAA | Date: 1/3/20

Duct Burners

# VISUAL EMISSIONS OBSERVATION FORM

Method Used (Circle One): Method 9 | 203A | 203B | Other: _____

Company Name: Bechtel Corporation
Facility Name: Cricket Valley Energy Center
Street Address: 7741 NY-22
City: Wingdale State: NY Zip: 12594

Process: Combined Cycle Unit #: 1 Operating Mode:
Control Equipment: Operating Mode:

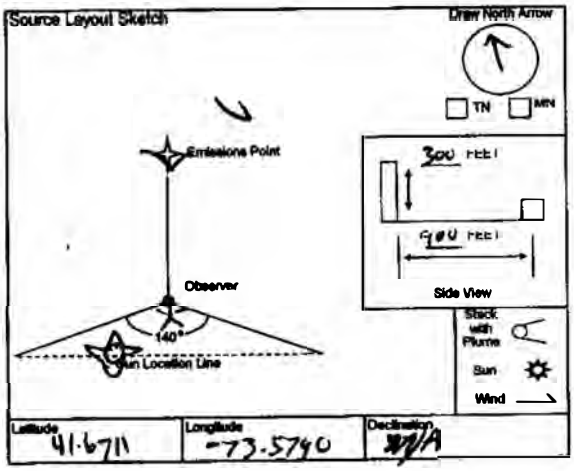
Describe Emissions Point: Top of unit one
Height of Emiss. Pt. Start: 300 ft End: 300 ft
Height of Emiss. Pt. Rel. to Observer Start: 300 ft End: 300 ft
Distance to Emiss. Pt. Start: 900 ft End: 900 ft
Direction to Emiss. Pt. (Degrees) Start: 70°N End: 70°N

Vertical Angle to Obs. Pt. Start: 30° End: 30°
Direction to Obs. Pt. (Degrees) Start: 189°S End: 189°S
Distance and Direction to Observation Point from Emission Point Start: 900 ft 189°S End: 900 ft 189°S

Describe Emissions Start: N/A End: N/A
Emission Color Start: N/A End: N/A
Water Droplet Plume Start: N/A End: N/A

Describe Plume Background Start: blue End: blue
Background Color Start: blue End: blue
Sky Conditions Start: clear End: clear
Wind Speed Start: 4.1 mph End: 3.8 mph
Wind Direction Start: SSE End: SSE
Ambient Temp. Start: 58.5 End: 51.1
Wet Bulb Temp.: 37.9
RH Percent: 38.4

Source Layout Sketch




Latitude: 41.6711 Longitude: -73.5740 Declination: N/A

Additional Information:

Form Number (AHI Project Code): bec-19-CricketValley,NY-Start #1 Page 1 of 2
Continued on Form Number (AHI Project Code): bec-19-CricketValley,NY-Start #1
Observation Date: 02/17/2020 Time Zone: EST Start Time: 1435 End Time: 1505

| Min \ Sec | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print): Matt Jones
Observer's Signature: [signature] Date: 2/17/20
Organization: Air Hygiene
Certified By: CAA Date: 1/3/20

Duct Burners

Method Used (Circle One): Method 9 | 203A | 203B | Other: _____

Company Name: Bechtel Corporation
Facility Name: Cricket Valley Energy Center
Street Address: 2241 NY-22
City: Wingdale | State: NY | Zip: 12594

Process: Combined Cycle | Unit #: 1 | Operating Mode:
Control Equipment: | Operating Mode:

Describe Emissions Point: Top of unit ore

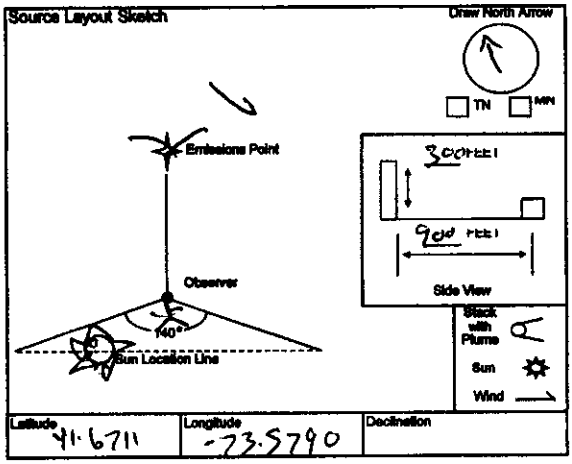
Height of Emiss. Pt. Start 300 Ft End 300 Ft
Height of Emiss. Pt. Rel. to Observer Start 300 Ft End 300 Ft
Distance to Emiss. Pt. Start 900 Ft End 900 Ft
Direction to Emiss. Pt. (Degrees) Start 7° W End 7° W

Vertical Angle to Obs. Pt. Start 30° End 30°
Direction to Obs. Pt. (Degrees) Start 189°S End 189°S
Distance and Direction to Observation Point from Emission Point Start 900 Ft 189°S End 900 Ft 189°S

Describe Emissions Start N/A End N/A
Emission Color Start N/A End N/A
Water Droplet Plume Start N/A End N/A

Describe Plume Background Start blue End blue
Background Color Start blue End blue
Sky Conditions Start clear End clear
Wind Speed Start 4 mph End 4.4 mph
Wind Direction Start SSE End SSE
Ambient Temp. Start 51.1 End 51.4
Wet Bulb Temp. 37.9
RH Percent 36.5

Source Layout Sketch




Latitude 41.6711 | Longitude -73.5790 | Declination

Additional Information

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code): Dec-19-CricketValley.NY-Stack #1 | Page 2 of 2
Continued on Form Number (AHI Project Code): Dec-19-CricketValley.NY-Stack #1
Observation Date: 01/17/2020 | Time Zone: EST | Start Time: 1505 | End Time: 1535

| Min \ Sec | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print): Matt Jones
Observer's Signature: [signature] | Date: 1/17/20
Organization: Air Hygiene
Certified By: CAA | Date: 1/3/20

# EMISSION DATA RECORDS

## Reference Method Data
## Base+DB Load
## NOx, CO, VOC, and $NH_3$

Following completion of the stack emission test program for Unit #U-00001, it was discovered that the U-00001 fuel gas flow meter operation was tied to a “test mode” (Mode 0) setting, and not the expected “natural gas mode” setting (Mode 1). Further investigations of the impact of this setting, indicate that the initial Mode 0 fuel gas flow results have a positive bias of 1.5%. Consequently, the original fuel gas flow results (see U-00001-supplied operational fuel gas data) have been reduced by 1.5%. The operating mode of the Unit 1 gas flowmeter has been reset to the correct Mode 1 (natural gas).

**Cricket Valley Energy Center LLC**
**February 19, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,643 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,016 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,668 | lb/min |
| Duct Burner Fuel Flow | 158 | lb/min |
| Total Fuel Flow | 2,468,984 | SCFH |

Note: Turbine fuel flow reduced by 1.5%, no change to duct burner fuel flow

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.07 | in. Hg |
| Relative Humidity | 81 | % |
| Ambient Temperature | 37 | ° F |
| Specific Humidity | 0.003714 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 240.9 | megawatts |
| Heat Input | 2,508 | MMBtu/hr |
| $NH_3$ Flow Rate | 200 | lb/hr |
| Meas. Stack Moisture | 6.7 | % |
| Stack Exhaust Flow (M19) | 49,278,069 | SCFH |

Data from: From PM Run PM U-00001 Base+DB-2

Base+Db Load, Run - 2-1

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 02/19/20 4:25:06 | 1640 | 11.72 | 2.69 | 0.00 | 0.00 | 5.11 | 0.88 |
| 02/19/20 4:25:36 | 1670 | 11.72 | 2.70 | 0.00 | 0.00 | 5.11 | 0.88 |
| 02/19/20 4:26:06 | 1700 | 11.72 | 2.69 | 0.00 | 0.00 | 5.11 | 0.87 |
| 02/19/20 4:26:36 | 1730 | 11.72 | 2.69 | 0.00 | 0.00 | 5.11 | 0.74 |
| 02/19/20 4:27:06 | 1760 | 11.72 | 2.69 | 0.00 | 0.00 | 5.11 | 0.81 |
| 02/19/20 4:27:36 | 1790 | 11.72 | 2.69 | 0.00 | 0.00 | 5.12 | 0.80 |
| 02/19/20 4:28:06 | 1820 | 11.71 | 2.67 | 0.00 | 0.00 | 5.12 | 0.83 |
| 02/19/20 4:28:36 | 1850 | 11.71 | 2.65 | 0.00 | 0.00 | 5.12 | 0.87 |
| 02/19/20 4:29:06 | 1880 | 11.71 | 2.61 | 0.00 | 0.00 | 5.12 | 0.81 |
| 02/19/20 4:29:36 | 1910 | 11.71 | 2.58 | 0.00 | 0.00 | 5.12 | 0.84 |
| 02/19/20 4:30:06 | 1940 | 11.71 | 2.58 | 0.00 | 0.00 | 5.12 | 0.79 |
| 02/19/20 4:30:36 | 1970 | 11.71 | 2.59 | 0.00 | 0.00 | 5.12 | 0.78 |
| 02/19/20 4:31:06 | 2000 | 11.71 | 2.60 | 0.00 | 0.00 | 5.12 | 0.78 |
| 02/19/20 4:31:36 | 2030 | 11.71 | 2.59 | 0.00 | 0.00 | 5.12 | 0.82 |
| 02/19/20 4:32:06 | 2060 | 11.71 | 2.56 | 0.00 | 0.00 | 5.12 | 0.80 |
| 02/19/20 4:32:36 | 2090 | 11.71 | 2.52 | 0.00 | 0.00 | 5.12 | 0.82 |
| 02/19/20 4:33:06 | 2120 | 11.70 | 2.51 | 0.00 | 0.00 | 5.12 | 0.77 |
| 02/19/20 4:33:36 | 2150 | 11.70 | 2.50 | 0.00 | 0.00 | 5.12 | 0.74 |
| 02/19/20 4:34:06 | 2180 | 11.70 | 2.47 | 0.00 | 0.00 | 5.12 | 0.69 |
| 02/19/20 4:34:36 | 2210 | 11.70 | 2.45 | 0.00 | 0.00 | 5.12 | 0.76 |
| 02/19/20 4:35:06 | 2240 | 11.71 | 2.47 | 0.00 | 0.00 | 5.12 | 0.79 |
| 02/19/20 4:35:36 | 2270 | 11.70 | 2.47 | 0.00 | 0.00 | 5.12 | 0.74 |
| 02/19/20 4:36:06 | 2300 | 11.70 | 2.46 | 0.00 | 0.00 | 5.12 | 0.72 |
| 02/19/20 4:36:36 | 2330 | 11.70 | 2.45 | 0.00 | 0.00 | 5.12 | 0.72 |
| 02/19/20 4:37:06 | 2360 | 11.69 | 2.47 | 0.00 | 0.00 | 5.12 | 0.67 |
| 02/19/20 4:37:36 | 2390 | 11.70 | 2.48 | 0.00 | 0.00 | 5.13 | 0.67 |
| 02/19/20 4:38:06 | 2420 | 11.69 | 2.48 | 0.00 | 0.00 | 5.13 | 0.61 |
| 02/19/20 4:38:36 | 2450 | 11.70 | 2.49 | 0.00 | 0.00 | 5.13 | 0.68 |
| 02/19/20 4:39:06 | 2480 | 11.70 | 2.49 | 0.00 | 0.00 | 5.13 | 0.68 |
| 02/19/20 4:39:36 | 2510 | 11.69 | 2.50 | 0.00 | 0.00 | 5.12 | 0.65 |
| 02/19/20 4:40:06 | 2540 | 11.69 | 2.51 | 0.00 | 0.00 | 5.13 | 0.67 |
| 02/19/20 4:40:36 | 2570 | 11.69 | 2.51 | 0.00 | 0.00 | 5.13 | 0.70 |
| 02/19/20 4:41:06 | 2600 | 11.69 | 2.51 | 0.00 | 0.00 | 5.13 | 0.66 |
| 02/19/20 4:41:36 | 2630 | 11.69 | 2.53 | 0.00 | 0.00 | 5.13 | 0.65 |
| 02/19/20 4:42:06 | 2660 | 11.69 | 2.56 | 0.00 | 0.00 | 5.13 | 0.70 |
| 02/19/20 4:42:36 | 2690 | 11.70 | 2.59 | 0.00 | 0.00 | 5.13 | 0.68 |
| 02/19/20 4:43:06 | 2720 | 11.69 | 2.60 | 0.00 | 0.00 | 5.13 | 0.66 |
| 02/19/20 4:43:36 | 2750 | 11.69 | 2.62 | 0.00 | 0.00 | 5.13 | 0.70 |
| 02/19/20 4:44:06 | 2780 | 11.69 | 2.63 | 0.00 | 0.00 | 5.13 | 0.68 |
| 02/19/20 4:44:36 | 2810 | 11.69 | 2.64 | 0.00 | 0.00 | 5.13 | 0.69 |
| 02/19/20 4:45:06 | 2840 | 11.69 | 2.64 | 0.00 | 0.00 | 5.13 | 0.67 |
| 02/19/20 4:45:36 | 2870 | 11.69 | 2.63 | 0.00 | 0.00 | 5.13 | 1.26 |
| 02/19/20 4:46:06 | 2900 | 11.69 | 2.65 | 0.00 | 0.00 | 5.13 | 0.88 |
| 02/19/20 4:46:36 | 2930 | 11.69 | 2.67 | 0.00 | 0.00 | 5.13 | 1.07 |
| 02/19/20 4:47:06 | 2960 | 11.69 | 2.66 | 0.00 | 0.00 | 5.13 | 1.15 |
| 02/19/20 4:47:36 | 2990 | 11.69 | 2.66 | 0.00 | 0.00 | 5.13 | 1.43 |
| 02/19/20 4:48:06 | 3020 | 11.69 | 2.66 | 0.00 | 0.00 | 5.13 | 1.24 |
| 02/19/20 4:48:36 | 3050 | 11.69 | 2.66 | 0.00 | 0.00 | 5.14 | 1.52 |
| 02/19/20 4:49:06 | 3080 | 11.69 | 2.68 | 0.00 | 0.00 | 5.13 | 1.92 |
| 02/19/20 4:49:36 | 3110 | 11.69 | 2.68 | 0.00 | 0.00 | 5.13 | 1.82 |
| 02/19/20 4:50:06 | 3140 | 11.69 | 2.66 | 0.00 | 0.00 | 5.13 | 2.12 |
| 02/19/20 4:50:36 | 3170 | 11.69 | 2.64 | 0.00 | 0.00 | 5.13 | 1.61 |
| 02/19/20 4:51:06 | 3200 | 11.70 | 2.63 | 0.00 | 0.00 | 5.13 | 1.41 |
| 02/19/20 4:51:36 | 3230 | 11.69 | 2.61 | 0.00 | 0.00 | 5.13 | 1.38 |
| 02/19/20 4:52:06 | 3260 | 11.69 | 2.61 | 0.00 | 0.00 | 5.13 | 1.72 |
| 02/19/20 4:52:36 | 3290 | 11.69 | 2.61 | 0.00 | 0.00 | 5.13 | 1.11 |
| 02/19/20 4:53:06 | 3320 | 11.69 | 2.61 | 0.00 | 0.00 | 5.13 | 1.05 |
| 02/19/20 4:53:36 | 3350 | 11.69 | 2.61 | 0.00 | 0.00 | 5.13 | 2.33 |
| 02/19/20 4:54:06 | 3380 | 11.70 | 2.61 | 0.00 | 0.00 | 5.14 | 1.92 |
| 02/19/20 4:54:36 | 3410 | 11.69 | 2.61 | 0.00 | 0.00 | 5.13 | 1.99 |
| 02/19/20 4:55:06 | 3440 | 11.69 | 2.60 | 0.00 | 0.00 | 5.14 | 2.42 |
| 02/19/20 4:55:36 | 3470 | 11.69 | 2.60 | 0.00 | 0.00 | 5.14 | 1.95 |
| 02/19/20 4:56:06 | 3500 | 11.70 | 2.58 | 0.00 | 0.00 | 5.14 | 2.32 |
| 02/19/20 4:56:36 | 3530 | 11.69 | 2.57 | 0.00 | 0.00 | 5.14 | 1.59 |
| 02/19/20 4:57:06 | 3560 | 11.69 | 2.58 | 0.00 | 0.00 | 5.14 | 2.26 |
| 02/19/20 4:57:36 | 3590 | 11.69 | 2.58 | 0.00 | 0.00 | 5.13 | 2.30 |
| 02/19/20 4:58:06 | 3620 | 11.69 | 2.58 | 0.00 | 0.00 | 5.14 | 1.50 |
| 02/19/20 4:58:36 | 3650 | 11.69 | 2.57 | 0.00 | 0.00 | 5.13 | 2.15 |
| 02/19/20 4:59:06 | 3680 | 11.69 | 2.57 | 0.00 | 0.00 | 5.13 | 2.19 |
| 02/19/20 4:59:36 | 3710 | 11.69 | 2.56 | 0.00 | 0.00 | 5.14 | 2.30 |
| 02/19/20 5:00:06 | 3740 | 11.69 | 2.53 | 0.00 | 0.00 | 5.14 | 1.76 |
| 02/19/20 5:00:36 | 3770 | 11.69 | 2.51 | 0.00 | 0.00 | 5.13 | 1.90 |
| 02/19/20 5:01:06 | 3800 | 11.69 | 2.53 | 0.00 | 0.00 | 5.14 | 2.52 |
| 02/19/20 5:01:36 | 3830 | 11.69 | 2.54 | 0.00 | 0.00 | 5.14 | 2.20 |

**Cricket Valley Energy Center LLC**
**February 19, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,643 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,016 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,668 | lb/min |
| Duct Burner Fuel Flow | 158 | lb/min |
| Total Fuel Flow | 2,468,984 | SCFH |

Note: Turbine fuel flow reduced by 1.5%, no change to duct burner fuel flow

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.07 | in. Hg |
| Relative Humidity | 81 | % |
| Ambient Temperature | 37 | ° F |
| Specific Humidity | 0.003714 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 240.9 | megawatts |
| Heat Input | 2,508 | MMBtu/hr |
| $NH_3$ Flow Rate | 200 | lb/hr |
| Meas. Stack Moisture | 6.7 | % |
| Stack Exhaust Flow (M19) | 49,278,069 | SCFH |

Data from: From PM Run PM U-00001 Base+DB-2

Base+Db Load, Run - 2-1

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 02/19/20 5:02:06 | 3860 | 11.69 | 2.54 | 0.00 | 0.00 | 5.14 | 1.38 |
| 02/19/20 5:02:36 | 3890 | 11.69 | 2.54 | 0.00 | 0.00 | 5.13 | 1.92 |
| 02/19/20 5:03:06 | 3920 | 11.69 | 2.50 | 0.00 | 0.00 | 5.13 | 1.85 |
| 02/19/20 5:03:36 | 3950 | 11.69 | 2.47 | 0.00 | 0.00 | 5.14 | 1.25 |
| 02/19/20 5:04:06 | 3980 | 11.69 | 2.46 | 0.00 | 0.00 | 5.14 | 2.74 |
| 02/19/20 5:04:36 | 4010 | 11.69 | 2.43 | 0.00 | 0.00 | 5.14 | 2.22 |
| 02/19/20 5:05:06 | 4040 | 11.68 | 2.43 | 0.00 | 0.00 | 5.14 | 1.80 |
| 02/19/20 5:05:36 | 4070 | 11.69 | 2.44 | 0.00 | 0.00 | 5.14 | 1.26 |
| 02/19/20 5:06:06 | 4100 | 11.69 | 2.45 | 0.00 | 0.00 | 5.14 | 1.13 |
| 02/19/20 5:06:36 | 4130 | 11.69 | 2.46 | 0.00 | 0.00 | 5.14 | 0.94 |
| 02/19/20 5:07:06 | 4160 | 11.69 | 2.46 | 0.00 | 0.00 | 5.14 | 1.97 |
| 02/19/20 5:07:36 | 4190 | 11.69 | 2.47 | 0.00 | 0.00 | 5.14 | 2.39 |
| 02/19/20 5:08:06 | 4220 | 11.69 | 2.50 | 0.00 | 0.00 | 5.14 | 1.96 |
| 02/19/20 5:08:36 | 4250 | 11.69 | 2.52 | 0.00 | 0.00 | 5.14 | 1.69 |
| 02/19/20 5:09:06 | 4280 | 11.69 | 2.52 | 0.00 | 0.00 | 5.14 | 1.31 |
| 02/19/20 5:09:36 | 4310 | 11.69 | 2.53 | 0.00 | 0.00 | 5.14 | 1.69 |
| 02/19/20 5:10:06 | 4340 | 11.68 | 2.56 | 0.00 | 0.00 | 5.14 | 1.80 |
| 02/19/20 5:10:36 | 4370 | 11.69 | 2.58 | 0.00 | 0.00 | 5.14 | 2.13 |
| 02/19/20 5:11:06 | 4400 | 11.69 | 2.58 | 0.00 | 0.00 | 5.14 | 2.37 |
| 02/19/20 5:11:36 | 4430 | 11.69 | 2.58 | 0.00 | 0.00 | 5.14 | 2.26 |
| 02/19/20 5:12:06 | 4460 | 11.69 | 2.58 | 0.00 | 0.00 | 5.14 | 2.14 |
| 02/19/20 5:12:36 | 4490 | 11.69 | 2.58 | 0.00 | 0.00 | 5.14 | 2.08 |
| 02/19/20 5:13:06 | 4520 | 11.69 | 2.59 | 0.00 | 0.00 | 5.14 | 1.64 |
| 02/19/20 5:13:36 | 4550 | 11.69 | 2.59 | 0.00 | 0.00 | 5.14 | 1.27 |
| 02/19/20 5:14:06 | 4580 | 11.69 | 2.58 | 0.00 | 0.00 | 5.14 | 1.52 |
| 02/19/20 5:14:36 | 4610 | 11.69 | 2.55 | 0.00 | 0.00 | 5.14 | 1.48 |
| 02/19/20 5:15:06 | 4640 | 11.69 | 2.55 | 0.00 | 0.00 | 5.14 | 1.91 |
| 02/19/20 5:15:36 | 4670 | 11.68 | 2.53 | 0.00 | 0.00 | 5.14 | 1.24 |
| 02/19/20 5:16:06 | 4700 | 11.69 | 2.52 | 0.00 | 0.00 | 5.14 | 0.98 |
| 02/19/20 5:16:36 | 4730 | 11.69 | 2.51 | 0.00 | 0.00 | 5.14 | 0.94 |
| 02/19/20 5:17:06 | 4760 | 11.69 | 2.53 | 0.00 | 0.00 | 5.14 | 0.92 |
| 02/19/20 5:17:36 | 4790 | 11.69 | 2.54 | 0.00 | 0.00 | 5.14 | 2.48 |
| 02/19/20 5:18:06 | 4820 | 11.69 | 2.54 | 0.00 | 0.00 | 5.14 | 3.92 |
| 02/19/20 5:18:36 | 4850 | 11.69 | 2.54 | 0.00 | 0.00 | 5.14 | 2.75 |
| 02/19/20 5:19:06 | 4880 | 11.69 | 2.53 | 0.00 | 0.00 | 5.14 | 1.63 |
| 02/19/20 5:19:36 | 4910 | 11.69 | 2.52 | 0.00 | 0.00 | 5.14 | 1.88 |
| 02/19/20 5:20:06 | 4940 | 11.69 | 2.50 | 0.00 | 0.00 | 5.14 | 1.89 |
| 02/19/20 5:20:36 | 4970 | 11.69 | 2.48 | 0.00 | 0.00 | 5.14 | 3.25 |
| 02/19/20 5:21:06 | 5000 | 11.68 | 2.48 | 0.00 | 0.00 | 5.14 | 2.62 |
| 02/19/20 5:21:36 | 5030 | 11.68 | 2.48 | 0.00 | 0.00 | 5.14 | 2.19 |
| 02/19/20 5:22:06 | 5060 | 11.69 | 2.49 | 0.00 | 0.00 | 5.14 | 1.60 |
| 02/19/20 5:22:36 | 5090 | 11.69 | 2.49 | 0.00 | 0.00 | 5.14 | 1.89 |
| 02/19/20 5:23:06 | 5120 | 11.68 | 2.46 | 0.00 | 0.00 | 5.14 | 2.03 |
| 02/19/20 5:23:36 | 5150 | 11.69 | 2.45 | 0.00 | 0.00 | 5.14 | 1.40 |
| 02/19/20 5:24:06 | 5180 | 11.69 | 2.47 | 0.00 | 0.00 | 5.14 | 1.30 |
| 02/19/20 5:24:36 | 5210 | 11.69 | 2.48 | 0.00 | 0.00 | 5.13 | 2.00 |
| **RAW AVERAGE** | | **11.69** | **2.56** | **0.00** | **0.00** | **5.13** | **1.45** |

| | | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|---|
| | **Serial Number:** | inst-02-0014 | inst-nx-0020 | inst-co-0045 | inst-th-0010 | inst-c2-0023 | inst-ir-0004 |
| | | (%) | (ppmvd) | (ppmvd) | (ppmvw) | (%) | |
| Bias | **Initial Zero** | 0.03 | 0.01 | 0.00 | 0.00 | 0.00 | |
| Bias | **Final Zero** | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Bias | **Avg. Zero** | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | |
| Bias | **Initial UpScale** | 11.99 | 8.87 | 9.08 | 3.39 | 9.01 | |
| Bias | **Final UpScale** | 12.00 | 8.99 | 9.13 | 3.32 | 9.03 | |
| Bias | **Avg. UpScale** | 12.00 | 8.93 | 9.11 | 3.36 | 9.02 | |
| **Upscale Cal Gas** | | 12.01 | 8.90 | 9.10 | 3.37 | 8.95 | |

| **EMISSIONS DATA** | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 11.71 | 2.54 | 0.00 | 0.00 | 5.09 | 1.55 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.63 | 0.00 | 0.00 | N/A | 1.00 |

Non-Bias Adjusted Averages Include: *

**Cricket Valley Energy Center LLC**
**February 19, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,643 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,016 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,669 | lb/min |
| Duct Burner Fuel Flow | 158 | lb/min |
| Total Fuel Flow | 2,469,676 | SCFH |

Note: Turbine fuel flow reduced by 1.5%, no change to duct burner fuel flow

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.11 | in. Hg |
| Relative Humidity | 72 | % |
| Ambient Temperature | 36 | ° F |
| Specific Humidity | 0.003166 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 241.2 | megawatts |
| Heat Input | 2,508 | MMBtu/hr |
| $NH_3$ Flow Rate | 205 | lb/hr |
| Meas. Stack Moisture | 6.7 | % |
| Stack Exhaust Flow (M19) | 49,219,375 | SCFH |

Data from: From PM Run PM U-00001 Base+DB-2

Base+Db Load, Run - 2-2

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 02/19/20 5:33:06 | 440 | 11.67 | 2.49 | 0.00 | 0.00 | 5.14 | 1.41 |
| 02/19/20 5:33:36 | 470 | 11.67 | 2.47 | 0.00 | 0.00 | 5.14 | 1.76 |
| 02/19/20 5:34:06 | 500 | 11.67 | 2.45 | 0.00 | 0.00 | 5.14 | 1.89 |
| 02/19/20 5:34:36 | 530 | 11.67 | 2.43 | 0.00 | 0.00 | 5.14 | 2.64 |
| 02/19/20 5:35:06 | 560 | 11.68 | 2.41 | 0.00 | 0.00 | 5.14 | 2.05 |
| 02/19/20 5:35:36 | 590 | 11.67 | 2.42 | 0.00 | 0.00 | 5.14 | 1.79 |
| 02/19/20 5:36:06 | 620 | 11.67 | 2.42 | 0.00 | 0.00 | 5.14 | 3.38 |
| 02/19/20 5:36:36 | 650 | 11.67 | 2.44 | 0.00 | 0.00 | 5.14 | 3.56 |
| 02/19/20 5:37:06 | 680 | 11.68 | 2.44 | 0.00 | 0.00 | 5.14 | 2.10 |
| 02/19/20 5:37:36 | 710 | 11.67 | 2.43 | 0.00 | 0.00 | 5.14 | 2.19 |
| 02/19/20 5:38:06 | 740 | 11.68 | 2.44 | 0.00 | 0.00 | 5.14 | 2.08 |
| 02/19/20 5:38:36 | 770 | 11.68 | 2.45 | 0.00 | 0.00 | 5.14 | 1.48 |
| 02/19/20 5:39:06 | 800 | 11.68 | 2.47 | 0.00 | 0.00 | 5.14 | 1.65 |
| 02/19/20 5:39:36 | 830 | 11.68 | 2.48 | 0.00 | 0.00 | 5.13 | 1.30 |
| 02/19/20 5:40:06 | 860 | 11.67 | 2.49 | 0.00 | 0.00 | 5.13 | 2.13 |
| 02/19/20 5:40:36 | 890 | 11.67 | 2.49 | 0.00 | 0.00 | 5.13 | 2.41 |
| 02/19/20 5:41:06 | 920 | 11.67 | 2.48 | 0.00 | 0.00 | 5.14 | 2.07 |
| 02/19/20 5:41:36 | 950 | 11.67 | 2.50 | 0.00 | 0.00 | 5.14 | 1.48 |
| 02/19/20 5:42:06 | 980 | 11.68 | 2.51 | 0.00 | 0.00 | 5.14 | 1.18 |
| 02/19/20 5:42:36 | 1010 | 11.68 | 2.55 | 0.00 | 0.00 | 5.13 | 1.60 |
| 02/19/20 5:43:06 | 1040 | 11.68 | 2.59 | 0.00 | 0.00 | 5.13 | 1.67 |
| 02/19/20 5:43:36 | 1070 | 11.68 | 2.60 | 0.00 | 0.00 | 5.13 | 1.31 |
| 02/19/20 5:44:06 | 1100 | 11.67 | 2.63 | 0.00 | 0.00 | 5.13 | 1.18 |
| 02/19/20 5:44:36 | 1130 | 11.67 | 2.63 | 0.00 | 0.00 | 5.14 | 1.28 |
| 02/19/20 5:45:06 | 1160 | 11.68 | 2.62 | 0.00 | 0.00 | 5.14 | 1.84 |
| 02/19/20 5:45:36 | 1190 | 11.68 | 2.63 | 0.00 | 0.00 | 5.13 | 1.64 |
| 02/19/20 5:46:06 | 1220 | 11.67 | 2.64 | 0.00 | 0.00 | 5.13 | 1.18 |
| 02/19/20 5:46:36 | 1250 | 11.67 | 2.63 | 0.00 | 0.00 | 5.13 | 1.10 |
| 02/19/20 5:47:06 | 1280 | 11.67 | 2.62 | 0.00 | 0.00 | 5.14 | 0.97 |
| 02/19/20 5:47:36 | 1310 | 11.67 | 2.58 | 0.00 | 0.00 | 5.13 | 1.42 |
| 02/19/20 5:48:06 | 1340 | 11.67 | 2.55 | 0.00 | 0.00 | 5.13 | 1.34 |
| 02/19/20 5:48:36 | 1370 | 11.67 | 2.55 | 0.00 | 0.00 | 5.13 | 1.75 |
| 02/19/20 5:49:06 | 1400 | 11.67 | 2.55 | 0.00 | 0.00 | 5.13 | 1.13 |
| 02/19/20 5:49:36 | 1430 | 11.68 | 2.55 | 0.00 | 0.00 | 5.14 | 1.43 |
| 02/19/20 5:50:06 | 1460 | 11.68 | 2.55 | 0.00 | 0.00 | 5.14 | 1.61 |
| 02/19/20 5:50:36 | 1490 | 11.68 | 2.53 | 0.00 | 0.00 | 5.13 | 1.67 |
| 02/19/20 5:51:06 | 1520 | 11.68 | 2.52 | 0.00 | 0.00 | 5.13 | 2.15 |
| 02/19/20 5:51:36 | 1550 | 11.67 | 2.50 | 0.00 | 0.00 | 5.13 | 1.33 |
| 02/19/20 5:52:06 | 1580 | 11.68 | 2.48 | 0.00 | 0.00 | 5.13 | 1.04 |
| 02/19/20 5:52:36 | 1610 | 11.68 | 2.50 | 0.00 | 0.00 | 5.13 | 0.90 |
| 02/19/20 5:53:06 | 1640 | 11.68 | 2.51 | 0.00 | 0.00 | 5.13 | 0.93 |
| 02/19/20 5:53:36 | 1670 | 11.68 | 2.54 | 0.00 | 0.00 | 5.13 | 0.90 |
| 02/19/20 5:54:06 | 1700 | 11.68 | 2.56 | 0.00 | 0.00 | 5.13 | 0.85 |
| 02/19/20 5:54:36 | 1730 | 11.68 | 2.59 | 0.00 | 0.00 | 5.13 | 0.85 |
| 02/19/20 5:55:06 | 1760 | 11.67 | 2.62 | 0.00 | 0.00 | 5.13 | 1.25 |
| 02/19/20 5:55:36 | 1790 | 11.67 | 2.57 | 0.00 | 0.00 | 5.13 | 1.20 |
| 02/19/20 5:56:06 | 1820 | 11.68 | 2.52 | 0.00 | 0.00 | 5.13 | 1.70 |
| 02/19/20 5:56:36 | 1850 | 11.68 | 2.52 | 0.00 | 0.00 | 5.13 | 1.33 |
| 02/19/20 5:57:06 | 1880 | 11.67 | 2.52 | 0.00 | 0.00 | 5.13 | 0.99 |
| 02/19/20 5:57:36 | 1910 | 11.67 | 2.51 | 0.00 | 0.00 | 5.13 | 1.00 |
| 02/19/20 5:58:06 | 1940 | 11.67 | 2.50 | 0.00 | 0.00 | 5.13 | 1.31 |
| 02/19/20 5:58:36 | 1970 | 11.68 | 2.47 | 0.00 | 0.00 | 5.13 | 1.84 |
| 02/19/20 5:59:06 | 2000 | 11.68 | 2.45 | 0.00 | 0.00 | 5.13 | 1.69 |
| 02/19/20 5:59:36 | 2030 | 11.67 | 2.46 | 0.00 | 0.00 | 5.13 | 1.50 |
| 02/19/20 6:00:06 | 2060 | 11.67 | 2.48 | 0.00 | 0.00 | 5.13 | 1.66 |
| 02/19/20 6:00:36 | 2090 | 11.67 | 2.50 | 0.00 | 0.00 | 5.13 | 4.33 |
| 02/19/20 6:01:06 | 2120 | 11.68 | 2.51 | 0.00 | 0.00 | 5.13 | 3.14 |
| 02/19/20 6:01:36 | 2150 | 11.66 | 2.55 | 0.00 | 0.00 | 5.13 | 3.10 |
| 02/19/20 6:02:06 | 2180 | 11.65 | 2.57 | 0.00 | 0.00 | 5.13 | 3.07 |
| 02/19/20 6:02:36 | 2210 | 11.67 | 2.53 | 0.00 | 0.00 | 5.13 | 3.02 |
| 02/19/20 6:03:06 | 2240 | 11.67 | 2.50 | 0.00 | 0.00 | 5.13 | 2.70 |
| 02/19/20 6:03:36 | 2270 | 11.67 | 2.54 | 0.00 | 0.00 | 5.13 | 2.20 |
| 02/19/20 6:04:06 | 2300 | 11.68 | 2.56 | 0.00 | 0.00 | 5.13 | 1.36 |
| 02/19/20 6:04:36 | 2330 | 11.68 | 2.57 | 0.00 | 0.00 | 5.13 | 1.27 |
| 02/19/20 6:05:06 | 2360 | 11.63 | 2.58 | 0.00 | 0.00 | 5.13 | 1.51 |
| 02/19/20 6:05:36 | 2390 | 11.66 | 2.55 | 0.00 | 0.00 | 5.14 | 1.52 |
| 02/19/20 6:06:06 | 2420 | 11.65 | 2.54 | 0.00 | 0.00 | 5.14 | 1.27 |
| 02/19/20 6:06:36 | 2450 | 11.66 | 2.55 | 0.00 | 0.00 | 5.13 | 2.08 |
| 02/19/20 6:07:06 | 2480 | 11.67 | 2.56 | 0.00 | 0.00 | 5.13 | 2.56 |
| 02/19/20 6:07:36 | 2510 | 11.67 | 2.59 | 0.00 | 0.00 | 5.12 | 3.35 |
| 02/19/20 6:08:06 | 2540 | 11.66 | 2.62 | 0.00 | 0.00 | 5.13 | 2.55 |
| 02/19/20 6:08:36 | 2570 | 11.64 | 2.59 | 0.00 | 0.00 | 5.13 | 2.20 |
| 02/19/20 6:09:06 | 2600 | 11.66 | 2.56 | 0.00 | 0.00 | 5.13 | 1.59 |
| 02/19/20 6:09:36 | 2630 | 11.65 | 2.55 | 0.00 | 0.00 | 5.13 | 1.19 |

**Cricket Valley Energy Center LLC**
**February 19, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,643 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,016 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,669 | lb/min |
| Duct Burner Fuel Flow | 158 | lb/min |
| Total Fuel Flow | 2,469,676 | SCFH |

Note: Turbine fuel flow reduced by 1.5%, no change to duct burner fuel flow

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.11 | in. Hg |
| Relative Humidity | 72 | % |
| Ambient Temperature | 36 | ° F |
| Specific Humidity | 0.003166 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 241.2 | megawatts |
| Heat Input | 2,508 | MMBtu/hr |
| $NH_3$ Flow Rate | 205 | lb/hr |
| Meas. Stack Moisture | 6.7 | % |
| Stack Exhaust Flow (M19) | 49,219,375 | SCFH |

Data from: From PM Run PM U-00001 Base+DB-2

Base+Db Load, Run - 2-2

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 02/19/20 6:10:06 | 2660 | 11.65 | 2.56 | 0.00 | 0.00 | 5.13 | 1.23 |
| 02/19/20 6:10:36 | 2690 | 11.66 | 2.61 | 0.00 | 0.00 | 5.13 | 1.15 |
| 02/19/20 6:11:06 | 2720 | 11.66 | 2.65 | 0.00 | 0.00 | 5.13 | 1.71 |
| 02/19/20 6:11:36 | 2750 | 11.67 | 2.62 | 0.00 | 0.00 | 5.12 | 1.41 |
| 02/19/20 6:12:06 | 2780 | 11.68 | 2.59 | 0.00 | 0.00 | 5.13 | 2.43 |
| 02/19/20 6:12:36 | 2810 | 11.63 | 2.54 | 0.00 | 0.00 | 5.13 | 2.40 |
| 02/19/20 6:13:06 | 2840 | 11.65 | 2.51 | 0.00 | 0.00 | 5.13 | 2.41 |
| 02/19/20 6:13:36 | 2870 | 11.67 | 2.52 | 0.00 | 0.00 | 5.13 | 2.24 |
| 02/19/20 6:14:06 | 2900 | 11.67 | 2.53 | 0.00 | 0.00 | 5.12 | 2.07 |
| 02/19/20 6:14:36 | 2930 | 11.67 | 2.56 | 0.00 | 0.00 | 5.12 | 1.88 |
| 02/19/20 6:15:06 | 2960 | 11.67 | 2.61 | 0.00 | 0.00 | 5.13 | 1.80 |
| 02/19/20 6:15:36 | 2990 | 11.67 | 2.59 | 0.00 | 0.00 | 5.13 | 2.11 |
| 02/19/20 6:16:06 | 3020 | 11.68 | 2.58 | 0.00 | 0.00 | 5.13 | 2.19 |
| 02/19/20 6:16:36 | 3050 | 11.67 | 2.58 | 0.00 | 0.00 | 5.13 | 4.69 |
| 02/19/20 6:17:06 | 3080 | 11.68 | 2.58 | 0.00 | 0.00 | 5.13 | 2.68 |
| 02/19/20 6:17:36 | 3110 | 11.67 | 2.57 | 0.00 | 0.00 | 5.13 | 2.67 |
| 02/19/20 6:18:06 | 3140 | 11.68 | 2.56 | 0.00 | 0.00 | 5.13 | 2.16 |
| 02/19/20 6:18:36 | 3170 | 11.68 | 2.53 | 0.00 | 0.00 | 5.13 | 2.16 |
| 02/19/20 6:19:06 | 3200 | 11.68 | 2.51 | 0.00 | 0.00 | 5.13 | 2.40 |
| 02/19/20 6:19:36 | 3230 | 11.68 | 2.51 | 0.00 | 0.00 | 5.13 | 2.12 |
| 02/19/20 6:20:06 | 3260 | 11.65 | 2.53 | 0.00 | 0.00 | 5.13 | 2.21 |
| 02/19/20 6:20:36 | 3290 | 11.67 | 2.54 | 0.00 | 0.00 | 5.13 | 2.01 |
| 02/19/20 6:21:06 | 3320 | 11.68 | 2.56 | 0.00 | 0.00 | 5.13 | 2.20 |
| 02/19/20 6:21:36 | 3350 | 11.68 | 2.59 | 0.00 | 0.00 | 5.12 | 3.26 |
| 02/19/20 6:22:06 | 3380 | 11.68 | 2.61 | 0.00 | 0.00 | 5.12 | 2.47 |
| 02/19/20 6:22:36 | 3410 | 11.68 | 2.60 | 0.00 | 0.00 | 5.13 | 2.33 |
| 02/19/20 6:23:06 | 3440 | 11.68 | 2.60 | 0.00 | 0.00 | 5.13 | 1.98 |
| 02/19/20 6:23:36 | 3470 | 11.69 | 2.60 | 0.00 | 0.00 | 5.13 | 2.02 |
| 02/19/20 6:24:06 | 3500 | 11.69 | 2.59 | 0.00 | 0.00 | 5.13 | 3.56 |
| 02/19/20 6:24:36 | 3530 | 11.69 | 2.58 | 0.00 | 0.00 | 5.13 | 2.29 |
| 02/19/20 6:25:06 | 3560 | 11.70 | 2.58 | 0.00 | 0.00 | 5.13 | 2.45 |
| 02/19/20 6:25:36 | 3590 | 11.63 | 2.57 | 0.00 | 0.00 | 5.13 | 2.39 |
| 02/19/20 6:26:06 | 3620 | 11.63 | 2.56 | 0.00 | 0.00 | 5.13 | 1.98 |
| 02/19/20 6:26:36 | 3650 | 11.66 | 2.60 | 0.00 | 0.00 | 5.14 | 2.17 |
| 02/19/20 6:27:06 | 3680 | 11.66 | 2.62 | 0.00 | 0.00 | 5.13 | 2.15 |
| 02/19/20 6:27:36 | 3710 | 11.67 | 2.63 | 0.00 | 0.00 | 5.12 | 3.42 |
| 02/19/20 6:28:06 | 3740 | 11.66 | 2.66 | 0.00 | 0.00 | 5.12 | 2.32 |
| 02/19/20 6:28:36 | 3770 | 11.67 | 2.70 | 0.00 | 0.00 | 5.12 | 2.37 |
| 02/19/20 6:29:06 | 3800 | 11.67 | 2.73 | 0.00 | 0.00 | 5.12 | 2.01 |
| 02/19/20 6:29:36 | 3830 | 11.68 | 2.66 | 0.00 | 0.00 | 5.12 | 3.07 |
| 02/19/20 6:30:06 | 3860 | 11.67 | 2.60 | 0.00 | 0.00 | 5.13 | 2.89 |
| 02/19/20 6:30:36 | 3890 | 11.62 | 2.60 | 0.00 | 0.00 | 5.12 | 2.48 |
| 02/19/20 6:31:06 | 3920 | 11.64 | 2.60 | 0.00 | 0.00 | 5.13 | 2.66 |
| 02/19/20 6:31:36 | 3950 | 11.67 | 2.60 | 0.00 | 0.00 | 5.14 | 2.41 |
| 02/19/20 6:32:06 | 3980 | 11.66 | 2.61 | 0.00 | 0.00 | 5.12 | 2.47 |
| 02/19/20 6:32:36 | 4010 | 11.68 | 2.65 | 0.00 | 0.00 | 5.12 | 1.84 |
| **RAW AVERAGE** | | **11.67** | **2.55** | **0.00** | **0.00** | **5.13** | **1.99** |

| | | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|---|
| | **Serial Number:** | inst-02-0014 | inst-nx-0020 | inst-co-0045 | inst-th-0010 | inst-c2-0023 | inst-ir-0004 |
| | | (%) | (ppmvd) | (ppmvd) | (ppmvw) | (%) | |
| Bias | **Initial Zero** | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Bias | **Final Zero** | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Bias | **Avg. Zero** | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Bias | **Initial UpScale** | 12.00 | 8.99 | 9.13 | 3.32 | 9.03 | |
| Bias | **Final UpScale** | 11.97 | 8.86 | 9.08 | 3.40 | 8.98 | |
| Bias | **Avg. UpScale** | 11.99 | 8.93 | 9.11 | 3.36 | 9.01 | |
| **Upscale Cal Gas** | | 12.01 | 8.90 | 9.10 | 3.37 | 8.95 | |

| **EMISSIONS DATA** | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 11.69 | 2.54 | 0.00 | 0.00 | 5.10 | 2.13 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.63 | 0.00 | 0.00 | N/A | 1.36 |

Non-Bias Adjusted Averages Include: *

**Cricket Valley Energy Center LLC**
**February 19, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,643 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,016 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,673 | lb/min |
| Duct Burner Fuel Flow | 158 | lb/min |
| Total Fuel Flow | 2,474,805 | SCFH |

Note: Turbine fuel flow reduced by 1.5%, no change to duct burner fuel flow

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.15 | in. Hg |
| Relative Humidity | 70 | % |
| Ambient Temperature | 34 | ° F |
| Specific Humidity | 0.002837 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 241.5 | megawatts |
| Heat Input | 2,514 | MMBtu/hr |
| $NH_3$ Flow Rate | 207 | lb/hr |
| Meas. Stack Moisture | 6.7 | % |
| Stack Exhaust Flow (M19) | 48,739,716 | SCFH |

Data from: From PM Run PM U-00001 Base+DB-2

Base+Db Load, Run - 2-3

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 02/19/20 6:41:06 | 320 | 11.57 | 2.49 | 0.21 | 0.00 | 5.02 | 2.44 |
| 02/19/20 6:41:36 | 350 | 11.56 | 2.47 | 0.21 | 0.00 | 5.02 | 2.04 |
| 02/19/20 6:42:06 | 380 | 11.57 | 2.45 | 0.15 | 0.00 | 5.02 | 2.29 |
| 02/19/20 6:42:36 | 410 | 11.57 | 2.40 | 0.17 | 0.00 | 5.02 | 3.62 |
| 02/19/20 6:43:06 | 440 | 11.54 | 2.37 | 0.25 | 0.00 | 5.02 | 3.26 |
| 02/19/20 6:43:36 | 470 | 11.56 | 2.38 | 0.22 | 0.00 | 5.02 | 2.83 |
| 02/19/20 6:44:06 | 500 | 11.57 | 2.42 | 0.21 | 0.00 | 5.02 | 2.64 |
| 02/19/20 6:44:36 | 530 | 11.57 | 2.33 | 0.22 | 0.00 | 5.02 | 2.33 |
| 02/19/20 6:45:06 | 560 | 11.55 | 2.28 | 0.26 | 0.00 | 5.02 | 2.62 |
| 02/19/20 6:45:36 | 590 | 11.56 | 2.33 | 0.14 | 0.00 | 5.02 | 2.52 |
| 02/19/20 6:46:06 | 620 | 11.56 | 2.44 | 0.16 | 0.00 | 5.01 | 2.23 |
| 02/19/20 6:46:36 | 650 | 11.57 | 2.47 | 0.23 | 0.00 | 5.02 | 2.63 |
| 02/19/20 6:47:06 | 680 | 11.57 | 2.57 | 0.26 | 0.00 | 5.02 | 1.87 |
| 02/19/20 6:47:36 | 710 | 11.58 | 2.57 | 0.23 | 0.00 | 5.02 | 2.42 |
| 02/19/20 6:48:06 | 740 | 11.57 | 2.51 | 0.22 | 0.00 | 5.02 | 3.60 |
| 02/19/20 6:48:36 | 770 | 11.58 | 2.43 | 0.19 | 0.00 | 5.02 | 2.70 |
| 02/19/20 6:49:06 | 800 | 11.58 | 2.42 | 0.23 | 0.00 | 5.02 | 2.53 |
| 02/19/20 6:49:36 | 830 | 11.58 | 2.34 | 0.19 | 0.00 | 5.02 | 2.92 |
| 02/19/20 6:50:06 | 860 | 11.58 | 2.33 | 0.25 | 0.00 | 5.02 | 3.57 |
| 02/19/20 6:50:36 | 890 | 11.55 | 2.32 | 0.21 | 0.00 | 5.02 | 3.09 |
| 02/19/20 6:51:06 | 920 | 11.57 | 2.37 | 0.26 | 0.00 | 5.02 | 2.81 |
| 02/19/20 6:51:36 | 950 | 11.57 | 2.51 | 0.23 | 0.00 | 5.02 | 3.43 |
| 02/19/20 6:52:06 | 980 | 11.58 | 2.24 | 0.23 | 0.00 | 5.02 | 4.65 |
| 02/19/20 6:52:36 | 1010 | 11.58 | 2.17 | 0.26 | 0.00 | 5.02 | 2.78 |
| 02/19/20 6:53:06 | 1040 | 11.58 | 2.26 | 0.18 | 0.00 | 5.02 | 2.66 |
| 02/19/20 6:53:36 | 1070 | 11.55 | 2.39 | 0.21 | 0.00 | 5.02 | 2.58 |
| 02/19/20 6:54:06 | 1100 | 11.55 | 2.53 | 0.24 | 0.00 | 5.02 | 2.51 |
| 02/19/20 6:54:36 | 1130 | 11.57 | 2.71 | 0.26 | 0.00 | 5.01 | 2.37 |
| 02/19/20 6:55:06 | 1160 | 11.57 | 2.75 | 0.19 | 0.00 | 5.02 | 2.44 |
| 02/19/20 6:55:36 | 1190 | 11.54 | 2.65 | 0.25 | 0.00 | 5.02 | 2.60 |
| 02/19/20 6:56:06 | 1220 | 11.51 | 2.63 | 0.27 | 0.00 | 5.02 | 2.26 |
| 02/19/20 6:56:36 | 1250 | 11.55 | 2.75 | 0.28 | 0.00 | 5.00 | 1.72 |
| 02/19/20 6:57:06 | 1280 | 11.54 | 2.70 | 0.22 | 0.00 | 5.01 | 2.88 |
| 02/19/20 6:57:36 | 1310 | 11.53 | 2.54 | 0.27 | 0.00 | 5.01 | 2.88 |
| 02/19/20 6:58:06 | 1340 | 11.55 | 2.53 | 0.17 | 0.00 | 5.01 | 2.63 |
| 02/19/20 6:58:36 | 1370 | 11.55 | 2.46 | 0.19 | 0.00 | 5.02 | 2.20 |
| 02/19/20 6:59:06 | 1400 | 11.57 | 2.46 | 0.17 | 0.00 | 5.02 | 2.41 |
| 02/19/20 6:59:36 | 1430 | 11.57 | 2.44 | 0.32 | 0.00 | 5.02 | 2.03 |
| 02/19/20 7:00:06 | 1460 | 11.57 | 2.31 | 0.24 | 0.00 | 5.02 | 2.14 |
| 02/19/20 7:00:36 | 1490 | 11.57 | 2.31 | 0.24 | 0.00 | 5.02 | 2.05 |
| 02/19/20 7:01:06 | 1520 | 11.57 | 2.33 | 0.29 | 0.00 | 5.02 | 1.96 |
| 02/19/20 7:01:36 | 1550 | 11.55 | 2.43 | 0.24 | 0.00 | 5.02 | 2.28 |
| 02/19/20 7:02:06 | 1580 | 11.54 | 2.53 | 0.23 | 0.00 | 5.02 | 1.96 |
| 02/19/20 7:02:36 | 1610 | 11.56 | 2.60 | 0.31 | 0.00 | 5.01 | 2.16 |
| 02/19/20 7:03:06 | 1640 | 11.53 | 2.59 | 0.34 | 0.00 | 5.01 | 1.91 |
| 02/19/20 7:03:36 | 1670 | 11.56 | 2.54 | 0.28 | 0.00 | 5.01 | 2.36 |
| 02/19/20 7:04:06 | 1700 | 11.56 | 2.54 | 0.29 | 0.00 | 5.02 | 1.68 |
| 02/19/20 7:04:36 | 1730 | 11.57 | 2.41 | 0.32 | 0.00 | 5.02 | 2.41 |
| 02/19/20 7:05:06 | 1760 | 11.57 | 2.37 | 0.22 | 0.00 | 5.02 | 1.88 |
| 02/19/20 7:05:36 | 1790 | 11.57 | 2.30 | 0.33 | 0.00 | 5.02 | 2.00 |
| 02/19/20 7:06:06 | 1820 | 11.58 | 2.27 | 0.28 | 0.00 | 5.02 | 2.05 |
| 02/19/20 7:06:36 | 1850 | 11.57 | 2.27 | 0.29 | 0.00 | 5.02 | 1.67 |
| 02/19/20 7:07:06 | 1880 | 11.57 | 2.28 | 0.31 | 0.00 | 5.02 | 2.09 |
| 02/19/20 7:07:36 | 1910 | 11.52 | 2.32 | 0.29 | 0.00 | 5.03 | 1.64 |
| 02/19/20 7:08:06 | 1940 | 11.54 | 2.47 | 0.28 | 0.00 | 5.01 | 2.26 |
| 02/19/20 7:08:36 | 1970 | 11.55 | 2.62 | 0.33 | 0.00 | 5.02 | 1.94 |
| 02/19/20 7:09:06 | 2000 | 11.56 | 2.64 | 0.24 | 0.00 | 5.02 | 1.93 |
| 02/19/20 7:09:36 | 2030 | 11.55 | 2.71 | 0.31 | 0.00 | 5.02 | 2.07 |
| 02/19/20 7:10:06 | 2060 | 11.54 | 2.85 | 0.31 | 0.00 | 5.02 | 1.64 |
| 02/19/20 7:10:36 | 2090 | 11.55 | 2.92 | 0.34 | 0.00 | 5.02 | 1.67 |
| 02/19/20 7:11:06 | 2120 | 11.56 | 2.82 | 0.25 | 0.00 | 5.02 | 1.34 |
| 02/19/20 7:11:36 | 2150 | 11.53 | 2.63 | 0.39 | 0.00 | 5.02 | 1.17 |
| 02/19/20 7:12:06 | 2180 | 11.53 | 2.45 | 0.29 | 0.00 | 5.02 | 1.95 |
| 02/19/20 7:12:36 | 2210 | 11.54 | 2.52 | 0.26 | 0.00 | 5.01 | 1.59 |
| 02/19/20 7:13:06 | 2240 | 11.53 | 2.46 | 0.33 | 0.00 | 5.02 | 1.95 |
| 02/19/20 7:13:36 | 2270 | 11.56 | 2.36 | 0.31 | 0.00 | 5.01 | 1.47 |
| 02/19/20 7:14:06 | 2300 | 11.56 | 2.38 | 0.33 | 0.00 | 5.02 | 1.49 |
| 02/19/20 7:14:36 | 2330 | 11.55 | 2.34 | 0.36 | 0.00 | 5.02 | 1.79 |
| 02/19/20 7:15:06 | 2360 | 11.55 | 2.36 | 0.32 | 0.00 | 5.02 | 1.95 |
| 02/19/20 7:15:36 | 2390 | 11.56 | 2.48 | 0.29 | 0.00 | 5.02 | 2.11 |
| 02/19/20 7:16:06 | 2420 | 11.56 | 2.57 | 0.35 | 0.00 | 5.03 | 2.12 |
| 02/19/20 7:16:36 | 2450 | 11.54 | 2.69 | 0.24 | 0.00 | 5.03 | 2.66 |
| 02/19/20 7:17:06 | 2480 | 11.53 | 2.82 | 0.37 | 0.00 | 5.02 | 2.07 |
| 02/19/20 7:17:36 | 2510 | 11.55 | 2.83 | 0.34 | 0.00 | 5.02 | 2.54 |

**Cricket Valley Energy Center LLC**
**February 19, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,643 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,016 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,673 | lb/min |
| Duct Burner Fuel Flow | 158 | lb/min |
| Total Fuel Flow | 2,474,805 | SCFH |

Note: Turbine fuel flow reduced by 1.5%, no change to duct burner fuel flow

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.15 | in. Hg |
| Relative Humidity | 70 | % |
| Ambient Temperature | 34 | ° F |
| Specific Humidity | 0.002837 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 241.5 | megawatts |
| Heat Input | 2,514 | MMBtu/hr |
| $NH_3$ Flow Rate | 207 | lb/hr |
| Meas. Stack Moisture | 6.7 | % |
| Stack Exhaust Flow (M19) | 48,739,716 | SCFH |

Data from: From PM Run PM U-00001 Base+DB-2

Base+Db Load, Run - 2-3

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 02/19/20 7:18:06 | 2540 | 11.57 | 2.85 | 0.26 | 0.00 | 5.02 | 2.24 |
| 02/19/20 7:18:36 | 2570 | 11.57 | 2.70 | 0.27 | 0.00 | 5.03 | 1.96 |
| 02/19/20 7:19:06 | 2600 | 11.53 | 2.57 | 0.29 | 0.00 | 5.03 | 1.68 |
| 02/19/20 7:19:36 | 2630 | 11.56 | 2.43 | 0.22 | 0.00 | 5.03 | 2.01 |
| 02/19/20 7:20:06 | 2660 | 11.57 | 2.56 | 0.23 | 0.00 | 5.02 | 1.54 |
| 02/19/20 7:20:36 | 2690 | 11.55 | 2.46 | 0.23 | 0.00 | 5.03 | 1.29 |
| 02/19/20 7:21:06 | 2720 | 11.56 | 2.50 | 0.30 | 0.00 | 5.03 | 2.01 |
| 02/19/20 7:21:36 | 2750 | 11.57 | 2.47 | 0.18 | 0.00 | 5.03 | 2.04 |
| 02/19/20 7:22:06 | 2780 | 11.54 | 2.29 | 0.22 | 0.00 | 5.03 | 1.86 |
| 02/19/20 7:22:36 | 2810 | 11.56 | 2.34 | 0.28 | 0.00 | 5.03 | 1.74 |
| 02/19/20 7:23:06 | 2840 | 11.53 | 2.36 | 0.21 | 0.00 | 5.03 | 1.47 |
| 02/19/20 7:23:36 | 2870 | 11.56 | 2.44 | 0.26 | 0.00 | 5.02 | 2.46 |
| 02/19/20 7:24:06 | 2900 | 11.54 | 2.58 | 0.23 | 0.00 | 5.03 | 2.10 |
| 02/19/20 7:24:36 | 2930 | 11.55 | 2.57 | 0.25 | 0.00 | 5.03 | 2.28 |
| 02/19/20 7:25:06 | 2960 | 11.53 | 2.70 | 0.22 | 0.00 | 5.03 | 2.00 |
| 02/19/20 7:25:36 | 2990 | 11.55 | 2.79 | 0.23 | 0.00 | 5.02 | 1.91 |
| 02/19/20 7:26:06 | 3020 | 11.56 | 2.71 | 0.30 | 0.00 | 5.03 | 2.27 |
| 02/19/20 7:26:36 | 3050 | 11.55 | 2.61 | 0.27 | 0.00 | 5.03 | 2.15 |
| 02/19/20 7:27:06 | 3080 | 11.55 | 2.60 | 0.27 | 0.00 | 5.03 | 1.97 |
| 02/19/20 7:27:36 | 3110 | 11.56 | 2.48 | 0.16 | 0.00 | 5.03 | 3.03 |
| 02/19/20 7:28:06 | 3140 | 11.57 | 2.41 | 0.20 | 0.00 | 5.03 | 2.46 |
| 02/19/20 7:28:36 | 3170 | 11.56 | 2.33 | 0.29 | 0.00 | 5.03 | 2.18 |
| 02/19/20 7:29:06 | 3200 | 11.55 | 2.27 | 0.24 | 0.00 | 5.03 | 2.05 |
| 02/19/20 7:29:36 | 3230 | 11.56 | 2.22 | 0.25 | 0.00 | 5.03 | 2.19 |
| 02/19/20 7:30:06 | 3260 | 11.53 | 2.27 | 0.25 | 0.00 | 5.03 | 1.94 |
| 02/19/20 7:30:36 | 3290 | 11.56 | 2.28 | 0.24 | 0.00 | 5.02 | 2.15 |
| 02/19/20 7:31:06 | 3320 | 11.56 | 2.30 | 0.26 | 0.00 | 5.03 | 3.20 |
| 02/19/20 7:31:36 | 3350 | 11.57 | 2.35 | 0.21 | 0.00 | 5.03 | 2.49 |
| 02/19/20 7:32:06 | 3380 | 11.57 | 2.46 | 0.21 | 0.00 | 5.03 | 1.86 |
| 02/19/20 7:32:36 | 3410 | 11.54 | 2.57 | 0.21 | 0.00 | 5.03 | 1.84 |
| 02/19/20 7:33:06 | 3440 | 11.56 | 2.70 | 0.25 | 0.00 | 5.03 | 4.00 |
| 02/19/20 7:33:36 | 3470 | 11.52 | 2.78 | 0.28 | 0.00 | 5.03 | 3.11 |
| 02/19/20 7:34:06 | 3500 | 11.55 | 2.73 | 0.32 | 0.00 | 5.02 | 2.80 |
| 02/19/20 7:34:36 | 3530 | 11.56 | 2.72 | 0.28 | 0.00 | 5.03 | 2.63 |
| 02/19/20 7:35:06 | 3560 | 11.54 | 2.57 | 0.23 | 0.00 | 5.03 | 3.82 |
| 02/19/20 7:35:36 | 3590 | 11.56 | 2.44 | 0.20 | 0.00 | 5.03 | 3.62 |
| 02/19/20 7:36:06 | 3620 | 11.56 | 2.39 | 0.22 | 0.00 | 5.03 | 3.17 |
| 02/19/20 7:36:36 | 3650 | 11.56 | 2.32 | 0.23 | 0.00 | 5.03 | 2.68 |
| 02/19/20 7:37:06 | 3680 | 11.55 | 2.30 | 0.22 | 0.00 | 5.03 | 3.49 |
| 02/19/20 7:37:36 | 3710 | 11.53 | 2.35 | 0.23 | 0.00 | 5.03 | 4.68 |
| 02/19/20 7:38:06 | 3740 | 11.54 | 2.36 | 0.29 | 0.00 | 5.03 | 3.36 |
| 02/19/20 7:38:36 | 3770 | 11.55 | 2.44 | 0.25 | 0.00 | 5.03 | 3.03 |
| 02/19/20 7:39:06 | 3800 | 11.55 | 2.45 | 0.27 | 0.00 | 5.03 | 2.86 |
| 02/19/20 7:39:36 | 3830 | 11.55 | 2.44 | 0.29 | 0.00 | 5.03 | 2.14 |
| 02/19/20 7:40:06 | 3860 | 11.55 | 2.53 | 0.23 | 0.00 | 5.03 | 1.67 |
| 02/19/20 7:40:36 | 3890 | 11.53 | 2.46 | 0.35 | 0.00 | 5.03 | 2.75 |
| **RAW AVERAGE** | | **11.56** | **2.48** | **0.25** | **0.00** | **5.02** | **2.37** |

| | | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|---|
| | **Serial Number:** | inst-02-0014 | inst-nx-0020 | inst-co-0045 | inst-th-0010 | inst-c2-0023 | inst-ir-0004 |
| | | (%) | (ppmvd) | (ppmvd) | (ppmvw) | (%) | |
| Bias | **Initial Zero** | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Bias | **Final Zero** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Bias | **Avg. Zero** | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Bias | **Initial UpScale** | 11.97 | 8.86 | 9.08 | 3.40 | 8.98 | |
| Bias | **Final UpScale** | 11.99 | 8.96 | 9.24 | 3.35 | 8.96 | |
| Bias | **Avg. UpScale** | 11.98 | 8.91 | 9.16 | 3.38 | 8.97 | |
| **Upscale Cal Gas** | | 12.01 | 8.90 | 9.10 | 3.37 | 8.95 | |

| **EMISSIONS DATA** | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 11.58 | 2.48 | 0.25 | 0.00 | 5.01 | 2.54 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.57 | 0.16 | 0.00 | N/A | 1.61 |

Non-Bias Adjusted Averages Include: *

# EMISSION DATA RECORDS

## Reference Method Data
## Base+DB Load
## $PM_{10}$

Following completion of the stack emission test program for Unit #U-00001, it was discovered that the U-00001 fuel gas flow meter operation was tied to a “test mode” (Mode 0) setting, and not the expected “natural gas mode” setting (Mode 1). Further investigations of the impact of this setting, indicate that the initial Mode 0 fuel gas flow results have a positive bias of 1.5%. Consequently, the original fuel gas flow results (see U-00001-supplied operational fuel gas data) have been reduced by 1.5%. The operating mode of the Unit 1 gas flowmeter has been reset to the correct Mode 1 (natural gas).

## METHOD 201A (FRONT) AND 202 (BACK) SOURCE SAMPLING TITLE PAGE

| Source Information | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base+DB |
| **Fuel Type** | Gas, Natural |

| Test Information | | | |
|---|---|---|---|
| **Project #** | | bec-19-cricketvalley.ny-start#1 | |
| **Operator** | | Aaron Blum | |
| **Date for Preliminary Run** | (mm/dd/yy) | 02/18/20 | |
| **Standard Temperature** | | 68 | °F |
| **Standard Pressure** | | 29.92 | in Hg |
| **Required Sample Vol.** | indust. spec. | 50 | scf |
| **Run Duration** | chk Subpart | 240 | minutes |
| **Unit Number** | | U-00001 | |
| **Base Run Number** | | PM U-00001 Base+DB | |
| **Number of Ports Available** | | 4 | |
| **Number of Ports Used** | | 4 | |
| **Port Inside Diameter** | | 6.00 | in |
| **Stack Shape** | | Circular | |

| Test Equipment Information | | | | | |
|---|---|---|---|---|---|
| **Run** | | **1** | **2** | **3** | |
| **Test Date** | (mm/dd/yy) | 02/18/20 | 02/19/20 | 02/19/20 | |
| **Load** | | Base+DB | Base+DB | Base+DB | % or w/DB |
| **Fuel F-Factor** | | 8643.54 | 8642.95 | 8642.95 | dscf/MMBtu |
| **Meter Box Number** | from ACS | Samp-cp-0030 | Samp-cp-0030 | Samp-cp-0030 | |
| **Meter Calibration Factor** | (Y) | 0.974 | 0.974 | 0.974 | |
| **Orifice Meter Coefficient** | ($\Delta H_@$) | 1.878 | 1.878 | 1.878 | in $H_2O$ |
| **Non-Console Manometer Used** | | No | No | No | |
| **Pitot Identification** | from ACS | 4187/10 | 4187/10 | 4187/10 | |
| **Pitot Tube Coefficient** | ($C_p$) | 0.7240 | 0.7240 | 0.7240 | |
| **Nozzle Number** | from ACS | 4b | 4b | 4b | must match cyc nozz tab (e.g. 3a, 4b, etc.) |
| **Nozzle Diameter** | ($D_n$) | 0.156 | 0.156 | 0.156 | in |
| **Probe Number** | from ACS | SAMP-PR-0133 | SAMP-PR-0133 | SAMP-PR-0133 | |
| **Probe Length** | | 120.0 | 120.0 | 120.0 | in |
| **(SS, Glass …. ) Liner Material** | from list | glass | glass | glass | |
| **Sample Case / Oven Number** | from ACS | SAMP-BH-0039 | SAMP-BH-0039 | SAMP-BH-0039 | |
| **Impinger Case Number** | from ACS | SAMP-SBC-0099 | SAMP-SBC-0099 | SAMP-SBC-0099 | |

| Testing Company Information | |
|---|---|
| **Company Name** | Air Hygiene International, Inc. (Tulsa, Oklahoma) |
| **Address** | 1600 W Tacoma Street |
| **City, State Zip** | Broken Arrow, Oklahoma 74012 |
| **Project Manager** | Rob White |
| **Phone Number** | (918) 307-8865 |
| **Fax Number** | (918) 307-9131 |

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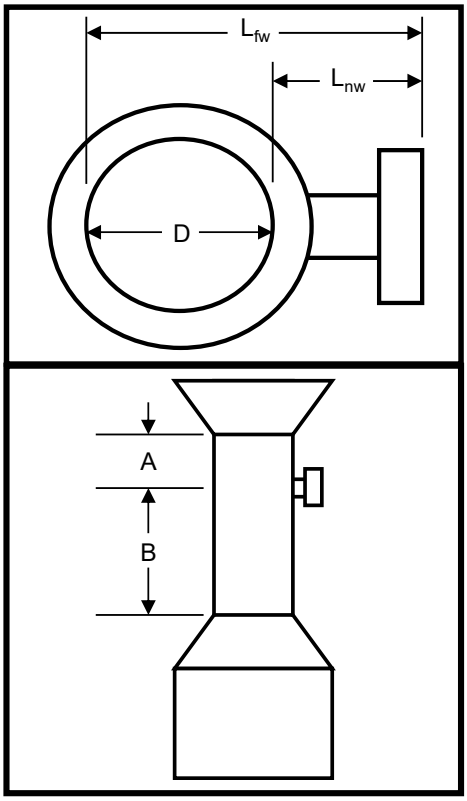
## METHOD 1 - SAMPLE AND VELOCITY TRAVERSES FOR CIRCULAR SOURCES

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Date** | 02/18/20 |
| **Sampling Location** | U-00001 Base+DB | **Stack Type** | Circular |
| **Operator** | Aaron Blum | **Ports Available** | 4 |
| **Project #** | bec-19-cricketvalley.ny-start#1 | **Ports Used** | 4 |
| **Stack Size** | Large (>24 inch diameter) | **Port ID (inches)** | 6.00 |

| **Circular Stack or Duct Diameter** | | | |
|---|---|---|---|
| **Distance to Far Wall of Stack** | ($L_{fw}$) | 236.00 | in |
| **Distance to Near Wall of Stack** | ($L_{nw}$) | 8.00 | in |
| **Diameter of Stack** | (D) | 228.00 | in |
| **Area of Stack** | ($A_s$) | 283.53 | ft² |

| **Distance from Port to Disturbances** | | | |
|---|---|---|---|
| **Distance Upstream** | (A) | 200.40 | in |
| **Diameters Upstream** | ($A_D$) | 0.88 | diameters |
| **Distance Downstream** | (B) | 850.00 | in |
| **Diameters Downstream** | ($B_D$) | 3.73 | diameters |




| **Number of Traverse Points Required** | | | |
|---|---|---|---|
| **Diameters to Flow Disturbance** | | **Minimum Number of[1] Traverse Points** | |
| **Down Stream** | **Up Stream** | **Particulate Points** | **Velocity Points** |
| 2.00-4.99 | 0.50-1.24 | 24 | 16 |
| 5.00-5.99 | 1.25-1.49 | 20 | 16 |
| 6.00-6.99 | 1.50-1.74 | 16 | 12 |
| 7.00-7.99 | 1.75-1.99 | 12 | 12 |
| >= 8.00 | >=2.00 | 8 or 12[2] | 8 or 12[2] |
| **Upstream Spec** | | 24 | 16 |
| **Downstream Spec** | | 24 | 16 |
| **Traverse Pts Required** | | 24 | 16 |

[1] Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.

[2] 8 for Circular Stacks 12 to 24 inches
12 for Circular Stacks over 24 inches

○ Method 1 Trav

◉ 12 Point PM Trav (M201a ONLY)

○ Velocity

| **Number of Traverse Points Used** | | | |
|---|---|---|---|
| 4 | **Ports by** | 3 | **Across** |
| 12 | **Pts Used** | 12 | **Required** |

| **Location of Traverse Points in Circular Stacks** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point Number** | (Fraction of Stack Dimension from Inside Wall to Traverse Point) Number of Traverse Points Across the Stack | | | | | | | | |
| | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 |
| 1 | .146 | .067 | .044 | .032 | .026 | .021 | .018 | .016 | .014 |
| 2 | .854 | .250 | .146 | .105 | .082 | .067 | .057 | .049 | .044 |
| 3 | | .750 | .296 | .194 | .146 | .118 | .099 | .085 | .075 |
| 4 | | .933 | .704 | .323 | .226 | .177 | .146 | .125 | .109 |
| 5 | | | .854 | .677 | .342 | .250 | .201 | .169 | .146 |
| 6 | | | .956 | .806 | .658 | .356 | .269 | .220 | .188 |
| 7 | | | | .895 | .774 | .644 | .366 | .283 | .236 |
| 8 | | | | .968 | .854 | .750 | .634 | .375 | .296 |
| 9 | | | | | .918 | .823 | .731 | .625 | .382 |
| 10 | | | | | .974 | .882 | .799 | .717 | .618 |
| 11 | | | | | | .933 | .854 | .780 | .704 |
| 12 | | | | | | .979 | .901 | .831 | .764 |

| **Traverse Point Locations** | | | |
|---|---|---|---|
| **Traverse Point Number** | **Fraction of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
| | | in | in |
| **1** | 0.044 | 10 | 18 |
| **2** | 0.146 | 33 2/8 | 41 2/8 |
| **3** | 0.296 | 67 4/8 | 75 4/8 |
| **4** | | | |
| **5** | | | |
| **6** | | | |
| **7** | | | |
| **8** | | | |
| **9** | | | |

## METHOD 2 - DETERMINATION OF STACK GAS VELOCITY AND VOLUMETRIC FLOW RATE

| | | | | |
|---|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | | | |
| **Sampling Location** | U-00001 Base+DB | | | |
| **Operator** | Aaron Blum | | | |
| **Project #** | bec-19-cricketvalley.ny-start#1 | | | |
| **Pitot Leak Check** | x | **PreTest** | x | **PostTest** |

| | | | |
|---|---|---|---|
| **Preliminary Run Date** | 02/18/20 | | |
| **Stack Type** | Circular | | |
| **Ports Available** | 4 | | |
| **Thermocouple ID** | SAMP-PR-0133 | | |
| **Pitot Coefficient** | 0.8198 | **Pitot Identification** | A4187 |

| **RM 201A or OTM 27 Blckag.** | **RM 201A or OTM 27 Pitot Coeff.** |
|---|---|
| 5.39E-04 | 0.7240 |

| **Stack Dimensions** | | | |
|---|---|---|---|
| **Area of Stack** | ($A_s$) | 283.53 | ft² |
| **Diameter of Stack** | (D) | 228.00 | in |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.14 | in Hg |
| **Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.21 | in Hg |

| **Stack Gas Composition** | | | |
|---|---|---|---|
| **Composition Data:** | **Estimated Composition** | | |
| **Carbon Dioxide Concentration** | (%$CO_2$) | 5.10 | %vd |
| **Oxygen Concentration** | (%$O_2$) | 12.30 | %vd |
| **Carbon Monoxide Concentration** | (ppmCO) | 0.00 | ppmvd |
| **Nitrogen Concentration** | (%$N_2$) | 82.60 | %vd |
| **Stack Moisture Content** | ($B_{ws}$) | 8.00 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.31 | lb/lb-mole |
| **Stack Wet Molecular Weight** | ($M_w$) | 28.40 | lb/lb-mole |

| **Results** | | | |
|---|---|---|---|
| **Avg Stack Gas Velocity** | ($v_s$) | 55.57 | ft/sec |
| **Avg Stack Dry Std Flow Rate** | ($Q_{sd}$) | 43,116,906 | dscf/hr |
| **Avg Stack Dry Std Flow Rate** | ($Q_{sd}$) | 718,615 | dscf/min |
| **Avg Stack Wet Flow Rate** | ($Q_{aw}$) | 945,278 | acf/min |
| **Avg Stack Wet Std Flow Rate** | ($Q_{sw}$) | 46,866,202 | ascf/hr |

**40 CFR 60, Method 2G, Section 8.11.1 (but applies to all Method 2 type static pressure measurements):**
If a Type S probe is used for this measurement, position the probe at or between any traverse point(s) and rotate the probe until a null differential pressure reading is obtained. Disconnect the tubing from one of the pressure ports; read and record the ΔP. For pressure devices with one-directional scales, if a deflection in the positive direction is noted with the negative side disconnected, then the static pressure is positive. Likewise, if a deflection in the positive direction is noted with the positive side disconnected, then the static pressure is negative.

**Stack Cross Section Schematic**

**Velocity Traverse Data**

| **Run Number** | PM U-00001 Base+DB-V1 | | | | |
|---|---|---|---|---|---|
| **Run Time** | 13:50 | **Start** | 14:12 | **End** | |

| **Traverse Point** | **Velocity Head** ($\Delta p$) | **Null Angle** ($N_a$) | **Zero Deg Pressure** ($0°_a$) | **Stack Temp** ($t_s$) | **Local Velocity** ($v_{s(l)}$) | **Adjusted Velocity Pressure** | **Adjusted Velocity Pressure w/BF, if app** |
|---|---|---|---|---|---|---|---|
| | in $H_2O$ | deg | in $H_2O$ | °F | ft/sec | in $H_2O$ | in $H_2O$ |
| A-1 | 1.50 | 5 | 0.04 | 186 | 74.48 | 1.17 | 1.17 |
| A-2 | 1.40 | 5 | 0.10 | 184 | 71.84 | 1.09 | 1.09 |
| A-3 | 1.40 | 10 | 0.07 | 185 | 71.90 | 1.09 | 1.09 |
| B-1 | 1.30 | 5 | 0.11 | 186 | 69.33 | 1.01 | 1.01 |
| B-2 | 1.40 | 5 | 0.02 | 184 | 71.84 | 1.09 | 1.09 |
| B-3 | 1.30 | -5 | -0.02 | 187 | 69.39 | 1.01 | 1.01 |
| C-1 | 1.40 | 0 | 0.00 | 186 | 71.95 | 1.09 | 1.09 |
| C-2 | 1.40 | -5 | 0.10 | 183 | 71.78 | 1.09 | 1.09 |
| C-3 | 1.30 | 5 | 0.11 | 185 | 69.28 | 1.01 | 1.01 |
| D-1 | 1.40 | 0 | 0.00 | 187 | 72.01 | 1.09 | 1.09 |
| D-2 | 1.40 | -5 | 0.06 | 185 | 71.90 | 1.09 | 1.09 |
| D-3 | 1.30 | -5 | 0.10 | 184 | 69.23 | 1.01 | 1.01 |
| **Average** | 1.38 | 5 | | 185 | | 1.07 | 1.07 |
| | 1.17 | **= Square roots of Δp** | | | | | 1.04 |
| **Standard deviation of null angles =** | | | | 2.6 | | | |

## METHOD 201A and OTM 27 - DETERMINATION OF NOZZLE SIZE AND POST RUN QUALITY CONTROL

| Gas Analysis | Prelim | PM U-00001 Base+DB-1 | PM U-00001 Base+DB-2 | PM U-00001 Base+DB-3 | PM U-00001 Base+DB-4 | PM U-00001 Base+DB-5 | PM U-00001 Base+DB-6 | |
|---|---|---|---|---|---|---|---|---|
| Carbon Dioxide Content | 5.1 | 5.3 | 5.3 | 5.3 | | | | % |
| Oxygen Content | 12.3 | 11.7 | 11.7 | 11.7 | | | | % |
| Stack Moisture Content | 8.0 | 6.9 | 6.7 | 6.9 | | | | % |
| Nitrogen plus CO Content | 82.6 | 83.0 | 83.0 | 83.0 | | | | % |

| Corrected Velocity Head, $\Delta p_{2.5}$ (in $H_2O$) | Min. | 1.01 | Max. | 1.17 |
|---|---|---|---|---|

| Stack and Equipment Information | Prelim | PM U-00001 Base+DB-1 | PM U-00001 Base+DB-2 | PM U-00001 Base+DB-3 | PM U-00001 Base+DB-4 | PM U-00001 Base+DB-5 | PM U-00001 Base+DB-6 | |
|---|---|---|---|---|---|---|---|---|
| Barometric Pressure | 30.14 | 30.14 | 30.02 | 30.14 | | | | in Hg |
| Stack Static Pressure | 0.95 | 0.95 | 0.95 | 0.95 | | | | in $H_2O$ |
| Absolute Stack Pressure | 30.21 | 30.21 | 30.09 | 30.21 | | | | in Hg |
| Average Stack Temp | 185 | 177 | 174 | 172 | | | | 0.00 |
| Average Stack Temp | 645 | 637 | 634 | 632 | | | | °R |
| Average Meter Temp | 85 | 70 | 68 | 74 | | | | 0.00 |
| Orifice Meter Coefficient | 1.878 | 1.878 | 1.878 | 1.878 | | | | in $H_2O$ |
| Pitot Coefficient | 0.724 | 0.724 | 0.724 | 0.724 | | | | |
| Stack Dry Molecular Weight | 29.31 | 29.32 | 29.31 | 29.31 | | | | lb/lb mole |
| Stack Wet Molecular Weight | 28.40 | 28.53 | 28.56 | 28.53 | | | | lb/lb mole |
| Stack Viscosity | 200.74 | 199.46 | 198.89 | 198.19 | | | | µP |
| Cunningham Correction Factor, for a 2.25 µm particle | 1.08 | | | | | | | |
| Cunningham Correction Factor, for a 2.5 µm particle | | 1.07 | 1.07 | 1.07 | | | | |
| Prelim Cut Dia., Cyclone I, $D_{50LL}$, $N_{re}$<3162 | 10.30 | 2.36 | 2.33 | 2.32 | | | | µm |
| Middle Zone Dia., Cyclone I, $D_{50T}$, $N_{re}$<3162 | 10.65 | | | | | | | µm |
| Sampling Rate ($PM_{10}$ & $PM_{2.5}$ Cyc.), $N_{re}$<3162 | 0.48 | | | | | | | dscfm |
| Reynolds Number, Cyc I & IV, $N_{re}$<3162 | 2742.55 | 2792.15 | 2818.10 | 2843.00 | | | | |
| Dia. of 50% Prob. ($D_{50}$) Cyc IV ($N_{re}$<3162) | 2.38 | 2.36 | 2.34 | 2.32 | | | | µm |
| Sampling Rate, Cyc IV, $N_{re}$<3,162 | 0.48 | | | | | | | dscfm |
| Reynolds Number, Cyc IV, $N_{re}$<3162 | 2742.50 | 2792.15 | 2818.10 | 2843.00 | | | | |
| Prelim Cut Dia., Cyclone I, $D_{50LL\geq3162}$ | 10.63 | | | | | | | µm |
| Middle Zone Dia., Cyclone I, $D_{50T\geq3162}$ | 10.81 | | | | | | | µm |
| Sampling Rate ($PM_{10}$ & $PM_{2.5}$ Cyc.)≥3162 | 0.47 | | | | | | | dscfm |
| Reynolds Number, Cyc I & IV, $N_{re}$≥3162 | 2684.42 | | | | | | | |
| Dia. of 50% Prob. ($D_{50}$) CIV ($N_{re}$≥3162) | 2.29 | | | | | | | µm |
| Sampling Rate, Cyc IV, $N_{re}$≥3,162 | 4.69 | | | | | | | dscfm |
| Reynolds Number ≥ 3162 | 26844.41 | | | | | | | |
| Cyclone Flow Rate | 0.48 | 0.48 | 0.48 | 0.48 | | | | ft³/min |
| Recalculated $D_{50-1}$ for $C_{IV}$ | | 2.36 | 2.33 | 2.32 | | | | |
| Recalculated Cunninham | | 1.08 | 1.08 | 1.08 | | | | |
| Z | | 1.00 | 1.00 | 1.00 | | | | |
| Isokinetics | | 98.08 | 98.64 | 98.22 | | | | % |
| No. Sampling Pts. Outside Δp | | 0 | 0 | 0 | | | | |
| Sample Nozzle Diameter | | 0.156 | 0.156 | 0.156 | | | | in |

| Orifice Head and Nozzle Selection Calculation | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nozzle No. | 2a | 2b | 3a | 3b | 4a | 4b | 5a | 5b | 6a | 6b | 7a |
| Nozzle diameter, $D_n$, in. | 0.119 | 0.130 | 0.130 | 0.143 | 0.155 | 0.156 | 0.175 | 0.172 | 0.197 | 0.192 | 0.212 |
| Nozzle velocity, $v_n$, ft/sec | 103.38 | 86.63 | 86.63 | 71.59 | 61.20 | 60.16 | 47.80 | 49.49 | 37.72 | 39.71 | 32.57 |
| $R_{min}$ | 0.77 | 0.76 | 0.76 | 0.74 | 0.73 | 0.72 | 0.69 | 0.70 | 0.63 | 0.65 | 0.58 |
| $v_{min}$, ft/sec | 79.40 | 65.66 | 65.66 | 53.21 | 44.49 | 43.61 | 33.01 | 34.47 | 23.93 | 25.78 | 18.94 |
| $R_{max}$ | 1.22 | 1.23 | 1.23 | 1.24 | 1.25 | 1.25 | 1.27 | 1.27 | 1.30 | 1.29 | 1.32 |
| $v_{max}$, ft/sec | 126.39 | 106.48 | 106.48 | 88.68 | 76.41 | 75.18 | 60.68 | 62.65 | 48.94 | 51.25 | 42.98 |
| $\Delta p_{min}$, in. $H_2O$ @ $t_{s-50}{}^oF$ | 2.37 | 1.62 | 1.62 | 1.07 | 0.75 | 0.72 | 0.41 | 0.45 | 0.22 | 0.25 | 0.13 |
| $\Delta p_{min}$, in. $H_2O$ @ $t_s$ | 2.19 | 1.50 | 1.50 | 0.98 | 0.69 | 0.66 | 0.38 | 0.41 | 0.20 | 0.23 | 0.12 |
| $\Delta p_{max}$, in. $H_2O$ @ $t_s$ | 5.55 | 3.94 | 3.94 | 2.73 | 2.03 | 1.96 | 1.28 | 1.36 | 0.83 | 0.91 | 0.64 |
| $\Delta p_{min}$, in. $H_2O$ @ $t_{s+50}{}^oF$ | 5.15 | 3.65 | 3.65 | 2.53 | 1.88 | 1.82 | 1.19 | 1.26 | 0.77 | 0.85 | 0.60 |
| ΔH, in. $H_2O$ @ $t_s$+50°F | 0.395 | | | | | | | | | | |
| **ΔH, in. $H_2O$ @ $t_s$** | **0.459** | | | | | | | | | | |
| ΔH, in. $H_2O$ @ $t_s$-50°F | 0.540 | | | | | | | | | | |

## METHOD 3a - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

| | | | | | |
|---|---|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Preliminary Run Date** | 02/18/20 | | |
| **Sampling Location** | U-00001 Base+DB | **Operator** | Aaron Blum | | |
| **Project #** | bec-19-cricketvalley.ny-start#1 | **# of Ports Used** | 1 (gas probe) | | |
| **Fuel Type** | Gas, Natural | **Min. Fuel Factor** | 1.600 | **Max. Fuel Factor** | 1.836 |

**Gas Analysis Data**

| **Run Number** | PM U-00001 Base+DB-1 | | **Date** | 02/18/20 | **Run Start Time** | 14:55 | **Run Stop Time** | 19:04 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 04:09 | 5.3 | 11.7 | 0.0 | 83.0 | 29.32 | 1.740 | 114.1 | YES |

**Gas Analysis Data**

| **Run Number** | PM U-00001 Base+DB-2 | | **Date** | 02/19/20 | **Run Start Time** | 04:24 | **Run Stop Time** | 08:15 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 03:51 | 5.3 | 11.7 | 0.0 | 83.0 | 29.31 | 1.742 | 113.9 | YES |

**Gas Analysis Data**

| **Run Number** | PM U-00001 Base+DB-3 | | **Date** | 02/19/20 | **Run Start Time** | 09:14 | **Run Stop Time** | 13:51 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 04:37 | 5.3 | 11.7 | 0.0 | 83.0 | 29.31 | 1.746 | 114.0 | YES |

## METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Preliminary Run Date** | 02/18/20 |
| **Sampling Location** | U-00001 Base+DB | **Operator** | Aaron Blum |
| **Project #** | bec-19-cricketvalley.ny-start#1 | **Ports Used** | 4 |

| **Scale Daily Calibration** | | | | | |
|---|---|---|---|---|---|
| **Scale Number** | SAMP-SC-0028 | **Standard** | **Result** | **Difference** | **Pass/Fail** |
| **Date** | | (g) | (g) | (g) | (± 0.5 g) |
| **Preliminary Date** | 02/18/20 | 500 | 499.7 | -0.3 | Pass |
| **Test Day 1** | 02/19/20 | 500 | 499.7 | -0.3 | Pass |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | PM U-00001 Base+DB-1 | | **Date** | 02/18/20 | **Start Time** | 14:55 | **Stop Time** | 19:04 |
| **Meter Box Number** | | Samp-cp-0030 | | | | **Meter Cal Factor** | (Y) | 0.974 | |
| **Total Meter Volume** | | ($V_m$) | 100.690 | dcf | | **Barometric Pressure** | ($P_b$) | 30.14 | in Hg |
| **Average Stack Temp** | | $(t_s)_{avg}$ | 177 | °F | | **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Average Meter Temp** | | $(t_m)_{avg}$ | 70 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.44 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | Dry | Dry | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 499.00 | 557.80 | 718.20 | 875.20 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 360.60 | 558.20 | 716.00 | 859.60 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 138.4 | -0.4 | 2.2 | 15.6 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | | ($W_t$) | 155.80 | g | | **Water Vol Weighed** | $(V_{wsg(std)})$ | 7.346 | scf |
| **Std Meter Volume** | | $(V_{m(std)})$ | 98.511 | dscf | | **Sat. Moisture Content** | $(B_{ws(svp)})$ | 47.32 | % |
| **Calc Moisture Content** | | $(B_{ws(calc)})$ | 6.94 | % | | **Final Moisture Content** | ($B_{ws}$) | 6.94 | % |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | PM U-00001 Base+DB-2 | | **Date** | 02/19/20 | **Start Time** | 04:24 | **Stop Time** | 08:15 |
| **Meter Box Number** | | Samp-cp-0030 | | | | **Meter Cal Factor** | (Y) | 0.974 | |
| **Total Meter Volume** | | ($V_m$) | 101.550 | dcf | | **Barometric Pressure** | ($P_b$) | 30.02 | in Hg |
| **Average Stack Temp** | | $(t_s)_{avg}$ | 174 | °F | | **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Average Meter Temp** | | $(t_m)_{avg}$ | 68 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.44 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | Dry | Dry | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 506.90 | 582.10 | 729.90 | 918.60 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 374.50 | 582.70 | 728.80 | 901.30 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 132.4 | -0.6 | 1.1 | 17.3 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | | ($W_t$) | 150.20 | g | | **Water Vol Weighed** | $(V_{wsg(std)})$ | 7.082 | scf |
| **Std Meter Volume** | | $(V_{m(std)})$ | 99.332 | dscf | | **Sat. Moisture Content** | $(B_{ws(svp)})$ | 43.90 | % |
| **Calc Moisture Content** | | $(B_{ws(calc)})$ | 6.66 | % | | **Final Moisture Content** | ($B_{ws}$) | 6.66 | % |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | PM U-00001 Base+DB-3 | | **Date** | 02/19/20 | **Start Time** | 09:14 | **Stop Time** | 13:51 |
| **Meter Box Number** | | Samp-cp-0030 | | | | **Meter Cal Factor** | (Y) | 0.974 | |
| **Total Meter Volume** | | ($V_m$) | 103.130 | dcf | | **Barometric Pressure** | ($P_b$) | 30.14 | in Hg |
| **Average Stack Temp** | | $(t_s)_{avg}$ | 172 | °F | | **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Average Meter Temp** | | $(t_m)_{avg}$ | 74 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.44 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | Dry | Dry | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 500.00 | 556.00 | 718.70 | 893.20 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 359.10 | 556.80 | 718.20 | 875.20 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 140.9 | -0.8 | 0.5 | 18.0 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | | ($W_t$) | 158.60 | g | | **Water Vol Weighed** | $(V_{wsg(std)})$ | 7.478 | scf |
| **Std Meter Volume** | | $(V_{m(std)})$ | 100.236 | dscf | | **Sat. Moisture Content** | $(B_{ws(svp)})$ | 41.94 | % |
| **Calc Moisture Content** | | $(B_{ws(calc)})$ | 6.94 | % | | **Final Moisture Content** | ($B_{ws}$) | 6.94 | % |

## METHOD 201A (FRONT) AND 202 (BACK) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#1 |

| | |
|---|---|
| **Date** | 02/18/20 |
| **Operator** | Aaron Blum |
| **Run Number** | PM U-00001 Base+DB-1 |

| **Filter #** |
|---|
| 18042521 |
| PM U-00001 Base+DB-1-CPM |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | 0.7240 | 4187/10 |
| **Average Stack Temp** | ($t_s$) | 177.1 | °F |
| **Average Meter Temp** | ($t_m$) | 70.1 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.878 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | 1.15 | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | 6.94 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.32 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.75 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | 0.37 | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | 0.00 | in $H_2O$ | 3.3 | in $H_2O$ for | 15.0 | sec [≥15] |
| PASS | **Pre (-)** | 0.00 | in $H_2O$ | 3.6 | in $H_2O$ for | 15.0 | sec [≥15] |
| | **Post (+)** | 0.00 | in $H_2O$ | 3.6 | in $H_2O$ for | 15.0 | sec [≥15] |
| | **Post (-)** | 0.00 | in $H_2O$ | 4.0 | in $H_2O$ for | 15.0 | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | Samp-cp-0030 | | |
| **Meter Cal Factor** | (Y) | 0.974 | |
| **Nozzle Number** | 4b | | |
| **Average Nozzle Diameter** | ($D_{ns}$) | 0.1560 | in |
| **Suggested Nozzle Diameter** | ($D_n$) | 0.2201 | in |
| **Probe Number** | SAMP-PR-0133 | | in |
| **Probe Length** | 120 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | SAMP-BH-0039 | | |
| **Impinger Case Number** | SAMP-SBC-0099 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.14 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.21 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.28 | in Hg |

| **Nozzle Measurements** | | | **ID: 4b** | |
|---|---|---|---|---|
| **Pre** | 0.156 | 0.156 | 0.156 | **PASS** |
| **Post** | 0.156 | 0.156 | 0.156 | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 14:55 | **End** | 19:04 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 360.6 | 558.2 | 716.0 | 859.6 | | | | |
| **Post** | 499.0 | 557.8 | 718.2 | 875.2 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | Samp-cp-0030 | Samp-cp-0030 | Samp-cp-0030 | | | SAMP-PR-0133 | SAMP-PR-0133 | SAMP-BH-0039 | SAMP-SBC-0099 | 1048 | 1018 | Samp-cp-0030 | | Samp-cp-0030 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head ($\Delta p$)** | **Desired Orifice ΔH ($\Delta H_@$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (248±25°F)** | **Filter Temp (248±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤85°F)** | **CPM Filter Temp (76.5±8.5°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 49.090 | 1.30 | 0.459 | 0.44 | 175 | 250 | 251 | 45 | 67 | 76 | 64 | 64 | 2.5 | 1.14 | 60.57 | 8.383 | 101.2 | 101.166 |
| A-2 | 22.0 | 00:22:00 | 57.560 | 1.40 | 0.459 | 0.44 | 175 | 249 | 245 | 49 | 64 | 77 | 67 | 67 | 3.0 | 1.18 | 62.86 | 17.013 | 99.1 | 100.939 |
| A-3 | 44.8 | 00:44:45 | 66.330 | 1.40 | 0.459 | 0.44 | 177 | 249 | 246 | 50 | 65 | 78 | 68 | 68 | 3.0 | 1.18 | 62.96 | 25.647 | 98.5 | 100.878 |
| B-1 | 67.5 | 01:07:30 | 75.120 | 1.20 | 0.459 | 0.44 | 176 | 250 | 256 | 50 | 66 | 78 | 72 | 72 | 3.0 | 1.10 | 58.24 | 33.553 | 99.5 | 100.375 |
| B-2 | 88.8 | 01:28:45 | 83.230 | 1.30 | 0.459 | 0.44 | 178 | 251 | 255 | 47 | 67 | 77 | 73 | 73 | 3.0 | 1.14 | 60.72 | 41.765 | 99.5 | 100.123 |
| B-3 | 110.8 | 01:50:45 | 91.670 | 1.40 | 0.459 | 0.44 | 177 | 252 | 256 | 48 | 68 | 76 | 73 | 73 | 3.0 | 1.18 | 62.96 | 50.609 | 99.5 | 100.650 |
| C-1 | 133.5 | 02:13:30 | 100.760 | 1.30 | 0.459 | 0.44 | 178 | 250 | 252 | 46 | 68 | 77 | 73 | 73 | 3.0 | 1.14 | 60.72 | 58.510 | 99.0 | 99.900 |
| C-2 | 155.5 | 02:35:30 | 108.880 | 1.20 | 0.459 | 0.44 | 177 | 250 | 251 | 51 | 69 | 78 | 70 | 70 | 3.0 | 1.10 | 58.29 | 66.055 | 98.9 | 99.222 |
| C-3 | 176.8 | 02:56:45 | 116.590 | 1.30 | 0.459 | 0.44 | 178 | 250 | 253 | 50 | 68 | 77 | 70 | 70 | 3.0 | 1.14 | 60.72 | 74.313 | 99.0 | 99.271 |
| D-1 | 198.8 | 03:18:45 | 125.030 | 1.40 | 0.459 | 0.44 | 177 | 250 | 249 | 50 | 67 | 78 | 70 | 70 | 3.0 | 1.18 | 62.96 | 82.689 | 98.5 | 99.115 |
| D-2 | 221.5 | 03:41:30 | 133.590 | 1.30 | 0.459 | 0.44 | 179 | 250 | 250 | 53 | 68 | 78 | 70 | 70 | 3.0 | 1.14 | 60.76 | 90.693 | 98.4 | 98.887 |
| D-3 | 243.5 | 04:03:30 | 141.770 | 1.30 | 0.459 | 0.44 | 178 | 251 | 253 | 54 | 68 | 78 | 71 | 71 | 3.0 | 1.14 | 60.72 | 98.516 | 98.1 | 98.516 |
| Last Pt | 265.5 | 04:25:30 | 149.780 | | | | | | | | | | | | | | | | | |
| **Final Val** | 265.5 | 04:25:30 | 149.780 | | | | | | | | | | | **Max Vac** | 3.0 | **Final Values** | | 98.516 | 98.1 | |
| **Average Values** | | | | 1.32 | | 0.44 | 177 | 250 | 251 | 49 | 67 | 77 | 70 | 70 | | 1.15 | 61.04 | | | |
| | | | | | | | | | | | | | 70 | | | | | | | |

| **Actual** | **DP to** | **Point-by-point** | **Point-by-point** | **Point** |
|---|---|---|---|---|
| **Actual Nozzle Diameter ($D_{na}$)** | **DP to DH Iso Factor (K)** | **Point-by-point Meter Volume ($V_m$)$_{std}$** | **Point-by-point Percent IsoKinetic (I)** | **Point Weighted Average Isokinetics** |
| in | | dscf | % | ($V_m$)$_{std}$ x (I) |
| 0.156 | 0.37 | 8.383 | 101.2 | 848.0 |
| 0.156 | 0.37 | 8.630 | 97.0 | 837.6 |
| 0.156 | 0.37 | 8.634 | 97.2 | 839.5 |
| 0.156 | 0.37 | 7.906 | 102.9 | 813.4 |
| 0.156 | 0.37 | 8.212 | 99.3 | 815.7 |
| 0.156 | 0.37 | 8.845 | 99.6 | 881.0 |
| 0.156 | 0.37 | 7.901 | 95.6 | 755.0 |
| 0.156 | 0.37 | 7.544 | 98.3 | 741.3 |
| 0.156 | 0.37 | 8.259 | 99.9 | 825.0 |
| 0.156 | 0.37 | 8.376 | 94.3 | 790.2 |
| 0.156 | 0.37 | 8.004 | 96.9 | 775.5 |
| 0.156 | 0.37 | 7.823 | 94.6 | 740.3 |
| | | | | |
| 0.156 | 0.37 | 98.516 | | |

| **RM 201A Calculations** | | | | | | |
|---|---|---|---|---|---|---|
| **Trav. Point** | **First Point** | **First Point** | **Subs. Point** | **Velocity** | | |
| **Trav. Point Estimated Dwell Times ($t_1$), ($t_n$)** | **First Point Dwell Times ($t_1$)** | **First Point Vel. Head Current Trav. ($\Delta p_{RM2}$)** | **Subs. Point Dwell Times Current Trav. ($t_n$)** | **Velocity Head Current Trav. ($\Delta p_{201A}$)** | **Violations** | |
| min | min | in $H_2O$ | min | in $H_2O$ | | |
| 22.00 | 22.03 | 1.30 | | 1.30 | 0 | |
| 22.75 | 22.86 | 1.40 | 22.86 | 1.40 | 0 | |
| 22.75 | 22.86 | 1.40 | 22.86 | 1.40 | 0 | |
| 21.25 | 21.16 | 1.20 | | 1.20 | 0 | |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 | |
| 22.75 | 22.86 | 1.40 | 22.86 | 1.40 | 0 | |
| 22.00 | 22.03 | 1.30 | | 1.30 | 0 | |
| 21.25 | 21.16 | 1.20 | 21.16 | 1.20 | 0 | |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 | |
| 22.75 | 22.86 | 1.40 | | 1.40 | 0 | |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 | |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 | |
| | | | | | | |

Z must be between 0.99 and 1.01, but the initial calculation is based on assumptions of the Cunniham Correction Factor and the Reynolds Number. In cases where your Z value is not between the limits and is producing an error, you need to run a second iteration based on the re-calculated numbers. To do this, copy the value in "Recalculated Cunninham, C =" [BH189] and do a "paste special value only" into "Calculated Cunninham, C =" [BH174]. This sets the initially calculated C equal to the C determined during this test run. At this point the program may recognize the second iteration and your error may go away. If it doesn't it is probably because it is having difficulties deciding between the Reynolds number at the threshold.

| | | | |
|---|---|---|---|
| | Stack Gas Viscosity (μs) | 199.46 | μP |
| | Cyclone Flow Rate ($Q_a$) | 0.48 | ft³/min |
| | Dia. of 50% Prob. ($D_{50}$) CI | 10.61 | μm |
| >> | Calculated Cunninham, C | 1.08 | |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{re}$<3162) | 10.32 | μm |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{re}$≥3162) | | μm |
| | Middle of Zone Dia. ($D_{50T}$) CI | 10.66 | μm |
| | Sampling Rate ($PM_{10}$ and $PM_{2.5}$ Cyc.) | 0.47 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$<3162) | 2.36 | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{re}$<3162) | 0.48 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$≥3162) | | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{re}$≥3162) | | dscfm |
| | Actual Test Run C (2.5 μm) | 1.07 | |
| | Actual Test Run $N_{RE}$ | 2792.15 | |
| | Actual Particle Cut Diameter for CI | 10.61 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$<3162) | 2.36 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$≥3162) | | μm |
| << | Recalculated Cunninham, C = | 1.08 | |
| | Recalculated $D_{50-1}$ for $C_{IV}$ = | 2.36 | |
| >> | Z (limits 0.99 to 1.01) = | 1.00 | |
| | Isokinetics (I) (80 to 120%) = | 98.08 | % |
| | No. Sampling Pts. Outside Δp = | 0 | |
| | Sample Nozzle Diameter = | 0.156 | in |
| | $\Delta p_{min}$ | 0.660 | in $H_2O$ |
| | $\Delta p_{max}$ | 1.963 | in $H_2O$ |

Notes:

## METHOD 201A (FRONT) AND 202 (BACK) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#1 |

| | |
|---|---|
| **Date** | 02/19/20 |
| **Operator** | Aaron Blum |
| **Run Number** | PM U-00001 Base+DB-2 |

| **Filter #** |
|---|
| 18082944 |
| PM U-00001 Base+DB-2-CPM |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | 0.7240 | 4187/10 |
| **Average Stack Temp** | ($t_s$) | 173.6 | °F |
| **Average Meter Temp** | ($t_m$) | 68.1 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.878 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | 1.15 | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | 6.66 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.31 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.37 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | 0.37 | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec (≥60) |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec (≥60) |
| **Pitot** | **Pre (+)** | 0.000 | in $H_2O$ | 3.3 | in $H_2O$ for | 15.0 | sec (≥15) |
| PASS | **Pre (-)** | 0.000 | in $H_2O$ | 3.8 | in $H_2O$ for | 15.0 | sec (≥15) |
| | **Post (+)** | 0.000 | in $H_2O$ | 3.7 | in $H_2O$ for | 15.0 | sec (≥15) |
| | **Post (-)** | 0.000 | in $H_2O$ | 3.8 | in $H_2O$ for | 15.0 | sec (≥15) |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | Samp-cp-0030 | | |
| **Meter Cal Factor** | (Y) | 0.974 | |
| **Nozzle Number** | 4b | | |
| **Average Nozzle Diameter** | ($D_{ns}$) | 0.1560 | in |
| **Suggested Nozzle Diameter** | ($D_n$) | 0.1548 | in |
| **Probe Number** | SAMP-PR-0133 | | in |
| **Probe Length** | 120 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | SAMP-BH-0039 | | |
| **Impinger Case Number** | SAMP-SBC-0099 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.02 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.09 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.16 | in Hg |

| **Nozzle Measurements** | | | **ID: 4b** | |
|---|---|---|---|---|
| **Pre** | 0.156 | 0.156 | 0.156 | **PASS** |
| **Post** | 0.156 | 0.156 | 0.156 | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 04:24 | **End** | 08:15 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 374.5 | 582.7 | 728.8 | 901.3 | | | | |
| **Post** | 506.9 | 582.1 | 729.9 | 918.6 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | Samp-cp-0030 | Samp-cp-0030 | Samp-cp-0030 | | | SAMP-PR-0133 | SAMP-PR-0133 | SAMP-BH-0039 | SAMP-SBC-0099 | 1026 | 8082 | Samp-cp-0030 | | Samp-cp-0030 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head ($\Delta p$)** | **Desired Orifice ΔH ($\Delta H_a$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (248±25°F)** | **Filter Temp (248±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤85°F)** | **CPM Filter Temp (76.5±8.5°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 126.000 | 1.40 | 0.459 | 0.44 | 172 | 248 | 256 | 57 | 60 | 75 | 60 | 60 | 2.5 | 1.18 | 62.80 | 8.722 | 97.8 | 101.785 |
| A-2 | 22.8 | 00:22:45 | 134.780 | 1.30 | 0.459 | 0.44 | 173 | 250 | 251 | 57 | 69 | 77 | 70 | 70 | 2.5 | 1.14 | 60.57 | 16.704 | 97.0 | 99.103 |
| A-3 | 44.8 | 00:44:45 | 142.970 | 1.40 | 0.459 | 0.44 | 171 | 252 | 249 | 55 | 70 | 77 | 71 | 71 | 2.5 | 1.18 | 62.75 | 25.264 | 96.6 | 99.373 |
| B-1 | 67.5 | 01:07:30 | 151.770 | 1.20 | 0.459 | 0.44 | 173 | 251 | 251 | 59 | 71 | 78 | 64 | 64 | 2.5 | 1.10 | 58.19 | 32.835 | 97.0 | 98.228 |
| B-2 | 88.8 | 01:28:45 | 159.450 | 1.30 | 0.459 | 0.44 | 170 | 250 | 254 | 60 | 71 | 77 | 66 | 66 | 2.5 | 1.14 | 60.42 | 41.261 | 97.9 | 98.914 |
| B-3 | 110.8 | 01:50:45 | 168.030 | 1.30 | 0.459 | 0.44 | 175 | 250 | 250 | 62 | 74 | 78 | 68 | 68 | 2.5 | 1.14 | 60.66 | 49.801 | 98.7 | 99.603 |
| C-1 | 132.8 | 02:12:45 | 176.760 | 1.40 | 0.459 | 0.44 | 176 | 250 | 253 | 63 | 76 | 77 | 68 | 68 | 2.5 | 1.18 | 63.00 | 58.303 | 98.3 | 99.546 |
| C-2 | 155.5 | 02:35:30 | 185.450 | 1.20 | 0.459 | 0.44 | 175 | 250 | 247 | 64 | 77 | 78 | 69 | 69 | 2.5 | 1.10 | 58.28 | 66.544 | 99.4 | 99.958 |
| C-3 | 176.8 | 02:56:45 | 193.890 | 1.30 | 0.459 | 0.44 | 176 | 251 | 245 | 65 | 77 | 78 | 69 | 69 | 2.5 | 1.14 | 60.71 | 74.893 | 99.5 | 100.046 |
| D-1 | 198.8 | 03:18:45 | 202.440 | 1.40 | 0.459 | 0.44 | 175 | 251 | 253 | 61 | 70 | 77 | 70 | 70 | 2.5 | 1.18 | 62.95 | 83.255 | 99.0 | 99.794 |
| D-2 | 221.5 | 03:41:30 | 211.020 | 1.30 | 0.459 | 0.44 | 174 | 250 | 253 | 61 | 71 | 78 | 71 | 71 | 2.5 | 1.14 | 60.61 | 91.378 | 98.9 | 99.634 |
| D-3 | 243.5 | 04:03:30 | 219.370 | 1.30 | 0.459 | 0.44 | 173 | 251 | 252 | 62 | 71 | 77 | 71 | 71 | 2.5 | 1.14 | 60.57 | 99.335 | 98.6 | 99.335 |
| Last Pt | 265.5 | 04:25:30 | 227.550 | | | | | | | | | | | | | | | | | |
| **Final Val** | 265.5 | 04:25:30 | 227.550 | | | | | | | | | | | **Max Vac** | 2.5 | **Final Values** | | 99.335 | 98.6 | |
| **Average Values** | | | | | 1.32 | | 0.44 | 174 | 250 | 251 | 61 | 71 | 77 | 68 | 68 | | 1.15 | 60.96 | | |
| | | | | | | | | | | | | | | 68 | | | | | | |

| **Actual** | **DP to** | **Point-by-point** | **Point-by-point** | **Point** |
|---|---|---|---|---|
| **Actual Nozzle Diameter ($D_{na}$)** | **DP to DH Iso Factor (K)** | **Point-by-point Meter Volume ($V_m$)$_{std}$** | **Point-by-point Percent IsoKinetic (I)** | **Point Weighted Average Isokinetics** |
| in | | dscf | % | ($V_m$)$_{std}$ x (I) |
| 0.156 | 0.37 | 8.722 | 97.8 | 852.9 |
| 0.156 | 0.37 | 7.982 | 96.1 | 767.2 |
| 0.156 | 0.37 | 8.560 | 95.9 | 821.0 |
| 0.156 | 0.37 | 7.571 | 98.2 | 743.7 |
| 0.156 | 0.37 | 8.426 | 101.2 | 852.9 |
| 0.156 | 0.37 | 8.541 | 103.0 | 879.8 |
| 0.156 | 0.37 | 8.502 | 95.6 | 813.0 |
| 0.156 | 0.37 | 8.241 | 107.1 | 882.7 |
| 0.156 | 0.37 | 8.349 | 100.8 | 841.3 |
| 0.156 | 0.37 | 8.362 | 94.0 | 785.9 |
| 0.156 | 0.37 | 8.123 | 97.9 | 795.1 |
| 0.156 | 0.37 | 7.957 | 95.8 | 762.5 |
| | | | | |
| 0.156 | 0.37 | 99.335 | | |

| **RM 201A Calculations** | | | | | |
|---|---|---|---|---|---|
| **Trav. Point** | **First Point** | **First Point** | **Subs. Point** | **Velocity** | |
| **Trav. Point Estimated Dwell Times ($t_1$), ($t_n$)** | **First Point Dwell Times ($t_1$)** | **First Point Vel. Head Prelim. Trav. ($\Delta p_{RM2}$)** | **Subs. Point Dwell Times Current Trav. ($t_n$)** | **Velocity Head Current Trav. ($\Delta p_{201A}$)** | **Violations** |
| min | min | in $H_2O$ | min | in $H_2O$ | |
| 22.75 | 22.86 | 1.40 | | 1.40 | 0 |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 |
| 22.75 | 22.86 | 1.40 | 22.86 | 1.40 | 0 |
| 21.25 | 21.16 | 1.20 | | 1.20 | 0 |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 |
| 22.75 | 22.86 | 1.40 | | 1.40 | 0 |
| 21.25 | 21.16 | 1.20 | 21.16 | 1.20 | 0 |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 |
| 22.75 | 22.86 | 1.40 | | 1.40 | 0 |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 |
| | | | | | |

Notes:

Z must be between 0.99 and 1.01, but the initial calculation is based on assumptions of the Cunniham Correction Factor and the Reynolds Number. In cases where your Z value is not between the limits and is producing an error, you need to run a second iteration based on the re-calculated numbers. To do this, copy the value in "Recalculated Cunninham, C =" [BH189] and do a "paste special value only" into "Calculated Cunninham, C =" [BH174]. This sets the initially calculated C equal to the C determined during this test run. At this point the program may recognize the second iteration and your error may go away. If it doesn't it is probably because it is having difficulties deciding between the Reynolds number at the threshold.

| | | | |
|---|---|---|---|
| | Stack Gas Viscosity (μs) | 198.89 | μP |
| | Cyclone Flow Rate ($Q_s$) | 0.48 | ft³/min |
| | Dia. of 50% Prob. ($D_{50}$) CI | 10.55 | μm |
| >> | Calculated Cunninham, C | 1.08 | |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{Re}$<3162) | 10.33 | μm |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{Re}$≥3162) | | μm |
| | Middle of Zone Dia. ($D_{50T}$) CI | 10.66 | μm |
| | Sampling Rate ($PM_{10}$ and $PM_{2.5}$ Cyc.) | 0.47 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$<3162) | 2.33 | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{Re}$<3162) | 0.48 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$≥3162) | | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{Re}$≥3162) | | dscfm |
| | Actual Test Run C (2.5 μm) | 1.07 | |
| | Actual Test Run $N_{RE}$ | 2818.10 | |
| | Actual Particle Cut Diameter for CI | 10.55 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$<3162) | 2.34 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$≥3162) | | μm |
| << | Recalculated Cunninham, C = | 1.08 | |
| | Recalculated $D_{50-1}$ for $C_{IV}$ = | 2.33 | |
| >> | Z (limits 0.99 to 1.01) = | 1.00 | |
| | Isokinetics (I) (80 to 120%) = | 98.64 | % |
| | No. Sampling Pts. Outside Δp = | 0 | |
| | Sample Nozzle Diameter = | 0.156 | in |
| | $\Delta p_{min}$ | 0.660 | in $H_2O$ |
| | $\Delta p_{max}$ | 1.963 | in $H_2O$ |

## METHOD 201A (FRONT) AND 202 (BACK) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#1 |

| | |
|---|---|
| **Date** | 02/19/20 |
| **Operator** | Aaron Blum |
| **Run Number** | PM U-00001 Base+DB-3 |

| **Filter #** |
|---|
| 18082938 |
| PM U-00001 Base+DB-3-CPM |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | 0.7240 | 4187/10 |
| **Average Stack Temp** | ($t_s$) | 171.8 | °F |
| **Average Meter Temp** | ($t_m$) | 73.6 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.878 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | 1.15 | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | 6.94 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.31 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.37 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | 0.37 | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec (≥60) |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec (≥60) |
| **Pitot** | **Pre (+)** | 0.00 | in $H_2O$ | 3.2 | in $H_2O$ for | 15.0 | sec (≥15) |
| | **Pre (-)** | 0.00 | in $H_2O$ | 3.5 | in $H_2O$ for | 15.0 | sec (≥15) |
| PASS | **Post (+)** | 0.00 | in $H_2O$ | 3.4 | in $H_2O$ for | 15.0 | sec (≥15) |
| | **Post (-)** | 0.00 | in $H_2O$ | 3.6 | in $H_2O$ for | 15.0 | sec (≥15) |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | Samp-cp-0030 | | |
| **Meter Cal Factor** | (Y) | 0.974 | |
| **Nozzle Number** | 4b | | |
| **Average Nozzle Diameter** | ($D_{ns}$) | 0.1560 | in |
| **Suggested Nozzle Diameter** | ($D_n$) | 0.1544 | in |
| **Probe Number** | SAMP-PR-0133 | | in |
| **Probe Length** | 120 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | SAMP-BH-0039 | | |
| **Impinger Case Number** | SAMP-SBC-0099 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.14 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.21 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.28 | in Hg |

| **Nozzle Measurements** | | | **ID: 4b** | |
|---|---|---|---|---|
| **Pre** | 0.156 | 0.156 | 0.156 | **PASS** |
| **Post** | 0.156 | 0.156 | 0.156 | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 09:14 | **End** | 13:51 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 359.1 | 556.8 | 718.2 | 875.2 | | | | |
| **Post** | 500.0 | 556.0 | 718.7 | 893.2 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | Samp-cp-0030 | Samp-cp-0030 | Samp-cp-0030 | | | SAMP-PR-0133 | SAMP-PR-0133 | SAMP-BH-0039 | SAMP-SBC-0099 | 1048 | 1018 | Samp-cp-0030 | | Samp-cp-0030 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head ($\Delta p$)** | **Desired Orifice ΔH ($\Delta H_a$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (248±25°F)** | **Filter Temp (248±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤85°F)** | **CPM Filter Temp (76.5±8.5°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 204.310 | 1.30 | 0.459 | 0.44 | 170 | 250 | 250 | 44 | 68 | 73 | 66 | 66 | 2.5 | 1.14 | 60.34 | 7.947 | 95.5 | 96.445 |
| A-2 | 22.0 | 00:22:00 | 212.370 | 1.40 | 0.459 | 0.44 | 171 | 253 | 264 | 45 | 70 | 77 | 70 | 70 | 2.5 | 1.18 | 62.67 | 16.616 | 96.4 | 99.141 |
| A-3 | 44.8 | 00:44:45 | 221.230 | 1.30 | 0.459 | 0.44 | 170 | 254 | 261 | 46 | 71 | 76 | 70 | 70 | 2.5 | 1.14 | 60.34 | 25.080 | 98.2 | 100.322 |
| B-1 | 66.8 | 01:06:45 | 229.880 | 1.30 | 0.459 | 0.44 | 173 | 255 | 273 | 48 | 74 | 77 | 72 | 72 | 2.5 | 1.14 | 60.48 | 33.220 | 98.2 | 99.942 |
| B-2 | 88.8 | 01:28:45 | 238.230 | 1.40 | 0.459 | 0.44 | 172 | 256 | 273 | 48 | 74 | 77 | 72 | 72 | 2.5 | 1.18 | 62.72 | 41.662 | 97.5 | 99.765 |
| B-3 | 111.5 | 01:51:30 | 246.890 | 1.30 | 0.459 | 0.44 | 170 | 255 | 270 | 49 | 73 | 77 | 73 | 73 | 2.5 | 1.14 | 60.34 | 49.874 | 97.7 | 99.749 |
| C-1 | 133.5 | 02:13:30 | 255.330 | 1.30 | 0.459 | 0.44 | 171 | 254 | 254 | 51 | 74 | 78 | 75 | 75 | 2.5 | 1.14 | 60.39 | 58.385 | 98.4 | 100.250 |
| C-2 | 155.5 | 02:35:30 | 264.110 | 1.40 | 0.459 | 0.44 | 172 | 252 | 253 | 52 | 74 | 77 | 75 | 75 | 2.5 | 1.18 | 62.72 | 67.556 | 99.0 | 101.191 |
| C-3 | 178.3 | 02:58:15 | 273.570 | 1.30 | 0.459 | 0.44 | 173 | 253 | 251 | 54 | 75 | 77 | 77 | 77 | 2.5 | 1.14 | 60.48 | 75.571 | 98.7 | 100.762 |
| D-1 | 200.3 | 03:20:15 | 281.870 | 1.40 | 0.459 | 0.44 | 174 | 255 | 252 | 50 | 60 | 75 | 77 | 77 | 2.5 | 1.18 | 62.81 | 84.070 | 98.4 | 100.658 |
| D-2 | 223.0 | 03:43:00 | 290.670 | 1.30 | 0.459 | 0.44 | 173 | 251 | 252 | 52 | 62 | 77 | 78 | 78 | 2.5 | 1.14 | 60.48 | 92.100 | 98.2 | 100.370 |
| D-3 | 245.0 | 04:05:00 | 299.000 | 1.30 | 0.459 | 0.44 | 172 | 252 | 255 | 53 | 63 | 77 | 78 | 78 | 2.5 | 1.14 | 60.43 | 100.236 | 98.2 | 100.236 |
| Last Pt | 267.0 | 04:27:00 | 307.440 | | | | | | | | | | | | | | | | | |
| **Final Val** | 267.0 | 04:27:00 | 307.440 | | | | | | | | | | | **Max Vac** | 2.5 | **Final Values** | | 100.236 | 98.2 | |
| **Average Values** | | | | 1.33 | | 0.44 | 172 | 253 | 259 | 49 | 70 | 77 | 74 | 74 | | 1.15 | 61.18 | | | |
| | | | | | | | | | | | | | 74 | | | | | | | |

| **Actual Actual Nozzle Diameter ($D_{na}$)** | **DP to DP to DH Iso Factor (K)** | **Point-by-point Point-by-point Meter Volume ($V_m$)$_{std}$** | **Point-by-point Percent IsoKinetic (I)** | **Point Point Weighted Average Isokinetics** |
|---|---|---|---|---|
| in | | dscf | % | ($V_m$)$_{std}$ x (I) |
| 0.156 | 0.37 | 7.947 | 95.5 | 759.0 |
| 0.156 | 0.37 | 8.670 | 97.2 | 842.5 |
| 0.156 | 0.37 | 8.464 | 101.7 | 861.1 |
| 0.156 | 0.37 | 8.140 | 98.1 | 798.3 |
| 0.156 | 0.37 | 8.442 | 94.7 | 799.5 |
| 0.156 | 0.37 | 8.212 | 98.7 | 810.6 |
| 0.156 | 0.37 | 8.511 | 102.4 | 871.3 |
| 0.156 | 0.37 | 9.170 | 102.9 | 943.3 |
| 0.156 | 0.37 | 8.016 | 96.6 | 774.1 |
| 0.156 | 0.37 | 8.499 | 95.5 | 811.5 |
| 0.156 | 0.37 | 8.030 | 96.7 | 776.8 |
| 0.156 | 0.37 | 8.136 | 97.9 | 796.8 |
| | | | | |
| 0.156 | 0.37 | 100.236 | | |

| **RM 201A Calculations** | | | | | | |
|---|---|---|---|---|---|---|
| **Trav. Point Trav. Point Estimated Dwell Times ($t_1$), ($t_n$)** | **First Point First Point Dwell Times Prelim. Trav. ($t_1$)** | **First Point Vel. Head Current Trav. ($\Delta p_{RM2}$)** | **Subs. Point Dwell Times Current Trav. ($t_n$)** | **Velocity Velocity Head Current Trav. ($\Delta p_{201A}$)** | **Violations** |
| min | min | in $H_2O$ | min | in $H_2O$ | |
| 22.00 | 22.03 | 1.30 | | 1.30 | 0 |
| 22.75 | 22.86 | 1.40 | 22.86 | 1.40 | 0 |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 |
| 22.00 | 22.03 | 1.30 | | 1.30 | 0 |
| 22.75 | 22.86 | 1.40 | 22.86 | 1.40 | 0 |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 |
| 22.00 | 22.03 | 1.30 | | 1.30 | 0 |
| 22.75 | 22.86 | 1.40 | 22.86 | 1.40 | 0 |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 |
| 22.75 | 22.86 | 1.40 | | 1.40 | 0 |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 |
| 22.00 | 22.03 | 1.30 | 22.03 | 1.30 | 0 |
| | | | | | |

Z must be between 0.99 and 1.01, but the initial calculation is based on assumptions of the Cunniham Correction Factor and the Reynolds Number. In cases where your Z value is not between the limits and is producing an error, you need to run a second iteration based on the re-calculated numbers. To do this, copy the value in "Recalculated Cunninham, C =" [BH189] and do a "paste special value only" into "Calculated Cunninham, C =" [BH174]. This sets the initially calculated C equal to the C determined during this test run. At this point the program may recognize the second iteration and your error may go away. If it doesn't it is probably because it is having difficulties deciding between the Reynolds number at the threshold.

| | | | |
|---|---|---|---|
| | Stack Gas Viscosity (μs) | 198.19 | μP |
| | Cyclone Flow Rate ($Q_s$) | 0.48 | ft³/min |
| | Dia. of 50% Prob. ($D_{50}$) CI | 10.51 | μm |
| >> | Calculated Cunninham, C | 1.08 | |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{Re}$<3162) | 10.34 | μm |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{Re}$≥3162) | | μm |
| | Middle of Zone Dia. ($D_{50T}$) CI | 10.67 | μm |
| | Sampling Rate ($PM_{10}$ and $PM_{2.5}$ Cyc.) | 0.47 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$<3162) | 2.32 | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{Re}$<3162) | 0.48 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$≥3162) | | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{Re}$≥3162) | | dscfm |
| | Actual Test Run C (2.5 μm) | 1.07 | |
| | Actual Test Run $N_{RE}$ | 2843.00 | |
| | Actual Particle Cut Diameter for CI | 10.51 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$<3162) | 2.32 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$≥3162) | | μm |
| << | Recalculated Cunninham, C = | 1.08 | |
| | Recalculated $D_{50-1}$ for $C_{IV}$ = | 2.32 | |
| >> | Z (limits 0.99 to 1.01) = | 1.00 | |
| | Isokinetics (I) (80 to 120%) = | 98.22 | % |
| | No. Sampling Pts. Outside Δp = | 0 | |
| | Sample Nozzle Diameter = | 0.156 | in |
| | $\Delta p_{min}$ | 0.660 | in $H_2O$ |
| | $\Delta p_{max}$ | 1.963 | in $H_2O$ |

Notes:

# EMISSION DATA RECORDS

## Reference Method Data
## Base+DB Load
## SAM

Following completion of the stack emission test program for Unit #U-00001, it was discovered that the U-00001 fuel gas flow meter operation was tied to a “test mode” (Mode 0) setting, and not the expected “natural gas mode” setting (Mode 1). Further investigations of the impact of this setting, indicate that the initial Mode 0 fuel gas flow results have a positive bias of 1.5%. Consequently, the original fuel gas flow results (see U-00001-supplied operational fuel gas data) have been reduced by 1.5%. The operating mode of the Unit 1 gas flowmeter has been reset to the correct Mode 1 (natural gas).

## METHOD 8A (CONTROLLED CONDENSATE) SOURCE SAMPLING TITLE PAGE

| Source Information | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base+DB |
| **Fuel Type** | Gas, Natural |

| Test Information | | | |
|---|---|---|---|
| **Project #** | | bec-19-cricketvalley.ny-start#1 | |
| **Operator** | | Atlas Melchert | |
| **Date for Preliminary Run** | (mm/dd/yy) | 02/17/20 | |
| **Standard Temperature** | | 68 | °F |
| **Standard Pressure** | | 29.92 | in Hg |
| **Required Sample Vol.** | 10 L/min | 10.6 | scf |
| **Run Duration** | 8a, 2.4.1.3 | 120 | minutes |
| **Unit Number** | | U-00001 | |
| **Base Run Number** | | SAM U-00001 Base+DB | |
| **Number of Ports Available** | | 4 | |
| **Number of Ports Used** | | 1 | |
| **Port Inside Diameter** | | 6.00 | in |
| **Stack Shape** | | Circular | |

| Test Equipment Information | | | | | |
|---|---|---|---|---|---|
| **Run** | | **1** | **2** | **3** | |
| **Test Date** | (mm/dd/yy) | 02/18/20 | 02/19/20 | 02/19/20 | |
| **Load** | | Base+DB | Base+DB | Base+DB | % or w/DB |
| **Fuel F-Factor** | | 8643.54 | 8642.95 | 8642.95 | dscf/MMBtu |
| **Meter Box Number** | from ACS | samp-cp-0007 | samp-cp-0007 | samp-cp-0007 | |
| **Meter Calibration Factor** | (Y) | 0.985 | 0.985 | 0.985 | |
| **Orifice Meter Coefficient** | ($\Delta H_@$) | 1.731 | 1.731 | 1.731 | in $H_2O$ |
| **Non-Console Manometer Used** | | No | No | No | |
| **Probe Number** | from ACS | SAMP-SAM-01 | SAMP-SAM-01 | SAMP-SAM-01 | |
| **Probe Length** | | 72.0 | 72.0 | 72.0 | in |
| **(SS, Glass …. ) Liner Material** | from list | glass | glass | glass | |
| **Sample Case / Oven Number** | from ACS | samp-ha-0005 | samp-ha-0005 | samp-ha-0005 | |
| **Impinger Case Number** | from ACS | samp-bc-0032 | samp-bc-0032 | samp-bc-0032 | |

| Testing Company Information | |
|---|---|
| **Company Name** | Air Hygiene International, Inc. (Tulsa, Oklahoma) |
| **Address** | 1600 W Tacoma Street |
| **City, State Zip** | Broken Arrow, Oklahoma 74012 |
| **Project Manager** | Rob White |
| **Phone Number** | (918) 307-8865 |
| **Fax Number** | (918) 307-9131 |

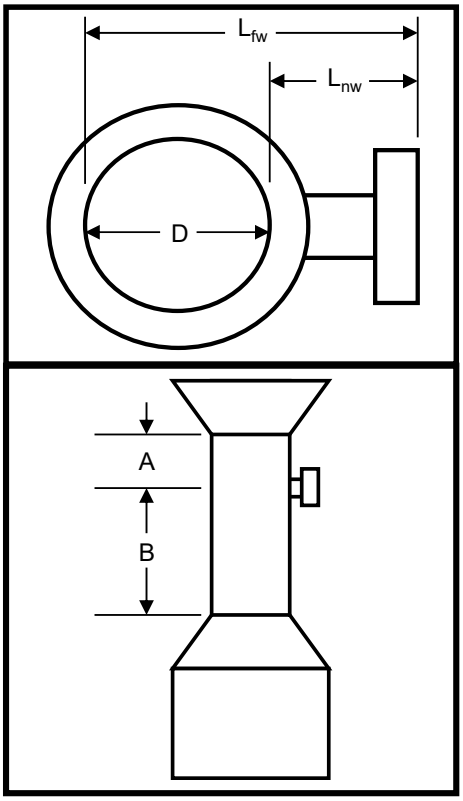
Created with Isocalc-AHI v20190830

## METHOD 1 - SAMPLE AND VELOCITY TRAVERSES FOR CIRCULAR SOURCES

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Date** | 02/17/20 |
| **Sampling Location** | U-00001 Base+DB | **Stack Type** | Circular |
| **Operator** | Atlas Melchert | **Ports Available** | 4 |
| **Project #** | bec-19-cricketvalley.ny-start#1 | **Ports Used** | 1 |
| **Stack Size** | Large (>24 inch diameter) | **Port ID (inches)** | 6.00 |

| **Circular Stack or Duct Diameter** | | | |
|---|---|---|---|
| **Distance to Far Wall of Stack** | ($L_{fw}$) | 236.00 | in |
| **Distance to Near Wall of Stack** | ($L_{nw}$) | 8.00 | in |
| **Diameter of Stack** | (D) | 228.00 | in |
| **Area of Stack** | ($A_s$) | 283.53 | ft² |

| **Distance from Port to Disturbances** | | | |
|---|---|---|---|
| **Distance Upstream** | (A) | 200.40 | in |
| **Diameters Upstream** | ($A_D$) | 0.88 | diameters |
| **Distance Downstream** | (B) | 850.00 | in |
| **Diameters Downstream** | ($B_D$) | 3.73 | diameters |




| **Number of Traverse Points Required** | | | |
|---|---|---|---|
| **Diameters to Flow Disturbance** | | **Minimum Number of[1] Traverse Points** | |
| **Down Stream** | **Up Stream** | **Particulate Points** | **Velocity Points** |
| 2.00-4.99 | 0.50-1.24 | 24 | 16 |
| 5.00-5.99 | 1.25-1.49 | 20 | 16 |
| 6.00-6.99 | 1.50-1.74 | 16 | 12 |
| 7.00-7.99 | 1.75-1.99 | 12 | 12 |
| >= 8.00 | >=2.00 | 8 or 12[2] | 8 or 12[2] |
| **Upstream Spec** | | 24 | 16 |
| **Downstream Spec** | | 24 | 16 |
| **Traverse Pts Required** | | 24 | 16 |

[1] Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.

[2] 8 for Circular Stacks 12 to 24 inches
12 for Circular Stacks over 24 inches

- (•) Method 1 Trav
- ( ) 12 Point PM Trav (M201a ONLY)
- ( ) Velocity

| **Number of Traverse Points Used** | | | |
|---|---|---|---|
| 1 | **Ports by** | 1 | **Across** |
| 1 | **Pts Used** | 1 | **Required** |

| **Location of Traverse Points in Circular Stacks** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point Number** | (Fraction of Stack Dimension from Inside Wall to Traverse Point) Number of Traverse Points Across the Stack | | | | | | | | |
| | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 |
| 1 | .146 | .067 | .044 | .032 | .026 | .021 | .018 | .016 | .014 |
| 2 | .854 | .250 | .146 | .105 | .082 | .067 | .057 | .049 | .044 |
| 3 | | .750 | .296 | .194 | .146 | .118 | .099 | .085 | .075 |
| 4 | | .933 | .704 | .323 | .226 | .177 | .146 | .125 | .109 |
| 5 | | | .854 | .677 | .342 | .250 | .201 | .169 | .146 |
| 6 | | | .956 | .806 | .658 | .356 | .269 | .220 | .188 |
| 7 | | | | .895 | .774 | .644 | .366 | .283 | .236 |
| 8 | | | | .968 | .854 | .750 | .634 | .375 | .296 |
| 9 | | | | | .918 | .823 | .731 | .625 | .382 |
| 10 | | | | | .974 | .882 | .799 | .717 | .618 |
| 11 | | | | | | .933 | .854 | .780 | .704 |
| 12 | | | | | | .979 | .901 | .831 | .764 |

| **Traverse Point Locations** | | | |
|---|---|---|---|
| **Traverse Point Number** | **Fraction of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
| | | in | in |
| **1** | 0.275 | 62 6/8 | 70 6/8 |
| **2** | | | |
| **3** | | | |
| **4** | | | |
| **5** | | | |
| **6** | | | |
| **7** | | | |
| **8** | | | |
| **9** | | | |

## METHOD 3a - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

| | | | | | |
|---|---|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Preliminary Run Date** | 02/17/20 | | |
| **Sampling Location** | U-00001 Base+DB | **Operator** | Atlas Melchert | | |
| **Project #** | bec-19-cricketvalley.ny-start#1 | **# of Ports Used** | 1 (gas probe) | | |
| **Fuel Type** | Gas, Natural | **Min. Fuel Factor** | 1.600 | **Max. Fuel Factor** | 1.836 |

**Gas Analysis Data**

| **Run Number** | SAM U-00001 Base+DB-1 | | **Date** | 02/18/20 | **Run Start Time** | 14:40 | **Run Stop Time** | 16:40 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 02:00 | 5.3 | 11.7 | 0.0 | 83.0 | 29.32 | 1.736 | 114.6 | YES |

**Gas Analysis Data**

| **Run Number** | SAM U-00001 Base+DB-2 | | **Date** | 02/19/20 | **Run Start Time** | 04:09 | **Run Stop Time** | 06:09 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 02:00 | 5.3 | 11.7 | 0.0 | 83.0 | 29.32 | 1.736 | 114.6 | YES |

**Gas Analysis Data**

| **Run Number** | SAM U-00001 Base+DB-3 | | **Date** | 02/19/20 | **Run Start Time** | 07:26 | **Run Stop Time** | 09:26 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 02:00 | 5.3 | 11.7 | 0.0 | 83.0 | 29.32 | 1.736 | 114.6 | YES |

## METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Preliminary Run Date** | 02/17/20 |
| **Sampling Location** | U-00001 Base+DB | **Operator** | Atlas Melchert |
| **Project #** | bec-19-cricketvalley.ny-start#1 | **Ports Used** | 1 |

| **Scale Daily Calibration** | | | | | |
|---|---|---|---|---|---|
| **Scale Number** | SAMP-SC-0028 | **Standard** | **Result** | **Difference** | **Pass/Fail** |
| **Date** | | (g) | (g) | (g) | (± 0.5 g) |
| **Test Day 1** | 02/18/20 | 500 | 499.7 | -0.3 | Pass |
| **Test Day 2** | 02/19/20 | 500 | 499.7 | -0.3 | Pass |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | SAM U-00001 Base+DB-1 | | **Date** | 02/18/20 | **Start Time** | 14:40 | **Stop Time** | 16:40 | |
| **Meter Box Number** | samp-cp-0007 | | | | **Meter Cal Factor** | (Y) | 0.985 | | |
| **Total Meter Volume** | ($V_m$) | 42.320 | dcf | | **Barometric Pressure** | ($P_b$) | 30.14 | in Hg | |
| **Average Stack Temp** | $(t_s)_{avg}$ | | °F | | **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ | |
| **Average Meter Temp** | $(t_m)_{avg}$ | 96 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.34 | in $H_2O$ | |
| | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** | |
| | (g) | (g) | (g) | (g) | | | | | |
| **Contents** | $H_2O_2$ | $H_2O_2$ | DI Water | Sil Gel | | | | | |
| **Final Value** ($V_f$),($W_f$) | 771.20 | 715.30 | 616.50 | 944.60 | | | | | |
| **Initial Value** ($V_i$),($W_i$) | 693.10 | 712.70 | 615.40 | 937.50 | | | | | |
| **Net Value** ($V_n$),($W_n$) | 78.1 | 2.6 | 1.1 | 7.1 | | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | ($W_t$) | 88.90 | g | | **Water Vol Weighed** | ($V_{wsg(std)}$) | 4.192 | scf | |
| **Std Meter Volume** | ($V_{m(std)}$) | 39.933 | dscf | | **Sat. Moisture Content** | ($B_{ws(svp)}$) | | % | |
| **Calc Moisture Content** | ($B_{ws(calc)}$) | 9.50 | % | | **Final Moisture Content** | ($B_{ws}$) | | % | |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | SAM U-00001 Base+DB-2 | | **Date** | 02/19/20 | **Start Time** | 04:09 | **Stop Time** | 06:09 | |
| **Meter Box Number** | samp-cp-0007 | | | | **Meter Cal Factor** | (Y) | 0.985 | | |
| **Total Meter Volume** | ($V_m$) | 42.320 | dcf | | **Barometric Pressure** | ($P_b$) | 30.02 | in Hg | |
| **Average Stack Temp** | $(t_s)_{avg}$ | | °F | | **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ | |
| **Average Meter Temp** | $(t_m)_{avg}$ | 101 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.34 | in $H_2O$ | |
| | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** | |
| | (g) | (g) | (g) | (g) | | | | | |
| **Contents** | $H_2O_2$ | $H_2O_2$ | DI Water | Sil Gel | | | | | |
| **Final Value** ($V_f$),($W_f$) | 780.10 | 722.00 | 618.70 | 951.90 | | | | | |
| **Initial Value** ($V_i$),($W_i$) | 716.00 | 715.30 | 616.50 | 944.60 | | | | | |
| **Net Value** ($V_n$),($W_n$) | 64.1 | 6.7 | 2.2 | 7.3 | | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | ($W_t$) | 80.30 | g | | **Water Vol Weighed** | ($V_{wsg(std)}$) | 3.786 | scf | |
| **Std Meter Volume** | ($V_{m(std)}$) | 39.432 | dscf | | **Sat. Moisture Content** | ($B_{ws(svp)}$) | | % | |
| **Calc Moisture Content** | ($B_{ws(calc)}$) | 8.76 | % | | **Final Moisture Content** | ($B_{ws}$) | | % | |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | SAM U-00001 Base+DB-3 | | **Date** | 02/19/20 | **Start Time** | 07:26 | **Stop Time** | 09:26 | |
| **Meter Box Number** | samp-cp-0007 | | | | **Meter Cal Factor** | (Y) | 0.985 | | |
| **Total Meter Volume** | ($V_m$) | 42.320 | dcf | | **Barometric Pressure** | ($P_b$) | 30.14 | in Hg | |
| **Average Stack Temp** | $(t_s)_{avg}$ | | °F | | **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ | |
| **Average Meter Temp** | $(t_m)_{avg}$ | 101 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.34 | in $H_2O$ | |
| | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** | |
| | (g) | (g) | (g) | (g) | | | | | |
| **Contents** | $H_2O_2$ | $H_2O_2$ | DI Water | Sil Gel | | | | | |
| **Final Value** ($V_f$),($W_f$) | 787.50 | 731.30 | 620.30 | 957.40 | | | | | |
| **Initial Value** ($V_i$),($W_i$) | 722.40 | 722.00 | 618.70 | 951.90 | | | | | |
| **Net Value** ($V_n$),($W_n$) | 65.1 | 9.3 | 1.6 | 5.5 | | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | ($W_t$) | 81.50 | g | | **Water Vol Weighed** | ($V_{wsg(std)}$) | 3.843 | scf | |
| **Std Meter Volume** | ($V_{m(std)}$) | 39.528 | dscf | | **Sat. Moisture Content** | ($B_{ws(svp)}$) | | % | |
| **Calc Moisture Content** | ($B_{ws(calc)}$) | 8.86 | % | | **Final Moisture Content** | ($B_{ws}$) | | % | |

**METHOD 8A (CONTROLLED CONDENSATE) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA**

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#1 |

| | |
|---|---|
| **Date** | 02/18/20 |
| **Operator** | Atlas Melchert |
| **Run Number** | SAM U-00001 Base+DB-1 |

| |
|---|
| **Filter #** |
| R0001 |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | | |
| **Average Stack Temp** | ($t_s$) | | °F |
| **Average Meter Temp** | ($t_m$) | 95.7 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.731 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.32 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.75 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Pre (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | samp-cp-0007 | | |
| **Meter Cal Factor** | (Y) | 0.985 | |
| **Nozzle Number** | NA | | |
| **Average Nozzle Diameter** | ($D_{na}$) | | in |
| **Suggested Nozzle Diameter** | ($D_{ni}$) | | in |
| **Probe Number** | SAMP-SAM-01 | | in |
| **Probe Length** | 72 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | samp-ha-0005 | | |
| **Impinger Case Number** | samp-bc-0032 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.14 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.21 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.27 | in Hg |

| **Nozzle Measurements** | | | **ID: NA** |
|---|---|---|---|
| **Pre** | | | **PASS** |
| **Post** | | | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 14:40 | **End** | 16:40 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 693.1 | 712.7 | 615.4 | 937.5 | | | | |
| **Post** | 771.2 | 715.3 | 616.5 | 944.6 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | samp-cp-0007 | samp-cp-0007 | samp-cp-0007 | | | SAMP-SAM-01 | SAMP-SAM-01 | samp-ha-0005 | samp-bc-0032 | TCSAM1 | | samp-cp-0007 | | samp-cp-0007 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head (Δp)** | **Desired Orifice ΔH ($\Delta H_d$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (375±25°F)** | **Filter Temp (525±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤185°F)** | **CPM Filter Temp (--±--°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)$_l$** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 671.410 | -- | 0.342 | 0.34 | -- | 350 | 513 | 41 | 69 | -- | 87 | 86 | 1.5 | | | 1.681 | | 40.347 |
| A-2 | 5.0 | 00:05:00 | 673.162 | -- | 0.342 | 0.34 | -- | 350 | 510 | 41 | 78 | -- | 89 | 86 | 1.5 | | | 3.359 | | 40.310 |
| A-3 | 10.0 | 00:10:00 | 674.914 | -- | 0.342 | 0.34 | -- | 350 | 507 | 41 | 87 | -- | 91 | 86 | 1.5 | | | 5.051 | | 40.410 |
| A-4 | 15.0 | 00:15:00 | 676.684 | -- | 0.342 | 0.34 | -- | 350 | 504 | 42 | 96 | -- | 95 | 87 | 1.5 | | | 6.719 | | 40.312 |
| A-5 | 20.0 | 00:20:00 | 678.437 | -- | 0.342 | 0.34 | -- | 350 | 504 | 42 | 98 | -- | 97 | 87 | 1.5 | | | 8.383 | | 40.238 |
| A-6 | 25.0 | 00:25:00 | 680.189 | -- | 0.342 | 0.34 | -- | 350 | 504 | 42 | 100 | -- | 99 | 87 | 1.5 | | | 10.061 | | 40.245 |
| A-7 | 30.0 | 00:30:00 | 681.959 | -- | 0.342 | 0.34 | -- | 350 | 505 | 43 | 102 | -- | 101 | 88 | 1.5 | | | 11.718 | | 40.176 |
| A-8 | 35.0 | 00:35:00 | 683.711 | -- | 0.342 | 0.34 | -- | 350 | 509 | 43 | 101 | -- | 101 | 88 | 1.5 | | | 13.392 | | 40.176 |
| A-9 | 40.0 | 00:40:00 | 685.481 | -- | 0.342 | 0.34 | -- | 350 | 513 | 43 | 100 | -- | 101 | 88 | 1.5 | | | 15.040 | | 40.107 |
| A-10 | 45.0 | 00:45:00 | 687.224 | -- | 0.342 | 0.34 | -- | 350 | 518 | 43 | 100 | -- | 102 | 90 | 1.5 | | | 16.735 | | 40.163 |
| A-11 | 50.0 | 00:50:00 | 689.021 | -- | 0.342 | 0.34 | -- | 350 | 515 | 42 | 100 | -- | 102 | 90 | 1.5 | | | 18.404 | | 40.154 |
| A-12 | 55.0 | 00:55:00 | 690.791 | -- | 0.342 | 0.34 | -- | 350 | 512 | 41 | 100 | -- | 102 | 90 | 1.5 | | | 20.141 | | 40.281 |
| A-13 | 60.0 | 01:00:00 | 692.633 | -- | 0.342 | 0.34 | -- | 350 | 509 | 42 | 100 | -- | 104 | 91 | 1.5 | | | 21.747 | | 40.148 |
| A-14 | 65.0 | 01:05:00 | 694.340 | -- | 0.342 | 0.34 | -- | 350 | 507 | 42 | 99 | -- | 104 | 91 | 1.5 | | | 23.369 | | 40.062 |
| A-15 | 70.0 | 01:10:00 | 696.065 | -- | 0.342 | 0.34 | -- | 350 | 505 | 42 | 98 | -- | 104 | 91 | 1.5 | | | 24.967 | | 39.947 |
| A-16 | 75.0 | 01:15:00 | 697.764 | -- | 0.342 | 0.34 | -- | 350 | 503 | 43 | 99 | -- | 105 | 92 | 1.5 | | | 26.620 | | 39.930 |
| A-17 | 80.0 | 01:20:00 | 699.525 | -- | 0.342 | 0.34 | -- | 350 | 502 | 43 | 98 | -- | 105 | 92 | 1.5 | | | 28.282 | | 39.927 |
| A-18 | 85.0 | 01:25:00 | 701.295 | -- | 0.342 | 0.34 | -- | 350 | 501 | 43 | 97 | -- | 105 | 92 | 1.5 | | | 29.944 | | 39.925 |
| A-19 | 90.0 | 01:30:00 | 703.065 | -- | 0.342 | 0.34 | -- | 350 | 500 | 43 | 98 | -- | 106 | 93 | 1.5 | | | 31.611 | | 39.930 |
| A-20 | 95.0 | 01:35:00 | 704.844 | -- | 0.342 | 0.34 | -- | 350 | 500 | 42 | 98 | -- | 106 | 93 | 1.5 | | | 33.270 | | 39.924 |
| A-21 | 100.0 | 01:40:00 | 706.614 | -- | 0.342 | 0.34 | -- | 350 | 500 | 41 | 98 | -- | 106 | 93 | 1.5 | | | 34.945 | | 39.937 |
| A-22 | 105.0 | 01:45:00 | 708.402 | -- | 0.342 | 0.34 | -- | 350 | 500 | 42 | 99 | -- | 106 | 94 | 1.5 | | | 36.603 | | 39.930 |
| A-23 | 110.0 | 01:50:00 | 710.172 | -- | 0.342 | 0.34 | -- | 350 | 500 | 42 | 99 | -- | 106 | 94 | 1.5 | | | 38.260 | | 39.923 |
| A-24 | 115.0 | 01:55:00 | 711.942 | -- | 0.342 | 0.34 | -- | 350 | 500 | 42 | 99 | -- | 106 | 94 | 1.5 | | | 39.934 | | 39.934 |
| Last Pt | 120.0 | 02:00:00 | 713.730 | | | | | | | | | | | | | | | | | |
| **Final Val** | 120.0 | 02:00:00 | 713.730 | | | | | | | | | | | **Max Vac** | 1.5 | **Final Values** | | 39.934 | | |
| **Average Values** | | | | | | 0.34 | | 350 | 506 | 42 | 96 | | 101 | 90 | | | | | | |
| | | | | | | | | | | | | | 96 | | | | | | | |

Notes:

**METHOD 8A (CONTROLLED CONDENSATE) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA**

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#1 |

| | |
|---|---|
| **Date** | 02/19/20 |
| **Operator** | Atlas Melchert |
| **Run Number** | SAM U-00001 Base+DB-2 |

| |
|---|
| **Filter #** |
| R0001 |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | | |
| **Average Stack Temp** | ($t_s$) | | °F |
| **Average Meter Temp** | ($t_m$) | 100.5 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.731 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.32 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.33 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Pre (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | samp-cp-0007 | | |
| **Meter Cal Factor** | (Y) | 0.985 | |
| **Nozzle Number** | NA | | |
| **Average Nozzle Diameter** | ($D_{na}$) | | in |
| **Suggested Nozzle Diameter** | ($D_{ni}$) | | in |
| **Probe Number** | SAMP-SAM-01 | | in |
| **Probe Length** | 72 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | samp-ha-0005 | | |
| **Impinger Case Number** | samp-bc-0032 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.02 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.09 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.15 | in Hg |

| **Nozzle Measurements** | | | **ID: NA** |
|---|---|---|---|
| **Pre** | | | **PASS** |
| **Post** | | | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 04:09 | **End** | 06:09 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 716.0 | 715.3 | 616.5 | 944.6 | | | | |
| **Post** | 780.1 | 722.0 | 618.7 | 951.9 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | samp-cp-0007 | samp-cp-0007 | samp-cp-0007 | | | SAMP-SAM-01 | SAMP-SAM-01 | samp-ha-0005 | samp-bc-0032 | TCSAM1 | | samp-cp-0007 | | samp-cp-0007 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head (Δp)** | **Desired Orifice ΔH ($\Delta H_d$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (375±25°F)** | **Filter Temp (525±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤185°F)** | **CPM Filter Temp (--±--°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)$_l$** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 726.910 | -- | 0.342 | 0.34 | -- | 350 | 513 | 47 | 59 | -- | 93 | 92 | 1.5 | | | 1.702 | | 40.859 |
| A-2 | 5.0 | 00:05:00 | 728.711 | -- | 0.342 | 0.34 | -- | 350 | 516 | 50 | 75 | -- | 95 | 92 | 1.5 | | | 3.377 | | 40.523 |
| A-3 | 10.0 | 00:10:00 | 730.486 | -- | 0.342 | 0.34 | -- | 350 | 519 | 53 | 91 | -- | 97 | 92 | 1.5 | | | 5.098 | | 40.784 |
| A-4 | 15.0 | 00:15:00 | 732.313 | -- | 0.342 | 0.34 | -- | 350 | 524 | 57 | 108 | -- | 101 | 92 | 1.5 | | | 6.731 | | 40.383 |
| A-5 | 20.0 | 00:20:00 | 734.053 | -- | 0.342 | 0.34 | -- | 350 | 522 | 58 | 112 | -- | 102 | 92 | 1.5 | | | 8.362 | | 40.136 |
| A-6 | 25.0 | 00:25:00 | 735.792 | -- | 0.342 | 0.34 | -- | 350 | 520 | 59 | 116 | -- | 103 | 92 | 1.5 | | | 9.991 | | 39.964 |
| A-7 | 30.0 | 00:30:00 | 737.532 | -- | 0.342 | 0.34 | -- | 350 | 519 | 61 | 120 | -- | 106 | 94 | 1.5 | | | 11.613 | | 39.817 |
| A-8 | 35.0 | 00:35:00 | 739.271 | -- | 0.342 | 0.34 | -- | 350 | 515 | 62 | 121 | -- | 106 | 94 | 1.5 | | | 13.244 | | 39.732 |
| A-9 | 40.0 | 00:40:00 | 741.020 | -- | 0.342 | 0.34 | -- | 350 | 511 | 63 | 122 | -- | 106 | 94 | 1.5 | | | 14.866 | | 39.643 |
| A-10 | 45.0 | 00:45:00 | 742.759 | -- | 0.342 | 0.34 | -- | 350 | 509 | 64 | 123 | -- | 108 | 95 | 1.5 | | | 16.500 | | 39.601 |
| A-11 | 50.0 | 00:50:00 | 744.516 | -- | 0.342 | 0.34 | -- | 350 | 516 | 64 | 123 | -- | 108 | 95 | 1.5 | | | 18.135 | | 39.567 |
| A-12 | 55.0 | 00:55:00 | 746.273 | -- | 0.342 | 0.34 | -- | 350 | 523 | 64 | 123 | -- | 108 | 95 | 1.5 | | | 19.769 | | 39.538 |
| A-13 | 60.0 | 01:00:00 | 748.030 | -- | 0.342 | 0.34 | -- | 350 | 530 | 65 | 125 | -- | 109 | 96 | 1.5 | | | 21.400 | | 39.508 |
| A-14 | 65.0 | 01:05:00 | 749.788 | -- | 0.342 | 0.34 | -- | 350 | 529 | 63 | 124 | -- | 109 | 96 | 1.5 | | | 23.032 | | 39.483 |
| A-15 | 70.0 | 01:10:00 | 751.545 | -- | 0.342 | 0.34 | -- | 350 | 528 | 61 | 123 | -- | 109 | 96 | 1.5 | | | 24.680 | | 39.487 |
| A-16 | 75.0 | 01:15:00 | 753.319 | -- | 0.342 | 0.34 | -- | 350 | 527 | 60 | 124 | -- | 109 | 98 | 1.5 | | | 26.308 | | 39.462 |
| A-17 | 80.0 | 01:20:00 | 755.076 | -- | 0.342 | 0.34 | -- | 350 | 525 | 59 | 124 | -- | 109 | 97 | 1.5 | | | 27.946 | | 39.453 |
| A-18 | 85.0 | 01:25:00 | 756.842 | -- | 0.342 | 0.34 | -- | 350 | 523 | 58 | 124 | -- | 109 | 96 | 1.5 | | | 29.586 | | 39.448 |
| A-19 | 90.0 | 01:30:00 | 758.608 | -- | 0.342 | 0.34 | -- | 350 | 521 | 58 | 125 | -- | 109 | 97 | 1.5 | | | 31.240 | | 39.461 |
| A-20 | 95.0 | 01:35:00 | 760.392 | -- | 0.342 | 0.34 | -- | 350 | 516 | 57 | 124 | -- | 109 | 97 | 1.5 | | | 32.886 | | 39.464 |
| A-21 | 100.0 | 01:40:00 | 762.166 | -- | 0.342 | 0.34 | -- | 350 | 511 | 56 | 123 | -- | 109 | 97 | 1.5 | | | 34.565 | | 39.503 |
| A-22 | 105.0 | 01:45:00 | 763.976 | -- | 0.342 | 0.34 | -- | 350 | 508 | 57 | 124 | -- | 109 | 98 | 1.5 | | | 36.185 | | 39.475 |
| A-23 | 110.0 | 01:50:00 | 765.725 | -- | 0.342 | 0.34 | -- | 350 | 508 | 57 | 124 | -- | 109 | 98 | 1.5 | | | 37.806 | | 39.450 |
| A-24 | 115.0 | 01:55:00 | 767.473 | -- | 0.342 | 0.34 | -- | 350 | 508 | 57 | 124 | -- | 109 | 98 | 1.5 | | | 39.434 | | 39.434 |
| Last Pt | 120.0 | 02:00:00 | 769.230 | | | | | | | | | | | | | | | | | |
| **Final Val** | 120.0 | 02:00:00 | 769.230 | | | | | | | | | | | **Max Vac** | 1.5 | **Final Values** | | 39.434 | | |
| **Average Values** | | | | | | 0.34 | | 350 | 518 | 59 | 116 | | 106 | 95 | | | | | | |
| | | | | | | | | | | | | | 101 | | | | | | | |

Notes:

**METHOD 8A (CONTROLLED CONDENSATE) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA**

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#1 |

| | |
|---|---|
| **Date** | 02/19/20 |
| **Operator** | Atlas Melchert |
| **Run Number** | SAM U-00001 Base+DB-3 |

| |
|---|
| **Filter #** |
| R0001 |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | | |
| **Average Stack Temp** | ($t_s$) | | °F |
| **Average Meter Temp** | ($t_m$) | 101.4 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.731 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.32 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.33 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Pre (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | samp-cp-0007 | | |
| **Meter Cal Factor** | (Y) | 0.985 | |
| **Nozzle Number** | NA | | |
| **Average Nozzle Diameter** | ($D_{na}$) | | in |
| **Suggested Nozzle Diameter** | ($D_{ni}$) | | in |
| **Probe Number** | SAMP-SAM-01 | | in |
| **Probe Length** | 72 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | samp-ha-0005 | | |
| **Impinger Case Number** | samp-bc-0032 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.14 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.21 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.27 | in Hg |

| **Nozzle Measurements** | | | **ID: NA** |
|---|---|---|---|
| **Pre** | | | **PASS** |
| **Post** | | | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 07:26 | **End** | 09:26 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 722.4 | 722.0 | 618.7 | 951.9 | | | | |
| **Post** | 787.5 | 731.3 | 620.3 | 957.4 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | samp-cp-0007 | samp-cp-0007 | samp-cp-0007 | | | SAMP-SAM-01 | SAMP-SAM-01 | samp-ha-0005 | samp-bc-0032 | TCSAM1 | | samp-cp-0007 | | samp-cp-0007 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head (Δp)** | **Desired Orifice ΔH ($\Delta H_d$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (375±25°F)** | **Filter Temp (525±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤185°F)** | **CPM Filter Temp (--±--°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)$_l$** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 782.510 | -- | 0.342 | 0.34 | -- | 350 | 524 | 53 | 69 | -- | 94 | 94 | 1.5 | | | 1.658 | | 39.786 |
| A-2 | 5.0 | 00:05:00 | 784.262 | -- | 0.342 | 0.34 | -- | 350 | 520 | 54 | 82 | -- | 97 | 94 | 1.5 | | | 3.311 | | 39.733 |
| A-3 | 10.0 | 00:10:00 | 786.013 | -- | 0.342 | 0.34 | -- | 350 | 516 | 55 | 95 | -- | 100 | 94 | 1.5 | | | 4.960 | | 39.679 |
| A-4 | 15.0 | 00:15:00 | 787.765 | -- | 0.342 | 0.34 | -- | 350 | 513 | 56 | 108 | -- | 103 | 95 | 1.5 | | | 6.611 | | 39.667 |
| A-5 | 20.0 | 00:20:00 | 789.525 | -- | 0.342 | 0.34 | -- | 350 | 513 | 56 | 111 | -- | 104 | 95 | 1.5 | | | 8.261 | | 39.652 |
| A-6 | 25.0 | 00:25:00 | 791.285 | -- | 0.342 | 0.34 | -- | 350 | 513 | 56 | 114 | -- | 105 | 95 | 1.5 | | | 9.917 | | 39.670 |
| A-7 | 30.0 | 00:30:00 | 793.055 | -- | 0.342 | 0.34 | -- | 350 | 515 | 56 | 118 | -- | 107 | 95 | 1.5 | | | 11.563 | | 39.644 |
| A-8 | 35.0 | 00:35:00 | 794.815 | -- | 0.342 | 0.34 | -- | 350 | 515 | 56 | 119 | -- | 107 | 95 | 1.5 | | | 13.216 | | 39.649 |
| A-9 | 40.0 | 00:40:00 | 796.584 | -- | 0.342 | 0.34 | -- | 350 | 515 | 56 | 120 | -- | 107 | 95 | 1.5 | | | 14.870 | | 39.653 |
| A-10 | 45.0 | 00:45:00 | 798.353 | -- | 0.342 | 0.34 | -- | 350 | 516 | 58 | 121 | -- | 108 | 96 | 1.5 | | | 16.521 | | 39.650 |
| A-11 | 50.0 | 00:50:00 | 800.123 | -- | 0.342 | 0.34 | -- | 350 | 521 | 59 | 122 | -- | 108 | 96 | 1.5 | | | 18.171 | | 39.647 |
| A-12 | 55.0 | 00:55:00 | 801.892 | -- | 0.342 | 0.34 | -- | 350 | 526 | 60 | 123 | -- | 108 | 96 | 1.5 | | | 19.830 | | 39.661 |
| A-13 | 60.0 | 01:00:00 | 803.670 | -- | 0.342 | 0.34 | -- | 350 | 533 | 61 | 124 | -- | 109 | 97 | 1.5 | | | 21.470 | | 39.636 |
| A-14 | 65.0 | 01:05:00 | 805.430 | -- | 0.342 | 0.34 | -- | 350 | 535 | 60 | 123 | -- | 109 | 97 | 1.5 | | | 23.109 | | 39.616 |
| A-15 | 70.0 | 01:10:00 | 807.191 | -- | 0.342 | 0.34 | -- | 350 | 537 | 59 | 122 | -- | 109 | 97 | 1.5 | | | 24.757 | | 39.611 |
| A-16 | 75.0 | 01:15:00 | 808.960 | -- | 0.342 | 0.34 | -- | 350 | 539 | 60 | 123 | -- | 109 | 97 | 1.5 | | | 26.388 | | 39.582 |
| A-17 | 80.0 | 01:20:00 | 810.712 | -- | 0.342 | 0.34 | -- | 350 | 536 | 58 | 121 | -- | 109 | 97 | 1.5 | | | 28.020 | | 39.557 |
| A-18 | 85.0 | 01:25:00 | 812.463 | -- | 0.342 | 0.34 | -- | 350 | 533 | 56 | 119 | -- | 109 | 97 | 1.5 | | | 29.667 | | 39.556 |
| A-19 | 90.0 | 01:30:00 | 814.232 | -- | 0.342 | 0.34 | -- | 350 | 532 | 55 | 117 | -- | 109 | 98 | 1.5 | | | 31.297 | | 39.533 |
| A-20 | 95.0 | 01:35:00 | 815.984 | -- | 0.342 | 0.34 | -- | 350 | 531 | 55 | 116 | -- | 109 | 98 | 1.5 | | | 32.935 | | 39.522 |
| A-21 | 100.0 | 01:40:00 | 817.744 | -- | 0.342 | 0.34 | -- | 350 | 530 | 55 | 115 | -- | 109 | 98 | 1.5 | | | 34.557 | | 39.493 |
| A-22 | 105.0 | 01:45:00 | 819.487 | -- | 0.342 | 0.34 | -- | 350 | 529 | 55 | 116 | -- | 109 | 98 | 1.5 | | | 36.211 | | 39.503 |
| A-23 | 110.0 | 01:50:00 | 821.265 | -- | 0.342 | 0.34 | -- | 350 | 529 | 55 | 116 | -- | 109 | 98 | 1.5 | | | 37.866 | | 39.512 |
| A-24 | 115.0 | 01:55:00 | 823.043 | -- | 0.342 | 0.34 | -- | 350 | 529 | 55 | 116 | -- | 109 | 98 | 1.5 | | | 39.528 | | 39.528 |
| Last Pt | 120.0 | 02:00:00 | 824.830 | | | | | | | | | | | | | | | | | |
| **Final Val** | 120.0 | 02:00:00 | 824.830 | | | | | | | | | | | **Max Vac** | 1.5 | **Final Values** | | 39.528 | | |
| **Average Values** | | | | | | 0.34 | | 350 | 525 | 57 | 114 | | 107 | 96 | | | | | | |
| | | | | | | | | | | | | | 101 | | | | | | | |

Notes:

# EMISSION DATA RECORDS

## Reference Method Data
## Base+DB Load
## Opacity

Following completion of the stack emission test program for Unit #U-00001, it was discovered that the U-00001 fuel gas flow meter operation was tied to a “test mode” (Mode 0) setting, and not the expected “natural gas mode” setting (Mode 1). Further investigations of the impact of this setting, indicate that the initial Mode 0 fuel gas flow results have a positive bias of 1.5%. Consequently, the original fuel gas flow results (see U-00001-supplied operational fuel gas data) have been reduced by 1.5%. The operating mode of the Unit 1 gas flowmeter has been reset to the correct Mode 1 (natural gas).

# VISUAL EMISSIONS OBSERVATION FORM

Method Used (Circle One): Method 9 (circled) | 203A | 203B | Other: _____

| | |
|---|---|
| Company Name | Bechtel corporation |
| Facility Name | Cricket Valley Energy Center |
| Street Address | 2241 NY-22 |
| City | Wingdale |
| State | NY |
| Zip | 12594 |

| | | |
|---|---|---|
| Process: Combined Cycle | Unit #: 1 | Operating Mode: |
| Control Equipment: | | Operating Mode: |

Describe Emissions Point: Top of unit one

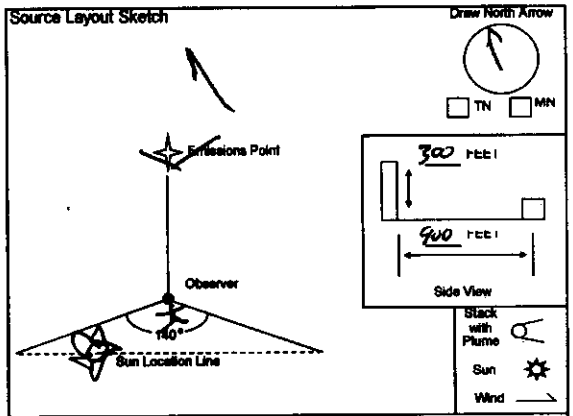
| | | | |
|---|---|---|---|
| Height of Emiss. Pt. Start 300 ft | End 300 ft | Height of Emiss. Pt. Rel. to Observer Start 300 ft | End 300 ft |
| Distance to Emiss. Pt. Start 900 ft | End 900 ft | Direction to Emiss. Pt. (Degrees) Start 7°N | End 7°N |

| | | | |
|---|---|---|---|
| Vetical Angle to Obs. Pt. Start 30° | End 30° | Direction to Obs. Pt. (Degrees) Start 189°S | End 189°S |
| Distance and Direction to Observation Point from Emission Point Start 900 ft | 189°S | End 900 ft | 189°S |

| | | | |
|---|---|---|---|
| Describe Emissions Start N/A | | End N/A | |
| Emission Color Start N/A | End N/A | Water Droplet Plume Start N/A | End N/A |

| | | | |
|---|---|---|---|
| Describe Plume Background Start blue | End blue | | |
| Background Color Start blue | End blue | Sky Conditions Start Scattered | End Scattered |
| Wind Speed Start 10mph | End 10mph | Wind Direction Start NW | End NW |
| Ambient Temp. Start 45°F | End 45°F | Wet Bulb Temp. 33.3 | RH Percent 41.7 |

Source Layout Sketch




| Latitude | Longitude | Declination |
|---|---|---|
| 41.6711 | -73.5790 | |

Additional Information:

Form Number (AHI Project Code): | Page 1 of 2

Continued on Form Number (AHI Project Code): bec-19 cricket valley, ny - start #1

| Observation Date | Time Zone | Start Time | End Time |
|---|---|---|---|
| 02/19/2020 | EST -1hr | 1200 | 1230 |

| Min. \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

| | |
|---|---|
| Observer's Name (Print): Matt Jones | |
| Observer's Signature: [signature] | Date: 2/19/20 |
| Organization: Air Hygiene | |
| Certified By: CAA | Date: 1/3/20 |

# VISUAL EMISSIONS OBSERVATION FORM

Method Used (Circle One): Method 9 (circled) | 203A | 203B | Other: _____

| | |
|---|---|
| Company Name | Bechtel Corporation |
| Facility Name | Cricket Valley Energy Center |
| Street Address | 22 41 NY-22 |
| City | Wingdale |
| State | NY |
| Zip | 12594 |

| | | |
|---|---|---|
| Process: combined cycle | Unit #: 1 | Operating Mode: |
| Control Equipment: | | Operating Mode: |

Describe Emissions Pont: Top of unit one

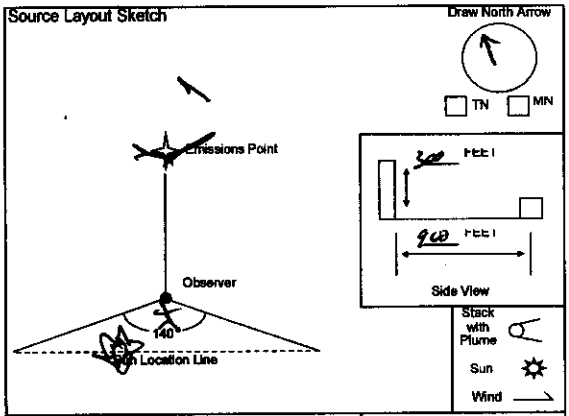
| | | | |
|---|---|---|---|
| Height of Emiss. Pt. Start 300 ft | End 300 ft | Height of Emiss. Pt. Rel. to Observer Start 300 ft | End 300 ft |
| Distance to Emiss. Pt. Start 900 ft | End 900 ft | Direction to Emiss. Pt. (Degrees) Start 7° N | End 7° N |

| | | | |
|---|---|---|---|
| Vetical Angle to Obs. Pt. Start 30° | End 30° | Direction to Obs. Pt. (Degrees) Start 189° S | End 189° S |
| Distance and Direction to Observation Point from Emission Point Start 900 ft 189° S | | End 900 ft 189° S | |

| | | | |
|---|---|---|---|
| Describe Emissions Start N/A | | End N/A | |
| Emission Color Start N/A | End N/A | Water Droplet Plume Start N/A | End N/A |

| | | | |
|---|---|---|---|
| Describe Plume Background Start blue | End blue | | |
| Background Color Start blue | End blue | Sky Conditions Start Scattered | End Scattered |
| Wind Speed Start 11 mph | End 11 mph | Wind Direction Start NW | End NW |
| Ambient Temp. Start 44.3 | End 44.0 | Wet Bulb Temp. 33.4 | RH Percent 41.7 |

Source Layout Sketch




| Latitude | Longitude | Declination |
|---|---|---|
| 41.6711 | -73.5790 | |

Additional Information:

Form Number (AHI Project Code): Page 2 of 2

Continued on Form Number (AHI Project Code): bec-19-cricketvalley.ny-Start #1

| Observation Date | Time Zone | Start Time | End Time |
|---|---|---|---|
| 02/19/2020 | EST -1hr | 1230 | 1300 |

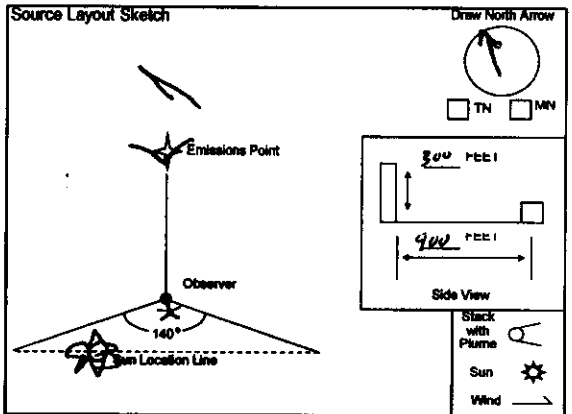
| Min. \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

| | |
|---|---|
| Observer's Name (Print): Matt Jones | |
| Observer's Signature: [signature] | Date: 2/14/20 |
| Organization: Air Hygiene | |
| Certified By: CAA | Date: 1/3/20 |

# VISUAL EMISSIONS OBSERVATION FORM

| | |
|---|---|
| Method Used (Circle One) | Method 9 (circled) 203A 203B Other: |
| Company Name | Bechtel Corporation |
| Facility Name | Cricket Valley Energy Center |
| Street Address | 2241 NY-22 |
| City | Wingdale |
| State | NY |
| Zip | 12594 |
| Process | Combined CCGR |
| Unit # | 1 |
| Operating Mode | |
| Control Equipment | |
| Operating Mode | |
| Describe Emissions Point | Top of unit 1 |
| Height of Emiss. Pt. | Start 300 ft End 300 ft |
| Height of Emiss. Pt. Rel. to Observer | Start 300 ft End 300 ft |
| Distance to Emiss. Pt. | Start 900 ft End 900 ft |
| Direction to Emiss. Pt. (Degrees) | Start ~~189°S~~ 70W End 70W |
| Vertical Angle to Obs. Pt. | Start 30° End 30° |
| Direction to Obs. Pt. (Degrees) | Start 189°S End 189°S |
| Distance and Direction to Observation Point from Emission Point | Start 900 ft 189°S End 900 ft 189°S |
| Describe Emissions | Start N/A End N/A |
| Emission Color | Start N/A End N/A |
| Water Droplet Plume | Start N/A End N/A |
| Describe Plume Background | Start blue End blue |
| Background Color | Start blue End blue |
| Sky Conditions | Start Scattered End Scattered |
| Wind Speed | Start 11 mph End 13 mph |
| Wind Direction | Start NW End NW |
| Ambient Temp. | Start 44.0 End 43.6 |
| Wet Bulb Temp. | 33.6 |
| RH Percent | 41.9 |

Source Layout Sketch




| Latitude | Longitude | Declination |
|---|---|---|
| 41.6711 | -73.5790 | |

Additional Information

| | |
|---|---|
| Form Number (AHI Project Code) | Page 1 of 2 |
| Continued on Form Number (AHI Project Code) | bec-ta-cricketvalley.ny-start #1 |
| Observation Date | 02/19/2020 |
| Time Zone | EST -1hr |
| Start Time | 1302 |
| End Time | 1332 |

| Min. \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

| | |
|---|---|
| Observer's Name (Print) | Matt Jones |
| Observer's Signature | [signature] |
| Date | 2/19/20 |
| Organization | Air Argoe |
| Certified By | CAA |
| Date | 1/3/20 |

Method Used (Circle One): Method 9 | 203A | 203B | Other: _____

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) | Page 2 of 2

Continued on Form Number (AHI Project Code): bc-19-cricketvalley.ing stack #1

Company Name: Bechtel Corporation
Facility Name: Cricket Valley Energy Center
Street Address: 2241 NY-22
City: Wingdale | State: NY | Zip: 12594

Process: Combined Cycle | Unit #: 1 | Operating Mode:
Control Equipment: | Operating Mode:

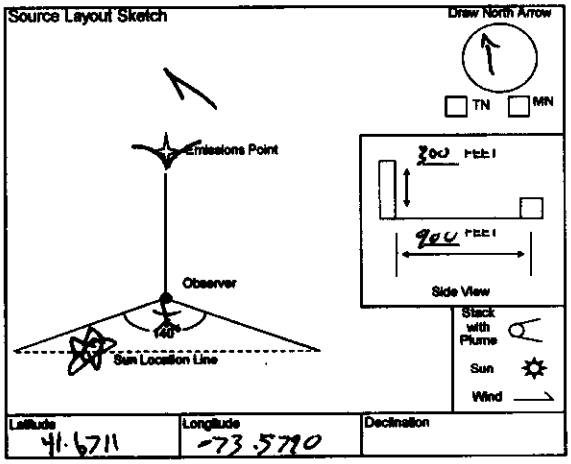
Describe Emissions Point: Top of unit one
Height of Emiss. Pt. Start 300 ft End 300 ft | Height of Emiss. Pt. Rel. to Observer Start 300 ft End 300 ft
Distance to Emiss. Pt. Start 900 ft End 900 ft | Direction to Emiss. Pt. (Degrees) Start 7°N End 7°N

Vertical Angle to Obs. Pt. Start 30° End 30° | Direction to Obs. Pt. (Degrees) Start 189°S End 189°S
Distance and Direction to Observation Point from Emission Point Start 900 ft 189°S End 900 ft 189°S

Describe Emissions Start N/A End N/A
Emission Color Start N/A End N/A | Water Droplet Plume Start N/A End N/A

Describe Plume Background Start blue End blue
Background Color Start blue End blue | Sky Conditions Start Scattered End Scattered
Wind Speed Start 13 mph End 13 mph | Wind Direction Start NW End NW
Ambient Temp. Start 43.5 End 43.1 | Wet Bulb Temp. 33.9 | RH Percent 46.1

Source Layout Sketch




Latitude 41.6711 | Longitude -73.5790 | Declination

Additional Information

| Min. \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observation Date: 07/19/2020 | Time Zone: EST -1hr | Start Time: 1330 | End Time: 1402

Observer's Name (Print): Matt Jones
Observer's Signature: [signature] | Date: 7/14/20
Organization: Air Physics
Certified By: CAA | Date: 1/3/20

Method Used (Circle One): Method 9 | 203A | 203B | Other: _____

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) | Page 1 of 2

Continued on Form Number (AHI Project Code): 5a-19-cricketvalley.ny-start#1

Company Name: Bechtel Corporation
Facility Name: Cricket Valley Energy Center
Street Address: 3241 NY-22
City: Wingdale | State: NY | Zip: 12594

Observation Date: 08/14/2020 | Time Zone: EST -1hr | Start Time: 1404 | End Time: 1434

Process: Combined Cycle | Unit #: 1 | Operating Mode:
Control Equipment: | Operating Mode:

Describe Emissions Pont: Top of unit one

Height of Emiss. Pt. Start 300 Ft End 300 Ft | Height of Emiss. Pt. Rel. to Observer Start 300 Ft End 300 Ft
Distance to Emiss. Pt. Start 900 Ft End 900 Ft | Direction to Emiss. Pt. (Degrees) Start 7W End 7W

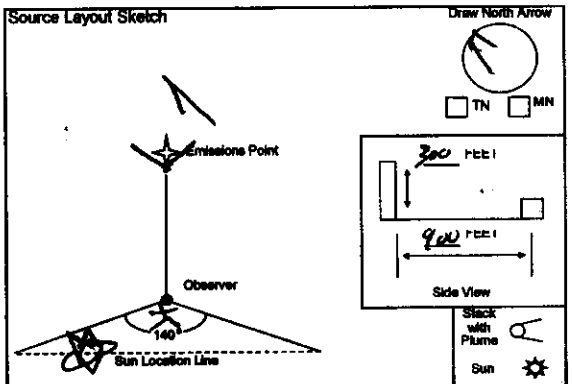
Vetical Angle to Obs. Pt. Start 30° End 30° | Direction to Obs. Pt. (Degrees) Start 189°S End 189°S
Distance and Direction to Observation Point from Emission Point Start 900 Ft 189°S End 900 Ft 189°S

Describe Emissions Start N/A End N/A
Emission Color Start N/A End N/A | Water Droplet Plume Start N/A End N/A

Describe Plume Background Start blue End blue
Background Color Start blue End blue | Sky Conditions Start Scattered End Scattered
Wind Speed Start 13 kmph End 13.9 kmph | Wind Direction Start NW End NW
Ambient Temp. Start 43.1 End 42.7 | Wet Bulb Temp. 33.9 | RH Percent 42.1

| Min. \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Source Layout Sketch




Latitude: 41.6711 | Longitude: -73.5790 | Declination:

Additional Information:

Observer's Name (Print): Matt Jurs
Observer's Signature: [signature] | Date: 8/14/20
Organization: AY Hygiene
Certified By: CAA | Date: 1/3/20

Method Used (Circle One)
Method 9 | 203A | 203B | Other: _____

Company Name: Bechtel Corporation
Facility Name: Cricket Valley Energy Center
Street Address: 22 41 NY-22
City: Wingdale | State: NY | Zip: 12594

Process: Combined Cycle | Unit #: 1 | Operating Mode:
Control Equipment: | Operating Mode:

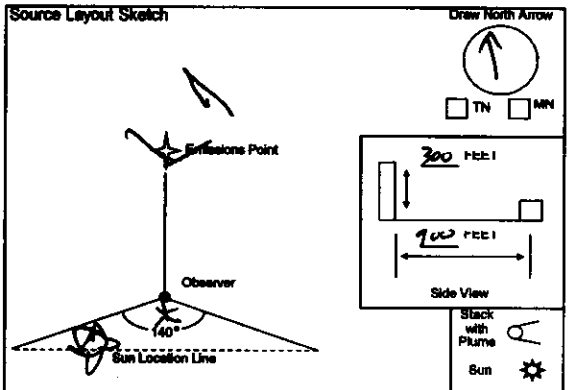
Describe Emissions Point: Top of unit exhaust
Height of Emiss. Pt. Start 300 ft End 300 ft | Height of Emiss. Pt. Rel. to Observer Start 300 ft End 300 ft
Distance to Emiss. Pt. Start 900 ft End 900 ft | Direction to Emiss. Pt. (Degrees) Start 70° N End 70° N

Vertical Angle to Obs. Pt. Start 30° End 30° | Direction to Obs. Pt. (Degrees) Start 189°S End 189°S
Distance and Direction to Observation Point from Emission Point Start 900 ft 189°S End 900 ft 189°S

Describe Emissions Start N/A End N/A
Emission Color Start N/A End N/A | Water Droplet Plume Start N/A End N/A

Describe Plume Background Start blue End blue
Background Color Start blue End blue | Sky Conditions Start scattered End scattered
Wind Speed Start 14 mph End 17.4 mph | Wind Direction Start NW End NW
Ambient Temp. Start 48.7 End 47.3 | Wet Bulb Temp. 34 | RH Percent 48.3

Source Layout Sketch




Latitude: 41.6711 | Longitude: -73.5790 | Declination:

Additional Information:

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code): | Page 2 of 2
Continued on Form Number (AHI Project Code): bc-19-cricket wkly .my -Stack #1
Observation Date: 02/19/2020 | Time Zone: EST -1hr | Start Time: 1134 | End Time: 1504

| Min. \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print): Matt Jones
Observer's Signature: | Date: 2/19/20
Organization: Air Hygiene International, Inc.
Certified By: CAA | Date: 1/3/20

# EMISSION DATA RECORDS

## Reference Method Data
## Base+DB Load and Auxiliary Boiler
## Opacity

Following completion of the stack emission test program for Unit #U-00001, it was discovered that the U-00001 fuel gas flow meter operation was tied to a “test mode” (Mode 0) setting, and not the expected “natural gas mode” setting (Mode 1). Further investigations of the impact of this setting, indicate that the initial Mode 0 fuel gas flow results have a positive bias of 1.5%. Consequently, the original fuel gas flow results (see U-00001-supplied operational fuel gas data) have been reduced by 1.5%. The operating mode of the Unit 1 gas flowmeter has been reset to the correct Mode 1 (natural gas).

Method Used (Circle One)
Method 9 | 203A | 203B | Other: _____

Company Name: Bechtel Corporation
Facility Name: Cricket Valley Energy Center
Street Address: 2241 NY-22
City: Wingdale | State: NY | Zip: 12594

Process: combined cycle | Unit #: 1 | Operating Mode: AUX BOP w DB
Control Equipment | Operating Mode

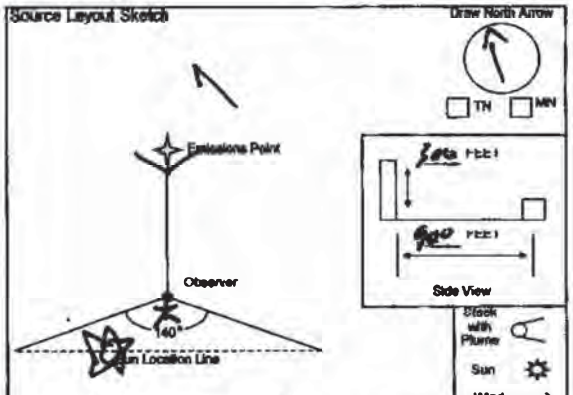
Describe Emissions Point: Top of unit 1

| | Start | End |
|---|---|---|
| Height of Emiss. Pt. | 300 Ft | 300 Ft |
| Height of Emiss. Pt. Rel. to Observer | 300 Ft | 300 Ft |
| Distance to Emiss. Pt. | 900 Ft | 900 Ft |
| Direction to Emiss. Pt. (Degrees) | 70 N | 70 N |
| Vetical Angle to Obs. Pt. | 30° | 30° |
| Direction to Obs. Pt. (Degrees) | 189°S | 189°S |
| Distance and Direction to Observation Point from Emission Point | 900 Ft 189°S | 900 Ft 189°S |

Describe Emissions: Start None | End None
Emission Color: Start N/A | End N/A
Water Droplet Plume: Start N/A | End N/A

Describe Plume Background: Start blue | End blue
Background Color: Start blue | End blue
Sky Conditions: Start Scattered | End Scattered
Wind Speed: Start 10 mph | End 9 mph
Wind Direction: Start NW | End NW
Ambient Temp.: Start 40.1 | End 39.9
Wet Bulb Temp.: 65
RH Percent: 24

Source Layout Sketch




Latitude: 41.6708 | Longitude: -73.5789 | Declination

Additional Information

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) | Page 1 of 2
Continued on Form Number (AHI Project Code): Loc-19 - Cricket Valley Energy Start #1
Observation Date: 03/[illegible]/20 | Time Zone: EST | Start Time: 1250 | End Time: 1320

| Min. \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print): [illegible]
Observer's Signature: [illegible] | Date: 3/6/20
Organization: AHT
Certified By: CAA | Date: 1/3/2020

Method Used (Circle One): Method 9 | 203A | 203B | Other: _____

# VISUAL EMISSIONS OBSERVATION FORM

Company Name: Bechtel corporation
Facility Name: cricket valley Energy center
Street Address: 22-41 NY-22
City: wingdale | State: NY | Zip: 12594

Process: combine cycle | Unit #: 1 | Operating Mode: Aux base w DB
Control Equipment | Operating Mode

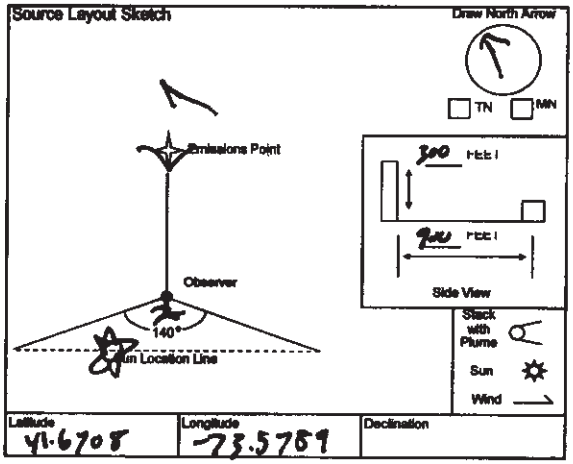
Describe Emissions Point: Top of unit 1
Height of Emiss. Pt. Start 300 ft End 300 ft | Height of Emiss. Pt. Rel. to Observer Start 300 ft End 300 ft
Distance to Emiss. Pt. Start 900 ft End 900 ft | Direction to Emiss. Pt. (Degrees) Start 7° N End 7° N

Vertical Angle to Obs. Pt. Start 30° End 30° | Direction to Obs. Pt. (Degrees) Start 189°S End 189°S
Distance and Direction to Observation Point from Emission Point Start 900 ft 189°S End 900 ft 189°S

Describe Emissions Start None End None
Emission Color Start N/A End N/A | Water Droplet Plume Start N/A End N/A

Describe Plume Background Start blue End blue
Background Color Start blue End blue | Sky Conditions Start Scattered End Scattered
Wind Speed Start 10 mph End 10 mph | Wind Direction Start NW End NW
Ambient Temp. Start 39.9 End 39.7 | Wet Bulb Temp. 65 | RH Percent 29

Source Layout Sketch




Latitude 41.6708 | Longitude -73.5789 | Declination

Additional Information

Form Number (AHI Project Code) | Page 2 of 2
Continued on Form Number (AHI Project Code): bec-19-cricket valley energy ctr #1
Observation Date 03/06/2020 | Time Zone EST | Start Time 1220 | End Time 1350

| Min. \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print)
Observer's Signature | Date 3/6/20
Organization AHI
Certified By CAA | Date 1/3/2020

Method Used (Circle One): Method 9 | 203A | 203B | Other: _____

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) | Page 1 of 2

Continued on Form Number (AHI Project Code): Loc-19-Cricket Valley Energy-Stack #1

Company Name: Bechtel corporation

Facility Name: Cricket Valley Energy Center

Street Address: 2241 NY-22

City: Wingdale | State: NY | Zip: 12594

Observation Date: 03/06/2020 | Time Zone: EST | Start Time: 1350 | End Time: 1420

Process: combined cycle | Unit #: 1 | Operating Mode: base AUX w DB

Control Equipment | Operating Mode

Describe Emissions Point: Top of unit 1

Height of Emiss. Pt. Start 300 Ft End 300 Ft | Height of Emiss. Pt. Rel. to Observer Start 300 Ft End 300 Ft

Distance to Emiss. Pt. Start 900 Ft End 900 Ft | Direction to Emiss. Pt. (Degrees) Start 7°N End 7°N

Vertical Angle to Obs. Pt. Start 30° End 30° | Direction to Obs. Pt. (Degrees) Start 189°S End 189°S

Distance and Direction to Observation Point from Emission Point Start 900 Ft 189°S End 900 Ft 189°S

Describe Emissions Start None End None

Emission Color Start N/A End N/A | Water Droplet Plume Start N/A End N/A

Describe Plume Background Start blue End blue

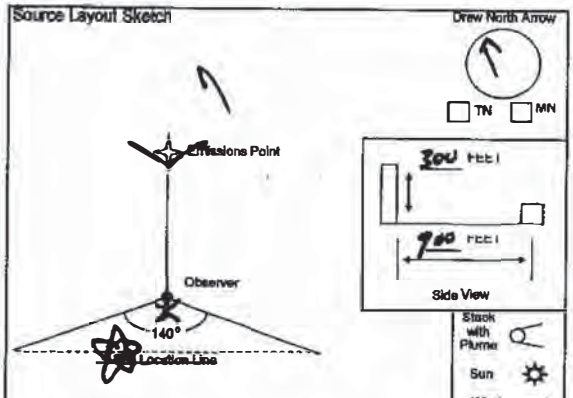
Background Color Start blue End blue | Sky Conditions Start Scattered End Scattered

Wind Speed Start 10.3mph End 10.6mph | Wind Direction Start NW End NW

Ambient Temp. Start 39.7 End 39.6 | Wet Bulb Temp. 65 | RH Percent 74

| Min. \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | ● | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Source Layout Sketch




Latitude: 41.6708 | Longitude: -73.5789 | Declination

Additional Information

Observer's Name (Print): Rob White

Observer's Signature | Date: 03/06/20

Organization: AHT

Certified By: CAA | Date: 1/3/2020

Method Used (Circle One): Method 9 | 203A | 203B | Other: _____

Company Name: Bechtel corporation
Facility Name: cricket valley Energy center
Street Address: 2241 NY-22
City: Wingdale | State: NY | Zip: 12522

Process: combined cycle | Unit #: 1 | Operating Mode: Base MAX W DB
Control Equipment | Operating Mode

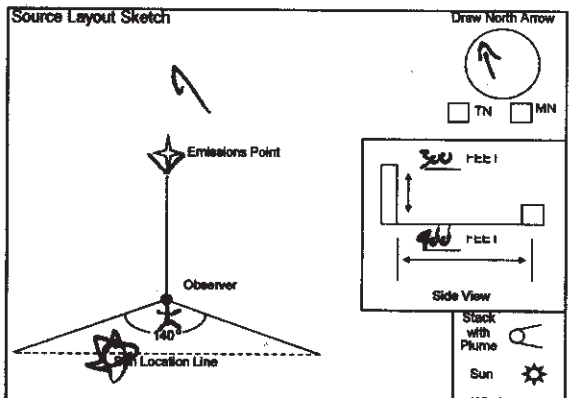
Describe Emissions Point: Top of unit 1

| | Start | End |
|---|---|---|
| Height of Emiss. Pt. | 300 ft | 300 ft |
| Height of Emiss. Pt. Rel. to Observer | 300 ft | 300 ft |
| Distance to Emiss. Pt. | 900 ft | 900 ft |
| Direction to Emiss. Pt. (Degrees) | 7° W | 7° W |
| Vertical Angle to Obs. Pt. | 30° | 30° |
| Direction to Obs. Pt. (Degrees) | 189°S | 189°S |
| Distance and Direction to Observation Point from Emission Point | 900 ft 189°S | 900 ft 189°S |

Describe Emissions: Start none | End none
Emission Color: Start N/A | End N/A
Water Droplet Plume: Start N/A | End N/A

Describe Plume Background: Start blue | End blue
Background Color: Start blue | End blue
Sky Conditions: Start Scattered | End Scattered
Wind Speed: Start 10.6 mph | End 11 mph
Wind Direction: Start NW | End NW
Ambient Temp.: Start 39.6 | End 39.6
Wet Bulb Temp.: 65
RH Percent: 74

Source Layout Sketch




Latitude: 41.6708 | Longitude: -73.5789 | Declination

Additional Information

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) | Page 2 of 2
Continued on Form Number (AHI Project Code): bec-19-cricket valley-ny-stat #1
Observation Date: 03/06/2020 | Time Zone: EST | Start Time: 1420 | End Time: 1450

| Min. \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print)
Observer's Signature | Date 3/6/2020
Organization AHI
Certified By CAA | Date 1/3/2020

Method Used (Circle One): Method 9 | 203A | 203B | Other: _____

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) | Page 1 of 2

Continued on Form Number (AHI Project Code): lec-ny-cricket valley.ny-Start #1

Company Name: Bechtel Collaboration
Facility Name: Cricket Valley Energy Center
Street Address: 2241 NY-22
City: Wingdale | State: NY | Zip: 12594

Observation Date: 03/06/2020 | Time Zone: EST | Start Time: 1450 | End Time: 1520

Process: combined cycle | Unit #: 1 | Operating Mode: Base Aux w DB
Control Equipment | Operating Mode

| Min \ Sec | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Describe Emissions Point: Top of unit 1

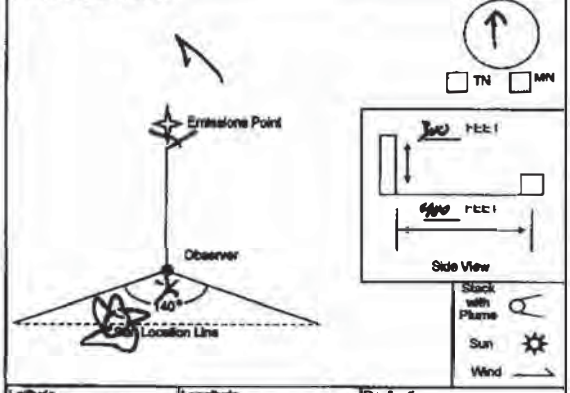
Height of Emiss. Pt.: Start 300 ft End 300 ft | Height of Emiss. Pt. Rel. to Observer: Start 300 ft End 300 ft
Distance to Emiss. Pt.: Start 900 ft End 900 ft | Direction to Emiss. Pt. (Degrees): Start 70° End 70°

Vertical Angle to Obs. Pt.: Start 30° End 30° | Direction to Obs. Pt. (Degrees): Start 189°S End 189°S
Distance and Direction to Observation Point from Emission Point: Start 900 ft 189°S End 900 ft 189°S

Describe Emissions: Start Plume End Plume
Emission Color: Start N/A End N/A | Water Droplet Plume: Start N/A End N/A

Describe Plume Background: Start blue End blue
Background Color: Start blue End blue | Sky Conditions: Start Overcast End Scattered
Wind Speed: Start 11 mph End 11.2 mph | Wind Direction: Start NW End NW
Ambient Temp.: Start 39.5 End 39.5 | Wet Bulb Temp.: 65 | RH Percent: 24

Source Layout Sketch | Draw North Arrow




Latitude: 41.6708 | Longitude: -73.5789 | Declination

Additional Information

Observer's Name (Print): Kal White
Observer's Signature: [signature] | Date: 03/06/20
Organization: AHI
Certified By: CAA | Date: 1/3/2020

Method Used (Circle One): Method 9 | 203A | 203B | Other: _____

Company Name: Becker corporation
Facility Name: cricket valley Energy center
Street Address: 2241 WY-22
City: Wingdale State: NY Zip: 12594

Process: crushed rock Unit #: 1 Operating Mode: base AUX w DP
Control Equipment: Operating Mode:

Describe Emissions Point: Top of unit 1

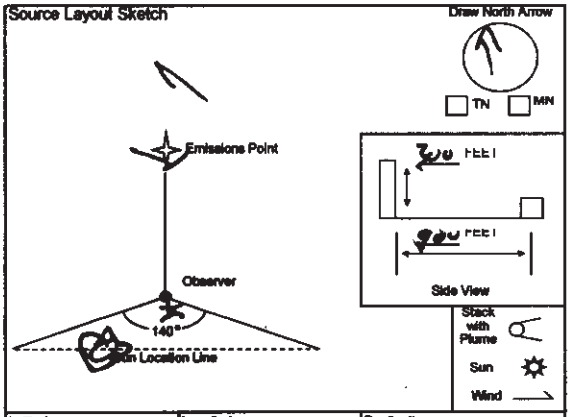
Height of Emiss. Pt. Start 30ft End 30ft | Height of Emiss. Pt. Rel. to Observer Start 30ft End 300ft
Distance to Emiss. Pt. Start 900ft End 900ft | Direction to Emiss. Pt. (Degrees) Start 7°N End 7°N

Vetical Angle to Obs. Pt. Start 30° End 30° | Direction to Obs. Pt. (Degrees) Start 189°S End 189°S
Distance and Direction to Observation Point from Emission Point Start 900 ft 189°S End 900 ft 189°S

Describe Emissions Start None End none
Emission Color Start N/A End N/A | Water Droplet Plume Start NA End N/A

Describe Plume Background Start blue End blue
Background Color Start blue End blue | Sky Conditions Start Scattered End Scattered
Wind Speed Start 11.5 mph End 11.5 mph | Wind Direction Start NW End NW
Ambient Temp. Start 39.5 End 39.1 | Wet Bulb Temp. | RH Percent

Source Layout Sketch




Latitude 41.6708 | Longitude -73.5789 | Declination

Additional Information

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) | Page 2 of 2
Continued on Form Number (AHI Project Code): bec-19 - Cricket Valley .ny Stack #1
Observation Date: 03/06/2020 | Time Zone: EST | Start Time: 1520 | End Time: 1550

| Min. \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print): Rob White
Observer's Signature: | Date 3/6/20
Organization: AHL
Certified By: CAA | Date 1/3/2020

# APPENDIX C

# CALIBRATION GAS CERTIFICATIONS

Assay Laboratory: Red Ball TGS
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150

# CERTIFICATE OF ANALYSIS
## (Zero Ambient Nitrogen)

| | | | |
|---|---|---|---|
| **Cylinder Number:** | CC731563 | **Certification Date:** | 12/12/2019 |
| **Product ID Number:** | 121026 | **Expiration Date:** | 12/10/2027 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | RBTGS-Shreveport-LA |
| **COA #** | CC731563.20191212-0 | **Lot Number:** | CC731563.20191212 |
| **Customer PO. NO.:** | | **Tracking Number:** | 098934324 |
| **Customer:** | | **Previous Certification Dates:** | |

**This mixture is for laboratory use only, not for drug, household or other use.**
**This mixture is certified in Mole % to be within ±2% of the actual number reported with a confidence of 95%.**
**This mixture was manufactured by scale; weights traceable to N.I.S.T. Certificate #822/266926-02.**
**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

**Composing Material: Zero Ambient Nitrogen, Cert., Sz152**

| Component | Specification | Concentration |
|---|---|---|
| Nitrogen | Balance | Balance |
| Oxygen as Impurity | <1.0 PPM | <1.0 PPM |
| Carbon Dioxide as Impurity | <0.5 PPM | <0.5 PPM |
| Carbon Monoxide as Impurity | <0.5 PPM | <0.5 PPM |
| Total Oxides of Nitrogen as Impurity | <0.1 PPM | <0.1 PPM |
| Sulfur Dioxide as Impurity | <0.1 PPM | <0.1 PPM |
| Total Hydrocarbons as Impurity | <0.1 PPM | <0.1 PPM |

Red Ball Technical Gas Service
PGVP Vendor ID # G12019
Information and Ordering
800-551-8150
Fax (318-425-6309)

Accreditation #62754

Anthony Cyr
Assistant Operations Manager

Version 02-B, Revised on 2015-05-27

RED BALL TECHNICAL GAS SERVICES

PJLA Calibration and Testing
Accreditation #62754

**Red Ball Technical Gas Service**
**555 Craig Kennedy Way**
**Shreveport, LA 71107**
**800-551-8150**
**PGVP Vendor ID # G12018**

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0096307 | **Certification Date:** | 09/13/2018 |
| **Product ID Number:** | 124605 | **Expiration Date:** | 09/11/2026 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0096307.20180830-0 | **Lot Number:** | EB0096307.20180830 |
| **Customer PO. NO.:** | | **Tracking Number:** | 095690632 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Dioxide** | **18.7 %** | ±0.14 % | NDIR | 09/13/2018 |
| **Oxygen** | **21.1 %** | ±0.11 % | MPA | 09/04/2018 |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0004987 | EB0004987.20180323 | 07/15/2026 | GMIS | N2 | CO2 | 19.5 % | 0.767 | 101001 |
| EB0032246 | EB0032246.20170209 | 08/05/2025 | GMIS | N2 | O2 | 24 % | 0.502 | 071001 |
| EB0097755 | EB0097755.20171018-0 | 12/26/2025 | GMIS | N2 | CO2 | 24.86 % | 0.212 | C1309410.01 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| O2 | MPA | Thermo | 410i | 1162980025 | 09/04/2018 |
| CO2 | NDIR | Thermo | 410i | 1162980025 | 08/14/2018 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Amisha Jewitt**
**Analytical Chemist**
Assay Laboratory: Red Ball TGS
Version 02-I, Revised on 2017-09-07

RED BALL TECHNICAL GAS SERVICES

PJLA Calibration and Testing
Accreditation #62754

**Red Ball Technical Gas Service**
**555 Craig Kennedy Way**
**Shreveport, LA 71107**
**800-551-8150**
**PGVP Vendor ID # G12019**

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0069916 | **Certification Date:** | 07/02/2019 |
| **Product ID Number:** | 124606 | **Expiration Date:** | 06/30/2027 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0069916.20190618-0 | **Lot Number:** | EB0069916.20190618 |
| **Customer PO. NO.:** | | **Tracking Number:** | 084212429 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Dioxide** | **8.95 %** | ±0.05 % | NDIR | 07/02/2019 |
| **Oxygen** | **12.01 %** | ±0.07 % | MPA | 06/26/2019 |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0004987 | EB0004987.20190327 | 06/18/2027 | GMIS | N2 | CO2 | 9.52 % | 0.191 | C1579010.02 |
| EB0005592 | EB0005592.20180118 | 07/21/2026 | GMIS | N2 | O2 | 11.98 % | 0.507 | 071001 |
| EB0049614 | EB0049614.20180504 | 07/21/2026 | GMIS | N2 | O2 | 24 % | 0.497 | 071001 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| O2 | MPA | Thermo | 410i | 1162980025 | 05/31/2019 |
| CO2 | NDIR | Thermo | 410i | 1162980025 | 07/01/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Amisha Jewitt**
**Analytical Chemist**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12018

PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0018282 | **Certification Date:** | 02/27/2018 |
| **Product ID Number:** | 124606 | **Expiration Date:** | 02/25/2026 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0018282.20180219-0 | **Lot Number:** | EB0018282.20180219 |
| **Customer PO. NO.:** | | **Tracking Number:** | 040342887 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Dioxide** | **8.94 %** | ±0.06 % | NDIR | 02/27/2018 |
| **Oxygen** | **11.96 %** | ±0.06 % | MPA | 02/23/2018 |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0019964 | EB0019964.20170209 | 08/05/2025 | GMIS | N2 | O2 | 24 % | 0.502 | 071001 |
| EB0097755 | EB0097755.20171018-0 | 12/26/2025 | GMIS | N2 | CO2 | 24.86 % | 0.212 | C1309410.01 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| O2 | MPA | Thermo | 410i | 1162980025 | 02/23/2018 |
| CO2 | NDIR | Thermo | 410i | 1162980025 | 02/26/2018 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Brandon Theus**
**Analytical Chemist**
Assay Laboratory: Red Ball TGS
Version 02-I, Revised on 2017-09-07

Red Ball Technical Gas Service
555 Craig Kennedy Way
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800-551-8150
PGVP Vendor ID # G12018

PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0019999 | **Certification Date:** | 09/14/2018 |
| **Product ID Number:** | 125780 | **Expiration Date:** | 09/13/2021 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0019999.20180724-0 | **Lot Number:** | EB0019999.20180724 |
| **Customer PO. NO.:** | | **Tracking Number:** | 040266073 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G2.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Monoxide** | **18.3 PPM** | ±0.2 PPM | FTIR | 08/21/2018 |
| **Nitric Oxide** | **17.5 PPM** | ±0.2 PPM | Chemiluminescence | 08/31/2018, 09/14/2018 |
| Total Oxides of Nitrogen | 17.8 PPM | | | |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| CC202290 | CC202290.20160721 | 01/11/2025 | GMIS | N2 | CO | 12.14 PPM | 1.033 | 091002 |
| EB0001972 | EB0001972.20180209 | 07/18/2021 | GMIS | N2 | NO | 32.5 PPM | 1.064 | 12100115 |
| EB0005969 | EB0005969.20171228 | 07/17/2026 | GMIS | N2 | NO | 62.3 PPM | 1.065 | 12100115 |
| EB0010962 | EB0010962.20171116 | 05/31/2021 | GMIS | N2 | NO | 15.1 PPM | 1.085 | 12100115 |
| EB0024184 | EB0024184.20171228 | 05/22/2026 | GMIS | N2 | NO | 91 PPM | 1.061 | 12100115 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| CO | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 08/20/2018 |
| NO | Chemiluminescence | Thermo | T42C | 42C-68400-360 | 08/20/2018 |
| NO | Chemiluminescence | Thermo | 42i-HL | 1152610017 | 09/14/2018 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Brandon Theus**
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PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0040961 | **Certification Date:** | 10/31/2019 |
| **Product ID Number:** | 124737 | **Expiration Date:** | 10/30/2022 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0040961.20191017-0 | **Lot Number:** | EB0040961.20191017 |
| **Customer PO. NO.:** | | **Tracking Number:** | 065159907 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Monoxide** | **9.1 PPM** | ±0.12 PPM | FTIR | 10/30/2019 |
| **Nitric Oxide** | **8.8 PPM** | ±0.10 PPM | Chemiluminescence | 10/23/2019, 10/31/2019 |
| Total Oxides of Nitrogen | 8.9 PPM | | | |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| ALM005307 | ALM0053007.20181025 | 10/09/2022 | GMIS | N2 | NO | 34.2 PPM | 1.062 | 1684B |
| CC202290 | CC202290.20160721 | 01/11/2025 | GMIS | N2 | CO | 12.14 PPM | 1.033 | 091002 |
| EB0076031 | EB0076031.20190205 | 05/27/2027 | GMIS | N2 | CO | 18.7 PPM | 1.036 | 091002 |
| EB0089797 | EB0089797.20171116 | 11/09/2022 | GMIS | N2 | NO | 9.8 PPM | 1.085 | 12100115 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NO | Chemiluminescence | Thermo | T42C | 42C-68400-360 | 10/18/2019 |
| CO | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 09/30/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Amisha Jewitt**
**Analytical Chemist**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

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PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0101718 | **Certification Date:** | 07/26/2019 |
| **Product ID Number:** | 125564 | **Expiration Date:** | 07/25/2022 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0101718.20190710-0 | **Lot Number:** | EB0101718.20190710 |
| **Customer PO. NO.:** | | **Tracking Number:** | 095705907 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Monoxide** | **5.09 PPM** | ±0.07 PPM | FTIR | 07/25/2019 |
| **Nitric Oxide** | **4.98 PPM** | ±0.06 PPM | Chemiluminescence | 07/16/2019, 07/26/2019 |
| Total Oxides of Nitrogen | 4.99 PPM | | | |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0032297 | EB0032297.20160725 | 09/06/2025 | GMIS | N2 | CO | 6.15 PPM | 1.067 | 091002 |
| EB0060662 | EB0060662.20151012 | 01/02/2022 | GMIS | N2 | NO | 2.97 PPM | 1.062 | 12100115 |
| EB0076031 | EB0076031.20190205 | 05/27/2027 | GMIS | N2 | CO | 18.7 PPM | 1.036 | 091002 |
| EB0078555 | EB0078555.20171116 | 11/09/2022 | GMIS | N2 | NO | 9.8 PPM | 1.113 | 12100115 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NO | Chemiluminescence | Thermo | T42C | 42C-68400-360 | 07/08/2019 |
| CO | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 07/08/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Anthony Cyr**
**Assistant Operations Manager**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

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800-551-8150
PGVP Vendor ID # G12018

PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0038438 | **Certification Date:** | 11/27/2018 |
| **Product ID Number:** | 126123 | **Expiration Date:** | 11/25/2026 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0038438.20181121-0 | **Lot Number:** | EB0038438.20181121 |
| **Customer PO. NO.:** | | **Tracking Number:** | 056853515 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Methane** | **8.77 PPM** | ±0.05 PPM | FTIR | 11/27/2018 |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0042063 | EB0042063.20171231 | 03/17/2023 | GMIS | N2 | CH4 | 30.37 PPM | 0.277 | 2751 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| CH4 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 11/27/2018 |

## SMART-CERT

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**Anthony Cyr**
**Assistant Operations Manager**
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Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0060640 | **Certification Date:** | 06/08/2018 |
| **Product ID Number:** | 124609 | **Expiration Date:** | 06/06/2026 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0060640.20180604-0 | **Lot Number:** | EB0060640.20180604 |
| **Customer PO. NO.:** | | **Tracking Number:** | 082997030 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Methane** | **4.90 PPM** | ±0.03 PPM | FTIR | 06/08/2018 |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0058163 | EB0058163.201411231g | 03/17/2023 | GMIS | N2 | CH4 | 30.38 PPM | 0.277 | 2751 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| CH4 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 06/08/2018 |

**SMART-CERT**

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Brandon Theus**
**Analytical Chemist**
Assay Laboratory: Red Ball TGS
Version 02-I, Revised on 2017-09-07

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PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0057200 | **Certification Date:** | 09/18/2018 |
| **Product ID Number:** | 125892 | **Expiration Date:** | 09/16/2026 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0057200.20180913-0 | **Lot Number:** | EB0057200.20180913 |
| **Customer PO. NO.:** | | **Tracking Number:** | 074329951 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Methane** | **3.37 PPM** | ±0.03 PPM | FTIR | 09/18/2018 |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0058163 | EB0058163.201411231g | 03/17/2023 | GMIS | N2 | CH4 | 30.38 PPM | 0.277 | 2751 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| CH4 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 09/18/2018 |

## SMART-CERT

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LaMeka Dennis
**Operations Manager**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

RED BALL TECHNICAL GAS SERVICES

PJLA Calibration and Testing
Accreditation #62754

**Red Ball Technical Gas Service**
**555 Craig Kennedy Way**
**Shreveport, LA 71107**
**800-551-8150**
**PGVP Vendor ID # G12019**

# CERTIFIED GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0100161 | **Certification Date:** | 12/30/2019 |
| **Product ID Number:** | 125123 | **Expiration Date:** | 12/29/2020 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0100161.20191230-0 | **Lot Number:** | EB0100161.20191230 |
| **Customer PO. NO.:** | | **Tracking Number:** | 095703088 |
| **Customer:** | | **Previous Certification Dates:** | |

**This mixture is for laboratory use only, not for drug, household or other use.**
**This mixture is certified in Mole % to be within ±2% of the actual number reported with a confidence of 95%.**
**This mixture was manufactured by scale; weights traceable to N.I.S.T. Certificate #822/266926-02.**
**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle |
|---|---|---|---|
| **Ammonia** | **50.4 PPM** | ± 2% NIST | FTIR |
| **Sulfur Hexafluoride** | **9.02 PPM** | ± 2% NIST | FTIR |
| Nitrogen | Balance | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| SA18481 | 70086910005 | 04/12/2020 | PS | N2 | NH3 | 21.1 PPM | 1.2 | 73248226 |
| EB0079029 | EB0079029 | 06/27/2020 | PS | N2 | SF6 | 10.1 PPM | 5 | 191064 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NH3 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | |
| SF6 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | |

## SMART-CERT

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LaMeka Dennis

**LaMeka Dennis**
**Operations Manager**
Assay Laboratory: Red Ball TGS
Version 02-G, Revised on 2017-07-02

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PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0026149 | **Certification Date:** | 01/19/2018 |
| **Product ID Number:** | 124731 | **Expiration Date:** | 01/18/2021 |
| **Cylinder Pressure:** | 1800 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0026149.20171219-0 | **Lot Number:** | EB0026149.20171219 |
| **Customer PO. NO.:** | | **Tracking Number:** | 048443465 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Nitrogen Dioxide** | **49.1 PPM** | ±0.5 PPM | FTIR | 01/12/2018, 01/19/2018 |

Air Balance

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0084166 | EB0084166.20161201 | 12/06/2020 | GMIS | AIR | NO2 | 62.5 PPM | 1.049 | 5605008 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NO2 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 12/14/2017 |
| NO2 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 01/12/2018 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Nate Fielder**
**Anaylst**
Assay Laboratory: Red Ball TGS
Version 02-I, Revised on 2017-09-07

# APPENDIX D

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

# QA/QC PROGRAM

AIR HYGIENE ensures the quality and validity of its emission measurement and reporting procedures through a rigorous quality assurance (QA) program. The program is developed and administered by an internal QA team and encompasses six major areas:

1. Field Qualifications
2. QA reviews of reports, laboratory work, and field testing;
3. Equipment calibration and maintenance;
4. Chain-of-custody;
5. Training; and
6. Knowledge of current test methods

## Field Qualifications

Air Hygiene personnel are required to gain and maintain competence with testing methods and techniques according to their job titles and the roles they play during field testing events. Qualifications for each job description include:

Staff Technician - An entry level position with responsibility to test on the stack by performing duties that include: keep trucks and trailers stocked and clean, travel to and from job site, be the “hands of the test” on the stack; stay on a stack during the sample test, set up and tear down equipment on-site, perform maintenance on equipment in the shop and on-site.

Test Technician or Specialist - Acts as the “hands of the test” on the stack by performing duties that include: stay on a stack during the sample test, migrate to the testing trailer and learn the different analyzers and testing methods used on site, set up and tear down testing equipment on site, learn the system for testing from Testing Managers and Project Managers, travel to and from job site; including driving responsibilities under DOT requirements, follow directions of Testing Managers and Project Managers, learn the proper way to conduct on-site test of stationary stacks

Test Manager or Engineer - Directs and coordinates all aspects of a successful test by performing the following duties personally or through subordinate supervisors including: operating analyzers and consoles during testing along with QA/QC procedures, supervise set up and tear down of equipment on site, writing, reviewing, and revising final test reports, working with the client or state personnel while on the job site, managing pre-test checklists and onsite testing procedures, diagnose and repair any problems that may arise with the equipment, safely operate a man lift and drive a truck with or without a trailer, act as crew leader in the field, write protocols and reports, maintain project log of services performed on the job, verify all equipment needed for a job was loaded on the trailer. Test Managers must hold at least one QSTI certificate.

Project Manager - Directs and coordinates all aspects of a successful test by performing the following duties personally or through subordinate supervisors including: operating analyzers and consoles during testing along with QA/QC procedures, supervise set up and tear down of equipment on site, writing, reviewing, and revising final test reports, working with the client or state personnel while on the job site, managing pre-test checklists and onsite testing procedures, diagnose and repair any problems that may arise with the equipment, safely operate a man lift and drive a truck with or without a trailer, act as crew leader in the field, write protocols and reports, maintain project log of services performed on the job, verify all equipment needed for a job was loaded on the trailer. Project Managers typically hold QSTI certificates in Groups 1 through 4.

## QA Reviews

Air Hygiene’s review procedure includes review of each source test report, along with laboratory and fieldwork, by the QA Team. The most important review is the one that takes place before a test program begins. The QA Team works closely with technical division personnel to prepare and review test protocols. Test protocol review includes selection of appropriate test procedures, evaluation of interferences or other restrictions that might preclude use of standard test procedures, and evaluation and/or development of alternate procedures.

## Equipment Calibration and Maintenance

The equipment used to conduct the emission measurements is maintained according to the manufacturer’s instructions to ensure proper operation. In addition to the maintenance program, calibrations are carried out on each measurement device according to the schedule outlined by the Environmental Protection Agency. Quality control checks are also conducted in the field for each test program. In conformance with ASTM D7036 Section 15.3.15, all metering and monitoring equipment meets or exceeds the uncertainty criteria contained in the method language that pertains to that equipment.

### Chain-of-Custody
Air Hygiene maintains full chain-of-custody documentation on all samples and data sheets. In addition to normal documentation of changes between field sample custodians, laboratory personnel, and field test personnel, Air Hygiene documents every individual who handles any test component in the field (e.g., probe wash, impinger loading and recovery, filter loading and recovery, etc.). Samples are stored in a locked area to which only Air Hygiene personnel have access. Field data sheets are secured at Air Hygiene's offices upon return from the field.

### Training
Personnel's training is essential to ensure quality testing. Air Hygiene has formal and informal training programs, which include:

1. Attendance at EPA-sponsored training courses
2. Enrollment in EPA correspondence courses
3 A requirement for all technicians to read and understand Air Hygiene's QA manual
4. In-house training and QA meetings on a regular basis
5. Maintenance of training records

### Knowledge of Current Test Methods
With the constant updating of standard test methods and the wide variety of emerging test procedures, it is essential that any qualified source tester keep abreast of new developments. Air Hygiene subscribes to services, which provide updates on EPA reference methods, rules, and regulations. Additionally, source test personnel regularly attend and present papers at testing and emission-related seminars and conferences. Air Hygiene personnel maintain membership in the Air and Waste Management Association and the American Industrial Hygiene Association.

### Reproduction and Distribution Policy
Reproducing portions of this test report may omit critical or substantial documentation or be taken out of context and due care must be exercised in this regard. Furthermore, this test report and its associated data shall not be reproduced in full or in part without the written consent of the customer.

### Data Provided by Client
Data provided by the Client is clearly identified in the report. Air Hygiene accepts data provided by the Client as accurate.

# COMBUSTION TESTING QUALITY ASSURANCE ACTIVITIES

In conformance with ASTM D7036 Section 15.3.11 and 13, all testing was performed without any real or apparent errors, with the exception of those that would be listed in Section 2.0 of this report. In addition, all testing was conducted according to the approved testing protocol, test methods, Air Hygiene Quality Manual, or ASTM D7036, with the exception of specifics noted in Section 2.0 of this report. A number of quality assurance activities were undertaken before, during, and after this testing project. This section of the report combined with the documentation in Appendix C describes each of those activities.

Each instrument's response was checked and adjusted in the field prior to the collection of data via multi-point calibration. The instrument's linearity was checked by adjusting its zero and span responses to zero nitrogen and an upscale calibration gas in the range of the expected concentrations. The instrument response was then challenged with other calibration gases of known concentration and accepted as being linear if the response of the other calibration gases agreed within plus or minus two percent of the range of predicted values. $NO_2$ to NO conversion was checked via direct connect with an EPA Protocol certified concentration of $NO_2$ in a balance of air or nitrogen. Conversion was verified to be between 90 and 110 percent.

After each test run, the analyzers were checked for zero and span drift. This allowed each test run to be bracketed by calibrations and documents the precision of the data just collected. The criterion for acceptable data is that the instrument drift is no more than three percent of the full-scale response. The quality assurance worksheets in the following pages summarize all multipoint calibration checks and zero to span checks performed during the tests. These worksheets (as prepared from the data records of Appendix A) show that no drifts in excess of three percent occurred in the zero to span checks following each test run.

The sampling systems were leak checked by demonstrating that a vacuum greater than 10 in Hg could be held for at least one minute with a decline of less than one inch of Hg. A leak test was conducted after the sample system was set up and before the system was dismantled. This test was conducted to ensure that ambient air had not diluted the sample. Any leakage detected prior to the tests would be repaired and another leak check conducted before testing commenced. No leaks were found during the pre or post-test leak checks.

The absence of leaks in the sampling system was also verified by a sampling system bias check. The sampling system's integrity was tested by comparing the responses of the analyzers to the calibration gases introduced via two paths. The first path was directly into the analyzer and the second path via the sample system at the sample probe. Any difference in the instrument responses by these two methods was attributed to sampling system bias or leakage. The criterion for acceptance is agreement within five percent of the span of the analyzer.

The control gases used to calibrate the instruments were analyzed and certified by the compressed gas vendors to plus or minus one percent accuracy for all gases. EPA Protocol No. 1 was used, where applicable to assign the concentration values traceable to the National Institute of Standards and Technology (NIST), Standard Reference Materials (SRM's). The gas calibration sheets as prepared by the vendor are contained in Appendix C.

Air Hygiene collected and reported the enclosed test data in accordance with the procedures and quality assurance activities described in this test report. Air Hygiene makes no warranty as to the suitability of the test methods. Air Hygiene also assumes no liability relating to the interpretation and use of the test data.

## INSTRUMENTAL ANALYSIS
## QUALITY ASSURANCE DATA

Date: February 17-19 and March __, 2020
Company: Cricket Valley Energy Center LLC
Location: Dover Plains, New York
Techs: RW / SB / AM / MW / AB / MJ / JJ

**Sample System Leak Check**

| Date | Sample System | Leak Rate (l/min) |
|---|---|---|
| February 17-19 and March __, 2020 | 1 | 0 |

# Accredited Laboratory

A2LA has accredited

## AIR HYGIENE INTERNATIONAL, INC.

*Broken Arrow, OK*

for technical competence in the field of

## Environmental Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets the A2LA *R219 – Specific Requirements – TNI Field Sampling and Measurement Organization Accreditation Program*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 18th day of December 2019

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3796.01
Valid to August 31, 2021

*For the tests to which this accreditation applies, please refer to the laboratory's Envrionmental Scope of Accreditation.*

STACK TESTING ACCREDITATION COUNCIL

American Association for Laboratory Accreditation

# *Accredited Air Emission Testing Body*

A2LA has accredited

## AIR HYGIENE INTERNATIONAL, INC.

In recognition of the successful completion of the joint A2LA and Stack Testing Accreditation Council (STAC) evaluation process, this laboratory is accredited to perform testing activities in compliance with ASTM D7036:2004 - Standard Practice for Competence of Air Emission Testing Bodies.

Presented this 18th day of December 2019.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3796.02
Valid to August 31, 2021

*This accreditation program is not included under the A2LA ILAC Mutual Recognition Arrangement.*

# SOURCE EVALUATION SOCIETY

## Qualified Source Testing Individual

LET IT BE KNOWN THAT

## ROBERT C. WHITE, Jr.

HAS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED EXPERIENCE REQUIREMENTS IN ACCORDANCE WITH THE GUIDELINES ISSUED BY THE SES QUALIFIED SOURCE TEST INDIVIDUAL REVIEW BOARD FOR

***GASEOUS POLLUTANTS INSTRUMENTAL SAMPLING METHODS***

ISSUED THIS 25TH DAY OF OCTOBER 2019 AND EFFECTIVE UNTIL OCTOBER 24TH, 2024

Peter R. Westlin, QSTI/QSTO Review Board

Peter S. Pakalnis, QSTI/QSTO Review Board

Tina Sanderson, QSTI/QSTO Review Board

J. Wade Bice, QSTI/QSTO Review Board

Karen D. Kajiya-Mills , QSTI/QSTO Review Board

Bruce Randall QSTI/QSTO Review Board

CERTIFICATE NO. 2015-898

# Compliance Assurance Associates Inc.

Helping Industry Comply with Environmental Regulations

This is to acknowledge that

Matt Jones

BRO200103-15622

Certificate verification is available at www.Compliance.Assurance.com/certs.php using the last name and 15622

successfully participated in Visible Emissions Evaluation field training and certification and pursuant to US EPA 40 CFR 60 Appendix A, Reference Method 9, as amended, is certified to evaluate Visible Emissions for a period of six (6) months from the date of this certification.



| Anthony Ferro - Field Manager | Broken Arrow, OK | 01/03/2020 |
|---|---|---|
| | Location | Date |

Compliance Assurance Associates, Inc. 682 Orvil Smith Rd, Harvest, AL, 35749. 901-381-9960. compliance-assurance.com

# Compliance Assurance Associates Inc.

Helping Industry Comply with Environmental Regulations

This is to acknowledge that

Rob White

BRO200103-14351

Certificate verification is available at www.Compliance.Assurance.com/certs.php using the last name and 14351

successfully participated in Visible Emissions Evaluation field training and certification and pursuant to US EPA 40 CFR 60 Appendix A, Reference Method 9, as amended, is certified to evaluate Visible Emissions for a period of six (6) months from the date of this certification.



| Anthony Ferro - Field Manager | Broken Arrow, OK | 01/03/2020 |
|---|---|---|
| | Location | Date |

Compliance Assurance Associates, Inc. 682 Orvil Smith Rd, Harvest, AL, 35749. 901-381-9960. compliance-assurance.com

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

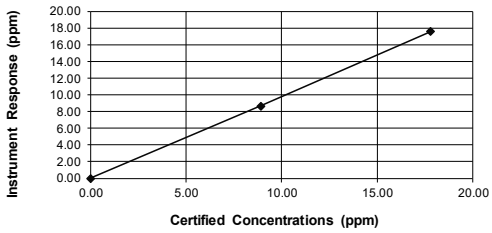
## Daily Reference Method Analyzer Calibration Data

**Calibration Date: February 17, 2020** **Location: Cricket Valley Energy Center - Unit U-00001**

**Client: Cricket Valley Energy Center LLC**

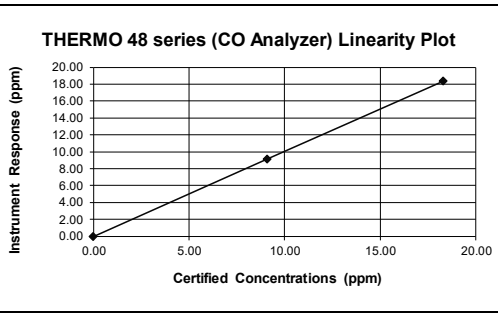
NOx Span (ppm) = 17.80

| THERMO 42 series (NOx Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Absolute Conc. (ppm) | Pass (±2%, ≤0.5ppm) |
| 0.00 | 0.06 | 0.34 | 0.06 | YES (%) |
| 8.90 | 8.73 | -0.96 | 0.17 | YES (%) |
| 17.80 | 17.68 | -0.67 | 0.12 | YES (%) |
| Linearity = 1.010 | | | | |



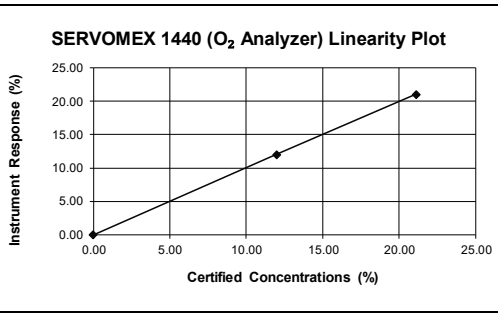

CO Span (ppm) = 18.30

| THERMO 48 series (CO Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Absolute Conc. (ppm) | Pass (±2%, ≤0.5ppm) |
| 0.00 | 0.00 | 0.00 | 0.00 | YES (%) |
| 9.10 | 9.10 | 0.00 | 0.00 | YES (%) |
| 18.30 | 18.37 | 0.38 | 0.07 | YES (%) |
| Linearity = 0.996 | | | | |




$O_2$ Span (%) = 21.10

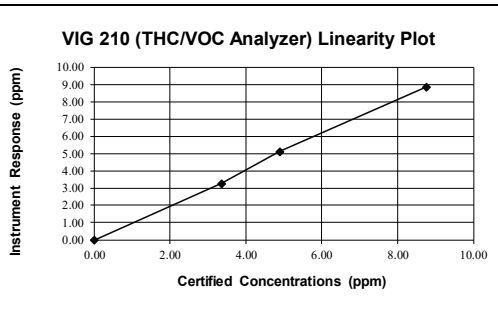
| SERVOMEX 1440 ($O_2$ Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (%) | Instrument Response (%) | Calibration Error (%) | Absolute Conc. (%) | Pass (±2%, ≤0.5%) |
| 0.00 | 0.06 | 0.28 | 0.06 | YES (%) |
| 12.01 | 12.03 | 0.09 | 0.02 | YES (%) |
| 21.10 | 21.09 | -0.05 | 0.01 | YES (%) |
| Linearity = 1.003 | | | | |




VOC (as C1) Range (ppm) = 10

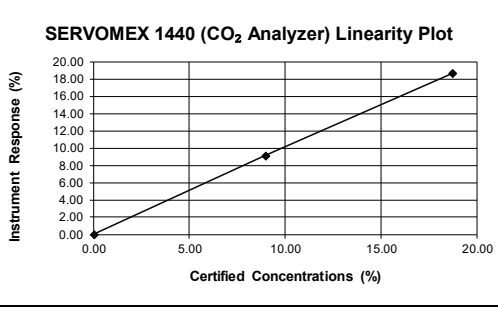
| VIG 210 (THC/VOC Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Estimated Point (ppm) | Pass (±2,5%)[1] |
| 0.00 | 0.00 | 0.00 | N/A | YES |
| 3.37 | 3.29 | -3.74 | 3.42 | YES |
| 4.90 | 5.12 | 3.12 | 4.97 | YES |
| 8.77 | 8.89 | 1.20 | N/A | YES |
| Linearity = 0.974 | | | | |

[1]-zero/high based on 2% of span, low/mid based on 5% of concentration




$CO_2$ Span (%) = 18.70

| SERVOMEX 1440 ($CO_2$ Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (%) | Instrument Response (%) | Calibration Error (%) | Absolute Conc. (%) | Pass (±2%, ≤0.5%) |
| 0.00 | 0.03 | 0.16 | 0.03 | YES (%) |
| 8.95 | 9.13 | 0.96 | 0.18 | YES (%) |
| 18.70 | 18.69 | -0.05 | 0.01 | YES (%) |
| Linearity = 1.002 | | | | |

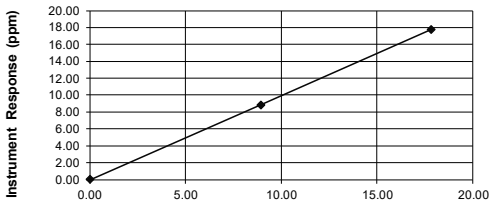


**Calibration Date: February 19, 2020** **Location: Cricket Valley Energy Center - Unit U-00001**

**Client: Cricket Valley Energy Center LLC**

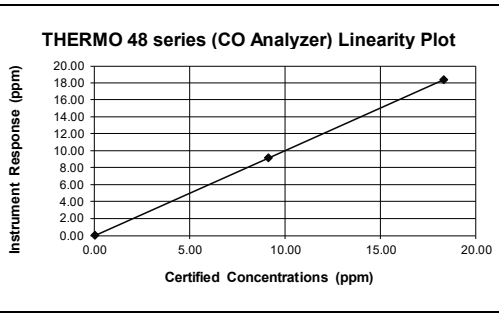
NOx Span (ppm) = 17.80

| THERMO 42 series (NOx Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Absolute Conc. (ppm) | Pass (±2%, ≤0.5ppm) |
| 0.00 | 0.02 | 0.11 | 0.02 | YES (%) |
| 8.90 | 8.81 | -0.51 | 0.09 | YES (%) |
| 17.80 | 17.78 | -0.11 | 0.02 | YES (%) |
| Linearity = 1.002 | | | | |



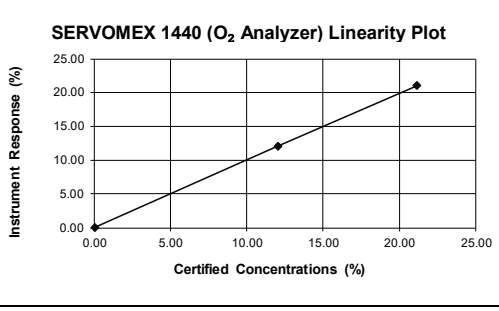

CO Span (ppm) = 18.30

| THERMO 48 series (CO Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Absolute Conc. (ppm) | Pass (±2%, ≤0.5ppm) |
| 0.00 | 0.00 | 0.00 | 0.00 | YES (%) |
| 9.10 | 9.12 | 0.11 | 0.02 | YES (%) |
| 18.30 | 18.38 | 0.44 | 0.08 | YES (%) |
| Linearity = 0.996 | | | | |




$O_2$ Span (%) = 21.10

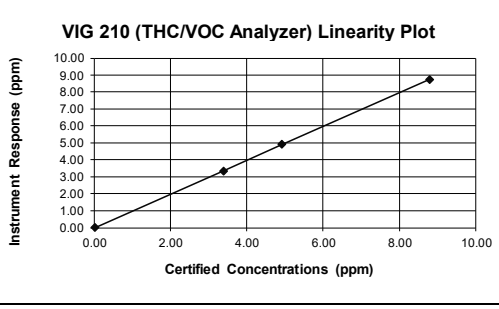
| SERVOMEX 1440 ($O_2$ Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (%) | Instrument Response (%) | Calibration Error (%) | Absolute Conc. (%) | Pass (±2%, ≤0.5%) |
| 0.00 | 0.05 | 0.24 | 0.05 | YES (%) |
| 12.01 | 12.01 | 0.00 | 0.00 | YES (%) |
| 21.10 | 21.02 | -0.38 | 0.08 | YES (%) |
| Linearity = 1.006 | | | | |




VOC (as C1) Range (ppm) = 10

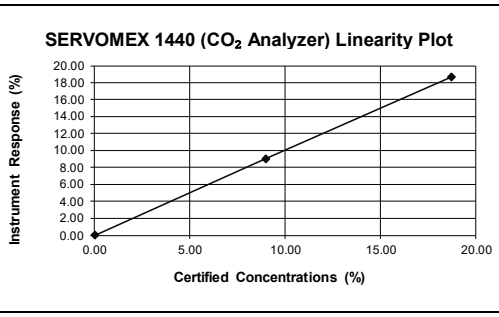
| VIG 210 (THC/VOC Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Estimated Point (ppm) | Pass (±2,5%)[1] |
| 0.00 | 0.00 | 0.00 | N/A | YES |
| 3.37 | 3.35 | -0.37 | 3.36 | YES |
| 4.90 | 4.90 | 0.23 | 4.89 | YES |
| 8.77 | 8.75 | -0.20 | N/A | YES |
| Linearity = 1.001 | | | | |

[1]-zero/high based on 2% of span,low/mid based on 5% of concentration




$CO_2$ Span (%) = 18.70

| SERVOMEX 1440 ($CO_2$ Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (%) | Instrument Response (%) | Calibration Error (%) | Absolute Conc. (%) | Pass (±2%, ≤0.5%) |
| 0.00 | 0.00 | 0.00 | 0.00 | YES (%) |
| 8.95 | 9.03 | 0.43 | 0.08 | YES (%) |
| 18.70 | 18.71 | 0.05 | 0.01 | YES (%) |
| Linearity = 1.000 | | | | |



**NOx Converter Efficiency**

**Date:** February 17, 2020

**Analyzer:** inst-nx-0020

RM 7E, (02-27-14), Sections 7.1.4; 8.2.4.1; 12.7; and 13.5 Introduce $NO_2$ to the analyzer and record the NOx concentration displayed. ... Calculate the converter efficiency using Equation 7E-7. The specification for converter efficiency must be met. ... Air Hygiene also references ALT-0013 for specific $NO_2$ concentration (40-60 ppm) and EPA Traceability Protocol requirements (±2%).

| | | |
|---|---|---|
| **Audit Gas:** | $NO_2$ Concentration ($C_v$), ppmvd | **49.10** |
| **Converter Efficiency Calculations:** | | |
| | Analyzer Reading, NO Channel, ppmvd | **2.30** |
| | Analyzer Reading, NOx Channel, ppmvd | **48.37** |
| | Analyzer Reading, $NO_2$ Channel ($C_{Dir(NO2)}$), ppmvd | **46.07** |
| | Converter Efficiency, % | **93.83** |

RM 7E, (02-27-14), 13.5 $NO_2$ to NO Conversion Efficiency Test (as applicable). The $NO_2$ to NO conversion efficiency, calculated according to Equation 7E-7, must be greater than or equal to 90 percent.

$$Eff_{NO2} = \left(\frac{C_{Dir}}{C_V}\right) \times 100$$

Eq. 7E-7 = $\frac{46.07 \text{ ppmvd}}{49.10 \text{ ppmvd}}$ x 100 = 93.83%

| Date/Time | Elapsed Time | NOx | NO |
|---|---|---|---|
| mm/dd/yy hh:mm:ss | Seconds | ppmvd | ppmvd |
| 02/17/20 12:37:04 | 20 | 47.01 | 3.06 |
| 02/17/20 12:37:34 | 50 | 47.26 | 3.04 |
| 02/17/20 12:38:04 | 80 | 47.48 | 3.01 |
| 02/17/20 12:38:34 | 110 | 47.68 | 2.98 |
| 02/17/20 12:39:04 | 140 | 47.82 | 2.95 |
| 02/17/20 12:39:34 | 170 | 48.01 | 2.94 |
| ***02/17/20 12:40:04*** | ***200*** | ***48.37*** | ***2.30*** |

**NOx Converter Efficiency**

**Date:** February 19, 2020

**Analyzer:** inst-nx-0020

RM 7E, (02-27-14), Sections 7.1.4; 8.2.4.1; 12.7; and 13.5 Introduce $NO_2$ to the analyzer and record the NOx concentration displayed. ... Calculate the converter efficiency using Equation 7E-7. The specification for converter efficiency must be met. ... Air Hygiene also references ALT-0013 for specific $NO_2$ concentration (40-60 ppm) and EPA Traceability Protocol requirements (±2%).

| | | |
|---|---|---|
| **Audit Gas:** | $NO_2$ Concentration ($C_v$), ppmvd | **49.10** |
| **Converter Efficiency Calculations:** | | |
| | Analyzer Reading, NO Channel, ppmvd | **2.40** |
| | Analyzer Reading, NOx Channel, ppmvd | **47.72** |
| | Analyzer Reading, $NO_2$ Channel ($C_{Dir(NO2)}$), ppmvd | **45.32** |
| | Converter Efficiency, % | **92.30** |

RM 7E, (02-27-14), 13.5 $NO_2$ to NO Conversion Efficiency Test (as applicable). The $NO_2$ to NO conversion efficiency, calculated according to Equation 7E-7, must be greater than or equal to 90 percent.

$$Eff_{NO2} = \left(\frac{C_{Dir}}{C_V}\right) \times 100$$

Eq. 7E-7 = $\frac{45.32 \text{ ppmvd}}{49.10 \text{ ppmvd}}$ x 100 = 92.3%

| Date/Time | Elapsed Time | NOx | NO |
|---|---|---|---|
| mm/dd/yy hh:mm:ss | Seconds | ppmvd | ppmvd |
| 02/19/20 07:45:06 | 4160 | 47.57 | 2.56 |
| 02/19/20 07:45:36 | 4190 | 47.65 | 2.53 |
| ***02/19/20 07:46:06*** | ***4220*** | ***47.72*** | ***2.40*** |
| 02/19/20 07:46:36 | 4250 | 47.81 | 2.40 |
| 02/19/20 07:47:06 | 4280 | 47.87 | 2.49 |
| 02/19/20 07:47:36 | 4310 | 47.80 | 2.47 |
| 02/19/20 07:48:06 | 4340 | 47.65 | 2.44 |

**Cricket Valley Energy Center LLC**
**February 17, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - PRE TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ (%) |
|---|---|---|---|
| 02/17/20 | 7:42:04 | UNIT 1 MKS_0014.LAB | 9.2406 |
| 02/17/20 | 7:42:34 | UNIT 1 MKS_0015.LAB | 9.1524 |
| 02/17/20 | 7:43:04 | UNIT 1 MKS_0016.LAB | 9.1499 |
| 02/17/20 | 7:43:35 | UNIT 1 MKS_0017.LAB | 9.1572 |
| 02/17/20 | 7:44:05 | UNIT 1 MKS_0018.LAB | 9.1676 |

**PRE TEST AVERAGE** **9.17**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - POST TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ (%) |
|---|---|---|---|
| 02/17/20 | 19:00:10 | UNIT 1 RUN 1_1362.LAB | 9.0354 |
| 02/17/20 | 19:00:40 | UNIT 1 RUN 1_1363.LAB | 9.1390 |
| 02/17/20 | 19:01:10 | UNIT 1 RUN 1_1364.LAB | 8.8000 |
| 02/17/20 | 19:01:40 | UNIT 1 RUN 1_1365.LAB | 9.0642 |
| 02/17/20 | 19:02:10 | UNIT 1 RUN 1_1366.LAB | 9.1347 |

**POST TEST AVERAGE** **9.03**

**Analyzer Make:** MKS **Analyzer Model:** 2030

$CO_2$ Cylinder Conc. % = 8.95

| Run ID | Instrument Response (%) | Error (%) | Pass / Fail ±5% |
|---|---|---|---|
| Pre Test | 9.17 | 2.50 | PASS |
| Post Test | 9.03 | 0.95 | PASS |

**Cricket Valley Energy Center LLC**
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**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - PRE TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ (ppm) |
|---|---|---|---|
| 02/17/20 | 7:52:09 | UNIT 1 MKS_0034.LAB | 47.8070 |
| 02/17/20 | 7:52:39 | UNIT 1 MKS_0035.LAB | 48.4938 |
| 02/17/20 | 7:53:09 | UNIT 1 MKS_0036.LAB | 55.8076 |
| 02/17/20 | 7:53:40 | UNIT 1 MKS_0037.LAB | 51.3194 |
| 02/17/20 | 7:54:10 | UNIT 1 MKS_0038.LAB | 47.7508 |

**PRE TEST AVERAGE** **50.24**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - POST TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ (ppm) |
|---|---|---|---|
| 02/17/20 | 19:21:43 | UNIT 1 RUN 1_1405.LAB | 50.5981 |
| 02/17/20 | 19:22:13 | UNIT 1 RUN 1_1406.LAB | 50.1445 |
| 02/17/20 | 19:22:43 | UNIT 1 RUN 1_1407.LAB | 50.4284 |
| 02/17/20 | 19:23:13 | UNIT 1 RUN 1_1408.LAB | 50.6571 |
| 02/17/20 | 19:23:43 | UNIT 1 RUN 1_1409.LAB | 50.6678 |

**POST TEST AVERAGE** **50.50**

**Analyzer Make:** MKS **Analyzer Model:** 2030

$NH_3$ Cylinder Conc. ppm = 50.40

| Run ID | Instrument Response (%) | Error (%) | Pass / Fail ±5% |
|---|---|---|---|
| Pre Test | 50.24 | -0.33 | PASS |
| Post Test | 50.50 | 0.20 | PASS |

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**Cricket Valley Energy Center**

## Calibration Gas #1

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ ppmvd |
|---|---|---|---|
| 02/17/20 | 8:16:16 | UNIT 1 MKS_0082.LAB | 50.1646 |
| 02/17/20 | 8:16:46 | UNIT 1 MKS_0083.LAB | 50.5970 |
| 02/17/20 | 8:17:16 | UNIT 1 MKS_0084.LAB | 50.7342 |
| 02/17/20 | 8:17:46 | UNIT 1 MKS_0085.LAB | 50.3635 |
| 02/17/20 | 8:18:17 | UNIT 1 MKS_0086.LAB | 50.8787 |
| 02/17/20 | 8:18:47 | UNIT 1 MKS_0087.LAB | 50.0742 |
| 02/17/20 | 8:19:17 | UNIT 1 MKS_0088.LAB | 50.3992 |
| 02/17/20 | 8:19:47 | UNIT 1 MKS_0089.LAB | 50.8070 |
| **RAW AVERAGE** | | | **50.502** |

## Calibration Gas #2

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $SF_6$ ppmvd |
|---|---|---|---|
| 02/17/20 | 8:16:16 | UNIT 1 MKS_0082.LAB | 9.7448 |
| 02/17/20 | 8:16:46 | UNIT 1 MKS_0083.LAB | 9.7298 |
| 02/17/20 | 8:17:16 | UNIT 1 MKS_0084.LAB | 9.7354 |
| 02/17/20 | 8:17:46 | UNIT 1 MKS_0085.LAB | 9.7474 |
| 02/17/20 | 8:18:17 | UNIT 1 MKS_0086.LAB | 9.7394 |
| 02/17/20 | 8:18:47 | UNIT 1 MKS_0087.LAB | 9.7168 |
| 02/17/20 | 8:19:17 | UNIT 1 MKS_0088.LAB | 9.7326 |
| 02/17/20 | 8:19:47 | UNIT 1 MKS_0089.LAB | 9.7355 |
| **RAW AVERAGE** | | | **9.735** |

## Run #1: Pre-Spike - Native

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $NH_3$ ppmvd | $SF_6$ ppmvd |
|---|---|---|---|---|---|---|
| 02/17/20 | 8:27:18 | UNIT 1 MKS_0104.LAB | 4.8114 | 8.1644 | 1.6119 | 0.0013 |
| 02/17/20 | 8:27:48 | UNIT 1 MKS_0105.LAB | 4.8114 | 7.9960 | 1.7031 | 0.0012 |
| 02/17/20 | 8:28:18 | UNIT 1 MKS_0106.LAB | 4.8128 | 7.9803 | 1.7059 | -0.0005 |
| 02/17/20 | 8:28:48 | UNIT 1 MKS_0107.LAB | 4.8128 | 7.8806 | 1.6900 | -0.0038 |
| 02/17/20 | 8:29:18 | UNIT 1 MKS_0108.LAB | 4.8128 | 7.9795 | 1.7702 | -0.0014 |
| 02/17/20 | 8:29:48 | UNIT 1 MKS_0109.LAB | 4.8134 | 7.9191 | 1.7365 | -0.0053 |
| 02/17/20 | 8:30:18 | UNIT 1 MKS_0110.LAB | 4.8127 | 7.9927 | 1.8926 | 0.0000 |
| 02/17/20 | 8:30:48 | UNIT 1 MKS_0111.LAB | 4.8145 | 8.0350 | 1.8940 | 0.0032 |
| **RAW AVERAGE** | | | **4.813** | **7.993** | **1.751** | **-0.001** |

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**Run #1: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $SF_6$ ppmvd | $NH_3$ ppmvd |
|---|---|---|---|---|---|---|
| 02/17/20 | 8:38:20 | UNIT 1 MKS_0126.LAB | 3.5403 | 8.5237 | 0.4365 | 3.9694 |
| 02/17/20 | 8:38:50 | UNIT 1 MKS_0127.LAB | 3.3992 | 8.4282 | 0.4354 | 3.9142 |
| 02/17/20 | 8:39:19 | UNIT 1 MKS_0128.LAB | 3.3643 | 8.4018 | 0.4263 | 3.6743 |
| 02/17/20 | 8:39:50 | UNIT 1 MKS_0129.LAB | 3.3928 | 8.4541 | 0.4353 | 3.7970 |
| 02/17/20 | 8:40:20 | UNIT 1 MKS_0130.LAB | 3.4090 | 8.4787 | 0.4284 | 3.8287 |
| 02/17/20 | 8:40:50 | UNIT 1 MKS_0131.LAB | 3.4332 | 8.2948 | 0.4389 | 3.9521 |
| 02/17/20 | 8:41:19 | UNIT 1 MKS_0132.LAB | 3.4566 | 8.6075 | 0.4380 | 3.8248 |
| 02/17/20 | 8:41:49 | UNIT 1 MKS_0133.LAB | 3.4204 | 8.5443 | 0.4294 | 4.3658 |
| **RAW AVERAGE** | | | **3.427** | **8.467** | **0.434** | **3.916** |

**Run #2: Pre-Spike - Native**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $NH_3$ ppmvd | $SF_6$ ppmvd |
|---|---|---|---|---|---|---|
| 02/17/20 | 8:49:20 | UNIT 1 MKS_0148.LAB | 4.8156 | 7.1468 | 1.7334 | -0.0003 |
| 02/17/20 | 8:49:51 | UNIT 1 MKS_0149.LAB | 4.8153 | 6.9111 | 1.6884 | 0.0031 |
| 02/17/20 | 8:50:21 | UNIT 1 MKS_0150.LAB | 4.8166 | 7.1915 | 1.6402 | 0.0013 |
| 02/17/20 | 8:50:51 | UNIT 1 MKS_0151.LAB | 4.8184 | 6.8733 | 1.5827 | -0.0008 |
| 02/17/20 | 8:51:21 | UNIT 1 MKS_0152.LAB | 4.8166 | 7.1891 | 1.5101 | 0.0003 |
| 02/17/20 | 8:51:51 | UNIT 1 MKS_0153.LAB | 4.8156 | 7.1163 | 1.4398 | -0.0021 |
| 02/17/20 | 8:52:21 | UNIT 1 MKS_0154.LAB | 4.8160 | 8.0617 | 1.6926 | -0.0024 |
| 02/17/20 | 8:52:51 | UNIT 1 MKS_0155.LAB | 4.8151 | 9.1029 | 1.5972 | 0.0000 |
| **RAW AVERAGE** | | | **4.816** | **7.449** | **1.611** | **0.000** |

**Run #2: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $SF_6$ ppmvd | $NH_3$ ppmvd |
|---|---|---|---|---|---|---|
| 02/17/20 | 9:00:22 | UNIT 1 MKS_0170.LAB | 3.4330 | 8.6802 | 0.3922 | 3.8887 |
| 02/17/20 | 9:00:52 | UNIT 1 MKS_0171.LAB | 3.4392 | 9.5001 | 0.3922 | 3.7278 |
| 02/17/20 | 9:01:22 | UNIT 1 MKS_0172.LAB | 3.5215 | 9.2708 | 0.3916 | 3.8999 |
| 02/17/20 | 9:01:52 | UNIT 1 MKS_0173.LAB | 3.3741 | 8.6999 | 0.3918 | 3.8767 |
| 02/17/20 | 9:02:23 | UNIT 1 MKS_0174.LAB | 3.4539 | 8.5292 | 0.3922 | 3.5894 |
| 02/17/20 | 9:02:53 | UNIT 1 MKS_0175.LAB | 3.4656 | 8.4816 | 0.3916 | 3.5462 |
| 02/17/20 | 9:03:22 | UNIT 1 MKS_0176.LAB | 3.3611 | 8.4769 | 0.3912 | 3.4599 |
| 02/17/20 | 9:03:52 | UNIT 1 MKS_0177.LAB | 3.3528 | 8.6448 | 0.3909 | 3.4735 |
| **RAW AVERAGE** | | | **3.425** | **8.785** | **0.392** | **3.683** |

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**Run #3: Pre-Spike - Native**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $NH_3$ ppmvd | $SF_6$ ppmvd |
|---|---|---|---|---|---|---|
| 02/17/20 | 9:12:24 | UNIT 1 MKS_0194.LAB | 4.8199 | 8.8567 | 1.4464 | 0.0022 |
| 02/17/20 | 9:12:54 | UNIT 1 MKS_0195.LAB | 4.8202 | 9.3786 | 1.3426 | -0.0028 |
| 02/17/20 | 9:13:24 | UNIT 1 MKS_0196.LAB | 4.8199 | 9.0872 | 1.3336 | -0.0073 |
| 02/17/20 | 9:13:54 | UNIT 1 MKS_0197.LAB | 4.8196 | 9.1273 | 1.5250 | 0.0016 |
| 02/17/20 | 9:14:23 | UNIT 1 MKS_0198.LAB | 4.8200 | 8.7111 | 1.5254 | -0.0026 |
| 02/17/20 | 9:14:54 | UNIT 1 MKS_0199.LAB | 4.8201 | 8.2667 | 1.4940 | 0.0007 |
| 02/17/20 | 9:15:24 | UNIT 1 MKS_0200.LAB | 4.8201 | 7.9235 | 1.4653 | 0.0021 |
| 02/17/20 | 9:15:54 | UNIT 1 MKS_0201.LAB | 4.8193 | 7.6802 | 1.4550 | -0.0041 |
| **RAW AVERAGE** | | | **4.820** | **8.629** | **1.448** | **-0.001** |

**Run #3: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $SF_6$ ppmvd | $NH_3$ ppmvd |
|---|---|---|---|---|---|---|
| 02/17/20 | 9:24:25 | UNIT 1 MKS_0218.LAB | 4.2543 | 8.4276 | 0.4913 | 3.9361 |
| 02/17/20 | 9:24:55 | UNIT 1 MKS_0219.LAB | 4.2414 | 8.4806 | 0.4906 | 4.0366 |
| 02/17/20 | 9:25:25 | UNIT 1 MKS_0220.LAB | 4.2871 | 8.1807 | 0.4907 | 3.9837 |
| 02/17/20 | 9:25:55 | UNIT 1 MKS_0221.LAB | 4.3099 | 8.5743 | 0.4906 | 3.7499 |
| 02/17/20 | 9:26:25 | UNIT 1 MKS_0222.LAB | 4.2646 | 8.5066 | 0.4904 | 3.9702 |
| 02/17/20 | 9:26:55 | UNIT 1 MKS_0223.LAB | 4.2633 | 8.3920 | 0.4904 | 3.8667 |
| 02/17/20 | 9:27:26 | UNIT 1 MKS_0224.LAB | 4.2941 | 8.7570 | 0.4901 | 4.0832 |
| 02/17/20 | 9:27:56 | UNIT 1 MKS_0225.LAB | 4.2737 | 8.7671 | 0.4888 | 3.9214 |
| **RAW AVERAGE** | | | **4.274** | **8.511** | **0.490** | **3.943** |

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**Cricket Valley Energy Center**

| Parameter | Unit | Run 1 | Run 2 | Run 3 |
|---|---|---|---|---|
| Concentration of $NH_3$ Cylinder | ppmvd | 50.50 | 50.50 | 50.50 |
| Concentration of $SF_6$ Cylinder | ppmvd | 9.74 | 9.74 | 9.74 |

Spike A

| | | | | |
|---|---|---|---|---|
| Stack $CO_2$ Concentration | %vd | 4.813 | 4.816 | 4.820 |
| Stack $H_2O$ Concentration | % | 7.993 | 7.449 | 8.629 |
| Stack $NH_3$ Concentration | ppmvd | 1.751 | 1.611 | 1.448 |
| Stack $SF_6$ Concentration | ppmvd | -0.001 | 0.000 | -0.001 |
| Stack + Spike $CO_2$ Concentration | %vd | 3.427 | 3.425 | 4.274 |
| Stack + Spike $H_2O$ Concentration | % | 8.467 | 8.785 | 8.511 |
| Stack + Spike $NH_3$ Concentration | ppmvd | 3.916 | 3.683 | 3.943 |
| Stack + Spike $SF_6$ Concentration | ppmvd | 0.434 | 0.392 | 0.490 |
| Dilution Ratio | | 0.045 | 0.040 | 0.050 |
| Ideal $NH_3$ Spike Yield | ppmvd | 3.922 | 3.578 | 3.919 |
| Percent Recovery $NH_3$ | % | 99.74% | 105.17% | 100.95% |

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**Cricket Valley Energy Center**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - PRE TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ (%) |
|---|---|---|---|
| 02/19/20 | 3:18:07 | UNIT 1 BKG_1507.LAB | 9.1128 |
| 02/19/20 | 3:18:37 | UNIT 1 BKG_1508.LAB | 9.0001 |
| 02/19/20 | 3:19:07 | UNIT 1 BKG_1509.LAB | 8.9262 |
| 02/19/20 | 3:19:37 | UNIT 1 BKG_1510.LAB | 8.9381 |
| 02/19/20 | 3:20:07 | UNIT 1 BKG_1511.LAB | 8.9567 |

**PRE TEST AVERAGE** **8.99**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - POST TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ (%) |
|---|---|---|---|
| 02/19/20 | 7:44:39 | UNIT 1 RUN 1_2029.LAB | 8.9430 |
| 02/19/20 | 7:45:09 | UNIT 1 RUN 1_2030.LAB | 8.6493 |
| 02/19/20 | 7:45:39 | UNIT 1 RUN 1_2031.LAB | 8.8445 |
| 02/19/20 | 7:46:09 | UNIT 1 RUN 1_2032.LAB | 8.6241 |
| 02/19/20 | 7:46:39 | UNIT 1 RUN 1_2033.LAB | 8.7849 |

**POST TEST AVERAGE** **8.77**

**Analyzer Make:** MKS **Analyzer Model:** 2030

$CO_2$ Cylinder Conc. % = 8.95

| Run ID | Instrument Response (%) | Error (%) | Pass / Fail ±5% |
|---|---|---|---|
| Pre Test | 8.99 | 0.41 | PASS |
| Post Test | 8.77 | -2.02 | PASS |

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**Cricket Valley Energy Center**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - PRE TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ (ppm) |
|---|---|---|---|
| 02/19/20 | 3:22:07 | UNIT 1 BKG_1515.LAB | 49.0988 |
| 02/19/20 | 3:22:37 | UNIT 1 BKG_1516.LAB | 49.2503 |
| 02/19/20 | 3:23:07 | UNIT 1 BKG_1517.LAB | 49.4185 |
| 02/19/20 | 3:23:37 | UNIT 1 BKG_1518.LAB | 49.5153 |
| 02/19/20 | 3:24:07 | UNIT 1 BKG_1519.LAB | 49.6730 |

**PRE TEST AVERAGE** **49.39**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - POST TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ (ppm) |
|---|---|---|---|
| 02/19/20 | 7:54:40 | UNIT 1 RUN 1_2049.LAB | 49.0707 |
| 02/19/20 | 7:55:11 | UNIT 1 RUN 1_2050.LAB | 49.7940 |
| 02/19/20 | 7:55:40 | UNIT 1 RUN 1_2051.LAB | 49.9085 |
| 02/19/20 | 7:56:11 | UNIT 1 RUN 1_2052.LAB | 50.2710 |
| 02/19/20 | 7:56:41 | UNIT 1 RUN 1_2053.LAB | 49.8649 |

**POST TEST AVERAGE** **49.78**

**Analyzer Make:** MKS **Analyzer Model:** 2030

$NH_3$ Cylinder Conc. ppm = 50.40

| Run ID | Instrument Response (%) | Error (%) | Pass / Fail ±5% |
|---|---|---|---|
| Pre Test | 49.39 | -2.00 | PASS |
| Post Test | 49.78 | -1.23 | PASS |

**Cricket Valley Energy Center LLC**
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**Cricket Valley Energy Center**

## Calibration Gas #1

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ ppmvd |
|---|---|---|---|
| 02/19/20 | 3:27:08 | UNIT 1 BKG_1525.LAB | 47.9995 |
| 02/19/20 | 3:27:38 | UNIT 1 BKG_1526.LAB | 48.5635 |
| 02/19/20 | 3:28:08 | UNIT 1 BKG_1527.LAB | 49.0942 |
| 02/19/20 | 3:28:38 | UNIT 1 BKG_1528.LAB | 49.5615 |
| 02/19/20 | 3:29:08 | UNIT 1 BKG_1529.LAB | 49.8815 |
| 02/19/20 | 3:29:38 | UNIT 1 BKG_1530.LAB | 50.3110 |
| 02/19/20 | 3:30:08 | UNIT 1 BKG_1531.LAB | 50.5988 |
| 02/19/20 | 3:30:38 | UNIT 1 BKG_1532.LAB | 50.9278 |
| **RAW AVERAGE** | | | **49.617** |

## Calibration Gas #2

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $SF_6$ ppmvd |
|---|---|---|---|
| 02/19/20 | 3:33:09 | UNIT 1 BKG_1537.LAB | 8.9793 |
| 02/19/20 | 3:33:39 | UNIT 1 BKG_1538.LAB | 8.9528 |
| 02/19/20 | 3:34:09 | UNIT 1 BKG_1539.LAB | 8.9671 |
| 02/19/20 | 3:34:39 | UNIT 1 BKG_1540.LAB | 8.9693 |
| 02/19/20 | 3:35:09 | UNIT 1 BKG_1541.LAB | 8.9746 |
| 02/19/20 | 3:35:39 | UNIT 1 BKG_1542.LAB | 8.9738 |
| 02/19/20 | 3:38:12 | UNIT 1 BKG_1543BKG.LAB | 8.8611 |
| 02/19/20 | 3:38:49 | UNIT 1 BKG_1544.LAB | 8.7872 |
| **RAW AVERAGE** | | | **8.933** |

## Run #1: Pre-Spike - Native

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $NH_3$ ppmvd | $SF_6$ ppmvd |
|---|---|---|---|---|---|---|
| 02/19/20 | 3:42:49 | UNIT 1 BKG_1552.LAB | 5.1699 | 8.7056 | 1.9962 | -0.0115 |
| 02/19/20 | 3:43:20 | UNIT 1 BKG_1553.LAB | 5.1572 | 8.9031 | 1.8991 | -0.0076 |
| 02/19/20 | 3:43:50 | UNIT 1 BKG_1554.LAB | 5.1530 | 8.6815 | 1.8251 | -0.0061 |
| 02/19/20 | 3:44:19 | UNIT 1 BKG_1555.LAB | 5.1433 | 8.6307 | 1.7437 | -0.0053 |
| 02/19/20 | 3:44:49 | UNIT 1 BKG_1556.LAB | 5.1531 | 8.8853 | 1.6789 | -0.0061 |
| 02/19/20 | 3:45:19 | UNIT 1 BKG_1557.LAB | 5.1372 | 8.3918 | 1.6025 | -0.0067 |
| 02/19/20 | 3:45:49 | UNIT 1 BKG_1558.LAB | 5.1407 | 8.9943 | 1.5784 | -0.0072 |
| 02/19/20 | 3:46:20 | UNIT 1 BKG_1559.LAB | 5.1473 | 8.9234 | 1.6357 | -0.0060 |
| **RAW AVERAGE** | | | **5.150** | **8.764** | **1.745** | **-0.007** |

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**Cricket Valley Energy Center**

**Run #1: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $SF_6$ ppmvd | $NH_3$ ppmvd |
|---|---|---|---|---|---|---|
| 02/19/20 | 3:50:20 | UNIT 1 BKG_1567.LAB | 3.3034 | 8.8276 | 0.3825 | 3.8811 |
| 02/19/20 | 3:50:50 | UNIT 1 BKG_1568.LAB | 3.1623 | 8.8262 | 0.3814 | 3.7114 |
| 02/19/20 | 3:51:20 | UNIT 1 BKG_1569.LAB | 3.1274 | 8.8262 | 0.3723 | 3.7006 |
| 02/19/20 | 3:51:51 | UNIT 1 BKG_1570.LAB | 3.1559 | 8.8266 | 0.3813 | 3.8002 |
| 02/19/20 | 3:52:20 | UNIT 1 BKG_1571.LAB | 3.1721 | 8.8261 | 0.3744 | 3.8436 |
| 02/19/20 | 3:52:51 | UNIT 1 BKG_1572.LAB | 3.1963 | 8.8259 | 0.3849 | 3.6096 |
| 02/19/20 | 3:53:21 | UNIT 1 BKG_1573.LAB | 3.2197 | 8.8253 | 0.3840 | 3.6948 |
| 02/19/20 | 3:53:51 | UNIT 1 BKG_1574.LAB | 3.1835 | 8.8263 | 0.3754 | 3.8130 |
| **RAW AVERAGE** | | | **3.190** | **8.826** | **0.380** | **3.757** |

**Run #2: Pre-Spike - Native**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $NH_3$ ppmvd | $SF_6$ ppmvd |
|---|---|---|---|---|---|---|
| 02/19/20 | 3:56:21 | UNIT 1 BKG_1579.LAB | 5.1554 | 8.7733 | 1.8008 | -0.0084 |
| 02/19/20 | 3:56:51 | UNIT 1 BKG_1580.LAB | 5.1550 | 8.4849 | 1.7586 | -0.0092 |
| 02/19/20 | 3:57:21 | UNIT 1 BKG_1581.LAB | 5.1553 | 8.7704 | 1.7133 | -0.0107 |
| 02/19/20 | 3:57:51 | UNIT 1 BKG_1582.LAB | 5.1509 | 8.6380 | 1.7795 | -0.0082 |
| 02/19/20 | 3:58:21 | UNIT 1 BKG_1583.LAB | 5.1647 | 8.5952 | 1.6892 | -0.0089 |
| 02/19/20 | 3:58:51 | UNIT 1 BKG_1584.LAB | 5.1579 | 8.5910 | 1.6654 | -0.0115 |
| 02/19/20 | 3:59:21 | UNIT 1 BKG_1585.LAB | 5.1568 | 8.6678 | 1.6233 | -0.0083 |
| 02/19/20 | 3:59:52 | UNIT 1 BKG_1586.LAB | 5.1669 | 8.9784 | 1.6544 | -0.0100 |
| **RAW AVERAGE** | | | **5.158** | **8.687** | **1.711** | **-0.009** |

**Run #2: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $SF_6$ ppmvd | $NH_3$ ppmvd |
|---|---|---|---|---|---|---|
| 02/19/20 | 4:04:41 | UNIT 1 RUN 1_1590.LAB | 3.1108 | 8.8975 | 0.4382 | 3.8840 |
| 02/19/20 | 4:05:11 | UNIT 1 RUN 1_1591.LAB | 3.2701 | 8.6032 | 0.3743 | 3.8593 |
| 02/19/20 | 4:05:41 | UNIT 1 RUN 1_1592.LAB | 3.3577 | 8.6274 | 0.3558 | 3.8760 |
| 02/19/20 | 4:06:11 | UNIT 1 RUN 1_1593.LAB | 3.2087 | 8.6517 | 0.3699 | 3.8245 |
| 02/19/20 | 4:06:41 | UNIT 1 RUN 1_1594.LAB | 2.9525 | 9.0394 | 0.3618 | 3.7961 |
| 02/19/20 | 4:07:11 | UNIT 1 RUN 1_1595.LAB | 3.2355 | 9.0810 | 0.4004 | 3.7499 |
| 02/19/20 | 4:07:41 | UNIT 1 RUN 1_1596.LAB | 3.2865 | 8.9148 | 0.3767 | 3.8185 |
| 02/19/20 | 4:08:11 | UNIT 1 RUN 1_1597.LAB | 3.2150 | 8.7624 | 0.3964 | 3.8547 |
| **RAW AVERAGE** | | | **3.205** | **8.822** | **0.384** | **3.833** |

**Cricket Valley Energy Center LLC**
**February 19, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**Run #3: Pre-Spike - Native**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $NH_3$ ppmvd | $SF_6$ ppmvd |
|---|---|---|---|---|---|---|
| 02/19/20 | 4:12:12 | UNIT 1 RUN 1_1605.LAB | 5.2003 | 8.5559 | 1.4172 | -0.0679 |
| 02/19/20 | 4:12:42 | UNIT 1 RUN 1_1606.LAB | 5.2150 | 8.3897 | 1.5632 | -0.0416 |
| 02/19/20 | 4:13:12 | UNIT 1 RUN 1_1607.LAB | 5.2155 | 8.3482 | 1.6687 | -0.0720 |
| 02/19/20 | 4:13:42 | UNIT 1 RUN 1_1608.LAB | 5.2183 | 8.7567 | 1.2404 | -0.1229 |
| 02/19/20 | 4:14:12 | UNIT 1 RUN 1_1609.LAB | 5.2118 | 8.7671 | 1.6588 | -0.0461 |
| 02/19/20 | 4:14:42 | UNIT 1 RUN 1_1610.LAB | 5.2413 | 8.7810 | 1.9392 | -0.1001 |
| 02/19/20 | 4:15:12 | UNIT 1 RUN 1_1611.LAB | 5.2240 | 8.6494 | 1.6206 | -0.0819 |
| 02/19/20 | 4:15:42 | UNIT 1 RUN 1_1612.LAB | 5.2109 | 8.5975 | 1.7034 | -0.0851 |
| **RAW AVERAGE** | | | **5.217** | **8.606** | **1.601** | **-0.077** |

**Run #3: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $SF_6$ ppmvd | $NH_3$ ppmvd |
|---|---|---|---|---|---|---|
| 02/19/20 | 4:17:42 | UNIT 1 RUN 1_1616.LAB | 3.3300 | 8.9661 | 0.4167 | 3.9361 |
| 02/19/20 | 4:18:12 | UNIT 1 RUN 1_1617.LAB | 3.3489 | 8.8797 | 0.4376 | 4.0366 |
| 02/19/20 | 4:18:42 | UNIT 1 RUN 1_1618.LAB | 3.2875 | 8.9260 | 0.4357 | 3.9837 |
| 02/19/20 | 4:19:13 | UNIT 1 RUN 1_1619.LAB | 3.0759 | 8.7065 | 0.4305 | 3.7499 |
| 02/19/20 | 4:19:43 | UNIT 1 RUN 1_1620.LAB | 3.1805 | 8.8473 | 0.4297 | 3.9702 |
| 02/19/20 | 4:20:13 | UNIT 1 RUN 1_1621.LAB | 3.2341 | 8.7714 | 0.4478 | 3.8667 |
| 02/19/20 | 4:20:43 | UNIT 1 RUN 1_1622.LAB | 3.1729 | 8.8713 | 0.4861 | 4.0832 |
| 02/19/20 | 4:21:13 | UNIT 1 RUN 1_1623.LAB | 3.0820 | 8.8454 | 0.4287 | 3.9214 |
| **RAW AVERAGE** | | | **3.214** | **8.852** | **0.439** | **3.943** |

**Cricket Valley Energy Center LLC**
**February 19, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

| Parameter | Unit | Run 1 | Run 2 | Run 3 |
|---|---|---|---|---|
| Concentration of $NH_3$ Cylinder | ppmvd | 49.62 | 49.62 | 49.62 |
| Concentration of $SF_6$ Cylinder | ppmvd | 8.93 | 8.93 | 8.93 |

Spike A

| | | | | |
|---|---|---|---|---|
| Stack $CO_2$ Concentration | %vd | 5.150 | 5.158 | 5.217 |
| Stack $H_2O$ Concentration | % | 8.764 | 8.687 | 8.606 |
| Stack $NH_3$ Concentration | ppmvd | 1.745 | 1.711 | 1.601 |
| Stack $SF_6$ Concentration | ppmvd | -0.007 | -0.009 | -0.077 |
| Stack + Spike $CO_2$ Concentration | %vd | 3.190 | 3.205 | 3.214 |
| Stack + Spike $H_2O$ Concentration | % | 8.826 | 8.822 | 8.852 |
| Stack + Spike $NH_3$ Concentration | ppmvd | 3.757 | 3.833 | 3.943 |
| Stack + Spike $SF_6$ Concentration | ppmvd | 0.380 | 0.384 | 0.439 |
| Dilution Ratio | | 0.042 | 0.043 | 0.049 |
| Ideal $NH_3$ Spike Yield | ppmvd | 3.779 | 3.771 | 3.962 |
| Percent Recovery $NH_3$ | % | 98.96% | 102.90% | 99.26% |

| DRIFT AND BIAS CHECK AND RESPONSE TIME CALCULATOR | | |
|---|---|---|
| **Strat Test Pre and Post QA/QC Check** | **$O_2$** | **NOx** |
| **Initial Zero** | 0.07 | 0.13 |
| **Final Zero** | 0.07 | 0.35 |
| **Avg. Zero** | 0.07 | 0.24 |
| **Initial UpScale** | 11.99 | 4.87 |
| **Final UpScale** | 11.86 | 4.71 |
| **Avg. UpScale** | 11.93 | 4.79 |
| **Sys Resp (Zero)** | 0.04 | 0.00 |
| **Sys Resp (Upscale)** | 11.99 | 4.98 |
| **Upscale Cal Gas** | 11.96 | 4.99 |
| **Initial Zero Bias** | 0.14% | 1.46% |
| **Final Zero Bias** | 0.14% | 3.93% |
| **Zero Drift** | 0.00% | 2.47% |
| **Initial Upscale Bias** | 0.00% | -1.24% |
| **Final Upscale Bias** | -0.62% | -3.03% |
| **Upscale Drift** | 0.62% | 1.80% |
| Alternative Specification Abs Diff **Initial Zero** | 0.03 | 0.13 |
| Alternative Specification Abs Diff **Final Zero** | 0.03 | 0.35 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.00 | 0.11 |
| Alternative Specification Abs Diff **Final Upscale** | 0.13 | 0.27 |
| **Calibration Span** | 21.10 | 8.90 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 |
| **5% of Cal. Span (bias)** | 1.06 | 0.45 |

| | | |
|---|---|---|
| **Response Time (min)** | 1.7 | 4.0 |
| **Sys. Response (min)** | 4.0 | |

| Date/Time mm/dd/yy hh:mm:ss | z | $O_2$ %-10 | s | z | NOx ppm-10 | s | INJECTIONS |
|---|---|---|---|---|---|---|---|
| 02/05/20 14:15:10 | | **12.14** | | | 3.02 | | x |
| 02/05/20 14:15:20 | | **11.60** | | | 3.02 | | |
| 02/05/20 14:15:30 | | 11.06 | | | 3.02 | | |
| 02/05/20 14:15:40 | | 10.52 | | | 3.02 | | |
| 02/05/20 14:15:50 | | 11.03 | | | 2.55 | | |
| 02/05/20 14:16:00 | | **11.55** | x | | 2.08 | | |
| 02/05/20 14:16:10 | | **12.07** | | | 1.60 | | |
| 02/05/20 14:16:20 | | **12.07** | | | 1.27 | | |
| 02/05/20 14:16:30 | | **12.07** | | | 0.93 | | |
| 02/05/20 14:16:40 | | **12.08** | | | 0.60 | | |
| 02/05/20 14:16:50 | | **12.08** | | | 0.59 | | |
| 02/05/20 14:17:00 | | **12.08** | | | 0.58 | | |
| 02/05/20 14:17:10 | | **12.08** | | | 0.57 | | |
| 02/05/20 14:17:20 | | **12.08** | | x | **0.39** | | |
| 02/05/20 14:17:30 | | **12.08** | | | **0.21** | | |
| 02/05/20 14:17:40 | | **12.08** | | | **0.03** | | |
| 02/05/20 14:17:50 | | **12.08** | | | **-0.02** | | |
| 02/05/20 14:18:00 | | **12.08** | | | **-0.07** | | |
| 02/05/20 14:18:10 | | **12.08** | | | **-0.12** | | |
| 02/05/20 14:18:20 | | **12.08** | | | **-0.11** | | |
| 02/05/20 14:18:30 | | **12.09** | | | **-0.09** | | x |
| 02/05/20 14:18:40 | | **12.09** | | | **-0.07** | | |
| 02/05/20 14:18:50 | | **12.09** | | | **-0.07** | | |
| 02/05/20 14:19:00 | | **12.09** | | | **-0.07** | | |
| 02/05/20 14:19:10 | | **12.10** | | | **-0.07** | | |
| 02/05/20 14:19:20 | | 9.77 | | | **-0.05** | | |
| 02/05/20 14:19:30 | | 7.44 | | | **-0.03** | | |
| 02/05/20 14:19:40 | | 5.11 | | | **0.00** | | |
| 02/05/20 14:19:50 | | 3.59 | | | 0.79 | | |
| 02/05/20 14:20:00 | | 2.08 | | | 1.58 | | |
| 02/05/20 14:20:10 | x | **0.56** | | | 2.38 | | |
| 02/05/20 14:20:20 | | **0.43** | | | 3.11 | | |
| 02/05/20 14:20:30 | | **0.30** | | | 3.84 | | |
| 02/05/20 14:20:40 | | **0.16** | | | 4.57 | | |
| 02/05/20 14:20:50 | | **0.14** | | | 4.57 | | |
| 02/05/20 14:21:00 | | **0.11** | | | 4.58 | | |
| 02/05/20 14:21:10 | | **0.09** | | | 4.58 | | |
| 02/05/20 14:21:20 | | **0.08** | | | 4.57 | | |
| 02/05/20 14:21:30 | | **0.08** | | | 4.55 | | |
| 02/05/20 14:21:40 | | **0.07** | | | 4.54 | | |
| 02/05/20 14:21:50 | | **0.07** | | | 4.54 | | |
| 02/05/20 14:22:00 | | **0.06** | | | 4.55 | | |
| 02/05/20 14:22:10 | | **0.06** | | | 4.55 | | |
| 02/05/20 14:22:20 | | **0.05** | | | 4.62 | | |
| 02/05/20 14:22:30 | | **0.05** | | | **4.68** | | x |
| 02/05/20 14:22:40 | | **0.05** | | | **4.75** | | |
| 02/05/20 14:22:50 | | **0.05** | | | **4.77** | | |
| 02/05/20 14:23:00 | | **0.05** | | | **4.78** | | |
| 02/05/20 14:23:10 | | **0.04** | | | **4.80** | | |

| DRIFT AND BIAS CHECK | | | | | |
|---|---|---|---|---|---|
| **Base Load, Run - 1-1** | **$O_2$** | **NOx** | **CO** | **VOC (as C1)** | **$CO_2$** |
| **Raw Average** | 12.91 | 2.48 | 0.32 | 0.54 | 4.82 |
| **Corrected Average** | 12.88 | 2.45 | 0.31 | 0.57 | 4.82 |
| **Initial Zero** | 0.03 | 0.01 | 0.00 | 0.01 | 0.00 |
| **Final Zero** | 0.10 | 0.02 | 0.01 | 0.01 | 0.03 |
| **Avg. Zero** | 0.07 | 0.02 | 0.01 | 0.01 | 0.02 |
| **Initial UpScale** | 11.99 | 8.91 | 9.08 | 3.29 | 8.94 |
| **Final UpScale** | 12.10 | 9.06 | 9.15 | 3.30 | 8.91 |
| **Avg. UpScale** | 12.05 | 8.99 | 9.12 | 3.30 | 8.93 |
| **Sys Resp (Zero)** | 0.06 | 0.06 | 0.00 | 0.00 | 0.03 |
| **Sys Resp (Upscale)** | 12.03 | 8.73 | 9.10 | 3.29 | 9.13 |
| **Upscale Cal Gas** | 12.01 | 8.90 | 9.10 | 3.37 | 8.95 |
| **Initial Zero Bias** | -0.14% | -0.28% | 0.00% | 0.10% | -0.16% |
| **Final Zero Bias** | 0.19% | -0.22% | 0.05% | 0.10% | 0.00% |
| **Zero Drift** | 0.33% | 0.06% | 0.05% | 0.00% | 0.16% |
| **Initial Upscale Bias** | -0.19% | 1.01% | -0.11% | 0.00% | -1.02% |
| **Final Upscale Bias** | 0.33% | 1.85% | 0.27% | 0.10% | -1.18% |
| **Upscale Drift** | 0.52% | 0.84% | 0.38% | 0.10% | 0.16% |
| Alternative Specification Abs Diff **Initial Zero** | 0.03 | 0.05 | 0.00 | -- | 0.03 |
| Alternative Specification Abs Diff **Final Zero** | 0.04 | 0.04 | 0.01 | -- | 0.00 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.04 | 0.18 | 0.02 | -- | 0.19 |
| Alternative Specification Abs Diff **Final Upscale** | 0.07 | 0.33 | 0.05 | -- | 0.22 |
| **Calibration Span** | 21.10 | 17.80 | 18.30 | 10.00 | 18.70 |
| **3% of Cal. Span (drift)** | 0.63 | 0.53 | 0.55 | 0.30 | 0.56 |
| **5% of Cal. Span (bias)** | 1.06 | 0.89 | 0.92 | 0.50 | 0.94 |

| DRIFT AND BIAS CHECK | | | | | |
|---|---|---|---|---|---|
| **Base Load, Run - 1-2** | **$O_2$** | **NOx** | **CO** | **VOC (as C1)** | **$CO_2$** |
| **Raw Average** | 12.95 | 2.38 | 0.41 | 0.25 | 4.82 |
| **Corrected Average** | 12.88 | 2.34 | 0.40 | 0.27 | 4.81 |
| **Initial Zero** | 0.10 | 0.02 | 0.01 | 0.01 | 0.03 |
| **Final Zero** | 0.03 | 0.02 | 0.00 | 0.00 | 0.02 |
| **Avg. Zero** | 0.07 | 0.02 | 0.01 | 0.01 | 0.03 |
| **Initial UpScale** | 12.10 | 9.06 | 9.15 | 3.30 | 8.91 |
| **Final UpScale** | 12.06 | 8.94 | 9.07 | 3.28 | 8.99 |
| **Avg. UpScale** | 12.08 | 9.00 | 9.11 | 3.29 | 8.95 |
| **Sys Resp (Zero)** | 0.06 | 0.06 | 0.00 | 0.00 | 0.03 |
| **Sys Resp (Upscale)** | 12.03 | 8.73 | 9.10 | 3.29 | 9.13 |
| **Upscale Cal Gas** | 12.01 | 8.90 | 9.10 | 3.37 | 8.95 |
| **Initial Zero Bias** | 0.19% | -0.22% | 0.05% | 0.10% | 0.00% |
| **Final Zero Bias** | -0.14% | -0.22% | 0.00% | 0.00% | -0.05% |
| **Zero Drift** | 0.33% | 0.00% | 0.05% | 0.10% | 0.05% |
| **Initial Upscale Bias** | 0.33% | 1.85% | 0.27% | 0.10% | -1.18% |
| **Final Upscale Bias** | 0.14% | 1.18% | -0.16% | -0.10% | -0.75% |
| **Upscale Drift** | 0.19% | 0.67% | 0.44% | 0.20% | 0.43% |
| Alternative Specification Abs Diff **Initial Zero** | 0.04 | 0.04 | 0.01 | -- | 0.00 |
| Alternative Specification Abs Diff **Final Zero** | 0.03 | 0.04 | 0.00 | -- | 0.01 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.07 | 0.33 | 0.05 | -- | 0.22 |
| Alternative Specification Abs Diff **Final Upscale** | 0.03 | 0.21 | 0.03 | -- | 0.14 |
| **Calibration Span** | 21.10 | 17.80 | 18.30 | 10.00 | 18.70 |
| **3% of Cal. Span (drift)** | 0.63 | 0.53 | 0.55 | 0.30 | 0.56 |
| **5% of Cal. Span (bias)** | 1.06 | 0.89 | 0.92 | 0.50 | 0.94 |

| DRIFT AND BIAS CHECK | | | | | |
|---|---|---|---|---|---|
| **Base Load, Run - 1-3** | **$O_2$** | **NOx** | **CO** | **VOC (as C1)** | **$CO_2$** |
| **Raw Average** | 12.95 | 2.45 | 0.02 | 0.02 | 4.82 |
| **Corrected Average** | 12.90 | 2.43 | 0.02 | 0.02 | 4.79 |
| **Initial Zero** | 0.03 | 0.02 | 0.00 | 0.00 | 0.02 |
| **Final Zero** | 0.01 | 0.00 | 0.00 | 0.00 | 0.02 |
| **Avg. Zero** | 0.02 | 0.01 | 0.00 | 0.00 | 0.02 |
| **Initial UpScale** | 12.06 | 8.94 | 9.07 | 3.28 | 8.99 |
| **Final UpScale** | 12.05 | 8.96 | 9.11 | 3.33 | 9.01 |
| **Avg. UpScale** | 12.06 | 8.95 | 9.09 | 3.31 | 9.00 |
| **Sys Resp (Zero)** | 0.06 | 0.06 | 0.00 | 0.00 | 0.03 |
| **Sys Resp (Upscale)** | 12.03 | 8.73 | 9.10 | 3.29 | 9.13 |
| **Upscale Cal Gas** | 12.01 | 8.90 | 9.10 | 3.37 | 8.95 |
| **Initial Zero Bias** | -0.14% | -0.22% | 0.00% | 0.00% | -0.05% |
| **Final Zero Bias** | -0.24% | -0.34% | 0.00% | 0.00% | -0.05% |
| **Zero Drift** | 0.09% | 0.11% | 0.00% | 0.00% | 0.00% |
| **Initial Upscale Bias** | 0.14% | 1.18% | -0.16% | -0.10% | -0.75% |
| **Final Upscale Bias** | 0.09% | 1.29% | 0.05% | 0.40% | -0.64% |
| **Upscale Drift** | 0.05% | 0.11% | 0.22% | 0.50% | 0.11% |
| Alternative Specification Abs Diff **Initial Zero** | 0.03 | 0.04 | 0.00 | -- | 0.01 |
| Alternative Specification Abs Diff **Final Zero** | 0.05 | 0.06 | 0.00 | -- | 0.01 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.03 | 0.21 | 0.03 | -- | 0.14 |
| Alternative Specification Abs Diff **Final Upscale** | 0.02 | 0.23 | 0.01 | -- | 0.12 |
| **Calibration Span** | 21.10 | 17.80 | 18.30 | 10.00 | 18.70 |
| **3% of Cal. Span (drift)** | 0.63 | 0.53 | 0.55 | 0.30 | 0.56 |
| **5% of Cal. Span (bias)** | 1.06 | 0.89 | 0.92 | 0.50 | 0.94 |

| DRIFT AND BIAS CHECK | | | | | |
|---|---|---|---|---|---|
| **Base+Db Load, Run - 2-1** | **$O_2$** | **NOx** | **CO** | **VOC (as C1)** | **$CO_2$** |
| **Raw Average** | 11.69 | 2.56 | 0.00 | 0.00 | 5.13 |
| **Corrected Average** | 11.71 | 2.54 | 0.00 | 0.00 | 5.09 |
| **Initial Zero** | 0.03 | 0.01 | 0.00 | 0.00 | 0.00 |
| **Final Zero** | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Avg. Zero** | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 |
| **Initial UpScale** | 11.99 | 8.87 | 9.08 | 3.39 | 9.01 |
| **Final UpScale** | 12.00 | 8.99 | 9.13 | 3.32 | 9.03 |
| **Avg. UpScale** | 12.00 | 8.93 | 9.11 | 3.36 | 9.02 |
| **Sys Resp (Zero)** | 0.05 | 0.02 | 0.00 | 0.00 | 0.00 |
| **Sys Resp (Upscale)** | 12.01 | 8.81 | 9.12 | 3.35 | 9.03 |
| **Upscale Cal Gas** | 12.01 | 8.90 | 9.10 | 3.37 | 8.95 |
| **Initial Zero Bias** | -0.09% | -0.06% | 0.00% | 0.00% | 0.00% |
| **Final Zero Bias** | -0.19% | -0.11% | 0.00% | 0.00% | 0.00% |
| **Zero Drift** | 0.09% | 0.06% | 0.00% | 0.00% | 0.00% |
| **Initial Upscale Bias** | -0.09% | 0.34% | -0.22% | 0.40% | -0.11% |
| **Final Upscale Bias** | -0.05% | 1.01% | 0.05% | -0.30% | 0.00% |
| **Upscale Drift** | 0.05% | 0.67% | 0.27% | 0.70% | 0.11% |
| Alternative Specification Abs Diff **Initial Zero** | 0.02 | 0.01 | 0.00 | -- | 0.00 |
| Alternative Specification Abs Diff **Final Zero** | 0.04 | 0.02 | 0.00 | -- | 0.00 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.02 | 0.06 | 0.04 | -- | 0.02 |
| Alternative Specification Abs Diff **Final Upscale** | 0.01 | 0.18 | 0.01 | -- | 0.00 |
| **Calibration Span** | 21.10 | 17.80 | 18.30 | 10.00 | 18.70 |
| **3% of Cal. Span (drift)** | 0.63 | 0.53 | 0.55 | 0.30 | 0.56 |
| **5% of Cal. Span (bias)** | 1.06 | 0.89 | 0.92 | 0.50 | 0.94 |

| DRIFT AND BIAS CHECK | | | | | |
|---|---|---|---|---|---|
| Base+Db Load, Run - 2-2 | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ |
| Raw Average | 11.67 | 2.55 | 0.00 | 0.00 | 5.13 |
| Corrected Average | 11.69 | 2.54 | 0.00 | 0.00 | 5.10 |
| Initial Zero | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| Final Zero | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avg. Zero | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial UpScale | 12.00 | 8.99 | 9.13 | 3.32 | 9.03 |
| Final UpScale | 11.97 | 8.86 | 9.08 | 3.40 | 8.98 |
| Avg. UpScale | 11.99 | 8.93 | 9.11 | 3.36 | 9.01 |
| Sys Resp (Zero) | 0.05 | 0.02 | 0.00 | 0.00 | 0.00 |
| Sys Resp (Upscale) | 12.01 | 8.81 | 9.12 | 3.35 | 9.03 |
| Upscale Cal Gas | 12.01 | 8.90 | 9.10 | 3.37 | 8.95 |
| Initial Zero Bias | -0.19% | -0.11% | 0.00% | 0.00% | 0.00% |
| Final Zero Bias | -0.14% | -0.11% | 0.00% | 0.00% | 0.00% |
| Zero Drift | 0.05% | 0.00% | 0.00% | 0.00% | 0.00% |
| Initial Upscale Bias | -0.05% | 1.01% | 0.05% | -0.30% | 0.00% |
| Final Upscale Bias | -0.19% | 0.28% | -0.22% | 0.50% | -0.27% |
| Upscale Drift | 0.14% | 0.73% | 0.27% | 0.80% | 0.27% |
| Alternative Specification Abs Diff: Initial Zero | 0.04 | 0.02 | 0.00 | -- | 0.00 |
| Alternative Specification Abs Diff: Final Zero | 0.03 | 0.02 | 0.00 | -- | 0.00 |
| Alternative Specification Abs Diff: Initial Upscale | 0.01 | 0.18 | 0.01 | -- | 0.00 |
| Alternative Specification Abs Diff: Final Upscale | 0.04 | 0.05 | 0.04 | -- | 0.05 |
| Calibration Span | 21.10 | 17.80 | 18.30 | 10.00 | 18.70 |
| 3% of Cal. Span (drift) | 0.63 | 0.53 | 0.55 | 0.30 | 0.56 |
| 5% of Cal. Span (bias) | 1.06 | 0.89 | 0.92 | 0.50 | 0.94 |

| DRIFT AND BIAS CHECK | | | | | |
|---|---|---|---|---|---|
| Base+Db Load, Run - 2-3 | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ |
| Raw Average | 11.56 | 2.48 | 0.25 | 0.00 | 5.02 |
| Corrected Average | 11.58 | 2.48 | 0.25 | 0.00 | 5.01 |
| Initial Zero | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 |
| Final Zero | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Avg. Zero | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial UpScale | 11.97 | 8.86 | 9.08 | 3.40 | 8.98 |
| Final UpScale | 11.99 | 8.96 | 9.24 | 3.35 | 8.96 |
| Avg. UpScale | 11.98 | 8.91 | 9.16 | 3.38 | 8.97 |
| Sys Resp (Zero) | 0.05 | 0.02 | 0.00 | 0.00 | 0.00 |
| Sys Resp (Upscale) | 12.01 | 8.81 | 9.12 | 3.35 | 9.03 |
| Upscale Cal Gas | 12.01 | 8.90 | 9.10 | 3.37 | 8.95 |
| Initial Zero Bias | -0.14% | -0.11% | 0.00% | 0.00% | 0.00% |
| Final Zero Bias | -0.24% | -0.11% | 0.00% | 0.00% | 0.00% |
| Zero Drift | 0.09% | 0.00% | 0.00% | 0.00% | 0.00% |
| Initial Upscale Bias | -0.19% | 0.28% | -0.22% | 0.50% | -0.27% |
| Final Upscale Bias | -0.09% | 0.84% | 0.66% | 0.00% | -0.37% |
| Upscale Drift | 0.09% | 0.56% | 0.87% | 0.50% | 0.11% |
| Alternative Specification Abs Diff: Initial Zero | 0.03 | 0.02 | 0.00 | -- | 0.00 |
| Alternative Specification Abs Diff: Final Zero | 0.05 | 0.02 | 0.00 | -- | 0.00 |
| Alternative Specification Abs Diff: Initial Upscale | 0.04 | 0.05 | 0.04 | -- | 0.05 |
| Alternative Specification Abs Diff: Final Upscale | 0.02 | 0.15 | 0.12 | -- | 0.07 |
| Calibration Span | 21.10 | 17.80 | 18.30 | 10.00 | 18.70 |
| 3% of Cal. Span (drift) | 0.63 | 0.53 | 0.55 | 0.30 | 0.56 |
| 5% of Cal. Span (bias) | 1.06 | 0.89 | 0.92 | 0.50 | 0.94 |

# AIR HYGIENE

## SINGLE LOAD TEST - FIELD DATA SHEET

| | |
|---|---|
| Company: | Cricket Valley Energy LLC |
| Location: | Cricket Valley Energy Center |
| Date: | 3-17-26 Project Code: bec-19-cricketvalley.ny-Start#1 |
| Unit Make and Model: | General Electric 7F.05 |
| Unit Number: | GT-00001 |
| Serial Number: | |
| Data Recorded By: | AB |
| Tested With AHI Unit(s): | Truck(s): Trailer(s): |
| LDEQ Warmup/Cal Req: | On (Day/Time): Cal (Day/Time): |

| CYLINDER SERIAL NUMBERS | | $O_2$ | NOx | CO |
|---|---|---|---|---|
| | Low | | | |
| | Mid | EB0069916 | EB0040967 | EB0040967 |
| | High | EB0096307 | EB0019999 | EB0019999 |

| CYLINDER SERIAL NUMBERS | | THC | $CO_2$ | NH3 |
|---|---|---|---|---|
| | Low | EB0003761 | | |
| | Mid | EB0057200 | EB0069916 | |
| | High | EB0038438 | EB0096307 | EB0100161 |

Stack Dia. = _____
Measured By: _____
Measured With: _____

| RUN INFORMATION | Load | | |
|---|---|---|---|
| | ____% #1 | ____% #2 | ____% #3 |
| Time Start (hh:mm:ss) | 13:35:04 | 14:50:04 | 16:00:01 |
| Time Stop (hh:mm:ss) | 14:34:34 | 15:49:34 | 16:59:31 |
| Rated Power (MW or hp) | | | |
| Actual Power (MW or hp) | | | |
| Barometric Pressure (in. Hg) | 30.28 | 3028 | 30.3 |
| Ambient Temperature (°F) | 43 | 43 | 45 |
| Relative Humidity (%) | 41 | 40 | 39 |
| Turbine Fuel Flow (SCFH) | | | |
| Duct Burner Fuel Flow (SCFH) | | | |
| Power Output | | | |

| $NO_2$ CONVERSION | |
|---|---|
| $NO_2$ Gas (ppm) | 49.1 |
| NO Reading (ppm) | 2.3 |
| NOx Reading (ppm) | 48.37 |
| Cylinder Num | EB0026149 |

| REPORT INFORMATION | | |
|---|---|---|
| | INSTRUMENT | SERIAL # |
| $O_2$ | servomax 1440 | inst-02-0014 |
| NOx | Thermo 42I-HL | inst-nx-00020 |
| CO | Thermo 48I | inst-co-0045 |

| RESPONSE TIME | | |
|---|---|---|
| | TIME (hh:mm) | RESP (min) |
| 1st Gas Inject | | |
| 1st Inst. @ 95% | | |
| 2nd Inst. @ 95% | | |
| 3rd Inst. @ 95% | | |
| 2nd Gas Inject | | |
| 1st Inst. @ 95% | | |
| 2nd Inst. @ 95% | | |
| 3rd Inst. @ 95% | | |
| 3rd Gas Inject | | |

| CALIBRATION | $O_2$ | | NOx | | CO | | THC | | $CO_2$ | | $SO_2$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Conc. | Actual | Conc. | Actual | Conc. | Actual | Conc. | Actual | Conc. | Actual | Conc. | Actual |
| Zero Gas | 0 | .06 | 0 | .06 | 0 | 0 | 0 | 0 | 0 | .03 | | |
| Low Gas | | | | 0 | | | 3.37 | 3.24 | | | | |
| Mid Gas | 11.96 | 12.03 | 8.9 | 8.73 | 9.1 | 9.1 | 4.84 | 5.12 | 8.99 | 9.13 | | |
| High Gas | 21 | 21.09 | 17.8 | 17.68 | 18.3 | 18.37 | 8.77 | 8.89 | 18.7 | 18.69 | | |

| BIAS | $O_2$ | | NOx | | CO | | THC | | $CO_2$ | | $SO_2$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Zero | Mid | Zero | Mid | Zero | Mid | Zero | Mid | Zero | Mid | Zero | Mid |
| Initial Run #1 | .03 | 11.99 | .01 | 8.91 | 0 | 9.08 | .01 | 3.29 | 0 | 8.94 | | |
| Run #1 / Run #2 | .01 | 12.1 | .02 | 9.06 | .01 | 9.15 | .01 | 3.36 | .03 | 8.91 | | |
| Run #2 / Run #3 | .03 | 12.06 | .02 | 8.94 | 0 | 9.07 | 0 | 3.28 | .02 | 8.94 | | |
| Run #3 / Final | .01 | 12.05 | 0 | 8.96 | 0 | 9.11 | 0 | 3.33 | .02 | 9.01 | | |
| Bias Gas Actual Conc. | | | | | | | | | | | | |

Signature _____

# SINGLE LOAD TEST - FIELD DATA SHEET

AIR HYGIENE

| | |
|---|---|
| Company: | Cricket Valley Energy LLC |
| Location: | Cricket Valley Energy Center |
| Date: | 2-19-20 Project Code: bec-19-cricketvalley.ny-Start#1 |
| Unit Make and Model: | General Electric 7F.05 |
| Unit Number: | GT-00001 |
| Serial Number: | |
| Data Recorded By: | AB |
| Tested With AHI Unit(s): | Truck(s): Trailer(s): |
| LDEQ Warmup/Cal Req: | On (Day/Time): Cal (Day/Time): |

| CYLINDER SERIAL NUMBERS | | $O_2$ | NOx | CO |
|---|---|---|---|---|
| | Low | | | |
| | Mid | EB0069916 | EB0040967 | EB0040967 |
| | High | EB0096307 | EB0019999 | EB0019999 |

Stack Dia. = _____
Measured By: _____
Measured With: _____

| CYLINDER SERIAL NUMBERS | | THC | $CO_2$ | NH3 |
|---|---|---|---|---|
| | Low | EB0003761 | | |
| | Mid | EB0057200 | EB0069916 | |
| | High | EB0038438 | EB0096307 | EB0100161 |

| RUN INFORMATION | Load | | |
|---|---|---|---|
| | _____% #1 | _____% #2 | _____% #3 |
| Time Start (hh:mm:ss) | 4:25:06 | 5:33:06 | 6:41:06 |
| Time Stop (hh:mm:ss) | 5:24:36 | 6:32:36 | 7:40:36 |
| Rated Power (MW or hp) | | | |
| Actual Power (MW or hp) | | | |
| Barometric Pressure (in. Hg) | 30.07 | 30.11 | 30.15 |
| Ambient Temperature (°F) | 37 | 36 | 34 |
| Relative Humidity (%) | 81 | 72 | 76 |
| Turbine Fuel Flow (SCFH) | | | |
| Duct Burner Fuel Flow (SCFH) | | | |
| Power Output | | | |

| $NO_2$ CONVERSION | |
|---|---|
| $NO_2$ Gas (ppm) | 49.1 |
| NO Reading (ppm) | 2.4 |
| NOx Reading (ppm) | 47.72 |
| Cylinder Num | EB0026149 |

| REPORT INFORMATION | | |
|---|---|---|
| | INSTRUMENT | SERIAL # |
| $O_2$ | servomax 1440 | inst-02-0014 |
| NOx | Thermo 42I-HL | inst-nx-00020 |
| CO | Thermo 48I | inst-co-0045 |

| RESPONSE TIME | | |
|---|---|---|
| | TIME (hh:mm) | RESP (min) |
| 1st Gas Inject | | |
| 1st Inst. @ 95% | | |
| 2nd Inst. @ 95% | | |
| 3rd Inst. @ 95% | | |
| 2nd Gas Inject | | |
| 1st Inst. @ 95% | | |
| 2nd Inst. @ 95% | | |
| 3rd Inst. @ 95% | | |
| 3rd Gas Inject | | |

| CALIBRATION | $O_2$ | | NOx | | CO | | THC | | $CO_2$ | | $SO_2$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Conc. | Actual | Conc. | Actual | Conc. | Actual | Conc. | Actual | Conc. | Actual | Conc. | Actual |
| Zero Gas | 0 | .05 | 0 | .02 | 0 | Ø | 0 | Ø | 0 | Ø | | |
| Low Gas | | | | | | | 3.37 | 3.35 | | | | |
| Mid Gas | 11.96 | 12.01 | 8.9 | 8.81 | 9.1 | 9.12 | 4.84 | 4.9 | 8.99 | 9.03 | | |
| High Gas | 21 | 21.02 | 17.8 | 17.78 | 18.3 | 18.38 | 8.77 | 8.75 | 18.7 | 18.71 | | |

| BIAS | $O_2$ | | NOx | | CO | | THC | | $CO_2$ | | $SO_2$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Zero | Mid | Zero | Mid | Zero | Mid | Zero | Mid | Zero | Mid | Zero | Mid |
| Initial Run #1 | .03 | 11.99 | .01 | 8.87 | Ø | 9.08 | Ø | 3.39 | Ø | 9.01 | | |
| Run #1 / Run #2 | .01 | 12.0 | Ø | 8.94 | Ø | 9.13 | Ø | 3.32 | Ø | 9.03 | | |
| Run #2 / Run #3 | .02 | 11.97 | Ø | 8.86 | Ø | 9.08 | Ø | 3.40 | Ø | 8.98 | | |
| Run #3 / Final | Ø | 11.99 | Ø | 8.96 | Ø | 9.24 | Ø | 3.35 | Ø | 8.96 | | |
| Bias Gas Actual Conc. | | | | | | | | | | | | |

Signature _____

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

## Laboratory Data Summary Base Load $PM_{10}$

## SAMPLE RECOVERY AND INTEGRITY DATA SHEET

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Date** | 02/16/20 |
| **Sampling Location** | U-00001 Base | **Operator** | Aaron Blum |
| **Project #** | bec-19-cricketvalley.ny-start#1 | | |

| **Run History Data** | | | | |
|---|---|---|---|---|
| **Run Number** | PM U-00001 Base-1 | PM U-00001 Base-2 | PM U-00001 Base-3 | |
| **Run Start Time** | 17:02 | 23:05 | 14:25 | (hh:mm) |
| **Run Stop Time** | 22:11 | 04:05 | 18:27 | (hh:mm) |
| **Train Prepared By** | RW | RW | RW | |
| **Train Recovered By** | RW | RW | RW | |
| **Recovery Date** | 02/17/20 | 02/18/20 | 02/19/20 | (mm/dd/yy) |
| **Relinquished By** | RW | RW | RW | |
| **Received By** | Courier | Courier | Courier | |
| **Relinquished Date** | 02/20/20 | 02/20/20 | 02/20/20 | (mm/dd/yy) |
| **Relinquished Time** | 14:20 | 14:20 | 14:20 | (hh:mm) |

| **Equipment Identification Numbers** | | | |
|---|---|---|---|
| **Impinger Case** | SAMP-BH-0039 | SAMP-BH-0039 | SAMP-BH-0039 |
| **Sample Box** | SAMP-SBC-0099 | SAMP-SBC-0099 | SAMP-SBC-0099 |
| **PM Filter** | 18082942 | 18092937 | 18082945 |
| **CPM Filter** | PM U-00001 Base-1-CPM | PM U-00001 Base-2-CPM | PM U-00001 Base-3-CPM |

| | |
|---|---|
| Sample Blank Taken | ☑ YES |

| **Moisture Content Data** | | | | | |
|---|---|---|---|---|---|
| **Impingers 1, 2, and 3 - Liquid Weight** | | | | | |
| **Final Weight** | ($W_f$) | 1743.0 | 1821.4 | 1825.5 | g |
| **Initial Weight** | ($W_i$) | 1626.4 | 1680.3 | 1688.7 | g |
| **Net Weight** | ($W_n$) | 116.6 | 141.1 | 136.8 | g |
| **Comments** | | | | | |
| **Impinger 4 - Silica Gel Weight** | | | | | |
| **Final Weight** | ($W_f$) | 859.0 | 901.3 | 930.1 | g |
| **Initial Weight** | ($W_i$) | 842.4 | 889.0 | 918.6 | g |
| **Net Weight** | ($W_n$) | 16.6 | 12.3 | 11.5 | g |
| **Comments** | | | | | |
| **Total Water Collected** | | | | | |
| **Total Weight** | ($W_{lc}$) | 133.2 | 153.4 | 148.3 | g |
| **Total Volume** | ($V_{lc}$) | 133.4 | 153.7 | 148.6 | ml |

## SAMPLE ANALYTICAL DATA SHEET

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base |
| **Project #** | bec-19-cricketvalley.ny-start#1 |

| **Analytical Data** | | **Run** | PM U-00001 Base-1 | | |
|---|---|---|---|---|---|
| **Sample Leakage Evident** | NO | **Estimated Leak Volume** | | 0.00 | (mg) |

| Sample Type | Sample Number | Date | Time |
|---|---|---|---|
| Filter | BV Labs | | |
| Nozzle Wash PM>10 | BV Labs | | |
| Cyclone Wash 2.5<PM<10 | BV Labs | | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | BV Labs | | |
| Inorganic Impinger Contents | BV Labs | | |
| Organic Impinger Contents | BV Labs | | |

| **Blank and Titration Concentrations** | | | | | |
|---|---|---|---|---|---|
| **Blank Type** | **Weight** | **Volume** | **Concentration** | **Mass** | |
| | (g) | (ml) | (mg/ml) | (mg) | |
| Acetone Blank Weight of Solids | 0.0000 | 201 | 0.000000 | -- | below RDL |
| DI Water Blank Weight of Solids | 0.0000 | 197 | 0.000000 | -- | below RDL |
| Hexane Blank Weight of Solids | 0.0000 | 228 | 0.000000 | -- | below RDL |

(3) Negative weight observed WET, Filter received wet, * Reported at RDL

| **Gravimetric Concentrations** | | | **Run** | | 1 | **Start Time** | 17:02 |
|---|---|---|---|---|---|---|---|
| **Sample Portion** | **Final** | **Tare** | **Gain** | **Volume** | **Blank Adjustment** | **Adjusted Gain** | |
| | (g) | (g) | (mg) | (ml) | (mg) | (mg) | |
| Filter | | * | 0.3000 | (3) -- | -- | 0.3000 | |
| Filter Beaker | | | | -- | -- | | |
| Nozzle Wash PM>10 | | | 16.2 | 100 | 0.0000 | 16.2000 | |
| Cyclone Wash 2.5<PM<10 | | | 1.3 | 130 | 0.0000 | 1.3000 | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | | | 1.7 | 130 | 0.0000 | 1.7000 | |
| Inorganic Impinger Contents | | | 4.6 | 502 | 1.4762 | 3.1238 | |
| Organic Impinger Contents | | | 1.6 | 228 | 0.5238 | 1.0762 | |

## SAMPLE ANALYTICAL DATA SHEET

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base |
| **Project #** | bec-19-cricketvalley.ny-start#1 |

| **Analytical Data** | | **Run** | PM U-00001 Base-2 | | |
|---|---|---|---|---|---|
| **Sample Leakage Evident** | NO | **Estimated Leak Volume** | | 0.00 | (mg) |

| Sample Type | Sample Number | Date | Time |
|---|---|---|---|
| Filter | BV Labs | | |
| Nozzle Wash PM>10 | BV Labs | | |
| Cyclone Wash 2.5<PM<10 | BV Labs | | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | BV Labs | | |
| Inorganic Impinger Contents | BV Labs | | |
| Organic Impinger Contents | BV Labs | | |

| **Blank and Titration Concentrations** | | | | | |
|---|---|---|---|---|---|
| **Blank Type** | **Weight** | **Volume** | **Concentration** | **Mass** | |
| | (g) | (ml) | (mg/ml) | (mg) | |
| Acetone Blank Weight of Solids | 0.0000 | 201 | 0.000000 | -- | below RDL |
| DI Water Blank Weight of Solids | 0.0000 | 197 | 0.000000 | -- | below RDL |
| Hexane Blank Weight of Solids | 0.0000 | 228 | 0.000000 | -- | below RDL |

(2) Negative weight observed, * Reported at RDL

| **Gravimetric Concentrations** | | | **Run** | | 2 | **Start Time** | 23:05 |
|---|---|---|---|---|---|---|---|
| **Sample Portion** | **Final** | **Tare** | **Gain** | **Volume** | **Blank Adjustment** | **Adjusted Gain** | |
| | (g) | (g) | (mg) | (ml) | (mg) | (mg) | |
| Filter | | * | 0.3000 | (2) -- | -- | 0.3000 | |
| Filter Beaker | | | | -- | -- | | |
| Nozzle Wash PM>10 | | | 14.5 | 110 | 0.0000 | 14.5000 | |
| Cyclone Wash 2.5<PM<10 | | | 1.7 | 130 | 0.0000 | 1.7000 | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | | | 2.7 | 130 | 0.0000 | 2.7000 | |
| Inorganic Impinger Contents | | | 4.2 | 441 | 1.4762 | 2.7238 | |
| Organic Impinger Contents | | | 2.4 | 349 | 0.5238 | 1.8762 | |

## SAMPLE ANALYTICAL DATA SHEET

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base |
| **Project #** | bec-19-cricketvalley.ny-start#1 |

| **Analytical Data** | | **Run** | PM U-00001 Base-3 | | |
|---|---|---|---|---|---|
| **Sample Leakage Evident** | NO | **Estimated Leak Volume** | | 0.00 | (mg) |

| Sample Type | Sample Number | Date | Time |
|---|---|---|---|
| Filter | BV Labs | | |
| Nozzle Wash PM>10 | BV Labs | | |
| Cyclone Wash 2.5<PM<10 | BV Labs | | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | BV Labs | | |
| Inorganic Impinger Contents | BV Labs | | |
| Organic Impinger Contents | BV Labs | | |

**Blank and Titration Concentrations**

| Blank Type | Weight | Volume | Concentration | Mass | |
|---|---|---|---|---|---|
| | (g) | (ml) | (mg/ml) | (mg) | |
| Acetone Blank Weight of Solids | 0.0000 | 201 | 0.000000 | -- | below RDL |
| DI Water Blank Weight of Solids | 0.0000 | 197 | 0.000000 | -- | below RDL |
| Hexane Blank Weight of Solids | 0.0000 | 228 | 0.000000 | -- | below RDL |

(4) Negtive results observed WET, Filter received wet LFT, Loose filter material in the petri dish DE, Edges of the filter are frayed, * Reported at RDL

| **Gravimetric Concentrations** | | | **Run** | | 3 | **Start Time** | 14:25 |
|---|---|---|---|---|---|---|---|
| **Sample Portion** | **Final** | **Tare** | **Gain** | **Volume** | **Blank Adjustment** | **Adjusted Gain** | |
| | (g) | (g) | (mg) | (ml) | (mg) | (mg) | |
| Filter | | * | 0.3000 | (4) -- | -- | 0.3000 | |
| Filter Beaker | | | | -- | -- | | |
| Nozzle Wash PM>10 | | | 14.0 | 97 | 0.0000 | 14.0000 | |
| Cyclone Wash 2.5<PM<10 | | | 1.5 | 85 | 0.0000 | 1.5000 | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | | | 1.7 | 63 | 0.0000 | 1.7000 | |
| Inorganic Impinger Contents | | | 3.6 | 441 | 1.4762 | 2.1238 | |
| Organic Impinger Contents | | * | 1.0 | 349 | 0.5238 | 0.4762 | |

## SAMPLE ANALYTICAL DATA SHEET

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base |
| **Project #** | bec-19-cricketvalley.ny-start#1 |

| **Analytical Data** | | **Run** | PM U-00001 Base-FB | | |
|---|---|---|---|---|---|
| **Sample Leakage Evident** | NO | **Estimated Leak Volume** | | 0.00 | (mg) |

| Sample Type | Sample Number | Date | Time |
|---|---|---|---|
| Inorganic Impinger Contents | BV Labs | | |
| Organic Impinger Contents | BV Labs | | |

| Gravimetric Concentrations | | | | | |
|---|---|---|---|---|---|
| **Sample Portion** | **Final** | **Tare** | **Gain** | | **Actual Gain** |
| | (g) | (g) | (mg) | | (mg) |
| Inorganic Impinger Contents | 0.0031 | 0.0000 | 1.4762 | max 2 mg total blank adjustment, proportioned | 3.1000 |
| Organic Impinger Contents | 0.0011 | 0.0000 | 0.5238 | | 1.1000 |

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

## Laboratory Data Summary Base+DB Load $PM_{10}$

## SAMPLE RECOVERY AND INTEGRITY DATA SHEET

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Date** | 02/18/20 |
| **Sampling Location** | U-00001 Base+DB | **Operator** | Aaron Blum |
| **Project #** | bec-19-cricketvalley.ny-start#1 | | |

| **Run History Data** | | | | |
|---|---|---|---|---|
| **Run Number** | PM U-00001 Base+DB-1 | PM U-00001 Base+DB-2 | PM U-00001 Base+DB-3 | |
| **Run Start Time** | 14:55 | 04:24 | 09:14 | (hh:mm) |
| **Run Stop Time** | 19:04 | 08:15 | 13:51 | (hh:mm) |
| **Train Prepared By** | RW | RW | RW | |
| **Train Recovered By** | RW | RW | RW | |
| **Recovery Date** | 02/18/20 | 08/19/20 | 08/19/20 | (mm/dd/yy) |
| **Relinquished By** | RW | RW | RW | |
| **Received By** | Courier | Courier | Courier | |
| **Relinquished Date** | 02/20/20 | 02/20/20 | 02/20/20 | (mm/dd/yy) |
| **Relinquished Time** | 14:20 | 14:20 | 14:20 | (hh:mm) |

| **Equipment Identification Numbers** | | | |
|---|---|---|---|
| **Impinger Case** | SAMP-BH-0039 | SAMP-BH-0039 | SAMP-BH-0039 |
| **Sample Box** | SAMP-SBC-0099 | SAMP-SBC-0099 | SAMP-SBC-0099 |
| **PM Filter** | 18042521 | 18082944 | 18082938 |
| **CPM Filter** | PM U-00001 Base+DB-1-CPM | PM U-00001 Base+DB-2-CPM | PM U-00001 Base+DB-3-CPM |

| | |
|---|---|
| Sample Blank Taken | ☑ YES |

| **Moisture Content Data** | | | | | |
|---|---|---|---|---|---|
| **Impingers 1, 2, and 3 - Liquid Weight** | | | | | |
| **Final Weight** | ($W_f$) | 1775.0 | 1818.9 | 1774.7 | g |
| **Initial Weight** | ($W_i$) | 1634.8 | 1686.0 | 1634.1 | g |
| **Net Weight** | ($W_n$) | 140.2 | 132.9 | 140.6 | g |
| **Comments** | | | | | |
| **Impinger 4 - Silica Gel Weight** | | | | | |
| **Final Weight** | ($W_f$) | 875.2 | 918.6 | 893.2 | g |
| **Initial Weight** | ($W_i$) | 859.6 | 901.3 | 875.2 | g |
| **Net Weight** | ($W_n$) | 15.6 | 17.3 | 18.0 | g |
| **Comments** | | | | | |
| **Total Water Collected** | | | | | |
| **Total Weight** | ($W_{lc}$) | 155.8 | 150.2 | 158.6 | g |
| **Total Volume** | ($V_{lc}$) | 156.1 | 150.5 | 158.9 | ml |

## SAMPLE ANALYTICAL DATA SHEET

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#1 |

| **Analytical Data** | | **Run** | PM U-00001 Base+DB-1 | | |
|---|---|---|---|---|---|
| **Sample Leakage Evident** | NO | **Estimated Leak Volume** | | 0.00 | (mg) |

| Sample Type | Sample Number | Date | Time |
|---|---|---|---|
| Filter | BV Labs | | |
| Nozzle Wash PM>10 | BV Labs | | |
| Cyclone Wash 2.5<PM<10 | BV Labs | | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | BV Labs | | |
| Inorganic Impinger Contents | BV Labs | | |
| Organic Impinger Contents | BV Labs | | |

**Blank and Titration Concentrations**

| Blank Type | Weight | Volume | Concentration | Mass | |
|---|---|---|---|---|---|
| | (g) | (ml) | (mg/ml) | (mg) | |
| Acetone Blank Weight of Solids | 0.0000 | 201 | 0.000000 | -- | below RDL |
| DI Water Blank Weight of Solids | 0.0000 | 197 | 0.000000 | -- | below RDL |
| Hexane Blank Weight of Solids | 0.0000 | 228 | 0.000000 | -- | below RDL |

(1) Negative weight observed LFT, Loose filter material in the petri dish DE, Edges of the filter are frayed, * Reported at RDL

| **Gravimetric Concentrations** | | | **Run** | | 1 | **Start Time** | 14:55 |
|---|---|---|---|---|---|---|---|
| **Sample Portion** | **Final** | **Tare** | **Gain** | **Volume** | **Blank Adjustment** | **Adjusted Gain** | |
| | (g) | (g) | (mg) | (ml) | (mg) | (mg) | |
| Filter | | * | 0.3000 | (1) -- | -- | 0.3000 | |
| Filter Beaker | | | | -- | -- | | |
| Nozzle Wash PM>10 | | | 1.1 | 140 | 0.0000 | 1.1000 | |
| Cyclone Wash 2.5<PM<10 | | | 0.9 | 120 | 0.0000 | 0.9000 | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | | | 1.7 | 120 | 0.0000 | 1.7000 | |
| Inorganic Impinger Contents | | | 4.6 | 371 | 1.4762 | 3.1238 | |
| Organic Impinger Contents | | | 1.3 | 334 | 0.5238 | 0.7762 | |

## SAMPLE ANALYTICAL DATA SHEET

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#1 |

| **Analytical Data** | | **Run** | PM U-00001 Base+DB-2 | | |
|---|---|---|---|---|---|
| **Sample Leakage Evident** | NO | **Estimated Leak Volume** | | 0.00 | (mg) |

| Sample Type | Sample Number | Date | Time |
|---|---|---|---|
| Filter | BV Labs | | |
| Nozzle Wash PM>10 | BV Labs | | |
| Cyclone Wash 2.5<PM<10 | BV Labs | | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | BV Labs | | |
| Inorganic Impinger Contents | BV Labs | | |
| Organic Impinger Contents | BV Labs | | |

| **Blank and Titration Concentrations** | | | | | |
|---|---|---|---|---|---|
| **Blank Type** | **Weight** | **Volume** | **Concentration** | **Mass** | |
| | (g) | (ml) | (mg/ml) | (mg) | |
| Acetone Blank Weight of Solids | 0.0000 | 201 | 0.000000 | -- | below RDL |
| DI Water Blank Weight of Solids | 0.0000 | 197 | 0.000000 | -- | below RDL |
| Hexane Blank Weight of Solids | 0.0000 | 228 | 0.000000 | -- | below RDL |

* Reported at RDL

| **Gravimetric Concentrations** | | | **Run** | | 2 | **Start Time** | 04:24 |
|---|---|---|---|---|---|---|---|
| **Sample Portion** | **Final** | **Tare** | **Gain** | **Volume** | **Blank Adjustment** | **Adjusted Gain** | |
| | (g) | (g) | (mg) | (ml) | (mg) | (mg) | |
| Filter | | * | 0.3000 | -- | -- | 0.3000 | |
| Filter Beaker | | | | -- | -- | | |
| Nozzle Wash PM>10 | | | 13.9 | 110 | 0.0000 | 13.9000 | |
| Cyclone Wash 2.5<PM<10 | | | 1.4 | 99 | 0.0000 | 1.4000 | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | | | 1.7 | 120 | 0.0000 | 1.7000 | |
| Inorganic Impinger Contents | | | 3.7 | 471 | 1.4762 | 2.2238 | |
| Organic Impinger Contents | | | 1.2 | 425 | 0.5238 | 0.6762 | |

## SAMPLE ANALYTICAL DATA SHEET

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#1 |

| **Analytical Data** | | **Run** | PM U-00001 Base+DB-3 | | |
|---|---|---|---|---|---|
| **Sample Leakage Evident** | NO | **Estimated Leak Volume** | | 0.00 | (mg) |

| Sample Type | Sample Number | Date | Time |
|---|---|---|---|
| Filter | BV Labs | | |
| Nozzle Wash PM>10 | BV Labs | | |
| Cyclone Wash 2.5<PM<10 | BV Labs | | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | BV Labs | | |
| Inorganic Impinger Contents | BV Labs | | |
| Organic Impinger Contents | BV Labs | | |

| **Blank and Titration Concentrations** | | | | | |
|---|---|---|---|---|---|
| **Blank Type** | **Weight** | **Volume** | **Concentration** | **Mass** | |
| | (g) | (ml) | (mg/ml) | (mg) | |
| Acetone Blank Weight of Solids | 0.0000 | 201 | 0.000000 | -- | below RDL |
| DI Water Blank Weight of Solids | 0.0000 | 197 | 0.000000 | -- | below RDL |
| Hexane Blank Weight of Solids | 0.0000 | 228 | 0.000000 | -- | below RDL |

(2) Negative weight observed, * Reported at RDL

| **Gravimetric Concentrations** | | | **Run** | | 3 | **Start Time** | 09:14 |
|---|---|---|---|---|---|---|---|
| **Sample Portion** | **Final** | **Tare** | **Gain** | **Volume** | **Blank Adjustment** | **Adjusted Gain** | |
| | (g) | (g) | (mg) | (ml) | (mg) | (mg) | |
| Filter | | * | 0.3000 | (2) -- | -- | 0.3000 | |
| Filter Beaker | | | | -- | -- | | |
| Nozzle Wash PM>10 | | | 1.2 | 120 | 0.0000 | 1.2000 | |
| Cyclone Wash 2.5<PM<10 | | | 1.8 | 130 | 0.0000 | 1.8000 | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | | | 1.4 | 130 | 0.0000 | 1.4000 | |
| Inorganic Impinger Contents | | | 3.8 | 391 | 1.4762 | 2.3238 | |
| Organic Impinger Contents | | * | 1.0 | 319 | 0.5238 | 0.4762 | |

## SAMPLE ANALYTICAL DATA SHEET

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00001 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#1 |

| **Analytical Data** | | **Run** | PM U-00001 Base+DB-FB | | |
|---|---|---|---|---|---|
| **Sample Leakage Evident** | NO | **Estimated Leak Volume** | | 0.00 | (mg) |

| Sample Type | Sample Number | Date | Time |
|---|---|---|---|
| Inorganic Impinger Contents | BV Labs | | |
| Organic Impinger Contents | BV Labs | | |

| **Gravimetric Concentrations** | | | | | |
|---|---|---|---|---|---|
| **Sample Portion** | **Final** | **Tare** | **Gain** | | **Actual Gain** |
| | (g) | (g) | (mg) | | (mg) |
| Inorganic Impinger Contents | 0.0031 | 0.0000 | 1.4762 | max 2 mg total blank adjustment, proportioned | 3.1000 |
| Organic Impinger Contents | 0.0011 | 0.0000 | 0.5238 | | 1.1000 |

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

## Field Collection Data QA SAM

# SAMPLE RECOVERY AND INTEGRITY DATA SHEET

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Date** | 02/17/20 |
| **Sampling Location** | U-00001 Base | **Operator** | Atlas Melchert |
| **Project #** | bec-19-cricketvalley.ny-start#1 | | |

| **Run History Data** | | | | |
|---|---|---|---|---|
| **Run Number** | SAM U-00001 Base-1 | SAM U-00001 Base-2 | SAM U-00001 Base-3 | |
| **Run Start Time** | 02:03 | 04:57 | 14:32 | (hh:mm) |
| **Run Stop Time** | 04:03 | 06:57 | 16:32 | (hh:mm) |
| **Train Prepared By** | AM | AM | AM | |
| **Train Recovered By** | AM | AM | AM | |
| **Recovery Date** | 02/18/20 | 02/18/20 | 02/19/20 | (mm/dd/yy) |
| **Relinquished By** | RW | RW | RW | |
| **Received By** | Courier | Courier | Courier | |
| **Relinquished Date** | 02/20/20 | 02/20/20 | 02/20/20 | (mm/dd/yy) |
| **Relinquished Time** | 14:20 | 14:20 | 14:20 | (hh:mm) |

| **Equipment Identification Numbers** | | | |
|---|---|---|---|
| **Impinger Case** | samp-ha-0005 | samp-ha-0005 | samp-ha-0005 |
| **Sample Box** | samp-bc-0032 | samp-bc-0032 | samp-bc-0032 |
| **Filter** | R0001 | R0001 | R0001 |

Sample Blank Taken ☑ YES

| **Moisture Content Data** | | | | | |
|---|---|---|---|---|---|
| **Impingers 1, 2, and 3 - Liquid Weight** | | | | | |
| **Final Weight** | ($W_f$) | 2112.2 | 2186.0 | 2137.7 | g |
| **Initial Weight** | ($W_i$) | 2040.5 | 2112.2 | 2078.5 | g |
| **Net Weight** | ($W_n$) | 71.7 | 73.8 | 59.2 | g |
| **Comments** | | | | | |
| **Impinger 4 - Silica Gel Weight** | | | | | |
| **Final Weight** | ($W_f$) | 932.2 | 937.5 | 963.5 | g |
| **Initial Weight** | ($W_i$) | 926.3 | 932.2 | 957.4 | g |
| **Net Weight** | ($W_n$) | 5.9 | 5.3 | 6.1 | g |
| **Comments** | | | | | |
| **Total Water Collected** | | | | | |
| **Total Weight** | ($W_{lc}$) | 77.6 | 79.1 | 65.3 | g |
| **Total Volume** | ($V_{lc}$) | 77.7 | 79.2 | 65.4 | ml |

# SAMPLE RECOVERY AND INTEGRITY DATA SHEET

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Date** | 02/17/20 |
| **Sampling Location** | U-00001 Base+DB | **Operator** | Atlas Melchert |
| **Project #** | bec-19-cricketvalley.ny-start#1 | | |

| **Run History Data** | | | | |
|---|---|---|---|---|
| **Run Number** | SAM U-00001 Base+DB-1 | SAM U-00001 Base+DB-2 | SAM U-00001 Base+DB-3 | |
| **Run Start Time** | 14:40 | 04:09 | 07:26 | (hh:mm) |
| **Run Stop Time** | 16:40 | 06:09 | 09:26 | (hh:mm) |
| **Train Prepared By** | AM | AM | AM | |
| **Train Recovered By** | AM | AM | AM | |
| **Recovery Date** | 02/18/20 | 02/18/20 | 02/19/20 | (mm/dd/yy) |
| **Relinquished By** | RW | RW | RW | |
| **Received By** | Courier | Courier | Courier | |
| **Relinquished Date** | 02/20/20 | 02/20/20 | 02/20/20 | (mm/dd/yy) |
| **Relinquished Time** | 14:20 | 14:20 | 14:20 | (hh:mm) |

| **Equipment Identification Numbers** | | | |
|---|---|---|---|
| **Impinger Case** | samp-ha-0005 | samp-ha-0005 | samp-ha-0005 |
| **Sample Box** | samp-bc-0032 | samp-bc-0032 | samp-bc-0032 |
| **Filter** | R0001 | R0001 | R0001 |

Sample Blank Taken ☑ YES

| **Moisture Content Data** | | | | | |
|---|---|---|---|---|---|
| **Impingers 1, 2, and 3 - Liquid Weight** | | | | | |
| **Final Weight** | ($W_f$) | 2103.0 | 2120.8 | 2139.1 | g |
| **Initial Weight** | ($W_i$) | 2021.2 | 2047.8 | 2063.1 | g |
| **Net Weight** | ($W_n$) | 81.8 | 73.0 | 76.0 | g |
| **Comments** | | | | | |
| **Impinger 4 - Silica Gel Weight** | | | | | |
| **Final Weight** | ($W_f$) | 944.6 | 951.9 | 957.4 | g |
| **Initial Weight** | ($W_i$) | 937.5 | 944.6 | 951.9 | g |
| **Net Weight** | ($W_n$) | 7.1 | 7.3 | 5.5 | g |
| **Comments** | | | | | |
| **Total Water Collected** | | | | | |
| **Total Weight** | ($W_{lc}$) | 88.9 | 80.3 | 81.5 | g |
| **Total Volume** | ($V_{lc}$) | 89.1 | 80.4 | 81.6 | ml |

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

## Laboratory Data $PM_{10}$ and SAM
## BV Labs

Your Project #: BEC-19-CRICKETVALLEY.NY-START1

**Attention: Data Reports**

Air Hygiene International Inc
1600 West Tacoma Street
Broken Arrow, OK
USA 74012

**Report Date: 2020/03/03**
Report #: R6096087
Version: 1 - Final

# CERTIFICATE OF ANALYSIS

**BV LABS JOB #: C048069**
**Received: 2020/02/21, 17:15**

Sample Matrix: Stack Sampling Train
# Samples Received: 23

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Analytical Method |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | 9 | 2020/02/27 | 2020/02/26 | BRL SOP-00118 | EPA 202 m |
| Non Extractable Condensibles (M202) | 8 | 2020/02/27 | 2020/02/27 | BRL SOP-00118 / BRL SOP-00109 | EPA 202 m |
| >10um Particulates in Rinse | 7 | 2020/02/27 | 2020/02/28 | BRL SOP-00109 | EPA M201A |
| 2.5-10um Particulates in Rinse | 7 | 2020/02/27 | 2020/02/28 | BRL SOP-00109 | EPA M201A |
| 2.5 um Particulates on Filter | 7 | N/A | 2020/02/26 | BRL SOP-00109 | EPA M201A |
| <2.5um Particulates in Rinse | 7 | 2020/02/27 | 2020/02/28 | BRL SOP-00109 | EPA M201A |
| Sulphuric Acid Mist by Titration (M8A) | 7 | 2020/03/02 | 2020/03/02 | BRL SOP-00116 | EPA CFR PTM 8 m |
| Final Volume of Acetone Probe Rinse | 7 | N/A | 2020/02/26 | BRL SOP-00109 | |
| Final Volume of Impinger | 7 | N/A | 2020/03/02 | | |
| Weight of Solvent from Impingers | 9 | N/A | 2020/02/26 | | |
| Weight of Water from Impingers | 8 | N/A | 2020/02/26 | | |

**Remarks:**

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Your Project #: BEC-19-CRICKETVALLEY.NY-START1

**Attention: Data Reports**

Air Hygiene International Inc
1600 West Tacoma Street
Broken Arrow, OK
USA 74012

**Report Date: 2020/03/03**
Report #: R6096087
Version: 1 - Final

# CERTIFICATE OF ANALYSIS

**BV LABS JOB #: C048069**
**Received: 2020/02/21, 17:15**

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key




Bureau Veritas Laboratories
03 Mar 2020 16:17:38

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Clayton Johnson, Project Manager - Air Toxics, Source Evaluation
Email: Clayton.Johnson@bvlabs.com
Phone# (905)817-5769

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## EPA M201A - PARTICULATES (STACK SAMPLING TRAIN)

| BV Labs ID | | MBP551 | MBP552 | MBP553 | MBP554 | | |
|---|---|---|---|---|---|---|---|
| Sampling Date | | | 2020/02/18 | 2020/02/18 | 2020/02/18 | | |
| | UNITS | M201A- BLANK | M201A- W/DB-R1 | M201A- W/DB-R2 | M201A- W/DB-R3 | RDL | QC Batch |
| > 10 Particulate Weight in Acetone Rinse | mg | 1.2 | 1.1 | 13.9 | 1.2 | 0.5 | 6608986 |
| < 2.5 Particulate Weight in Acetone Rinse | mg | 1.9 | 1.7 | 1.7 | 1.4 | 0.5 | 6608981 |
| 2.5 - 10 Particulate Weight in Acetone Rinse | mg | 1.7 | 0.9 | 1.4 | 1.8 | 0.5 | 6608984 |
| < 2.5 Particulate Weight on Filter | mg | <0.30 | <0.30 (1) | <0.30 | <0.30 (2) | 0.30 | 6607770 |
| Acetone Rinse Volume (10) | ml | 110 | 140 | 110 | 120 | 1 | 6608983 |
| Acetone Rinse Volume (2.5 - 10) | ml | 91 | 120 | 99 | 130 | 1 | 6608983 |
| Acetone Rinse Volume (2.5) | ml | 100 | 120 | 120 | 130 | 1 | 6608983 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Negative weight observed

LFT Loose filter material in the petri dish
DE Edges of the filter are frayed
(2) Negative weight observed

| BV Labs ID | | MBP556 | MBP557 | MBP558 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2020/02/17 | 2020/02/17 | 2020/02/17 | | |
| | UNITS | M201A- W/ODB-R1 | M201A- W/ODB-R2 | M201A- W/ODB-R3 | RDL | QC Batch |
| > 10 Particulate Weight in Acetone Rinse | mg | 16.2 | 14.5 | 14.0 | 0.5 | 6608986 |
| < 2.5 Particulate Weight in Acetone Rinse | mg | 1.7 | 2.7 | 1.7 | 0.5 | 6608981 |
| 2.5 - 10 Particulate Weight in Acetone Rinse | mg | 1.3 | 1.7 | 1.5 | 0.5 | 6608984 |
| < 2.5 Particulate Weight on Filter | mg | <0.30 (1) | <0.30 (2) | <0.30 (3) | 0.30 | 6607770 |
| Acetone Rinse Volume (10) | ml | 100 | 110 | 97 | 1 | 6608983 |
| Acetone Rinse Volume (2.5 - 10) | ml | 130 | 130 | 85 | 1 | 6608983 |
| Acetone Rinse Volume (2.5) | ml | 130 | 130 | 63 | 1 | 6608983 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Negative weight observed

WET Filters was received wet
(2) Negative weight observed
(3) Negtive results observed

WET Filters were received wet
LFT Loose filter material in the petri dish
DE Edges of the filter are frayed



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## EPA M202 CONDENSIBLE PM (STACK SAMPLING TRAIN)

| BV Labs ID | | MBP535 | MBP536 | MBP537 | MBP538 | | |
|---|---|---|---|---|---|---|---|
| Sampling Date | | | | | | | |
| | UNITS | M8A/M202- DI WATER BLANK | M202- HEXANE BLANK | M202- ACETONE BLANK | M202- FB | RDL | QC Batch |
| Weight | g | 200 | N/A | N/A | 440 | 0.1 | 6608740 |
| Weight of Solvent | g | N/A | 130 | 150 | 320 | 0.1 | 6608738 |
| **Miscellaneous Parameters** | | | | | | | |
| Inorganic Condensibles | mg | <0.5 | N/A | N/A | 3.1 | 0.5 | 6608739 |
| Organic Condensibles | mg | N/A | <1.0 | <1.0 | 1.1 | 1.0 | 6608735 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

| BV Labs ID | | MBP539 | MBP540 | MBP541 | MBP543 | MBP544 | | |
|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2020/02/18 | 2020/02/18 | 2020/02/18 | 2020/02/17 | 2020/02/17 | | |
| | UNITS | M202- W/DB-R1 | M202- W/DB-R2 | M202- W/DB-R3 | M202- W/ODB-R1 | M202- W/ODB-R2 | RDL | QC Batch |
| Weight | g | 370 | 470 | 390 | 500 | 440 | 0.1 | 6608740 |
| Weight of Solvent | g | 220 | 280 | 210 | 150 | 230 | 0.1 | 6608738 |
| **Miscellaneous Parameters** | | | | | | | | |
| Inorganic Condensibles | mg | 4.6 | 3.7 | 3.8 | 4.6 | 4.2 | 0.5 | 6608739 |
| Organic Condensibles | mg | 1.3 | 1.2 | <1.0 | 1.6 | 2.4 | 1.0 | 6608735 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

| BV Labs ID | | MBP545 | | |
|---|---|---|---|---|
| Sampling Date | | 2020/02/17 | | |
| | UNITS | M202- W/ODB-R3 | RDL | QC Batch |
| Weight | g | 440 | 0.1 | 6608740 |
| Weight of Solvent | g | 230 | 0.1 | 6608738 |
| **Miscellaneous Parameters** | | | | |
| Inorganic Condensibles | mg | 3.6 | 0.5 | 6608739 |
| Organic Condensibles | mg | <1.0 | 1.0 | 6608735 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

| BV Labs ID | | MBP535 | | MBP785 | MBP785 | | |
|---|---|---|---|---|---|---|---|
| Sampling Date | | | | 2020/02/17 | 2020/02/17 | | |
| | UNITS | M8A/M202- DI WATER BLANK | RDL | M8A- W/DB- R1-CW | M8A- W/DB- R1-CW Lab-Dup | RDL | QC Batch |
| Impinger Volume | ml | 196 | 1 | 232 | N/A | 1 | 6613884 |
| **Miscellaneous Parameters** | | | | | | | |
| Sulphuric Acid Mist | mg | <0.78 | 0.78 | <0.93 | <0.93 | 0.93 | 6613883 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

| BV Labs ID | | MBP801 | | MBP802 | | MBP805 | | |
|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2020/02/17 | | 2020/02/17 | | 2020/02/18 | | |
| | UNITS | M8A- W/DB- R2-CW | RDL | M8A- W/DB- R3-CW | RDL | M8A- W/ODB- R1-CW | RDL | QC Batch |
| Impinger Volume | ml | 194 | 1 | 254 | 1 | 191 | 1 | 6613884 |
| **Miscellaneous Parameters** | | | | | | | | |
| Sulphuric Acid Mist | mg | <0.78 | 0.78 | <1 | 1 | <0.76 | 0.76 | 6613883 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

| BV Labs ID | | MBP806 | | MBP807 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2020/02/18 | | 2020/02/18 | | |
| | UNITS | M8A- W/ODB- R2-CW | RDL | M8A- W/ODB- R3-CW | RDL | QC Batch |
| Impinger Volume | ml | 197 | 1 | 232 | 1 | 6613884 |
| **Miscellaneous Parameters** | | | | | | |
| Sulphuric Acid Mist | mg | <0.79 | 0.79 | <0.93 | 0.93 | 6613883 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## TEST SUMMARY

**BV Labs ID:** MBP535 **Collected:**
**Sample ID:** M8A/M202- DI WATER BLANK **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Non Extractable Condensibles (M202) | BAL | 6608739 | 2020/02/27 | 2020/02/27 | Muhammad M Rahman |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |
| Final Volume of Impinger | | 6613884 | N/A | 2020/03/02 | Rupinder Sihota |
| Weight of Water from Impingers | | 6608740 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP536 **Collected:**
**Sample ID:** M202- HEXANE BLANK **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP537 **Collected:**
**Sample ID:** M202- ACETONE BLANK **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP538 **Collected:**
**Sample ID:** M202- FB **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6608739 | 2020/02/27 | 2020/02/27 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6608740 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP539 **Collected:** 2020/02/18
**Sample ID:** M202- W/DB- R1 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6608739 | 2020/02/27 | 2020/02/27 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6608740 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP540 **Collected:** 2020/02/18
**Sample ID:** M202- W/DB- R2 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## TEST SUMMARY

**BV Labs ID:** MBP540
**Sample ID:** M202- W/DB- R2
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Non Extractable Condensibles (M202) | BAL | 6608739 | 2020/02/27 | 2020/02/27 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6608740 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP541
**Sample ID:** M202- W/DB- R3
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6608739 | 2020/02/27 | 2020/02/27 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6608740 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP543
**Sample ID:** M202- W/ODB- R1
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6608739 | 2020/02/27 | 2020/02/27 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6608740 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP544
**Sample ID:** M202- W/ODB- R2
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6608739 | 2020/02/27 | 2020/02/27 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6608740 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP545
**Sample ID:** M202- W/ODB- R3
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6608739 | 2020/02/27 | 2020/02/27 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6608740 | N/A | 2020/02/26 | Muhammad M Rahman |



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## TEST SUMMARY

**BV Labs ID:** MBP551
**Sample ID:** M201A- BLANK
**Matrix:** Stack Sampling Train

**Collected:**
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6608986 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6608984 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6607770 | N/A | 2020/02/26 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6608981 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6608983 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP552
**Sample ID:** M201A- W/DB- R1
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6608986 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6608984 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6607770 | N/A | 2020/02/26 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6608981 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6608983 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP553
**Sample ID:** M201A- W/DB- R2
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6608986 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6608984 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6607770 | N/A | 2020/02/26 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6608981 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6608983 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP554
**Sample ID:** M201A- W/DB- R3
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6608986 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6608984 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6607770 | N/A | 2020/02/26 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6608981 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6608983 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP556
**Sample ID:** M201A- W/ODB- R1
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6608986 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6608984 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6607770 | N/A | 2020/02/26 | Brenda Moore |



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## TEST SUMMARY

**BV Labs ID:** MBP556
**Sample ID:** M201A- W/ODB- R1
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| <2.5um Particulates in Rinse | BAL | 6608981 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6608983 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP557
**Sample ID:** M201A- W/ODB- R2
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6608986 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6608984 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6607770 | N/A | 2020/02/26 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6608981 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6608983 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP558
**Sample ID:** M201A- W/ODB- R3
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6608986 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6608984 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6607770 | N/A | 2020/02/26 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6608981 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6608983 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP785
**Sample ID:** M8A- W/DB- R1- CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |
| Final Volume of Impinger | | 6613884 | N/A | 2020/03/02 | Rupinder Sihota |

**BV Labs ID:** MBP785 Dup
**Sample ID:** M8A- W/DB- R1- CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |

**BV Labs ID:** MBP801
**Sample ID:** M8A- W/DB- R2- CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |
| Final Volume of Impinger | | 6613884 | N/A | 2020/03/02 | Rupinder Sihota |



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## TEST SUMMARY

**BV Labs ID:** MBP802
**Sample ID:** M8A- W/DB- R3- CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |
| Final Volume of Impinger | | 6613884 | N/A | 2020/03/02 | Rupinder Sihota |

**BV Labs ID:** MBP805
**Sample ID:** M8A- W/ODB- R1- CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |
| Final Volume of Impinger | | 6613884 | N/A | 2020/03/02 | Rupinder Sihota |

**BV Labs ID:** MBP806
**Sample ID:** M8A- W/ODB- R2- CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |
| Final Volume of Impinger | | 6613884 | N/A | 2020/03/02 | Rupinder Sihota |

**BV Labs ID:** MBP807
**Sample ID:** M8A- W/ODB- R3- CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |
| Final Volume of Impinger | | 6613884 | N/A | 2020/03/02 | Rupinder Sihota |



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## GENERAL COMMENTS

Sample MBP535 [M8A/M202- DI WATER BLANK] : INORGANIC EXTRACTION: No residue noted in Teflon dish.

Sample MBP536 [M202- HEXANE BLANK] : ORGANIC EXTRACTION: No residue noted in vial.

Sample MBP537 [M202- ACETONE BLANK] : ORGANIC EXTRACTION: No residue noted in vial.

Sample MBP538 [M202- FB] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MBP539 [M202- W/DB- R1] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MBP540 [M202- W/DB- R2] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MBP541 [M202- W/DB- R3] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MBP543 [M202- W/ODB- R1] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MBP544 [M202- W/ODB- R2] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MBP545 [M202- W/ODB- R3] : ORGANIC EXTRACTION : Light oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

**Results relate only to the items tested.**



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## QUALITY ASSURANCE REPORT

| QA/QC Batch | Init | QC Type | Parameter | Date Analyzed | Value | % Recovery | UNITS | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 6608735 | MOR | Spiked Blank | Organic Condensibles | 2020/02/28 | | 98 | % | 70 - 130 |
| 6608735 | MOR | Method Blank | Organic Condensibles | 2020/02/26 | <1.0 | | mg | |
| 6608739 | MOR | Method Blank | Inorganic Condensibles | 2020/03/02 | <0.5 | | mg | |
| 6608981 | MOR | Method Blank | < 2.5 Particulate Weight in Acetone Rinse | 2020/02/28 | <0.5 | | mg | |
| 6608984 | MOR | Method Blank | 2.5 - 10 Particulate Weight in Acetone Rinse | 2020/02/28 | <0.5 | | mg | |
| 6608986 | MOR | Method Blank | > 10 Particulate Weight in Acetone Rinse | 2020/02/28 | <0.5 | | mg | |
| 6613883 | RSU | Matrix Spike(MBP785) | Sulphuric Acid Mist | 2020/03/02 | | 97 | % | 80 - 120 |
| 6613883 | RSU | Spiked Blank | Sulphuric Acid Mist | 2020/03/02 | | 99 | % | 90 - 110 |
| 6613883 | RSU | Method Blank | Sulphuric Acid Mist | 2020/03/02 | <0.2 | | mg | |
| 6613883 | RSU | RPD - Sample/Sample Dup | Sulphuric Acid Mist | 2020/03/02 | NC | | % | 20 |

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).



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## VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Brenda Moore, Team Lead, Inorganic

Frank Mo, B.Sc., Inorganic Lab. Manager

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

C048069

Requested Standard Analysis - 5-10 business days after receipt at lab

## SAMPLE DESCRIPTION AND LABELING RECORD

Contact Information (deliver results to)
Name: Rob White
Phone: (918) 307-8865
Email: rwhite@airhygiene.com

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com

| Project Number: | bec-19-cricketvalley.ny-start#1 | Laboratory Analysis Requested: |
|---|---|---|
| Person Taking Samples: | Aaron Blum | Gravimetric |

| Sample Number | Location | Date | Volume | Analysis Method | | | |
|---|---|---|---|---|---|---|---|
| | | | | RM 201A | RM 202 | -- | -- |
| CTG-0001_W/DB-1-F | Unit CTG-0001_W/DB - Run 1 - Filter | 02/18/20 | N/A | X | | | |
| CTG-0001_W/DB-1-C2 | Unit CTG-0001_W/DB - Run 1 - Nozzle Wash PM>10 | 02/18/20 | | X | | | |
| CTG-0001_W/DB-1-C3 | Unit CTG-0001_W/DB - Run 1 - Cyclone Wash 2.5<PM<10 | 02/18/20 | | X | | | |
| CTG-0001_W/DB-1-C4 | Unit CTG-0001_W/DB - Run 1 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 02/18/20 | N/A | X | | | |
| CTG-0001_W/DB-1-C5 | Unit CTG-0001_W/DB - Run 1 - Inorganic Impinger Contents | 02/18/20 | | | X | | |
| CTG-0001_W/DB-1-C6 | Unit CTG-0001_W/DB - Run 1 - Organic Impinger Contents | 02/18/20 | | | X | | |
| CTG-0001_W/DB-1-CPM | Unit CTG-0001_W/DB - Run 1 - CPM Filter | 02/18/20 | N/A | | X | | |
| CTG-0001_W/DB-2-F | Unit CTG-0001_W/DB - Run 2 - Filter | 02/18/20 | N/A | X | | | |
| CTG-0001_W/DB-2-C2 | Unit CTG-0001_W/DB - Run 2 - Nozzle Wash PM>10 | 02/18/20 | | X | | | |
| CTG-0001_W/DB-2-C3 | Unit CTG-0001_W/DB - Run 2 - Cyclone Wash 2.5<PM<10 | 02/18/20 | | X | | | |
| CTG-0001_W/DB-2-C4 | Unit CTG-0001_W/DB - Run 2 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 02/18/20 | N/A | X | | | |
| CTG-0001_W/DB-2-C5 | Unit CTG-0001_W/DB - Run 2 - Inorganic Impinger Contents | 02/18/20 | | | X | | |
| CTG-0001_W/DB-2-C6 | Unit CTG-0001_W/DB - Run 2 - Organic Impinger Contents | 02/18/20 | | | X | | |
| CTG-0001_W/DB-2-CPM | Unit CTG-0001_W/DB - Run 2 - CPM Filter | 02/18/20 | N/A | | X | | |
| CTG-0001_W/DB-3-F | Unit CTG-0001_W/DB - Run 3 - Filter | 02/18/20 | N/A | X | | | |
| CTG-0001_W/DB-3-C2 | Unit CTG-0001_W/DB - Run 3 - Nozzle Wash PM>10 | 02/18/20 | | X | | | |
| CTG-0001_W/DB-3-C3 | Unit CTG-0001_W/DB - Run 3 - Cyclone Wash 2.5<PM<10 | 02/18/20 | | X | | | |
| CTG-0001_W/DB-3-C4 | Unit CTG-0001_W/DB - Run 3 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 02/18/20 | N/A | X | | | |
| CTG-0001_W/DB-3-C5 | Unit CTG-0001_W/DB - Run 3 - Inorganic Impinger Contents | 02/18/20 | | | X | | |
| CTG-0001_W/DB-3-C6 | Unit CTG-0001_W/DB - Run 3 - Organic Impinger Contents | 02/18/20 | | | X | | |
| CTG-0001_W/DB-3-CPM | Unit CTG-0001_W/DB - Run 3 - CPM Filter | 02/18/20 | N/A | | X | | |
| CTG-0001_W/DB-FB-C3 | Unit CTG-0001_W/DB - Run FB - Cyclone Wash 2.5<PM<10 | FB | | X | | | |
| CTG-0001_W/DB-FB-C4 | Unit CTG-0001_W/DB - Run FB - Cyclone Exit to Front Half of Filter Wash (<2.5) | FB | N/A | X | | | |
| CTG-0001_W/DB-FB-C5 | Unit CTG-0001_W/DB - Run FB - Inorganic Impinger Contents | FB | | | X | | |
| CTG-0001_W/DB-B1-Acetone | Unit CTG-0001_W/DB - Blank - Acetone | | 200 | | X | | |
| CTG-0001_W/DB-B2-DI Water | Unit CTG-0001_W/DB - Blank - DI Water | | 200 | X | | | |
| CTG-0001_W/DB-B3-Hexane | Unit CTG-0001_W/DB - Blank - Hexane | | 200 | | X | | |

Signature: [signature] Date: 2/20/20 Time: AAC

Signature: Date: Time:

FIDELE NTAMWEMEZI
Signature: [signature] Date: 2020/02/21 Time: 17:15

FIDELE NTAMWEMEZI
Signature: [signature] Date: 2020/02/25 Time: 13:40

bec-19-cricketvalley#1-PM_W_DBxlsm.xlsm SD&L

C048-069

Requested Standard Analysis - 5-10 business days after receipt at lab

**SAMPLE DESCRIPTION AND LABELING RECORD**


**Contact Information (deliver results to)**

Name: Rob White
Phone: (918) 307-8865
Email: rwhite@airhygiene.com

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com


| Project Number: | bec-19-cricketvalley.ny-start#1 | Laboratory Analysis Requested: |
|---|---|---|
| Person Taking Samples: | Aaron Blum | Gravimetric |

| Sample Number | Location | Date | Volume | Analysis Method | | | |
|---|---|---|---|---|---|---|---|
| | | | | RM 201A | RM 202 | – | – |
| CTG-0001_W/ODB-1-F | Unit CTG-0001_W/ODB - Run 1 - Filter | 02/17/20 | N/A | X | | | |
| CTG-0001_W/ODB-1-C2 | Unit CTG-0001_W/ODB - Run 1 - Nozzle Wash PM>10 | 02/17/20 | | X | | | |
| CTG-0001_W/ODB-1-C3 | Unit CTG-0001_W/ODB - Run 1 - Cyclone Wash 2.5<PM<10 | 02/17/20 | | X | | | |
| CTG-0001_W/ODB-1-C4 | Unit CTG-0001_W/ODB - Run 1 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 02/17/20 | N/A | X | | | |
| CTG-0001_W/ODB-1-C5 | Unit CTG-0001_W/ODB - Run 1 - Inorganic Impinger Contents | 02/17/20 | | | X | | |
| CTG-0001_W/ODB-1-C6 | Unit CTG-0001_W/ODB - Run 1 - Organic Impinger Contents | 02/17/20 | | | X | | |
| CTG-0001_W/ODB-1-CPM | Unit CTG-0001_W/ODB - Run 1 - CPM Filter | 02/17/20 | N/A | | X | | |
| CTG-0001_W/ODB-2-F | Unit CTG-0001_W/ODB - Run 2 - Filter | 02/17/20 | N/A | X | | | |
| CTG-0001_W/ODB-2-C2 | Unit CTG-0001_W/ODB - Run 2 - Nozzle Wash PM>10 | 02/17/20 | | X | | | |
| CTG-0001_W/ODB-2-C3 | Unit CTG-0001_W/ODB - Run 2 - Cyclone Wash 2.5<PM<10 | 02/17/20 | | X | | | |
| CTG-0001_W/ODB-2-C4 | Unit CTG-0001_W/ODB - Run 2 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 02/17/20 | N/A | X | | | |
| CTG-0001_W/ODB-2-C5 | Unit CTG-0001_W/ODB - Run 2 - Inorganic Impinger Contents | 02/17/20 | | | X | | |
| CTG-0001_W/ODB-2-C6 | Unit CTG-0001_W/ODB - Run 2 - Organic Impinger Contents | 02/17/20 | | | X | | |
| CTG-0001_W/ODB-2-CPM | Unit CTG-0001_W/ODB - Run 2 - CPM Filter | 02/17/20 | N/A | | X | | |
| CTG-0001_W/ODB-3-F | Unit CTG-0001_W/ODB - Run 3 - Filter | 02/17/20 | N/A | X | | | |
| CTG-0001_W/ODB-3-C2 | Unit CTG-0001_W/ODB - Run 3 - Nozzle Wash PM>10 | 02/17/20 | | X | | | |
| CTG-0001_W/ODB-3-C3 | Unit CTG-0001_W/ODB - Run 3 - Cyclone Wash 2.5<PM<10 | 02/17/20 | | X | | | |
| CTG-0001_W/ODB-3-C4 | Unit CTG-0001_W/ODB - Run 3 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 02/17/20 | N/A | X | | | |
| CTG-0001_W/ODB-3-C5 | Unit CTG-0001_W/ODB - Run 3 - Inorganic Impinger Contents | 02/17/20 | | | X | | |
| CTG-0001_W/ODB-3-C6 | Unit CTG-0001_W/ODB - Run 3 - Organic Impinger Contents | 02/17/20 | | | X | | |
| CTG-0001_W/ODB-3-CPM | Unit CTG-0001_W/ODB - Run 3 - CPM Filter | 02/17/20 | N/A | | X | | |
| CTG-0001_W/ODB-FB-C3 | Unit CTG-0001_W/ODB - Run FB - Cyclone Wash 2.5<PM<10 | FB | | X | | | |
| CTG-0001_W/ODB-FB-C4 | Unit CTG-0001_W/ODB - Run FB - Cyclone Exit to Front Half of Filter Wash (<2.5) | FB | N/A | X | | | |
| CTG-0001_W/ODB-FB-C5 | Unit CTG-0001_W/ODB - Run FB - Inorganic Impinger Contents | FB | | | X | | |
| CTG-0001_W/ODB-B1-Acetone | Unit CTG-0001_W/ODB - Blank - Acetone | | 200 | | X | | |
| CTG-0001_W/ODB-B2-DI Water | Unit CTG-0001_W/ODB - Blank - DI Water | | 200 | X | | | |
| CTG-0001_W/ODB-B3-Hexane | Unit CTG-0001_W/ODB - Blank - Hexane | | 200 | | X | | |

| Signature | Date | Time | Signature | Date | Time |
|---|---|---|---|---|---|
| [signature] | 2/20/20 | 1400 | FIDELE NTAMWEMEZI [signature] | 2020/02/21 | 17 15 |
| | | | FIDELE NTAMWEMEZI [signature] | 2020/02/25 | 13 40 |

C048069

Requested Standard Analysis - 5-10 business days after receipt at lab

## SAMPLE DESCRIPTION AND LABELING RECORD

**Contact Information (deliver results to)**

**Name:** Rob White
**Phone:** (918) 307-8865
**Email:** rwhite@airhygiene.com

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com

| Project Number: | bec-19-cricketvalley.ny-start#1 | Laboratory Analysis Requested: |
|---|---|---|
| Person Taking Samples: | Atlas Melchert | Titration |

| Sample Number | Location | Date | Volume | Analysis Method | | | |
|---|---|---|---|---|---|---|---|
| | | | | Cont Cond | -- | -- | -- |
| CT-0001W/DB-1-CW | Unit CT-0001W/DB - Run 1 - Condenser Wash | 02/17/20 | | | | | |
| CT-0001W/DB-2-CW | Unit CT-0001W/DB - Run 2 - Condenser Wash | 02/17/20 | | | | | |
| CT-0001W/DB-3-CW | Unit CT-0001W/DB - Run 3 - Condenser Wash | 02/17/20 | | | | | |
| CT-0001W/DB-B2-DI Water | Unit CT-0001W/DB - Blank - DI Water | | 100 | | | | |
| CT-0001W/DB-B3-$H_2O_2$ | Unit CT-0001W/DB - Blank - $H_2O_2$ | | 100 | | | | |

| Signature | Date | Time | Signature | Date | Time |
|---|---|---|---|---|---|
| [signature] | 2/20/20 | 1420 | FIDELE NTAMWEMEZI [signature] | 2020/02/21 | 17:15 |
| | | | FIDELE NTAMWEMEZI [signature] | 2020/02/25 | 13:40 |

bec-19-cricketvally.ny-start#1-M8a-wDB

SD&L

C048069

Requested Standard Analysis - 5-10 business days after receipt at lab

## SAMPLE DESCRIPTION AND LABELING RECORD

**Contact Information (deliver results to)**
**Name:** Rob White
**Phone:** (918) 307-8865
**Email:** rwhite@airhygiene.com

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com

Project Number: bec-19-cricketvalley.ny-start#1

Person Taking Samples:

Laboratory Analysis Requested: Titration

| Sample Number | Location | Date | Volume | Analysis Method: Cont Cond | -- | -- | -- |
|---|---|---|---|---|---|---|---|
| CT-0001w/oDB-1-CW | Unit CT-0001w/oDB - Run 1 - Condenser Wash | 02/18/20 | | | | | |
| CT-0001w/oDB-2-CW | Unit CT-0001w/oDB - Run 2 - Condenser Wash | 02/18/20 | | | | | |
| CT-0001w/oDB-3-CW | Unit CT-0001w/oDB - Run 3 - Condenser Wash | 02/18/20 | | | | | |
| CT-0001w/oDB-B2-DI Water | Unit CT-0001w/oDB - Blank - DI Water | | 100 | | | | |
| CT-0001w/oDB-B3-$H_2O_2$ | Unit CT-0001w/oDB - Blank - $H_2O_2$ | | 100 | | | | |

| Signature | Date | Time | Signature | Date | Time |
|---|---|---|---|---|---|
| [signature] | 2/18/20 | 1900 | FIDELE NTAMWEMEZI | 2020/02/21 | 17:15 |
| | | | FIDELE NTAMWEMEZI | 2020/02/25 | 13:40 |

bec-19-cricketvalley.ny-start#1-woDB-M8A

SD&L

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

## Supplemental Laboratory Data $PM_{10}$ Filters
## BV Labs

**Inorganic Analysis Action / Comment Form**

| | |
|---|---|
| Client ID | Air Hygiene |
| Maxxam Job # | C048069 |
| Maxxam Sample ID's | start MBP551-01R |

| Analytical Worksheet(s) | | | |
|---|---|---|---|
| | Filters | 6607770 | |
| | Solvent Rinse | 6608981 | |
| | Solvent Volumes | 6608983 | |
| | | | |

| | |
|---|---|
| Analysis | Particulates |
| Analyst ID | |

| Actions: | *Impacted Sample ID's |
|---|---|
| Bottle discrepancies | |
| Filters damaged | |
| Solvent rinse anomalies | |
| Water impinger anomalies | |
| Filter blank submitted | Yes |
| Solvent blank submitted | Yes |
| Water blank submitted | |
| Other | |

Comments

See data sheets for any anomalies of samples

Filter
Particulate Weight Log

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Job # | C048069 | | Metals | No | supplier | Pall | N/A | |
| Client | Air Hygiene | | Filter Blank Submitted | Yes | p/n | 61631 | N/A | |
| Analysis | Particulate Weight on Filter | | Date of Dessication | 2020/02/25 | lot # | T83173 | N/A | Type |
| Balance ID | 220-BALANAL4 | | Time of Dessication | 3:25 PM | | | | M5 |
| Condition | Dickson THDX S/N 6003123 | | | | | | | |

DE Edges of filter frayed
LPC Loose particulate material in filter containe
FT Filter torn
FCL Filter contains liquid after dessication
LFT Loose filter material

Increment 1

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Analyst | B Moore | B Moore | B Moore | | | | | | |
| Weighing Date | | 2020/02/26 | 2020/02/27 | | | | | | |
| Weighing Time | | 3:53 PM | 10:18 AM | | | | | | |
| Temperature (ºC) | | 23 | 23 | | | | | | |
| Humidity (%) | 40 | 40 | 39 | | | | | | |

| Worksheet # | # | Maxxam # | Filter Condition | Filter ID # | Pre Weight gm | Weight #1 gm | Weight #2 gm | Weight #3 gm | Weight #4 gm | Weight #5 gm | Weight #6 gm | Weight #7 gm | Final Weight gm | Particulate mg | RDL mg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6607770 | 1 | MBP551-01R | NORMAL | 18042522 | 0.11325 | 0.1132 | 0.1131 | | | | | | 0.1131 | -0.1 | 0.3 |
| 6607770 | 2 | MBP552-01R | *DE**LFT* | 18082938 | 0.11415 | 0.1097 | 0.1095 | | | | | | 0.1095 | -4.7 | 0.3 |
| 6607770 | 3 | MBP553-01R | NORMAL | 18082944 | 0.11435 | 0.1145 | 0.1144 | | | | | | 0.1144 | 0.1 | 0.3 |
| 6607770 | 4 | MBP554-01R | NORMAL | 18042521 | 0.11180 | 0.1093 | 0.1093 | | | | | | 0.1093 | -2.5 | 0.3 |
| 6607770 | 5 | MBP556-01R | WET | 18082942 | 0.11415 | 0.1117 | 0.1117 | | | | | | 0.1117 | -2.5 | 0.3 |
| 6607770 | 6 | MBP557-01R | NORMAL | 18082937 | 0.11400 | 0.1118 | 0.1117 | | | | | | 0.1117 | -2.3 | 0.3 |
| 6607770 | 7 | MBP558-01R | WET*DE*LFT | 18082945 | 0.11190 | 0.1069 | 0.1068 | | | | | | 0.1068 | -5.1 | 0.3 |
| | 8 | | | | | | | | | | | | | | |
| | 9 | | | | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | | | |
| | | | | zero | 0.0000 | 0.0000 | -0.0001 | | | | | | | | |
| | | | | 0.3000 gm | 0.3000 | 0.3000 | 0.2999 | | | | | | | | |
| | 11 | | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | |
| | 18 | | | | | | | | | | | | | | |
| | 19 | | | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | | | |
| | | | | zero | | | | | | | | | | | |
| | | | | 0.3000 gm | | | | | | | | | | | |
| | 21 | | | | | | | | | | | | | | |
| | 22 | | | | | | | | | | | | | | |
| | 23 | | | | | | | | | | | | | | |
| | 24 | | | | | | | | | | | | | | |
| | 25 | | | | | | | | | | | | | | |
| | 26 | | | | | | | | | | | | | | |
| | 27 | | | | | | | | | | | | | | |
| | 28 | | | | | | | | | | | | | | |
| | 29 | | | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | | | |
| | | | | zero | | | | | | | | | | | |
| | | | | 0.3000 gm | | | | | | | | | | | |
| | 31 | | | | | | | | | | | | | | |
| | 32 | | | | | | | | | | | | | | |
| | 33 | | | | | | | | | | | | | | |
| | 34 | | | | | | | | | | | | | | |
| | 35 | | | | | | | | | | | | | | |
| | 36 | | | | | | | | | | | | | | |
| | 37 | | | | | | | | | | | | | | |
| | 38 | | | | | | | | | | | | | | |
| | 39 | | | | | | | | | | | | | | |
| | 40 | | | | | | | | | | | | | | |
| | | | | zero | | | | | | | | | | | |
| | | | | 0.3000 gm | | | | | | | | | | | |

Filters are placed in a dessicator for 24 hours minimum prior to beginning weighing cycle.
Filters are not to be exposed to lab atmosphere for > 2 minutes at a relative humidity of≥50 %.
Verification Weight 5mg S/N 1000144533
Verification Weight 100mg S/N 29785
Verification Weight 300mg S/N 1000112492

Specific data from the lab regarding the filter weights reported at the RDL and noted as “negative weight observed”.

Comparison of actual Lab Reported Filter Loss to the gains in the sample train sections just prior to and just after the filter. The total gains in each of these sections always accounts for the filter loss. Air Hygiene concluded that the frayed filter edges either ended up in the section prior to the filter and/or the section just downstream of the filter.

Data Summary

| Run | Filter | Gain in Cyclone End to Front Half of Filter Wash (<2.5) (mg) | Gain in Inorganic Impinger Content (mg) | Sum of Gains (mg) | Lab Reported Filter Loss (mg) |
|---|---|---|---|---|---|
| Base – Run 1 | 18082942 | 1.7 | 4.6 | 6.3 | -2.5 |
| Base – Run 2 | 18082937 | 2.7 | 4.2 | 6.9 | -2.3 |
| Base – Run 3 | 18082945 | 1.7 | 3.6 | 5.3 | -5.1 |
| Base+DB – Run 1 | 18042521 | 1.7 | 4.6 | 6.3 | -2.5 |
| Base+DB – Run 2 | 18082944 | 1.7 | 3.7 | 5.4 | 0.1 |
| Base+DB – Run 3 | 18082938 | 1.4 | 3.8 | 5.2 | -4.7 |

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

## Supplemental Laboratory Data SAM by IC
## BV Labs

Your Project #: BEC-19-CRICKETVALLEY.NY-START1

**Attention: Data Reports**

Air Hygiene International Inc
1600 West Tacoma Street
Broken Arrow, OK
USA 74012

**Report Date: 2020/03/13**
Report #: R6108718
Version: 3 - Revision

# CERTIFICATE OF ANALYSIS – REVISED REPORT

**BV LABS JOB #: C048069**
**Received: 2020/02/21, 17:15**

Sample Matrix: Stack Sampling Train
# Samples Received: 7

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Analytical Method |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | 7 | 2020/03/10 | 2020/03/10 | BRL SOP-00105 | EPA 8 m |
| Sulphuric Acid Mist by Titration (M8A) | 7 | 2020/03/02 | 2020/03/02 | BRL SOP-00116 | EPA CFR PTM 8 m |

**Remarks:**

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Clayton Johnson, Project Manager - Air Toxics, Source Evaluation
Email: Clayton.Johnson@bvlabs.com
Phone# (905)817-5769

==========

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



55555 North Service Road, Burlington, Ontario, Canada L7L 5H7 Tel: (905) 332-8788 Toll Free: (800) 668-0639 Fax: (905) 332-9169

## RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

| BV Labs ID | | MBP535 | | MBP785 | MBP785 | | |
|---|---|---|---|---|---|---|---|
| Sampling Date | | | | 2020/02/17 | 2020/02/17 | | |
| | UNITS | M8A/M202- DI WATER BLANK | RDL | M8A- W/DB- R1-CW | M8A- W/DB- R1-CW Lab-Dup | RDL | QC Batch |
| **Miscellaneous Parameters** | | | | | | | |
| Sulphuric Acid Mist | mg | <0.02 | 0.02 | <0.024 | <0.024 | 0.024 | 6627946 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

| BV Labs ID | | MBP801 | | MBP802 | | MBP805 | | |
|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2020/02/17 | | 2020/02/17 | | 2020/02/18 | | |
| | UNITS | M8A- W/DB- R2-CW | RDL | M8A- W/DB- R3-CW | RDL | M8A- W/ODB- R1-CW | RDL | QC Batch |
| **Miscellaneous Parameters** | | | | | | | | |
| Sulphuric Acid Mist | mg | 0.04 | 0.02 | 0.056 | 0.026 | 0.02 | 0.02 | 6627946 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

| BV Labs ID | | MBP806 | | MBP807 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2020/02/18 | | 2020/02/18 | | |
| | UNITS | M8A- W/ODB- R2-CW | RDL | M8A- W/ODB- R3-CW | RDL | QC Batch |
| **Miscellaneous Parameters** | | | | | | |
| Sulphuric Acid Mist | mg | 0.03 | 0.02 | 0.028 | 0.024 | 6627946 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch


55555 North Service Road, Burlington, Ontario, Canada L7L 5H7 Tel: (905) 332-8788 Toll Free: (800) 668-0639 Fax: (905) 332-9169

## TEST SUMMARY

**BV Labs ID:** MBP535 **Collected:**
**Sample ID:** M8A/M202- DI WATER BLANK **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6627946 | 2020/03/10 | 2020/03/10 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |

**BV Labs ID:** MBP785 **Collected:** 2020/02/17
**Sample ID:** M8A- W/DB- R1- CW **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6627946 | 2020/03/10 | 2020/03/10 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |

**BV Labs ID:** MBP785 Dup **Collected:** 2020/02/17
**Sample ID:** M8A- W/DB- R1- CW **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6627946 | 2020/03/10 | 2020/03/10 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |

**BV Labs ID:** MBP801 **Collected:** 2020/02/17
**Sample ID:** M8A- W/DB- R2- CW **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6627946 | 2020/03/10 | 2020/03/10 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |

**BV Labs ID:** MBP802 **Collected:** 2020/02/17
**Sample ID:** M8A- W/DB- R3- CW **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6627946 | 2020/03/10 | 2020/03/10 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |

**BV Labs ID:** MBP805 **Collected:** 2020/02/18
**Sample ID:** M8A- W/ODB- R1- CW **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6627946 | 2020/03/10 | 2020/03/10 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |


55555 North Service Road, Burlington, Ontario, Canada L7L 5H7 Tel: (905) 332-8788 Toll Free: (800) 668-0639 Fax: (905) 332-9169

## TEST SUMMARY

**BV Labs ID:** MBP806
**Sample ID:** M8A- W/ODB- R2- CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6627946 | 2020/03/10 | 2020/03/10 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |

**BV Labs ID:** MBP807
**Sample ID:** M8A- W/ODB- R3- CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6627946 | 2020/03/10 | 2020/03/10 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |



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## GENERAL COMMENTS

Sample MBP535 [M8A/M202- DI WATER BLANK] : INORGANIC EXTRACTION: No residue noted in Teflon dish.

**Results relate only to the items tested.**



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## QUALITY ASSURANCE REPORT

| QA/QC Batch | Init | QC Type | Parameter | Date Analyzed | Value | % Recovery | UNITS | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 6613883 | RSU | Matrix Spike(MBP785) | Sulphuric Acid Mist | 2020/03/02 | | 97 | % | 80 - 120 |
| 6613883 | RSU | Spiked Blank | Sulphuric Acid Mist | 2020/03/02 | | 99 | % | 90 - 110 |
| 6613883 | RSU | Method Blank | Sulphuric Acid Mist | 2020/03/02 | <0.2 | | mg | |
| 6613883 | RSU | RPD - Sample/Sample Dup | Sulphuric Acid Mist | 2020/03/02 | NC | | % | 20 |
| 6627946 | LLE | Matrix Spike(MBP785) | Sulphuric Acid Mist | 2020/03/10 | | 97 | % | 80 - 120 |
| 6627946 | LLE | Spiked Blank | Sulphuric Acid Mist | 2020/03/10 | | 102 | % | 90 - 110 |
| 6627946 | LLE | Method Blank | Sulphuric Acid Mist | 2020/03/10 | <0.02 | | mg | |
| 6627946 | LLE | RPD - Sample/Sample Dup | Sulphuric Acid Mist | 2020/03/10 | NC | | % | 20 |

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).



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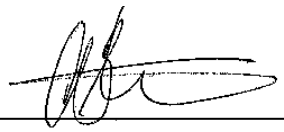
## VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Ann-Marie Stern, Team Lead, Inorganic



Frank Mo, B.Sc., Inorganic Lab. Manager

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.



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# QUALITY ASSURANCE AND QUALITY CONTROL DATA

## Audit Sample Data
## (not required for this scope of work)

# APPENDIX E

# FUEL ANALYSIS RECORDS

**Client:** Cricket Valley Energy Center LLC
**Location:** Cricket Valley Energy Center
**Date:** February 17, 2020
**Project #:** bec-19-cricketvalley.ny-start#1

**Natural Gas - Fuel Analysis**

Standardized to 68 deg F and 14.696 psia - EPA Standards

| Gas Component | | Mole (%) | Molecular[1] Weight (lb/lb-mole) | Lbs Component per Lb-Mole of Gas | Wt. % of Component | Ideal Gross[1,3] Heating Value (Btu/ft$^3$) | Fuel Heat Value [HHV] (Btu/SCF) | Ideal Net[1,3] Heating Value (Btu/ft$^3$) | Fuel Heat Value [LHV] (Btu/SCF) |
|---|---|---|---|---|---|---|---|---|---|
| Methane | $CH_4$ | 93.1168 | 16.0430 | 14.94 | 87.36 | 994.85 | 926.37 | 895.75 | 834.10 |
| Ethane | $C_2H_6$ | 4.9202 | 30.0700 | 1.48 | 8.65 | 1,743.15 | 85.77 | 1,594.41 | 78.45 |
| Propane | $C_3H_8$ | 0.2063 | 44.0970 | 0.09 | 0.53 | 2,478.35 | 5.11 | 2,280.17 | 4.70 |
| iso-Butane | $iC_4H_{10}$ | 0.0167 | 58.1230 | 0.01 | 0.06 | 3,203.11 | 0.53 | 2,955.38 | 0.49 |
| n-Butane | $nC_4H_{10}$ | 0.0174 | 58.1230 | 0.01 | 0.06 | 3,213.35 | 0.56 | 2,965.62 | 0.52 |
| Iso-Pentane | $iC_5H_{12}$ | 0.0047 | 72.1500 | 0.00 | 0.02 | 3,940.87 | 0.19 | 3,643.50 | 0.17 |
| n-Pentane | $nC_5H_{12}$ | 0.0027 | 72.1500 | 0.00 | 0.01 | 3,948.75 | 0.11 | 3,648.32 | 0.10 |
| Hexanes | $C_6H_{14}$ | 0.0054 | 86.1770 | 0.00 | 0.03 | 4,684.54 | 0.25 | 4,337.82 | 0.23 |
| Heptanes | $C_7H_{16}$ | 0.0000 | 100.2040 | 0.00 | 0.00 | 5,419.94 | 0.00 | 5,023.77 | 0.00 |
| Octanes | $C_8H_{18}$ | 0.0000 | 114.2310 | 0.00 | 0.00 | 6,155.14 | 0.00 | 5,709.23 | 0.00 |
| Carbon Dioxide | $CO_2$ | 0.4658 | 44.0100 | 0.20 | 1.20 | 0.00 | 0.00 | 0.00 | 0.00 |
| Nitrogen | $N_2$ | 1.0304 | 28.0134 | 0.29 | 1.69 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hydrogen Sulfide | $H_2S$ | 0.0000 | 34.0800 | 0.00 | 0.00 | 627.54 | 0.00 | 578.00 | 0.00 |
| Oxygen | $O_2$ | 0.2136 | 31.9988 | 0.07 | 0.40 | 0.00 | 0.00 | 0.00 | 0.00 |
| Helium | He | 0.0000 | 4.0026 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hydrogen | $H_2$ | 0.0000 | 2.0159 | 0.00 | 0.00 | 319.34 | 0.00 | 269.82 | 0.00 |
| **Totals** | | **100.000** | | **17.10** | **100.00** | **dry** | **1,018.89** | **dry** | **918.76** |
| | | | | | | **wet[2,5]** | **995.39** | **wet[2,5]** | **897.58** |

| Characteristics of Fuel Gas | | |
|---|---|---|
| Molecular Weight of gas = | 17.101 | lb/lb-mole |
| Btu per lb. of gas[4] = | 22,952.168 | gross (HHV) |
| Btu per lb. of gas[4] = | 20,696.745 | net (LHV) |
| Density of fuel gas[2] = | 0.0444 | lb/cu. ft |
| Wt % VOC in fuel gas = | 0.71 | % |
| Specific Gravity[1] = | 0.5905 | |

| Component | Wt% |
|---|---|
| carbon | 73.22 |
| oxygen | 1.27 |
| hydrogen | 23.82 |
| nitrogen | 1.69 |
| helium | 0.00 |
| sulfur | 0.00 |
| **Total** | **100.00** |

**F-Factor (SCF dry exhaust per MMBtu [HHV]) = 8,643.54**
(Based on EPA RM-19) at 68 deg F and 14.696 psia

**F-Factor Calculation:**

F-Factor = 1,000,000*((3.64*%H)+(1.53*%C)+(0.57*%S)+(0.14*%N)-(0.46*%O))/GCV

GCV = Gross Btu per lb. of gas (HHV)

%H, %C, %S, %N, & %O are percent weight values calculated from fuel analysis and have units of (scf/lb)/%

Density of natural gas based on specific gravity multiplied by density of air at 68 deg F and 14.696 psia.

**References:**


[1] ASTM D 3588

[2] Civil Engineering Reference Manual, 7th ed. - Michael R. Lindeburg

[3] Mark's Standard Handbook for Mechanical Engineers, 10th ed. - Eugene A. Avallone, Theodore Baumeister III

[4] Introduction to Fluid Mechanics, 3rd ed. - William S. Janna

[5] GPA Reference Bulletin 181-86, revised 1986, reprinted 1995

**Client:** Cricket Valley Energy Center LLC
**Location:** Cricket Valley Energy Center
**Date:** February 18, 2020
**Project #:** bec-19-cricketvalley.ny-start#1

**Natural Gas - Fuel Analysis**

Standardized to 68 deg F and 14.696 psia - EPA Standards

| Gas Component | | Mole (%) | Molecular[1] Weight (lb/lb-mole) | Lbs Component per Lb-Mole of Gas | Wt. % of Component | Ideal Gross[1,3] Heating Value (Btu/ft$^3$) | Fuel Heat Value [HHV] (Btu/SCF) | Ideal Net[1,3] Heating Value (Btu/ft$^3$) | Fuel Heat Value [LHV] (Btu/SCF) |
|---|---|---|---|---|---|---|---|---|---|
| Methane | $CH_4$ | 93.1168 | 16.0430 | 14.94 | 87.36 | 994.85 | 926.37 | 895.75 | 834.10 |
| Ethane | $C_2H_6$ | 4.9202 | 30.0700 | 1.48 | 8.65 | 1,743.15 | 85.77 | 1,594.41 | 78.45 |
| Propane | $C_3H_8$ | 0.2063 | 44.0970 | 0.09 | 0.53 | 2,478.35 | 5.11 | 2,280.17 | 4.70 |
| iso-Butane | $iC_4H_{10}$ | 0.0167 | 58.1230 | 0.01 | 0.06 | 3,203.11 | 0.53 | 2,955.38 | 0.49 |
| n-Butane | $nC_4H_{10}$ | 0.0174 | 58.1230 | 0.01 | 0.06 | 3,213.35 | 0.56 | 2,965.62 | 0.52 |
| Iso-Pentane | $iC_5H_{12}$ | 0.0047 | 72.1500 | 0.00 | 0.02 | 3,940.87 | 0.19 | 3,643.50 | 0.17 |
| n-Pentane | $nC_5H_{12}$ | 0.0027 | 72.1500 | 0.00 | 0.01 | 3,948.75 | 0.11 | 3,648.32 | 0.10 |
| Hexanes | $C_6H_{14}$ | 0.0054 | 86.1770 | 0.00 | 0.03 | 4,684.54 | 0.25 | 4,337.82 | 0.23 |
| Heptanes | $C_7H_{16}$ | 0.0000 | 100.2040 | 0.00 | 0.00 | 5,419.94 | 0.00 | 5,023.77 | 0.00 |
| Octanes | $C_8H_{18}$ | 0.0000 | 114.2310 | 0.00 | 0.00 | 6,155.14 | 0.00 | 5,709.23 | 0.00 |
| Carbon Dioxide | $CO_2$ | 0.4658 | 44.0100 | 0.20 | 1.20 | 0.00 | 0.00 | 0.00 | 0.00 |
| Nitrogen | $N_2$ | 1.0304 | 28.0134 | 0.29 | 1.69 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hydrogen Sulfide | $H_2S$ | 0.0000 | 34.0800 | 0.00 | 0.00 | 627.54 | 0.00 | 578.00 | 0.00 |
| Oxygen | $O_2$ | 0.2136 | 31.9988 | 0.07 | 0.40 | 0.00 | 0.00 | 0.00 | 0.00 |
| Helium | He | 0.0000 | 4.0026 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hydrogen | $H_2$ | 0.0000 | 2.0159 | 0.00 | 0.00 | 319.34 | 0.00 | 269.82 | 0.00 |
| **Totals** | | **100.000** | | **17.10** | **100.00** | **dry** | **1,018.89** | **dry** | **918.76** |
| | | | | | | **wet[2,5]** | **995.39** | **wet[2,5]** | **897.58** |

| Characteristics of Fuel Gas | | |
|---|---|---|
| Molecular Weight of gas = | 17.101 | lb/lb-mole |
| Btu per lb. of gas[4] = | 22,952.168 | gross (HHV) |
| Btu per lb. of gas[4] = | 20,696.745 | net (LHV) |
| Density of fuel gas[2] = | 0.0444 | lb/cu. ft |
| Wt % VOC in fuel gas = | 0.71 | % |
| Specific Gravity[1] = | 0.5905 | |

| Component | Wt% |
|---|---|
| carbon | 73.22 |
| oxygen | 1.27 |
| hydrogen | 23.82 |
| nitrogen | 1.69 |
| helium | 0.00 |
| sulfur | 0.00 |
| **Total** | **100.00** |

**F-Factor (SCF dry exhaust per MMBtu [HHV]) = 8,643.54**
(Based on EPA RM-19) at 68 deg F and 14.696 psia

**F-Factor Calculation:**

F-Factor = 1,000,000*((3.64*%H)+(1.53*%C)+(0.57*%S)+(0.14*%N)-(0.46*%O))/GCV

GCV = Gross Btu per lb. of gas (HHV)

%H, %C, %S, %N, & %O are percent weight values calculated from fuel analysis and have units of (scf/lb)/%

Density of natural gas based on specific gravity multiplied by density of air at 68 deg F and 14.696 psia.

**References:**


[1] ASTM D 3588

[2] Civil Engineering Reference Manual, 7th ed. - Michael R. Lindeburg

[3] Mark's Standard Handbook for Mechanical Engineers, 10th ed. - Eugene A. Avallone, Theodore Baumeister III

[4] Introduction to Fluid Mechanics, 3rd ed. - William S. Janna

[5] GPA Reference Bulletin 181-86, revised 1986, reprinted 1995

**Client:** Cricket Valley Energy Center LLC
**Location:** Cricket Valley Energy Center
**Date:** February 19, 2020
**Project #:** bec-19-cricketvalley.ny-start#1

**Natural Gas - Fuel Analysis**

Standardized to 68 deg F and 14.696 psia - EPA Standards

| Gas Component | | Mole (%) | Molecular[1] Weight (lb/lb-mole) | Lbs Component per Lb-Mole of Gas | Wt. % of Component | Ideal Gross[1,3] Heating Value (Btu/ft$^3$) | Fuel Heat Value [HHV] (Btu/SCF) | Ideal Net[1,3] Heating Value (Btu/ft$^3$) | Fuel Heat Value [LHV] (Btu/SCF) |
|---|---|---|---|---|---|---|---|---|---|
| Methane | $CH_4$ | 93.1346 | 16.0430 | 14.94 | 87.39 | 994.85 | 926.54 | 895.75 | 834.26 |
| Ethane | $C_2H_6$ | 4.7455 | 30.0700 | 1.43 | 8.35 | 1,743.15 | 82.72 | 1,594.41 | 75.66 |
| Propane | $C_3H_8$ | 0.2007 | 44.0970 | 0.09 | 0.52 | 2,478.35 | 4.97 | 2,280.17 | 4.58 |
| iso-Butane | $iC_4H_{10}$ | 0.0147 | 58.1230 | 0.01 | 0.05 | 3,203.11 | 0.47 | 2,955.38 | 0.43 |
| n-Butane | $nC_4H_{10}$ | 0.0158 | 58.1230 | 0.01 | 0.05 | 3,213.35 | 0.51 | 2,965.62 | 0.47 |
| Iso-Pentane | $iC_5H_{12}$ | 0.0039 | 72.1500 | 0.00 | 0.02 | 3,940.87 | 0.15 | 3,643.50 | 0.14 |
| n-Pentane | $nC_5H_{12}$ | 0.0022 | 72.1500 | 0.00 | 0.01 | 3,948.75 | 0.09 | 3,648.32 | 0.08 |
| Hexanes | $C_6H_{14}$ | 0.0040 | 86.1770 | 0.00 | 0.02 | 4,684.54 | 0.19 | 4,337.82 | 0.17 |
| Heptanes | $C_7H_{16}$ | 0.0000 | 100.2040 | 0.00 | 0.00 | 5,419.94 | 0.00 | 5,023.77 | 0.00 |
| Octanes | $C_8H_{18}$ | 0.0000 | 114.2310 | 0.00 | 0.00 | 6,155.14 | 0.00 | 5,709.23 | 0.00 |
| Carbon Dioxide | $CO_2$ | 0.4917 | 44.0100 | 0.22 | 1.27 | 0.00 | 0.00 | 0.00 | 0.00 |
| Nitrogen | $N_2$ | 1.1346 | 28.0134 | 0.32 | 1.86 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hydrogen Sulfide | $H_2S$ | 0.0000 | 34.0800 | 0.00 | 0.00 | 627.54 | 0.00 | 578.00 | 0.00 |
| Oxygen | $O_2$ | 0.2523 | 31.9988 | 0.08 | 0.47 | 0.00 | 0.00 | 0.00 | 0.00 |
| Helium | He | 0.0000 | 4.0026 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hydrogen | $H_2$ | 0.0000 | 2.0159 | 0.00 | 0.00 | 319.34 | 0.00 | 269.82 | 0.00 |
| **Totals** | | **100.000** | | **17.10** | **100.00** | **dry** | **1,015.65** | **dry** | **915.80** |
| | | | | | | **wet[2,5]** | **992.23** | **wet[2,5]** | **894.68** |

| Characteristics of Fuel Gas | | |
|---|---|---|
| Molecular Weight of gas = | 17.098 | lb/lb-mole |
| Btu per lb. of gas[4] = | 22,883.761 | gross (HHV) |
| Btu per lb. of gas[4] = | 20,633.993 | net (LHV) |
| Density of fuel gas[2] = | 0.0444 | lb/cu. ft |
| Wt % VOC in fuel gas = | 0.67 | % |
| Specific Gravity[1] = | 0.5903 | |

| Component | Wt% |
|---|---|
| carbon | 72.99 |
| oxygen | 1.39 |
| hydrogen | 23.76 |
| nitrogen | 1.86 |
| helium | 0.00 |
| sulfur | 0.00 |
| **Total** | **100.00** |

**F-Factor (SCF dry exhaust per MMBtu [HHV]) = 8,642.95**
(Based on EPA RM-19) at 68 deg F and 14.696 psia

**F-Factor Calculation:**

F-Factor = 1,000,000*((3.64*%H)+(1.53*%C)+(0.57*%S)+(0.14*%N)-(0.46*%O))/GCV

GCV = Gross Btu per lb. of gas (HHV)

%H, %C, %S, %N, & %O are percent weight values calculated from fuel analysis and have units of (scf/lb)/%

Density of natural gas based on specific gravity multiplied by density of air at 68 deg F and 14.696 psia.

**References:**


[1] ASTM D 3588

[2] Civil Engineering Reference Manual, 7th ed. - Michael R. Lindeburg

[3] Mark's Standard Handbook for Mechanical Engineers, 10th ed. - Eugene A. Avallone, Theodore Baumeister III

[4] Introduction to Fluid Mechanics, 3rd ed. - William S. Janna

[5] GPA Reference Bulletin 181-86, revised 1986, reprinted 1995

# Certificate of Analysis

SINCE 1985

*Quality Controlled Through Analysis*

10630 FALLSTONE RD. HOUSTON, TEXAS 77099
P.O. BOX 741905, HOUSTON, TEXAS 77274

TEL: (281) 495-2400
FAX: (281) 495-2410

| | | | |
|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92010-003 Page 1 of 3 | **REPORT DATE:** | March 03, 2020 |
| **SAMPLE:** | Cricket Valley-R2&3-NoDuct R3 Natural Gas Sample 2020-02-17 | | |

**TEST** **RESULT**

***Composition of Natural Gas by Gas Chromatography, ASTM D 1945.a***

| | ***Results, Mol %*** |
|---|---|
| Hydrogen | 0.0000 |
| Oxygen | 0.3437 |
| Nitrogen | 1.3731 |
| Carbon Dioxide | 0.4530 |
| Methane | 93.1300 |
| Ethane | 4.4506 |
| Propane | 0.2115 |
| iso-Butane | 0.0142 |
| n-Butane | 0.0146 |
| iso-Pentane | 0.0035 |
| n-Pentane | 0.0020 |
| Hexanes Plus | 0.0038 |
| **TOTAL** | **100.0000** |

***Calorific Value and Specific Gravity, Calculated at 14.696 psia and 60°F, ASTM D 3588.e***

| | ***Results*** |
|---|---|
| NET (Dry basis), BTU/scf | 930.2 |
| Gross (Dry basis), BTU/scf | 1,032 |
| NET (Dry basis), BTU/lb | 20,308 |
| Gross (Dry basis), BTU/lb | 22,519 |

***Calorific Value and Specific Gravity, Calculated at 14.696 psia and 68°F, ASTM D 3588.e***

| | ***Results*** |
|---|---|
| NET (Dry basis), BTU/scf | 916.1 |
| Gross (Dry basis), BTU/scf | 1,016 |
| NET (Dry basis), BTU/lb | 20,308 |
| Gross (Dry basis), BTU/lb | 22,519 |

Cert. No.: 0005085, 17025
Quality Management System Certified to ISO 9001:2008, and ISO 17025:2005

These analyses, opinions or interpretations are based on material supplied by the client to whom, and for whose exclusive and confidential use this report is made. Results related only to the items tested. Texas OilTech Laboratories, L.P. and its officers assume no responsibility and make no warranty for proper operations of any petroleum, oil, gas or any other material in connection with which this report is used or relied on. This report may not be reproduced, except in full without prior written approval by Texas OilTech Laboratories, L.P.

# Certificate of Analysis

SINCE 1985

*Quality Controlled Through Analysis*

10630 FALLSTONE RD. HOUSTON, TEXAS 77099
P.O. BOX 741905, HOUSTON, TEXAS 77274

TEL: (281) 495-2400
FAX: (281) 495-2410

| | | | |
|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92010-003 Page 2 of 3 | **REPORT DATE:** | March 03, 2020 |
| **SAMPLE:** | Cricket Valley-R2&3-NoDuct R3 Natural Gas Sample 2020-02-17 | | |

**TEST** **RESULT**

***Sulfur Compounds in Natural Gas and Gaseous Fuels by GC, ASTM D 5504***

| | ***Results, ppm/Wt*** |
|---|---|
| Hydrogen Sulfide | 0.9 |
| Carbonyl Sulfide | 0.1 |
| 2-Methyl Thiophene | 0.1 |
| 2-Pentyl Mercaptan | <0.1 |
| 3-Methyl Thiophene | <0.1 |
| Benzothiophene | <0.1 |
| Carbon Disulfide | <0.1 |
| Diethylsulfide | <0.1 |
| Dimethylsulfide | <0.1 |
| Ethyl Mercaptan | <0.1 |
| Ethylmethylsulfide | <0.1 |
| Isobutyl Mercaptan | <0.1 |
| Isopropyl Mercaptan | 0.2 |
| Methyl Mercaptan | 0.1 |
| Methyl-t-butyl Sulfide | <0.1 |
| n-Butyl Mercaptan | <0.1 |
| Propyl Mercaptan | 0.1 |
| Tert-butyl disulfide | <0.1 |
| Tert-Butyl mercaptan | 0.8 |
| Tetra-Hydro Thiophene | <0.1 |
| Thiophene | <0.1 |
| Thiophenol | <0.1 |
| Dibenzothiophene | <0.1 |
| 1,2-Ethanedithiol | <0.1 |
| Propyl Sulfide | <0.1 |
| 1-Hexanethiol | <0.1 |
| 1,5-Pentanedithiol | <0.1 |
| Bromothiophene | <0.1 |
| Propyl Disulfide | <0.1 |
| 1-Heptanethiol | <0.1 |
| 2-Methyl Benzothiophene | <0.1 |
| Phenyl Sulfide | <0.1 |
| 1-Nonanethiol | <0.1 |
| 2-Butyl Thiophene | <0.1 |
| 3-Butyl Thiophene | <0.1 |

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P.O. BOX 741905, HOUSTON, TEXAS 77274

TEL: (281) 495-2400
FAX: (281) 495-2410

| | | | |
|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92010-003 Page 3 of 3 | **REPORT DATE:** | March 03, 2020 |
| **SAMPLE:** | Cricket Valley-R2&3-NoDuct R3 Natural Gas Sample 2020-02-17 | | |

| **TEST** | **RESULT** |
|---|---|

| ***Parameter*** | ***Results*** |
|---|---|
| | |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 60ºF, wt% | $3.9 \times 10^{-4}$ |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 68ºF, wt% | $3.8 \times 10^{-4}$ |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 60ºF, ppmw | 3.9 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 68ºF, ppmw | 3.8 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, grains/100 scf @ 60ºF | 0.12 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, grains/100 scf @ 68ºF | 0.11 |

Respectfully submitted
For Texas OilTech Laboratories, L.P.

Roland Gore
Associate Laboratory Director



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FAX: (281) 495-2410

| | | | |
|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92010-001 Page 1 of 3 | **REPORT DATE:** | March 03, 2020 |
| **SAMPLE:** | Cricket Valley-R1-NoDuct Natural Gas Sample 2020-02-18 | | |

**TEST** **RESULT**

***Composition of Natural Gas by Gas Chromatography. ASTM D 1945.a***

| | ***Results, Mol %*** |
|---|---|
| Hydrogen | 0.0000 |
| Oxygen | 0.2136 |
| Nitrogen | 1.0304 |
| Carbon Dioxide | 0.4658 |
| Methane | 93.1168 |
| Ethane | 4.9202 |
| Propane | 0.2063 |
| iso-Butane | 0.0167 |
| n-Butane | 0.0174 |
| iso-Pentane | 0.0047 |
| n-Pentane | 0.0027 |
| Hexanes Plus | 0.0054 |
| **TOTAL** | **100.0000** |

***Calorific Value and Specific Gravity. Calculated at 14.696 psia and 60°F. ASTM D 3588.e***

| | ***Results*** |
|---|---|
| NET (Dry basis), BTU/scf | 937.0 |
| Gross (Dry basis), BTU/scf | 1,039 |
| NET (Dry basis), BTU/lb | 20,501 |
| Gross (Dry basis), BTU/lb | 22,731 |

***Calorific Value and Specific Gravity. Calculated at 14.696 psia and 68°F. ASTM D 3588.e***

| | ***Results*** |
|---|---|
| NET (Dry basis), BTU/scf | 922.8 |
| Gross (Dry basis), BTU/scf | 1,023 |
| NET (Dry basis), BTU/lb | 20,501 |
| Gross (Dry basis), BTU/lb | 22,731 |

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| | | | |
|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92010-001 Page 2 of 3 | **REPORT DATE:** | March 03, 2020 |
| **SAMPLE:** | Cricket Valley-R1-NoDuct Natural Gas Sample 2020-02-18 | | |

**TEST** **RESULT**

***Sulfur Compounds in Natural Gas and Gaseous Fuels by GC, ASTM D 5504***

| | ***Results, ppm/Wt*** |
|---|---|
| Hydrogen Sulfide | 0.7 |
| Carbonyl Sulfide | 0.1 |
| 2-Methyl Thiophene | <0.1 |
| 2-Pentyl Mercaptan | <0.1 |
| 3-Methyl Thiophene | <0.1 |
| Benzothiophene | <0.1 |
| Carbon Disulfide | <0.1 |
| Diethylsulfide | <0.1 |
| Dimethylsulfide | <0.1 |
| Ethyl Mercaptan | <0.1 |
| Ethylmethylsulfide | <0.1 |
| Isobutyl Mercaptan | <0.1 |
| Isopropyl Mercaptan | 0.2 |
| Methyl Mercaptan | <0.1 |
| Methyl-t-butyl Sulfide | <0.1 |
| n-Butyl Mercaptan | <0.1 |
| Propyl Mercaptan | 0.1 |
| Tert-butyl disulfide | <0.1 |
| Tert-Butyl mercaptan | 0.8 |
| Tetra-Hydro Thiophene | <0.1 |
| Thiophene | <0.1 |
| Thiophenol | <0.1 |
| Dibenzothiophene | <0.1 |
| 1,2-Ethanedithiol | <0.1 |
| Propyl Sulfide | <0.1 |
| 1-Hexanethiol | <0.1 |
| 1,5-Pentanedithiol | <0.1 |
| Bromothiophene | <0.1 |
| Propyl Disulfide | <0.1 |
| 1-Heptanethiol | <0.1 |
| 2-Methyl Benzothiophene | <0.1 |
| Phenyl Sulfide | <0.1 |
| 1-Nonanethiol | <0.1 |
| 2-Butyl Thiophene | <0.1 |
| 3-Butyl Thiophene | <0.1 |

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| | | | |
|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92010-001 Page 3 of 3 | **REPORT DATE:** | March 03, 2020 |
| **SAMPLE:** | Cricket Valley-R1-NoDuct Natural Gas Sample 2020-02-18 | | |

| **TEST** | **RESULT** |
|---|---|

| ***Parameter*** | ***Results*** |
|---|---|
| | |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 60ºF, wt% | $3.5 \times 10^{-4}$ |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 68ºF, wt% | $3.4 \times 10^{-4}$ |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 60ºF, ppmw | 3.5 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 68ºF, ppmw | 3.4 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, grains/100 scf @ 60ºF | 0.10 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, grains/100 scf @ 68ºF | 0.10 |

Respectfully submitted
For Texas OilTech Laboratories, L.P.

Roland Gore
Associate Laboratory Director



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| | | | |
|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92010-002 Page 1 of 3 | **REPORT DATE:** | March 03, 2020 |
| **SAMPLE:** | Cricket Valley-R1-Duct Natural Gas Sample 2020-02-19 | | |

**TEST** **RESULT**

***Composition of Natural Gas by Gas Chromatography. ASTM D 1945.a***

| | ***Results, Mol %*** |
|---|---|
| Hydrogen | 0.0000 |
| Oxygen | 0.2523 |
| Nitrogen | 1.1346 |
| Carbon Dioxide | 0.4917 |
| Methane | 93.1346 |
| Ethane | 4.7455 |
| Propane | 0.2007 |
| iso-Butane | 0.0147 |
| n-Butane | 0.0158 |
| iso-Pentane | 0.0039 |
| n-Pentane | 0.0022 |
| Hexanes Plus | 0.0040 |
| **TOTAL** | **100.0000** |

***Calorific Value and Specific Gravity. Calculated at 14.696 psia and 60°F. ASTM D 3588.e***

| | ***Results*** |
|---|---|
| NET (Dry basis), BTU/scf | 934.5 |
| Gross (Dry basis), BTU/scf | 1,036 |
| NET (Dry basis), BTU/lb | 20,415 |
| Gross (Dry basis), BTU/lb | 22,636 |

***Calorific Value and Specific Gravity. Calculated at 14.696 psia and 68°F. ASTM D 3588.e***

| | ***Results*** |
|---|---|
| NET (Dry basis), BTU/scf | 920.3 |
| Gross (Dry basis), BTU/scf | 1,020 |
| NET (Dry basis), BTU/lb | 20,415 |
| Gross (Dry basis), BTU/lb | 22,636 |

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| | | | |
|---|---|---|---|
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| **CLIENT PROJECT:** | | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92010-002 Page 2 of 3 | **REPORT DATE:** | March 03, 2020 |
| **SAMPLE:** | Cricket Valley-R1-Duct Natural Gas Sample 2020-02-19 | | |

**TEST** **RESULT**

***Sulfur Compounds in Natural Gas and Gaseous Fuels by GC, ASTM D 5504***

| | ***Results, ppm/Wt*** |
|---|---|
| Hydrogen Sulfide | 0.8 |
| Carbonyl Sulfide | 0.1 |
| 2-Methyl Thiophene | <0.1 |
| 2-Pentyl Mercaptan | <0.1 |
| 3-Methyl Thiophene | <0.1 |
| Benzothiophene | <0.1 |
| Carbon Disulfide | <0.1 |
| Diethylsulfide | <0.1 |
| Dimethylsulfide | <0.1 |
| Ethyl Mercaptan | <0.1 |
| Ethylmethylsulfide | <0.1 |
| Isobutyl Mercaptan | <0.1 |
| Isopropyl Mercaptan | 0.2 |
| Methyl Mercaptan | 0.1 |
| Methyl-t-butyl Sulfide | <0.1 |
| n-Butyl Mercaptan | <0.1 |
| Propyl Mercaptan | 0.1 |
| Tert-butyl disulfide | <0.1 |
| Tert-Butyl mercaptan | 0.8 |
| Tetra-Hydro Thiophene | <0.1 |
| Thiophene | <0.1 |
| Thiophenol | <0.1 |
| Dibenzothiophene | <0.1 |
| 1,2-Ethanedithiol | <0.1 |
| Propyl Sulfide | <0.1 |
| 1-Hexanethiol | <0.1 |
| 1,5-Pentanedithiol | <0.1 |
| Bromothiophene | <0.1 |
| Propyl Disulfide | <0.1 |
| 1-Heptanethiol | <0.1 |
| 2-Methyl Benzothiophene | <0.1 |
| Phenyl Sulfide | <0.1 |
| 1-Nonanethiol | <0.1 |
| 2-Butyl Thiophene | <0.1 |
| 3-Butyl Thiophene | <0.1 |

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| | | | |
|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92010-002 Page 3 of 3 | **REPORT DATE:** | March 03, 2020 |
| **SAMPLE:** | Cricket Valley-R1-Duct Natural Gas Sample 2020-02-19 | | |

| **TEST** | **RESULT** |
|---|---|

| ***Parameter*** | ***Results*** |
|---|---|
| | |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 60ºF, wt% | $3.9 \times 10^{-4}$ |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 68ºF, wt% | $3.8 \times 10^{-4}$ |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 60ºF, ppmw | 3.9 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 68ºF, ppmw | 3.8 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, grains/100 scf @ 60ºF | 0.12 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, grains/100 scf @ 68ºF | 0.11 |

Respectfully submitted
For Texas OilTech Laboratories, L.P.

Roland Gore
Associate Laboratory Director



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## Conversion Factors (Gas Analysis) to adjust BTU/ft$^3$ and Sulfur content @60ºF and 68ºF

NET (Dry Basis) BTU/scf @60ºF, factor= 1

NET (Dry Basis) BTU/scf @68ºF, factor= 0.984839

Gross (Dry Basis) BTU/scf @60ºF, factor = 1

Gross (Dry Basis) BTU/scf @68ºF, factor = 0.984839

NET (Dry Basis) BTU/lb @60ºF, factor = 1

NET (Dry Basis) BTU/lb @68ºF, factor = 1

GROSS (Dry Basis) BTU/lb @60ºF, factor= 1

GROSS (Dry Basis) BTU/lb @68ºF, factor= 1

Sulfur Total Volatile, ASTM D 6667 @60ºF, wt% or ppmwt, factor= 1

Sulfur Total Volatile, ASTM D 6667 @68ºF, wt% or ppmwt, factor= 0.984839

Sulfur Total Volatile, ASTM D 6667 @60ºF, grains/100scf = ppmwt @60ºF x 0.0300

Sulfur Total Volatile, ASTM D 6667 @68ºF, grains/100scf = ppmwt @60ºF x 0.0295

## Conversion Factors (Liquid Fuel Analysis)

Liquid Fuel BTU/lb @60ºF= Liquid fuel BTU/lb @68ºF

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# SAMPLE DESCRIPTION AND CHAIN OF CUSTODY RECORD

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com

| | | | |
|---|---|---|---|
| Project Number: | bec-19-cricketvalley.ny-start#1 | Laboratory Analysis Requested: | |
| Person Taking Samples: | Swanson B., Aaron Blum | Fuel Component and Sulfur Analysis | |

| Sample Number | Location | Date | Volume | Analysis Method(s) [and target(s)] | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | GPA2261/ASTM 1945 [component analysis] | GPA 2172 Calculation @ 60 F & 68 F [HHV] | ASTM 5504 [speciated sulfur content] | | | | |
| 021720-Run1 with Out-1A | Cricket Valley-R1-NoDuct Natural Gas Sample [primary] | 02/17/20 | 10L | X | X | X | | | | |
| 021720-Run1 with DB-1B | Cricket Valley-R1-NoDuct Natural Gas Sample [backup] | 02/17/20 | 10L | as necessary | as necessary | as necessary | | | | |
| 021820-Run 1 with Duct-1A | Cricket Valley-R1-Duct Natural Gas Sample [primary] | 02/18/20 | 10L | X | X | X | | | | |
| 021820-Run 1 with Duct-1B | Cricket Valley-R1-Duct Natural Gas Sample [backup] | 02/18/20 | 10L | as necessary | as necessary | as necessary | | | | |
| 021920-R2&3 Duct-1A | Cricket Valley-R2&3-Duct_R3 noduct Natural Gas Sample [primary] | 02/19/20 | 10L | X | X | X | | | | |
| 021920-R2&3 Duct-1B | Cricket Valley-R2&3-Duct_R3 noduct Natural Gas Sample [backup] | 02/19/20 | 10L | as necessary | as necessary | as necessary | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Relin[illegible] | 02/20/20 Date: | 14:00 Time: | Received by: (Signature) | 2/24/20 Date: | 09:30am Time: |
| Relinquished by: (Signature) | Date: | Time: | Received by: (Signature) | Date: | Time: |

# APPENDIX F

# STRATIFICATION TEST DATA

# STRATIFICATION TEST DATA

## Stratification Test Data Base Load

| Source Information | |
|---|---|
| **Company** | Cricket Valley Energy Center LLC |
| **Plant Name** | Cricket Valley Energy Center |
| **Equipment** | General Electric 7F.05 |
| **Location** | Dover Plains, New York |

| Test Information | |
|---|---|
| **Date** | 02/05/20 |
| **Project #** | bec-19-cricketvalley.ny-start#1 |
| **Unit Number** | U-00001 |
| **Load** | Base |
| **Number of Ports Available** | 4 |
| **Number of Ports Used** | 4 |

| Stack and Test Type | | | |
|---|---|---|---|
| ○ | Isokinetic Traverse (Wet Chemistry Testing) | | **Circular Stack** |
| ○ | Velocity Traverse (Flow and Flow RATA Test) | | |
| ○ | Stratification Traverse (Compliance Test) | ☐ RM 20 | |
| ◉ | **Stratification Traverse (RATA)** ☐ Part 60 | ☑ Part 75 | |

Created with Traverse-AHI v20200108

## METHOD 1 - STRATIFICATION TEST FOR A CIRCULAR SOURCE

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 02/05/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | bec-19-cricketvalley.ny-start#1 |
| **Equipment** | General Electric 7F.05 | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Circular Stack or Duct Diameter** | | | |
|---|---|---|---|
| **Distance to Far Wall of Stack** | ($L_{fw}$) | 236.00 | in. |
| **Distance to Near Wall of Stack** | ($L_{nw}$) | 8.00 | in. |
| **Diameter of Stack** | (D) | 228.00 | in. |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ |

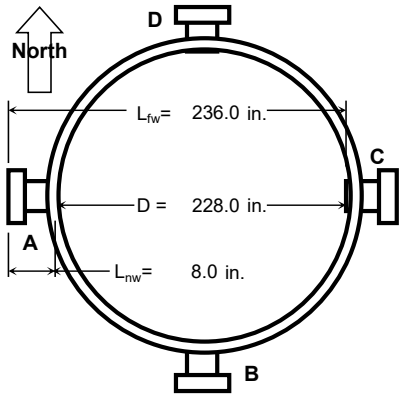
| **Distance from Disturbances to Port** | | | |
|---|---|---|---|
| **Distance Upstream** | (A) | 200.40 | in. |
| **Diameters Upstream** | ($A_D$) | 0.88 | diameters |
| **Distance Downstream** | (B) | 850.00 | in. |
| **Diameters Downstream** | ($B_D$) | 3.73 | diameters |

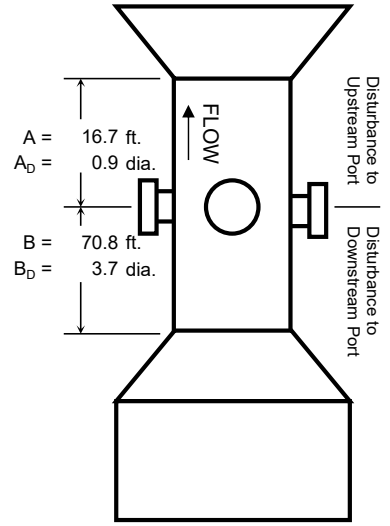
| **Number of Traverse Points Required** | | | | | |
|---|---|---|---|---|---|
| Diameters to Flow Disturbance | | Minimum Number of[1] Traverse Points | | Minimum Number of Traverse Points | |
| Down ($B_D$) Stream | Up ($A_D$) Stream | Particulate Points | Velocity Points | Comp Stratification Criteria | Points |
| 2.00-4.99 | 0.50-1.24 | 24 | 16 | RM 7E 8.1.2 | 12 RM1 pts |
| 5.00-5.99 | 1.25-1.49 | 20 | 16 | Alt 7E 8.1.2 | 3 points |
| 6.00-6.99 | 1.50-1.74 | 16 | 12 | | |
| 7.00-7.99 | 1.75-1.99 | 12 | 12 | | |
| >= 8.00 | >=2.00 | 8 or 12[2] | 8 or 12[2] | **Minimum Number of** | |
| Upstream Spec | | 24 | 16 | **Traverse Points** | |
| Downstream Spec | | 24 | 16 | **RATA Stratification** | |
| Traverse Pts Required | | 24 | 16 | **Criteria** | **Points** |
| | | | | Part75/60 | 12 RM1 pts |
| | | | | 75 abrv (a) | 3 points |
| | | | | 75 abrv (b) | 6 points |
| | | | | 12 points | |

[1] Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.

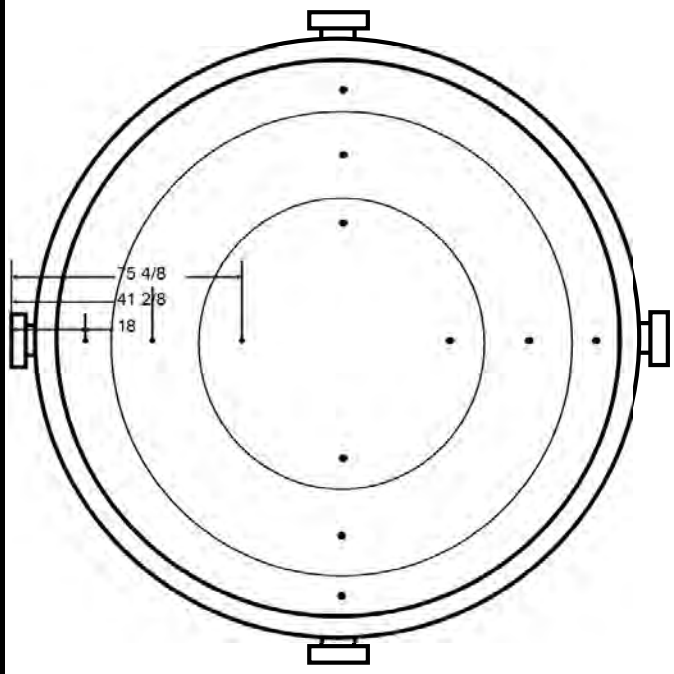
[2] 8 for Circular Stacks 12 to 24 inches
12 for Circular Stacks over 24 inches

| **Number of Traverse Points Used** | | | | |
|---|---|---|---|---|
| 4 | **Ports by** | 3 | **Pts / port** | **Stratification Traverse (RATA)** |
| 12 | **Pts Used** | 12 | **Required** | |




| **Traverse Point Locations** | | | |
|---|---|---|---|
| **Traverse Point Number** | **Percent of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
| | % | in. | in. |
| **1** | 4.4% | 10 | 18 |
| **2** | 14.6% | 33 2/8 | 41 2/8 |
| **3** | 29.6% | 67 4/8 | 75 4/8 |
| **4** | | | |
| **5** | | | |
| **6** | | | |
| **7** | | | |
| **8** | | | |
| **9** | | | |
| **10** | | | |
| **11** | | | |
| **12** | | | |
| **13** | | | |
| **14** | | | |
| **15** | | | |
| **16** | | | |
| **17** | | | |
| **18** | | | |
| **19** | | | |
| **20** | | | |
| **21** | | | |
| **22** | | | |
| **23** | | | |
| **24** | | | |



## STRATIFICATION TRAVERSE (RATA) RESULTS

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 02/05/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | bec-19-cricketvalley.ny-start#1 |
| **Equipment** | General Electric 7F.05 | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Stack Dimensions** | | | | **Traverse Data** | | | |
|---|---|---|---|---|---|---|---|
| **Diameter or Length of Stack** | (D) | 228.00 | in. | 4 | **Ports by** | 3 | **Pts / port** |
| **Width of Stack** | (W) | | in. | 12 | **Pts Used** | 12 | **Required** |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ | **Run Start** | 14:35:09 | **Run End** | 16:38:09 |

| **Traverse Point** | **Time Per Point** | **Point Start Time** | **Point Stop Time (Reading)** | **$O_2$** | **Percent Difference** | **NOx** | **Percent Difference** |
|---|---|---|---|---|---|---|---|
| | min. | hh:mm:ss | hh:mm:ss | % | % | ppm | % |
| D-3 | 8.00 | 14:35:09 | 14:43:09 | 12.15 | 0.50% | 2.57 | 7.47% |
| D-2 | 8.00 | 14:43:09 | 14:51:09 | 12.24 | 0.24% | 2.62 | 5.67% |
| D-1 | 8.00 | 14:51:09 | 14:59:09 | 12.24 | 0.24% | 2.56 | **7.83%** |
| C-3 | 8.00 | 14:59:09 | 15:07:09 | 12.18 | 0.25% | 2.70 | 2.79% |
| C-2 | 8.00 | 15:07:09 | 15:15:09 | 12.16 | 0.42% | 2.77 | 0.27% |
| C-1 | 8.00 | 15:15:09 | 15:23:09 | 12.15 | 0.50% | 2.87 | 3.33% |
| B-3 | 31.00 | 15:23:09 | 15:54:09 | 12.30 | 0.73% | 2.90 | 4.41% |
| B-2 | 8.00 | 15:54:09 | 16:02:09 | 12.30 | 0.73% | 2.76 | 0.63% |
| B-1 | 8.00 | 16:02:09 | 16:10:09 | 12.32 | **0.89%** | 2.93 | 5.49% |
| A-3 | 9.00 | 16:10:09 | 16:19:09 | 12.12 | 0.74% | 2.97 | 6.93% |
| A-2 | 8.00 | 16:19:09 | 16:27:09 | 12.16 | 0.42% | 2.88 | 3.69% |
| A-1 | 11.00 | 16:27:09 | 16:38:09 | 12.21 | 0.01% | 2.80 | 0.81% |
| **Average** | | | | 12.21 | | 2.78 | |

| | | | $O_2$ | | NOx | | |
|---|---|---|---|---|---|---|---|
| | | | **Criteria** | **Results** | **Criteria** | **Results** | **AND criteria** |
| **RATA Part 75** | Non-Stratified % | ≤ | 5% | Non (%) | 5% | Non (Δ) | Under Part 75 criteria all measured pollutants and diluents demonstrate a non-stratified stack with subsequent testing from a single point located at least one meter away from the stack wall. |
| | Non-Stratified Δ | ≤ | 0.3 | | 3 | | |
| | Minimally-Stratified % | ≤ | 10% | | 10% | | |
| | Minimally-Stratified Δ | ≤ | 0.5 | | 5 | | |
| | Stratified | > | 10% | | 10% | | |
| | **Outcome** | | 1 point | | 1 point | | |
| | **Location** | | any point | | any point | | |
| | **Maximum Concentration** | | 12.32 | | 2.97 | | |
| | **Upscale Δ = Max Concentration - Average** | | 0.11 | Non | 0.19 | Non | |
| | **Upscale % Difference** | | 0.89% | Non | 6.93% | Mini | |
| | **Minimum Concentration** | | 12.12 | | 2.56 | | |
| | **Downscale Δ = Average - Min Concentration** | | 0.09 | Non | 0.22 | Non | |
| | **Downscale % Difference** | | 0.74% | Non | 7.83% | Mini | |
| | **First Point on List Closest to Average** | | | | C-1 | | |
| **Port Averages with Maximum Concentration Indicator** | **Port A Average** | | 12.16 | | 2.88 | <max | |
| | **Port B Average** | | 12.31 | <max | 2.86 | | |
| | **Port C Average** | | 12.16 | | 2.78 | | |
| | **Port D Average** | | 12.21 | | 2.58 | | |
| | **Port E Average** | | | | | | |
| | **Port F Average** | | | | | | |
| | **Port G Average** | | | | | | |

## RATA SAMPLE POINTS FOR CIRCULAR STACK

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 02/05/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | bec-19-cricketvalley.ny-start#1 |
| **Equipment** | General Electric 7F.05 | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Stack Dimensions** | | | | **Traverse Data** | | | |
|---|---|---|---|---|---|---|---|
| **Diameter or Length of Stack** | (D) | 228.00 | in. | 4 | **Ports by** | 3 | **Pts / port** |
| **Width of Stack** | (W) | | in. | 12 | **Pts Used** | 12 | **Required** |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ | **Run Start** | 14:35:09 | **Run End** | 16:38:09 |

**40 CFR 75 Criteria**

| **Stratification Results** | |
|---|---|
| **Maximum Percent Difference** | 7.83 % for NOx |
| **Maximum Pollutant Conc. Diff.** | 0.22 ppm for NOx |
| **Maximum Diluent Conc. Diff.** | 0.11 % for $O_2$ |
| **Stratification Conclusions** | |
| **Comparison** | all diluents/pollutants |
| **Stack Diameter** | D > 93.6 in. |

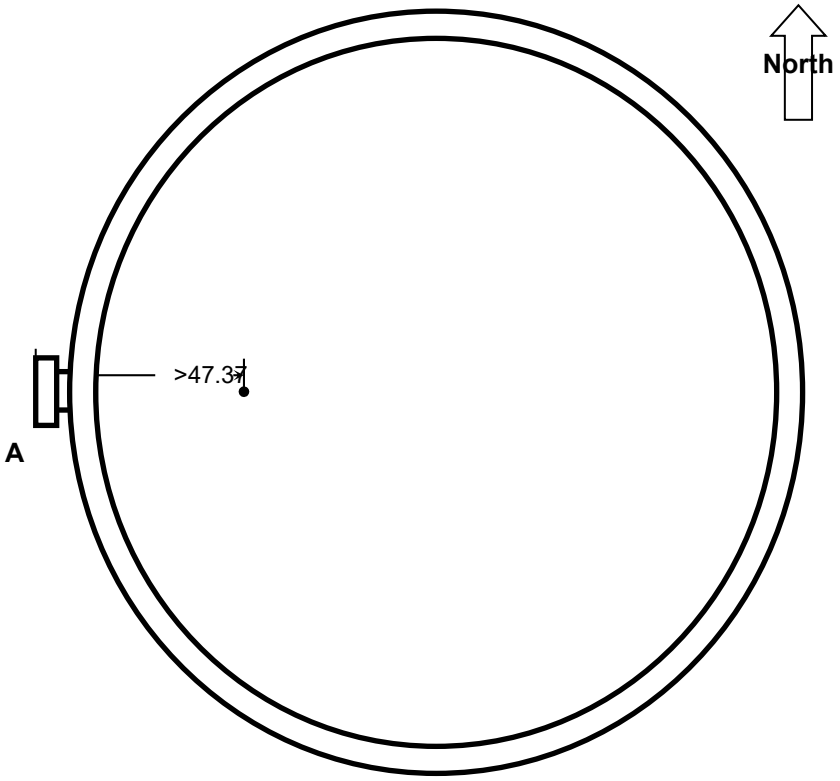
Under Part 75 criteria all measured pollutants and diluents demonstrate a non-stratified stack with subsequent testing from a single point located at least one meter away from the stack wall.

| **Traverse Point Number** | **Percent of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
|---|---|---|---|
| | % | in. | in. |
| **1** | >17.27% | >39.37 | >47.37 |
| **2** | | | |
| **3** | | | |

Test Type
- ☐ Moisture, for MW
- ☐ Moisture, for wet-to-dry
- ☑ Gas

☐ Use 6.5.6.3(a) points?

☐ 6.5.6(b)(2) alt. points could apply



# STRATIFICATION TEST DATA

## Stratification Test Data Base+DB Load

| Source Information | |
|---|---|
| **Company** | Cricket Valley Energy Center LLC |
| **Plant Name** | Cricket Valley Energy Center |
| **Equipment** | General Electric 7F.05 |
| **Location** | Dover Plains, New York |

| Test Information | |
|---|---|
| **Date** | 02/17/20 |
| **Project #** | bec-19-cricketvalley.ny-start#1 |
| **Unit Number** | U-00001 |
| **Load** | Base+DB |
| **Number of Ports Available** | 4 |
| **Number of Ports Used** | 4 |

| Stack and Test Type | | | |
|---|---|---|---|
| ○ | Isokinetic Traverse (Wet Chemistry Testing) | | **Circular Stack** |
| ○ | Velocity Traverse (Flow and Flow RATA Test) | | |
| ○ | Stratification Traverse (Compliance Test) | ☐ RM 20 | |
| ◉ | **Stratification Traverse (RATA)** ☐ Part 60 | ☑ Part 75 | |

Created with Traverse-AHI v20200108

## METHOD 1 - STRATIFICATION TEST FOR A CIRCULAR SOURCE

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 02/17/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | bec-19-cricketvalley.ny-start#1 |
| **Equipment** | General Electric 7F.05 | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

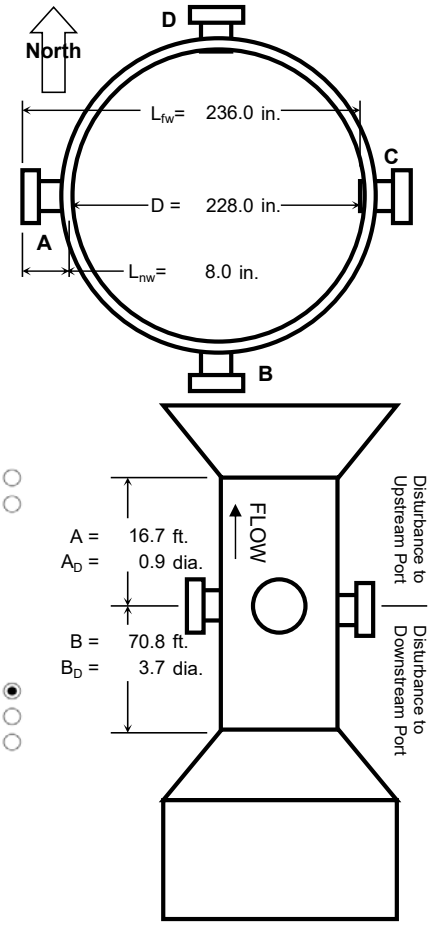
| **Circular Stack or Duct Diameter** | | | |
|---|---|---|---|
| **Distance to Far Wall of Stack** | ($L_{fw}$) | 236.00 | in. |
| **Distance to Near Wall of Stack** | ($L_{nw}$) | 8.00 | in. |
| **Diameter of Stack** | (D) | 228.00 | in. |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ |

| **Distance from Disturbances to Port** | | | |
|---|---|---|---|
| **Distance Upstream** | (A) | 200.40 | in. |
| **Diameters Upstream** | ($A_D$) | 0.88 | diameters |
| **Distance Downstream** | (B) | 850.00 | in. |
| **Diameters Downstream** | ($B_D$) | 3.73 | diameters |

| **Number of Traverse Points Required** | | | | | |
|---|---|---|---|---|---|
| Diameters to Flow Disturbance | | Minimum Number of[1] Traverse Points | | Minimum Number of Traverse Points | |
| Down ($B_D$) Stream | Up ($A_D$) Stream | Particulate Points | Velocity Points | Comp Stratification Criteria | Points |
| 2.00-4.99 | 0.50-1.24 | 24 | 16 | RM 7E 8.1.2 | 12 RM1 pts |
| 5.00-5.99 | 1.25-1.49 | 20 | 16 | Alt 7E 8.1.2 | 3 points |
| 6.00-6.99 | 1.50-1.74 | 16 | 12 | | |
| 7.00-7.99 | 1.75-1.99 | 12 | 12 | | |
| >= 8.00 | >=2.00 | 8 or 12[2] | 8 or 12[2] | **Minimum Number of** | |
| Upstream Spec | | 24 | 16 | **Traverse Points** | |
| Downstream Spec | | 24 | 16 | **RATA Stratification** | |
| Traverse Pts Required | | 24 | 16 | **Criteria** | **Points** |
| | | | | Part75/60 | 12 RM1 pts |
| | | | | 75 abrv (a) | 3 points |
| | | | | 75 abrv (b) | 6 points |
| | | | | 12 points | |

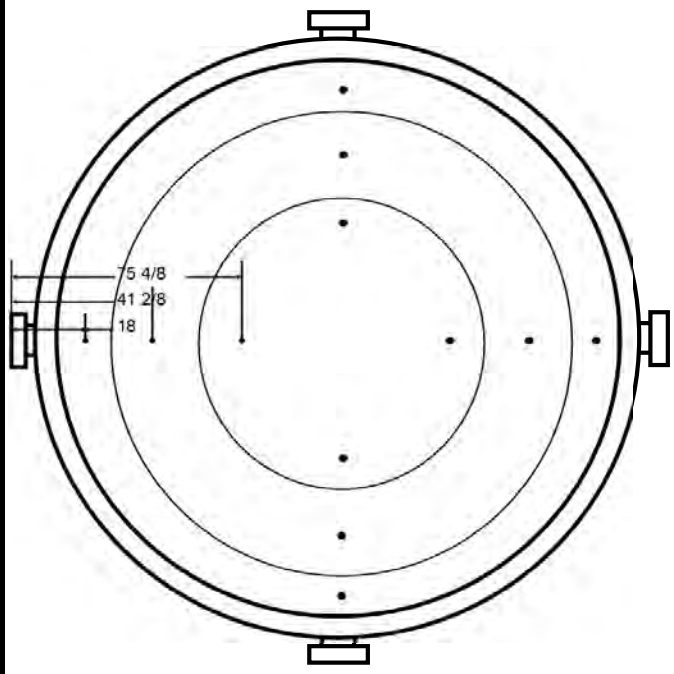
[1] Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.

[2] 8 for Circular Stacks 12 to 24 inches
12 for Circular Stacks over 24 inches




| **Number of Traverse Points Used** | | | | |
|---|---|---|---|---|
| 4 | **Ports by** | 3 | **Pts / port** | **Stratification Traverse (RATA)** |
| 12 | **Pts Used** | 12 | **Required** | |

| **Traverse Point Locations** | | | |
|---|---|---|---|
| **Traverse Point Number** | **Percent of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
| | % | in. | in. |
| **1** | 4.4% | 10 | 18 |
| **2** | 14.6% | 33 2/8 | 41 2/8 |
| **3** | 29.6% | 67 4/8 | 75 4/8 |
| **4** | | | |
| **5** | | | |
| **6** | | | |
| **7** | | | |
| **8** | | | |
| **9** | | | |
| **10** | | | |
| **11** | | | |
| **12** | | | |
| **13** | | | |
| **14** | | | |
| **15** | | | |
| **16** | | | |
| **17** | | | |
| **18** | | | |
| **19** | | | |
| **20** | | | |
| **21** | | | |
| **22** | | | |
| **23** | | | |
| **24** | | | |



## STRATIFICATION TRAVERSE (RATA) RESULTS

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 02/17/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | bec-19-cricketvalley.ny-start#1 |
| **Equipment** | General Electric 7F.05 | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Stack Dimensions** | | | | **Traverse Data** | | | |
|---|---|---|---|---|---|---|---|
| **Diameter or Length of Stack** | (D) | 228.00 | in. | 4 | **Ports by** | 3 | **Pts / port** |
| **Width of Stack** | (W) | | in. | 12 | **Pts Used** | 12 | **Required** |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ | **Run Start** | 10:19:14 | **Run End** | 12:01:14 |

| **Traverse Point** | **Time Per Point** | **Point Start Time** | **Point Stop Time (Reading)** | **$O_2$** | **Percent Difference** | **NOx** | **Percent Difference** |
|---|---|---|---|---|---|---|---|
| | min. | hh:mm:ss | hh:mm:ss | % | % | ppm | % |
| D-3 | 8.00 | 10:19:14 | 10:27:14 | 12.45 | 0.09% | 2.40 | 7.99% |
| D-2 | 8.00 | 10:27:14 | 10:35:14 | 12.43 | 0.25% | 2.36 | 6.19% |
| D-1 | 8.00 | 10:35:14 | 10:43:14 | 12.42 | **0.33%** | 2.47 | 11.14% |
| C-3 | 10.00 | 10:43:14 | 10:53:14 | 12.47 | 0.07% | 2.11 | 5.06% |
| C-2 | 8.00 | 10:53:14 | 11:01:14 | 12.46 | 0.01% | 2.12 | 4.61% |
| C-1 | 8.00 | 11:01:14 | 11:09:14 | 12.46 | 0.01% | 2.16 | 2.81% |
| B-3 | 10.00 | 11:09:14 | 11:19:14 | 12.49 | 0.23% | 2.09 | 5.96% |
| B-2 | 8.00 | 11:19:14 | 11:27:14 | 12.48 | 0.15% | 2.07 | 6.86% |
| B-1 | 8.00 | 11:27:14 | 11:35:14 | 12.44 | 0.17% | 2.49 | **12.04%** |
| A-3 | 10.00 | 11:35:14 | 11:45:14 | 12.48 | 0.15% | 2.18 | 1.91% |
| A-2 | 8.00 | 11:45:14 | 11:53:14 | 12.48 | 0.15% | 2.12 | 4.61% |
| A-1 | 8.00 | 11:53:14 | 12:01:14 | 12.47 | 0.07% | 2.10 | 5.51% |
| **Average** | | | | 12.46 | | 2.22 | |

| | | | $O_2$ | | NOx | | |
|---|---|---|---|---|---|---|---|
| | | | **Criteria** | **Results** | **Criteria** | **Results** | **AND criteria** |
| **RATA Part 75** | Non-Stratified % | ≤ | 5% | Non (%) | 5% | Non (Δ) | Under Part 75 criteria all measured pollutants and diluents demonstrate a non-stratified stack with subsequent testing from a single point located at least one meter away from the stack wall. |
| | Non-Stratified Δ | ≤ | 0.3 | | 3 | | |
| | Minimally-Stratified % | ≤ | 10% | | 10% | | |
| | Minimally-Stratified Δ | ≤ | 0.5 | | 5 | | |
| | Stratified | > | 10% | | 10% | | |
| | **Outcome** | | 1 point | | 1 point | | |
| | **Location** | | any point | | any point | | |
| | **Maximum Concentration** | | 12.49 | | 2.49 | | |
| | **Upscale Δ = Max Concentration - Average** | | 0.03 | Non | 0.27 | Non | |
| | **Upscale % Difference** | | 0.23% | Non | 12.04% | Strat | |
| | **Minimum Concentration** | | 12.42 | | 2.07 | | |
| | **Downscale Δ = Average - Min Concentration** | | 0.04 | Non | 0.15 | Non | |
| | **Downscale % Difference** | | 0.33% | Non | 6.86% | Mini | |
| | **First Point on List Closest to Average** | | C-1 | | A-2 | | |
| **Port Averages with Maximum Concentration Indicator** | **Port A Average** | | 12.48 | <max | 2.13 | | |
| | **Port B Average** | | 12.47 | | 2.22 | | |
| | **Port C Average** | | 12.46 | | 2.13 | | |
| | **Port D Average** | | 12.43 | | 2.41 | <max | |
| | **Port E Average** | | | | | | |
| | **Port F Average** | | | | | | |
| | **Port G Average** | | | | | | |

## RATA SAMPLE POINTS FOR CIRCULAR STACK

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 02/17/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | bec-19-cricketvalley.ny-start#1 |
| **Equipment** | General Electric 7F.05 | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Stack Dimensions** | | | | **Traverse Data** | | | |
|---|---|---|---|---|---|---|---|
| **Diameter or Length of Stack** | (D) | 228.00 | in. | 4 | **Ports by** | 3 | **Pts / port** |
| **Width of Stack** | (W) | | in. | 12 | **Pts Used** | 12 | **Required** |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ | **Run Start** | 10:19:14 | **Run End** | 12:01:14 |

**40 CFR 75 Criteria**

| **Stratification Results** | |
|---|---|
| **Maximum Percent Difference** | 12.04 % for NOx |
| **Maximum Pollutant Conc. Diff.** | 0.27 ppm for NOx |
| **Maximum Diluent Conc. Diff.** | 0.04 % for $O_2$ |
| **Stratification Conclusions** | |
| **Comparison** | all diluents/pollutants |
| **Stack Diameter** | D > 93.6 in. |

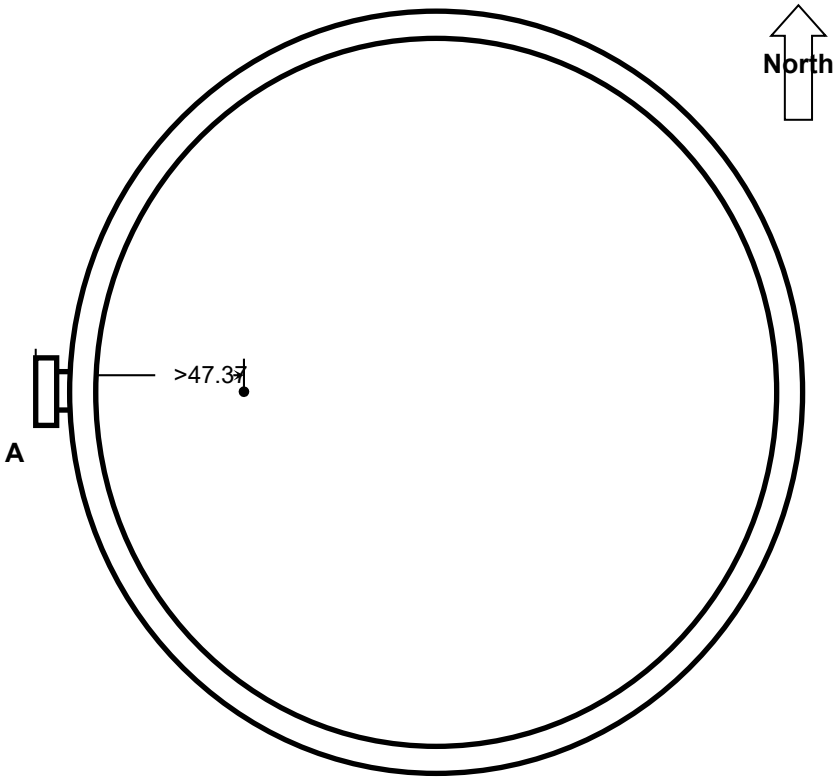
Under Part 75 criteria all measured pollutants and diluents demonstrate a non-stratified stack with subsequent testing from a single point located at least one meter away from the stack wall.

| **Traverse Point Number** | **Percent of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
|---|---|---|---|
| | % | in. | in. |
| **1** | >17.27% | >39.37 | >47.37 |
| **2** | | | |
| **3** | | | |

Test Type
- ☐ Moisture, for MW
- ☐ Moisture, for wet-to-dry
- ☑ Gas

☐ Use 6.5.6.3(a) points?

☐ 6.5.6(b)(2) alt. points could apply



# APPENDIX G

# EQUIPMENT CALIBRATION RECORDS

APEX SOURCE TESTING EQUIPMENT INSTRUMENTS

Apex Instruments, Inc.
204 Technology Park Lane
Fuquay-Varina, NC 27526

# S-TYPE PITOT TUBE CALIBRATION SHEET

***Reference USEPA Reference Method 2 (40CFR60, App. A, Meth. 2)***

| | | | |
|---|---|---|---|
| PITOT SERIAL# | 4187 | CALIBRATION DATE: | 10-Jan-13 |
| PITOT TYPE: | S-Type | BAROMETRIC PRESSURE: | 29.74 in Hg |
| STD. PITOT TYPE: | Ellipsoidal | STATIC PRESSURE | 1.4 in $H_20$ |
| Cp(std): | 0.990 | BLOCKAGE %: | N/A |
| PROBE SERIAL# | NICK | CORRECTION FACTOR: | 1.00 |

| | SIDE "A" CALIBRATION | | | |
|---|---|---|---|---|
| RUN NO. | Δ Pstd in $H_2O$ | Δ Ps in $H_2O$ | Cp(s) | DEVIATION Cp(s) - avg.Cp(s) |
| 1 | 0.560 | 0.820 | 0.818 | -0.001 |
| 2 | 0.560 | 0.815 | 0.821 | 0.002 |
| 3 | 0.560 | 0.820 | 0.818 | -0.001 |
| | | *"A" AVERAGE* | 0.819 | 0.0014 (must be ≤ 0.01) |

| | SIDE "B" CALIBRATION | | | |
|---|---|---|---|---|
| RUN NO. | Δ Pstd in $H_2O$ | Δ Ps in $H_2O$ | Cp(s) | DEVIATION Cp(s) - avg.Cp(s) |
| 1 | 0.560 | 0.815 | 0.821 | 0.000 |
| 2 | 0.560 | 0.815 | 0.821 | 0.000 |
| 3 | 0.560 | 0.815 | 0.821 | 0.000 |
| | | *"B" AVERAGE* | 0.821 | 0.0000 (must be ≤ 0.01) |

**ACCEPTANCE CRITERIA**

**AVERAGE** -0.0017 AVG. Cp (A) - AVG. Cp (B) must be ≤ 0.01

**If the Average and both Deviation Averages "A" & "B" are ≤ 0.01, then the OVERALL AVERAGE below may be used.**
*** If NOT, use the "A" Average OR "B" Average.**

**OVERALL AVERAGE** 0.8198




I certify that the above pitot tube was tested in accordance with the US EPA Method 2 standards.
See the Code of Federal Regulations, Title 40, Part 60, Appendix A, Method 2, Item 4.

Print Name: Nick Allen

Signature:

Date 1.11.13

# Wind Tunnel Pitot Calibration

| | | | |
|---|---|---|---|
| S-type Pitot ID: | **A4187** | Date: | **2-Mar-15** |
| Standard Pitot ID: | **001** | Personnel: | **KMR MF** |
| Cp(std): | **0.99** | Cp(actual): | **0.724** |
| Part Number: | | $P_{bar}$(in Hg): | **29.71** |
| Test Velocity (fps): | **50** | T(°F): | **55** |
| Wind Tunnel Location: | **Calera, AL** | Tunnel Size: | **20" x 40"** |
| Customer: | **Air Hygiene** | | |

A-SIDE

| $\Delta P_{std}$ (in. $H_2O$) | $\Delta P_s$ (in. $H_2O$) | Cp(s) | Deviation* |
|---|---|---|---|
| **0.563** | **1.053** | **0.723** | 0.002 |
| **0.561** | **1.048** | **0.724** | -0.001 |
| **0.561** | **1.050** | **0.724** | 0.000 |
| | ***AVERAGE*** | **0.724** | 0.001 |
| | | Std deviation | 0.002 |

**NOTES:**

1. **Pitot calibrated with an Environmental Supply Co. PM10 cyclone.**
2. **$C_p$ is only valid when used with PM10 cyclone.**
3. **$C_p$ is only valid with 1" spacing from PM10 cyclone.**

$$Cp(s) = Cp(std)\sqrt{\frac{\Delta P(std)}{\Delta P(s)}}$$

*Deviation = {Cp(s) - *AVG* Cp(s)} {must be <0.010}

Standard deviation of the deviations must be less than 0.02 for both sides.

**Pitot tube S/N A4187 was calibrated in accordance with the CFR 40, Part 60 Appendix A, Method 2, Section 10.**

Signature

3/2/15
Date

**METERING SYSTEM DRY GAS METER CALIBRATION SHEET**
**EPA Reference Method**
**Metering System Pre-Test Calibration**
**Air Hygiene Assett ID: samp-cp-0030**

Filename: \\AHI-FILESVR\public\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0030 Calibration 7-3-19 (.xls]Original (5 point)

Make: apex
Model #: 522
Serial #: 1706009

Date: 07/03/19
Barometric Pressure: 29.10 (in. Hg)
Theoretical Critical Vacuum: 13.73 (in. Hg)

**DRY GAS METER READINGS**

| ΔH (in. H2O) | Time (min) | Volume Initial (ft³) | Volume Final (ft³) | Volume Total (ft³) | Initial Temperature Inlet (°F) | Initial Temperature Outlet (°F) |
|---|---|---|---|---|---|---|
| 0.32 | 17.00 | 443.350 | 448.680 | 5.330 | 71.0 | 71.0 |
| 0.63 | 12.00 | 448.680 | 454.070 | 5.390 | 73.0 | 73.0 |
| 1.10 | 10.00 | 454.070 | 460.140 | 6.070 | 74.0 | 74.0 |
| 1.90 | 10.00 | 460.140 | 468.070 | 7.930 | 76.0 | 76.0 |
| 3.50 | 10.00 | 468.070 | 479.010 | 10.940 | 77.0 | 77.0 |

| Final Temperature Inlet (°F) | Final Temperature Outlet (°F) | Orifice Serial# (number) | K' Orifice Coefficient (see above) | Actual Vacuum (in. Hg) | Ambient Temperature Initial (°F) | Ambient Temperature Final (°F) | Ambient Temperature Average (°F) |
|---|---|---|---|---|---|---|---|
| 73.0 | 73.0 | 40 | 0.2341 | 16.0 | 71.3 | 72.0 | 71.7 |
| 74.0 | 74.0 | 48 | 0.3350 | 16.0 | 72.0 | 72.5 | 72.3 |
| 76.0 | 76.0 | 55 | 0.4531 | 16.0 | 72.5 | 72.7 | 72.6 |
| 77.0 | 77.0 | 63 | 0.5888 | 16.0 | 72.7 | 72.8 | 72.8 |
| 80.0 | 80.0 | 73 | 0.8077 | 16.0 | 72.8 | 73.0 | 72.9 |

**RESULTS**

| DRY GAS METER VOLUME CORRECTED Vm(std) (ft³) | DRY GAS METER VOLUME CORRECTED Vm(std) (liters) | ORIFICE VOLUME CORRECTED Vcr(std) (ft³) | ORIFICE VOLUME CORRECTED Vcr(std) (liters) | ORIFICE VOLUME NOMINAL Vcr (ft³) |
|---|---|---|---|---|
| 5.147 | 145.76 | 5.023 | 142.2 | 5.202 |
| 5.194 | 147.11 | 5.071 | 143.6 | 5.258 |
| 5.840 | 165.40 | 5.713 | 161.8 | 5.928 |
| 7.624 | 215.91 | 7.423 | 210.2 | 7.704 |
| 10.521 | 297.95 | 10.182 | 288.3 | 10.570 |

| DRY GAS METER CALIBRATION FACTOR Y Variation (number) | DRY GAS METER CALIBRATION FACTOR Y Value (number) | ORIFICE CALIBRATION FACTOR ΔH@ Value (in. H2O) | ORIFICE CALIBRATION FACTOR ΔH@ Value (mm H2O) | ORIFICE CALIBRATION FACTOR ΔH@ Variation (in. H2O) |
|---|---|---|---|---|
| 0.001 | 0.976 | 1.990 | 50.56 | 0.113 |
| 0.002 | 0.976 | 1.910 | 48.52 | 0.033 |
| 0.004 | 0.978 | 1.819 | 46.21 | -0.058 |
| -0.001 | 0.974 | 1.856 | 47.15 | -0.021 |
| -0.007 | 0.968 | 1.811 | 46.00 | -0.067 |
| **AVERAGE:** | **0.974** | **1.878** | 47.69 | **PASSED** |

Notes:

For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter,acceptable tolerance of individual values from the average is +/- 0.02. For Orifice Calibration Factor dH@, the orifice differential pressure in inches of $H_20$ that equates to 0.75 cfm of air at 68 °F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is +/- 0.2. For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above. The Critical Orifice Coefficient, K', must be entered in English units, (ft)^3*(deg R)^0.5/((in.Hg)*(min)).

SIGNATURE: Craig McCarty DATE: 07/03/19 07/03/19

**METERING SYSTEM THERMOCOUPLE CALIBRATION SHEET**
**EPA Reference Method**
**Metering System Pre-Test Calibration**
**Air Hygiene Assett ID: samp-cp-0030**

Filename: \\AHI-FILESVR\public\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0030 Calibration 7-3-19 (.xls]Original (5 point)

Make: apex
Model #: 522
Serial #: 1706009

Date: 07/03/19
Barometric Pressure: 29.28 (in. Hg)
Temperature (ASTM cal): 75.40 (°F)

| Thermocouple | 100 (°F) | | 600 (°F) | | 1200 (°F) | |
|---|---|---|---|---|---|---|
| | Reading | % Error | Reading | % Error | Reading | % Error |
| **Stack** | 101.00 | 0.50 | 603.00 | 0.50 | 1206.00 | 0.50 |
| **Probe** | 101.00 | 0.50 | 603.00 | 0.50 | 1206.00 | 0.50 |
| **Filter** | 101.00 | 0.50 | 603.00 | 0.50 | 1206.00 | 0.50 |
| **Dryer** | 101.00 | 0.50 | 603.00 | 0.50 | 1206.00 | 0.50 |
| **Aux.** | 101.00 | 0.50 | 603.00 | 0.50 | 1206.00 | 0.50 |

Note: Calibrated against an ALTEK Thermocouple Source Series 22, ID: samp-tc-0003
Direct temperature output calibrated to ASTM and IPTS standards as outlined in ALTEK Data Sheet 22.

| Thermocouple | 75.40 (°F) | | Responded to heating/cooling with the anticipated outcome? |
|---|---|---|---|
| | Reading | (±°F) | |
| **DGM In** | 74.0 | 1.40 | yes |
| **DGM Out** | 74.0 | 1.40 | yes |

Note: Calibrated against Reference Thermometer ID: a070717

SIGNATURE: Craig McCarty DATE: 07/03/19 07/03/19

Standard for Calibration of Console Thermocouple Systems

40 CFR, Part 60
Appendix A, Method 5
10.3.2 The temperature data recorded in the field shall be considered valid. If, during calibration, the absolute temperature measured with the sensor being calibrated and the reference sensor **agree within 1.5 percent**, the temperature data taken in the field shall be considered valid.

Standard for Calibration of Individual Thermocouples

EMC, ALT-011: After each test run series, check the accuracy (and, hence, the calibration) of each thermocouple system at ambient temperature, or any other temperature, within the range specified by the manufacturer, using a reference thermometer (either ASTM reference thermometer or a thermometer that has been calibrated against an ASTM reference thermometer). The temperatures of the thermocouple and reference thermometers shall **agree to within ±2°F**.

Check the continuity of the thermocouple by subjecting it to a change in the temperature (e.g.., removing it from the stack or touching an ice cube). This step will also check for loose connections and reversed connections (noted by a wrong change in the temperature).

**PROBE (STACK), HOTBOX (FILTER), AND GOOSENECK (EXIT) THERMOCOUPLE CALIBRATION SHEET**
**EPA Reference Method**
**Metering System Pre-Test Calibration**

**Air Hygiene Assett ID(s):** **Probe:** samp-hp-0086 **Hotbox:** samp-bh-0012 **Gooseneck:** samp-ad-0028

Filename: \\AHI-FILESVR\public\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0030 Calibration 7-3-19 (.xls]Original (5 point)

Barometric Pressure: 29.10

| Thermo-couples | | Temps (°F) | Signature | | Date | |
|---|---|---|---|---|---|---|
| Stack | Ref | 73.10 | Craig McCarty | | 07/03/19 | 07/03/19 |
| | Read | 73.00 | | | | |
| | ±°F | 0.10 | | | | |
| Probe | Ref | 73.10 | Craig McCarty | | 07/03/19 | 07/03/19 |
| | Read | 73.00 | | | | |
| | ±°F | 0.10 | | | | |
| Filter | Ref | 73.10 | Craig McCarty | | 07/03/19 | 07/03/19 |
| | Read | 73.00 | | | | |
| | ±°F | 0.10 | | | | |
| Cond. | Ref | 73.10 | Craig McCarty | | 07/03/19 | 07/03/19 |
| | Read | 73.00 | | | | |
| | ±°F | 0.10 | | | | |
| CPM | Ref | 73.10 | Craig McCarty | | 07/03/19 | 07/03/19 |
| | Read | 73.00 | | | | |
| | ±°F | 0.10 | | | | |
| Exit | Ref | 73.10 | Craig McCarty | | 07/03/19 | 07/03/19 |
| | Read | 73.00 | | | | |
| | ±°F | 0.10 | | | | |

Note: Calibrated against Reference Thermometer ID: a070717

| Thermocouple | Responded to heating/cooling with the anticipated outcome? |
|---|---|
| **Stack** | yes |
| **Probe** | yes |
| **Filter** | yes |
| **Cond.** | yes |
| **CPM** | yes |
| **Exit** | yes |

Standard for Calibration of Individual Thermocouples

EMC, ALT-011: After each test run series, check the accuracy (and, hence, the calibration) of each thermocouple system at ambient temperature, or any other temperature, within the range specified by the manufacturer, using a reference thermometer (either ASTM reference thermometer or a thermometer that has been calibrated against an ASTM reference thermometer). The temperatures of the thermocouple and reference thermometers shall **agree to within ±2°F**.

Check the continuity of the thermocouple by subjecting it to a change in the temperature (e.g.., removing it from the stack or touching an ice cube). This step will also check for loose connections and reversed connections (noted by a wrong change in the temperature).

**Alternative Post-Test Metering System Calibration**

**RM 5, Section 16.3.1.3**

$$\gamma_{qa} = \frac{\theta}{V_m}\sqrt{\frac{0.0319 T_m}{\Delta H@\left(P_{bar} + \frac{\Delta H_{avg}}{13.6}\right)}}\frac{29}{M_d}\left(\sqrt{\Delta H}\right)_{avg}$$

| Parameters | Variable | Run 1 | Run 2 | Run 3 | Units |
|---|---|---|---|---|---|
| Run Time | Θ | 267.75 | 268.75 | 263.25 | minutes |
| Actual Meter Volume | $V_m$ | 104.89 | 103.58 | 102.29 | dcf |
| Meter Temperature | $T_m$ | 527.17 | 525.17 | 535.08 | °R |
| Meter Pressure at 0.75 cfm | ΔH@ | 1.878 | 1.878 | 1.878 | in. $H_2O$ |
| Barometric Pressure | $P_{bar}$ | 29.98 | 29.88 | 30.12 | in. Hg |
| Average Meter Pressure | $\Delta H_{avg}$ | 0.46 | 0.46 | 0.46 | in. $H_2O$ |
| Dry Molecular Weight | $M_d$ | 29.29 | 29.28 | 29.28 | lb/lb-mol |
| Average √Meter Pressure | $(\Delta H)^{1/2}_{avg}$ | 0.68 | 0.68 | 0.68 | $(\text{in. } H_2O)^{1/2}$ |
| Run Specific Gamma | $Y_{aq}$ | 0.9409 | 0.9564 | 0.9537 | |

Constants:

0.0319 = (29.92/528) $(0.75)^2$(in. Hg/°R) $cfm^2$

29 = Dry molecular weight of air, lb/lb-mole

13.6 = conversion from inches of water to inches of mercury

| | |
|---|---|
| $Y_{aq\ (avg)}$ | 0.9503 |
| $Y_i$ | 0.9740 |
| %Diff | 2.43% |
| Criteria | %Diff <5% |
| **Result** | **PASS** |

Example Calculation (Run 1)

$$Y_{aq} = \frac{267.75}{104.89} \times \sqrt{\frac{0.0319 \times 527.17}{1.878 \times \left(29.98 + \frac{0.46}{13.6}\right)}} \times \frac{29}{29.29} \times 0.6782 = 0.9409$$

**Alternative Post-Test Metering System Calibration**

**RM 5, Section 16.3.1.3**

$$\gamma_{qa} = \frac{\theta}{V_m}\sqrt{\frac{0.0319T_m}{\Delta H@\left(P_{bar} + \frac{\Delta H_{avg}}{13.6}\right)}}\frac{29}{M_d}\left(\sqrt{\Delta H}\right)_{avg}$$

| Parameters | Variable | Run 1 | Run 2 | Run 3 | Units |
|---|---|---|---|---|---|
| Run Time | Θ | 265.50 | 265.50 | 267.00 | minutes |
| Actual Meter Volume | $V_m$ | 100.69 | 101.55 | 103.13 | dcf |
| Meter Temperature | $T_m$ | 530.08 | 528.08 | 533.58 | °R |
| Meter Pressure at 0.75 cfm | ΔH@ | 1.878 | 1.878 | 1.878 | in. $H_2O$ |
| Barometric Pressure | $P_{bar}$ | 30.14 | 30.02 | 30.14 | in. Hg |
| Average Meter Pressure | $\Delta H_{avg}$ | 0.44 | 0.44 | 0.44 | in. $H_2O$ |
| Dry Molecular Weight | $M_d$ | 29.32 | 29.31 | 29.31 | lb/lb-mol |
| Average √Meter Pressure | $(\Delta H)^{1/2}_{avg}$ | 0.66 | 0.66 | 0.66 | $(\text{in. } H_2O)^{1/2}$ |
| Run Specific Gamma | $Y_{aq}$ | 0.9503 | 0.9424 | 0.9362 | |

Constants:

0.0319 = (29.92/528) $(0.75)^2$(in. Hg/°R) $cfm^2$

29 = Dry molecular weight of air, lb/lb-mole

13.6 = conversion from inches of water to inches of mercury

| | |
|---|---|
| $Y_{aq\ (avg)}$ | 0.9430 |
| $Y_i$ | 0.9740 |
| %Diff | 3.19% |
| Criteria | %Diff <5% |
| **Result** | **PASS** |

Example Calculation (Run 1)

$$Y_{aq} = \frac{265.50}{100.69} \times \sqrt{\frac{0.0319 \times 530.08}{1.878 \times \left(30.14 + \frac{0.44}{13.6}\right)} \times \frac{29}{29.32}} \times 0.6633 = 0.9503$$

**METERING SYSTEM DRY GAS METER CALIBRATION SHEET**
**EPA Reference Method**
**Metering System Pre-Test Calibration**
**Air Hygiene Assett ID: samp-cp-0007**

Filename: \\AHI-FILESVR\public\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0007 Calibration 2-20-19.xls]Original (5 point)

Make: Thermo Environmental
Model #: MST-C1
Serial #: 90704

Date: 02/20/19
Barometric Pressure: 29.03 (in. Hg)
Theoretical Critical Vacuum: 13.69 (in. Hg)

**DRY GAS METER READINGS**

| ΔH | Time | Volume | | | Initial Temperature | |
|---|---|---|---|---|---|---|
| | | Initial | Final | Total | Inlet | Outlet |
| (in. H2O) | (min) | (ft³) | (ft³) | (ft³) | (°F) | (°F) |
| 0.26 | 17.00 | 280.930 | 286.280 | 5.350 | 80.0 | 71.0 |
| 0.55 | 12.00 | 286.280 | 291.690 | 5.410 | 80.0 | 73.0 |
| 1.10 | 10.00 | 291.690 | 297.800 | 6.110 | 86.0 | 74.0 |
| 1.80 | 10.00 | 297.800 | 305.720 | 7.920 | 89.0 | 75.0 |
| 3.50 | 10.00 | 305.720 | 316.650 | 10.930 | 94.0 | 76.0 |

| Final Temperature | | Orifice | K' Orifice | Actual | Ambient Temperature | | |
|---|---|---|---|---|---|---|---|
| Inlet | Outlet | Serial# | Coefficient | Vacuum | Initial | Final | Average |
| (°F) | (°F) | (number) | (see above) | (in. Hg) | (°F) | (°F) | (°F) |
| 81.0 | 73.0 | 40 | 0.2341 | 16.0 | 68.7 | 69.4 | 69.1 |
| 86.0 | 74.0 | 48 | 0.3350 | 16.0 | 69.4 | 69.5 | 69.5 |
| 89.0 | 75.0 | 55 | 0.4531 | 16.0 | 69.5 | 69.5 | 69.5 |
| 94.0 | 76.0 | 63 | 0.5888 | 16.0 | 69.6 | 69.5 | 69.6 |
| 93.0 | 77.0 | 73 | 0.8077 | 16.0 | 69.5 | 69.5 | 69.5 |

**RESULTS**

| DRY GAS METER | | ORIFICE | | |
|---|---|---|---|---|
| VOLUME CORRECTED Vm(std) (ft³) | VOLUME CORRECTED Vm(std) (liters) | VOLUME CORRECTED Vcr(std) (ft³) | VOLUME CORRECTED Vcr(std) (liters) | VOLUME NOMINAL Vcr (ft³) |
| 5.112 | 144.78 | 5.023 | 142.2 | 5.189 |
| 5.154 | 145.97 | 5.072 | 143.6 | 5.244 |
| 5.800 | 164.24 | 5.716 | 161.9 | 5.911 |
| 7.496 | 212.30 | 7.428 | 210.4 | 7.681 |
| 10.361 | 293.42 | 10.190 | 288.6 | 10.536 |

| DRY GAS METER CALIBRATION FACTOR Y | | ORIFICE CALIBRATION FACTOR ΔH@ | | |
|---|---|---|---|---|
| Variation (number) | Value (number) | Value (in. H2O) | Value (mm H2O) | Variation (in. H2O) |
| -0.003 | 0.982 | 1.613 | 40.98 | -0.118 |
| -0.001 | 0.984 | 1.663 | 42.24 | -0.068 |
| 0.000 | 0.986 | 1.815 | 46.10 | 0.083 |
| 0.006 | 0.991 | 1.756 | 44.59 | 0.024 |
| -0.002 | 0.983 | 1.811 | 45.99 | 0.079 |
| **AVERAGE:** | **0.985** | **1.731** | 43.98 | **PASSED** |

Notes:

For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter,acceptable tolerance of individual values from the average is +/- 0.02. For Orifice Calibration Factor dH@, the orifice differential pressure in inches of $H_20$ that equates to 0.75 cfm of air at 68 °F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is +/- 0.2. For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above. The Critical Orifice Coefficient, K', must be entered in English units, (ft)^3*(deg R)^0.5/((in.Hg)*(min)).

SIGNATURE: Craig McCarty _____ DATE: 02/20/19 02/20/19

**METERING SYSTEM THERMOCOUPLE CALIBRATION SHEET**
**EPA Reference Method**
**Metering System Pre-Test Calibration**
**Air Hygiene Assett ID: samp-cp-0007**

Filename: \\AHI-FILESVR\public\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0007 Calibration 2-20-19.xls]Original (5 point)

Make: Thermo Environmental
Model #: MST-C1
Serial #: 90704

Date: 02/20/19
Barometric Pressure: 29.03 (in. Hg)
Temperature (ASTM cal): 68.70 (°F)

| Thermocouple | 100 (°F) | | 600 (°F) | | 1200 (°F) | |
|---|---|---|---|---|---|---|
| | Reading | % Error | Reading | % Error | Reading | % Error |
| **Stack** | 101.00 | 0.50 | 602.00 | 0.33 | 1205.00 | 0.42 |
| **Probe** | 101.00 | 0.50 | 602.00 | 0.33 | 1205.00 | 0.42 |
| **Filter** | 101.00 | 0.50 | 602.00 | 0.33 | 1205.00 | 0.42 |
| **Dryer** | 101.00 | 0.50 | 602.00 | 0.33 | 1205.00 | 0.42 |
| **Aux.** | 101.00 | 0.50 | 602.00 | 0.33 | 1205.00 | 0.42 |

Note: Calibrated against an ALTEK Thermocouple Source Series 22, ID: samp-tc-0003
Direct temperature output calibrated to ASTM and IPTS standards as outlined in ALTEK Data Sheet 22.

| Thermocouple | 68.70 (°F) | | Responded to heating/cooling with the anticipated outcome? |
|---|---|---|---|
| | Reading | (±°F) | |
| **DGM In** | 68.0 | 0.70 | yes |
| **DGM Out** | 67.0 | 1.70 | yes |

Note: Calibrated against Reference Thermometer ID: a070717

SIGNATURE: Craig McCarty DATE: 02/20/19 02/20/19

Standard for Calibration of Console Thermocouple Systems

40 CFR, Part 60
Appendix A, Method 5
10.3.2 The temperature data recorded in the field shall be considered valid. If, during calibration, the absolute temperature measured with the sensor being calibrated and the reference sensor **agree within 1.5 percent**, the temperature data taken in the field shall be considered valid.

Standard for Calibration of Individual Thermocouples

EMC, ALT-011: After each test run series, check the accuracy (and, hence, the calibration) of each thermocouple system at ambient temperature, or any other temperature, within the range specified by the manufacturer, using a reference thermometer (either ASTM reference thermometer or a thermometer that has been calibrated against an ASTM reference thermometer). The temperatures of the thermocouple and reference thermometers shall **agree to within ±2°F**.

Check the continuity of the thermocouple by subjecting it to a change in the temperature (e.g.., removing it from the stack or touching an ice cube). This step will also check for loose connections and reversed connections (noted by a wrong change in the temperature).

**PROBE (STACK), HOTBOX (FILTER), AND GOOSENECK (EXIT) THERMOCOUPLE CALIBRATION SHEET**
**EPA Reference Method**
**Metering System Pre-Test Calibration**

**Air Hygiene Assett ID(s):** **Probe:** samp-hp-0086 **Hotbox:** samp-bh-0012 **Gooseneck:** samp-ad-0028

Filename: \\AHI-FILESVR\public\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0007 Calibration 2-20-19.xls]Original (5 point)

Barometric Pressure: 29.03

| Thermo-couples | | Temps (°F) | Signature | | Date | |
|---|---|---|---|---|---|---|
| Stack | Ref | 68.90 | Craig McCarty | | 02/20/19 | 02/20/19 |
| | Read | 70.00 | | | | |
| | ±°F | 1.10 | | | | |
| Probe | Ref | 68.90 | Craig McCarty | | 02/20/19 | 02/20/19 |
| | Read | 70.00 | | | | |
| | ±°F | 1.10 | | | | |
| Filter | Ref | 68.90 | Craig McCarty | | 02/20/19 | 02/20/19 |
| | Read | 69.00 | | | | |
| | ±°F | 0.10 | | | | |
| Cond. | Ref | 68.90 | Craig McCarty | | 02/20/19 | 02/20/19 |
| | Read | 69.00 | | | | |
| | ±°F | 0.10 | | | | |
| CPM | Ref | 68.90 | Craig McCarty | | 02/20/19 | 02/20/19 |
| | Read | 69.00 | | | | |
| | ±°F | 0.10 | | | | |
| Exit | Ref | 68.90 | Craig McCarty | | 02/20/19 | 02/20/19 |
| | Read | 70.00 | | | | |
| | ±°F | 1.10 | | | | |

Note: Calibrated against Reference Thermometer ID: a070717

| Thermocouple | Responded to heating/cooling with the anticipated outcome? |
|---|---|
| **Stack** | yes |
| **Probe** | yes |
| **Filter** | yes |
| **Cond.** | yes |
| **CPM** | yes |
| **Exit** | yes |

Standard for Calibration of Individual Thermocouples

EMC, ALT-011: After each test run series, check the accuracy (and, hence, the calibration) of each thermocouple system at ambient temperature, or any other temperature, within the range specified by the manufacturer, using a reference thermometer (either ASTM reference thermometer or a thermometer that has been calibrated against an ASTM reference thermometer). The temperatures of the thermocouple and reference thermometers shall **agree to within ±2°F**.

Check the continuity of the thermocouple by subjecting it to a change in the temperature (e.g.., removing it from the stack or touching an ice cube). This step will also check for loose connections and reversed connections (noted by a wrong change in the temperature).

**Alternative Post-Test Metering System Calibration**

**RM 5, Section 16.3.1.3**

$$\gamma_{qa} = \frac{\theta}{V_m}\sqrt{\frac{0.0319 T_m}{\Delta H@\left(P_{bar} + \frac{\Delta H_{avg}}{13.6}\right)}}\frac{29}{M_d}\left(\sqrt{\Delta H}\right)_{avg}$$

| Parameters | Variable | Run 1 | Run 2 | Run 3 | Units |
|---|---|---|---|---|---|
| Run Time | Θ | 120.00 | 120.00 | 120.00 | minutes |
| Actual Meter Volume | $V_m$ | 42.32 | 42.32 | 42.32 | dcf |
| Meter Temperature | $T_m$ | 548.63 | 550.31 | 561.31 | °R |
| Meter Pressure at 0.75 cfm | ΔH@ | 1.731 | 1.731 | 1.731 | in. $H_2O$ |
| Barometric Pressure | $P_{bar}$ | 29.98 | 29.88 | 30.12 | in. Hg |
| Average Meter Pressure | $\Delta H_{avg}$ | 0.34 | 0.34 | 0.34 | in. $H_2O$ |
| Dry Molecular Weight | $M_d$ | 29.28 | 29.28 | 29.28 | lb/lb-mol |
| Average √Meter Pressure | $(\Delta H)^{1/2}_{avg}$ | 0.58 | 0.58 | 0.58 | $(\text{in. } H_2O)^{1/2}$ |
| Run Specific Gamma | $Y_{aq}$ | 0.9552 | 0.9583 | 0.9640 | |

Constants:

0.0319 = (29.92/528) $(0.75)^2$(in. Hg/°R) $cfm^2$

29 = Dry molecular weight of air, lb/lb-mole

13.6 = conversion from inches of water to inches of mercury

| | |
|---|---|
| $Y_{aq\ (avg)}$ | 0.9592 |
| $Y_i$ | 0.9850 |
| %Diff | 2.62% |
| Criteria | %Diff <5% |
| **Result** | **PASS** |

Example Calculation (Run 1)

$$Y_{aq} = \frac{120.00}{42.32} \times \sqrt{\frac{0.0319 \times 548.63}{1.731 \times \left(29.98 + \frac{0.34}{13.6}\right)}} \times \frac{29}{29.28} \times 0.5831 = 0.9552$$

**Alternative Post-Test Metering System Calibration**

**RM 5, Section 16.3.1.3**

$$\gamma_{qa} = \frac{\theta}{V_m}\sqrt{\frac{0.0319T_m}{\Delta H@\left(P_{bar} + \frac{\Delta H_{avg}}{13.6}\right)}}\frac{29}{M_d}\left(\sqrt{\Delta H}\right)_{avg}$$

| Parameters | Variable | Run 1 | Run 2 | Run 3 | Units |
|---|---|---|---|---|---|
| Run Time | Θ | 120.00 | 120.00 | 120.00 | minutes |
| Actual Meter Volume | $V_m$ | 42.32 | 42.32 | 42.32 | dcf |
| Meter Temperature | $T_m$ | 555.69 | 560.50 | 561.38 | °R |
| Meter Pressure at 0.75 cfm | ΔH@ | 1.731 | 1.731 | 1.731 | in. $H_2O$ |
| Barometric Pressure | $P_{bar}$ | 30.14 | 30.02 | 30.14 | in. Hg |
| Average Meter Pressure | $\Delta H_{avg}$ | 0.34 | 0.34 | 0.34 | in. $H_2O$ |
| Dry Molecular Weight | $M_d$ | 29.32 | 29.32 | 29.32 | lb/lb-mol |
| Average √Meter Pressure | $(\Delta H)^{1/2}_{avg}$ | 0.58 | 0.58 | 0.58 | $(\text{in. } H_2O)^{1/2}$ |
| Run Specific Gamma | $Y_{aq}$ | 0.9581 | 0.9642 | 0.9630 | |

Constants:

0.0319 = (29.92/528) $(0.75)^2$(in. Hg/°R) $cfm^2$

29 = Dry molecular weight of air, lb/lb-mole

13.6 = conversion from inches of water to inches of mercury

| | |
|---|---|
| $Y_{aq\ (avg)}$ | 0.9618 |
| $Y_i$ | 0.9850 |
| %Diff | 2.36% |
| Criteria | %Diff <5% |
| **Result** | **PASS** |

Example Calculation (Run 1)

$$Y_{aq} = \frac{120.00}{42.32} \times \sqrt{\frac{0.0319 \times 555.69}{1.731 \times \left(30.14 + \frac{0.34}{13.6}\right)}} \times \frac{29}{29.32} \times 0.5831 = 0.9581$$

**Field Balance Weight Verfication**
**Annual 500g Field Balance Stock Weight vs. 500g ISO 17025 Traceable Weight**
**Air Hygiene Asset ID: samp-sc-0028**

Filename: \\AHI-FILESVR\public\Shared\QAQC\Calibrations\Field Balance Weights\2020\[samp-sc-0028-Extra.xlsm]Balance
Make: Ohaus
Model #: Scout Pro SP2001-US
Serial #: B228113219
Field Weight #: sc-0028
Trailer #: Extra

ISO 17025 Weight ID LABS-WT-0005
ISO S/N 1000128090
ISO Cal Due 7/29/2020

| ISO 17025 Certfified Weight (g) | Field Balance Weight (g) | ± g |
|---|---|---|
| 500.00 | 499.90 | 0.10 |

must be <0.5

Sean Barnes _____ 01/09/20

*(signature)* *(date)*

| ISO 17025 Certfified Weight (g) | Field Balance Weight (g) | ± g |
|---|---|---|
| 500.00 | 499.50 | 0.50 |

must be <0.5

Sean Barnes _____ 01/09/20

*(signature)* *(date)*

| ISO 17025 Certfified Weight (g) | Field Balance Weight (g) | ± g |
|---|---|---|
| 500.00 | 499.80 | 0.20 |

must be <0.5

Sean Barnes _____ 01/09/20

*(signature)* *(date)*

Note: Calibrated against ISO 17025 Certified weight LABS-WT-0005

EPA Method 4 - Section 10.3, EPA Method 5 - Section 10.7, EPA Method 202 - Section 10.3: Field Balance Calibration Check. Check the calibration of the balance used to weigh impingers with a weight that is at least 500g or within 50g of a loaded impinger. The weight must be ASTM E617-13 "Standard Specification for Laboratory Weights and Precision Mass Standards" Class 6 (or better). Daily before used, the field balance must meausure within ±0.5g of the certified mass. If the daily balance calibration check fails, perform corrective measures and repeat the check before using balance.

ISO 17025 Certified 500g Weight is certified annually. Certified weight is used to verify Class 6 or better weight that accompanies each field balance on the balance it will be used. Acceptance critieria is certified weight must be within ±0.5g of Class 6 or better weight.

**WEATHER STATION CALIBRATION SHEET**
**Temperature, Barometric Pressure, and Relative Humidity Periodic Calibration**
**Air Hygiene Asset ID: samp-we-0014**

Filename: \\AHI-FILESVR\public\Shared\QAQC\Calibrations\Weather Stations\2020\[SAMP-WE-0014_224.xlsm]112013
Make: Kestrel — ISO 17025 Weather Station ID: SAMP-WE-0033
Model #: 4000 — ISO 17025 S/N: A026334
Serial #: 671144 — ISO 17025 Cal Due: 7/23/2020

| ASTM Temp (deg F) (±1.5°) | Thermo. (deg F) | ± deg F | ASTM Barometer (in. Hg) (±0.1 in Hg) | Barometric (in. Hg) | ± in. Hg | Time |
|---|---|---|---|---|---|---|
| 70.10 | 69.70 | 0.40 | 29.11 | 29.13 | 0.02 | 15:08 |

Sean Barnes — Sean Barnes — 01/27/20
*(signature)* *(date)*

| ASTM Temp (deg F) (±1.5°) | Thermo. (deg F) | ± deg F | ASTM Barometer (in. Hg) (±0.1 in Hg) | Barometric (in. Hg) | ± in. Hg | Time |
|---|---|---|---|---|---|---|
| 70.50 | 70.40 | 0.10 | 29.11 | 29.12 | 0.01 | 15:26 |

Sean Barnes — Sean Barnes — 01/27/20
*(signature)* *(date)*

| ASTM Temp (deg F) (±1.5°) | Thermo. (deg F) | ± deg F | ASTM Barometer (in. Hg) (±0.1 in Hg) | Barometric (in. Hg) | ± in. Hg | Time |
|---|---|---|---|---|---|---|
| 70.80 | 70.40 | 0.40 | 29.11 | 29.12 | 0.01 | 15:41 |

Sean Barnes — Sean Barnes — 01/27/20
*(signature)* *(date)*

| ASTM Temp (deg F) (±1.5°) | Thermo. (deg F) | ± deg F | ASTM Barometer (in. Hg) (±0.1 in Hg) | Barometric (in. Hg) | ± in. Hg | Time |
|---|---|---|---|---|---|---|
| 70.60 | 69.00 | 1.60 | 29.10 | 29.12 | 0.02 | 16:00 |

Sean Barnes — Sean Barnes — 01/27/20
*(signature)* *(date)*

Note: Verified against ISO 17025 Traceable Barometer and Thermometer (SAMP-WE-0033).

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**end of report**

# EMISSION COMPLIANCE TEST
# FOR THE
# GENERAL ELECTRIC, 7F.05, UNIT #U-00002
# PREPARED FOR
# CRICKET VALLEY ENERGY CENTER LLC
# AT THE
# CRICKET VALLEY ENERGY CENTER
# DOVER PLAINS, NEW YORK
# MARCH 9-11, 2020

## Permit No: 3-1326-00275/00009
## Facility DEC ID: 3132600275
## Report Date: April 8, 2020



**Corporate Headquarters**
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012

AIR HYGIENE, INC.

(918) 307-8865 or (888) 461-8778
www.airhygiene.com

**Remote Testing Offices**
Las Vegas, NV 89156
Ft. Worth, TX 76028
Humble, TX 77338
Shreveport, LA 71115
Miami, FL 33101
Pittsburgh, PA 15205

**EMISSION COMPLIANCE TEST**
**FOR THE**
**GENERAL ELECTRIC, 7F.05, UNIT #U-00002**
**PREPARED FOR**
**CRICKET VALLEY ENERGY CENTER LLC**
**AT THE**
**CRICKET VALLEY ENERGY CENTER**
**DOVER PLAINS, NEW YORK**
**MARCH 9-11, 2020**

Prepared and Reviewed by:

Logan K. Tsotsoros

Logan Tsotsoros
AHU Support Staff

Thomas K Graham

Thomas K. Graham, PE, QSTI
Director of AHU

I, Rob C. White

Rob White, QSTI
Test Manager
certify that this testing was conducted and
this report was created in conformance
with the requirements of ASTM D7036

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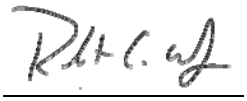
## CERTIFICATION OF INFORMATION

I certify under penalty of law that I believe the information provided in this document is true, accurate and complete. I am aware that there are significant civil and criminal penalties, including the possibility of fine or imprisonment or both, for submitting false, inaccurate or incomplete information.



Rob White, QSTI
Test Manager
Air Hygiene International, Inc.

March 11, 2020
Date

## FACILITY CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attached documents and, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil and criminal penalties, including the possibility of fine or imprisonment or both, for submitting false, inaccurate or incomplete information.

I am the responsible official with direct knowledge and overall responsibility for the information contained in this report.

Name

Title

Signature

Date

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**Emissions Compliance Test**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center LLC**
**Cricket Valley Energy Center**
**Dover Plains, New York**
**March 9-11, 2020**

## 1.0 INTRODUCTION

Air Hygiene International, Inc. (Air Hygiene) has completed the Emissions Compliance Test for nitrogen oxides (NOx), carbon monoxide (CO), total hydrocarbons/volatile organic compounds (THC/VOC), sulfur dioxide ($SO_2$) [by fuel analysis], ammonia ($NH_3$), particulate matter ($PM_{10}$), sulfuric acid mist (SAM), opacity / visual emissions (VE), flow, moisture ($H_2O$), carbon dioxide ($CO_2$), and oxygen ($O_2$) from the exhaust of the General Electric, 7F.05, Unit #U-00002 for Cricket Valley Energy Center LLC at the Cricket Valley Energy Center in Dover Plains, New York. This report details the background, results, process description, and the sampling/analysis methodology of the stack sampling survey conducted on March 9-11, 2020.

## 1.1 TEST PURPOSE AND OBJECTIVES

The purpose of the test was to conduct an initial compliance emission test to document levels of selected pollutants at two test loads, base loaded with duct burners on and base loaded with duct burners off (Base+DB and Base). The information will be used to confirm compliance with the operating permit issued by the New York State Department of Environmental Conservation (NYSDEC). The specific objective was to determine the emission concentrations and rates of NOx, CO, THC/VOC, $SO_2$ [fuel analysis], $NH_3$, $PM_{10}$, SAM, VE, flow, $H_2O$, $CO_2$, and $O_2$ from the exhaust of Cricket Valley Energy Center LLC's General Electric, 7F.05, Unit #U-00002 at Base+DB and Base.

## 1.2 SUMMARY OF TEST PROGRAM

The following list details pertinent information related to this specific project:

1.2.1 Participating Organizations
- New York State Department of Environmental Conservation (NYSDEC)
- Cricket Valley Energy Center LLC
- Bechtel Corporation
- Air Hygiene

1.2.2 Industry
- Electric Utility / Electric Services

1.2.3 Air Permit Requirements
- Permit Number: 3-1326-00275/00009

1.2.4 Plant Location
- Cricket Valley Energy Center in Dover Plains, New York
  - GPS Coordinates [Latitude 41.67721, Longitude -73.57992]
  - Physical Address: 2241 ST RTE 22, Dover Plains, New York 12522
  - Federal Registry System / Facility Registry Service (FRS) No. – 110043340364
  - Source Classification Code (SCC) – 10200602

1.2.5 Equipment Tested
- General Electric, 7F.05, Unit #U-00002

1.2.6 Emission Points

- Exhaust from the General Electric, 7F.05, Unit #U-00002
- For all gases, one sample point in the exhaust duct from the General Electric, 7F.05, Unit #U-00002, determined after conducting a 12-point stratification test
- For all $PM_{10}$ testing, 12 sampling points in the exhaust duct from the General Electric, 7F.05, Unit #U-00002
- For all SAM testing, one sample point in the exhaust duct from the General Electric, 7F.05, Unit #U-00002
- For opacity, one sample visual observation point from the exit of the exhaust duct to the atmosphere from the General Electric, 7F.05, Unit #U-00002

1.2.7 Emission Parameters Measured

- NOx
- CO
- THC/VOC
- $SO_2$ [fuel analysis]
- $NH_3$
- $PM_{10}$
- SAM
- Opacity
- Flow
- $H_2O$
- $CO_2$
- $O_2$

1.2.8 Dates of Emission Test

- March 9-11, 2020

1.2.9 Federal Certifications

- Stack Testing Accreditation Council AETB Certificate No. 3796.02
- International Standard ISO/IEC 17025:2005 Certificate No. 3796.01

## 1.3 KEY PERSONNEL

| | | |
|---|---|---|
| Cricket Valley Energy Center LLC: | Marc Duquette (mduquette@cricketvalley.com) | 617-320-5219 |
| Bechtel Corporation: | John Curran | 772-678-1878 |
| Bechtel Corporation: | Peter Carr (pcarr@bechtel.com) | 571-392-6737 |
| NYSDEC: | Alyssa Carbone | 845-256-3051 |
| Air Hygiene: | Rob White (rwhite@airhygiene.com) | 918-307-8865 |
| Air Hygiene: | Swanson Bierman (swanson@airhygiene.com) | 918-307-8865 |
| Air Hygiene: | Andrew McMahan | 918-307-8865 |
| Air Hygiene: | Taylor Williams | 918-307-8865 |
| Air Hygiene: | Sean Fields | 918-307-8865 |
| Air Hygiene: | Matt Jones | 918-307-8865 |
| Air Hygiene: | Adrian Lopez | 918-307-8865 |

## 2.0 SUMMARY OF TEST RESULTS

Results from the sampling conducted on Cricket Valley Energy Center LLC's General Electric, 7F.05, Unit #U-00002 located at the Cricket Valley Energy Center on March 9-11, 2020 are summarized in the following table and relate only to the items tested.

**TABLE 2.1**
**SUMMARY OF GENERAL ELECTRIC, 7F.05, UNIT #U-00002 RESULTS**

| Parameter | Base Load | Base+DB Load | Permit Limits Base | Permit Limits Base+DB |
|---|---|---|---|---|
| **Heat Input (MMBtu/hr)** | 2,218.4 | 2,465.5 | -- | -- |
| **CT Power Output (megawatts)** | 230.7 | 232.1 | -- | -- |
| **Load Condition** | Nominal base load, w/o DB[1] | Nominal base load, w/ DB[2] | -- | -- |
| **NOx (ppmvd)** | 2.08 | 2.51 | -- | -- |
| **NOx (ppm@15%$O_2$)** | 1.57 | 1.66 | 2.0 | 2.0 |
| **CO (ppmvd)** | 0.19 | 0.21 | -- | -- |
| **CO (ppm@15%$O_2$)** | 0.15 | 0.14 | 2.0 | 2.0 |
| **VOC (as C1) (ppmvd)** | 0.00 | 0.00 | -- | -- |
| **VOC (as C1) (ppm@15%$O_2$)** | 0.00 | 0.00 | 0.7 | 1.8 |
| **Total $PM_{10}$ (mg)** | 8.83 | 7.10 | -- | -- |
| **Total $PM_{10}$ (lb/MMBtu)** | 0.0044 | 0.0031 | 0.005 | 0.006 |
| **Fuel Sulfur (grains / 100 scf)** | 0.13 | 0.12 | 0.4 | 0.4 |
| **SAM (as $H_2SO_4$) (mg)** | 0.02 | 0.02 | -- | -- |
| **SAM (as $H_2SO_4$) (lb/MMBtu)** | 0.00003 | 0.00003 | 0.00065 | 0.00065 |
| **$NH_3$ (ppmvd)** | 1.30 | 1.74 | -- | -- |
| **$NH_3$ (ppm@15%$O_2$)** | 0.98 | 1.15 | 5.0 | 5.0 |
| **Opacity (%)** | 0 | 0 | 20 | 20 |

Notes: [1]Air permit specifically indicates design capacity heat input of 2395.7 MMBtu/hr [ISO Conditions, 1 atm (29.923 in Hg), temperature 15 C or 59 F, and RH 60%] for the gas turbine. [2]Air permit specifically indicates design capacity heat input of 247 mmBtu/hr [ISO Conditions, 1 atm (29.923 in Hg), temperature 15 C or 59 F, and RH 60%] for the duct burner.

The results of all measured pollutant emissions were below the required limits. All testing was conducted according to the approved testing protocol. All testing was performed without any real or apparent errors with the following exceptions:

The $PM_{10}$ filter weights were reported by the laboratory at the reportable detection limit (RDL). Supplemental laboratory data was provided and additional data analysis indicated minor filter losses, which were accounted for in either the sample train section cleanup just prior to the filter or the sample train cleanup in the section just after the filter. As a result, the PM results are considered valid with accounting for all minor filter weight losses in other fractions of the sample train results.

The SAM analysis was conducted by titration, per the requirements of CTM-013 with all results reported below the reportable detection limits (RDLs). However, when reporting emission rates using the titration based RDL values, the SAM results exceeded permitted limits. To remedy, the SAM analysis was also conducted by ion chromatography (IC). The supplemental IC analysis (Appendix D) yielded lower RDLs and also all results that were below the permitted limits. Emission rates were calculated based on the supplemental IC data.

## 3.0 SOURCE OPERATION

## 3.1 PROCESS DESCRIPTION

Cricket Valley Energy Center LLC owns and operates the Cricket Valley Energy Center located at 2241 ST RTE 22 in Dover Plains, New York. Located on the Cricket Valley Energy Center are three General Electric 7F.05 Combustion Turbine Generators (CTGs), designated as Emission Units U-00001, U-00002, and U-00003. The CTGs and associated heat recovery steam generators (HRSGs) which are equipped with dry low NOx burners in combination with selective catalytic reduction systems (SCRs). The CTG-HRSGs are also equipped with oxidation catalysts which reduce CO and VOC emissions.

## 3.2 SAMPLING LOCATION

The sample ports were located approximately vertical, circular and measures 19 feet (ft) (228 inches) in diameter at the test ports which are approximately 265.8 ft above grade level with an exit elevation of approximately 282.5 ft above grade level. The test ports are located approximately 70.8 ft (850 inches) downstream and approximately 16.7 ft (200.4 inches) upstream from the nearest disturbances. Air Hygiene has field verified the measurable dimensions. Non-field verified dimensions are provided by Cricket Valley Energy Center LLC. All exhaust samples for gaseous emissions were continuously drawn from the exhaust system at the sample ports from a single point determined after conducting a stratification test. During the stratification test three points were traversed from each of the four ports. The probe was allowed to remain at a point for two times the system response time. For $PM_{10}$ testing, an initial velocity traverse was performed across the stack from 12 total points at each test load. All $PM_{10}$ sampling occurred from the same 12 points. All SAM testing occurred from a simple sample point. All opacity observations were made by viewing the point where the exhaust system exited to the atmosphere at the top of the exhaust stack.

## 4.0 SAMPLING AND ANALYTICAL PROCEDURES

## 4.1 TEST METHODS

The emission test on the General Electric, 7F.05, Unit #U-00002 at the Cricket Valley Energy Center was performed following United States Environmental Protection Agency (EPA) methods described by the Code of Federal Regulations (CFR). Table 4.1 outlines the specific methods performed on March 9-11, 2020.

**TABLE 4.1**
**SUMMARY OF SAMPLING METHODS**

| Pollutant or Parameter | Sampling Method | Analysis Method |
|---|---|---|
| Sample Point Location | EPA Method 1 | Equal Area Method |
| Stack Flow Rate | EPA Method 2 | S-Type Pitot Tube |
| Oxygen | EPA Method 3A | Paramagnetic Cell |
| Carbon Dioxide | EPA Method 3A | Nondispersive Infrared Analyzer |
| Stack Moisture Content | EPA Method 4 | Gravimetric Analysis |

| Pollutant or Parameter | Sampling Method | Analysis Method |
|---|---|---|
| Sulfur Dioxide | GPA 2261 | Fuel Sulfur Content |
| Nitrogen Oxides | EPA Method 7E | Chemiluminescent Analyzer |
| Sulfuric Acid Mist | CTM-013 (EPA Method 8A) | Wet Chemistry Solubility |
| Opacity | EPA Method 9 | Visual Observation |
| Carbon Monoxide | EPA Method 10 | Nondispersive Infrared Analyzer |
| Volatile Organic Compounds | EPA Method 18/25A | Gas Chromatograph and Flame Ionization Detector |
| Stack Flow Rate | EPA Method 19 | ASTM 5504 and Dry Oxygen F Factor |
| Particulate Matter | EPA Method 201A | Front Half Filterables |
| Particulate Matter | EPA Method 202 | Back Half Condensables |
| Ammonia Slip | EPA Method 320 | Fourier Transform Infrared |

## 4.2 INSTRUMENT CONFIGURATION AND OPERATIONS FOR GAS ANALYSIS

The sampling and analysis procedures used during these tests conform with the methods outlined in the Code of Federal Regulations (CFR), Title 40, Part 60, Appendix A, Methods 1, 2, 3A, 4, 7E, 9, 10, 18, 19, 25A; 40 CFR 51, Appendix M, Methods 201A and 202; 40 CFR 63, Appendix A, Method 320; Conditional Test Method (CTM)-013 [Method 8A]; ASTM 5504; and GPA 2261.

Figure 4.1 depicts the sample system used for the real-time gas analyzer tests. The gas sample was continuously pulled through the probe and transported, via heat-traced Teflon® tubing, to a heated head pump and into the FTIR then to a stainless-steel minimum-contact condenser designed to dry the sample. Transportation of the sample, through Teflon® tubing, continued into the sample manifold within the mobile laboratory via a stainless steel/Teflon® diaphragm pump. From the manifold, the sample was partitioned to the real-time analyzers through rotameters that controlled the flow rate of the sample. Exhaust samples were routed to the wet based analyzer prior to gas conditioning.

Figure 4.1 shows that the sample system was also equipped with a separate path through which a calibration gas could be delivered to the probe and back through the entire sampling system. This allowed for convenient performance of system bias checks as required by the testing methods.

All instruments were housed in a climate controlled, trailer-mounted mobile laboratory. Gaseous calibration standards were provided in aluminum cylinders with the concentrations certified by the vendor. EPA Protocol No. 1 was used to determine the cylinder concentrations where applicable (i.e. NOx calibration gases).

Table 4.2 provides a description of the analyzers used for the instrument portion of the tests. All data from the continuous monitoring instruments were recorded on a Logic Beach Portable Data Logging System which retrieves calibrated electronic data from each instrument every one second and reports an average of the collected data every 30 seconds. For target compounds measured with the Fourier transform infrared (FTIR) spectrometer,

interferograms consisting of 27 co-added scans were recorded continuously during the test periods, and provided approximately 30-second average concentrations. Spectral data was analyzed by the MKS MG2000 software.

Figure 4.2 represents the sample system used for the $PM_{10}$ tests. A heated stainless-steel probe with a glass liner and stainless-steel nozzle was inserted into the sample ports of the stack to extract gas measurements from the emission stream through a filter and glass impinger train. Flow rates are monitored with oil filled manometers and total sample volumes are measured with a dry gas meter. Glassware that is used to collect and analyze Method 202 condensable particulate samples is cleaned prior to the test with soap and water, and rinsed using tap water, deionized water, acetone, and finally, hexane. After cleaning, Air Hygiene incorporates a glassware bake at 300ºC for six hours rather than the alternative of collecting a field train proof blank.

Figure 4.3 represents the sample system used for the SAM tests. A heated stainless-steel probe with a glass liner was inserted into a sample port of the stack to extract gas measurements from the emission stream through a filter and glass impinger train. Flow rates are monitored with oil filled manometers and total sample volumes are measured with a dry gas meter.

The stack gas analysis for $O_2$ and $CO_2$ concentrations was performed in accordance with procedures set forth in EPA Method 3A. The $O_2$ analyzer uses a paramagnetic cell detector and the $CO_2$ analyzer uses a continuous nondispersive infrared analyzer.

EPA Method 7E was used to determine concentrations of NOx. A chemiluminescent analyzer was used to determine the nitrogen oxides concentration in the gas stream. A $NO_2$ in nitrogen certified gas cylinder was used to verify at least a 90 percent $NO_2$ conversion on the day of the test.

CO emission concentrations were quantified in accordance with procedures set forth in EPA Method 10. A continuous nondispersive infrared (NDIR) analyzer was used for this purpose.

THC emission concentrations were quantified in accordance with procedures set forth in EPA Method 25A. A continuous flame ionization (FID) analyzer was used for this purpose. THC emissions concentrations were below VOC limits and all assumed as VOCs. EPA Method 18 for Tedlar bag sampling and analysis of methane and ethane content was not analyzed or subtracted from the THC concentrations to determine VOC concentrations.

An MKS Instruments - MultiGas™ Fourier Transform Infrared (FTIR) spectrometer, or equivalent, was used for $NH_3$ analysis per EPA Method 320. The FTIR spectrometer spectral resolution was 0.5 $cm^{-1}$. The system employed a silicon carbide infrared source at 1200ºC, a helium neon reference laser, beam splitters, potassium bromide (KBr) cell window, front-surface optical transfer mirrors, and multi-pass absorption cells. MCT detectors were used and cooled with liquid nitrogen in order to maintain a constant temperature of 77 Kelvin. The approximately 5.11-meter multi-pass path cells incorporated aspheric, aberration-correcting mirrors to increase the optical throughput and the detection sensitivity. Transducers and thermocouples were connected directly to the insulated sample cells that provide the pressure and temperatures of the sample streams. During testing, the temperature of the absorption cells was set at 191ºC. Elevated temperature prevented gas condensation within the cell and minimized compound adhesion to the cell walls and mirrors. The volume of the absorption cell was 0.5 liters, so at a sample gas flow rate of 10.0 liters per minute, the sample gas in the cell is refreshed at least times each minute. Interferograms consisting of 27 co-added scans were recorded continuously during the test periods, and provided approximately 30-second average concentrations.

**TABLE 4.2**
**ANALYTICAL INSTRUMENTATION**

| Parameter | Manufacturer and Model | Range | Sensitivity | Detection Principle |
|---|---|---|---|---|
| NOx | THERMO 42 series | User may select up to 5,000 ppm | 0.1 ppm | Thermal reduction of $NO_2$ to NO. Chemiluminescence of reaction of NO with $O_3$. Detection by PMT. Inherently linear for listed ranges. |
| CO | THERMO 48 series | User may select up to 10,000 ppm | 0.1 ppm | Infrared absorption, gas filter correlation detector, microprocessor-based linearization. |
| $CO_2$ | SERVOMEX 1440 | 0-20% | 0.1% | Nondispersive infrared |
| $NH_3$ | MKS 2030 | User may select from multiple ranges | 0.1 ppm | Fourier Transform Infrared – FTIR |
| VOC | THERMO 51 series | User may select up to 10,000 ppm | 0.1 ppm | Flame Ionization Detector |
| $O_2$ | SERVOMEX 1440 | 0-25% | 0.1% | Paramagnetic cell, inherently linear. |

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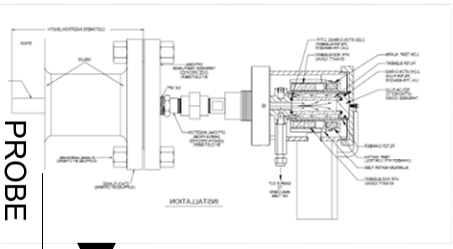
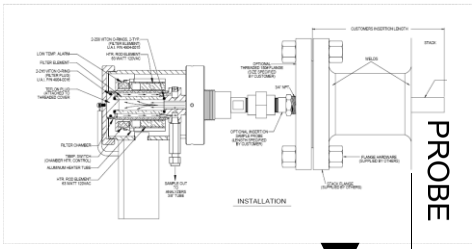



LEGEND
- Heated Teflon Tubing (pre-conditioned sample)
- Unheated Teflon Tubing (conditioned sample)
- Diluted Calibration Gas
- Calibration Gas
- Electronic Input/Output




PROCESS INLET OR 2ND STACK

dual line heated sample umbilical

STACK EXHAUST

TEST TRAILER EXTERIOR

TEST TRAILER INTERIOR

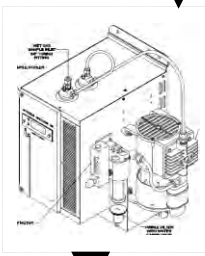
DATA RECORDER



COMPUTER



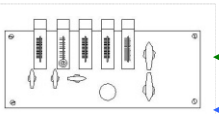
GAS CONDITIONER



dual line heated sample umbilical

MOBILE SECONDARY ANALYZERS

MANIFOLD





GAS DILUTER

THC, VOC



$O_2$, $CO_2$, NOx, CO, $SO_2$



HOT/WET ANALYZERS
COLD/DRY ANALYZERS

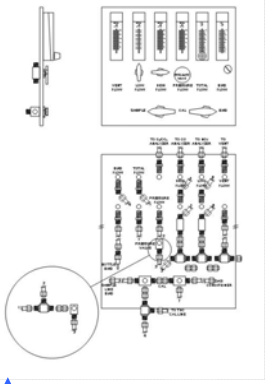


COLD/DRY ANALYZERS HOT/WET



$O_2$, $CO_2$, NOx, CO, $SO_2$

FLOW CONTROL MANIFOLD





FTIR

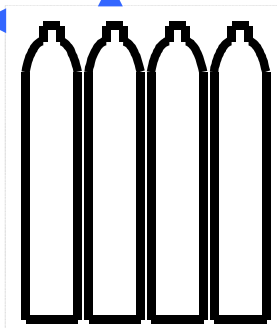
THC, VOC



CONDITIONER

VENT

CALIBRATION/ BIAS GAS BOTTLES



VENT

FIXED PRIMARY ANALYZERS

Shown fully equipped. Some labs may not contain these features and others may contain additional features specific to certain scopes.

AIR HYGIENE

Figure 4.1
EMISSIONS TESTING LAB

1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
www.airhygiene.com
(888) 461-8778

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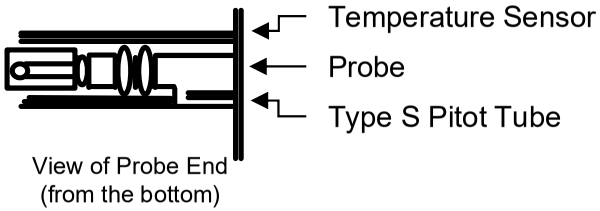



Wet Chemistry Assembly
(photo)

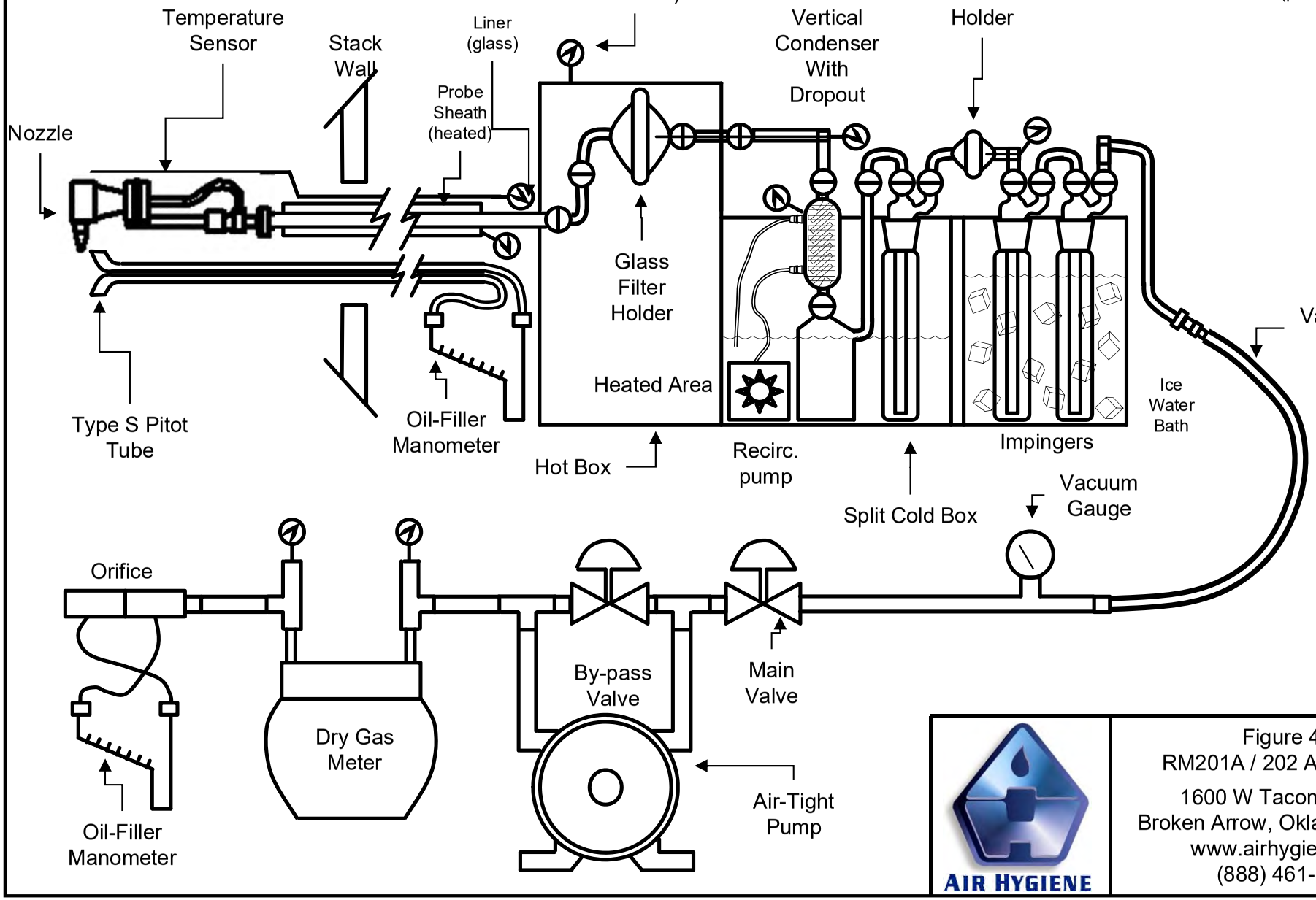


Figure 4.2
RM201A / 202 ASSEMBLY

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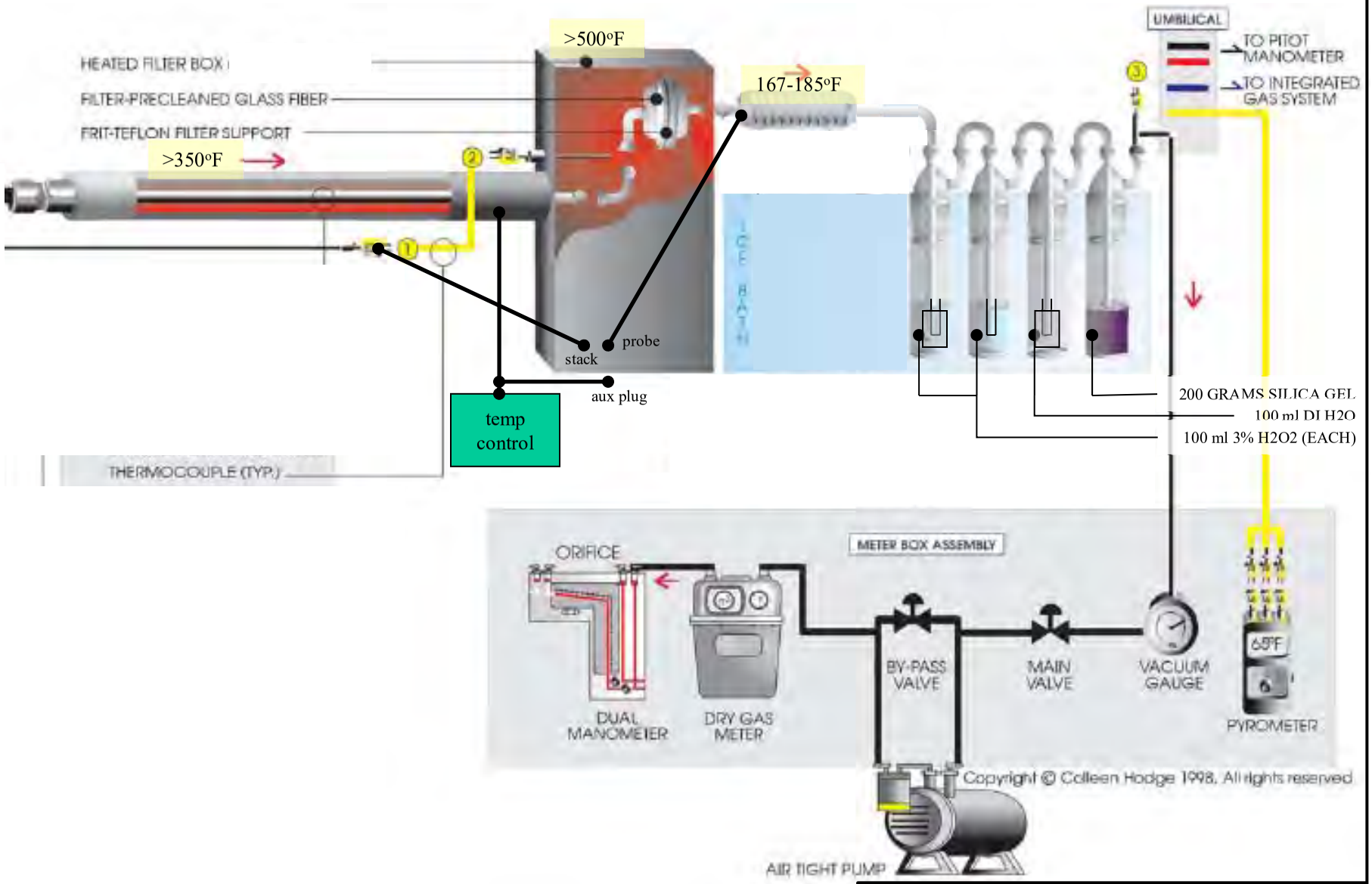


TEST NOTES:
10 LPM SAMPLE FLOW
Delta H @ 0.35 IS ABOUT 10 LPM ON STANDARD CONSOLE
15 MIN AMBIENT AIR PURGE

Figure 4.3
METHOD 8A ASSEMBLY

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(888) 461-8778

# APPENDIX A

# TEST RESULTS AND CALCULATIONS

**TABLE A.1: EMISSIONS TESTING SCHEDULE**

| Unit | Load | Component | Run | Date | Start | Stop | Time Sync | Duration |
|---|---|---|---|---|---|---|---|---|
| U-00002 | Base | Stratification Test | Base-1 | 02/25/20 | 06:14 | 07:12 | DAHS | 00:58 |
| U-00002 | Base | Cyclonic Flow Check | PM U-00002 Base-V1 | 03/09/20 | 06:44 | 07:11 | DAHS | 00:27 |
| U-00002 | Base | NOx, CO, VOC, $NH_3$ | 1-1 | 03/09/20 | 14:44 | 15:43 | DAHS | 01:00 |
| U-00002 | Base | NOx, CO, VOC, $NH_3$ | 1-2 | 03/09/20 | 16:05 | 17:04 | DAHS | 01:00 |
| U-00002 | Base | NOx, CO, VOC, $NH_3$ | 1-3 | 03/09/20 | 17:18 | 18:17 | DAHS | 01:00 |
| U-00002 | Base | Opacity | Op-1-1 | 03/09/20 | 10:52 | 11:52 | DAHS | 01:00 |
| U-00002 | Base | Opacity | Op-1-2 | 03/09/20 | 11:52 | 12:52 | DAHS | 01:00 |
| U-00002 | Base | Opacity | Op-1-3 | 03/09/20 | 12:52 | 13:52 | DAHS | 01:00 |
| U-00002 | Base | $PM_{10}$ | PM U-00002 Base-1 | 03/09/20 | 08:15 | 13:16 | DAHS | 05:01 |
| U-00002 | Base | $PM_{10}$ | PM U-00002 Base-2 | 03/09/20 | 13:30 | 19:48 | DAHS | 06:18 |
| U-00002 | Base | $PM_{10}$ | PM U-00002 Base-3 | 03/10/20 | 07:23 | 12:15 | DAHS | 04:52 |
| U-00002 | Base | SAM | SAM U-00002 Base-1 | 03/09/20 | 08:06 | 10:06 | DAHS | 02:00 |
| U-00002 | Base | SAM | SAM U-00002 Base-2 | 03/09/20 | 11:49 | 13:49 | DAHS | 02:00 |
| U-00002 | Base | SAM | SAM U-00002 Base-3 | 03/09/20 | 15:17 | 17:17 | DAHS | 02:00 |
| U-00002 | Base+DB | Stratification Test | BaseDB-1 | 03/10/20 | 12:32 | 14:11 | DAHS | 01:39 |
| U-00002 | Base+DB | Cyclonic Flow Check | PM U-00002 Base+DB-V1 | 03/10/20 | 13:08 | 13:24 | DAHS | 00:16 |
| U-00002 | Base+DB | NOx, CO, VOC, $NH_3$ | 2-1 | 03/10/20 | 15:27 | 16:26 | DAHS | 01:00 |
| U-00002 | Base+DB | NOx, CO, VOC, $NH_3$ | 2-2 | 03/10/20 | 17:35 | 18:34 | DAHS | 01:00 |
| U-00002 | Base+DB | NOx, CO, VOC, $NH_3$ | 2-3 | 03/10/20 | 18:35 | 19:34 | DAHS | 01:00 |
| U-00002 | Base+DB | Opacity | Op-2-1 | 03/10/20 | 14:30 | 15:30 | DAHS | 01:00 |
| U-00002 | Base+DB | Opacity | Op-2-2 | 03/10/20 | 15:30 | 16:30 | DAHS | 01:00 |
| U-00002 | Base+DB | Opacity | Op-2-3 | 03/10/20 | 16:30 | 17:30 | DAHS | 01:00 |
| U-00002 | Base+DB | $PM_{10}$ | PM U-00002 Base+DB-1 | 03/10/20 | 14:12 | 18:40 | DAHS | 04:28 |
| U-00002 | Base+DB | $PM_{10}$ | PM U-00002 Base+DB-2 | 03/11/20 | 06:23 | 11:17 | DAHS | 04:54 |
| U-00002 | Base+DB | $PM_{10}$ | PM U-00002 Base+DB-3 | 03/11/20 | 12:30 | 17:15 | DAHS | 04:45 |
| U-00002 | Base+DB | SAM | SAM U-00002 Base+DB-1 | 03/11/20 | 05:46 | 07:46 | DAHS | 02:00 |
| U-00002 | Base+DB | SAM | SAM U-00002 Base+DB-2 | 03/11/20 | 08:40 | 10:40 | DAHS | 02:00 |
| U-00002 | Base+DB | SAM | SAM U-00002 Base+DB-3 | 03/11/20 | 11:33 | 13:33 | DAHS | 02:00 |

# TEST RESULTS AND CALCULATIONS

## Emissions Results
## Base Load
## NOx, CO, VOC, and $NH_3$

## GENERAL ELECTRIC, 7F.05, UNIT #U-00002 BASE LOAD DATA SUMMARY

| Parameter | Base Load, Run - 1-1 | Base Load, Run - 1-2 | Base Load, Run - 1-3 | Average |
|---|---|---|---|---|
| **Date (mm/dd/yy)** | 03/09/20 | 03/09/20 | 03/09/20 | 03/09/20 |
| **Start Time (hh:mm:ss)** | 14:44:11 | 16:05:11 | 17:18:11 | 14:44:11 |
| **End Time (hh:mm:ss)** | 15:43:41 | 17:04:41 | 18:17:41 | 18:17:41 |
| **Run Duration (min / run)** | 60 | 60 | 60 | 60 |
| **Bar. Pressure (in. Hg)** | 30.28 | 30.28 | 30.30 | 30.29 |
| **Amb. Temp. (°F)** | 66 | 67 | 65 | 66 |
| **Rel. Humidity (%)** | 22 | 25 | 28 | 25 |
| **Spec. Humidity (lb water / lb air)** | 0.002926 | 0.003445 | 0.003599 | 0.003323 |
| **$NH_3$ Flow Rate (lb/hr)** | 126.8 | 123.3 | 124.2 | 124.7 |
| **Turbine Fuel Flow (lb/min)** | 1,617 | 1,624 | 1,622 | 1,621 |
| **Duct Burner Fuel Flow (lb/min)** | 0 | 0 | 0 | 0 |
| **Total Fuel Flow (SCFH)** | 2,195,187 | 2,205,298 | 2,202,317 | 2,200,934 |
| **Stack Flow (RM19) (SCFH)** | 51,014,767 | 51,447,204 | 50,992,328 | 51,151,433 |
| **Stack Moisture (% Method 4)** | 7.6 | 7.6 | 7.6 | 7.6 |
| **Heat Input (MMBtu/hr)** | 2,212.6 | 2,222.8 | 2,219.8 | 2,218.4 |
| **CT Power Output (megawatts)** | 230.8 | 230.6 | 230.5 | 230.7 |
| **NOx (ppmvd)** | 2.14 | 2.15 | 1.95 | 2.08 |
| **NOx (ppm@15%$O_2$)** | 1.61 | 1.63 | 1.46 | 1.57 |
| **CO (ppmvd)** | 0.21 | 0.22 | 0.15 | 0.19 |
| **CO (ppm@15%$O_2$)** | 0.16 | 0.16 | 0.11 | 0.15 |
| **VOC (as C1) (ppmvd)** | 0.00 | 0.01 | 0.00 | 0.00 |
| **VOC (as C1) (ppm@15%$O_2$)** | 0.00 | 0.01 | 0.00 | 0.00 |
| **Fuel Sulfur (grains / 100 scf)** | 0.13 | 0.13 | 0.13 | 0.13 |
| **$CO_2$ (%)** | 4.22 | 4.75 | 4.42 | 4.46 |
| **$O_2$ (%)** | 13.07 | 13.10 | 13.04 | 13.07 |

# Calculations, Formulas, and Constants

The following information supports the spreadsheets for this testing project.

## Given Data:

Ideal Gas Conversion Factor = 385.23 SCF/lb-mol at 68 deg F & 14.696 psia

Fuel Heating Value is based upon Air Hygiene's fuel gas calculation sheet. All calculations are based upon a correction to 68 deg F & 14.696 psia

High Heating Values (HHV) are used for the Fuel Heating Value, F-Factor, and Fuel Flow Data per EPA requirements.

**ASTM D 3588**

| | |
|---|---|
| Molecular Weight of NOx (lb/lb-mole) = | 46.01 |
| Molecular Weight of CO (lb/lb-mole) = | 28.00 |
| Molecular Weight of $SO_2$ (lb/lb-mole) = | 64.00 |
| Molecular Weight of THC (propane) (lb/lb-mole) = | 44.00 |
| Molecular Weight of VOC (methane) (lb/lb-mole) = | 16.00 |
| Molecular Weight of $NH_3$ (lb/lb-mole) = | 17.03 |
| Molecular Weight of HCHO (lb/lb-mole) = | 30.03 |
| Molecular Weight of $CO_2$ (lb/lb-mole) = | 44.01 |

**40CFR60, App. A., RM 19, Table 19-1**

| | |
|---|---|
| Conversion Constant for NOx = | 0.0000001194351 |
| Conversion Constant for CO = | 0.0000000726839 |
| Conversion Constant for $SO_2$ = | 0.0000001661345 |
| Conversion Constant for THC = | 0.0000001142175 |
| Conversion Constant for VOC (methane) = | 0.0000000415336 |
| Conversion Constant for $NH_3$ = | 0.0000000442074 |
| Conversion Constant for HCHO = | 0.0000000779534 |
| Conversion Constant for $CO_2$ = | 0.0000001142434 |

NOTE: units are lb/ppm*ft$^3$

## Formulas:

1. Corrected Raw Average ($C_{Gas}$), 40CFR60, App. A, RM 7E, Eq. 7E-5 (08/15/06)

$$C_{Gas} = \left(C_{Avg} - C_O\right) \times \left(\frac{C_{MA}}{C_M - C_O}\right)$$

2. Correction to % $O_2$, 40CFR60, App. A, RM 20, Eq. 20-5 (11/26/02)

$$C_{adj} = C_{Gas(Target)} \times \left(\frac{20.9\% - AdjFactor}{20.9\% - C_{Gas(O2)}}\right)$$

3. Correction to % $O_2$ and ISO Conditions

$$C_{ISO} = C_{Adj} \times \sqrt{\frac{P_r}{P_o}} \times e^{(19 \times (H_O - 0.00633))} \times \left(\frac{288}{T_a}\right)^{1.53}$$

4. Method 19 stack exhaust flow (scfh) [ref. EPA EMC FAQ Method 19]

$$Q_S = \left(\frac{FFactor \times Q_f \times HHV}{1{,}000{,}000}\right) \times \left(\frac{20.9\%}{20.9\% - C_{Gas(O2)}}\right)$$

5. Emission Rate in lb/hr

$$E_{lb/hr} = \frac{C_{Gas}}{10^6} \times \frac{Q_S \times MW}{G}$$

6. Emission Rate in tons per year

$$E_{ton/yr} = \frac{E_{lb/hr} \times hr_{year}}{2000}$$

7. Emission Concentration in lb/MMBtu ($O_2$ based)

$$E_{lb/MMBtu} = \frac{C_{Gas} \times F_d Factor \times Conv_C \times 20.9\%}{20.9\% - C_{Gas(O2)}}$$

8. Emission Concentration in g/hp*hr

$$E_{g/hp \cdot hr} = \frac{E_{lb/hr} \times 453.6}{mw \times 1341.022} \; or \; \frac{E_{lb/hr} \times 453.6}{hp}$$

**RM 7E, (08-15-06), 12.1 Nomenclature. The terms used in the equations are defined as follows:**

ACE = Analyzer calibration error, percent of calibration span.
$B_{WS}$ = Moisture content of sample gas as measured by Method 4 or other approved method, percent/100.
$C_{Avg}$ = Average unadjusted gas concentration indicated by data recorder for the test run.
$C_D$ = Pollutant concentration adjusted to dry conditions.
$C_{Dir}$ = Measured concentration of a calibration gas (low, mid, or high) when introduced in direct calibration mode.
$C_{Gas}$ = Average effluent gas concentration adjusted for bias.
$C_M$ = Average of initial and final system calibration bias (or 2-point system calibration error) check responses for the upscale calibration gas.
$C_{MA}$ = Actual concentration of the upscale calibration gas, ppmv.
$C_O$ = Average of the initial and final system calibration bias (or 2-point system calibration error) check responses from the low-level (or zero) calibration gas.
$C_S$ = Measured concentration of a calibration gas (low, mid, or high) when introduced in system calibration mode.
$C_{SS}$ = Concentration of NOx measured in the spiked sample.
$C_{Spike}$ = Concentration of NOx in the undiluted spike gas.
$C_{Calc}$ = Calculated concentration of NOx in the spike gas diluted in the sample.
$C_V$ = Manufacturer certified concentration of a calibration gas (low, mid, or high).
$C_W$ = Pollutant concentration measured under moist sample conditions, wet basis.
CS = Calibration span.
D = Drift assessment, percent of calibration span.
$E_p$ = The predicted response for the low-level and mid-level gases based on a linear response line between the zero and high-level response.
$Eff_{NO2}$ = $NO_2$ to NO converter efficiency, percent.
H = High calibration gas, designator.
L = Low calibration gas, designator.
M = Mid calibration gas, designator.
NOFinal = The average NO concentration observed with the analyzer in the NO mode during the converter efficiency test in Section 16.2.2.
NOxCorr = The NOx concentration corrected for the converter efficiency.
NOxFinal = The final NOx concentration observed during the converter efficiency test in Section 16.2.2.
NOxPeak = The highest NOx concentration observed during the converter efficiency test in Section 16.2.2.
$Q_{Spike}$ = Flow rate of spike gas introduced in system calibration mode, L/min.
$Q_{Total}$ = Total sample flow rate during the spike test, L/min.
R = Spike recovery, percent.
SB = System bias, percent of calibration span.
$SB_i$ = Pre-run system bias, percent of calibration span.
$SB_f$ = Post-run system bias, percent of calibration span.
SB / $D_{Alt}$ = Alternative absolute difference criteria to pass bias and/or drift checks.
SCE = System calibration error, percent of calibration span.
$SCE_i$ = Pre-run system calibration error, percent of calibration span.
$SCE_{final}$ = Post-run system calibration error, percent of calibration span.
Z = Zero calibration gas, designator.

**40CFR60.355(b)(1), (09-20-06), Nomenclature. The terms used in the equations are defined as follows:**

$P_r$ = reference combustor inlet absolute pressure at 101.3 kilopascals ambient pressure, mm Hg
$P_o$ = observed combustor inlet absolute pressure at test, mm Hg
$H_o$ = observed humidity of ambient air, g $H_2O$/g air
e = transcendental constant, 2.718
$T_a$ = ambient temperature, K

**Small Engine and FTIR Nomenclature. The terms used in the equations are defined as follows:**

bhp = brake horsepower
hp = horsepower
$Q_{sys}$ = system flow (lpm)
$Q_m$ = matrix spike flow (lpm)

**RM 19, (07-29-06), 12.1 Nomenclature. The terms used in the equations are defined as follows:**

AdjFactor = Percent oxygen or carbon dioxide adjustment applied to a target pollutant
$B_{wa}$ = Moisture fraction of ambient air, percent.
Btu = British thermal unit
$\%_C$ = Concentration of carbon from an ultimate analysis of fuel, weight percent.
$\%_{CO2d}$,$\%_{CO2w}$ = Concentration of carbon dioxide on a dry and wet basis, respectively, percent.
CIP / CDP = Combustor inlet pressure / compressor discharge pressure (mm Hg); note, some manufactures reference as PCD.
E = Pollutant emission rate, ng/J (lb/million Btu).
$E_a$ = Average pollutant rate for the specified performance test period, ng/J (lb/million Btu).
$E_{ao}$, $E_{ai}$ = Average pollutant rate of the control device, outlet and inlet, respectively, for the performance test period, ng/J (lb/million Btu).
$E_{bi}$ = Pollutant rate from the steam generating unit, ng/J (lb/million Btu).
$E_{bo}$ = Pollutant emission rate from the steam generating unit, ng/J (lb/million Btu).
$E_{ci}$ = Pollutant rate in combined effluent, ng/J (lb/million Btu).
$E_{co}$ = Pollutant emission rate in combined effluent, ng/J (lb/million Btu).
$E_d$ = Average pollutant rate for each sampling period (e.g.,24-hr Method 6B sample or 24-hr fuel sample) or for each fuel lot (e.g., amount of fuel bunkered), ng/J (lb/million Btu).
$E_{di}$ = Average inlet $SO_2$ rate for each sampling period d, ng/J (lb/million Btu).
$E_g$ = Pollutant rate from gas turbine, ng/J (lb/million Btu).
$E_{ga}$ = Daily geometric average pollutant rate, ng/J (lbs/million Btu) or ppm corrected to 7 percent $O_2$.
$E_{jo}$,$E_{ji}$ = Matched pair hourly arithmetic average pollutant rate, outlet and inlet, respectively, ng/J (lb/million Btu) or ppm corrected to 7 percent $O_2$.
$E_h$ = Hourly average pollutant, ng/J (lb/million Btu).
$E_{hj}$ = Hourly arithmetic average pollutant rate for hour "j," ng/J (lb/million Btu) or ppm corrected to 7 percent $O_2$.
EXP = Natural logarithmic base (2.718) raised to the value enclosed by brackets.
Fc = Ratio of the volume of carbon dioxide produced to the gross calorific value of the fuel from Method 19
$F_d$, $F_w$, $F_c$ = Volumes of combustion components per unit of heat content, scm/J (scf/million Btu).
$ft^3$ = cubic feet
G = ideal gas conversion factor
(385.23 SCF/lb-mol at 68 deg F & 14.696 psia)
GCM = gross Btu per SCF (constant, compound based)
GCV = Gross calorific value of the fuel consistent with the ultimate analysis, kJ/kg (Btu/lb).
$GCV_p$, $GCV_r$ = Gross calorific value for the product and raw fuel lots, respectively, dry basis, kJ/kg (Btu/lb).
$\%_H$ = Concentration of hydrogen from an ultimate analysis of fuel, weight percent.
$H_b$ = Heat input rate to the steam generating unit from fuels fired in the steam generating unit, J/hr (million Btu/hr).
$H_g$ = Heat input rate to gas turbine from all fuels fired in the gas turbine, J/hr (million Btu/hr).
$\%_{H2O}$ = Concentration of water from an ultimate analysis of fuel, weight percent.
$H_r$ = Total numbers of hours in the performance test period (e.g., 720 hours for 30-day performance test period).
K = volume of combustion component per pound of component (constant)
K = Conversion factor, $10^{-5}$ (kJ/J)/(%) [$10^6$ Btu/million Btu].
$K_c$ = (9.57 scm/kg)/% [(1.53 scf/lb)/%].
$K_{cc}$ = (2.0 scm/kg)/% [(0.321 scf/lb)/%].
$K_{hd}$ = (22.7 scm/kg)/% [(3.64 scf/lb)/%].
$K_{hw}$ = (34.74 scm/kg)/% [(5.57 scf/lb)/%].
$K_n$ = (0.86 scm/kg)/% [(0.14 scf/lb)/%].
$K_o$ = (2.85 scm/kg)/% [(0.46 scf/lb)/%].
$K_s$ = (3.54 scm/kg)/% [(0.57 scf/lb)/%].
$K_{sulfur}$ = $2x10^4$ Btu/wt%-MMBtu
$K_w$ = (1.30 scm/kg)/% [(0.21 scf/lb)/%].
lb = pound
ln = Natural log of indicated value.
$L_p$,$L_r$ = Weight of the product and raw fuel lots, respectively, metric ton (ton).
$\%_N$ = Concentration of nitrogen from an ultimate analysis of fuel, weight percent.
$M_{\%}$ = mole percent
mol = mole
MW = molecular weight (lb/lb-mol)
$MW_{AIR}$ = molecular weight of air ( 28.9625 lb/lb-mole)[1]
NCM = net Btu per SCF (constant based on compound)
$\%_O$ = Concentration of oxygen from an ultimate analysis of fuel, weight percent.
$\%_{O2d}$, $\%_{O2w}$ = Concentration of oxygen on a dry and wet basis, respectively, percent.
$P_B$ = barometric pressure, in Hg
$P_s$ = Potential SO2 emissions, percent.
$\%_S$ = Sulfur content of as-fired fuel lot, dry basis, weight percent.
$S_e$ = Standard deviation of the hourly average pollutant rates for each performance test period, ng/J (lb/million Btu).
$\%_{Sf}$ = Concentration of sulfur from an ultimate analysis of fuel, weight percent.
S(wt%) = weight percent of sulfur, per lab analysis by appropriate ASTM standard
$S_i$ = Standard deviation of the hourly average inlet pollutant rates for each performance test period, ng/J (lb/million Btu).
$S_o$ = Standard deviation of the hourly average emission rates for each performance test period, ng/J (lb/million Btu).
$\%S_p$, $\%S_r$ = Sulfur content of the product and raw fuel lots respectively, dry basis, weight percent.
SCF = standard cubic feet
SH = specific humidity, pounds of water per pound of air
$t_{0.95}$ = Values shown in Table 19-3 for the indicated number of data points n.
$T_{amb}$ = ambient temperature, $^oF$
W/D Factor = 1.0236 = conv. at 14.696 psia and
68 deg F (ref. Civil Eng. Ref. Manual, 7th Ed.)
$X_{CO2}$=$CO_2$ Correction factor, percent.
$X_k$ = Fraction of total heat input from each type of fuel k.

**EXAMPLE CALCULATIONS (FFACTOR)**

RM 19, (02-27-14),
2.0 Summary of Method,
2.1 Emission Rates. Oxygen ($O_2$) or carbon dioxide ($CO_2$) concentrations and appropriate F factors (ratios of combustion gas volumes to heat inputs) are used to calculate pollutant emission rates from pollutant concentrations.

RM 19, (02-27-14),
12.2 Emission Rates of PM, $SO_2$, and NOx. Select from the following sections the applicable procedure to compute the PM, $SO_2$, or NOx emission rate (E) in lb/MMBtu. The pollutant concentration must be in lb/scf and the F factor must be in scf/MMBtu. If the pollutant concentration (C) is not in the appropriate units, use Table 19–1 in Section 17.0 to make the proper conversion. An F factor is the ratio of the gas volume of the products of combustion to the heat content of the fuel. The dry F factor ($F_d$) includes all components of combustion less water, the wet F factor ($F_w$) includes all components of combustion, and the carbon F factor ($F_c$) includes only carbon dioxide.

Mark's Std Hdbk, 10th ed.,pg 4-26
**High Heat Value Dry** ($HHV_{dry}$), calc for Methane (single component for the fuel gas)

$$HHV_{dry}\left(Btu / SCF\right) = \left[\left(\frac{M_{\%}}{100}\right) \times GCM\right]$$

$HHV_{dry}$ = 93.50 % / 100.00 x 994.85 Btu / SCF = 930.20 Btu / SCF

Mark's Std Hdbk, 10th ed., pg 4-26
**Low Heat Value Dry** ($LHV_{dry}$), calc for Methane (single component for the fuel gas)

$$LHV_{dry}\left(Btu / SCF\right) = \left[\left(\frac{M_{\%}}{100}\right) \times NCM\right]$$

$LHV_{dry}$ = 93.50 % / 100.00 x 895.75 Btu / SCF = 837.55 Btu / SCF

Civil Eng. Ref. Man.,7th Ed.,pg 14-9/GPA Ref. Bulletin 181-86, App. C
**High Heat Value Wet** ($HHV_{wet}$), calc for entire sample (all components of the fuel gas)

$$HHV_{wet}\left(Btu / SCF\right) = \frac{HHV_{dry}}{W / D.factor}$$

$HHV_{wet}$ = 1,007.94 Btu/SCF / 1.0236 = 984.70 Btu/SCF

Civil Eng. Ref. Man.,7th Ed.,pg 14-9/GPA Ref. Bulletin 181-86, App. C
**Low Heat Value Wet** ($LHV_{wet}$), calc for entire sample (all components of the fuel gas)

$$LHV_{wet}\left(Btu / SCF\right) = \frac{LHV_{dry}}{W / D.factor}$$

$LHV_{wet}$ = 908.68 Btu/SCF / 1.0236 = 887.73 Btu/SCF

**Lbs Component per Lb-Mol of Gas** (CM), calc for Methane (single component for the fuel gas)

$$CM\left(lb / lb-mol\right) = \left[\left(\frac{M_{\%}}{100}\right) \times MW\right]$$

CM = 93.50 % / 100.00 x 16.04 lb / lb-mol = 15.00 lb/lb-mol

ASTM D 3588
**Fuel Molecular Weight** ($MW_{Fuel}$)

$$MW_{Fuel}\left(lb / lb \cdot mol\right) = \left[\sum \left(CM\right)\right]$$

$MW_{Fuel}$ = 15.00 lb/lb-mol
\+ 1.26 lb/lb-mol
\+ etc. = 17.023 lb/lb-mol

Btu per Lb of Gas Gross (**GCV**)

$$GCV\left(Btu / lb\right) = \left[\frac{HHV_{dry} \times G}{MW_{Fuel}}\right]$$

GCV = 1,007.94 Btu/SCF x 385.23 $ft^3$/lbmol / 17.023 lb/lb-mol = 22,809.48 Btu/lb

ASTM D 3588 (SG)
**Specific Gravity**

$$SG = \left[\frac{MW_{Fuel}}{MW_{AIR}}\right]$$

SG = 17.02 lb/lb-mol / 28.96 lb/lb-mol = 0.5878

Btu per Lb of Gas Net (**NCV**)

$$NCV\left(Btu / lb\right) = \left[\frac{LHV_{dry} \times G}{MW_{Fuel}}\right]$$

NCV = 908.68 Btu/SCF x 385.23 $ft^3$/lbmol / 17.023 lb/lb-mol = 20,563.29 Btu/lb

**Weight Percent** of Component ($C_{\%}$), methane

$$C_{\%}\left(\%\right) = \left[\left(\frac{CM}{MW_{Fuel}}\right) \times 100\right]$$

$C_{\%}$ = 15.00 lb/lb-mol / 17.02 lb/lb-mol x 100 = 88.12 %

**Weight Percent of Volatile Organic Compounds** ($VOC_{\%}$)

$$VOC_{\%}(\%) = \left[\sum_{C_3H_8}^{C_8H_{18}} Wt_{\%}\right]$$

$VOC_{\%}$ = 0.38 % + 0.03 % + 0.03 % + etc. = 0.47 %

RM 19, (02-27-14), 12.3.2 Determined **F Factors**. If the fuel burned is not listed in Table 19–2 or if the owner or operator chooses to determine an F factor rather than use the values in Table 19–2, use the procedure below: 12.3.2.1 Equations. Use the eq

RM 19, (02-27-14),
12.1 Nomenclature

| **K (scf/lb)/%** | |
|---|---|
| H | 3.64 |
| C | 1.53 |
| S | 0.57 |
| $N_2$ | 0.14 |
| $O_2$ | 0.46 |

$$F_d = \frac{K\left(K_{hd}\%H + K_c\%C + K_s\%S + K_n\%N - K_o\%O\right)}{GCV} \qquad \text{Eq. 19-13}$$

$F_d$ = $10^6$Btu / MMBtu x [ 3.64 SCF / lb · % x 23.72 % + 1.53 SCF / lb · % x 72.59 % + 0.57 SCF / lb · % x 0.00 % + 0.14 SCF / lb · % x 2.17 % - 0.46 SCF / lb · % x 1.51 % ] x lb / 22,809.48 Btu = 8,638.42 SCF / MMBtu

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (INFORMATION)**

**Specific Humidity ($RH_{sp}$)**

Note: RHsp (gr/lb) calculated using temperature, relative humidity, and barometric pressure with psychrometric chart, psychrometric calculator, or built in psychrometric algorithm.

$$RH_{sp}(lb/lb) = \left[\left(\frac{gr}{lb}\right) \times \frac{lb}{7000\,gr}\right]$$

$RH_{sp}$= $\frac{20.48\ gr}{lb}$ x $\frac{1\ lb}{7000\ gr}$ = 0.002926 $\frac{lb\ H_2O}{lb\ Air}$

**Fuel Flow Conversion ($Q_f$)**

Note: Qf(lb/min) is a value obtained from the source operator.

$$Q_f = \left[Q_f \times G \times \left(\frac{1}{MW_{Fuel}}\right)\right]$$

$Q_f$ = $\frac{1{,}616.74\ lb}{min}$ x $\frac{60\ min}{hr}$ x $\frac{385.23\ ft^3}{lb\text{-}mol}$ x $\frac{lb\text{-}mol}{17.02\ lb}$ = 2,195,187 SCFH

**Heat Rate (MMBtu/hr)**

$$HR = \frac{HHV_{DRY} \times Q_f}{1{,}000{,}000}$$

Heat Rate = $\frac{1{,}007.94\ Btu}{SCF}$ x $\frac{2{,}195{,}186.52\ SCF}{hr}$ x $\frac{MMBtu}{10^6\ Btu}$ = $\frac{2{,}212.62\ \ MMBtu}{hr}$

**EXAMPLE CALCULATIONS (CALIBRATION)**

**Analyzer Calibration Error**

RM 7E, (02-27-14), 12.2 Analyzer Calibration Error. For non-dilution systems, use Equation 7E-1 to calculate the analyzer calibration error for the low-, mid-, and high-level calibration gases. (calc for NOx analyzer mid gas, if applicable)

$$ACE = \left(\frac{C_{Dir} - C_V}{CS}\right) \times 100$$ Eq. 7E-1

ACE = $\frac{5.05\ ppm - \ 4.91\ ppm}{8.90\ ppm}$ x 100 = 1.57 %

**Calibration Error and Estimated Point, RM 25A, THC/VOC Analyzer**

RM 25A, (02-27-14), 8.4 Calibration Error Test. Immediately prior to the test series (within 2 hours of the start of the test), introduce zero gas and high-level calibration gas at the calibration valve assembly. Adjust the analyzer output to the appropriate levels, if necessary. Calculate the predicted response for the low-level and mid-level gases based on a linear response line between the zero and high-level response. Then introduce low-level and mid-level calibration gases successively to the measurement system. ... These differences must be less than 5 percent of the respective calibration gas value. (calc for THC/VOC analyzer mid gas, if applicable)

$$E_P = \frac{C_{Dir(H)} - C_{Dir(Z)}}{C_{V(H)} - C_{V(Z)}} \times C_{Dir(M)} + C_{Dir(Z)}$$

Eq. of a line
y=mx+b

$E_p$ = $\frac{8.82\ ppm - \ 0.00\ ppm}{8.77\ ppm - \ 0.00\ ppm}$ x 4.90 ppm + 0.00 = 4.93 ppm

$$ACE = \left(\frac{C_{Dir} - C_V}{CS}\right) \times 100$$ Eq. 7E-1

$ACE_{VOC(}$ = $\frac{4.73\ ppm - \ 4.93\ ppm}{4.90\ ppm}$ x 100 = -4.05 %

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (BIAS, DRIFT, AND CORRECTED RAW AVERAGE)**

**System Bias**

RM 7E, (02-27-14), 12.3 System Bias. For non-dilution systems, use Equation 7E-2 to calculate the system bias separately for the low-level and upscale calibration gases. (calc for NOx analyzer upscale gas, Run 1 initial bias, if applicable)

$$SB = \left(\frac{C_S - C_{Dir}}{CS}\right) \times 100$$ Eq. 7E-2

SB = $\frac{4.84 \text{ ppm} - 5.05 \text{ ppm}}{8.90 \text{ ppm}}$ x 100 = -2.36 %

**Drift Assessment**

RM 7E, (02-27-14), 12.5 Drift Assessment. Use Equation 7E-4 to separately calculate the low-level and upscale drift over each test run. (calc for NOx analyzer upscale drift, Run 1, if applicable)

$$D = \left|SB_{final} - SB_i\right|$$ Eq. 7E-4

D = | -1.35 % - -2.36 % | = 1.01 %

**Alternative Drift and Bias**

RM 7E, (02-27-14), 13.2 / 13.3 System Bias and Drift. Alternatively, the results are acceptable if |Cs – Cdir| is ≤ 0.5 ppmv or if |Cs – Cv| is ≤ 0.5 ppmv (as applicable). (calc for NOx analyzer initial upscale, Run 1, if applicable)

$$SB / D_{Alt} = \left|C_S - C_{Dir}\right|$$ Eq. Section 13.2 and 13.3

$SB / D_{Alt}$ = | 4.84 ppm - 5.05 ppm | = 0.21 ppm

**Bias Adjusted Average**

RM 7E, (02-27-14), 12.6 Effluent Gas Concentration. For each test run, calculate Cavg, the arithmetic average of all valid NOx concentration values (e.g., 1-minute averages). Then adjust the value of Cavg for bias, using Equation 7E-5b. (calc for NOx analyzer, Run 1, if applicable)

$$C_{Gas} = \left(C_{Avg} - C_O\right) \times \left(\frac{C_{MA}}{C_M - C_O}\right)$$ Eq. 7E-5b

$C_{Gas}$ = $\left(2.08 \text{ ppm} - -0.08 \text{ ppm}\right)$ $\left(\frac{4.91 \text{ ppm}}{4.89 \text{ ppm} - -0.08 \text{ ppm}}\right)$ = 2.14 ppm

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (RUNS)**

**Moisture Correction**

RM 7E, (02-27-14), 12.10 Moisture Correction. Use Equation 7E-10 if your measurements need to be corrected to a dry basis. (calc for NOx analyzer, Run 1, if applicable) Note: Calculations may not match as Run 1 results are typically also bias adjusted

$$C_D = \frac{C_W}{1 - B_{WS}}$$ Eq. 7E-10

$C_D$ = $\frac{1.97 \text{ ppmvw}}{1 - 0.08}$ = 2.14 ppmvd or inversely, $C_W = C_D \times \left(1 - B_{WS}\right)$

$C_W$ = 2.14 ppmvd x $\left(1 - 0.08\right)$ = 1.97 ppmvw

**Diluent-Corrected Pollutant Concentration, $O_2$ Based**

RM 20, (11-26-02), 7.3.1 Correction of Pollutant Concentration Using $O_2$ Concentration. Calculate the $O_2$ corrected pollutant concentration, as follows: (calc for NOx gas, Run 1, if applicable) [now contained in applicable Subpart]

$$C_{adj} = C_{Gas(Target)} \times \left(\frac{20.9\% - AdjFactor}{20.9\% - C_{Gas(O2)}}\right)$$ Eq. 20-4

$C_{adj}$ = 2.14 ppm x $\left(\frac{20.9\% - 15.00\ \%}{20.9\% - 13.07\ \%}\right)$ = 1.61 ppm@15%$O_2$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

# TEST RESULTS AND CALCULATIONS

## Emissions Results
## Base Load
## $PM_{10}$

## METHOD 201A (FRONT) AND 202 (BACK) - RESULTS

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base |
| **Project #** | bec-19-cricketvalley.ny-start#2 |

| **Historical Data** | PM U-00002 Base-1 | PM U-00002 Base-2 | PM U-00002 Base-3 | **Average** | **Units** | **Limits** |
|---|---|---|---|---|---|---|
| Run Start Time | 08:15 | 13:30 | 07:23 | | hh:mm | |
| Run Stop Time | 13:16 | 19:48 | 12:15 | | hh:mm | |
| Test Date | 03/09/20 | 03/09/20 | 03/10/20 | | mm/dd/yy | |
| Load | Base | Base | Base | | % or w/DB | -- |
| Meter Calibration Factor | 0.974 | 0.974 | 0.974 | | | |
| Pitot Tube Coefficient | 0.7240 | 0.7240 | 0.7240 | | | |
| Average Nozzle Diameter | 0.156 | 0.156 | 0.156 | | in | |
| **Stack Test Data** | PM U-00002 Base-1 | PM U-00002 Base-2 | PM U-00002 Base-3 | **Average** | **Units** | **Limits** |
| Initial Meter Volume | 364.330 | 468.560 | 572.380 | | $ft^3$ | |
| Final Meter Volume | 468.230 | 570.440 | 675.200 | | $ft^3$ | |
| Total Meter Volume | 103.900 | 101.880 | 102.820 | 102.867 | $ft^3$ | |
| Total Sampling Time | 270.25 | 262.25 | 266.75 | 266.42 | min | |
| Average Meter Temperature | 77.33 | 87.58 | 78.50 | 81.14 | °F | |
| Average Stack Temperature | 189.67 | 191.83 | 190.25 | 190.58 | °F | |
| Barometric Pressure | 30.30 | 30.25 | 30.14 | 30.23 | in Hg | |
| Stack Static Pressure | -0.89 | -0.89 | -0.89 | -0.89 | in $H_2O$ | |
| Absolute Stack Pressure | 30.23 | 30.18 | 30.07 | 30.16 | in Hg | |
| Average Orifice Pressure Drop | 0.46 | 0.46 | 0.46 | 0.46 | in $H_2O$ | |
| Absolute Meter Pressure | 30.44 | 30.39 | 30.28 | 30.37 | in Hg | |
| Avg Square Root Pitot Pressure | 1.19 | 1.15 | 1.17 | 1.17 | $\sqrt{(in\ H_2O)}$ | |
| **Moisture Content Data** | PM U-00002 Base-1 | PM U-00002 Base-2 | PM U-00002 Base-3 | **Average** | **Units** | **Limits** |
| Impinger Water Weight Gain | 164.00 | 145.20 | 140.60 | 149.93 | g | |
| Silica Gel Weight Gain | 31.70 | 24.00 | 23.30 | 26.33 | g | |
| Total Water Volume Collected | 196.05 | 169.51 | 164.20 | 176.58 | ml | |
| Standard Water Vapor Volume | 9.23 | 7.98 | 7.73 | 8.31 | scf | |
| Standard Meter Volume | 100.8 | 96.8 | 99.0 | 98.9 | dscf | |
| Standard Metric Meter Volume | 2.9 | 2.7 | 2.8 | 2.8 | dscm | |
| Calculated Stack Moisture | 8.39 | 7.61 | 7.24 | 7.74 | % | |
| Saturated Stack Moisture | 62.33 | 65.40 | 63.45 | 63.73 | % | |
| Reported Stack Moisture Content | 8.39 | 7.61 | 7.24 | 7.74 | % | |
| **Gas Analysis Data** | PM U-00002 Base-1 | PM U-00002 Base-2 | PM U-00002 Base-3 | **Average** | **Units** | **Limits** |
| Carbon Dioxide Content | 4.9 | 4.8 | 4.8 | 4.8 | % | |
| Oxygen Content | 12.7 | 12.8 | 12.8 | 12.8 | % | |
| Carbon Monoxide Content | 0.0 | 0.0 | 0.0 | 0.0 | ppm | |
| Nitrogen Content | 82.4 | 82.4 | 82.4 | 82.4 | % | |
| Stack Dry Molecular Weight | 29.29 | 29.28 | 29.28 | 29.28 | lb/lb-mole | |
| Stack Wet Molecular Weight | 28.35 | 28.42 | 28.46 | 28.41 | lb/lb-mole | |
| Calculated Fuel Factor | 1.673 | 1.688 | 1.688 | 1.683 | | |
| Fuel F-Factor | 8638.42 | 8638.42 | 8638.67 | 8638.50 | dscf/MMBtu | |
| Percent Excess Air | 140.3 | 143.0 | 143.0 | 142.1 | % | |

## METHOD 201A (FRONT) AND 202 (BACK) - RESULTS

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base |
| **Project #** | bec-19-cricketvalley.ny-start#2 |

| **Volumetric Flow Rate Data** | PM U-00002 Base-1 | PM U-00002 Base-2 | PM U-00002 Base-3 | **Average** | **Units** | **Limits** |
|---|---|---|---|---|---|---|
| Average Stack Gas Velocity | 63.94 | 62.27 | 63.24 | 63.15 | ft/sec | |
| Stack Cross-Sectional Area | 283.53 | 283.53 | 283.53 | 283.53 | ft² | |
| Actual Stack Flow Rate | 1,087,671 | 1,059,255 | 1,075,842 | 1,074,256 | acfm | |
| Wet Standard Stack Flow Rate | 53,596 | 51,936 | 52,685 | 52,739 | wkscfh | |
| Dry Standard Stack Flow Rate | 49,102,141 | 47,983,757 | 48,871,628 | 48,652,509 | dscfh | |
| Percent of Isokinetic Rate | 97.5 | 98.8 | 97.5 | 97.9 | % | |
| **Gravimetric Analysis** | PM U-00002 Base-1 | PM U-00002 Base-2 | PM U-00002 Base-3 | **Average** | **Units** | **Limits** |
| $NH_4OH$ Correction | 0.0000 | 0.0000 | 0.0000 | 0.0000 | ml | |
| $NH_4OH$ Correction | 0.0000 | 0.0000 | 0.0000 | 0.0000 | mg | |
| **Emission Rate Data** | PM U-00002 Base-1 | PM U-00002 Base-2 | PM U-00002 Base-3 | **Average** | **Units** | **Limits** |
| Total $PM_{10}$ Mass | 9.10 | 9.80 | 7.60 | 8.83 | mg | -- |
| Total $PM_{10}$ Concentration | 9.03E-05 | 1.01E-04 | 7.67E-05 | 8.94E-05 | g/dscf | -- |
| | 1.39E-03 | 1.56E-03 | 1.18E-03 | 1.38E-03 | gr/dscf | -- |
| Total $PM_{10}$ Emission Rate | 4.43 | 4.86 | 3.75 | 4.35 | kg/hr | -- |
| | 9.77 | 10.70 | 8.27 | 9.58 | lb/hr | -- |
| | 42.80 | 46.89 | 36.22 | 41.97 | tpy | -- |
| | 0.0044 | 0.0050 | 0.0038 | 0.0044 | lb/MMBtu | 0.005 |
| Filterable $PM_{10}$ Mass | 2.70 | 3.10 | 1.70 | 2.50 | mg | -- |
| Filterable $PM_{10}$ Concentration | 2.68E-05 | 3.20E-05 | 1.72E-05 | 2.53E-05 | g/dscf | -- |
| | 4.13E-04 | 4.94E-04 | 2.65E-04 | 3.91E-04 | gr/dscf | -- |
| Filterable $PM_{10}$ Emission Rate | 1.32 | 1.54 | 0.84 | 1.23 | kg/hr | -- |
| | 2.90 | 3.39 | 1.85 | 2.71 | lb/hr | -- |
| | 12.70 | 14.83 | 8.10 | 11.88 | tpy | -- |
| | 0.0013 | 0.0016 | 0.0008 | 0.0012 | lb/MMBtu | -- |
| Condensable $PM_{10}$ Mass | 6.40 | 6.70 | 5.90 | 6.33 | mg | -- |
| Condensable $PM_{10}$ Concentration | 6.35E-05 | 6.92E-05 | 5.96E-05 | 6.41E-05 | g/dscf | -- |
| | 9.80E-04 | 1.07E-03 | 9.19E-04 | 9.89E-04 | gr/dscf | -- |
| Condensable $PM_{10}$ Emission Rate | 3.12 | 3.32 | 2.91 | 3.12 | kg/hr | -- |
| | 6.87 | 7.32 | 6.42 | 6.87 | lb/hr | -- |
| | 30.10 | 32.06 | 28.12 | 30.09 | tpy | -- |
| | 0.0031 | 0.0034 | 0.0029 | 0.0031 | lb/MMBtu | -- |
| **RM 201A Quality Control** | PM U-00002 Base-1 | PM U-00002 Base-2 | PM U-00002 Base-3 | **Average** | **Units** | **Limits** |
| Stack Viscosity | 201.67 | 202.96 | 202.93 | 202.52 | µP | |
| Cyclone Flow Rate | 0.496 | 0.489 | 0.490 | 0.492 | ft³/min | |
| Dry Gas Sampling Rate | 0.373 | 0.369 | 0.371 | 0.371 | dscfm | |
| Reynolds Number | 2802.09 | 2740.48 | 2748.34 | 2,763.64 | | |
| Recalculated Cunninham | 1.079 | 1.077 | 1.078 | 1.078 | | |
| Dia. of 50% Prob. (D50) CI | 10.45 | 10.60 | 10.58 | 10.54 | | |
| Recalculated D50-1 for CIV | 2.31 | 2.37 | 2.36 | 2.35 | | |
| Z | 1.00 | 1.00 | 1.00 | 1.00 | | |
| No. Sampling Pts. Outside Δp | 0 | 0 | 0 | 0 | points | |

## Nomenclature

- %CO = carbon monoxide concentration (%)
- $\%CO_2$ = carbon dioxide concentration (%)
- $\%N_2$ = nitrogen concentration (%)
- $\%O_2$ = oxygen concentration (%)
- $\%O_{2,wet}$ = Oxygen content of gas stream, % by volume of wet gas. (Note: The oxygen percentage used in Method 201A, Equation 3 is on a wet gas basis. That means that since oxygen is typically measured on a dry gas basis, the measured percent O2 must be multiplied by the quantity $(1 - B_{ws})$ to convert to the actual volume fraction. Therefore, $\%O_{2,wet} = (1 - B_{ws}) * \%O_{2, dry}$)
- $(\%EA)_{avg}$ = average excess air (%)
- $(F_o)_{avg}$ = average calculated fuel factor
- $[(\Delta p)^{0.5}]_{avg}$ = Average of square roots of the velocity pressures measured during the preliminary traverse, inches W.C.
- μ = Gas viscosity, micropoise
- 12.0 = Constant calculated as 60 percent of 20.5 square inch cross-sectional area of combined cyclone head, square inches
- 17.03 = mg/milliequivalents for ammonium ion
- 22.4 = liters of ideal gas per lb-mol of substance at $0^oC$ and 1 atm (ref. Civil Engineering Reference Manual, 7th ed. - Michael R. Lindeburg)
- 24.04 = liters of ideal gas per lb-mol of substance at $20^oC$ and 1 atm (ref. Civil Engineering Reference Manual, 7th ed. - Michael R. Lindeburg)
- $5.02 \times 10^4$ = constant derived from the molecular weight and correcting standard temperature and pressure (ref. Bay Area Air Quality Management District, Source Test Procedure ST-1B, Ammonia Integrated Sampling, Adopted January 20, 1982, Regulation 7-303)
- A = distance upstream (in.)
- $A_D$ = stack diameters upstream (dia.)
- An = Area of nozzle, square feet
- $A_s$ = area of stack ($ft^2$)
- B = distance downstream (in.)
- $B_D$ = stack diameters downstream (dia.)
- $b_f$ = Average blockage factor calculated in Equation 26, dimensionless
- $B_{wm}$ = meter moisture content (%)
- $B_{ws}$ = stack moisture content (%)
- C = Cunningham correction factor for particle diameter, Dp, and calculated using the actual stack gas temperature, dimensionless
- $C_1$ = -150.3162 (micropoise)
- $C_2$ = 18.0614 (micropoise/$K^{0.5}$) = 13.4622 (micropoise/$R^{0.5}$)
- $C_3$ = $1.19183 \times 10^6$ (micropoise/$K^2$) = $3.86153 \times 10^6$ (micropoise/$R^2$)
- $C_4$ = 0.591123 (micropoise)
- $C_5$ = 91.9723 (micropoise)
- $C_6$ = $4.91705 \times 10^{-5}$ (micropoise/$K^2$) = $1.51761 \times 10^{-5}$ (micropoise/$R^2$)
- $C_a$ = Acetone blank concentration, mg/mg
- $C_b$ = Concentration of NH3 ion in the back half of train (breakthrough)
- $C_f$ = Concentration of NH3 ion in the front half of train (main catch)
- $C_{fPM10}$ = Conc. of filterable $PM_{10}$, gr/dscf
- $C_{fPM2.5}$ = Conc. of filterable $PM_{2.5}$, gr/dscf
- $C_k$ = K Factor Constant, 849.8

## Nomenclature

- $C_n$ = nozzle diameter constant, 0.03575
- $C_p$' = Coefficient for the pitot used in the preliminary traverse, dimensionless
- $C_p$ = Pitot coefficient for the combined cyclone pitot, dimensionless
- $C_{cpm}$ = Concentration of the condensable PM in the stack gas, dry basis, corrected to standard conditions, milligrams/dry standard cubic foot.
- $C_r$ = Re-estimated Cunningham correction factor for particle diameter equivalent to the actual cut size diameter and calculated using the actual stack gas temperature, dimensionless
- $D_{50}$ = Particle cut diameter, micrometers
- $D_{50(N+1)}$ = $D_{50}$ value for cyclone IV calculated during the N+1 iterative step, micrometers
- $D_{50-1}$ = Re-calculated particle cut diameters based on re-estimated $C_r$, micrometers
- $D_{50LL}$ = Cut diameter for cyclone I corresponding to the 2.25 micrometer cut diameter for cyclone IV, micrometer
- $D_{50N}$ = $D_{50}$ value for cyclone IV calculated during the Nth iterative step, micrometers
- $D_{50T}$ = Cyclone I cut diameter corresponding to the middle of the overlap zone shown in Method 201A, Figure 10 of Section 17, micrometers
- $D_e$ = equivalent stack diameter (in.)
- ΔH@ = ΔH @ 0.75 scfm (in. H2O)
- $\Delta H_{avg}$ = average orifice pressure (in. $H_2O$)
- $D_n$ = Inner diameter of sampling nozzle mounted on Cyclone I, inches
- $D_{na}$ = actual nozzle diameter (in.)
- $D_p$ = Physical particle size, micrometers
- $\Delta p$ = velocity head (in. $H_2O$)
- $\Delta p_1$ = velocity head at first current traverse point (in. $H_2O$)
- $\Delta p'_1$ = velocity head at first preliminary traverse point (in. $H_2O$)
- $\Delta p_{avg}$ = average pitot tube differential pressure (in. $H_2O$)
- $\Delta p_n$ = velocity head at subsequent current traverse point (in. $H_2O$)
- $\Delta p_{RM2}$ = method 2 velocity head (in. $H_2O$)
- $D_s$ = diameter of stack (in.)
- $F_d$ = fuel f-factor (dscf/MMBtu)
- $f_{O2}$ = stack gas fraction of $O_2$, by volume, dry basis
- I = Percent isokinetic sampling, dimensionless
- $K_1$ = standard volume correction, 17.65$^{o}$R/in. Hg
- $K_4$ = isokinetic conversion constant, 0.0945min•in.Hg/sec•$^{o}$R
- $K_5$ = water mass to std water vapor, 0.04715 $ft^3$/g
- $K_p$ = 85.49, ((ft/sec)/(pounds/mole -$^{o}$R))
- L = length of stack (in.)
- $L_{fw}$ = distance to far wall of stack (in.)
- $L_{nw}$ = distance to near wall of stack (in.) [reference]
- $m_{\#x}$ = weight measurements (g)
- $M_1$ = Milligrams of PM collected on the filter, less than or equal to 2.5 micrometers
- $M_2$ = Milligrams of PM recovered from Container #2 (acetone blank corrected), greater than 10 micrometers
- $M_3$ = Milligrams of PM recovered from Container #3 (acetone blank corrected), less than or equal to 10 and greater than 2.5 micrometers
- $M_4$ = Milligrams of PM recovered from Container #4 (acetone blank corrected), less than or equal to 2.5 micrometers

## Nomenclature

- $m_a$ = Mass of residue of acetone after evaporation, mg
- $m_c$ = Mass of the NH4+ added to sample to form ammonium sulfate, mg
- $m_{cpm}$ = Mass of the total condensable PM, mg
- $M_d$ = Molecular weight of dry gas, pounds/pound mole
- $m_{fb}$ = Mass of total CPM in field train recovery blank, mg
- $m_{fx}$ = final weight, avg of last two measurements (g)
- mg = Milligram
- mg/L = Milligram per liter
- $m_i$ = Mass of inorganic CPM, mg
- $m_{ib}$ = Mass of inorganic CPM in field train recovery blank, mg
- $M_n$ = total particulates (mg)
- $m_o$ = Mass of organic CPM, mg
- $m_{ob}$ = Mass of organic CPM in field train blank, mg
- $m_r$ = Mass of dried sample from inorganic fraction, mg
- $m_{tx}$ = tare weight (g)
- MW = molecular weight (lb/lb-mole)
- $M_w$ = Molecular weight of wet gas, pounds/pound mole
- N = Normality of ammonium hydroxide titrant
- $N_a$ = null angle (deg.)
- $N_{re}$ = Reynolds number, dimensionless
- $N_{tp}$ = Number of iterative steps or total traverse points
- $P_b$ = $P_{bar}$ = barometric pressure (in. Hg)
- $P_{bar}$ = barometric pressure (in. Hg)
- ppmCO = carbon monoxide concentration (ppm)
- ppmv = Parts per million by volume
- ppmw = Parts per million by weight
- $P_s$ = absolute stack pressure (in. Hg)
- $P_{static}$ = static pressure (in. $H_2O$)
- $P_{std}$ = standard pressure, 29.92 in. Hg
- $\Theta$ = total sampling time (min)
- $Q_{aw}$ = average stack wet flow rate (ascf/min)
- $Q_I$ = Sampling rate for cyclone I to achieve specified $D_{50}$
- $Q_m$ = estimated orifice flow rate, 0.750 acfm, else Vm/Q from previous run
- $Q_s$ = Sampling rate for cyclone I to achieve specified $D_{50}$
- $Q_{s(std)}$ = total cyclone flow rate at standard conditions (dscf/min)
- $Q_{sd}$ = dry standard stack flow rate (dscfm)
- $Q_{sST}$ = Dry gas sampling rate through the sampling assembly, dscfm
- $Q_{sw}$ = wet standard stack flow rate (ascfm)
- $R_{max}$ = Nozzle/stack velocity ratio parameter, dimensionless
- $R_{min}$ = Nozzle/stack velocity ratio parameter, dimensionless
- $t_1$ = Sampling time at point 1, min
- $t_m$ = average gas meter temperature ($^oF$)
- $t_m$ = average meter temperature ($^oF$)
- $T_m$ = Meter box and orifice gas temperature, $^oR$
- $t_n$ = Sampling time at point n, min

## Nomenclature

- $t_r$ = Total projected run time, min
- $T_s$ = Absolute stack gas temperature, $^oR$
- $T_{std}$ = standard temperature, $68^oF$, $528^oR$
- $T_u$ = absolute temperature offset, $460^oR$
- $V_a$ = Volume of acetone blank, ml
- $V_{aw}$ = Volume of acetone used in sample recovery wash, ml
- $V_b$ = Volume of aliquot taken for IC analysis, ml
- $V_c$ = Quantity of water captured in impingers and silica gel, ml
- $V_f$ = final impinger volume (ml)
- $V_i$ = initial impinger volume (ml)
- $V_{ic}$ = Volume of impinger contents sample, ml
- $V_m$ = Dry gas meter volume sampled, acf
- $V_{m(std)}$ = standard meter volume (dscf)
- $v_{max}$ = Maximum gas velocity calculated from Equations 18 or 19, ft/sec
- $v_{max}$ = maximum nozzle velocity (ft/sec)
- $V_{mf}$ = final dry gas meter reading (dcf)
- $V_{mi}$ = initial dry gas meter reading (dcf)
- $v_{min}$ = Minimum gas velocity calculated from Method 201A, Equations 16 or 17, ft/sec
- $V_{ms}$ = Dry gas meter volume sampled, corrected to standard conditions, dscf
- $v_n$ = Sample gas velocity in the nozzle, ft/sec
- $v_{org}$ = organics wash volume (ml)
- $V_p$ = Volume of water added during train purge
- $v_s$ = average stack gas velocity (ft/sec)
- $v_{sl}$ = local velocity (ft/sec)
- $V_t$ = total impinger volume (ml) = ;$(V_f-V_i)$
- $V_t$ = Volume of NH4OH titrant, ml
- $V_{w(std)}$ = volume of water vapor in gas sample at standard conditions (scf)
- $v_x$ = blank volume (ml)
- W = width of stack (in.)
- $W_{2,3,4}$ = Weight of PM recovered from Containers #2, #3, and #4, mg
- $W_a$ = Weight of blank residue in acetone used to recover samples, mg
- $W_f$ = final impinger weight (g)
- $W_i$ = initial impinger weight (g)
- $W_t$ = total impinger weight (g) = ;$(W_f-W_i)$
- $w_x$ = blank weight of solids (g)
- Y = meter calibration factor (a.k.a gamma)
- Z = Ratio between estimated cyclone IV $D_{50}$ values, dimensionless
- γ = Dry gas meter gamma value, dimensionless
- ΔH = Meter box orifice pressure drop, inches W.C.
- ΔH@ = Pressure drop across orifice at flow rate of 0.75 scfm at standard conditions, inches W.C. (Note: Specific to each orifice and meter box.)
- $\Delta p_1$ = Velocity pressure measured at point 1, inches W.C.
- $\Delta p_{avg}$ = Average velocity pressure, inches W.C.
- $\Delta p_m$ = Observed velocity pressure using S-type pitot tube in preliminary traverse, inches W.C.
- $\Delta p_{max}$ = Maximum velocity pressure, inches W.C.

## Nomenclature

- $\Delta p_{min}$ = Minimum velocity pressure, inches W.C.
- $\Delta p_n$ = Velocity pressure measured at point n during the test run, inches W.C.
- $\Delta p_s$ = Velocity pressure calculated in Method 201a, Equation 25, inches W.C.
- $\Delta p_{s1}$ = Velocity pressure adjusted for combined cyclone pitot tube, inches W.C.
- $\Delta p_{s2}$ = Velocity pressure corrected for blockage, inches W.C.
- $\theta$ = Total run time, min
- $\rho_a$ = Density of acetone, mg/ml (see label on bottle)
- $\Sigma_n$ = total number of sampling points

**EXAMPLE CALCULATIONS (Reference Method 1 - Circular Stack)**

**Diameter of Stack (in.)**

$$D(in.) = L_{fw} - L_{nw}$$

D (in.) = 236.00 in. - 8.00 in. = 228.00 in.

**Stack Diameters Downstream**

$$B_D\,(dia.) = \frac{B}{D}$$

$B_D$ (dia.) = $\frac{850.00 \text{ in.}}{228.00 \text{ in.}}$ = 3.73 diameters

**Area of Stack ($ft^2$)**

$$A_s\,(ft^2) = \pi \times \left(\frac{D}{2 \times 12}\right)^2$$

$A_s$ ($ft^2$) = 3.14 x ( $\frac{228.00 \text{ in.}}{2 \text{ x } 12\text{in./ft}}$ )$^2$ = 283.53 $ft^2$

**Stack Diameters Upstream**

$$A_D\,(dia.) = \frac{A}{D}$$

$A_D$ (dia.) = $\frac{200.40 \text{ in.}}{228.00 \text{ in.}}$ = 0.88 diameters

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Reference Method 3a) [Values from Run 1 test]**

**Carbon Monoxide Concentration (%)**

$$\%CO = \frac{ppmCO}{10{,}000}$$

$$\%CO\ (\%) = \frac{0.00 \quad ppm}{10{,}000\ ppm/\%} = 0.0000\ \%$$

**Nitrogen Concentration (%)**

$$\%N_2 = 100 - \%CO_2 - \%O_2 - \%CO$$

$\%N_2$ (%) = 100 - 4.90 % - 12.70 % - 0.00 / 10,000 % = 82.4 %

**Stack Dry Molecular Weight (lb/lb-mole)**

$$M_d\,(lb/lb-mol) = \sum\left(\frac{MW_{comp}}{100} \times \%component\right)$$

$M_d$ (lb/lb-mol) = ( $\frac{44 \text{ lb/lb-mol}}{100}$ x 4.90 % ) +

( $\frac{32 \text{ lb/lb-mol}}{100}$ x 12.70 %) + ( $\frac{28 \text{ lb/lb-mol}}{100}$ x [ $\frac{0.00}{10{,}000}$ + 82.40 ] ) = $\frac{29.29 \text{ lb}}{\text{lb-mol}}$

**Stack Wet Molecular Weight (lb/lb-mole)**

$$M_S\,(lb/lb-mol) = \left[M_d \times \left(1 - \frac{B_{WS}}{100}\right)\right] + \left[MW_{H_2O} \times \frac{B_{WS}}{100}\right]$$

$M_S$ (lb/lb-mol) = { $\frac{29.29 \text{ lb}}{\text{lb-mol}}$ x (1 - $\frac{8.39 \%}{100}$ ) } + { $\frac{18 \text{ lb}}{\text{lb-mol}}$ x $\frac{8.39 \%}{100}$ } = $\frac{28.35 \text{ lb}}{\text{lb-mol}}$

**Average Calculated Fuel Factor ($F_o$)**

$$F_{o(avg)} = \frac{\left[20.9 - (\%O_2)_{avg} - (0.5 \times (\%CO)_{avg})\right]}{(\%CO_2)_{avg} + (\%CO)_{avg}}$$

$F_{o(avg)}$ = $\frac{20.9\% - 12.70\ \% - (0.5 \text{ x } 0.000\ \%)}{4.90\ \% + 0.000\ \%}$ = 1.673

**Average Excess Air (%)**

$$\%EA_{avg}\,(\%) = \frac{100 \times \left[(\%O_2)_{avg} - (0.5 \times (\%CO)_{avg})\right]}{(0.264 \times (N_2)_{avg}) - \left[(\%O_2)_{avg} - (0.5 \times (\%CO)_{avg})\right]}$$

$(\%EA)_{AVG}$ = $\frac{100 \text{ x } \{ \ 12.70\ \% - (0.5 \text{ x } 0.000\ \%) \}}{(\ 0.264 \text{ x } 82.40\ \%) - \{\ 12.70\ \% - (0.5 \text{ x } 0.000\ \%)\}}$ = 140.28 %

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Reference Method 2) [Values from Run 1 test]**

**Absolute Stack Pressure (in. Hg)**

$$P_S\,(in.Hg) = P_b + \frac{P_{static}}{13.6}$$

$P_s$ (in. Hg) = 30.30 in. Hg + $\frac{\text{-0.89 in. } H_2O}{\text{13.6 in. } H_2O/\text{in. Hg}}$ = 30.23 in. Hg

**Average Stack Gas Velocity (ft/sec)**

$$v_s\,(ft/\sec) = K_p \times C_p \times \left(\sqrt{\Delta p}\right)_{avg} \times \sqrt{\frac{(t_s)_{avg} + T_u}{P_s \times M_s}}$$

$v_{sl}$ (ft/sec) =

$\left(\frac{85.49 \text{ ft (lb/lb-mol)(in. Hg)}}{\text{sec } (^oR)(\text{in. } H_2O)}\right)^{1/2}$ x 0.72 x 1.19 in.$H_2O^{1/2}$ x $\sqrt{\frac{189.67 + 460\ ^oR}{30.23 \text{ in. Hg x } 28.35 \text{ lb/lb-mol}}}$ = $\frac{63.9 \text{ ft}}{\text{sec}}$

**Average Stack Dry Standard Flow Rate (dscfh)**

$$Q_{sd}\,(dscfh) = \frac{60 \times 60 \times \left(1 - \frac{B_{ws}}{100}\right) \times v_s \times A_s \times T_{std} \times P_s}{(t_s + T_u) \times P_{std}}$$

$Q_{sd}$ (dscf/hr) = $\frac{3600 \text{ sec}}{\text{hr}}$ x (1 - $\frac{8.39\ \%}{100}$) x $\frac{63.94 \text{ ft}}{\text{sec}}$ x 283.53 $ft^2$ x $\frac{68.00 + 460\ ^oR}{189.67 + 460\ ^oR}$ x $\frac{30.23 \text{ in. Hg}}{29.92 \text{ in. Hg}}$ = $\frac{49{,}102{,}141.46 \text{ dscf}}{\text{hr}}$

**Average Stack Wet Flow Rate (acfm)**

$$Q_{aw}\,(acfm) = 60 \times v_s \times A_s$$

$Q_{aw}$ (acf/min) = $\frac{60 \text{ sec}}{\text{min}}$ x $\frac{63.94 \text{ ft}}{\text{sec}}$ x 283.53 $ft^2$ = $\frac{1{,}087{,}671.38 \text{ acf}}{\text{min}}$

**Average Stack Wet Standard Flow Rate (ascfh)**

$$Q_{sw}\,(ascfh) = \frac{60 \times Q_{aw} \times T_{std} \times P_s}{(t_s + T_u) \times P_{std}}$$

$Q_{sw}$ (ascf/hr) = $\frac{60 \text{ min}}{\text{hr}}$ x $\frac{1{,}087{,}671.38 \text{ acf}}{\text{min}}$ x $\frac{68.00 + 460\ ^oR}{189.67 + 460\ ^oR}$ x $\frac{30.23 \text{ in. Hg}}{29.92 \text{ in. Hg}}$ = $\frac{53{,}596{,}241.59 \text{ ascf}}{\text{hr}}$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Reference Method 4) [Values from Run 1 test]**

**Water Volume Weighed (scf)**

$$V_{wsg\ (std)}(scf) = W_t \times K_5$$

$V_{wsg(std)}$ = 195.70 g x 0.04715 $ft^3/g$ = 9.227 scf

**Standard Meter Volume (dscf)**

$$V_{m(std)}(dscf) = \frac{K_1 \times Y \times V_m \times \left(P_b + \frac{\Delta H_{avg}}{13.6}\right)}{(t_m)_{avg} + T_u}$$

$$V_{m(std)} = \frac{17.65\ ^\circ R}{\text{in. Hg}} \times 0.97 \times 103.90\ \text{dcf} \times \frac{(30.30\ \text{in. Hg} + \frac{0.46\ \text{in. } H_2O}{13.6\ \text{in. } H_2O / \text{in. Hg}})}{77.33\ ^\circ F + 460\ ^\circ R} = 100.82\ \text{dscf}$$

**Calculated Moisture Content (%)**

$$B_{ws(calc)}(\%) = 100 \times \frac{V_{wsg(std)}}{V_{wsg(std)} + V_{m(std)}}$$

$$B_{ws(calc)} = 100 \times \frac{9.23\ \text{dscf}}{9.23\ \text{dscf} + 100.82\ \text{dscf}} = 8.39\ \%$$

**Saturated Moisture Content (%)**

$$B_{ws(svp)}(\%) = 100 \times \frac{10^{\left(6.691 - \frac{3144}{t_{s(avg)} + 390.86}\right)}}{P_b + \frac{P_{static}}{13.6}} \leq 100$$

$$B_{ws(svp)} = 100 \times \frac{10^{\left(6.691 - \frac{3144}{189.67\ ^\circ F + 390.86}\right)}}{30.30\ \text{in. Hg} + \frac{-0.89\ \text{in. } H_2O}{13.6\ \text{in. } H_2O / \text{in. Hg}}} \leq 100 = 62.33\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Isokinetic Sampling) [Values from Run 1 test]**

**Desired Orifice (in. $H_2O$)** (first point)

$$\Delta H_d\,(in.H_2O) = K \times \Delta p$$

$\Delta H_d$ (in. $H_2O$) = x

in. $H_2O$ = in. $H_2O$

**Absolute Meter Pressure (in. Hg)**

$$P_m\,(in.Hg) = P_b + \frac{\Delta H @}{13.6}$$

$P_m$ (in. Hg) = 30.30 in. Hg + $\frac{1.88 \text{ in. } H_2O}{13.6 \text{ in. } H_2O/\text{in. Hg}}$ = 30.44 in. Hg

**Recommended Nozzle Diameter (in.)**

$$D_{ni}\,(in.) = \sqrt{\frac{C_n \times Q_m \times P_m}{(t_m + T_u) \times C_p} \times \left(\frac{1 - \frac{B_{wm}}{100}}{1 - \frac{B_{ws}}{100}}\right)} \times \sqrt{(t_s + T_u) \times \left[\frac{M_d \times \left(1 - \frac{B_{ws}}{100}\right) + \left(18 \times \frac{B_{ws}}{100}\right)}{P_s \times \Delta p_{avg}}\right]}$$

$D_{ni}$ (in.) = $\sqrt{\frac{0.03575 \text{ (lb-mole•°R•in. } H_2O)^{1/2}\text{•min•in.}^2}{\text{acf•in. Hg}^{3/4}\text{•lb}^{1/2}} \text{ x } 0.75 \text{ acf x } 30.44 \text{ in. Hg } \left(1 - \frac{0.00\ \%}{100}\right) \text{ x } \left(\frac{1 - \frac{0.00\ \%}{100}}{1 - \frac{8.39\ \%}{100}}\right) \text{ x } \left(\frac{77.33 \text{ °F} + 460\text{°R}}{0.72}\right) \text{ x } \left(189.67 \text{ °F} + 460\text{°R}\right) \text{ x } \frac{\frac{29.29 \text{ lb}}{\text{lb-mole}} \text{ x } \left(1 - \frac{8.39\ \%}{100}\right) + \left(\frac{18 \text{ lb}}{\text{lb-mol}} \text{ x } \frac{8.39\ \%}{100}\right)}{30.23 \text{ in. Hg x } 1.19 \text{ in. } H_2O}}$ = 0.218 in.

**ΔP to ΔH Isokinetic Factor**

$$K = C_k \times C_p^2 \times \Delta H @ \times D_{na}^4 \times \left[\frac{M_d \times \left(1 - \frac{B_{wm}}{100}\right) + \left(18 \times \frac{B_{wm}}{100}\right)}{M_d \times \left(1 - \frac{B_{ws}}{100}\right) + \left(18 \times \frac{B_{ws}}{100}\right)}\right] \times \left(\frac{1 - \frac{B_{ws}}{100}}{1 - \frac{B_{wm}}{100}}\right)^2 \times \left(\frac{t_m + T_u}{ts + T_u}\right) \times \frac{P_s}{P_m}$$

K = $\frac{849.8}{\text{in. } H_2O\text{•in.}^4}$ x 0.72 $^2$ x 1.88 in. $H_2O$ x 0.16 $^4$ x $\left(\frac{1 - \frac{8.39\ \%}{100}}{1 - \frac{0.00\ \%}{100}}\right)^2$ x $\frac{77.33 \text{ °F} + 460\text{°R}}{189.67 \text{ °F} + 460\text{°R}}$ ) x ( $\frac{\frac{29.29 \text{ lb}}{\text{lb/mole}} \text{ x } \left(1 - \frac{0.00\ \%}{100}\right) + \left(\frac{18 \text{ lb}}{\text{lb-mol}} \text{ x } \frac{0.00\ \%}{100}\right)}{\frac{29.29 \text{ lb}}{\text{lb/mole}} \text{ x } \left(1 - \frac{8.39\ \%}{100}\right) + \left(\frac{18 \text{ lb}}{\text{lb-mol}} \text{ x } \frac{8.39\ \%}{100}\right)}$ x $\frac{30.23 \text{ in. Hg}}{30.44 \text{ in. Hg}}$ = 0.35

**Percent Isokinetic (%)** (first point)

$$I(\%) = \frac{K_4 \times \left((t_s)_{avg} + T_u\right) \times V_{m(std)}}{\left(\Theta \times (v_{s(l)})_{avg} \times P_s \times \pi \times \left(\frac{D_{na}}{2} \times \frac{1}{12}\right)^2\right) \times \left(1 - \frac{B_{ws}}{100}\right)}$$

I (%) = $\frac{0.0945 \text{ min•in. Hg}}{\text{sec•°R}}$ x ( 191.00 °F + 460 °R) x 8.41 dscf

$\frac{}{22.50 \text{ min x } \frac{63.83 \text{ ft}}{\text{sec}} \text{ x } 30.23 \text{ in. Hg x } 3.14 \text{ x } \left(\frac{0.16 \text{ in.}}{2} \text{ x } \frac{\text{ft.}}{12 \text{ in.}}\right)^2 \text{ x } \left(1 - \frac{8.39\ \%}{100}\right)}$ = 97.99 %

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Isokinetic Sampling) [Values from Run 1 test]**

**Cumulative Percent Isokinetic (%)** (weighted average of all points)

$$I(\%) = \sum_{1-n} \frac{\left[I(\%) \times V_{m(std)}\right]_{1-n}}{V_{m(std)_{1-n}}}$$

Using Method 5, Eq 5-8 to determine intermediate isokinetics at each point, weighted averaging of the cumulative isokinetics is necessary since all points are not equal, and determined by using the dry standard meter volume collected at each point to weight the cumulative average. Intermediate isokinetics and dry standard meter volumes are found at each point. At each point the cumulative sum is found of each value and the quotient of the two used to determine the cumulative isokinetics for each residual point (n).

| Pt | In (%) | x | Vm(std)n | = | I (%)n | ∑(I (%)n) | / | ∑(Vm(std)n) | = | I (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| A-1 | 97.99 | x | 8.410 | = | 824.08 | 824.08 | / | 8.41 | = | 98.0 |
| A-2 | 96.71 | x | 8.306 | = | 803.28 | 1627.35 | / | 16.72 | = | 97.3 |
| A-3 | 94.83 | x | 7.506 | = | 711.79 | 2339.14 | / | 24.22 | = | 96.6 |
| B-1 | 102.98 | x | 9.461 | = | 974.30 | 3313.44 | / | 33.68 | = | 98.4 |
| B-2 | 94.42 | x | 8.122 | = | 766.87 | 4080.31 | / | 41.81 | = | 97.6 |
| B-3 | 95.04 | x | 8.170 | = | 776.44 | 4856.75 | / | 49.98 | = | 97.2 |
| C-1 | 101.69 | x | 8.043 | = | 817.88 | 5674.63 | / | 58.02 | = | 97.8 |
| C-2 | 96.79 | x | 8.886 | = | 860.06 | 6534.69 | / | 66.90 | = | 97.7 |
| C-3 | 96.92 | x | 8.325 | = | 806.84 | 7341.53 | / | 75.23 | = | 97.6 |
| D-1 | 91.52 | x | 8.415 | = | 770.17 | 8111.70 | / | 83.64 | = | 97.0 |
| D-2 | 98.83 | x | 8.489 | = | 839.01 | 8950.71 | / | 92.13 | = | 97.1 |
| D-3 | 100.83 | x | 8.668 | = | 873.96 | 9824.67 | / | 100.80 | => | 97.5 |

Last Pt

**Percent Isokinetic (%)** (intermediate equation, all points)
[equivalent to taking an average of point-by-point isokinetics without weighting the average (e.g. all points equal)]

$$I(\%) = \frac{K_4 \times \left((t_s)_{avg} + T_u\right) \times V_{m(std)}}{\left(\Theta \times (v_{s(l)})_{avg} \times P_s \times \pi \times \left(\frac{D_{na}}{2} \times \frac{1}{12}\right)^2\right) \times \left(1 - \frac{B_{ws}}{100}\right)}$$

$$I(\%) = \frac{\frac{0.0945 \text{ min•in. Hg}}{\text{sec•}^{\circ}\text{R}} \times (189.67\ ^{\circ}\text{F} + 460\ ^{\circ}\text{R}) \times 100.82 \text{ dscf}}{270.25 \text{ min} \times \frac{63.94 \text{ ft}}{\text{sec}} \times 30.23 \text{ in. Hg} \times 3.14 \times \left(\frac{0.16 \text{ in.}}{2} \times \frac{\text{ft.}}{12 \text{ in.}}\right)^2 \times \left(1 - \frac{8.39\ \%}{100}\right)} = 97.43\ \%$$

**Raw Data Percent Isokinetic (%)**
[utilizes the raw data equation for isokinetics from Method 5]

$$I(\%) = \frac{100\left((t_s)_{avg} + T_u\right)\left[K_4 V_{1c} + \frac{V_m Y}{(t_m)_{avg} + T_u}\left(P_{bar} + \frac{\Delta H}{13.6}\right)\right]}{60\left(\Theta \times (v_{s(l)})_{avg} \times P_s \times \pi \times \left(\frac{D_{na}}{2} \times \frac{1}{12}\right)^2\right)}$$

$$I(\%) = \frac{100 \times (189.67\ ^{\circ}\text{F} + 460\ ^{\circ}\text{R}) \times \left[\frac{0.002669 \text{ ft}^3\text{•in. Hg}}{\text{ml•}^{\circ}\text{R}} \times 196.1 \text{ ml} + \frac{103.90 \text{ dcf} \times 0.974}{77.33\ ^{\circ}\text{F} + 460\ ^{\circ}\text{R}} \left(30.30 \text{ in Hg} + \frac{1.186}{13.6}\right)\right]}{60 \times 270.25 \text{ min} \times \frac{63.94 \text{ ft}}{\text{sec}} \times 30.23 \text{ in. Hg} \times 3.14 \times \left(\frac{0.16 \text{ in.}}{2} \times \frac{\text{ft.}}{12 \text{ in.}}\right)^2} = 97.54\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Gravimetric Analysis) [Values from Run 1 test]**

**Blank Concentration [Acetone Blank Weight of Solids] (mg/ml)**

$$C_x(mg/ml) = \frac{1000 \times w_x}{v_x}$$

$C_x$ (mg/ml) = $\frac{1000\ mg}{g}$ x $\frac{0.0000\ g}{200.60\ ml}$ = $\frac{0.0000\ mg}{ml}$ = $\frac{\quad mg}{ml}$

**Blank Adjustment [Acetone Blank Weight of Solids and Nozzle Wash PM>10] (mg)**

$$W_x(mg) = v_x \times C_x$$

$W_x$ (mg) = 61 ml x 0.0000 mg/ml = 0.00 mg < Sample Gain

**Sample Gain [Nozzle Wash PM>10] (mg)**

$$m_x(mg) = \left(m_{fx} - m_{tx}\right) \times 1000$$

$m_x$ (mg) = $\frac{1000\ mg}{g}$ x ( 0.0091 g - 0.00 g ) = 9.10 mg

**Adjusted Sample Gain [Nozzle Wash PM>10] (mg)**

$$m_{xadj}(mg) = m_x - W_x$$

$m_{xadj}$ (mg) = 9.1 mg - 0.00 mg = 9.10 mg

**0.1N $NH_4OH$ Correction (mg)**

$$m_c(mg) = 17.03 \times V_t \times N$$

$m_c$ (mg) = 17.03 x 0.00 ml x 0.1 N = 0.00 mg

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Analysis) [Values from Run 1 test - Total $PM_{10}$ Mass]**

**Stack Total Concentration (g/dscf)**

$$c_s(g/dscf) = 0.001 \times \frac{M_n}{V_{m(std)}}$$

$$c_s \text{ (g/dscf)} = \frac{\text{g}}{\text{1000 mg}} \times \frac{\text{9.10 mg}}{\text{100.82 dscf}} = \frac{\text{9.03E-05 g}}{\text{dscf}}$$

**Stack Total Concentration (gr/dscf)**

$$c_s'(gr/dscf) = 0.001 \times \frac{M_n}{V_{m(std)}} \times \frac{7000}{453.592}$$

$$c'_s \text{ (gr/dscf)} = \frac{\text{g}}{\text{1000 mg}} \times \frac{\text{9.10 mg}}{\text{100.82 dscf}} \times \frac{\text{7000 gr}}{\text{lb}} \times \frac{\text{lb}}{\text{453.592 g}} = \frac{\text{1.39E-03 gr}}{\text{dscf}}$$

**Total Emissions Rate (kg/hr)**

$$E(kg/hr) = c_s \times Q_{sd} \times \frac{kg}{1000\ g}$$

$$E \text{ (kg/hr)} = \frac{\text{kg}}{\text{1000 g}} \times \frac{\text{9.03E-05 g}}{\text{dscf}} \times \frac{\text{49,102,141 dscf}}{\text{hr}} = \frac{\text{4.43 kg}}{\text{hr}}$$

**Total Emissions Rate (lb/hr)**

$$E'(lb/hr) = \frac{M_n \times Q_{sd}}{V_{m(std)}} \times \frac{lb \times g}{453.592g \times 1000mg}$$

$$E' \text{ (lb/hr)} = \frac{\text{g}}{\text{1000 mg}} \times \frac{\text{lb}}{\text{453.592 g}} \times \frac{\text{9.10 mg}}{\text{100.82 dscf}} \times \frac{\text{49,102,141 dscf}}{\text{hr}} = \frac{\text{9.77 lb}}{\text{hr}}$$

**Total Emissions Rate (tpy)**

$$E''(ton/yr) = E' \times \frac{8760}{2000}$$

$$E'' \text{ (tpy)} = \frac{\text{ton}}{\text{2000 lb}} \times \frac{\text{8,760 hr}}{\text{yr}} \times \frac{\text{9.77 lb}}{\text{hr}} = \frac{\text{42.80 ton}}{\text{yr}}$$

**Total Emissions Rate (lb/MMBtu)**

Oxygen Based:

$$E'''(lb/MMBtu) = \frac{M_n \times F_d}{V_{m(std)} \times 1000 \times 453.592} \times \left(\frac{20.9}{20.9 - \%O_2}\right)$$

$$E''' \text{ (lb/MMBtu)} = \frac{\text{g}}{\text{1000 mg}} \times \frac{\text{lb}}{\text{453.592 g}} \times \frac{\text{9.10 mg}}{\text{100.82 dscf}} \times \frac{\text{8,638.42 dscf}}{\text{MMBtu}} \times \left(\frac{\text{20.9}}{\text{20.9 - 12.7 \%}}\right) = \frac{\text{0.0044 lb}}{\text{MMBtu}}$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Stack Gas Viscosity (μP) [based on preliminary data] [RM 201A, Eq. 3]**

$$\mu(\mu P) = C_1 + C_2\sqrt{T_s} + C_3 T_s^{-2} + C4(\%O_{2,wet}) - C_5 B_{ws} + C_6 B_{ws} T_s^2$$

μ (μP) = -150.3162 μP + 13.4622 $\sqrt{\quad 187 \quad + 460}$ + 3.86153x10$^{6}$ ( 187 + 460 )$^{-2}$ + 0.591123 ( 13.0 x (1 - 8.00 /100) - 91.9723 ( 8.00 /100) + 1.51761x10$^{-5}$ ( 8.00 /100)( 187 + 460)$^2$ = 201.52 μP

**Cunningham Correction Factor [RM 201A, Eq. 4]**
**[based on preliminary data for a 2.25 micrometer diameter particle]**

$$C = 1 + 0.0057193\left[\frac{\mu}{P_s D_{50}}\right]\left[\frac{T_s}{M_w}\right]^{0.5}$$

$$C = 1 + 0.0057193 \times \left(\frac{201.52\ \mu P}{30.24\ \text{in Hg} \times 2.25\ \mu m}\right)\left(\frac{187 + 460\ ^{o}R}{28.40\ \text{lb / lb-mole}}\right)^{0.5} = 1.08$$

**First calculation set using Cyclone I or Cyclone I and IV, assuming $N_{re}$<3,162**

**Lower Limit Cut Diameter for Cyclone I (μm) [RM 201A, Eq. 5]**
**[assumes $N_{re}$<3,162]**

$$D_{50LL}(\mu m) = 9.507 C^{0.3007}\left[\frac{M_w P_s}{T_s}\right]^{0.1993}$$

$$D_{50LL}\ (\mu m) = 9.507 \times 1.08^{\ 0.3007} \times \left(\frac{30.24\ \text{in Hg} \times 28.40\ \text{lb / lb-mole}}{187 + 460\ ^{o}R}\right)^{0.1993} = 10.30\ \mu m$$

**Cut Diameter for Cyclone I for the Middle of the Overlap Zone (μm) [RM 201A, Eq. 6]**
**[assumes $N_{re}$<3,162]**

$$D_{50T}(\mu m) = \left(\frac{11 + D_{50LL}}{2}\right)$$

$$D_{50T}\ (\mu m) = \frac{11 + 10.30\ \mu m}{2} = 10.65\ \mu m$$

**Sampling Rate Using Both $PM_{10}$ and $PM_{2.5}$ Cyclones (acfm) [RM 201A, Eq. 7]**
**[assumes $N_{re}$<3,162]**

Qs (acfm) =

$$Q_s(acfm) = Q_I(acfm) = 0.07296(\mu)\left[\frac{T_s}{M_w P_s}\right]^{0.2949}\left[\frac{1}{D_{50T}}\right]^{1.4102}$$

$$0.07296 \times 201.52\ \mu P \times \left(\frac{187 + 460\ ^{o}R}{30.24\ \text{in Hg} \times 28.40\ \text{lb / lb-mole}}\right)^{0.2949} \times \left(\frac{1}{10.65\ \mu m}\right)^{1.4102} = 0.48\ \text{acfm}$$

**Reynolds Number (dimensionless) [RM 201A, Eq. 10]**
**[verification of $N_{re}$<3,162, using Cyclone I and IV]**

$$N_{re} = 8.64 \times 10^5\left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

Correct

$$N_{re} = 8.64 \times 10^5 \times \frac{30.24\ \text{in Hg} \times 28.40\ \text{lb / lb-mole}}{187 + 460\ ^{o}R} \times \frac{0.48\ \text{acfm}}{201.52\ \mu P} = 2739.94 < 3{,}162$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Second calculation set using Cyclone IV, assuming $N_{re}$<3,162**

**Particle Cut Diameter for $N_{re}$ Less than 3,162 for Cyclone IV (μm) [RM 201A, Eq. 34]**
**[assumes $N_{re}$<3,162]**

$$D_{50}(\mu m) = 0.0024302 \left[\frac{\mu}{Q_s}\right]^{1.1791} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.6790}$$

$D_{50}$ (μm) =

0.0024302 x ( 201.52 μP / 0.48 acfm )$^{1.1791}$ x ( 1 / 1.08 )$^{0.5}$ x ( 187 + 460 °R / 30.24 in Hg x 28.40 lb / lb-mole )$^{0.6790}$ = 2.38 μm

**Sampling Rate Using Only $PM_{2.5}$ Cyclone for $N_{re}$ Less than 3,162 (acfm) [RM 201A, Eq. 8]**

$$Q_{IV}(acfm) = 0.0060639 \left(\frac{\mu}{C^{0.4242}}\right) \left[\frac{P_s M_w}{T_s}\right]^{-.05759} \left[\frac{1}{D_{50}}\right]^{0.8481}$$

$Q_{IV}$ (acfm) =

0.0060639 x ( 201.52 μP / 1.08 $^{0.4242}$ ) x ( 30.24 in Hg x 28.40 lb / lb-mole / 187 + 460 °R )$^{-0.5759}$ x ( 1 / 2.38 μm )$^{0.8481}$ = 0.48 acfm

**Reynolds Number (dimensionless) [RM 201A, Eq. 10]**
**[verification of $N_{re}$<3,162, using Cyclone IV only]**

$$N_{re} = 8.64 \times 10^5 \left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

Correct

$N_{re}$ = 8.64 x $10^5$ x 30.24 in Hg x 28.40 lb / lb-mole / 187 + 460 °R x 0.48 acfm / 201.52 μP = 2739.90 < 3,162

**Third calculation set using Cyclone I or Cyclone I and IV, assuming $N_{re}$≥3,162**

**Lower Limit Cut Diameter for Cyclone I (μm) [RM 201A, Eq. 12]**
**[assumes $N_{re}$≥3,162]**

$$D_{50LL}(\mu m) = 10.0959 C^{0.4400} \left[\frac{M_w P_s}{T_s}\right]^{0.0600}$$

$D_{50LL}$ (μm) = 10.0959 x 1.08 $^{0.4400}$ x ( 30.24 in Hg x 28.40 lb / lb-mole / 187 + 460 °R )$^{0.0600}$ = 10.63 μm

**Cut Diameter for Cyclone I for the Middle of the Overlap Zone (μm) [RM 201A, Eq. 6]**
**[assumes $N_{re}$≥3,162]**

$$D_{50T}(\mu m) = \left(\frac{11 + D_{50LL}}{2}\right)$$

$D_{50T}$ (μm) = ( 11 + 10.63 μm ) / 2 = 10.81 μm

**Sampling Rate Using Both $PM_{10}$ and $PM_{2.5}$ Cyclones (acfm) [RM 201A, Eq. 7]**
**[assumes $N_{re}$≥3,162]**

$$Q_s(acfm) = Q_I(acfm) = 0.07296(\mu) \left[\frac{T_s}{M_w P_s}\right]^{0.2949} \left[\frac{1}{D_{50T}}\right]^{1.4102}$$

Qs (acfm) =

0.07296 x 201.52 μP x ( 187 + 460 °R / 30.24 in Hg x 28.40 lb / lb-mole )$^{0.2949}$ x ( 1 / 10.81 μm )$^{1.4102}$ = 0.47 acfm

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Reynolds Number (dimensionless) [RM 201A, Eq. 10]**
**[verification of $N_{re}$≥3,162, using Cyclone I and IV]**

$$N_{re} = 8.64 \times 10^5 \left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

Wrong Assumption

$N_{re}$ = 8.64 x $10^5$ x ( 30.24 in Hg x 28.40 lb / lb-mole ) / ( 187 + 460 °R ) x ( 0.47 acfm ) / ( 201.52 µP ) = 2681.40 < 3,162

**Fourth calculation set using Cyclone IV, assuming $N_{re}$≥3,162**

**Particle Cut Diameter for $N_{re}$ Greater than or Equal to 3,162 for Cyclone IV (µm) [RM 201A, Eq. 35]**
**[assumes $N_{re}$≥3,162]**

$D_{50}$ (µm) =

$$D_{50}(\mu m) = 0.019723 \left[\frac{\mu}{Q_s}\right]^{0.8058} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.3058}$$

0.019723 x ( 201.52 µP / 0.47 acfm )$^{0.8058}$ x ( 1 / 1.08 )$^{0.5}$
x ( 187 + 460 °R / 30.24 in Hg x 28.40 lb / lb-mole )$^{0.3058}$ = 2.29 µm

**Sampling Rate Using Only $PM_{2.5}$ Cyclone for $N_{re}$ Greater than or Equal to 3,162 (acfm) [RM 201A, Eq. 9]**

$Q_{IV}$ (acfm) =

$$Q_{IV}(acfm) = 0.007657 \left(\frac{\mu}{C^{0.6205}}\right)\left[\frac{P_s M_w}{T_s}\right]^{-0.3795} \left[\frac{1}{D_{50}}\right]^{1.241}$$

0.007657 x ( 201.52 µP / 1.08 $^{0.6205}$ ) x ( 30.24 in Hg x 28.40 lb / lb-mole / 187 + 460 °R )$^{-0.3795}$
x ( 1 / 2.29 µm )$^{1.241}$ = 0.47 acfm

**Reynolds Number (dimensionless) [RM 201A, Eq. 10]**
**[verification of $N_{re}$≥3,162, using Cyclone IV only]**

$$N_{re} = 8.64 \times 10^5 \left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

Wrong Assumption

$N_{re}$ = 8.64 x $10^5$ x ( 30.24 in Hg x 28.40 lb / lb-mole ) / ( 187 + 460 °R ) x ( 0.48 acfm ) / ( 201.52 µP ) = 2739.94 < 3,162

**Meter Box Orifice Pressure Drop (in $H_2O$) [RM 201A, Eq. 11]**
**As calculated using applicable calculation set 1, 2, 3, or 4**

$$\Delta H(inH_2O) = \left[\frac{Q_s(1 - B_{ws})P_s}{T_s}\right]^2 \left[\frac{1.083 T_m M_d \Delta H_@}{P_{bar}}\right]$$

ΔH (in $H_2O$) = ( 0.48 acfm x ( 1 - 8.00 /100) x 30.24 in Hg / 187 + 460 °R )$^2$
x ( 1.083 x ( 85.00 + 460 °R) x 29.30 lb / lb-mole x 1.878 in $H_2O$ / 30.31 in Hg ) = 0.459 in $H_2O$

| | | | | |
|---|---|---|---|---|
| 50 °F above stack temperature | $T_{s+50}$ = | 237 | $\Delta H_{+50}$ = | 0.396 in $H_2O$ |
| 50 °F below stack temperature | $T_{s+50}$ = | 137 | $\Delta H_{+50}$ = | 0.539 in $H_2O$ |

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Adjusted Velocity Pressure (in $H_2O$) [point A-1] [RM201A, Eq. 25]**

$$\Delta p_s(inH_2O) = \Delta p_m\left[\frac{C_p}{C'_p}\right]^2$$

$\Delta p_s$ (in $H_2O$) = 1.50 in $H_2O$ x ( 0.7240 / 0.8198 )$^2$ = 1.17 in $H_2O$

**Average Probe Blockage Factor [RM201A, Eq. 26]**

$$b_f = \frac{22.0}{A}$$

$b_f$ = 22.0 / 40828.14 $in^2$ = 5.39E-04

**Velocity Pressure Adjusted for Blockage Factor (in $H_2O$) [point A-1] [RM201A, Eq. 27]**

Target PM and/or Stack Size Not Applicable to Blockage Factor Calculation

$$\Delta p_{s2}(inH_2O) = \Delta p_{s1}\left[\frac{1}{(1-b_f)}\right]^2$$

$\Delta p_s$ (in $H_2O$) = 1.17 in $H_2O$ x ( 1 / ( 1 - 0.00E+00 ) )$^2$ = 1.17 in $H_2O$

**Velocity of Stack Gas Adjusted for Blockage Factor and/or $C_p$ / $C'_p$ (ft/sec) [RM201A, Eq. 13]**

Target PM and/or Stack Size Not Applicable to Blockage Factor Calculation

$$v_s = K_p C_p \left(\sqrt{(\Delta p)}\right)_{avg}\left[\sqrt{\frac{T_s}{P_s M_w}}\right]$$

$v_s$ (ft/sec) =

85.49 ft/sec / lb/mole - °R x 0.7240 x 1.06 x ( 187 + 460 °R / 30.24 in Hg x 28.40 lb / lb-mole )$^{0.5}$ = 56.77 ft/sec

**Calculated Nozzle Diameter for Acceptable Sampling Rate (in) [RM201A, Eq. 14]**

$$D(in) = \left[\frac{3.056 Q_s}{v_s}\right]^{0.5}$$

D (in) = ( 3.056 x 0.48 acfm / 56.77 ft/sec )$^{0.5}$ = 0.161 in

Represents ideal diameter, which we then compare to capabilities of all nozzles from multiple sets

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Velocity of Gas in Nozzle 4b (diam. = 0.156 in), (ft/sec) [RM201A, Eq. 15]**

$v_n$ (ft/sec) = $\frac{0.48 \text{ acfm}}{60 \text{ min / sec}} \div 1.33\text{E-}04 \text{ ft}^2$ = 60.43 $\frac{\text{ft}}{\text{sec}}$

Example set of calculations for nozzle used with run 1

$$v_n = \frac{\left(\frac{Q_s}{60 \frac{\text{min}}{\text{sec}}}\right)}{A_n}$$

**Minimum Nozzle Velocity to Stack Velocity Ratio Parameter (dimensionless) [RM201A, Eq. 16]**

**Nozzle 4b (diam. = 0.156 in)**

$$R_{min} = \left[0.2457 + \left(0.3072 - \frac{0.2603(\mu)(Q_s)^{0.5}}{v_n^{1.5}}\right)^{0.5}\right]$$

$R_{min}$ =

$0.2457 + (0.3072 - \frac{0.2603 \text{ x } 201.52 \text{ µP x } (0.48 \text{ acfm})^{0.5}}{60.43 \text{ in}^{1.5}})^{0.5}$ = 0.73

**Maximum Nozzle Velocity to Stack Velocity Ratio Parameter (dimensionless) [RM201A, Eq. 17]**

**Nozzle 4b (diam. = 0.156 in)**

$$R_{max} = \left[0.4457 + \left(0.5690 + \frac{0.2603(\mu)(Q_s)^{0.5}}{v_n^{1.5}}\right)^{0.5}\right]$$

$R_{max}$ =

$0.4457 + (0.5690 + \frac{0.2603 \text{ x } 201.52 \text{ µP x } (0.48 \text{ acfm})^{0.5}}{60.43 \text{ in}^{1.5}})^{0.5}$ = 1.25

**Minimum Gas Velocity for $R_{min}$ Less than 0.5 (ft/sec)** **Nozzle 4b (diam. = 0.156 in)**

$v_{min}\ (ft/sec) = v_n(0.5)$ **[RM201A, Eq. 18]**

$v_{min}$ (ft/sec) = 0.5 x $\frac{\text{ft}}{\text{sec}}$ = $\frac{\text{ft}}{\text{sec}}$ Not Applicable

**Minimum Gas Velocity for $R_{min}$ Greater than or Equal to 0.5 (ft/sec)** **Nozzle 4b (diam. = 0.156 in)**

$v_{min}\ (ft/sec) = v_n R_{min}$ **[RM201A, Eq. 19]**

$v_{min}$ (ft/sec) = 60.43 $\frac{\text{ft}}{\text{sec}}$ x 0.73 = 43.81 $\frac{\text{ft}}{\text{sec}}$

**Maximum Gas Velocity for $R_{max}$ Less than 1.5 (ft/sec)** **Nozzle 4b (diam. = 0.156 in)**

$v_{max}\ (ft/sec) = v_n R_{max}$ **[RM201A, Eq. 20]**

$v_{max}$ (ft/sec) = 60.43 $\frac{\text{ft}}{\text{sec}}$ x 1.25 = 75.52 $\frac{\text{ft}}{\text{sec}}$

**Maximum Gas Velocity for $R_{max}$ Greater than or Equal to 1.5 (ft/sec)** **Nozzle 4b (diam. = 0.156 in)**

$v_{max}\ (ft/sec) = v_n(1.5)$ **[RM201A, Eq. 21]**

$v_{max}$ (ft/sec) = 1.5 x $\frac{\text{ft}}{\text{sec}}$ = $\frac{\text{ft}}{\text{sec}}$ Not Applicable

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Minimum Velocity Pressure (in $H_2O$) [RM201A, Eq. 22]** **Nozzle 4b (diam. = 0.156 in)**

Run 1 nozzle is able to achieve $\Delta p_{min}$ below preliminary data minimum

$$\Delta p_{min}\ (inH_2O) = 1.3686 \times 10^{-4}\left[\frac{P_s M_w}{T_s}\right]\left[\frac{v_{min}}{C_p}\right]^2$$

$\Delta p_{min}$ (in $H_2O$) =

$1.3686 \times 10^{-4} \times \left(\frac{30.24 \text{ in Hg} \times 28.40 \text{ lb / lb-mole}}{187 + 460\ ^{o}R}\right) \times \left(\frac{43.81 \text{ ft/sec}}{0.7240}\right)^2 =$ 0.67 in $H_2O$ vs. 1.01

**Maximum Velocity Pressure (in $H_2O$) [RM201A, Eq. 23]** **Nozzle 4b (diam. = 0.156 in)**

Run 1 nozzle is able to achieve $\Delta p_{max}$ above preliminary data maximum

$$\Delta p_{max}\ (inH_2O) = 1.3686 \times 10^{-4}\left[\frac{P_s M_w}{T_s}\right]\left[\frac{v_{max}}{C_p}\right]^2$$

$\Delta p_{max}$ (in $H_2O$) =

$1.3686 \times 10^{-4} \times \left(\frac{30.24 \text{ in Hg} \times 28.40 \text{ lb / lb-mole}}{187 + 460\ ^{o}R}\right) \times \left(\frac{75.52 \text{ ft/sec}}{0.7240}\right)^2 =$ 1.98 in $H_2O$ vs. 1.25

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Run 1 test]**

**Sampling Dwell Time at Each Point (minutes) [point A-1] [RM201A, Eq. 24]**

$$t_n(\text{min}) = \left[\frac{C_p\sqrt{\Delta p_n}}{C_p'\left(\sqrt{\Delta p_n}\right)_{avg}}\right]\left[\frac{t_r}{N_{tp}}\right]$$

$t_n$ (min) = $\left(\frac{0.7240 \times (1.40)^{0.5}}{0.7240 \times 1.06}\right) \times \left(\frac{240.00 \text{ min}}{12.00}\right) =$ 22.39 minutes

**Dry Gas Volume Sampled at Standard Conditions (dscf) [point A-1] [RM201A, Eq. 28]**

$$v_{ms}(dscf) = \left[\frac{528}{29.92}\right]\left[\gamma \cdot v_m\right]\left[\frac{\left(P_{bar} + \frac{\Delta H}{13.6}\right)}{T_m}\right]$$

$v_{ms}$ (dscf) = $\left(\frac{528}{29.92}\right)$ ( 0.974 x 8.42 dcf ) x

$\left(\frac{30.30 \text{ in Hg} + 0.46 \text{ in } H_2O / 13.6}{62.00 + 460\ ^{o}R}\right) =$ 8.41 dscf

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Run 1 test]**

**Sample Flow Rate at Standard Conditions (dscfm) [RM201A, Eq. 29]**

$Q_{sST}\ (dscfm) = \frac{v_{ms}}{\Theta}$

$Q_{sST}$ (dscfm) = $\frac{100.82\ \text{dscf}}{270.25\ \text{min}} = \frac{0.37\ \text{dscf}}{\text{min}}$

**Sampling Rate (acfm) [e.g. cyclone flow rate] [RM201A, Eq. 32]**

$Q_s(acfm) = \frac{29.92}{528} Q_{sST} \left[\frac{1}{(1-B_{ws})}\right]\left[\frac{T_s}{P_s}\right]$

$Q_s$ (acfm) = $\frac{29.92\ \text{in Hg}}{528\ ^{o}\text{R}} \times \frac{0.37\ \text{dscf}}{\text{min}} \times \frac{1}{(1-\ 8.39\ /100)} \times \frac{190\ + 460\ ^{o}\text{R}}{30.23\ \text{in Hg}} =$ 0.50 acfm

**Actual Conditions Reynolds Number (dimensionless) [RM 201A, Eq. 10]**

$N_{re} = 8.64 \times 10^5 \left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$

$N_{re} = 8.64 \times 10^5 \times \frac{30.23\ \text{in Hg} \times 28.35\ \text{lb / lb-mole}}{190\ + 460\ ^{o}\text{R}} \times \frac{0.50\ \text{acfm}}{201.67\ \mu\text{P}} =$ 2802.09

**Actual Conditions Particle Cut Diameter for Cyclone I (µm) [RM201A, Eq. 33]**

$D_{50}\ (\mu m) = 0.15625 \left[\frac{T_s}{M_w P_s}\right]^{0.2091} \left[\frac{\mu}{Q_s}\right]^{0.7091}$

$D_{50}$ (µm) = 0.15625 x $\left(\frac{190\ + 460\ ^{o}\text{R}}{30.23\ \text{in Hg} \times 28.35\ \text{lb / lb-mole}}\right)^{0.2091}$ x $\left(\frac{201.67\ \mu\text{P}}{0.50\ \text{acfm}}\right)^{0.7091} =$ 10.45 µm

**Actual Particle Cut Diameter for Cyclone IV is determined by:**

**Actual Conditions Cunningham Correction Factor [RM 201A, Eq. 4]**
**[for a 2.5 micrometer diameter particle (estimated size)]**

$C = 1 + 0.0057193 \left[\frac{\mu}{P_s D_{50}}\right]\left[\frac{T_s}{M_w}\right]^{0.5}$

C = 1 + 0.0057193 x $\left(\frac{201.67\ \mu\text{P}}{30.23\ \text{in Hg x 2.5 µm}}\right)\left(\frac{190\ + 460\ ^{o}\text{R}}{28.35\ \text{lb / lb-mole}}\right)^{0.5} =$ 1.07

**Actual Conditions Particle Cut Diameter for $N_{re}$ Less than 3,162 for Cyclone IV (µm) [RM 201A, Eq. 34]**

$D_{50}\ (\mu m) = 0.0024302 \left[\frac{\mu}{Q_s}\right]^{1.1791} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.6790}$

$D_{50}$ (µm) =

0.0024302 x $\left(\frac{201.67\ \mu\text{P}}{0.50\ \text{acfm}}\right)^{1.1791}$ x $\left(\frac{1}{1.07}\right)^{0.5}$

x $\left(\frac{190\ + 460\ ^{o}\text{R}}{30.23\ \text{in Hg} \times 28.35\ \text{lb / lb-mole}}\right)^{0.6790} =$ 2.32 µm

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Run 1 test]**

**Actual Conditions Particle Cut Diameter for $N_{re}$ Greater than or Equal to 3,162 for Cyclone IV (µm) [RM 201A, Eq. 35]**

$$D_{50}(\mu m) = 0.019723 \left[\frac{\mu}{Q_s}\right]^{0.8058} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.3058}$$

$D_{50}$ (µm) =

0.019723 x ( µP / acfm )$^{0.8058}$ x ( 1 )$^{0.5}$ x ( + 460 °R / in Hg x lb / lb-mole )$^{0.3058}$ = µm

**Re-calculated Cunningham Correction Factor (dimensionless) [RM 201A, Eq. 36]**

$$C_r = 1 + 0.0057193 \left[\frac{\mu}{P_s D_{50}}\right]\left[\frac{T_s}{M_w}\right]^{0.5}$$

C = 1 + 0.0057193 x ( 201.67 µP / 30.23 in Hg x 2.32 µm )( 190 + 460 °R / 28.35 lb / lb-mole )$^{0.5}$ = 1.08

**Re-calculated Particle Cut Diameter for $N_{re}$ Less than 3,162 for Cyclone IV (µm) [RM 201A, Eq. 37]**

$$D_{50-1}(\mu m) = 0.0024302 \left[\frac{\mu}{Q_s}\right]^{1.1791} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.6790}$$

$D_{50-1}$ (µm) =

0.0024302 x ( 201.67 µP / 0.50 acfm )$^{1.1791}$ x ( 1 / 1.08 )$^{0.5}$ x ( 190 + 460 °R / 30.23 in Hg x 28.35 lb / lb-mole )$^{0.6790}$ = 2.31 µm

**Re-Calculated Particle Cut Diameter for $N_{re}$ Greater than or Equal to 3,162 for Cyclone IV (µm) [RM 201A, Eq. 38]**

$$D_{50-1}(\mu m) = 0.019723 \left[\frac{\mu}{Q_s}\right]^{0.8058} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.3058}$$

$D_{50-1}$ (µm) =

0.019723 x ( µP / acfm )$^{0.8058}$ x ( 1 )$^{0.5}$ x ( + 460 °R / in Hg x lb / lb-mole )$^{0.3058}$ = µm

**Ratio (Z) Between $D_{50}$ and $D_{50-1}$ Values (dimensionless) [RM 201A, Eq. 39]**

$$Z = \frac{D_{50-1}}{D_{50}} \qquad 0.99 \le \left[Z = \left(\frac{D_{50}}{D_{50-1}}\right)\right] \le 1.01$$

Z = 2.31 µm / 2.31 µm = 1.00

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

# TEST RESULTS AND CALCULATIONS

## Emissions Results
## Base Load
## SAM

## METHOD 8A (CONTROLLED CONDENSATE) - RESULTS

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base |
| **Project #** | bec-19-cricketvalley.ny-start#2 |

| **Historical Data** | SAM U-00002 Base-1 | SAM U-00002 Base-2 | SAM U-00002 Base-3 | **Average** | **Units** | **Limits** |
|---|---|---|---|---|---|---|
| Run Start Time | 08:06 | 11:49 | 15:17 | | hh:mm | |
| Run Stop Time | 10:06 | 13:49 | 17:17 | | hh:mm | |
| Test Date | 03/09/20 | 03/09/20 | 03/09/20 | | mm/dd/yy | |
| Load | Base | Base | Base | | % or w/DB | -- |
| Meter Calibration Factor | 0.985 | 0.985 | 0.985 | | | |
| **Stack Test Data** | SAM U-00002 Base-1 | SAM U-00002 Base-2 | SAM U-00002 Base-3 | **Average** | **Units** | **Limits** |
| Initial Meter Volume | 892.500 | 942.200 | 995.600 | | $ft^3$ | |
| Final Meter Volume | 935.060 | 984.610 | 1038.180 | | $ft^3$ | |
| Total Meter Volume | 42.560 | 42.410 | 42.580 | 42.517 | $ft^3$ | |
| Total Sampling Time | 120.00 | 120.00 | 120.00 | 120.00 | min | |
| Average Meter Temperature | 87.13 | 87.92 | 90.71 | 88.58 | °F | |
| Barometric Pressure | 30.30 | 29.88 | 30.12 | 30.10 | in Hg | |
| Stack Static Pressure | 0.95 | 0.95 | 0.95 | 0.95 | in $H_2O$ | |
| Absolute Stack Pressure | 30.37 | 29.95 | 30.19 | 30.17 | in Hg | |
| Average Orifice Pressure Drop | 0.34 | 0.34 | 0.34 | 0.34 | in $H_2O$ | |
| Absolute Meter Pressure | 30.43 | 30.01 | 30.25 | 30.23 | in Hg | |
| **Moisture Content Data** | SAM U-00002 Base-1 | SAM U-00002 Base-2 | SAM U-00002 Base-3 | **Average** | **Units** | **Limits** |
| Impinger Water Weight Gain | 63.10 | 69.90 | 57.50 | 63.50 | g | |
| Silica Gel Weight Gain | 8.30 | 12.20 | 7.30 | 9.27 | g | |
| Total Water Volume Collected | 71.53 | 82.25 | 64.92 | 72.90 | ml | |
| Standard Water Vapor Volume | 3.37 | 3.87 | 3.06 | 3.43 | scf | |
| Standard Meter Volume | 41.0 | 40.2 | 40.5 | 40.6 | dscf | |
| Standard Metric Meter Volume | 1.2 | 1.1 | 1.1 | 1.1 | dscm | |
| Calculated Stack Moisture | 7.59 | 8.78 | 7.01 | 7.79 | % | |
| **Gas Analysis Data** | SAM U-00002 Base-1 | SAM U-00002 Base-2 | SAM U-00002 Base-3 | **Average** | **Units** | **Limits** |
| Carbon Dioxide Content | 4.8 | 4.8 | 4.8 | 4.8 | % | |
| Oxygen Content | 12.7 | 12.8 | 12.8 | 12.8 | % | |
| Carbon Monoxide Content | 0.0 | 0.0 | 0.0 | 0.0 | ppm | |
| Nitrogen Content | 82.5 | 82.4 | 82.4 | 82.4 | % | |
| Stack Dry Molecular Weight | 29.28 | 29.28 | 29.28 | 29.28 | lb/lb-mole | |
| Calculated Fuel Factor | 1.708 | 1.688 | 1.688 | 1.694 | | |
| Fuel F-Factor | 8638.42 | 8638.42 | 8638.42 | 8638.42 | dscf/MMBtu | |
| **Sulfuric Acid Mist IC Analysis** | SAM U-00002 Base-1 | SAM U-00002 Base-2 | SAM U-00002 Base-3 | **Average** | **Units** | **Limits** |
| $H_2SO_4$ (IC) Sample Volume - Front Half Rinse | 201.0 | 138.0 | 138.0 | 159.00 | ml | -- |
| $H_2SO_4$ (IC) Sample - Mass Per Volume | 0.1 | 0.2 | 0.1 | 0.14 | mg/L | -- |
| $H_2SO_4$ (IC) Mass | 0.02 | 0.03 | 0.02 | 0.02 | mg | -- |
| $H_2SO_4$ (IC) Concentration | 5.12E-07 | 6.96E-07 | 4.20E-07 | 5.43E-07 | g/dscf | -- |
| | 7.90E-06 | 1.07E-05 | 6.48E-06 | 8.37E-06 | gr/dscf | -- |
| | 1.81E-08 | 2.46E-08 | 1.48E-08 | 1.92E-08 | g/L | -- |
| | 0.00 | 0.01 | 0.00 | 0.00 | ppmvd | -- |
| $H_2SO_4$ (IC) Emission Rate | 0.00002 | 0.00003 | 0.00002 | 0.00003 | lb/MMBtu | 0.00065 |

Note: Run 1 reported at the RDL (0.021 mg)

**EXAMPLE CALCULATIONS (Reference Method 1 - Circular Stack)**

**Diameter of Stack (in.)**

$$D(in.) = L_{fw} - L_{nw}$$

D (in.) = 236.00 in. - 8.00 in. = 228.00 in.

**Stack Diameters Downstream**

$$B_D\,(dia.) = \frac{B}{D}$$

$B_D$ (dia.) = $\frac{850.00 \text{ in.}}{228.00 \text{ in.}}$ = 3.73 diameters

**Area of Stack ($ft^2$)**

$$A_s\,(ft^2) = \pi \times \left(\frac{D}{2 \times 12}\right)^2$$

$A_s$ ($ft^2$) = 3.14 x ( $\frac{228.00 \text{ in.}}{2 \text{ x } 12\text{in./ft}}$ )$^2$ = 283.53 $ft^2$

**Stack Diameters Upstream**

$$A_D\,(dia.) = \frac{A}{D}$$

$A_D$ (dia.) = $\frac{200.40 \text{ in.}}{228.00 \text{ in.}}$ = 0.88 diameters

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Reference Method 4) [Values from Run 1 test]**

**Water Volume Weighed (scf)**

$$V_{wsg\ (std)}(scf) = W_t \times K_5$$

$V_{wsg(std)}$ = 71.40 g x 0.04715 $ft^3/g$ = 3.367 scf

**Standard Meter Volume (dscf)**

$$V_{m(std)}(dscf) = \frac{K_1 \times Y \times V_m \times \left(P_b + \frac{\Delta H_{avg}}{13.6}\right)}{(t_m)_{avg} + T_u}$$

$$V_{m(std)} = \frac{\frac{17.65\ ^\circ R}{in.\ Hg} \times 0.99 \times 42.56\ dcf \times \left(30.30\ in.\ Hg + \frac{0.34\ in.\ H_2O}{13.6\ in.\ H_2O / in.\ Hg}\right)}{87.13\ ^\circ F + 460\ ^\circ R} = 41.00\ dscf$$

**Calculated Moisture Content (%)**

$$B_{ws(calc)}(\%) = 100 \times \frac{V_{wsg(std)}}{V_{wsg(std)} + V_{m(std)}}$$

$$B_{ws(calc)} = 100 \times \frac{3.37\ dscf}{3.37\ dscf + 41.00\ dscf} = 7.59\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Analysis) [Values from Run 1 test - $H_2SO_4$ (IC)]**

**Stack $H_2SO_4$ Mass (mg)**

$$M_n(mg) = \frac{M_{n(lab)}}{V_{s(lab)}} \times V_{sample} \times \frac{L}{1000ml}$$

$M_n$ (mg) = $\frac{\text{L}}{\text{1000 ml}}$ x 0.10 $\frac{\text{mg}}{\text{L}}$ x 201.00 ml = 0.02 mg

**Stack $H_2SO_4$ Concentration (g/dscf)**

$$c_s(g/dscf) = 0.001 \times \frac{M_n}{V_{m(std)}}$$

$c_s$ (g/dscf) = $\frac{\text{g}}{\text{1000 mg}}$ x $\frac{\text{0.02 mg}}{\text{41.00 dscf}}$ = $\frac{\text{5.10E-07 g}}{\text{dscf}}$

**Stack $H_2SO_4$ Concentration (gr/dscf)**

$$c'_s(gr/dscf) = 0.001 \times \frac{M_n}{V_{m(std)}} \times \frac{7000}{453.592}$$

c'$_s$ (gr/dscf) = $\frac{\text{g}}{\text{1000 mg}}$ x $\frac{\text{0.02 mg}}{\text{41.00 dscf}}$ x $\frac{\text{7000 gr}}{\text{lb}}$ x $\frac{\text{lb}}{\text{453.592 g}}$ = $\frac{\text{7.90E-06 gr}}{\text{dscf}}$

**Stack $H_2SO_4$ Concentration (g/L)**

$$c''_s(g/L) = c'_s \times \frac{dscf}{28.31685 dsL}$$

c'$_s$ (gr/dscf) = 5.12E-07 $\frac{\text{g}}{\text{dscf}}$ x $\frac{\text{dscf}}{\text{28.31685 dsL}}$ = $\frac{\text{2.00E-08 g}}{\text{L}}$

**Stack $H_2SO_4$ Concentration (ppmvd)**

$$c'''_s(ppmvd) = \frac{M_n}{V_{m(std)}} \times Ideal\ Gas\ Constant \times \frac{10^6 parts}{million\ parts} \times \frac{1}{Mol\ Wt}$$

c'''$_s$ (ppmvd) = 1.81E-08 $\frac{\text{g}}{\text{L}}$ x $\frac{\text{24.04 L gas}}{\text{lb-mol}}$ x $\frac{10^6 \text{ parts}}{\text{MM parts}}$ x $\frac{\text{lb-mol}}{\text{98.0790 lb}}$ = 0.004 ppmvd

**$H_2SO_4$ Emissions Rate (lb/MMBtu)**

Oxygen Based:

$$E'''(lb/MMBtu) = \frac{M_n \times F_d}{V_{m(std)} \times 1000 \times 453.592} \times \left(\frac{20.9}{20.9 - \%O_2}\right)$$

E''' (lb/MMBtu) = $\frac{\text{g}}{\text{1000 mg}}$ x $\frac{\text{lb}}{\text{453.592 g}}$ x $\frac{\text{0.02 mg}}{\text{41.00 dscf}}$ x $\frac{\text{8,638.42 dscf}}{\text{MMBtu}}$ x ( $\frac{\text{20.9}}{\text{20.9 - 12.7 \%}}$ ) = $\frac{\text{0.00002 lb}}{\text{MMBtu}}$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

# TEST RESULTS AND CALCULATIONS

## Emissions Results
## Base+DB Load
## NOx, CO, VOC, and $NH_3$

## GENERAL ELECTRIC, 7F.05, UNIT #U-00002 BASE+DB LOAD DATA SUMMARY

| Parameter | Base+DB Load, Run - 2-1 | Base+DB Load, Run - 2-2 | Base+DB Load, Run - 2-3 | Average |
|---|---|---|---|---|
| **Date (mm/dd/yy)** | 03/10/20 | 03/10/20 | 03/10/20 | 03/10/20 |
| **Start Time (hh:mm:ss)** | 15:27:20 | 17:35:20 | 18:35:20 | 15:27:20 |
| **End Time (hh:mm:ss)** | 16:26:50 | 18:34:50 | 19:34:50 | 19:34:50 |
| **Run Duration (min / run)** | 60 | 60 | 60 | 60 |
| **Bar. Pressure (in. Hg)** | 30.17 | 30.15 | 30.12 | 30.15 |
| **Amb. Temp. (°F)** | 52 | 49 | 46 | 49 |
| **Rel. Humidity (%)** | 53 | 70 | 73 | 65 |
| **Spec. Humidity (lb water / lb air)** | 0.004296 | 0.005086 | 0.004740 | 0.004707 |
| **$NH_3$ Flow Rate (lb/hr)** | 151.7 | 149.8 | 149.2 | 150.2 |
| **Turbine Fuel Flow (lb/min)** | 1,625 | 1,625 | 1,627 | 1,626 |
| **Duct Burner Fuel Flow (lb/min)** | 166 | 171 | 174 | 170 |
| **Total Fuel Flow (SCFH)** | 2,431,495 | 2,438,066 | 2,444,977 | 2,438,179 |
| **Stack Flow (RM19) (SCFH)** | 50,273,314 | 49,918,813 | 49,882,005 | 50,024,711 |
| **Stack Moisture (% Method 4)** | 6.7 | 6.7 | 6.7 | 6.7 |
| **Heat Input (MMBtu/hr)** | 2,458.8 | 2,465.4 | 2,472.4 | 2,465.5 |
| **CT Power Output (megawatts)** | 231.8 | 232.1 | 232.6 | 232.1 |
| **NOx (ppmvd)** | 2.44 | 2.53 | 2.55 | 2.51 |
| **NOx (ppm@15%$O_2$)** | 1.63 | 1.68 | 1.68 | 1.66 |
| **CO (ppmvd)** | 0.21 | 0.21 | 0.21 | 0.21 |
| **CO (ppm@15%$O_2$)** | 0.14 | 0.14 | 0.14 | 0.14 |
| **VOC (as C1) (ppmvd)** | 0.00 | 0.00 | 0.00 | 0.00 |
| **VOC (as C1) (ppm@15%$O_2$)** | 0.00 | 0.00 | 0.00 | 0.00 |
| **Fuel Sulfur (grains / 100 scf)** | 0.12 | 0.12 | 0.12 | 0.12 |
| **$CO_2$ (%)** | 5.07 | 5.06 | 5.08 | 5.07 |
| **$O_2$ (%)** | 12.07 | 11.98 | 11.95 | 12.00 |

# TEST RESULTS AND CALCULATIONS

## Emissions Results
## Base+DB Load
## $PM_{10}$

## METHOD 201A (FRONT) AND 202 (BACK) - RESULTS

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#2 |

| **Historical Data** | PM U-00002 Base+DB-1 | PM U-00002 Base+DB-2 | PM U-00002 Base+DB-3 | **Average** | **Units** | **Limits** |
|---|---|---|---|---|---|---|
| Run Start Time | 14:12 | 06:23 | 12:30 | | hh:mm | |
| Run Stop Time | 18:40 | 11:17 | 17:15 | | hh:mm | |
| Test Date | 03/10/20 | 03/11/20 | 03/11/20 | | mm/dd/yy | |
| Load | Base+DB | Base+DB | Base+DB | | % or w/DB | -- |
| Meter Calibration Factor | 0.974 | 0.974 | 0.974 | | | |
| Pitot Tube Coefficient | 0.7240 | 0.7240 | 0.7240 | | | |
| Average Nozzle Diameter | 0.156 | 0.156 | 0.156 | | in | |
| **Stack Test Data** | PM U-00002 Base+DB-1 | PM U-00002 Base+DB-2 | PM U-00002 Base+DB-3 | **Average** | **Units** | **Limits** |
| Initial Meter Volume | 675.750 | 778.770 | 884.600 | | $ft^3$ | |
| Final Meter Volume | 777.340 | 884.310 | 987.200 | | $ft^3$ | |
| Total Meter Volume | 101.590 | 105.540 | 102.600 | 103.243 | $ft^3$ | |
| Total Sampling Time | 272.25 | 277.75 | 275.00 | 275.00 | min | |
| Average Meter Temperature | 87.17 | 80.67 | 83.29 | 83.71 | °F | |
| Average Stack Temperature | 189.00 | 181.50 | 181.33 | 183.94 | °F | |
| Barometric Pressure | 30.14 | 30.12 | 30.11 | 30.12 | in Hg | |
| Stack Static Pressure | -0.89 | -0.89 | -0.89 | -0.89 | in $H_2O$ | |
| Absolute Stack Pressure | 30.07 | 30.05 | 30.04 | 30.06 | in Hg | |
| Average Orifice Pressure Drop | 0.44 | 0.44 | 0.44 | 0.44 | in $H_2O$ | |
| Absolute Meter Pressure | 30.28 | 30.26 | 30.25 | 30.26 | in Hg | |
| Avg Square Root Pitot Pressure | 1.12 | 1.14 | 1.13 | 1.13 | $\sqrt{(in\ H_2O)}$ | |
| **Moisture Content Data** | PM U-00002 Base+DB-1 | PM U-00002 Base+DB-2 | PM U-00002 Base+DB-3 | **Average** | **Units** | **Limits** |
| Impinger Water Weight Gain | 186.30 | 225.50 | 210.00 | 207.27 | g | |
| Silica Gel Weight Gain | 19.80 | 20.50 | 20.50 | 20.27 | g | |
| Total Water Volume Collected | 206.47 | 246.44 | 230.92 | 227.94 | ml | |
| Standard Water Vapor Volume | 9.72 | 11.60 | 10.87 | 10.73 | scf | |
| Standard Meter Volume | 96.3 | 101.2 | 97.8 | 98.4 | dscf | |
| Standard Metric Meter Volume | 2.7 | 2.9 | 2.8 | 2.8 | dscm | |
| Calculated Stack Moisture | 9.17 | 10.29 | 10.00 | 9.82 | % | |
| Saturated Stack Moisture | 61.77 | 52.49 | 52.31 | 55.52 | % | |
| Reported Stack Moisture Content | 9.17 | 10.29 | 10.00 | 9.82 | % | |
| **Gas Analysis Data** | PM U-00002 Base+DB-1 | PM U-00002 Base+DB-2 | PM U-00002 Base+DB-3 | **Average** | **Units** | **Limits** |
| Carbon Dioxide Content | 5.3 | 5.3 | 5.3 | 5.3 | % | |
| Oxygen Content | 11.7 | 11.7 | 11.7 | 11.7 | % | |
| Carbon Monoxide Content | 0.0 | 0.0 | 0.0 | 0.0 | ppm | |
| Nitrogen Content | 83.0 | 83.0 | 83.0 | 83.0 | % | |
| Stack Dry Molecular Weight | 29.32 | 29.31 | 29.31 | 29.31 | lb/lb-mole | |
| Stack Wet Molecular Weight | 28.28 | 28.15 | 28.18 | 28.20 | lb/lb-mole | |
| Calculated Fuel Factor | 1.740 | 1.742 | 1.746 | 1.742 | | |
| Fuel F-Factor | 8638.67 | 8636.30 | 8636.30 | 8637.09 | dscf/MMBtu | |
| Percent Excess Air | 114.1 | 113.9 | 114.0 | 114.0 | % | |

## METHOD 201A (FRONT) AND 202 (BACK) - RESULTS

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#2 |

| **Volumetric Flow Rate Data** | PM U-00002 Base+DB-1 | PM U-00002 Base+DB-2 | PM U-00002 Base+DB-3 | **Average** | **Units** | **Limits** |
|---|---|---|---|---|---|---|
| Average Stack Gas Velocity | 60.63 | 61.62 | 60.99 | 61.08 | ft/sec | |
| Stack Cross-Sectional Area | 283.53 | 283.53 | 283.53 | 283.53 | ft² | |
| Actual Stack Flow Rate | 1,031,351 | 1,048,278 | 1,037,485 | 1,039,038 | acfm | |
| Wet Standard Stack Flow Rate | 50,604 | 52,001 | 51,462 | 51,356 | wkscfh | |
| Dry Standard Stack Flow Rate | 45,965,064 | 46,652,496 | 46,317,226 | 46,311,595 | dscfh | |
| Percent of Isokinetic Rate | 98.8 | 100.2 | 98.6 | 99.2 | % | |
| **Gravimetric Analysis** | PM U-00002 Base+DB-1 | PM U-00002 Base+DB-2 | PM U-00002 Base+DB-3 | **Average** | **Units** | **Limits** |
| $NH_4OH$ Correction | 0.0000 | 0.0000 | 0.0000 | 0.0000 | ml | |
| $NH_4OH$ Correction | 0.0000 | 0.0000 | 0.0000 | 0.0000 | mg | |
| **Emission Rate Data** | PM U-00002 Base+DB-1 | PM U-00002 Base+DB-2 | PM U-00002 Base+DB-3 | **Average** | **Units** | **Limits** |
| Total $PM_{10}$ Mass | 7.80 | 5.20 | 8.30 | 7.10 | mg | -- |
| Total $PM_{10}$ Concentration | 8.10E-05 | 5.14E-05 | 8.48E-05 | 7.24E-05 | g/dscf | -- |
| | 1.25E-03 | 7.93E-04 | 1.31E-03 | 1.12E-03 | gr/dscf | -- |
| Total $PM_{10}$ Emission Rate | 3.72 | 2.40 | 3.93 | 3.35 | kg/hr | -- |
| | 8.21 | 5.29 | 8.66 | 7.39 | lb/hr | -- |
| | 35.96 | 23.16 | 37.94 | 32.35 | tpy | -- |
| | 0.0035 | 0.0022 | 0.0037 | 0.0031 | lb/MMBtu | 0.006 |
| Filterable $PM_{10}$ Mass | 2.90 | 1.90 | 1.90 | 2.23 | mg | -- |
| Filterable $PM_{10}$ Concentration | 3.01E-05 | 1.88E-05 | 1.94E-05 | 2.28E-05 | g/dscf | -- |
| | 4.65E-04 | 2.90E-04 | 3.00E-04 | 3.51E-04 | gr/dscf | -- |
| Filterable $PM_{10}$ Emission Rate | 1.38 | 0.88 | 0.90 | 1.05 | kg/hr | -- |
| | 3.05 | 1.93 | 1.98 | 2.32 | lb/hr | -- |
| | 13.37 | 8.46 | 8.69 | 10.17 | tpy | -- |
| | 0.0013 | 0.0008 | 0.0008 | 0.0010 | lb/MMBtu | -- |
| Condensable $PM_{10}$ Mass | 4.90 | 3.30 | 6.40 | 4.87 | mg | -- |
| Condensable $PM_{10}$ Concentration | 5.09E-05 | 3.26E-05 | 6.54E-05 | 4.96E-05 | g/dscf | -- |
| | 7.85E-04 | 5.03E-04 | 1.01E-03 | 7.66E-04 | gr/dscf | -- |
| Condensable $PM_{10}$ Emission Rate | 2.34 | 1.52 | 3.03 | 2.30 | kg/hr | -- |
| | 5.16 | 3.35 | 6.68 | 5.06 | lb/hr | -- |
| | 22.59 | 14.69 | 29.26 | 22.18 | tpy | -- |
| | 0.0022 | 0.0014 | 0.0028 | 0.0021 | lb/MMBtu | -- |
| **RM 201A Quality Control** | PM U-00002 Base+DB-1 | PM U-00002 Base+DB-2 | PM U-00002 Base+DB-3 | **Average** | **Units** | **Limits** |
| Stack Viscosity | 200.23 | 197.41 | 197.64 | 198.43 | µP | |
| Cyclone Flow Rate | 0.476 | 0.491 | 0.478 | 0.482 | ft³/min | |
| Dry Gas Sampling Rate | 0.354 | 0.364 | 0.356 | 0.358 | dscfm | |
| Reynolds Number | 2692.23 | 2834.63 | 2759.69 | 2,762.18 | | |
| Recalculated Cunninham | 1.075 | 1.078 | 1.076 | 1.077 | | |
| Dia. of 50% Prob. (D50) CI | 10.71 | 10.36 | 10.56 | 10.54 | | |
| Recalculated D50-1 for CIV | 2.42 | 2.28 | 2.36 | 2.35 | | |
| Z | 1.00 | 1.00 | 1.00 | 1.00 | | |
| No. Sampling Pts. Outside Δp | 0 | 0 | 0 | 0 | points | |

**EXAMPLE CALCULATIONS (Reference Method 1 - Circular Stack)**

**Diameter of Stack (in.)**

$$D(in.) = L_{fw} - L_{nw}$$

D (in.) = 236.00 in. - 8.00 in. = 228.00 in.

**Stack Diameters Downstream**

$$B_D\,(dia.) = \frac{B}{D}$$

$B_D$ (dia.) = $\frac{850.00 \text{ in.}}{228.00 \text{ in.}}$ = 3.73 diameters

**Area of Stack ($ft^2$)**

$$A_s\,(ft^2) = \pi \times \left(\frac{D}{2 \times 12}\right)^2$$

$A_s$ ($ft^2$) = 3.14 x ( $\frac{228.00 \text{ in.}}{2 \text{ x } 12\text{in./ft}}$ )$^2$ = 283.53 $ft^2$

**Stack Diameters Upstream**

$$A_D\,(dia.) = \frac{A}{D}$$

$A_D$ (dia.) = $\frac{200.40 \text{ in.}}{228.00 \text{ in.}}$ = 0.88 diameters

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Reference Method 3a) [Values from Run 1 test]**

**Carbon Monoxide Concentration (%)**

$$\%CO = \frac{ppmCO}{10{,}000}$$

$$\%CO\ (\%) = \frac{0.00 \quad ppm}{10{,}000\ ppm/\%} = 0.0000\ \%$$

**Nitrogen Concentration (%)**

$$\%N_2 = 100 - \%CO_2 - \%O_2 - \%CO$$

$\%N_2$ (%) = 100 - 5.30 % - 11.68 % - 0.00 / 10,000 % = 83.02 %

**Stack Dry Molecular Weight (lb/lb-mole)**

$$M_d\,(lb/lb-mol) = \sum\left(\frac{MW_{comp}}{100} \times \%component\right)$$

$$M_d\ (lb/lb\text{-}mol) = \left(\frac{44\ lb/lb\text{-}mol}{100} \times 5.30\ \%\right) +$$

$$\left(\frac{32\ lb/lb\text{-}mol}{100} \times 11.68\ \%\right) + \left(\frac{28\ lb/lb\text{-}mol}{100} \times \left[\frac{0.00}{10{,}000} + 83.02\ \right]\right) = \frac{29.32\ lb}{lb\text{-}mol}$$

**Stack Wet Molecular Weight (lb/lb-mole)**

$$M_S\,(lb/lb-mol) = \left[M_d \times \left(1 - \frac{B_{WS}}{100}\right)\right] + \left[MW_{H_2O} \times \frac{B_{WS}}{100}\right]$$

$$M_S\ (lb/lb\text{-}mol) = \left\{\frac{29.32\ lb}{lb\text{-}mol} \times \left(1 - \frac{9.17\ \%}{100}\right)\right\} + \left\{\frac{18\ lb}{lb\text{-}mol} \times \frac{9.17\ \%}{100}\right\} = \frac{28.28\ lb}{lb\text{-}mol}$$

**Average Calculated Fuel Factor ($F_o$)**

$$F_{o(avg)} = \frac{\left[20.9 - (\%O_2)_{avg} - (0.5 \times (\%CO)_{avg})\right]}{(\%CO_2)_{avg} + (\%CO)_{avg}}$$

$$F_{o(avg)} = \frac{20.9\% - 11.68\ \% - (0.5 \times 0.000\ \%)}{5.30\ \% + 0.000\ \%} = 1.740$$

**Average Excess Air (%)**

$$\%EA_{avg}\,(\%) = \frac{100 \times \left[(\%O_2)_{avg} - (0.5 \times (\%CO)_{avg})\right]}{(0.264 \times (N_2)_{avg}) - \left[(\%O_2)_{avg} - (0.5 \times (\%CO)_{avg})\right]}$$

$$(\%EA)_{AVG} = \frac{100 \times \{\ 11.68\ \% - (0.5 \times 0.000\ \%)\ \}}{(\ 0.264 \times 83.02\ \%) - \{\ 11.68\ \% - (0.5 \times 0.000\ \%)\}} = 114.09\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Reference Method 2) [Values from Run 1 test]**

**Absolute Stack Pressure (in. Hg)**

$$P_S\,(in.Hg) = P_b + \frac{P_{static}}{13.6}$$

$P_s$ (in. Hg) = 30.14 in. Hg + $\frac{\text{-0.89 in. } H_2O}{\text{13.6 in. } H_2O/\text{in. Hg}}$ = 30.07 in. Hg

**Average Stack Gas Velocity (ft/sec)**

$$v_s\,(ft/\sec) = K_p \times C_p \times \left(\sqrt{\Delta p}\right)_{avg} \times \sqrt{\frac{(t_s)_{avg} + T_u}{P_s \times M_s}}$$

$v_{sl}$ (ft/sec) =

$$\left(\frac{85.49\ \text{ft}\ \ (\text{lb/lb-mol})(\text{in. Hg})}{\text{sec}\qquad (^{o}\text{R})(\text{in. } H_2O)}\right)^{1/2} \times\ 0.72\ \times\ 1.12\ \text{in.}H_2O^{1/2}\ \times \sqrt{\frac{189.00\ +\ 460\ ^{o}\text{R}}{30.07\ \text{in. Hg} \times\ 28.28\ \text{lb/lb-mol}}} = \frac{60.6\ \text{ft}}{\text{sec}}$$

**Average Stack Dry Standard Flow Rate (dscfh)**

$$Q_{sd}\,(dscfh) = \frac{60 \times 60 \times \left(1 - \frac{B_{ws}}{100}\right) \times v_s \times A_s \times T_{std} \times P_s}{(t_s + T_u) \times P_{std}}$$

$Q_{sd}$ (dscf/hr) = $\frac{3600\ \text{sec}}{\text{hr}}$ x (1 - $\frac{9.17\ \%}{100}$) x $\frac{60.63\ \text{ft}}{\text{sec}}$ x 283.53 $\text{ft}^2$ x $\frac{68.00\ +\ 460\ ^{o}\text{R}}{189.00\ +\ 460\ ^{o}\text{R}}$ x $\frac{30.07\ \text{in. Hg}}{29.92\ \text{in. Hg}}$ = $\frac{45{,}965{,}063.97\ \text{dscf}}{\text{hr}}$

**Average Stack Wet Flow Rate (acfm)**

$$Q_{aw}\,(acfm) = 60 \times v_s \times A_s$$

$Q_{aw}$ (acf/min) = $\frac{60\ \text{sec}}{\text{min}}$ x $\frac{60.63\ \text{ft}}{\text{sec}}$ x 283.53 $\text{ft}^2$ = $\frac{1{,}031{,}350.91\ \text{acf}}{\text{min}}$

**Average Stack Wet Standard Flow Rate (ascfh)**

$$Q_{sw}\,(ascfh) = \frac{60 \times Q_{aw} \times T_{std} \times P_s}{(t_s + T_u) \times P_{std}}$$

$Q_{sw}$ (ascf/hr) = $\frac{60\ \text{min}}{\text{hr}}$ x $\frac{1{,}031{,}350.91\ \text{acf}}{\text{min}}$ x $\frac{68.00\ +\ 460\ ^{o}\text{R}}{189.00\ +\ 460\ ^{o}\text{R}}$ x $\frac{30.07\ \text{in. Hg}}{29.92\ \text{in. Hg}}$ = $\frac{50{,}603{,}971.98\ \text{ascf}}{\text{hr}}$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Reference Method 4) [Values from Run 1 test]**

**Water Volume Weighed (scf)**

$$V_{wsg\ (std)}(scf) = W_t \times K_5$$

$V_{wsg(std)}$ = 206.10 g x 0.04715 $ft^3/g$ = 9.718 scf

**Standard Meter Volume (dscf)**

$$V_{m(std)}(dscf) = \frac{K_1 \times Y \times V_m \times \left(P_b + \frac{\Delta H_{avg}}{13.6}\right)}{(t_m)_{avg} + T_u}$$

$$V_{m(std)} = \frac{17.65\ ^\circ R}{\text{in. Hg}} \times 0.97 \times 101.59\ \text{dcf} \times \frac{30.14\ \text{in. Hg} + \frac{0.44\ \text{in. } H_2O}{13.6\ \text{in. } H_2O / \text{in. Hg}}}{87.17\ ^\circ F + 460\ ^\circ R} = 96.29\ \text{dscf}$$

**Calculated Moisture Content (%)**

$$B_{ws(calc)}(\%) = 100 \times \frac{V_{wsg(std)}}{V_{wsg(std)} + V_{m(std)}}$$

$$B_{ws(calc)} = 100 \times \frac{9.72\ \text{dscf}}{9.72\ \text{dscf} + 96.29\ \text{dscf}} = 9.17\ \%$$

**Saturated Moisture Content (%)**

$$B_{ws(svp)}(\%) = 100 \times \frac{10^{\left(6.691 - \frac{3144}{t_{s(avg)} + 390.86}\right)}}{P_b + \frac{P_{static}}{13.6}} \le 100$$

$$B_{ws(svp)} = 100 \times \frac{10^{\left(6.691 - \frac{3144}{189.00\ ^\circ F + 390.86}\right)}}{30.14\ \text{in. Hg} + \frac{-0.89\ \text{in. } H_2O}{13.6\ \text{in. } H_2O / \text{in. Hg}}} \le 100 = 61.77\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Isokinetic Sampling) [Values from Run 1 test]**

**Desired Orifice (in. $H_2O$)** (first point)

$$\Delta H_d\,(in.H_2O) = K \times \Delta p$$

$\Delta H_d$ (in. $H_2O$) = x

in. $H_2O$ = in. $H_2O$

**Absolute Meter Pressure (in. Hg)**

$$P_m\,(in.Hg) = P_b + \frac{\Delta H@}{13.6}$$

$P_m$ (in. Hg) = 30.14 in. Hg + $\frac{1.88 \text{ in. } H_2O}{13.6 \text{ in. } H_2O/\text{in. Hg}}$ = 30.28 in. Hg

**Recommended Nozzle Diameter (in.)**

$$D_{ni}\,(in.) = \sqrt{\frac{C_n \times Q_m \times P_m}{(t_m + T_u) \times C_p} \times \left(\frac{1 - \frac{B_{wm}}{100}}{1 - \frac{B_{ws}}{100}}\right) \times \sqrt{(t_s + T_u) \times \left[\frac{M_d \times \left(1 - \frac{B_{ws}}{100}\right) + \left(18 \times \frac{B_{ws}}{100}\right)}{P_s \times \Delta p_{avg}}\right]}}$$

$$D_{ni}\,(in.) = \sqrt{\frac{\frac{0.03575\ (\text{lb-mole}\bullet{}^{o}\text{R}\bullet\text{in. } H_2O)^{1/2}\bullet\text{min}\bullet\text{in.}^2}{\text{acf}\bullet\text{in. Hg}^{3/4}\bullet\text{lb}^{1/2}} \times 0.75 \text{ acf} \times 30.28 \text{ in. Hg}}{\left(87.17\ {}^{o}\text{F} + 460^{o}\text{R}\right) \times 0.72} \times \left(\frac{1 - \frac{0.00\ \%}{100}}{1 - \frac{9.17\ \%}{100}}\right) \times \sqrt{(189.00\ {}^{o}\text{F} + 460^{o}\text{R}) \times \frac{\frac{29.32 \text{ lb}}{\text{lb-mole}} \times \left(1 - \frac{9.17\ \%}{100}\right) + \left(\frac{18 \text{ lb}}{\text{lb-mol}} \times \frac{9.17\ \%}{100}\right)}{30.07 \text{ in. Hg} \times 1.12 \text{ in. } H_2O}}} = 0.219 \text{ in.}$$

**ΔP to ΔH Isokinetic Factor**

$$K = C_k \times C_p^2 \times \Delta H@ \times D_{na}^4 \times \left[\frac{M_d \times \left(1 - \frac{B_{wm}}{100}\right) + \left(18 \times \frac{B_{wm}}{100}\right)}{M_d \times \left(1 - \frac{B_{ws}}{100}\right) + \left(18 \times \frac{B_{ws}}{100}\right)}\right] \times \left(\frac{1 - \frac{B_{ws}}{100}}{1 - \frac{B_{wm}}{100}}\right)^2 \times \left(\frac{t_m + T_u}{ts + T_u}\right) \times \frac{P_s}{P_m}$$

$$K = \frac{849.8}{\text{in. } H_2O\bullet\text{in.}^4} \times 0.72^2 \times 1.88 \text{ in. } H_2O \times 0.16^4 \times \left(\frac{1 - \frac{9.17\ \%}{100}}{1 - \frac{0.00\ \%}{100}}\right)^2 \times \frac{87.17\ {}^{o}\text{F} + 460^{o}\text{R}}{189.00\ {}^{o}\text{F} + 460^{o}\text{R}}) \times$$

$$\left(\frac{\frac{29.32 \text{ lb}}{\text{lb/mole}} \times \left(1 - \frac{0.00\ \%}{100}\right) + \left(\frac{18 \text{ lb}}{\text{lb-mol}} \times \frac{0.00\ \%}{100}\right)}{\frac{29.32 \text{ lb}}{\text{lb/mole}} \times \left(1 - \frac{9.17\ \%}{100}\right) + \left(\frac{18 \text{ lb}}{\text{lb-mol}} \times \frac{9.17\ \%}{100}\right)}\right) \times \frac{30.07 \text{ in. Hg}}{30.28 \text{ in. Hg}} = 0.35$$

**Percent Isokinetic (%)** (first point)

$$I(\%) = \frac{K_4 \times \left((t_s)_{avg} + T_u\right) \times V_{m(std)}}{\left(\Theta \times \left(v_{s(l)}\right)_{avg} \times P_s \times \pi \times \left(\frac{D_{na}}{2} \times \frac{1}{12}\right)^2\right) \times \left(1 - \frac{B_{ws}}{100}\right)}$$

$$I\,(\%) = \frac{\frac{0.0945 \text{ min}\bullet\text{in. Hg}}{\text{sec}\bullet{}^{o}\text{R}} \times (187.00\ {}^{o}\text{F} + 460\ {}^{o}\text{R}) \times 8.48 \text{ dscf}}{23.00 \text{ min} \times \frac{61.55 \text{ ft}}{\text{sec}} \times 30.07 \text{ in. Hg} \times 3.14 \times \left(\frac{0.16 \text{ in.}}{2} \times \frac{\text{ft.}}{12 \text{ in.}}\right)^2 \times \left(1 - \frac{9.17\ \%}{100}\right)} = 101.04\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Isokinetic Sampling) [Values from Run 1 test]**

**Cumulative Percent Isokinetic (%)** (weighted average of all points)

$$I(\%) = \sum_{1-n} \frac{\lfloor I(\%) \times V_{m(std)} \rfloor_{1-n}}{V_{m(std)_{1-n}}}$$

Using Method 5, Eq 5-8 to determine intermediate isokinetics at each point, weighted averaging of the cumulative isokinetics is necessary since all points are not equal, and determined by using the dry standard meter volume collected at each point to weight the cumulative average. Intermediate isokinetics and dry standard meter volumes are found at each point. At each point the cumulative sum is found of each value and the quotient of the two used to determine the cumulative isokinetics for each residual point (n).

| Pt | In (%) | x | Vm(std)n | = | I (%)n | ∑(I (%)n) | / | ∑(Vm(std)n) | = | I (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| A-1 | 101.04 | x | 8.483 | = | 857.07 | 857.07 | / | 8.48 | = | 101.0 |
| A-2 | 94.05 | x | 7.333 | = | 689.70 | 1546.77 | / | 15.82 | = | 97.8 |
| A-3 | 103.53 | x | 8.085 | = | 837.09 | 2383.86 | / | 23.90 | = | 99.7 |
| B-1 | 91.93 | x | 7.713 | = | 709.05 | 3092.91 | / | 31.61 | = | 97.8 |
| B-2 | 96.55 | x | 6.890 | = | 665.21 | 3758.13 | / | 38.50 | = | 97.6 |
| B-3 | 94.48 | x | 7.921 | = | 748.37 | 4506.50 | / | 46.42 | = | 97.1 |
| C-1 | 97.66 | x | 8.181 | = | 798.93 | 5305.44 | / | 54.60 | = | 97.2 |
| C-2 | 106.55 | x | 9.657 | = | 1028.89 | 6334.33 | / | 64.26 | = | 98.6 |
| C-3 | 98.43 | x | 8.245 | = | 811.57 | 7145.90 | / | 72.51 | = | 98.6 |
| D-1 | 103.51 | x | 8.053 | = | 833.53 | 7979.43 | / | 80.56 | = | 99.1 |
| D-2 | 95.32 | x | 7.421 | = | 707.33 | 8686.76 | / | 87.98 | = | 98.7 |
| D-3 | 99.14 | x | 8.298 | = | 822.61 | 9509.37 | / | 96.28 | => | 98.8 |

Last Pt

**Percent Isokinetic (%)** (intermediate equation, all points)
[equivalent to taking an average of point-by-point isokinetics without weighting the average (e.g. all points equal)]

$$I(\%) = \frac{K_4 \times \left((t_s)_{avg} + T_u\right) \times V_{m(std)}}{\left(\Theta \times (v_{s(l)})_{avg} \times P_s \times \pi \times \left(\frac{D_{na}}{2} \times \frac{1}{12}\right)^2\right) \times \left(1 - \frac{B_{ws}}{100}\right)}$$

$$I(\%) = \frac{0.0945 \text{ min•in. Hg}}{\text{sec•}^{\circ}\text{R}} \times (189.00\ ^{\circ}\text{F} + 460\ ^{\circ}\text{R}) \times 96.29 \text{ dscf}$$

$$\frac{}{272.25 \text{ min} \times \frac{60.63 \text{ ft}}{\text{sec}} \times 30.07 \text{ in. Hg} \times 3.14 \times \left(\frac{0.16 \text{ in.}}{2} \times \frac{\text{ft.}}{12 \text{ in.}}\right)^2 \times \left(1 - \frac{9.17\ \%}{100}\right)} = 98.67\ \%$$

**Raw Data Percent Isokinetic (%)**
[utilizes the raw data equation for isokinetics from Method 5]

$$I(\%) = \frac{100\left((t_s)_{avg} + T_u\right)\left[K_4 V_{1c} + \frac{V_m Y}{(t_m)_{avg} + T_u}\left(P_{bar} + \frac{\Delta H}{13.6}\right)\right]}{60\left(\Theta \times (v_{s(l)})_{avg} \times P_s \times \pi \times \left(\frac{D_{na}}{2} \times \frac{1}{12}\right)^2\right)}$$

$$I(\%) = \frac{100 \times (189.00\ ^{\circ}\text{F} + 460\ ^{\circ}\text{R}) \times \left[\frac{0.002669 \text{ ft}^3\text{•in. Hg}}{\text{ml•}^{\circ}\text{R}} \times 206.5 \text{ ml} + \frac{101.59 \text{ dcf} \times 0.974}{87.17\ ^{\circ}\text{F} + 460\ ^{\circ}\text{R}} \left(30.14 \text{ in Hg} + \frac{1.121}{13.6}\right)\right]}{}$$

$$\frac{}{60 \times 272.25 \text{ min} \times \frac{60.63 \text{ ft}}{\text{sec}} \times 30.07 \text{ in. Hg} \times 3.14 \times \left(\frac{0.16 \text{ in.}}{2} \times \frac{\text{ft.}}{12 \text{ in.}}\right)^2} = 98.77\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Gravimetric Analysis) [Values from Run 1 test]**

**Blank Concentration [Acetone Blank Weight of Solids] (mg/ml)**

$$C_x(mg/ml) = \frac{1000 \times w_x}{v_x}$$

$C_x$ (mg/ml) = $\frac{1000\ mg}{g}$ x $\frac{0.0000\ g}{200.60\ ml}$ = $\frac{0.0000\ mg}{ml}$ = $\frac{\quad mg}{ml}$

**Blank Adjustment [Acetone Blank Weight of Solids and Nozzle Wash PM>10] (mg)**

$$W_x(mg) = v_x \times C_x$$

$W_x$ (mg) = 96 ml x 0.0000 mg/ml = 0.00 mg < Sample Gain

**Sample Gain [Nozzle Wash PM>10] (mg)**

$$m_x(mg) = \left(m_{fx} - m_{tx}\right) \times 1000$$

$m_x$ (mg) = $\frac{1000\ mg}{g}$ x ( 0.0108 g - 0.00 g ) = 10.80 mg

**Adjusted Sample Gain [Nozzle Wash PM>10] (mg)**

$$m_{xadj}(mg) = m_x - W_x$$

$m_{xadj}$ (mg) = 10.8 mg - 0.00 mg = 10.80 mg

**0.1N $NH_4OH$ Correction (mg)**

$$m_c(mg) = 17.03 \times V_t \times N$$

$m_c$ (mg) = 17.03 x 0.00 ml x 0.1 N = 0.00 mg

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Analysis) [Values from Run 1 test - Total $PM_{10}$ Mass]**

**Stack Total Concentration (g/dscf)**

$$c_s(g/dscf) = 0.001 \times \frac{M_n}{V_{m(std)}}$$

$$c_s \text{ (g/dscf)} = \frac{\text{g}}{\text{1000 mg}} \times \frac{\text{7.80 mg}}{\text{96.29 dscf}} = \frac{\text{8.10E-05 g}}{\text{dscf}}$$

**Stack Total Concentration (gr/dscf)**

$$c_s'(gr/dscf) = 0.001 \times \frac{M_n}{V_{m(std)}} \times \frac{7000}{453.592}$$

$$c'_s \text{ (gr/dscf)} = \frac{\text{g}}{\text{1000 mg}} \times \frac{\text{7.80 mg}}{\text{96.29 dscf}} \times \frac{\text{7000 gr}}{\text{lb}} \times \frac{\text{lb}}{\text{453.592 g}} = \frac{\text{1.25E-03 gr}}{\text{dscf}}$$

**Total Emissions Rate (kg/hr)**

$$E(kg/hr) = c_s \times Q_{sd} \times \frac{kg}{1000\ g}$$

$$E \text{ (kg/hr)} = \frac{\text{kg}}{\text{1000 g}} \times \frac{\text{8.10E-05 g}}{\text{dscf}} \times \frac{\text{45,965,064 dscf}}{\text{hr}} = \frac{\text{3.72 kg}}{\text{hr}}$$

**Total Emissions Rate (lb/hr)**

$$E'(lb/hr) = \frac{M_n \times Q_{sd}}{V_{m(std)}} \times \frac{lb \times g}{453.592g \times 1000mg}$$

$$E' \text{ (lb/hr)} = \frac{\text{g}}{\text{1000 mg}} \times \frac{\text{lb}}{\text{453.592 g}} \times \frac{\text{7.80 mg}}{\text{96.29 dscf}} \times \frac{\text{45,965,064 dscf}}{\text{hr}} = \frac{\text{8.21 lb}}{\text{hr}}$$

**Total Emissions Rate (tpy)**

$$E''(ton/yr) = E' \times \frac{8760}{2000}$$

$$E'' \text{ (tpy)} = \frac{\text{ton}}{\text{2000 lb}} \times \frac{\text{8,760 hr}}{\text{yr}} \times \frac{\text{8.21 lb}}{\text{hr}} = \frac{\text{35.96 ton}}{\text{yr}}$$

**Total Emissions Rate (lb/MMBtu)**

Oxygen Based:

$$E'''(lb/MMBtu) = \frac{M_n \times F_d}{V_{m(std)} \times 1000 \times 453.592} \times \left(\frac{20.9}{20.9 - \%O_2}\right)$$

$$E''' \text{ (lb/MMBtu)} = \frac{\text{g}}{\text{1000 mg}} \times \frac{\text{lb}}{\text{453.592 g}} \times \frac{\text{7.80 mg}}{\text{96.29 dscf}} \times \frac{\text{8,638.67 dscf}}{\text{MMBtu}} \times \left(\frac{\text{20.9}}{\text{20.9 - 11.7 \%}}\right) = \frac{\text{0.0035 lb}}{\text{MMBtu}}$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Stack Gas Viscosity (μP) [based on preliminary data] [RM 201A, Eq. 3]**

$$\mu(\mu P) = C_1 + C_2\sqrt{T_s} + C_3 T_s^{-2} + C4(\%O_{2,wet}) - C_5 B_{ws} + C_6 B_{ws} T_s^2$$

μ (μP) = -150.3162 μP + 13.4622 $\sqrt{\quad 181 \quad + 460}$ + 3.86153x10$^{6}$ ( 181 + 460 )$^{-2}$ + 0.591123 ( 5.2 x (1 - 8.00 /100)
- 91.9723 ( 8.00 /100) + 1.51761x10$^{-5}$ ( 8.00 /100)( 181 + 460)$^2$ = 195.85 μP

**Cunningham Correction Factor [RM 201A, Eq. 4]**
**[based on preliminary data for a 2.25 micrometer diameter particle]**

$$C = 1 + 0.0057193\left[\frac{\mu}{P_s D_{50}}\right]\left[\frac{T_s}{M_w}\right]^{0.5}$$

$$C = 1 + 0.0057193 \times \left(\frac{195.85\ \mu P}{30.07\ \text{in Hg} \times 2.25\ \mu m}\right)\left(\frac{181 + 460\ ^{o}R}{29.14\ \text{lb / lb-mole}}\right)^{0.5} = 1.08$$

**First calculation set using Cyclone I or Cyclone I and IV, assuming $N_{re}$<3,162**

**Lower Limit Cut Diameter for Cyclone I (μm) [RM 201A, Eq. 5]**
**[assumes $N_{re}$<3,162]**

$$D_{50LL}(\mu m) = 9.507 C^{0.3007}\left[\frac{M_w P_s}{T_s}\right]^{0.1993}$$

$$D_{50LL}\ (\mu m) = 9.507 \times 1.08^{\ 0.3007} \times \left(\frac{30.07\ \text{in Hg} \times 29.14\ \text{lb / lb-mole}}{181 + 460\ ^{o}R}\right)^{0.1993} = 10.35\ \mu m$$

**Cut Diameter for Cyclone I for the Middle of the Overlap Zone (μm) [RM 201A, Eq. 6]**
**[assumes $N_{re}$<3,162]**

$$D_{50T}(\mu m) = \left(\frac{11 + D_{50LL}}{2}\right)$$

$$D_{50T}\ (\mu m) = \frac{11 + 10.35\ \mu m}{2} = 10.67\ \mu m$$

**Sampling Rate Using Both $PM_{10}$ and $PM_{2.5}$ Cyclones (acfm) [RM 201A, Eq. 7]**
**[assumes $N_{re}$<3,162]**

$$Q_s(acfm) = Q_I(acfm) = 0.07296(\mu)\left[\frac{T_s}{M_w P_s}\right]^{0.2949}\left[\frac{1}{D_{50T}}\right]^{1.4102}$$

Qs (acfm) =

$$0.07296 \times 195.85\ \mu P \times \left(\frac{181 + 460\ ^{o}R}{30.07\ \text{in Hg} \times 29.14\ \text{lb / lb-mole}}\right)^{0.2949} \times \left(\frac{1}{10.67\ \mu m}\right)^{1.4102} = 0.46\ \text{acfm}$$

**Reynolds Number (dimensionless) [RM 201A, Eq. 10]**
**[verification of $N_{re}$<3,162, using Cyclone I and IV]**

$$N_{re} = 8.64 \times 10^5\left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

Correct

$$N_{re} = 8.64 \times 10^5 \times \frac{30.07\ \text{in Hg} \times 29.14\ \text{lb / lb-mole}}{181 + 460\ ^{o}R} \times \frac{0.46\ \text{acfm}}{195.85\ \mu P} = 2788.06 < 3{,}162$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Second calculation set using Cyclone IV, assuming $N_{re}$<3,162**

**Particle Cut Diameter for $N_{re}$ Less than 3,162 for Cyclone IV (µm) [RM 201A, Eq. 34]**
**[assumes $N_{re}$<3,162]**

$$D_{50}(\mu m) = 0.0024302 \left[\frac{\mu}{Q_s}\right]^{1.1791} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.6790}$$

$D_{50}$ (µm) = 0.0024302 x ( 195.85 µP / 0.46 acfm )$^{1.1791}$ x ( 1 / 1.08 )$^{0.5}$ x ( 181 + 460 °R / 30.07 in Hg x 29.14 lb / lb-mole )$^{0.6790}$ = 2.37 µm

**Sampling Rate Using Only $PM_{2.5}$ Cyclone for $N_{re}$ Less than 3,162 (acfm) [RM 201A, Eq. 8]**

$$Q_{IV}(acfm) = 0.0060639 \left(\frac{\mu}{C^{0.4242}}\right) \left[\frac{P_s M_w}{T_s}\right]^{-.05759} \left[\frac{1}{D_{50}}\right]^{0.8481}$$

$Q_{IV}$ (acfm) = 0.0060639 x ( 195.85 µP / 1.08 $^{0.4242}$ ) x ( 30.07 in Hg x 29.14 lb / lb-mole / 181 + 460 °R )$^{-0.5759}$ x ( 1 / 2.37 µm )$^{0.8481}$ = 0.46 acfm

**Reynolds Number (dimensionless) [RM 201A, Eq. 10]**
**[verification of $N_{re}$<3,162, using Cyclone IV only]**

$$N_{re} = 8.64 \times 10^5 \left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

Correct

$N_{re}$ = 8.64 x $10^5$ x 30.07 in Hg x 29.14 lb / lb-mole / 181 + 460 °R x 0.46 acfm / 195.85 µP = 2788.01 < 3,162

**Third calculation set using Cyclone I or Cyclone I and IV, assuming $N_{re}$≥3,162**

**Lower Limit Cut Diameter for Cyclone I (µm) [RM 201A, Eq. 12]**
**[assumes $N_{re}$≥3,162]**

$$D_{50LL}(\mu m) = 10.0959 C^{0.4400} \left[\frac{M_w P_s}{T_s}\right]^{0.0600}$$

$D_{50LL}$ (µm) = 10.0959 x 1.08 $^{0.4400}$ x ( 30.07 in Hg x 29.14 lb / lb-mole / 181 + 460 °R )$^{0.0600}$ = 10.63 µm

**Cut Diameter for Cyclone I for the Middle of the Overlap Zone (µm) [RM 201A, Eq. 6]**
**[assumes $N_{re}$≥3,162]**

$$D_{50T}(\mu m) = \left(\frac{11 + D_{50LL}}{2}\right)$$

$D_{50T}$ (µm) = ( 11 + 10.63 µm ) / 2 = 10.82 µm

**Sampling Rate Using Both $PM_{10}$ and $PM_{2.5}$ Cyclones (acfm) [RM 201A, Eq. 7]**
**[assumes $N_{re}$≥3,162]**

$$Q_s(acfm) = Q_I(acfm) = 0.07296(\mu) \left[\frac{T_s}{M_w P_s}\right]^{0.2949} \left[\frac{1}{D_{50T}}\right]^{1.4102}$$

Qs (acfm) = 0.07296 x 195.85 µP x ( 181 + 460 °R / 30.07 in Hg x 29.14 lb / lb-mole )$^{0.2949}$ x ( 1 / 10.82 µm )$^{1.4102}$ = 0.45 acfm

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Reynolds Number (dimensionless) [RM 201A, Eq. 10]**
**[verification of $N_{re}$≥3,162, using Cyclone I and IV]**

$$N_{re} = 8.64 \times 10^5 \left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

Wrong Assumption

$N_{re}$ = 8.64 x $10^5$ x ( 30.07 in Hg x 29.14 lb / lb-mole ) / ( 181 + 460 °R ) x ( 0.45 acfm ) / ( 195.85 µP ) = 2736.91 < 3,162

**Fourth calculation set using Cyclone IV, assuming $N_{re}$≥3,162**

**Particle Cut Diameter for $N_{re}$ Greater than or Equal to 3,162 for Cyclone IV (µm) [RM 201A, Eq. 35]**
**[assumes $N_{re}$≥3,162]**

$$D_{50}(\mu m) = 0.019723 \left[\frac{\mu}{Q_s}\right]^{0.8058} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.3058}$$

$D_{50}$ (µm) =

0.019723 x ( ( 195.85 µP ) / ( 0.45 acfm ) )$^{0.8058}$ x ( ( 1 ) / ( 1.08 ) )$^{0.5}$
x ( ( 181 + 460 °R ) / ( 30.07 in Hg x 29.14 lb / lb-mole ) )$^{0.3058}$ = 2.29 µm

**Sampling Rate Using Only $PM_{2.5}$ Cyclone for $N_{re}$ Greater than or Equal to 3,162 (acfm) [RM 201A, Eq. 9]**

$$Q_{IV}(acfm) = 0.007657 \left(\frac{\mu}{C^{0.6205}}\right)\left[\frac{P_s M_w}{T_s}\right]^{-0.3795}\left[\frac{1}{D_{50}}\right]^{1.241}$$

$Q_{IV}$ (acfm) =

0.007657 x ( ( 195.85 µP ) / ( 1.08 $^{0.6205}$ ) ) x ( ( 30.07 in Hg x 29.14 lb / lb-mole ) / ( 181 + 460 °R ) )$^{-0.3795}$
x ( ( 1 ) / ( 2.29 µm ) )$^{1.241}$ = 0.45 acfm

**Reynolds Number (dimensionless) [RM 201A, Eq. 10]**
**[verification of $N_{re}$≥3,162, using Cyclone IV only]**

$$N_{re} = 8.64 \times 10^5 \left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

Wrong Assumption

$N_{re}$ = 8.64 x $10^5$ x ( 30.07 in Hg x 29.14 lb / lb-mole ) / ( 181 + 460 °R ) x ( 0.46 acfm ) / ( 195.85 µP ) = 2788.06 < 3,162

**Meter Box Orifice Pressure Drop (in $H_2O$) [RM 201A, Eq. 11]**
**As calculated using applicable calculation set 1, 2, 3, or 4**

$$\Delta H(inH_2O) = \left[\frac{Q_s(1 - B_{ws})P_s}{T_s}\right]^2 \left[\frac{1.083 T_m M_d \Delta H_@}{P_{bar}}\right]$$

ΔH (in $H_2O$) = ( 0.46 acfm x ( 1 - 8.00 /100) x 30.07 in Hg ) / ( 181 + 460 °R ) )$^2$
x ( 1.083 x ( 85.00 + 460 °R) x 30.11 lb / lb-mole x 1.878 in $H_2O$ ) / ( 30.14 in Hg ) ) = 0.441 in $H_2O$

| | | | | |
|---|---|---|---|---|
| 50 °F above stack temperature | $T_{s+50}$ = | 231 | $\Delta H_{+50}$ = | 0.379 in $H_2O$ |
| 50 °F below stack temperature | $T_{s+50}$ = | 131 | $\Delta H_{+50}$ = | 0.519 in $H_2O$ |

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Adjusted Velocity Pressure (in $H_2O$) [point A-1] [RM201A, Eq. 25]**

$$\Delta p_s(inH_2O) = \Delta p_m\left[\frac{C_p}{C'_p}\right]^2$$

$\Delta p_s$ (in $H_2O$) = 1.30 in $H_2O$ x ( 0.7240 / 0.8198 )$^2$ = 1.01 in $H_2O$

**Average Probe Blockage Factor [RM201A, Eq. 26]**

$$b_f = \frac{22.0}{A}$$

$b_f$ = 22.0 / 40828.14 $in^2$ = 5.39E-04

**Velocity Pressure Adjusted for Blockage Factor (in $H_2O$) [point A-1] [RM201A, Eq. 27]**

Target PM and/or Stack Size Not Applicable to Blockage Factor Calculation

$$\Delta p_{s2}(inH_2O) = \Delta p_{s1}\left[\frac{1}{(1-b_f)}\right]^2$$

$\Delta p_s$ (in $H_2O$) = 1.01 in $H_2O$ x ( 1 / ( 1 - 0.00E+00 ) )$^2$ = 1.01 in $H_2O$

**Velocity of Stack Gas Adjusted for Blockage Factor and/or $C_p$ / $C'_p$ (ft/sec) [RM201A, Eq. 13]**

Target PM and/or Stack Size Not Applicable to Blockage Factor Calculation

$$v_s = K_p C_p \left(\sqrt{(\Delta p)}\right)_{avg}\left[\sqrt{\frac{T_s}{P_s M_w}}\right]$$

$v_s$ (ft/sec) =

85.49 ft/sec / lb/mole - °R x 0.7240 x 0.99 x ( 181 + 460 °R / 30.07 in Hg x 29.14 lb / lb-mole )$^{0.5}$ = 52.41 ft/sec

**Calculated Nozzle Diameter for Acceptable Sampling Rate (in) [RM201A, Eq. 14]**

$$D(in) = \left[\frac{3.056 Q_s}{v_s}\right]^{0.5}$$

D (in) = ( 3.056 x 0.46 acfm / 52.41 ft/sec )$^{0.5}$ = 0.164 in

Represents ideal diameter, which we then compare to capabilities of all nozzles from multiple sets

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Velocity of Gas in Nozzle 4b (diam. = 0.156 in), (ft/sec) [RM201A, Eq. 15]**

$v_n$ (ft/sec) = $\frac{0.46 \text{ acfm}}{60 \text{ min/sec} \times 1.33\text{E-}04 \text{ ft}^2}$ = 58.02 $\frac{\text{ft}}{\text{sec}}$

Example set of calculations for nozzle used with run 1

$$v_n = \frac{\left(\frac{Q_s}{60 \frac{\text{min}}{\text{sec}}}\right)}{A_n}$$

**Minimum Nozzle Velocity to Stack Velocity Ratio Parameter (dimensionless) [RM201A, Eq. 16]**

**Nozzle 4b (diam. = 0.156 in)**

$$R_{min} = \left[0.2457 + \left(0.3072 - \frac{0.2603(\mu)(Q_s)^{0.5}}{v_n^{1.5}}\right)^{0.5}\right]$$

$R_{min}$ =

$0.2457 + (0.3072 - \frac{0.2603 \times 195.85 \text{ µP} \times (0.46 \text{ acfm})^{0.5}}{58.02 \text{ in}^{1.5}})^{0.5}$ = 0.72

**Maximum Nozzle Velocity to Stack Velocity Ratio Parameter (dimensionless) [RM201A, Eq. 17]**

**Nozzle 4b (diam. = 0.156 in)**

$$R_{max} = \left[0.4457 + \left(0.5690 + \frac{0.2603(\mu)(Q_s)^{0.5}}{v_n^{1.5}}\right)^{0.5}\right]$$

$R_{max}$ =

$0.4457 + (0.5690 + \frac{0.2603 \times 195.85 \text{ µP} \times (0.46 \text{ acfm})^{0.5}}{58.02 \text{ in}^{1.5}})^{0.5}$ = 1.25

**Minimum Gas Velocity for $R_{min}$ Less than 0.5 (ft/sec)** **Nozzle 4b (diam. = 0.156 in)**

$v_{min}(ft/sec) = v_n(0.5)$ $v_{min}$ (ft/sec) = 0.5 x $\frac{\text{ft}}{\text{sec}}$ = $\frac{\text{ft}}{\text{sec}}$ **[RM201A, Eq. 18]**

Not Applicable

**Minimum Gas Velocity for $R_{min}$ Greater than or Equal to 0.5 (ft/sec)** **Nozzle 4b (diam. = 0.156 in)**

$v_{min}(ft/sec) = v_n R_{min}$ $v_{min}$ (ft/sec) = 58.02 $\frac{\text{ft}}{\text{sec}}$ x 0.72 = 42.01 $\frac{\text{ft}}{\text{sec}}$ **[RM201A, Eq. 19]**

**Maximum Gas Velocity for $R_{max}$ Less than 1.5 (ft/sec)** **Nozzle 4b (diam. = 0.156 in)**

$v_{max}(ft/sec) = v_n R_{max}$ $v_{max}$ (ft/sec) = 58.02 $\frac{\text{ft}}{\text{sec}}$ x 1.25 = 72.55 $\frac{\text{ft}}{\text{sec}}$ **[RM201A, Eq. 20]**

**Maximum Gas Velocity for $R_{max}$ Greater than or Equal to 1.5 (ft/sec)** **Nozzle 4b (diam. = 0.156 in)**

$v_{max}(ft/sec) = v_n(1.5)$ $v_{max}$ (ft/sec) = 1.5 x $\frac{\text{ft}}{\text{sec}}$ = $\frac{\text{ft}}{\text{sec}}$ **[RM201A, Eq. 21]**

Not Applicable

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Minimum Velocity Pressure (in $H_2O$) [RM201A, Eq. 22]** **Nozzle 4b (diam. = 0.156 in)**

Run 1 nozzle is able to achieve $\Delta p_{min}$ below preliminary data minimum

$$\Delta p_{min}\ (inH_2O) = 1.3686 \times 10^{-4}\left[\frac{P_s M_w}{T_s}\right]\left[\frac{v_{min}}{C_p}\right]^2$$

$\Delta p_{min}$ (in $H_2O$) =

$1.3686 \times 10^{-4} \times \left(\frac{30.07 \text{ in Hg} \times 29.14 \text{ lb / lb-mole}}{181 + 460\ ^{o}R}\right) \times \left(\frac{42.01 \text{ ft/sec}}{0.7240}\right)^2 =$ 0.63 in $H_2O$ vs. 0.86

**Maximum Velocity Pressure (in $H_2O$) [RM201A, Eq. 23]** **Nozzle 4b (diam. = 0.156 in)**

Run 1 nozzle is able to achieve $\Delta p_{max}$ above preliminary data maximum

$$\Delta p_{max}\ (inH_2O) = 1.3686 \times 10^{-4}\left[\frac{P_s M_w}{T_s}\right]\left[\frac{v_{max}}{C_p}\right]^2$$

$\Delta p_{max}$ (in $H_2O$) =

$1.3686 \times 10^{-4} \times \left(\frac{30.07 \text{ in Hg} \times 29.14 \text{ lb / lb-mole}}{181 + 460\ ^{o}R}\right) \times \left(\frac{72.55 \text{ ft/sec}}{0.7240}\right)^2 =$ 1.88 in $H_2O$ vs. 1.09

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Run 1 test]**

**Sampling Dwell Time at Each Point (minutes) [point A-1] [RM201A, Eq. 24]**

$$t_n(\text{min}) = \left[\frac{C_p\sqrt{\Delta p_n}}{C_p'\left(\sqrt{\Delta p_n}\right)_{avg}}\right]\left[\frac{t_r}{N_{tp}}\right]$$

$t_n$ (min) = $\left(\frac{0.7240 \times \left(1.30\right)^{0.5}}{0.7240 \times 0.99}\right) \times \left(\frac{240.00 \text{ min}}{12.00}\right) =$ 23.03 minutes

**Dry Gas Volume Sampled at Standard Conditions (dscf) [point A-1] [RM201A, Eq. 28]**

$$v_{ms}(dscf) = \left[\frac{528}{29.92}\right]\left[\gamma \cdot v_m\right]\left[\frac{\left(P_{bar} + \frac{\Delta H}{13.6}\right)}{T_m}\right]$$

$v_{ms}$ (dscf) = $\left(\frac{528}{29.92}\right)$ ( 0.974 x 8.80 dcf ) x

$\left(\frac{30.14 \text{ in Hg} + 0.44 \text{ in } H_2O / 13.6}{78.00 + 460\ ^{o}R}\right) =$ 8.48 dscf

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Run 1 test]**

**Sample Flow Rate at Standard Conditions (dscfm) [RM201A, Eq. 29]**

$$Q_{sST}\,(dscfm) = \frac{v_{ms}}{\Theta}$$

$Q_{sST}$ (dscfm) = $\frac{96.29 \text{ dscf}}{272.25 \text{ min}}$ = $\frac{0.35 \text{ dscf}}{\text{min}}$

**Sampling Rate (acfm) [e.g. cyclone flow rate] [RM201A, Eq. 32]**

$$Q_s(acfm) = \frac{29.92}{528} Q_{sST} \left[\frac{1}{(1 - B_{ws})}\right]\left[\frac{T_s}{P_s}\right]$$

$Q_s$ (acfm) = $\frac{29.92 \text{ in Hg}}{528\ ^{o}\text{R}}$ x $\frac{0.35 \text{ dscf}}{\text{min}}$ x $\frac{1}{(1 - 9.17 /100)}$ x $\frac{189 + 460\ ^{o}\text{R}}{30.07 \text{ in Hg}}$ = 0.48 acfm

**Actual Conditions Reynolds Number (dimensionless) [RM 201A, Eq. 10]**

$$N_{re} = 8.64 \times 10^5 \left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

$N_{re}$ = 8.64 x $10^5$ x $\frac{30.07 \text{ in Hg x } 28.28 \text{ lb / lb-mole}}{189 + 460\ ^{o}\text{R}}$ x $\frac{0.48 \text{ acfm}}{200.23 \text{ µP}}$ = 2692.23

**Actual Conditions Particle Cut Diameter for Cyclone I (µm) [RM201A, Eq. 33]**

$$D_{50}\,(\mu m) = 0.15625 \left[\frac{T_s}{M_w P_s}\right]^{0.2091} \left[\frac{\mu}{Q_s}\right]^{0.7091}$$

$D_{50}$ (µm) = 0.15625 x ( $\frac{189 + 460\ ^{o}\text{R}}{30.07 \text{ in Hg x } 28.28 \text{ lb / lb-mole}}$ )$^{0.2091}$ x ( $\frac{200.23 \text{ µP}}{0.48 \text{ acfm}}$ )$^{0.7091}$ = 10.71 µm

**Actual Particle Cut Diameter for Cyclone IV is determined by:**

**Actual Conditions Cunningham Correction Factor [RM 201A, Eq. 4]**
**[for a 2.5 micrometer diameter particle (estimated size)]**

$$C = 1 + 0.0057193 \left[\frac{\mu}{P_s D_{50}}\right]\left[\frac{T_s}{M_w}\right]^{0.5}$$

C = 1 + 0.0057193 x ( $\frac{200.23 \text{ µP}}{30.07 \text{ in Hg x } 2.5 \text{ µm}}$ )( $\frac{189 + 460\ ^{o}\text{R}}{28.28 \text{ lb / lb-mole}}$ )$^{0.5}$ = 1.07

**Actual Conditions Particle Cut Diameter for $N_{re}$ Less than 3,162 for Cyclone IV (µm) [RM 201A, Eq. 34]**

$$D_{50}\,(\mu m) = 0.0024302 \left[\frac{\mu}{Q_s}\right]^{1.1791} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.6790}$$

$D_{50}$ (µm) =

0.0024302 x ( $\frac{200.23 \text{ µP}}{0.48 \text{ acfm}}$ )$^{1.1791}$ x ( $\frac{1}{1.07}$ )$^{0.5}$

x ( $\frac{189 + 460\ ^{o}\text{R}}{30.07 \text{ in Hg x } 28.28 \text{ lb / lb-mole}}$ )$^{0.6790}$ = 2.42 µm

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Run 1 test]**

**Actual Conditions Particle Cut Diameter for $N_{re}$ Greater than or Equal to 3,162 for Cyclone IV (µm) [RM 201A, Eq. 35]**

$$D_{50}(\mu m) = 0.019723 \left[\frac{\mu}{Q_s}\right]^{0.8058} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.3058}$$

$D_{50}$ (µm) =

0.019723 x ( µP / acfm )$^{0.8058}$ x ( 1 )$^{0.5}$ x ( + 460 °R / in Hg x lb / lb-mole )$^{0.3058}$ = µm

**Re-calculated Cunningham Correction Factor (dimensionless) [RM 201A, Eq. 36]**

$$C_r = 1 + 0.0057193 \left[\frac{\mu}{P_s D_{50}}\right]\left[\frac{T_s}{M_w}\right]^{0.5}$$

C = 1 + 0.0057193 x ( 200.23 µP / 30.07 in Hg x 2.42 µm )( 189 + 460 °R / 28.28 lb / lb-mole )$^{0.5}$ = 1.08

**Re-calculated Particle Cut Diameter for $N_{re}$ Less than 3,162 for Cyclone IV (µm) [RM 201A, Eq. 37]**

$$D_{50-1}(\mu m) = 0.0024302 \left[\frac{\mu}{Q_s}\right]^{1.1791} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.6790}$$

$D_{50-1}$ (µm) =

0.0024302 x ( 200.23 µP / 0.48 acfm )$^{1.1791}$ x ( 1 / 1.08 )$^{0.5}$ x ( 189 + 460 °R / 30.07 in Hg x 28.28 lb / lb-mole )$^{0.6790}$ = 2.42 µm

**Re-Calculated Particle Cut Diameter for $N_{re}$ Greater than or Equal to 3,162 for Cyclone IV (µm) [RM 201A, Eq. 38]**

$$D_{50-1}(\mu m) = 0.019723 \left[\frac{\mu}{Q_s}\right]^{0.8058} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.3058}$$

$D_{50-1}$ (µm) =

0.019723 x ( µP / acfm )$^{0.8058}$ x ( 1 )$^{0.5}$ x ( + 460 °R / in Hg x lb / lb-mole )$^{0.3058}$ = µm

**Ratio (Z) Between $D_{50}$ and $D_{50-1}$ Values (dimensionless) [RM 201A, Eq. 39]**

$$Z = \frac{D_{50-1}}{D_{50}} \qquad 0.99 \le \left[Z = \left(\frac{D_{50}}{D_{50-1}}\right)\right] \le 1.01$$

Z = 2.42 µm / 2.42 µm = 1.00

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

# TEST RESULTS AND CALCULATIONS

## Emissions Results
## Base+DB Load
## SAM

## METHOD 8A (CONTROLLED CONDENSATE) - RESULTS

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base+DB |
| **Project #** | U-00001 Base+DB |

| **Historical Data** | SAM U-00002 Base+DB-1 | SAM U-00002 Base+DB-2 | SAM U-00002 Base+DB-3 | **Average** | **Units** | **Limits** |
|---|---|---|---|---|---|---|
| Run Start Time | 05:46 | 08:40 | 11:33 | | hh:mm | |
| Run Stop Time | 07:46 | 10:40 | 13:33 | | hh:mm | |
| Test Date | 03/11/20 | 03/11/20 | 03/11/20 | | mm/dd/yy | |
| Load | Base+DB | Base+DB | Base+DB | | % or w/DB | -- |
| Meter Calibration Factor | 0.985 | 0.985 | 0.985 | | | |
| **Stack Test Data** | SAM U-00002 Base+DB-1 | SAM U-00002 Base+DB-2 | SAM U-00002 Base+DB-3 | **Average** | **Units** | **Limits** |
| Initial Meter Volume | 46.270 | SAM U-0001 Base+DB | 142.600 | | $ft^3$ | |
| Final Meter Volume | 87.230 | 136.210 | 183.900 | | $ft^3$ | |
| Total Meter Volume | 40.960 | 41.810 | 41.300 | 41.357 | $ft^3$ | |
| Total Sampling Time | 120.00 | 120.00 | 120.00 | 120.00 | min | |
| Average Meter Temperature | 83.10 | 86.21 | 88.71 | 86.01 | °F | |
| Barometric Pressure | 30.09 | 30.15 | 30.14 | 30.13 | in Hg | |
| Stack Static Pressure | 0.95 | 0.95 | 0.95 | 0.95 | in $H_2O$ | |
| Absolute Stack Pressure | 30.16 | 43878.00 | 30.21 | 14646.12 | in Hg | |
| Average Orifice Pressure Drop | 0.34 | 0.34 | 0.34 | 0.34 | in $H_2O$ | |
| Absolute Meter Pressure | 30.22 | 30.28 | 30.27 | 30.25 | in Hg | |
| **Moisture Content Data** | SAM U-00002 Base+DB-1 | SAM U-00002 Base+DB-2 | SAM U-00002 Base+DB-3 | **Average** | **Units** | **Limits** |
| Impinger Water Weight Gain | 56.80 | 66.10 | 61.60 | 61.50 | g | |
| Silica Gel Weight Gain | 8.40 | 8.30 | 6.80 | 7.83 | g | |
| Total Water Volume Collected | 65.32 | 74.53 | 68.52 | 69.46 | ml | |
| Standard Water Vapor Volume | 3.07 | 3.51 | 3.23 | 3.27 | scf | |
| Standard Meter Volume | 39.5 | 40.1 | 39.5 | 39.7 | dscf | |
| Standard Metric Meter Volume | 1.1 | 1.1 | 1.1 | 1.1 | dscm | |
| Calculated Stack Moisture | 7.22 | 8.04 | 7.55 | 7.60 | % | |
| **Gas Analysis Data** | SAM U-00002 Base+DB-1 | SAM U-00002 Base+DB-2 | SAM U-00002 Base+DB-3 | **Average** | **Units** | **Limits** |
| Carbon Dioxide Content | 5.3 | 5.3 | 5.3 | 5.3 | % | |
| Oxygen Content | 11.7 | 11.7 | 11.7 | 11.7 | % | |
| Carbon Monoxide Content | 0.0 | 0.0 | 0.0 | 0.0 | ppm | |
| Nitrogen Content | 83.0 | 83.0 | 83.0 | 83.0 | % | |
| Stack Dry Molecular Weight | 29.32 | 29.32 | 29.32 | 29.32 | lb/lb-mole | |
| Calculated Fuel Factor | 1.736 | 1.736 | 1.736 | 1.736 | | |
| Fuel F-Factor | 8636.30 | 8636.30 | 8636.30 | 8636.30 | dscf/MMBtu | |
| **Sulfuric Acid Mist IC Analysis** | SAM U-00002 Base+DB-1 | SAM U-00002 Base+DB-2 | SAM U-00002 Base+DB-3 | **Average** | **Units** | **Limits** |
| $H_2SO_4$ (IC) Sample Volume - Front Half Rinse | 154.0 | 160.0 | 144.0 | 152.67 | ml | -- |
| $H_2SO_4$ (IC) Sample - Mass Per Volume | 0.2 | 0.1 | 0.2 | 0.15 | mg/L | -- |
| $H_2SO_4$ (IC) Mass | 0.03 | 0.02 | 0.03 | 0.02 | mg | -- |
| $H_2SO_4$ (IC) Concentration | 6.84E-07 | 3.99E-07 | 6.59E-07 | 5.80E-07 | g/dscf | -- |
| | 1.06E-05 | 6.15E-06 | 1.02E-05 | 8.96E-06 | gr/dscf | -- |
| | 2.42E-08 | 1.41E-08 | 2.33E-08 | 2.05E-08 | g/L | -- |
| | 0.01 | 0.00 | 0.01 | 0.01 | ppmvd | -- |
| $H_2SO_4$ (IC) Emission Rate | 0.00003 | 0.00002 | 0.00003 | 0.00003 | lb/MMBtu | 0.00065 |

Note: Run 2 reported at the RDL (0.016 mg)

**EXAMPLE CALCULATIONS (Reference Method 1 - Circular Stack)**

**Diameter of Stack (in.)**

$$D(in.) = L_{fw} - L_{nw}$$

D (in.) = 236.00 in. - 8.00 in. = 228.00 in.

**Stack Diameters Downstream**

$$B_D\,(dia.) = \frac{B}{D}$$

$B_D$ (dia.) = $\frac{850.00 \text{ in.}}{228.00 \text{ in.}}$ = 3.73 diameters

**Area of Stack ($ft^2$)**

$$A_s\,(ft^2) = \pi \times \left(\frac{D}{2 \times 12}\right)^2$$

$A_s$ ($ft^2$) = 3.14 x ( $\frac{228.00 \text{ in.}}{2 \text{ x } 12\text{in./ft}}$ )$^2$ = 283.53 $ft^2$

**Stack Diameters Upstream**

$$A_D\,(dia.) = \frac{A}{D}$$

$A_D$ (dia.) = $\frac{200.40 \text{ in.}}{228.00 \text{ in.}}$ = 0.88 diameters

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Reference Method 4) [Values from Run 1 test]**

**Water Volume Weighed (scf)**

$$V_{wsg\ (std)}(scf) = W_t \times K_5$$

$V_{wsg(std)}$ = 65.20 g x 0.04715 $ft^3/g$ = 3.074 scf

**Standard Meter Volume (dscf)**

$$V_{m(std)}(dscf) = \frac{K_1 \times Y \times V_m \times \left(P_b + \frac{\Delta H_{avg}}{13.6}\right)}{(t_m)_{avg} + T_u}$$

$$V_{m(std)} = \frac{\frac{17.65\ ^\circ R}{in.\ Hg} \times 0.99 \times 40.96\ dcf \times \left(30.09\ in.\ Hg + \frac{0.34\ in.\ H_2O}{13.6\ in.\ H_2O / in.\ Hg}\right)}{83.10\ ^\circ F + 460\ ^\circ R} = 39.48\ dscf$$

**Calculated Moisture Content (%)**

$$B_{ws(calc)}(\%) = 100 \times \frac{V_{wsg(std)}}{V_{wsg(std)} + V_{m(std)}}$$

$$B_{ws(calc)} = 100 \times \frac{3.07\ dscf}{3.07\ dscf + 39.48\ dscf} = 7.22\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Analysis) [Values from Run 1 test - $H_2SO_4$ (IC)]**

**Stack $H_2SO_4$ Mass (mg)**

$$M_n(mg) = \frac{M_{n(lab)}}{V_{s(lab)}} \times V_{sample} \times \frac{L}{1000ml}$$

$M_n$ (mg) = $\frac{\text{L}}{\text{1000 ml}}$ x 0.18 $\frac{\text{mg}}{\text{L}}$ x 154.00 ml = 0.03 mg

**Stack $H_2SO_4$ Concentration (g/dscf)**

$$c_s(g/dscf) = 0.001 \times \frac{M_n}{V_{m(std)}}$$

$c_s$ (g/dscf) = $\frac{\text{g}}{\text{1000 mg}}$ x $\frac{\text{0.03 mg}}{\text{39.48 dscf}}$ = $\frac{\text{6.80E-07 g}}{\text{dscf}}$

**Stack $H_2SO_4$ Concentration (gr/dscf)**

$$c'_s(gr/dscf) = 0.001 \times \frac{M_n}{V_{m(std)}} \times \frac{7000}{453.592}$$

c'$_s$ (gr/dscf) = $\frac{\text{g}}{\text{1000 mg}}$ x $\frac{\text{0.03 mg}}{\text{39.48 dscf}}$ x $\frac{\text{7000 gr}}{\text{lb}}$ x $\frac{\text{lb}}{\text{453.592 g}}$ = $\frac{\text{1.06E-05 gr}}{\text{dscf}}$

**Stack $H_2SO_4$ Concentration (g/L)**

$$c''_s(g/L) = c'_s \times \frac{dscf}{28.31685 dsL}$$

c'$_s$ (gr/dscf) = 6.84E-07 $\frac{\text{g}}{\text{dscf}}$ x $\frac{\text{dscf}}{\text{28.31685 dsL}}$ = $\frac{\text{2.00E-08 g}}{\text{L}}$

**Stack $H_2SO_4$ Concentration (ppmvd)**

$$c'''_s(ppmvd) = \frac{M_n}{V_{m(std)}} \times Ideal\ Gas\ Constant \times \frac{10^6 parts}{million\ parts} \times \frac{1}{Mol\ Wt}$$

c'''$_s$ (ppmvd) = 2.42E-08 $\frac{\text{g}}{\text{L}}$ x $\frac{\text{24.04 L gas}}{\text{lb-mol}}$ x $\frac{10^6 \text{ parts}}{\text{MM parts}}$ x $\frac{\text{lb-mol}}{\text{98.0790 lb}}$ = 0.006 ppmvd

**$H_2SO_4$ Emissions Rate (lb/MMBtu)**

Oxygen Based:

$$E'''(lb/MMBtu) = \frac{M_n \times F_d}{V_{m(std)} \times 1000 \times 453.592} \times \left(\frac{20.9}{20.9 - \%O_2}\right)$$

E''' (lb/MMBtu) = $\frac{\text{g}}{\text{1000 mg}}$ x $\frac{\text{lb}}{\text{453.592 g}}$ x $\frac{\text{0.03 mg}}{\text{39.48 dscf}}$ x $\frac{\text{8,636.30 dscf}}{\text{MMBtu}}$ x ( $\frac{\text{20.9}}{\text{20.9 - 11.7 \%}}$ ) = $\frac{\text{0.00003 lb}}{\text{MMBtu}}$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

# APPENDIX B

# EMISSION DATA RECORDS

# Cricket Valley Energy Center LLC

| | |
|---|---|
| **Air Permit Number:** | 3-1326-00275/00009 |
| **Plant Name or Location:** | Cricket Valley Energy Center |
| **Date:** | March 9, 2020 |
| **Project Number:** | bec-19-cricketvalley.ny-start#2 |
| **Manufacturer & Equipment:** | General Electric |
| **Model:** | 7F.05 |
| **Unit Number:** | U-00002 |
| **Test Load:** | Multiiple |
| **Tester(s) / Test Unit(s):** | RW/AM/220/213 |

| | | RUN | | | | | |
|---|---|---|---|---|---|---|---|
| | **UNITS** | **1-1** | **1-2** | **1-3** | **2-1** | **2-2** | **2-3** |
| **Start Time** | hh:mm:ss | 14:44:11 | 16:05:11 | 17:18:11 | 15:27:20 | 17:35:20 | 18:35:20 |
| **End Time** | hh:mm:ss | 15:43:41 | 17:04:41 | 18:17:41 | 16:26:50 | 18:34:50 | 19:34:50 |
| **Bar. Pressure** | in. Hg | 30.28 | 30.28 | 30.30 | 30.17 | 30.15 | 30.12 |
| **Amb. Temp.** | °F | 66 | 67 | 65 | 52 | 49 | 46 |
| **Rel. Humidity** | % | 22 | 25 | 28 | 53 | 70 | 73 |
| **Spec. Humidity** | lb water / lb air | 0.002926 | 0.003445 | 0.003599 | 0.004296 | 0.005086 | 0.004740 |
| **Date** | mm/dd/yy | 03/09/20 | 03/09/20 | 03/09/20 | 03/10/20 | 03/10/20 | 03/10/20 |
| **Load Designator** | | Base | Base | Base | Base+DB | Base+DB | Base+DB |
| **$NH_3$ Flow Rate** | lb/hr | 126.8 | 123.3 | 124.2 | 151.7 | 149.8 | 149.2 |
| **Turbine Fuel Flow** | lb/min | 1,617 | 1,624 | 1,622 | 1,625 | 1,625 | 1,627 |
| **Duct Burner Fuel Flow** | lb/min | 0 | 0 | 0 | 166 | 171 | 174 |
| **Total Fuel Flow** | SCFH | 2,195,187 | 2,205,298 | 2,202,317 | 2,431,495 | 2,438,066 | 2,444,977 |
| **Stack Moisture** | % Method 4 | 7.61 | 7.61 | 7.61 | 6.66 | 6.66 | 6.66 |
| **Heat Input** | MMBtu/hr | 2212.6 | 2222.8 | 2219.8 | 2458.8 | 2465.4 | 2472.4 |
| **CT Power Output** | megawatts | 230.8 | 230.6 | 230.5 | 231.8 | 232.1 | 232.6 |

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# EMISSION DATA RECORDS

## Operating Data Base Load
## (provided by Cricket Valley Energy Center LLC)
## NOx, CO, VOC, and $NH_3$

| Description | | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/9 14:44 - 3/9 15:43) | | 230.78 | 26.95 | 0.00 | 12.41 | 126.77 | 1167.92 | 6.35 |
| COUNT = 60 | | | | | | | | |
| Signal Tagname | | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| | 3/9/20 14:44 | 231.22 | 26.97 | 0.00 | 12.49 | 127.92 | 1167.93 | 6.56 |
| | 3/9/20 14:45 | 230.88 | 27.00 | 0.00 | 12.49 | 127.95 | 1167.84 | 6.56 |
| | 3/9/20 14:46 | 230.82 | 26.97 | 0.00 | 12.49 | 127.60 | 1168.17 | 6.55 |
| | 3/9/20 14:47 | 231.22 | 27.02 | 0.00 | 12.50 | 127.17 | 1167.74 | 6.54 |
| | 3/9/20 14:48 | 231.07 | 27.01 | 0.00 | 12.50 | 126.84 | 1168.31 | 6.54 |
| | 3/9/20 14:49 | 230.81 | 26.97 | 0.00 | 12.50 | 126.57 | 1167.98 | 6.53 |
| | 3/9/20 14:50 | 230.96 | 26.93 | 0.00 | 12.50 | 126.84 | 1168.00 | 6.52 |
| | 3/9/20 14:51 | 230.96 | 26.98 | 0.00 | 12.51 | 127.14 | 1168.17 | 6.52 |
| | 3/9/20 14:52 | 231.00 | 26.96 | 0.00 | 12.51 | 127.66 | 1168.28 | 6.51 |
| | 3/9/20 14:53 | 230.96 | 26.99 | 0.00 | 12.51 | 127.45 | 1168.23 | 6.50 |
| | 3/9/20 14:54 | 230.97 | 26.91 | 0.00 | 12.51 | 127.44 | 1168.29 | 6.49 |
| | 3/9/20 14:55 | 230.99 | 26.92 | 0.00 | 12.51 | 127.15 | 1168.10 | 6.49 |
| | 3/9/20 14:56 | 230.80 | 26.97 | 0.00 | 12.52 | 126.48 | 1167.86 | 6.48 |
| | 3/9/20 14:57 | 230.98 | 26.88 | 0.00 | 12.52 | 126.35 | 1167.94 | 6.47 |
| | 3/9/20 14:58 | 231.17 | 27.02 | 0.00 | 12.52 | 125.90 | 1168.20 | 6.47 |
| | 3/9/20 14:59 | 230.92 | 26.87 | 0.00 | 12.52 | 126.08 | 1167.89 | 6.46 |
| | 3/9/20 15:00 | 230.91 | 26.98 | 0.00 | 12.53 | 126.65 | 1167.56 | 6.45 |
| | 3/9/20 15:01 | 230.66 | 26.90 | 0.00 | 12.53 | 127.09 | 1167.80 | 6.44 |
| | 3/9/20 15:02 | 230.70 | 26.94 | 0.00 | 12.52 | 126.99 | 1167.68 | 6.44 |
| | 3/9/20 15:03 | 230.70 | 26.91 | 0.00 | 12.49 | 127.29 | 1168.41 | 6.43 |
| | 3/9/20 15:04 | 230.74 | 26.93 | 0.00 | 12.46 | 126.73 | 1168.46 | 6.42 |
| | 3/9/20 15:05 | 230.89 | 26.98 | 0.00 | 12.44 | 126.77 | 1168.13 | 6.42 |
| | 3/9/20 15:06 | 230.98 | 26.99 | 0.00 | 12.41 | 126.68 | 1168.47 | 6.41 |
| | 3/9/20 15:07 | 230.95 | 26.93 | 0.00 | 12.38 | 126.65 | 1168.10 | 6.40 |
| | 3/9/20 15:08 | 230.75 | 26.92 | 0.00 | 12.37 | 126.34 | 1168.18 | 6.39 |
| | 3/9/20 15:09 | 230.74 | 26.87 | 0.00 | 12.36 | 126.34 | 1167.46 | 6.39 |
| | 3/9/20 15:10 | 231.01 | 26.97 | 0.00 | 12.35 | 126.66 | 1168.07 | 6.38 |
| | 3/9/20 15:11 | 230.64 | 26.90 | 0.00 | 12.35 | 126.85 | 1167.66 | 6.37 |
| | 3/9/20 15:12 | 230.38 | 26.90 | 0.00 | 12.34 | 127.62 | 1167.64 | 6.37 |
| | 3/9/20 15:13 | 230.52 | 26.90 | 0.00 | 12.33 | 127.26 | 1168.10 | 6.36 |
| | 3/9/20 15:14 | 230.63 | 26.92 | 0.00 | 12.32 | 126.80 | 1168.10 | 6.35 |
| | 3/9/20 15:15 | 231.06 | 26.87 | 0.00 | 12.31 | 126.09 | 1167.82 | 6.34 |
| | 3/9/20 15:16 | 231.19 | 27.01 | 0.00 | 12.30 | 126.42 | 1167.75 | 6.34 |
| | 3/9/20 15:17 | 230.97 | 26.93 | 0.00 | 12.30 | 126.86 | 1167.74 | 6.33 |
| | 3/9/20 15:18 | 230.72 | 26.96 | 0.00 | 12.29 | 128.31 | 1168.45 | 6.32 |
| | 3/9/20 15:19 | 230.89 | 26.88 | 0.00 | 12.28 | 128.35 | 1168.18 | 6.32 |
| | 3/9/20 15:20 | 230.60 | 26.96 | 0.00 | 12.27 | 127.18 | 1167.65 | 6.31 |
| | 3/9/20 15:21 | 230.56 | 26.99 | 0.00 | 12.26 | 126.67 | 1168.15 | 6.30 |
| | 3/9/20 15:22 | 230.62 | 26.87 | 0.00 | 12.25 | 126.53 | 1167.45 | 6.29 |
| | 3/9/20 15:23 | 230.82 | 26.92 | 0.00 | 12.24 | 126.42 | 1168.26 | 6.29 |
| | 3/9/20 15:24 | 230.67 | 26.96 | 0.00 | 12.24 | 126.08 | 1167.88 | 6.28 |
| | 3/9/20 15:25 | 230.63 | 26.92 | 0.00 | 12.25 | 126.79 | 1167.53 | 6.27 |
| | 3/9/20 15:26 | 230.46 | 27.00 | 0.00 | 12.28 | 126.78 | 1167.78 | 6.27 |
| | 3/9/20 15:27 | 230.22 | 26.91 | 0.00 | 12.30 | 126.72 | 1167.24 | 6.26 |
| | 3/9/20 15:28 | 230.33 | 26.89 | 0.00 | 12.33 | 126.66 | 1167.17 | 6.25 |
| | 3/9/20 15:29 | 230.78 | 26.98 | 0.00 | 12.35 | 127.09 | 1168.06 | 6.24 |
| | 3/9/20 15:30 | 230.59 | 26.91 | 0.00 | 12.38 | 126.53 | 1168.19 | 6.24 |
| | 3/9/20 15:31 | 230.60 | 26.90 | 0.00 | 12.40 | 127.18 | 1168.18 | 6.23 |
| | 3/9/20 15:32 | 230.87 | 26.95 | 0.00 | 12.43 | 127.38 | 1168.39 | 6.22 |
| | 3/9/20 15:33 | 230.79 | 26.98 | 0.00 | 12.45 | 126.33 | 1167.80 | 6.22 |
| | 3/9/20 15:34 | 230.60 | 26.93 | 0.00 | 12.48 | 125.84 | 1167.46 | 6.21 |
| | 3/9/20 15:35 | 230.69 | 27.02 | 0.00 | 12.50 | 125.96 | 1167.68 | 6.20 |
| | 3/9/20 15:36 | 230.53 | 26.93 | 0.00 | 12.53 | 126.59 | 1167.93 | 6.19 |
| | 3/9/20 15:37 | 230.58 | 26.90 | 0.00 | 12.56 | 126.63 | 1168.15 | 6.19 |
| | 3/9/20 15:38 | 230.64 | 27.01 | 0.00 | 12.36 | 126.52 | 1167.44 | 6.18 |
| | 3/9/20 15:39 | 230.35 | 26.94 | 0.00 | 12.37 | 126.87 | 1167.83 | 6.17 |
| | 3/9/20 15:40 | 230.59 | 26.95 | 0.00 | 12.38 | 126.63 | 1167.89 | 6.17 |
| | 3/9/20 15:41 | 230.92 | 26.98 | 0.00 | 12.39 | 125.63 | 1167.47 | 6.16 |
| | 3/9/20 15:42 | 230.76 | 26.98 | 0.00 | 12.40 | 125.34 | 1167.64 | 6.15 |
| | 3/9/20 15:43 | 230.52 | 26.98 | 0.00 | 12.40 | 124.58 | 1167.55 | 6.15 |

| Description | | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/9 16:5 - 3/9 17:4) | | 230.63 | 27.07 | 0.00 | 12.43 | 123.26 | 1174.41 | 5.78 |
| COUNT = 60 | | | | | | | | |
| Signal Tagname | | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| | 3/9/20 16:05 | 231.11 | 27.09 | 0.00 | 12.41 | 125.02 | 1174.88 | 5.99 |
| | 3/9/20 16:06 | 231.26 | 27.09 | 0.00 | 12.39 | 125.10 | 1174.92 | 5.98 |
| | 3/9/20 16:07 | 231.20 | 27.16 | 0.00 | 12.36 | 125.07 | 1174.73 | 5.97 |
| | 3/9/20 16:08 | 231.21 | 27.17 | 0.00 | 12.43 | 124.74 | 1175.15 | 5.97 |
| | 3/9/20 16:09 | 231.26 | 27.07 | 0.00 | 12.47 | 124.40 | 1174.28 | 5.96 |
| | 3/9/20 16:10 | 231.38 | 27.10 | 0.00 | 12.48 | 123.80 | 1174.58 | 5.95 |
| | 3/9/20 16:11 | 230.96 | 27.08 | 0.00 | 12.49 | 123.69 | 1174.58 | 5.95 |
| | 3/9/20 16:12 | 230.84 | 27.04 | 0.00 | 12.50 | 123.37 | 1174.61 | 5.94 |
| | 3/9/20 16:13 | 230.40 | 27.07 | 0.00 | 12.50 | 122.92 | 1174.46 | 5.93 |
| | 3/9/20 16:14 | 230.54 | 27.09 | 0.00 | 12.51 | 122.48 | 1174.43 | 5.92 |
| | 3/9/20 16:15 | 230.75 | 27.14 | 0.00 | 12.51 | 122.61 | 1174.45 | 5.92 |
| | 3/9/20 16:16 | 231.05 | 27.08 | 0.00 | 12.50 | 122.84 | 1174.51 | 5.91 |
| | 3/9/20 16:17 | 230.75 | 27.04 | 0.00 | 12.49 | 122.55 | 1174.16 | 5.90 |
| | 3/9/20 16:18 | 230.72 | 27.03 | 0.00 | 12.48 | 122.99 | 1174.71 | 5.90 |
| | 3/9/20 16:19 | 230.54 | 27.02 | 0.00 | 12.48 | 122.62 | 1173.96 | 5.89 |
| | 3/9/20 16:20 | 230.66 | 27.05 | 0.00 | 12.47 | 122.61 | 1174.19 | 5.88 |
| | 3/9/20 16:21 | 230.79 | 27.12 | 0.00 | 12.46 | 123.18 | 1174.64 | 5.87 |
| | 3/9/20 16:22 | 231.16 | 27.13 | 0.00 | 12.45 | 122.87 | 1175.04 | 5.87 |
| | 3/9/20 16:23 | 230.83 | 27.11 | 0.00 | 12.44 | 123.33 | 1174.50 | 5.86 |
| | 3/9/20 16:24 | 230.94 | 27.13 | 0.00 | 12.43 | 123.18 | 1174.71 | 5.85 |
| | 3/9/20 16:25 | 230.98 | 27.12 | 0.00 | 12.42 | 123.42 | 1174.40 | 5.85 |
| | 3/9/20 16:26 | 230.75 | 27.13 | 0.00 | 12.41 | 124.40 | 1174.75 | 5.84 |
| | 3/9/20 16:27 | 231.02 | 27.08 | 0.00 | 12.42 | 123.86 | 1174.29 | 5.83 |
| | 3/9/20 16:28 | 231.19 | 27.11 | 0.00 | 12.44 | 123.56 | 1174.23 | 5.82 |
| | 3/9/20 16:29 | 230.81 | 27.06 | 0.00 | 12.45 | 123.54 | 1173.95 | 5.82 |
| | 3/9/20 16:30 | 230.38 | 27.10 | 0.00 | 12.47 | 123.45 | 1174.24 | 5.81 |
| | 3/9/20 16:31 | 230.46 | 27.03 | 0.00 | 12.49 | 123.75 | 1174.45 | 5.80 |
| | 3/9/20 16:32 | 230.64 | 27.05 | 0.00 | 12.51 | 123.01 | 1174.60 | 5.80 |
| | 3/9/20 16:33 | 230.74 | 27.08 | 0.00 | 12.49 | 122.52 | 1174.00 | 5.79 |
| | 3/9/20 16:34 | 230.92 | 27.03 | 0.00 | 12.46 | 122.63 | 1174.61 | 5.78 |
| | 3/9/20 16:35 | 231.14 | 27.21 | 0.00 | 12.44 | 123.50 | 1174.39 | 5.77 |
| | 3/9/20 16:36 | 230.93 | 27.10 | 0.00 | 12.42 | 123.90 | 1174.62 | 5.77 |
| | 3/9/20 16:37 | 230.60 | 27.11 | 0.00 | 12.39 | 123.12 | 1174.43 | 5.76 |
| | 3/9/20 16:38 | 230.51 | 27.14 | 0.00 | 12.37 | 123.44 | 1174.95 | 5.75 |
| | 3/9/20 16:39 | 230.62 | 27.06 | 0.00 | 12.34 | 123.72 | 1174.32 | 5.75 |
| | 3/9/20 16:40 | 230.69 | 27.15 | 0.00 | 12.32 | 123.34 | 1174.84 | 5.74 |
| | 3/9/20 16:41 | 230.81 | 27.01 | 0.00 | 12.29 | 123.35 | 1174.57 | 5.73 |
| | 3/9/20 16:42 | 230.35 | 27.00 | 0.00 | 12.39 | 123.65 | 1174.18 | 5.73 |
| | 3/9/20 16:43 | 230.14 | 27.01 | 0.00 | 12.45 | 123.58 | 1174.65 | 5.72 |
| | 3/9/20 16:44 | 229.95 | 27.07 | 0.00 | 12.45 | 123.01 | 1174.22 | 5.71 |
| | 3/9/20 16:45 | 229.94 | 27.04 | 0.00 | 12.44 | 121.50 | 1174.13 | 5.70 |
| | 3/9/20 16:46 | 230.06 | 26.99 | 0.00 | 12.44 | 121.07 | 1174.91 | 5.70 |
| | 3/9/20 16:47 | 230.17 | 27.00 | 0.00 | 12.43 | 121.37 | 1173.54 | 5.69 |
| | 3/9/20 16:48 | 230.40 | 27.04 | 0.00 | 12.43 | 121.40 | 1174.14 | 5.68 |
| | 3/9/20 16:49 | 230.01 | 27.07 | 0.00 | 12.43 | 122.46 | 1174.81 | 5.68 |
| | 3/9/20 16:50 | 230.01 | 27.04 | 0.00 | 12.42 | 122.57 | 1174.18 | 5.67 |
| | 3/9/20 16:51 | 229.89 | 26.94 | 0.00 | 12.42 | 122.98 | 1173.74 | 5.66 |
| | 3/9/20 16:52 | 230.02 | 27.03 | 0.00 | 12.41 | 123.54 | 1173.94 | 5.65 |
| | 3/9/20 16:53 | 230.07 | 27.00 | 0.00 | 12.41 | 122.84 | 1174.12 | 5.65 |
| | 3/9/20 16:54 | 230.20 | 27.00 | 0.00 | 12.41 | 122.17 | 1174.28 | 5.64 |
| | 3/9/20 16:55 | 230.58 | 27.09 | 0.00 | 12.40 | 122.66 | 1174.37 | 5.63 |
| | 3/9/20 16:56 | 230.57 | 27.10 | 0.00 | 12.40 | 123.58 | 1174.09 | 5.63 |
| | 3/9/20 16:57 | 230.80 | 27.10 | 0.00 | 12.40 | 124.30 | 1174.41 | 5.62 |
| | 3/9/20 16:58 | 230.32 | 27.00 | 0.00 | 12.39 | 124.83 | 1174.05 | 5.61 |
| | 3/9/20 16:59 | 230.46 | 27.03 | 0.00 | 12.39 | 125.13 | 1174.49 | 5.60 |
| | 3/9/20 17:00 | 230.33 | 27.00 | 0.00 | 12.38 | 124.47 | 1174.49 | 5.60 |
| | 3/9/20 17:01 | 230.31 | 27.02 | 0.00 | 12.38 | 123.10 | 1174.33 | 5.59 |
| | 3/9/20 17:02 | 230.79 | 27.08 | 0.00 | 12.38 | 122.63 | 1174.35 | 5.58 |
| | 3/9/20 17:03 | 230.41 | 27.08 | 0.00 | 12.37 | 122.41 | 1174.19 | 5.58 |
| | 3/9/20 17:04 | 230.48 | 27.08 | 0.00 | 12.37 | 122.74 | 1173.75 | 5.57 |

| Description | | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/9 17:18 - 3/9 18:17) | | 230.55 | 27.03 | 0.00 | 12.49 | 124.21 | 1174.02 | 5.26 |
| COUNT = 60 | | | | | | | | |
| Signal Tagname | | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| | 3/9/20 17:18 | 230.29 | 27.01 | 0.00 | 12.52 | 123.39 | 1174.04 | 5.47 |
| | 3/9/20 17:19 | 230.07 | 26.99 | 0.00 | 12.52 | 123.36 | 1173.27 | 5.46 |
| | 3/9/20 17:20 | 230.10 | 27.01 | 0.00 | 12.52 | 123.49 | 1173.25 | 5.45 |
| | 3/9/20 17:21 | 230.19 | 27.05 | 0.00 | 12.52 | 123.85 | 1173.66 | 5.45 |
| | 3/9/20 17:22 | 230.26 | 27.04 | 0.00 | 12.52 | 124.22 | 1173.85 | 5.44 |
| | 3/9/20 17:23 | 230.44 | 27.02 | 0.00 | 12.52 | 124.29 | 1174.40 | 5.43 |
| | 3/9/20 17:24 | 230.34 | 27.00 | 0.00 | 12.52 | 124.59 | 1174.29 | 5.43 |
| | 3/9/20 17:25 | 229.93 | 27.01 | 0.00 | 12.52 | 124.20 | 1173.98 | 5.42 |
| | 3/9/20 17:26 | 230.27 | 27.05 | 0.00 | 12.52 | 123.99 | 1173.33 | 5.41 |
| | 3/9/20 17:27 | 230.19 | 26.89 | 0.00 | 12.52 | 123.89 | 1174.12 | 5.40 |
| | 3/9/20 17:28 | 230.20 | 27.03 | 0.00 | 12.52 | 124.62 | 1174.21 | 5.40 |
| | 3/9/20 17:29 | 230.07 | 26.98 | 0.00 | 12.52 | 123.78 | 1173.74 | 5.39 |
| | 3/9/20 17:30 | 230.04 | 27.00 | 0.00 | 12.52 | 123.44 | 1173.51 | 5.38 |
| | 3/9/20 17:31 | 229.80 | 26.93 | 0.00 | 12.52 | 123.48 | 1174.17 | 5.38 |
| | 3/9/20 17:32 | 230.47 | 27.07 | 0.00 | 12.52 | 123.43 | 1174.00 | 5.37 |
| | 3/9/20 17:33 | 230.03 | 27.04 | 0.00 | 12.52 | 123.31 | 1174.38 | 5.36 |
| | 3/9/20 17:34 | 230.27 | 27.05 | 0.00 | 12.52 | 123.55 | 1173.79 | 5.36 |
| | 3/9/20 17:35 | 230.28 | 26.97 | 0.00 | 12.52 | 123.86 | 1173.47 | 5.35 |
| | 3/9/20 17:36 | 230.19 | 27.02 | 0.00 | 12.52 | 124.09 | 1173.89 | 5.34 |
| | 3/9/20 17:37 | 230.33 | 27.01 | 0.00 | 12.51 | 124.53 | 1174.09 | 5.33 |
| | 3/9/20 17:38 | 230.62 | 27.09 | 0.00 | 12.50 | 124.37 | 1174.37 | 5.33 |
| | 3/9/20 17:39 | 230.28 | 26.96 | 0.00 | 12.49 | 124.65 | 1174.03 | 5.32 |
| | 3/9/20 17:40 | 230.45 | 26.99 | 0.00 | 12.48 | 125.14 | 1174.05 | 5.31 |
| | 3/9/20 17:41 | 230.47 | 27.01 | 0.00 | 12.47 | 124.80 | 1173.47 | 5.31 |
| | 3/9/20 17:42 | 230.48 | 27.02 | 0.00 | 12.46 | 124.15 | 1173.92 | 5.30 |
| | 3/9/20 17:43 | 230.52 | 26.98 | 0.00 | 12.45 | 123.53 | 1173.74 | 5.29 |
| | 3/9/20 17:44 | 230.88 | 27.06 | 0.00 | 12.43 | 123.57 | 1174.07 | 5.28 |
| | 3/9/20 17:45 | 230.73 | 27.08 | 0.00 | 12.42 | 124.11 | 1174.43 | 5.28 |
| | 3/9/20 17:46 | 230.89 | 27.01 | 0.00 | 12.41 | 124.66 | 1173.95 | 5.27 |
| | 3/9/20 17:47 | 230.64 | 26.98 | 0.00 | 12.40 | 125.10 | 1173.82 | 5.26 |
| | 3/9/20 17:48 | 230.58 | 27.01 | 0.00 | 12.39 | 125.18 | 1174.61 | 5.26 |
| | 3/9/20 17:49 | 230.50 | 27.03 | 0.00 | 12.38 | 124.81 | 1173.78 | 5.25 |
| | 3/9/20 17:50 | 230.44 | 27.02 | 0.00 | 12.37 | 123.96 | 1174.31 | 5.24 |
| | 3/9/20 17:51 | 230.57 | 27.07 | 0.00 | 12.36 | 123.93 | 1173.39 | 5.23 |
| | 3/9/20 17:52 | 230.40 | 27.01 | 0.00 | 12.35 | 123.93 | 1173.88 | 5.23 |
| | 3/9/20 17:53 | 230.73 | 27.06 | 0.00 | 12.36 | 123.98 | 1173.99 | 5.22 |
| | 3/9/20 17:54 | 230.76 | 27.11 | 0.00 | 12.38 | 123.82 | 1173.54 | 5.21 |
| | 3/9/20 17:55 | 231.05 | 27.10 | 0.00 | 12.39 | 124.22 | 1173.98 | 5.21 |
| | 3/9/20 17:56 | 230.91 | 27.06 | 0.00 | 12.41 | 124.18 | 1173.72 | 5.20 |
| | 3/9/20 17:57 | 230.86 | 27.10 | 0.00 | 12.42 | 124.02 | 1174.03 | 5.19 |
| | 3/9/20 17:58 | 231.05 | 27.07 | 0.00 | 12.44 | 124.38 | 1174.51 | 5.18 |
| | 3/9/20 17:59 | 230.91 | 27.10 | 0.00 | 12.45 | 124.49 | 1174.27 | 5.18 |
| | 3/9/20 18:00 | 231.06 | 27.05 | 0.00 | 12.47 | 124.44 | 1173.80 | 5.17 |
| | 3/9/20 18:01 | 230.36 | 27.08 | 0.00 | 12.48 | 124.94 | 1174.47 | 5.16 |
| | 3/9/20 18:02 | 230.54 | 26.99 | 0.00 | 12.50 | 124.85 | 1174.08 | 5.16 |
| | 3/9/20 18:03 | 230.84 | 27.08 | 0.00 | 12.51 | 124.56 | 1174.34 | 5.15 |
| | 3/9/20 18:04 | 230.62 | 27.06 | 0.00 | 12.53 | 123.91 | 1174.30 | 5.14 |
| | 3/9/20 18:05 | 231.07 | 27.08 | 0.00 | 12.54 | 124.04 | 1174.29 | 5.13 |
| | 3/9/20 18:06 | 231.12 | 27.02 | 0.00 | 12.56 | 124.44 | 1174.14 | 5.13 |
| | 3/9/20 18:07 | 231.02 | 27.01 | 0.00 | 12.56 | 124.38 | 1173.84 | 5.12 |
| | 3/9/20 18:08 | 230.71 | 27.07 | 0.00 | 12.56 | 124.72 | 1174.23 | 5.11 |
| | 3/9/20 18:09 | 230.82 | 27.09 | 0.00 | 12.56 | 124.87 | 1174.15 | 5.11 |
| | 3/9/20 18:10 | 230.88 | 27.08 | 0.00 | 12.56 | 124.37 | 1173.83 | 5.10 |
| | 3/9/20 18:11 | 230.82 | 27.05 | 0.00 | 12.56 | 124.32 | 1173.83 | 5.09 |
| | 3/9/20 18:12 | 230.68 | 27.05 | 0.00 | 12.56 | 124.93 | 1174.14 | 5.08 |
| | 3/9/20 18:13 | 230.62 | 27.06 | 0.00 | 12.56 | 124.34 | 1174.32 | 5.08 |
| | 3/9/20 18:14 | 230.74 | 26.97 | 0.00 | 12.56 | 124.48 | 1174.54 | 5.07 |
| | 3/9/20 18:15 | 230.65 | 27.06 | 0.00 | 12.56 | 124.57 | 1174.03 | 5.06 |
| | 3/9/20 18:16 | 230.58 | 27.04 | 0.00 | 12.56 | 124.06 | 1174.59 | 5.06 |
| | 3/9/20 18:17 | 231.30 | 27.05 | 0.00 | 12.56 | 123.84 | 1174.79 | 5.05 |

# EMISSION DATA RECORDS

## Operating Data Base Load
## (provided by Cricket Valley Energy Center LLC)
## $PM_{10}$

| Description | | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/9 8:15 - 3/9 13:16) | | 236.44 | 27.39 | 0.00 | 12.32 | 144.05 | 1172.02 | 247.08 |
| COUNT = 302 | | | | | | | | |
| Signal Tagname | | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| | 3/9/20 8:15 | 241.72 | 27.82 | 0.00 | 12.17 | 181.22 | 1173.32 | 476.96 |
| | 3/9/20 8:16 | 242.02 | 27.78 | 0.00 | 12.16 | 180.99 | 1173.82 | 476.48 |
| | 3/9/20 8:17 | 241.70 | 27.77 | 0.00 | 12.14 | 180.55 | 1173.21 | 476.13 |
| | 3/9/20 8:18 | 241.62 | 27.78 | 0.00 | 12.13 | 179.42 | 1173.07 | 476.94 |
| | 3/9/20 8:19 | 241.33 | 27.88 | 0.00 | 12.12 | 178.34 | 1173.26 | 477.75 |
| | 3/9/20 8:20 | 241.58 | 27.73 | 0.00 | 12.11 | 177.73 | 1173.80 | 478.44 |
| | 3/9/20 8:21 | 241.59 | 27.75 | 0.00 | 12.10 | 178.03 | 1173.38 | 478.80 |
| | 3/9/20 8:22 | 241.52 | 27.79 | 0.00 | 12.09 | 177.67 | 1173.52 | 479.16 |
| | 3/9/20 8:23 | 241.32 | 27.72 | 0.00 | 12.09 | 176.76 | 1173.07 | 479.52 |
| | 3/9/20 8:24 | 241.31 | 27.77 | 0.00 | 12.10 | 175.34 | 1173.09 | 479.88 |
| | 3/9/20 8:25 | 241.32 | 27.78 | 0.00 | 12.10 | 174.79 | 1173.46 | 479.57 |
| | 3/9/20 8:26 | 241.44 | 27.73 | 0.00 | 12.11 | 174.49 | 1173.15 | 478.83 |
| | 3/9/20 8:27 | 241.54 | 27.74 | 0.00 | 12.11 | 175.11 | 1173.44 | 478.09 |
| | 3/9/20 8:28 | 241.67 | 27.77 | 0.00 | 12.11 | 175.90 | 1173.24 | 477.35 |
| | 3/9/20 8:29 | 241.61 | 27.70 | 0.00 | 12.12 | 176.73 | 1172.99 | 476.63 |
| | 3/9/20 8:30 | 241.35 | 27.82 | 0.00 | 12.12 | 177.28 | 1172.89 | 475.90 |
| | 3/9/20 8:31 | 241.47 | 27.84 | 0.00 | 12.12 | 177.39 | 1172.78 | 475.18 |
| | 3/9/20 8:32 | 241.68 | 27.83 | 0.00 | 12.12 | 176.53 | 1173.60 | 474.92 |
| | 3/9/20 8:33 | 241.43 | 27.74 | 0.00 | 12.12 | 176.25 | 1173.76 | 475.07 |
| | 3/9/20 8:34 | 241.64 | 27.90 | 0.00 | 12.12 | 176.95 | 1173.04 | 475.23 |
| | 3/9/20 8:35 | 241.38 | 27.78 | 0.00 | 12.13 | 178.82 | 1172.89 | 475.38 |
| | 3/9/20 8:36 | 241.40 | 27.74 | 0.00 | 12.13 | 177.88 | 1173.51 | 475.53 |
| | 3/9/20 8:37 | 241.56 | 27.70 | 0.00 | 12.13 | 177.36 | 1173.56 | 475.68 |
| | 3/9/20 8:38 | 240.97 | 27.63 | 0.00 | 12.13 | 176.88 | 1172.47 | 475.84 |
| | 3/9/20 8:39 | 241.51 | 27.81 | 0.00 | 12.13 | 176.03 | 1173.02 | 475.99 |
| | 3/9/20 8:40 | 241.07 | 27.76 | 0.00 | 12.13 | 173.93 | 1173.26 | 476.14 |
| | 3/9/20 8:41 | 241.27 | 27.74 | 0.00 | 12.13 | 173.35 | 1172.82 | 475.88 |
| | 3/9/20 8:42 | 241.25 | 27.68 | 0.00 | 12.13 | 173.07 | 1172.93 | 475.60 |
| | 3/9/20 8:43 | 241.36 | 27.74 | 0.00 | 12.13 | 173.98 | 1173.07 | 475.33 |
| | 3/9/20 8:44 | 241.12 | 27.66 | 0.00 | 12.13 | 175.08 | 1172.73 | 475.05 |
| | 3/9/20 8:45 | 241.07 | 27.65 | 0.00 | 12.13 | 175.75 | 1173.23 | 474.77 |
| | 3/9/20 8:46 | 240.91 | 27.71 | 0.00 | 12.14 | 175.37 | 1172.88 | 474.53 |
| | 3/9/20 8:47 | 240.92 | 27.78 | 0.00 | 12.14 | 174.47 | 1173.05 | 474.43 |
| | 3/9/20 8:48 | 240.93 | 27.68 | 0.00 | 12.14 | 173.12 | 1172.78 | 474.33 |
| | 3/9/20 8:49 | 240.92 | 27.64 | 0.00 | 12.15 | 171.80 | 1173.07 | 474.24 |
| | 3/9/20 8:50 | 241.12 | 27.72 | 0.00 | 12.15 | 171.90 | 1172.46 | 474.14 |
| | 3/9/20 8:51 | 240.85 | 27.74 | 0.00 | 12.15 | 171.23 | 1172.61 | 474.04 |
| | 3/9/20 8:52 | 240.96 | 27.72 | 0.00 | 12.16 | 171.80 | 1172.72 | 473.95 |
| | 3/9/20 8:53 | 240.82 | 27.72 | 0.00 | 12.16 | 171.97 | 1172.91 | 473.85 |
| | 3/9/20 8:54 | 240.82 | 27.76 | 0.00 | 12.17 | 171.51 | 1172.99 | 473.76 |
| | 3/9/20 8:55 | 240.81 | 27.73 | 0.00 | 12.17 | 170.89 | 1173.07 | 473.66 |
| | 3/9/20 8:56 | 240.54 | 27.66 | 0.00 | 12.18 | 170.17 | 1172.42 | 473.62 |
| | 3/9/20 8:57 | 240.45 | 27.66 | 0.00 | 12.18 | 170.53 | 1173.05 | 473.63 |
| | 3/9/20 8:58 | 240.55 | 27.67 | 0.00 | 12.18 | 169.33 | 1172.54 | 474.58 |
| | 3/9/20 8:59 | 240.55 | 27.65 | 0.00 | 12.19 | 168.17 | 1173.41 | 478.01 |
| | 3/9/20 9:00 | 240.55 | 27.70 | 0.00 | 12.19 | 168.00 | 1173.16 | 477.43 |
| | 3/9/20 9:01 | 240.50 | 27.67 | 0.00 | 12.20 | 168.41 | 1172.66 | 476.85 |
| | 3/9/20 9:02 | 240.57 | 27.66 | 0.00 | 12.21 | 168.36 | 1172.23 | 476.27 |
| | 3/9/20 9:03 | 240.39 | 27.63 | 0.00 | 12.23 | 169.10 | 1173.43 | 475.69 |
| | 3/9/20 9:04 | 240.06 | 27.68 | 0.00 | 12.24 | 170.07 | 1172.73 | 475.11 |
| | 3/9/20 9:05 | 240.20 | 27.61 | 0.00 | 12.26 | 168.39 | 1173.74 | 474.53 |
| | 3/9/20 9:06 | 240.04 | 27.68 | 0.00 | 12.27 | 165.17 | 1173.02 | 473.94 |
| | 3/9/20 9:07 | 239.72 | 27.62 | 0.00 | 12.29 | 163.71 | 1172.98 | 473.36 |
| | 3/9/20 9:08 | 240.03 | 27.61 | 0.00 | 12.30 | 161.82 | 1173.00 | 473.01 |
| | 3/9/20 9:09 | 239.88 | 27.66 | 0.00 | 12.32 | 161.64 | 1172.95 | 474.29 |
| | 3/9/20 9:10 | 240.19 | 27.68 | 0.00 | 12.33 | 161.89 | 1172.77 | 474.92 |
| | 3/9/20 9:11 | 239.84 | 27.61 | 0.00 | 12.35 | 161.60 | 1172.41 | 474.60 |
| | 3/9/20 9:12 | 239.80 | 27.66 | 0.00 | 12.36 | 161.96 | 1172.60 | 474.28 |
| | 3/9/20 9:13 | 239.66 | 27.61 | 0.00 | 12.37 | 161.61 | 1172.72 | 473.96 |
| | 3/9/20 9:14 | 239.75 | 27.70 | 0.00 | 12.39 | 161.24 | 1173.24 | 473.63 |
| | 3/9/20 9:15 | 239.58 | 27.64 | 0.00 | 12.40 | 160.51 | 1172.29 | 473.31 |
| | 3/9/20 9:16 | 239.49 | 27.65 | 0.00 | 12.42 | 160.27 | 1172.54 | 472.99 |
| | 3/9/20 9:17 | 239.66 | 27.62 | 0.00 | 12.43 | 160.44 | 1172.62 | 472.74 |
| | 3/9/20 9:18 | 239.59 | 27.65 | 0.00 | 12.44 | 159.58 | 1172.81 | 474.10 |
| | 3/9/20 9:19 | 239.32 | 27.59 | 0.00 | 12.46 | 159.00 | 1172.81 | 475.46 |
| | 3/9/20 9:20 | 239.44 | 27.54 | 0.00 | 12.47 | 157.69 | 1172.98 | 476.55 |
| | 3/9/20 9:21 | 239.50 | 27.62 | 0.00 | 12.48 | 157.35 | 1172.69 | 476.54 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/9 8:15 - 3/9 13:16) | 236.44 | 27.39 | 0.00 | 12.32 | 144.05 | 1172.02 | 247.08 |
| COUNT = 302 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/9/20 9:22 | 239.59 | 27.62 | 0.00 | 12.50 | 156.44 | 1172.67 | 476.52 |
| 3/9/20 9:23 | 239.37 | 27.62 | 0.00 | 12.51 | 156.31 | 1172.95 | 476.51 |
| 3/9/20 9:24 | 239.26 | 27.59 | 0.00 | 12.51 | 155.47 | 1173.26 | 476.49 |
| 3/9/20 9:25 | 239.41 | 27.63 | 0.00 | 12.51 | 153.49 | 1173.50 | 475.55 |
| 3/9/20 9:26 | 238.78 | 27.64 | 0.00 | 12.51 | 153.31 | 1172.69 | 474.36 |
| 3/9/20 9:27 | 239.00 | 27.60 | 0.00 | 12.52 | 153.41 | 1173.06 | 473.17 |
| 3/9/20 9:28 | 239.22 | 27.55 | 0.00 | 12.52 | 153.47 | 1173.04 | 473.49 |
| 3/9/20 9:29 | 239.28 | 27.53 | 0.00 | 12.52 | 153.92 | 1172.76 | 474.00 |
| 3/9/20 9:30 | 238.72 | 27.54 | 0.00 | 12.52 | 153.88 | 1172.97 | 474.51 |
| 3/9/20 9:31 | 238.76 | 27.49 | 0.00 | 12.52 | 152.76 | 1172.44 | 475.53 |
| 3/9/20 9:32 | 239.04 | 27.57 | 0.00 | 12.53 | 150.91 | 1173.10 | 474.81 |
| 3/9/20 9:33 | 239.13 | 27.55 | 0.00 | 12.53 | 150.60 | 1173.44 | 471.72 |
| 3/9/20 9:34 | 239.21 | 27.55 | 0.00 | 12.53 | 152.52 | 1173.37 | 472.53 |
| 3/9/20 9:35 | 239.05 | 27.54 | 0.00 | 12.53 | 152.71 | 1172.97 | 476.08 |
| 3/9/20 9:36 | 238.86 | 27.52 | 0.00 | 12.54 | 153.49 | 1172.56 | 475.03 |
| 3/9/20 9:37 | 239.06 | 27.48 | 0.00 | 12.54 | 153.04 | 1173.55 | 473.88 |
| 3/9/20 9:38 | 238.79 | 27.53 | 0.00 | 12.54 | 152.49 | 1172.49 | 473.91 |
| 3/9/20 9:39 | 238.52 | 27.51 | 0.00 | 12.54 | 152.82 | 1173.03 | 475.77 |
| 3/9/20 9:40 | 238.62 | 27.59 | 0.00 | 12.52 | 152.38 | 1173.33 | 475.03 |
| 3/9/20 9:41 | 238.49 | 27.58 | 0.00 | 12.50 | 151.07 | 1173.01 | 474.28 |
| 3/9/20 9:42 | 238.72 | 27.55 | 0.00 | 12.47 | 149.18 | 1173.16 | 473.54 |
| 3/9/20 9:43 | 238.58 | 27.57 | 0.00 | 12.45 | 148.38 | 1173.45 | 472.61 |
| 3/9/20 9:44 | 238.64 | 27.56 | 0.00 | 12.42 | 148.44 | 1172.55 | 471.18 |
| 3/9/20 9:45 | 238.69 | 27.49 | 0.00 | 12.40 | 149.13 | 1173.38 | 470.88 |
| 3/9/20 9:46 | 238.43 | 27.59 | 0.00 | 12.37 | 149.50 | 1172.32 | 471.14 |
| 3/9/20 9:47 | 238.43 | 27.57 | 0.00 | 12.34 | 150.53 | 1172.80 | 470.86 |
| 3/9/20 9:48 | 238.63 | 27.56 | 0.00 | 12.32 | 150.37 | 1172.79 | 470.36 |
| 3/9/20 9:49 | 238.69 | 27.55 | 0.00 | 12.29 | 150.48 | 1172.34 | 470.36 |
| 3/9/20 9:50 | 238.59 | 27.50 | 0.00 | 12.27 | 149.23 | 1172.90 | 471.14 |
| 3/9/20 9:51 | 238.63 | 27.55 | 0.00 | 12.24 | 149.42 | 1173.14 | 471.88 |
| 3/9/20 9:52 | 238.41 | 27.59 | 0.00 | 12.22 | 149.87 | 1173.20 | 472.51 |
| 3/9/20 9:53 | 238.61 | 27.54 | 0.00 | 12.20 | 150.20 | 1173.21 | 473.13 |
| 3/9/20 9:54 | 238.33 | 27.50 | 0.00 | 12.21 | 150.70 | 1173.05 | 474.58 |
| 3/9/20 9:55 | 238.28 | 27.53 | 0.00 | 12.22 | 148.69 | 1173.04 | 473.60 |
| 3/9/20 9:56 | 238.28 | 27.45 | 0.00 | 12.24 | 146.53 | 1173.01 | 472.10 |
| 3/9/20 9:57 | 238.14 | 27.54 | 0.00 | 12.25 | 146.03 | 1173.00 | 472.36 |
| 3/9/20 9:58 | 238.18 | 27.53 | 0.00 | 12.26 | 146.48 | 1173.04 | 472.90 |
| 3/9/20 9:59 | 238.10 | 27.60 | 0.00 | 12.27 | 146.85 | 1173.38 | 473.33 |
| 3/9/20 10:00 | 238.14 | 27.40 | 0.00 | 12.28 | 147.29 | 1173.15 | 473.75 |
| 3/9/20 10:01 | 238.15 | 27.46 | 0.00 | 12.29 | 146.88 | 1172.88 | 474.17 |
| 3/9/20 10:02 | 237.81 | 27.51 | 0.00 | 12.30 | 147.08 | 1172.86 | 474.59 |
| 3/9/20 10:03 | 238.16 | 27.51 | 0.00 | 12.31 | 147.47 | 1172.86 | 475.01 |
| 3/9/20 10:04 | 237.98 | 27.45 | 0.00 | 12.32 | 147.05 | 1172.88 | 475.07 |
| 3/9/20 10:05 | 237.52 | 27.49 | 0.00 | 12.33 | 146.91 | 1172.64 | 473.33 |
| 3/9/20 10:06 | 237.80 | 27.47 | 0.00 | 12.34 | 146.30 | 1173.08 | 471.75 |
| 3/9/20 10:07 | 237.52 | 27.55 | 0.00 | 12.35 | 145.02 | 1172.88 | 473.59 |
| 3/9/20 10:08 | 237.75 | 27.50 | 0.00 | 12.35 | 144.81 | 1173.07 | 473.95 |
| 3/9/20 10:09 | 237.81 | 27.46 | 0.00 | 12.33 | 144.81 | 1173.03 | 473.67 |
| 3/9/20 10:10 | 237.61 | 27.46 | 0.00 | 12.32 | 145.01 | 1172.29 | 473.39 |
| 3/9/20 10:11 | 237.73 | 27.46 | 0.00 | 12.31 | 145.33 | 1172.85 | 473.11 |
| 3/9/20 10:12 | 237.66 | 27.51 | 0.00 | 12.30 | 145.55 | 1172.49 | 472.83 |
| 3/9/20 10:13 | 237.80 | 27.50 | 0.00 | 12.28 | 145.83 | 1172.61 | 472.55 |
| 3/9/20 10:14 | 237.42 | 27.44 | 0.00 | 12.27 | 145.49 | 1172.17 | 472.27 |
| 3/9/20 10:15 | 237.57 | 27.40 | 0.00 | 12.26 | 144.66 | 1172.26 | 474.63 |
| 3/9/20 10:16 | 237.10 | 27.46 | 0.00 | 12.25 | 143.15 | 1172.11 | 475.01 |
| 3/9/20 10:17 | 237.45 | 27.52 | 0.00 | 12.24 | 141.27 | 1172.12 | 474.37 |
| 3/9/20 10:18 | 237.35 | 27.50 | 0.00 | 12.24 | 140.63 | 1172.41 | 473.73 |
| 3/9/20 10:19 | 237.35 | 27.47 | 0.00 | 12.25 | 140.45 | 1172.52 | 473.09 |
| 3/9/20 10:20 | 237.24 | 27.45 | 0.00 | 12.25 | 141.70 | 1172.07 | 472.80 |
| 3/9/20 10:21 | 237.39 | 27.49 | 0.00 | 12.26 | 142.86 | 1172.58 | 472.56 |
| 3/9/20 10:22 | 237.31 | 27.45 | 0.00 | 12.26 | 143.63 | 1171.86 | 472.32 |
| 3/9/20 10:23 | 237.04 | 27.51 | 0.00 | 12.27 | 144.51 | 1171.90 | 472.07 |
| 3/9/20 10:24 | 237.24 | 27.38 | 0.00 | 12.27 | 143.81 | 1172.25 | 471.83 |
| 3/9/20 10:25 | 236.98 | 27.41 | 0.00 | 12.28 | 142.03 | 1173.21 | 471.59 |
| 3/9/20 10:26 | 237.09 | 27.35 | 0.00 | 12.28 | 141.32 | 1172.33 | 471.35 |
| 3/9/20 10:27 | 236.89 | 27.50 | 0.00 | 12.28 | 140.68 | 1172.48 | 471.10 |
| 3/9/20 10:28 | 237.02 | 27.32 | 0.00 | 12.29 | 140.56 | 1172.96 | 473.41 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/9 8:15 - 3/9 13:16) | 236.44 | 27.39 | 0.00 | 12.32 | 144.05 | 1172.02 | 247.08 |
| COUNT = 302 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/9/20 10:29 | 236.72 | 27.51 | 0.00 | 12.29 | 140.07 | 1172.42 | 473.76 |
| 3/9/20 10:30 | 236.73 | 27.41 | 0.00 | 12.30 | 139.08 | 1172.29 | 473.38 |
| 3/9/20 10:31 | 236.86 | 27.43 | 0.00 | 12.30 | 138.55 | 1172.08 | 472.99 |
| 3/9/20 10:32 | 236.75 | 27.44 | 0.00 | 12.31 | 138.08 | 1173.07 | 472.60 |
| 3/9/20 10:33 | 237.03 | 27.49 | 0.00 | 12.31 | 139.20 | 1172.44 | 472.22 |
| 3/9/20 10:34 | 236.98 | 27.45 | 0.00 | 12.32 | 140.46 | 1173.04 | 471.90 |
| 3/9/20 10:35 | 236.73 | 27.42 | 0.00 | 12.32 | 140.57 | 1172.45 | 471.90 |
| 3/9/20 10:36 | 236.64 | 27.42 | 0.00 | 12.33 | 140.73 | 1173.27 | 471.89 |
| 3/9/20 10:37 | 237.00 | 27.43 | 0.00 | 12.33 | 139.82 | 1172.48 | 471.88 |
| 3/9/20 10:38 | 236.51 | 27.46 | 0.00 | 12.34 | 139.44 | 1172.18 | 471.87 |
| 3/9/20 10:39 | 236.72 | 27.43 | 0.00 | 12.34 | 139.02 | 1172.79 | 471.87 |
| 3/9/20 10:40 | 236.57 | 27.43 | 0.00 | 12.35 | 138.35 | 1172.34 | 471.86 |
| 3/9/20 10:41 | 236.54 | 27.44 | 0.00 | 12.35 | 137.98 | 1172.23 | 471.85 |
| 3/9/20 10:42 | 236.22 | 27.33 | 0.00 | 12.36 | 138.47 | 1172.54 | 471.84 |
| 3/9/20 10:43 | 236.04 | 27.33 | 0.00 | 12.36 | 138.70 | 1172.34 | 471.84 |
| 3/9/20 10:44 | 236.41 | 27.40 | 0.00 | 12.37 | 137.78 | 1172.75 | 468.46 |
| 3/9/20 10:45 | 236.27 | 27.45 | 0.00 | 12.37 | 135.48 | 1172.29 | 471.19 |
| 3/9/20 10:46 | 236.12 | 27.38 | 0.00 | 12.38 | 135.52 | 1171.81 | 470.58 |
| 3/9/20 10:47 | 235.90 | 27.32 | 0.00 | 12.38 | 135.14 | 1172.09 | 470.69 |
| 3/9/20 10:48 | 235.92 | 27.32 | 0.00 | 12.38 | 135.04 | 1172.45 | 470.96 |
| 3/9/20 10:49 | 235.98 | 27.39 | 0.00 | 12.39 | 134.84 | 1173.18 | 471.22 |
| 3/9/20 10:50 | 235.89 | 27.47 | 0.00 | 12.39 | 134.57 | 1172.58 | 8.23 |
| 3/9/20 10:51 | 236.28 | 27.40 | 0.00 | 12.37 | 134.74 | 1172.94 | 8.22 |
| 3/9/20 10:52 | 236.27 | 27.38 | 0.00 | 12.36 | 135.12 | 1173.00 | 8.22 |
| 3/9/20 10:53 | 236.29 | 27.33 | 0.00 | 12.34 | 136.03 | 1173.24 | 8.21 |
| 3/9/20 10:54 | 236.16 | 27.33 | 0.00 | 12.33 | 136.19 | 1172.72 | 8.20 |
| 3/9/20 10:55 | 236.22 | 27.40 | 0.00 | 12.32 | 135.96 | 1172.62 | 8.19 |
| 3/9/20 10:56 | 235.92 | 27.43 | 0.00 | 12.30 | 136.11 | 1172.58 | 8.19 |
| 3/9/20 10:57 | 235.94 | 27.35 | 0.00 | 12.29 | 135.99 | 1172.56 | 8.18 |
| 3/9/20 10:58 | 235.79 | 27.39 | 0.00 | 12.29 | 135.42 | 1172.31 | 8.17 |
| 3/9/20 10:59 | 235.93 | 27.36 | 0.00 | 12.31 | 134.54 | 1172.91 | 8.17 |
| 3/9/20 11:00 | 236.08 | 27.32 | 0.00 | 12.34 | 134.78 | 1172.46 | 8.16 |
| 3/9/20 11:01 | 235.98 | 27.33 | 0.00 | 12.36 | 134.21 | 1172.56 | 8.15 |
| 3/9/20 11:02 | 235.65 | 27.29 | 0.00 | 12.38 | 134.65 | 1172.93 | 8.14 |
| 3/9/20 11:03 | 235.77 | 27.34 | 0.00 | 12.41 | 134.68 | 1172.33 | 8.14 |
| 3/9/20 11:04 | 235.85 | 27.35 | 0.00 | 12.43 | 134.35 | 1172.39 | 8.13 |
| 3/9/20 11:05 | 235.61 | 27.31 | 0.00 | 12.45 | 134.34 | 1172.28 | 8.12 |
| 3/9/20 11:06 | 235.93 | 27.36 | 0.00 | 12.48 | 134.84 | 1172.78 | 8.12 |
| 3/9/20 11:07 | 235.81 | 27.32 | 0.00 | 12.50 | 134.87 | 1172.09 | 8.11 |
| 3/9/20 11:08 | 235.73 | 27.39 | 0.00 | 12.51 | 134.75 | 1172.56 | 8.10 |
| 3/9/20 11:09 | 235.77 | 27.35 | 0.00 | 12.51 | 134.76 | 1172.41 | 8.10 |
| 3/9/20 11:10 | 235.69 | 27.33 | 0.00 | 12.50 | 134.77 | 1172.99 | 8.09 |
| 3/9/20 11:11 | 235.87 | 27.36 | 0.00 | 12.50 | 135.39 | 1172.83 | 8.08 |
| 3/9/20 11:12 | 235.92 | 27.37 | 0.00 | 12.50 | 135.33 | 1172.63 | 8.07 |
| 3/9/20 11:13 | 235.81 | 27.34 | 0.00 | 12.50 | 136.23 | 1172.97 | 8.07 |
| 3/9/20 11:14 | 236.24 | 27.37 | 0.00 | 12.50 | 135.98 | 1173.45 | 8.06 |
| 3/9/20 11:15 | 235.69 | 27.34 | 0.00 | 12.50 | 135.39 | 1171.82 | 8.05 |
| 3/9/20 11:16 | 235.68 | 27.35 | 0.00 | 12.50 | 134.75 | 1172.08 | 8.05 |
| 3/9/20 11:17 | 235.55 | 27.37 | 0.00 | 12.50 | 133.79 | 1171.94 | 8.04 |
| 3/9/20 11:18 | 235.25 | 27.30 | 0.00 | 12.50 | 133.36 | 1171.57 | 8.03 |
| 3/9/20 11:19 | 235.50 | 27.28 | 0.00 | 12.49 | 132.99 | 1172.51 | 8.02 |
| 3/9/20 11:20 | 235.26 | 27.30 | 0.00 | 12.49 | 131.90 | 1172.24 | 8.02 |
| 3/9/20 11:21 | 235.23 | 27.30 | 0.00 | 12.49 | 131.83 | 1171.42 | 8.01 |
| 3/9/20 11:22 | 235.06 | 27.28 | 0.00 | 12.49 | 132.31 | 1171.85 | 8.00 |
| 3/9/20 11:23 | 235.17 | 27.35 | 0.00 | 12.49 | 132.81 | 1172.44 | 8.00 |
| 3/9/20 11:24 | 234.48 | 27.36 | 0.00 | 12.49 | 132.73 | 1171.58 | 7.99 |
| 3/9/20 11:25 | 234.73 | 27.20 | 0.00 | 12.49 | 132.73 | 1172.31 | 7.98 |
| 3/9/20 11:26 | 234.43 | 27.30 | 0.00 | 12.49 | 132.19 | 1172.06 | 7.97 |
| 3/9/20 11:27 | 234.95 | 27.27 | 0.00 | 12.49 | 131.29 | 1172.38 | 7.97 |
| 3/9/20 11:28 | 235.05 | 27.25 | 0.00 | 12.48 | 130.83 | 1172.10 | 7.96 |
| 3/9/20 11:29 | 234.99 | 27.30 | 0.00 | 12.48 | 130.67 | 1171.92 | 7.95 |
| 3/9/20 11:30 | 234.61 | 27.25 | 0.00 | 12.48 | 130.60 | 1171.07 | 7.95 |
| 3/9/20 11:31 | 234.44 | 27.22 | 0.00 | 12.48 | 130.95 | 1171.57 | 7.94 |
| 3/9/20 11:32 | 234.45 | 27.22 | 0.00 | 12.48 | 131.17 | 1171.66 | 7.93 |
| 3/9/20 11:33 | 234.35 | 27.23 | 0.00 | 12.48 | 131.41 | 1171.58 | 7.92 |
| 3/9/20 11:34 | 234.11 | 27.24 | 0.00 | 12.47 | 131.12 | 1171.49 | 7.92 |
| 3/9/20 11:35 | 233.91 | 27.23 | 0.00 | 12.44 | 131.02 | 1170.73 | 7.91 |

| Description | | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/9 8:15 - 3/9 13:16) | | 236.44 | 27.39 | 0.00 | 12.32 | 144.05 | 1172.02 | 247.08 |
| COUNT = 302 | | | | | | | | |
| Signal Tagname | | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| | 3/9/20 11:36 | 233.99 | 27.22 | 0.00 | 12.40 | 129.96 | 1171.71 | 7.90 |
| | 3/9/20 11:37 | 233.80 | 27.25 | 0.00 | 12.37 | 127.87 | 1171.92 | 7.90 |
| | 3/9/20 11:38 | 234.12 | 27.25 | 0.00 | 12.34 | 127.89 | 1172.41 | 7.89 |
| | 3/9/20 11:39 | 233.66 | 27.24 | 0.00 | 12.33 | 127.26 | 1171.25 | 7.88 |
| | 3/9/20 11:40 | 233.79 | 27.21 | 0.00 | 12.33 | 128.34 | 1171.61 | 7.87 |
| | 3/9/20 11:41 | 234.11 | 27.20 | 0.00 | 12.34 | 128.91 | 1171.70 | 7.87 |
| | 3/9/20 11:42 | 233.63 | 27.19 | 0.00 | 12.34 | 129.82 | 1171.37 | 7.86 |
| | 3/9/20 11:43 | 233.66 | 27.23 | 0.00 | 12.35 | 129.78 | 1171.47 | 7.85 |
| | 3/9/20 11:44 | 233.79 | 27.14 | 0.00 | 12.35 | 128.43 | 1171.51 | 7.85 |
| | 3/9/20 11:45 | 233.32 | 27.16 | 0.00 | 12.35 | 128.15 | 1171.48 | 7.84 |
| | 3/9/20 11:46 | 233.28 | 27.19 | 0.00 | 12.36 | 128.60 | 1171.42 | 7.83 |
| | 3/9/20 11:47 | 233.19 | 27.17 | 0.00 | 12.36 | 128.32 | 1171.22 | 7.82 |
| | 3/9/20 11:48 | 233.46 | 27.15 | 0.00 | 12.37 | 128.21 | 1171.30 | 7.82 |
| | 3/9/20 11:49 | 233.72 | 27.23 | 0.00 | 12.37 | 127.91 | 1170.77 | 7.81 |
| | 3/9/20 11:50 | 234.10 | 27.29 | 0.00 | 12.37 | 128.76 | 1171.27 | 7.80 |
| | 3/9/20 11:51 | 233.79 | 27.28 | 0.00 | 12.38 | 129.43 | 1171.70 | 7.80 |
| | 3/9/20 11:52 | 233.95 | 27.26 | 0.00 | 12.38 | 129.99 | 1171.58 | 7.79 |
| | 3/9/20 11:53 | 234.06 | 27.21 | 0.00 | 12.38 | 130.02 | 1171.05 | 7.78 |
| | 3/9/20 11:54 | 233.95 | 27.26 | 0.00 | 12.39 | 130.48 | 1170.99 | 7.77 |
| | 3/9/20 11:55 | 234.10 | 27.24 | 0.00 | 12.39 | 131.05 | 1171.30 | 7.77 |
| | 3/9/20 11:56 | 233.96 | 27.19 | 0.00 | 12.39 | 131.04 | 1171.21 | 7.76 |
| | 3/9/20 11:57 | 233.73 | 27.16 | 0.00 | 12.40 | 130.92 | 1171.74 | 7.75 |
| | 3/9/20 11:58 | 233.93 | 27.18 | 0.00 | 12.40 | 131.31 | 1171.88 | 7.75 |
| | 3/9/20 11:59 | 233.59 | 27.23 | 0.00 | 12.40 | 130.46 | 1171.39 | 7.74 |
| | 3/9/20 12:00 | 233.56 | 27.21 | 0.00 | 12.41 | 129.79 | 1171.78 | 7.73 |
| | 3/9/20 12:01 | 233.43 | 27.22 | 0.00 | 12.41 | 129.46 | 1171.39 | 7.72 |
| | 3/9/20 12:02 | 233.38 | 27.14 | 0.00 | 12.41 | 128.16 | 1171.22 | 7.72 |
| | 3/9/20 12:03 | 233.80 | 27.17 | 0.00 | 12.42 | 127.85 | 1171.22 | 7.71 |
| | 3/9/20 12:04 | 233.46 | 27.18 | 0.00 | 12.42 | 128.59 | 1171.04 | 7.70 |
| | 3/9/20 12:05 | 233.52 | 27.19 | 0.00 | 12.42 | 129.18 | 1170.82 | 7.70 |
| | 3/9/20 12:06 | 233.59 | 27.07 | 0.00 | 12.43 | 130.60 | 1171.28 | 7.69 |
| | 3/9/20 12:07 | 233.23 | 27.21 | 0.00 | 12.43 | 130.39 | 1170.90 | 7.68 |
| | 3/9/20 12:08 | 233.13 | 27.16 | 0.00 | 12.43 | 130.80 | 1170.82 | 7.68 |
| | 3/9/20 12:09 | 232.98 | 27.23 | 0.00 | 12.41 | 130.38 | 1170.44 | 7.67 |
| | 3/9/20 12:10 | 233.22 | 27.07 | 0.00 | 12.39 | 129.12 | 1171.15 | 7.66 |
| | 3/9/20 12:11 | 233.21 | 27.15 | 0.00 | 12.37 | 129.11 | 1170.58 | 7.65 |
| | 3/9/20 12:12 | 233.12 | 27.22 | 0.00 | 12.35 | 128.73 | 1170.89 | 7.65 |
| | 3/9/20 12:13 | 233.50 | 27.24 | 0.00 | 12.34 | 129.36 | 1171.45 | 7.64 |
| | 3/9/20 12:14 | 233.36 | 27.13 | 0.00 | 12.32 | 129.41 | 1170.64 | 7.63 |
| | 3/9/20 12:15 | 233.31 | 27.20 | 0.00 | 12.30 | 129.86 | 1170.39 | 7.63 |
| | 3/9/20 12:16 | 233.42 | 27.18 | 0.00 | 12.28 | 130.17 | 1171.26 | 7.62 |
| | 3/9/20 12:17 | 233.04 | 27.05 | 0.00 | 12.26 | 130.83 | 1170.54 | 7.61 |
| | 3/9/20 12:18 | 233.58 | 27.17 | 0.00 | 12.25 | 131.37 | 1171.74 | 7.60 |
| | 3/9/20 12:19 | 233.26 | 27.13 | 0.00 | 12.23 | 131.52 | 1171.15 | 7.60 |
| | 3/9/20 12:20 | 233.12 | 27.23 | 0.00 | 12.21 | 132.00 | 1171.09 | 7.59 |
| | 3/9/20 12:21 | 233.05 | 27.11 | 0.00 | 12.19 | 131.64 | 1170.95 | 7.58 |
| | 3/9/20 12:22 | 232.54 | 27.16 | 0.00 | 12.17 | 130.82 | 1170.22 | 7.58 |
| | 3/9/20 12:23 | 233.10 | 27.17 | 0.00 | 12.18 | 131.21 | 1170.56 | 7.57 |
| | 3/9/20 12:24 | 232.97 | 27.11 | 0.00 | 12.18 | 131.00 | 1170.51 | 7.56 |
| | 3/9/20 12:25 | 232.69 | 27.11 | 0.00 | 12.18 | 131.58 | 1170.61 | 7.55 |
| | 3/9/20 12:26 | 232.59 | 27.09 | 0.00 | 12.18 | 132.27 | 1170.24 | 7.55 |
| | 3/9/20 12:27 | 232.42 | 27.17 | 0.00 | 12.18 | 132.75 | 1170.44 | 7.54 |
| | 3/9/20 12:28 | 232.76 | 27.09 | 0.00 | 12.18 | 132.84 | 1170.46 | 7.53 |
| | 3/9/20 12:29 | 232.51 | 27.08 | 0.00 | 12.18 | 132.85 | 1170.09 | 7.53 |
| | 3/9/20 12:30 | 231.90 | 27.04 | 0.00 | 12.19 | 131.65 | 1170.58 | 7.52 |
| | 3/9/20 12:31 | 232.05 | 27.04 | 0.00 | 12.19 | 131.28 | 1169.96 | 7.51 |
| | 3/9/20 12:32 | 232.04 | 27.09 | 0.00 | 12.19 | 131.20 | 1170.33 | 7.50 |
| | 3/9/20 12:33 | 232.40 | 27.10 | 0.00 | 12.19 | 130.22 | 1169.75 | 7.50 |
| | 3/9/20 12:34 | 232.63 | 27.12 | 0.00 | 12.19 | 130.01 | 1169.97 | 7.49 |
| | 3/9/20 12:35 | 232.92 | 27.12 | 0.00 | 12.20 | 129.54 | 1170.83 | 7.48 |
| | 3/9/20 12:36 | 232.71 | 27.14 | 0.00 | 12.22 | 131.02 | 1170.60 | 7.48 |
| | 3/9/20 12:37 | 232.80 | 27.15 | 0.00 | 12.24 | 131.06 | 1169.84 | 7.47 |
| | 3/9/20 12:38 | 232.23 | 27.11 | 0.00 | 12.26 | 131.55 | 1170.25 | 7.46 |
| | 3/9/20 12:39 | 232.23 | 27.05 | 0.00 | 12.26 | 131.12 | 1170.13 | 7.45 |
| | 3/9/20 12:40 | 231.87 | 27.03 | 0.00 | 12.26 | 131.15 | 1169.65 | 7.45 |
| | 3/9/20 12:41 | 232.07 | 27.13 | 0.00 | 12.26 | 131.12 | 1170.34 | 7.44 |
| | 3/9/20 12:42 | 231.84 | 27.01 | 0.00 | 12.27 | 130.62 | 1170.31 | 7.43 |

| Description | | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/9 8:15 - 3/9 13:16) | | 236.44 | 27.39 | 0.00 | 12.32 | 144.05 | 1172.02 | 247.08 |
| COUNT = 302 | | | | | | | | |
| Signal Tagname | | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| | 3/9/20 12:43 | 232.09 | 27.05 | 0.00 | 12.27 | 129.55 | 1170.77 | 7.43 |
| | 3/9/20 12:44 | 232.03 | 27.05 | 0.00 | 12.27 | 129.03 | 1170.33 | 7.42 |
| | 3/9/20 12:45 | 231.91 | 27.08 | 0.00 | 12.28 | 128.36 | 1169.60 | 7.41 |
| | 3/9/20 12:46 | 231.79 | 27.12 | 0.00 | 12.28 | 128.20 | 1169.36 | 7.40 |
| | 3/9/20 12:47 | 231.87 | 27.08 | 0.00 | 12.28 | 128.11 | 1170.09 | 7.40 |
| | 3/9/20 12:48 | 232.28 | 27.06 | 0.00 | 12.28 | 127.90 | 1170.60 | 7.39 |
| | 3/9/20 12:49 | 232.53 | 27.05 | 0.00 | 12.29 | 128.73 | 1169.90 | 7.38 |
| | 3/9/20 12:50 | 232.68 | 27.08 | 0.00 | 12.29 | 128.56 | 1170.65 | 7.38 |
| | 3/9/20 12:51 | 232.01 | 27.05 | 0.00 | 12.29 | 129.56 | 1170.17 | 7.37 |
| | 3/9/20 12:52 | 231.92 | 27.06 | 0.00 | 12.30 | 129.54 | 1169.51 | 7.36 |
| | 3/9/20 12:53 | 232.22 | 27.07 | 0.00 | 12.30 | 129.47 | 1169.83 | 7.35 |
| | 3/9/20 12:54 | 232.19 | 27.10 | 0.00 | 12.30 | 128.58 | 1169.70 | 7.35 |
| | 3/9/20 12:55 | 232.22 | 27.15 | 0.00 | 12.31 | 127.46 | 1169.93 | 7.34 |
| | 3/9/20 12:56 | 232.12 | 27.05 | 0.00 | 12.31 | 127.90 | 1170.58 | 7.33 |
| | 3/9/20 12:57 | 232.27 | 27.18 | 0.00 | 12.31 | 126.80 | 1170.47 | 7.33 |
| | 3/9/20 12:58 | 231.95 | 27.08 | 0.00 | 12.32 | 126.97 | 1170.49 | 7.32 |
| | 3/9/20 12:59 | 231.97 | 27.15 | 0.00 | 12.34 | 127.03 | 1170.08 | 7.31 |
| | 3/9/20 13:00 | 232.07 | 27.10 | 0.00 | 12.36 | 126.65 | 1169.50 | 7.31 |
| | 3/9/20 13:01 | 231.64 | 27.04 | 0.00 | 12.38 | 126.57 | 1169.76 | 7.30 |
| | 3/9/20 13:02 | 231.78 | 26.97 | 0.00 | 12.40 | 125.90 | 1170.48 | 7.29 |
| | 3/9/20 13:03 | 232.04 | 27.13 | 0.00 | 12.40 | 125.72 | 1170.39 | 7.28 |
| | 3/9/20 13:04 | 231.84 | 27.03 | 0.00 | 12.37 | 125.13 | 1170.03 | 7.28 |
| | 3/9/20 13:05 | 232.04 | 27.03 | 0.00 | 12.35 | 125.32 | 1170.06 | 7.27 |
| | 3/9/20 13:06 | 231.90 | 27.09 | 0.00 | 12.32 | 125.90 | 1169.78 | 7.26 |
| | 3/9/20 13:07 | 231.84 | 27.03 | 0.00 | 12.29 | 126.92 | 1169.67 | 7.26 |
| | 3/9/20 13:08 | 231.57 | 26.98 | 0.00 | 12.26 | 127.06 | 1169.52 | 7.25 |
| | 3/9/20 13:09 | 231.71 | 27.07 | 0.00 | 12.25 | 127.11 | 1169.73 | 7.24 |
| | 3/9/20 13:10 | 231.51 | 26.97 | 0.00 | 12.24 | 127.29 | 1169.53 | 7.23 |
| | 3/9/20 13:11 | 231.97 | 27.07 | 0.00 | 12.24 | 126.83 | 1170.34 | 7.23 |
| | 3/9/20 13:12 | 232.05 | 26.97 | 0.00 | 12.24 | 126.77 | 1169.62 | 7.22 |
| | 3/9/20 13:13 | 231.75 | 27.10 | 0.00 | 12.24 | 126.19 | 1169.45 | 7.21 |
| | 3/9/20 13:14 | 231.85 | 27.01 | 0.00 | 12.24 | 126.55 | 1170.20 | 7.21 |
| | 3/9/20 13:15 | 231.44 | 27.08 | 0.00 | 12.24 | 126.67 | 1169.14 | 7.20 |
| | 3/9/20 13:16 | 231.55 | 27.04 | 0.00 | 12.24 | 127.21 | 1169.79 | 7.19 |

| Description | | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/9 13:30 - 3/9 19:48) | | 231.19 | 27.05 | 0.00 | 12.45 | 125.57 | 1172.24 | 5.79 |
| COUNT = 379 | | | | | | | | |
| Signal Tagname | | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| | 3/9/20 13:30 | 231.63 | 27.06 | 0.00 | 12.24 | 125.53 | 1169.21 | 7.09 |
| | 3/9/20 13:31 | 231.84 | 27.03 | 0.00 | 12.24 | 125.78 | 1168.91 | 7.08 |
| | 3/9/20 13:32 | 231.85 | 27.04 | 0.00 | 12.24 | 126.82 | 1168.95 | 7.08 |
| | 3/9/20 13:33 | 231.51 | 27.03 | 0.00 | 12.24 | 127.42 | 1168.99 | 7.07 |
| | 3/9/20 13:34 | 231.60 | 26.99 | 0.00 | 12.24 | 127.18 | 1169.24 | 7.06 |
| | 3/9/20 13:35 | 231.34 | 26.98 | 0.00 | 12.23 | 126.79 | 1168.44 | 7.06 |
| | 3/9/20 13:36 | 230.91 | 27.02 | 0.00 | 12.23 | 127.22 | 1169.08 | 7.05 |
| | 3/9/20 13:37 | 231.23 | 26.94 | 0.00 | 12.23 | 126.86 | 1169.17 | 7.04 |
| | 3/9/20 13:38 | 231.18 | 27.04 | 0.00 | 12.23 | 125.46 | 1169.40 | 7.03 |
| | 3/9/20 13:39 | 231.15 | 26.99 | 0.00 | 12.23 | 125.48 | 1169.46 | 7.03 |
| | 3/9/20 13:40 | 231.07 | 27.03 | 0.00 | 12.23 | 125.46 | 1168.59 | 7.02 |
| | 3/9/20 13:41 | 231.42 | 26.99 | 0.00 | 12.23 | 125.09 | 1169.03 | 7.01 |
| | 3/9/20 13:42 | 231.38 | 27.01 | 0.00 | 12.23 | 125.85 | 1168.89 | 7.01 |
| | 3/9/20 13:43 | 231.12 | 26.85 | 0.00 | 12.23 | 126.87 | 1168.64 | 7.00 |
| | 3/9/20 13:44 | 231.12 | 26.95 | 0.00 | 12.23 | 126.32 | 1169.24 | 6.99 |
| | 3/9/20 13:45 | 231.35 | 26.93 | 0.00 | 12.23 | 125.94 | 1168.86 | 6.98 |
| | 3/9/20 13:46 | 231.20 | 26.97 | 0.00 | 12.23 | 125.77 | 1168.30 | 6.98 |
| | 3/9/20 13:47 | 231.31 | 26.91 | 0.00 | 12.23 | 125.61 | 1168.79 | 6.97 |
| | 3/9/20 13:48 | 230.76 | 27.06 | 0.00 | 12.23 | 125.95 | 1168.89 | 6.96 |
| | 3/9/20 13:49 | 231.30 | 26.92 | 0.00 | 12.23 | 125.54 | 1168.82 | 6.96 |
| | 3/9/20 13:50 | 231.48 | 26.99 | 0.00 | 12.23 | 125.81 | 1168.48 | 6.95 |
| | 3/9/20 13:51 | 231.38 | 26.98 | 0.00 | 12.26 | 126.49 | 1168.62 | 6.94 |
| | 3/9/20 13:52 | 231.38 | 26.97 | 0.00 | 12.30 | 127.06 | 1167.95 | 6.93 |
| | 3/9/20 13:53 | 231.42 | 26.97 | 0.00 | 12.34 | 127.04 | 1168.65 | 6.93 |
| | 3/9/20 13:54 | 231.35 | 27.05 | 0.00 | 12.32 | 126.95 | 1168.99 | 6.92 |
| | 3/9/20 13:55 | 231.48 | 26.99 | 0.00 | 12.31 | 126.76 | 1169.18 | 6.91 |
| | 3/9/20 13:56 | 231.48 | 26.98 | 0.00 | 12.30 | 127.01 | 1168.92 | 6.91 |
| | 3/9/20 13:57 | 231.67 | 26.96 | 0.00 | 12.28 | 127.05 | 1169.10 | 6.90 |
| | 3/9/20 13:58 | 231.72 | 27.03 | 0.00 | 12.27 | 126.97 | 1168.88 | 6.89 |
| | 3/9/20 13:59 | 231.63 | 26.96 | 0.00 | 12.26 | 126.80 | 1169.17 | 6.89 |
| | 3/9/20 14:00 | 231.60 | 27.00 | 0.00 | 12.24 | 126.90 | 1169.28 | 6.88 |
| | 3/9/20 14:01 | 231.89 | 27.00 | 0.00 | 12.23 | 126.71 | 1169.76 | 6.87 |
| | 3/9/20 14:02 | 231.92 | 27.01 | 0.00 | 12.22 | 126.63 | 1168.69 | 6.86 |
| | 3/9/20 14:03 | 231.77 | 27.02 | 0.00 | 12.21 | 126.64 | 1168.72 | 6.86 |
| | 3/9/20 14:04 | 231.37 | 27.04 | 0.00 | 12.19 | 127.40 | 1168.20 | 6.85 |
| | 3/9/20 14:05 | 231.46 | 26.96 | 0.00 | 12.20 | 128.69 | 1168.56 | 6.84 |
| | 3/9/20 14:06 | 231.13 | 26.99 | 0.00 | 12.22 | 128.03 | 1168.66 | 6.84 |
| | 3/9/20 14:07 | 230.78 | 26.96 | 0.00 | 12.24 | 126.55 | 1168.50 | 6.83 |
| | 3/9/20 14:08 | 230.98 | 26.96 | 0.00 | 12.26 | 126.34 | 1168.51 | 6.82 |
| | 3/9/20 14:09 | 231.23 | 26.98 | 0.00 | 12.29 | 125.09 | 1168.71 | 6.81 |
| | 3/9/20 14:10 | 231.52 | 26.95 | 0.00 | 12.31 | 125.78 | 1168.92 | 6.81 |
| | 3/9/20 14:11 | 231.34 | 27.01 | 0.00 | 12.33 | 125.69 | 1168.28 | 6.80 |
| | 3/9/20 14:12 | 231.41 | 26.96 | 0.00 | 12.34 | 125.98 | 1168.77 | 6.79 |
| | 3/9/20 14:13 | 231.64 | 26.98 | 0.00 | 12.35 | 126.40 | 1168.70 | 6.79 |
| | 3/9/20 14:14 | 231.88 | 27.03 | 0.00 | 12.36 | 126.72 | 1168.67 | 6.78 |
| | 3/9/20 14:15 | 231.94 | 27.01 | 0.00 | 12.37 | 127.00 | 1168.96 | 6.77 |
| | 3/9/20 14:16 | 231.63 | 26.97 | 0.00 | 12.37 | 128.12 | 1168.51 | 6.76 |
| | 3/9/20 14:17 | 231.65 | 26.95 | 0.00 | 12.38 | 128.27 | 1168.99 | 6.76 |
| | 3/9/20 14:18 | 231.44 | 27.09 | 0.00 | 12.39 | 127.05 | 1168.54 | 6.75 |
| | 3/9/20 14:19 | 231.55 | 26.98 | 0.00 | 12.40 | 126.75 | 1168.49 | 6.74 |
| | 3/9/20 14:20 | 231.78 | 27.00 | 0.00 | 12.41 | 126.30 | 1168.40 | 6.74 |
| | 3/9/20 14:21 | 231.35 | 27.02 | 0.00 | 12.42 | 127.06 | 1168.32 | 6.73 |
| | 3/9/20 14:22 | 231.25 | 26.96 | 0.00 | 12.43 | 127.77 | 1168.98 | 6.72 |
| | 3/9/20 14:23 | 231.38 | 27.01 | 0.00 | 12.44 | 126.25 | 1167.89 | 6.71 |
| | 3/9/20 14:24 | 231.36 | 27.02 | 0.00 | 12.45 | 126.37 | 1168.82 | 6.71 |
| | 3/9/20 14:25 | 231.40 | 26.97 | 0.00 | 12.46 | 126.16 | 1168.50 | 6.70 |
| | 3/9/20 14:26 | 231.37 | 27.05 | 0.00 | 12.47 | 126.60 | 1168.66 | 6.69 |
| | 3/9/20 14:27 | 231.29 | 27.00 | 0.00 | 12.48 | 127.19 | 1168.45 | 6.69 |
| | 3/9/20 14:28 | 231.34 | 27.01 | 0.00 | 12.49 | 127.46 | 1168.92 | 6.68 |
| | 3/9/20 14:29 | 231.51 | 27.02 | 0.00 | 12.50 | 127.36 | 1168.36 | 6.67 |
| | 3/9/20 14:30 | 231.31 | 27.06 | 0.00 | 12.51 | 127.69 | 1168.53 | 6.66 |
| | 3/9/20 14:31 | 231.06 | 27.05 | 0.00 | 12.52 | 127.54 | 1168.07 | 6.66 |
| | 3/9/20 14:32 | 230.98 | 27.04 | 0.00 | 12.51 | 126.85 | 1168.29 | 6.65 |
| | 3/9/20 14:33 | 231.03 | 27.04 | 0.00 | 12.49 | 126.74 | 1168.36 | 6.64 |
| | 3/9/20 14:34 | 231.41 | 27.13 | 0.00 | 12.47 | 126.70 | 1168.31 | 6.64 |
| | 3/9/20 14:35 | 230.99 | 26.98 | 0.00 | 12.46 | 127.45 | 1167.91 | 6.63 |
| | 3/9/20 14:36 | 231.22 | 27.04 | 0.00 | 12.45 | 127.10 | 1168.57 | 6.62 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/9 13:30 - 3/9 19:48) | 231.19 | 27.05 | 0.00 | 12.45 | 125.57 | 1172.24 | 5.79 |
| COUNT = 379 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/9/20 14:37 | 231.39 | 27.00 | 0.00 | 12.44 | 127.33 | 1168.27 | 6.61 |
| 3/9/20 14:38 | 231.70 | 27.01 | 0.00 | 12.43 | 127.41 | 1168.60 | 6.61 |
| 3/9/20 14:39 | 231.38 | 27.03 | 0.00 | 12.43 | 127.85 | 1168.14 | 6.60 |
| 3/9/20 14:40 | 231.33 | 27.04 | 0.00 | 12.42 | 128.15 | 1168.31 | 6.59 |
| 3/9/20 14:41 | 231.30 | 27.05 | 0.00 | 12.46 | 127.88 | 1167.94 | 6.59 |
| 3/9/20 14:42 | 231.44 | 26.99 | 0.00 | 12.48 | 128.19 | 1168.41 | 6.58 |
| 3/9/20 14:43 | 231.25 | 27.08 | 0.00 | 12.49 | 127.53 | 1168.07 | 6.57 |
| 3/9/20 14:44 | 231.22 | 26.97 | 0.00 | 12.49 | 127.92 | 1167.93 | 6.56 |
| 3/9/20 14:45 | 230.88 | 27.00 | 0.00 | 12.49 | 127.95 | 1167.84 | 6.56 |
| 3/9/20 14:46 | 230.82 | 26.97 | 0.00 | 12.49 | 127.60 | 1168.17 | 6.55 |
| 3/9/20 14:47 | 231.22 | 27.02 | 0.00 | 12.50 | 127.17 | 1167.74 | 6.54 |
| 3/9/20 14:48 | 231.07 | 27.01 | 0.00 | 12.50 | 126.84 | 1168.31 | 6.54 |
| 3/9/20 14:49 | 230.81 | 26.97 | 0.00 | 12.50 | 126.57 | 1167.98 | 6.53 |
| 3/9/20 14:50 | 230.96 | 26.93 | 0.00 | 12.50 | 126.84 | 1168.00 | 6.52 |
| 3/9/20 14:51 | 230.96 | 26.98 | 0.00 | 12.51 | 127.14 | 1168.17 | 6.52 |
| 3/9/20 14:52 | 231.00 | 26.96 | 0.00 | 12.51 | 127.66 | 1168.28 | 6.51 |
| 3/9/20 14:53 | 230.96 | 26.99 | 0.00 | 12.51 | 127.45 | 1168.23 | 6.50 |
| 3/9/20 14:54 | 230.97 | 26.91 | 0.00 | 12.51 | 127.44 | 1168.29 | 6.49 |
| 3/9/20 14:55 | 230.99 | 26.92 | 0.00 | 12.51 | 127.15 | 1168.10 | 6.49 |
| 3/9/20 14:56 | 230.80 | 26.97 | 0.00 | 12.52 | 126.48 | 1167.86 | 6.48 |
| 3/9/20 14:57 | 230.98 | 26.88 | 0.00 | 12.52 | 126.35 | 1167.94 | 6.47 |
| 3/9/20 14:58 | 231.17 | 27.02 | 0.00 | 12.52 | 125.90 | 1168.20 | 6.47 |
| 3/9/20 14:59 | 230.92 | 26.87 | 0.00 | 12.52 | 126.08 | 1167.89 | 6.46 |
| 3/9/20 15:00 | 230.91 | 26.98 | 0.00 | 12.53 | 126.65 | 1167.56 | 6.45 |
| 3/9/20 15:01 | 230.66 | 26.90 | 0.00 | 12.53 | 127.09 | 1167.80 | 6.44 |
| 3/9/20 15:02 | 230.70 | 26.94 | 0.00 | 12.52 | 126.99 | 1167.68 | 6.44 |
| 3/9/20 15:03 | 230.70 | 26.91 | 0.00 | 12.49 | 127.29 | 1168.41 | 6.43 |
| 3/9/20 15:04 | 230.74 | 26.93 | 0.00 | 12.46 | 126.73 | 1168.46 | 6.42 |
| 3/9/20 15:05 | 230.89 | 26.98 | 0.00 | 12.44 | 126.77 | 1168.13 | 6.42 |
| 3/9/20 15:06 | 230.98 | 26.99 | 0.00 | 12.41 | 126.68 | 1168.47 | 6.41 |
| 3/9/20 15:07 | 230.95 | 26.93 | 0.00 | 12.38 | 126.65 | 1168.10 | 6.40 |
| 3/9/20 15:08 | 230.75 | 26.92 | 0.00 | 12.37 | 126.34 | 1168.18 | 6.39 |
| 3/9/20 15:09 | 230.74 | 26.87 | 0.00 | 12.36 | 126.34 | 1167.46 | 6.39 |
| 3/9/20 15:10 | 231.01 | 26.97 | 0.00 | 12.35 | 126.66 | 1168.07 | 6.38 |
| 3/9/20 15:11 | 230.64 | 26.90 | 0.00 | 12.35 | 126.85 | 1167.66 | 6.37 |
| 3/9/20 15:12 | 230.38 | 26.90 | 0.00 | 12.34 | 127.62 | 1167.64 | 6.37 |
| 3/9/20 15:13 | 230.52 | 26.90 | 0.00 | 12.33 | 127.26 | 1168.10 | 6.36 |
| 3/9/20 15:14 | 230.63 | 26.92 | 0.00 | 12.32 | 126.80 | 1168.10 | 6.35 |
| 3/9/20 15:15 | 231.06 | 26.87 | 0.00 | 12.31 | 126.09 | 1167.82 | 6.34 |
| 3/9/20 15:16 | 231.19 | 27.01 | 0.00 | 12.30 | 126.42 | 1167.75 | 6.34 |
| 3/9/20 15:17 | 230.97 | 26.93 | 0.00 | 12.30 | 126.86 | 1167.74 | 6.33 |
| 3/9/20 15:18 | 230.72 | 26.96 | 0.00 | 12.29 | 128.31 | 1168.45 | 6.32 |
| 3/9/20 15:19 | 230.89 | 26.88 | 0.00 | 12.28 | 128.35 | 1168.18 | 6.32 |
| 3/9/20 15:20 | 230.60 | 26.96 | 0.00 | 12.27 | 127.18 | 1167.65 | 6.31 |
| 3/9/20 15:21 | 230.56 | 26.99 | 0.00 | 12.26 | 126.67 | 1168.15 | 6.30 |
| 3/9/20 15:22 | 230.62 | 26.87 | 0.00 | 12.25 | 126.53 | 1167.45 | 6.29 |
| 3/9/20 15:23 | 230.82 | 26.92 | 0.00 | 12.24 | 126.42 | 1168.26 | 6.29 |
| 3/9/20 15:24 | 230.67 | 26.96 | 0.00 | 12.24 | 126.08 | 1167.88 | 6.28 |
| 3/9/20 15:25 | 230.63 | 26.92 | 0.00 | 12.25 | 126.79 | 1167.53 | 6.27 |
| 3/9/20 15:26 | 230.46 | 27.00 | 0.00 | 12.28 | 126.78 | 1167.78 | 6.27 |
| 3/9/20 15:27 | 230.22 | 26.91 | 0.00 | 12.30 | 126.72 | 1167.24 | 6.26 |
| 3/9/20 15:28 | 230.33 | 26.89 | 0.00 | 12.33 | 126.66 | 1167.17 | 6.25 |
| 3/9/20 15:29 | 230.78 | 26.98 | 0.00 | 12.35 | 127.09 | 1168.06 | 6.24 |
| 3/9/20 15:30 | 230.59 | 26.91 | 0.00 | 12.38 | 126.53 | 1168.19 | 6.24 |
| 3/9/20 15:31 | 230.60 | 26.90 | 0.00 | 12.40 | 127.18 | 1168.18 | 6.23 |
| 3/9/20 15:32 | 230.87 | 26.95 | 0.00 | 12.43 | 127.38 | 1168.39 | 6.22 |
| 3/9/20 15:33 | 230.79 | 26.98 | 0.00 | 12.45 | 126.33 | 1167.80 | 6.22 |
| 3/9/20 15:34 | 230.60 | 26.93 | 0.00 | 12.48 | 125.84 | 1167.46 | 6.21 |
| 3/9/20 15:35 | 230.69 | 27.02 | 0.00 | 12.50 | 125.96 | 1167.68 | 6.20 |
| 3/9/20 15:36 | 230.53 | 26.93 | 0.00 | 12.53 | 126.59 | 1167.93 | 6.19 |
| 3/9/20 15:37 | 230.58 | 26.90 | 0.00 | 12.56 | 126.63 | 1168.15 | 6.19 |
| 3/9/20 15:38 | 230.64 | 27.01 | 0.00 | 12.36 | 126.52 | 1167.44 | 6.18 |
| 3/9/20 15:39 | 230.35 | 26.94 | 0.00 | 12.37 | 126.87 | 1167.83 | 6.17 |
| 3/9/20 15:40 | 230.59 | 26.95 | 0.00 | 12.38 | 126.63 | 1167.89 | 6.17 |
| 3/9/20 15:41 | 230.92 | 26.98 | 0.00 | 12.39 | 125.63 | 1167.47 | 6.16 |
| 3/9/20 15:42 | 230.76 | 26.98 | 0.00 | 12.40 | 125.34 | 1167.64 | 6.15 |
| 3/9/20 15:43 | 230.52 | 26.98 | 0.00 | 12.40 | 124.58 | 1167.55 | 6.15 |

| Description | | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/9 13:30 - 3/9 19:48) | | 231.19 | 27.05 | 0.00 | 12.45 | 125.57 | 1172.24 | 5.79 |
| COUNT = 379 | | | | | | | | |
| Signal Tagname | | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| | 3/9/20 15:44 | 230.51 | 26.96 | 0.00 | 12.41 | 125.50 | 1166.82 | 6.14 |
| | 3/9/20 15:45 | 230.49 | 26.94 | 0.00 | 12.42 | 124.62 | 1167.02 | 6.13 |
| | 3/9/20 15:46 | 230.54 | 26.93 | 0.00 | 12.43 | 124.69 | 1166.88 | 6.12 |
| | 3/9/20 15:47 | 230.35 | 26.90 | 0.00 | 12.44 | 124.60 | 1167.57 | 6.12 |
| | 3/9/20 15:48 | 230.36 | 26.96 | 0.00 | 12.45 | 124.46 | 1167.13 | 6.11 |
| | 3/9/20 15:49 | 231.25 | 27.07 | 0.00 | 12.45 | 125.55 | 1174.35 | 6.10 |
| | 3/9/20 15:50 | 230.85 | 27.10 | 0.00 | 12.46 | 126.11 | 1175.13 | 6.10 |
| | 3/9/20 15:51 | 230.86 | 27.14 | 0.00 | 12.44 | 126.54 | 1174.67 | 6.09 |
| | 3/9/20 15:52 | 230.58 | 27.10 | 0.00 | 12.43 | 126.01 | 1174.62 | 6.08 |
| | 3/9/20 15:53 | 230.81 | 27.11 | 0.00 | 12.41 | 124.92 | 1175.08 | 6.07 |
| | 3/9/20 15:54 | 230.98 | 27.08 | 0.00 | 12.39 | 123.25 | 1174.33 | 6.07 |
| | 3/9/20 15:55 | 230.89 | 27.09 | 0.00 | 12.38 | 123.20 | 1174.30 | 6.06 |
| | 3/9/20 15:56 | 230.78 | 27.13 | 0.00 | 12.37 | 124.14 | 1174.82 | 6.05 |
| | 3/9/20 15:57 | 230.24 | 27.09 | 0.00 | 12.41 | 124.92 | 1174.58 | 6.05 |
| | 3/9/20 15:58 | 230.54 | 27.05 | 0.00 | 12.45 | 124.22 | 1174.66 | 6.04 |
| | 3/9/20 15:59 | 231.10 | 27.16 | 0.00 | 12.49 | 122.75 | 1174.74 | 6.03 |
| | 3/9/20 16:00 | 230.85 | 27.06 | 0.00 | 12.53 | 122.54 | 1174.32 | 6.02 |
| | 3/9/20 16:01 | 230.84 | 27.03 | 0.00 | 12.52 | 123.03 | 1174.65 | 6.02 |
| | 3/9/20 16:02 | 230.96 | 27.12 | 0.00 | 12.50 | 123.85 | 1174.41 | 6.01 |
| | 3/9/20 16:03 | 230.93 | 27.07 | 0.00 | 12.47 | 123.62 | 1174.42 | 6.00 |
| | 3/9/20 16:04 | 231.08 | 27.10 | 0.00 | 12.44 | 124.70 | 1174.79 | 6.00 |
| | 3/9/20 16:05 | 231.11 | 27.09 | 0.00 | 12.41 | 125.02 | 1174.88 | 5.99 |
| | 3/9/20 16:06 | 231.26 | 27.09 | 0.00 | 12.39 | 125.10 | 1174.92 | 5.98 |
| | 3/9/20 16:07 | 231.20 | 27.16 | 0.00 | 12.36 | 125.07 | 1174.73 | 5.97 |
| | 3/9/20 16:08 | 231.21 | 27.17 | 0.00 | 12.43 | 124.74 | 1175.15 | 5.97 |
| | 3/9/20 16:09 | 231.26 | 27.07 | 0.00 | 12.47 | 124.40 | 1174.28 | 5.96 |
| | 3/9/20 16:10 | 231.38 | 27.10 | 0.00 | 12.48 | 123.80 | 1174.58 | 5.95 |
| | 3/9/20 16:11 | 230.96 | 27.08 | 0.00 | 12.49 | 123.69 | 1174.58 | 5.95 |
| | 3/9/20 16:12 | 230.84 | 27.04 | 0.00 | 12.50 | 123.37 | 1174.61 | 5.94 |
| | 3/9/20 16:13 | 230.40 | 27.07 | 0.00 | 12.50 | 122.92 | 1174.46 | 5.93 |
| | 3/9/20 16:14 | 230.54 | 27.09 | 0.00 | 12.51 | 122.48 | 1174.43 | 5.92 |
| | 3/9/20 16:15 | 230.75 | 27.14 | 0.00 | 12.51 | 122.61 | 1174.45 | 5.92 |
| | 3/9/20 16:16 | 231.05 | 27.08 | 0.00 | 12.50 | 122.84 | 1174.51 | 5.91 |
| | 3/9/20 16:17 | 230.75 | 27.04 | 0.00 | 12.49 | 122.55 | 1174.16 | 5.90 |
| | 3/9/20 16:18 | 230.72 | 27.03 | 0.00 | 12.48 | 122.99 | 1174.71 | 5.90 |
| | 3/9/20 16:19 | 230.54 | 27.02 | 0.00 | 12.48 | 122.62 | 1173.96 | 5.89 |
| | 3/9/20 16:20 | 230.66 | 27.05 | 0.00 | 12.47 | 122.61 | 1174.19 | 5.88 |
| | 3/9/20 16:21 | 230.79 | 27.12 | 0.00 | 12.46 | 123.18 | 1174.64 | 5.87 |
| | 3/9/20 16:22 | 231.16 | 27.13 | 0.00 | 12.45 | 122.87 | 1175.04 | 5.87 |
| | 3/9/20 16:23 | 230.83 | 27.11 | 0.00 | 12.44 | 123.33 | 1174.50 | 5.86 |
| | 3/9/20 16:24 | 230.94 | 27.13 | 0.00 | 12.43 | 123.18 | 1174.71 | 5.85 |
| | 3/9/20 16:25 | 230.98 | 27.12 | 0.00 | 12.42 | 123.42 | 1174.40 | 5.85 |
| | 3/9/20 16:26 | 230.75 | 27.13 | 0.00 | 12.41 | 124.40 | 1174.75 | 5.84 |
| | 3/9/20 16:27 | 231.02 | 27.08 | 0.00 | 12.42 | 123.86 | 1174.29 | 5.83 |
| | 3/9/20 16:28 | 231.19 | 27.11 | 0.00 | 12.44 | 123.56 | 1174.23 | 5.82 |
| | 3/9/20 16:29 | 230.81 | 27.06 | 0.00 | 12.45 | 123.54 | 1173.95 | 5.82 |
| | 3/9/20 16:30 | 230.38 | 27.10 | 0.00 | 12.47 | 123.45 | 1174.24 | 5.81 |
| | 3/9/20 16:31 | 230.46 | 27.03 | 0.00 | 12.49 | 123.75 | 1174.45 | 5.80 |
| | 3/9/20 16:32 | 230.64 | 27.05 | 0.00 | 12.51 | 123.01 | 1174.60 | 5.80 |
| | 3/9/20 16:33 | 230.74 | 27.08 | 0.00 | 12.49 | 122.52 | 1174.00 | 5.79 |
| | 3/9/20 16:34 | 230.92 | 27.03 | 0.00 | 12.46 | 122.63 | 1174.61 | 5.78 |
| | 3/9/20 16:35 | 231.14 | 27.21 | 0.00 | 12.44 | 123.50 | 1174.39 | 5.77 |
| | 3/9/20 16:36 | 230.93 | 27.10 | 0.00 | 12.42 | 123.90 | 1174.62 | 5.77 |
| | 3/9/20 16:37 | 230.60 | 27.11 | 0.00 | 12.39 | 123.12 | 1174.43 | 5.76 |
| | 3/9/20 16:38 | 230.51 | 27.14 | 0.00 | 12.37 | 123.44 | 1174.95 | 5.75 |
| | 3/9/20 16:39 | 230.62 | 27.06 | 0.00 | 12.34 | 123.72 | 1174.32 | 5.75 |
| | 3/9/20 16:40 | 230.69 | 27.15 | 0.00 | 12.32 | 123.34 | 1174.84 | 5.74 |
| | 3/9/20 16:41 | 230.81 | 27.01 | 0.00 | 12.29 | 123.35 | 1174.57 | 5.73 |
| | 3/9/20 16:42 | 230.35 | 27.00 | 0.00 | 12.39 | 123.65 | 1174.18 | 5.73 |
| | 3/9/20 16:43 | 230.14 | 27.01 | 0.00 | 12.45 | 123.58 | 1174.65 | 5.72 |
| | 3/9/20 16:44 | 229.95 | 27.07 | 0.00 | 12.45 | 123.01 | 1174.22 | 5.71 |
| | 3/9/20 16:45 | 229.94 | 27.04 | 0.00 | 12.44 | 121.50 | 1174.13 | 5.70 |
| | 3/9/20 16:46 | 230.06 | 26.99 | 0.00 | 12.44 | 121.07 | 1174.91 | 5.70 |
| | 3/9/20 16:47 | 230.17 | 27.00 | 0.00 | 12.43 | 121.37 | 1173.54 | 5.69 |
| | 3/9/20 16:48 | 230.40 | 27.04 | 0.00 | 12.43 | 121.40 | 1174.14 | 5.68 |
| | 3/9/20 16:49 | 230.01 | 27.07 | 0.00 | 12.43 | 122.46 | 1174.81 | 5.68 |
| | 3/9/20 16:50 | 230.01 | 27.04 | 0.00 | 12.42 | 122.57 | 1174.18 | 5.67 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/9 13:30 - 3/9 19:48) COUNT = 379 | 231.19 | 27.05 | 0.00 | 12.45 | 125.57 | 1172.24 | 5.79 |

| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
|---|---|---|---|---|---|---|---|
| 3/9/20 16:51 | 229.89 | 26.94 | 0.00 | 12.42 | 122.98 | 1173.74 | 5.66 |
| 3/9/20 16:52 | 230.02 | 27.03 | 0.00 | 12.41 | 123.54 | 1173.94 | 5.65 |
| 3/9/20 16:53 | 230.07 | 27.00 | 0.00 | 12.41 | 122.84 | 1174.12 | 5.65 |
| 3/9/20 16:54 | 230.20 | 27.00 | 0.00 | 12.41 | 122.17 | 1174.28 | 5.64 |
| 3/9/20 16:55 | 230.58 | 27.09 | 0.00 | 12.40 | 122.66 | 1174.37 | 5.63 |
| 3/9/20 16:56 | 230.57 | 27.10 | 0.00 | 12.40 | 123.58 | 1174.09 | 5.63 |
| 3/9/20 16:57 | 230.80 | 27.10 | 0.00 | 12.40 | 124.30 | 1174.41 | 5.62 |
| 3/9/20 16:58 | 230.32 | 27.00 | 0.00 | 12.39 | 124.83 | 1174.05 | 5.61 |
| 3/9/20 16:59 | 230.46 | 27.03 | 0.00 | 12.39 | 125.13 | 1174.49 | 5.60 |
| 3/9/20 17:00 | 230.33 | 27.00 | 0.00 | 12.38 | 124.47 | 1174.49 | 5.60 |
| 3/9/20 17:01 | 230.31 | 27.02 | 0.00 | 12.38 | 123.10 | 1174.33 | 5.59 |
| 3/9/20 17:02 | 230.79 | 27.08 | 0.00 | 12.38 | 122.63 | 1174.35 | 5.58 |
| 3/9/20 17:03 | 230.41 | 27.08 | 0.00 | 12.37 | 122.41 | 1174.19 | 5.58 |
| 3/9/20 17:04 | 230.48 | 27.08 | 0.00 | 12.37 | 122.74 | 1173.75 | 5.57 |
| 3/9/20 17:05 | 230.48 | 27.05 | 0.00 | 12.37 | 123.38 | 1173.90 | 5.56 |
| 3/9/20 17:06 | 230.38 | 27.10 | 0.00 | 12.36 | 123.53 | 1174.00 | 5.55 |
| 3/9/20 17:07 | 230.35 | 27.03 | 0.00 | 12.37 | 124.13 | 1173.28 | 5.55 |
| 3/9/20 17:08 | 230.09 | 27.12 | 0.00 | 12.39 | 124.09 | 1174.07 | 5.54 |
| 3/9/20 17:09 | 230.40 | 27.09 | 0.00 | 12.41 | 124.53 | 1173.69 | 5.53 |
| 3/9/20 17:10 | 230.14 | 27.01 | 0.00 | 12.43 | 123.96 | 1173.53 | 5.53 |
| 3/9/20 17:11 | 230.13 | 27.01 | 0.00 | 12.45 | 123.59 | 1174.15 | 5.52 |
| 3/9/20 17:12 | 229.85 | 27.01 | 0.00 | 12.47 | 122.91 | 1173.75 | 5.51 |
| 3/9/20 17:13 | 229.50 | 26.98 | 0.00 | 12.49 | 122.63 | 1174.08 | 5.50 |
| 3/9/20 17:14 | 230.06 | 27.02 | 0.00 | 12.51 | 122.54 | 1173.61 | 5.50 |
| 3/9/20 17:15 | 229.97 | 26.98 | 0.00 | 12.52 | 122.96 | 1173.66 | 5.49 |
| 3/9/20 17:16 | 229.83 | 26.96 | 0.00 | 12.52 | 123.71 | 1173.75 | 5.48 |
| 3/9/20 17:17 | 230.26 | 27.01 | 0.00 | 12.52 | 123.53 | 1173.67 | 5.48 |
| 3/9/20 17:18 | 230.29 | 27.01 | 0.00 | 12.52 | 123.39 | 1174.04 | 5.47 |
| 3/9/20 17:19 | 230.07 | 26.99 | 0.00 | 12.52 | 123.36 | 1173.27 | 5.46 |
| 3/9/20 17:20 | 230.10 | 27.01 | 0.00 | 12.52 | 123.49 | 1173.25 | 5.45 |
| 3/9/20 17:21 | 230.19 | 27.05 | 0.00 | 12.52 | 123.85 | 1173.66 | 5.45 |
| 3/9/20 17:22 | 230.26 | 27.04 | 0.00 | 12.52 | 124.22 | 1173.85 | 5.44 |
| 3/9/20 17:23 | 230.44 | 27.02 | 0.00 | 12.52 | 124.29 | 1174.40 | 5.43 |
| 3/9/20 17:24 | 230.34 | 27.00 | 0.00 | 12.52 | 124.59 | 1174.29 | 5.43 |
| 3/9/20 17:25 | 229.93 | 27.01 | 0.00 | 12.52 | 124.20 | 1173.98 | 5.42 |
| 3/9/20 17:26 | 230.27 | 27.05 | 0.00 | 12.52 | 123.99 | 1173.33 | 5.41 |
| 3/9/20 17:27 | 230.19 | 26.89 | 0.00 | 12.52 | 123.89 | 1174.12 | 5.40 |
| 3/9/20 17:28 | 230.20 | 27.03 | 0.00 | 12.52 | 124.62 | 1174.21 | 5.40 |
| 3/9/20 17:29 | 230.07 | 26.98 | 0.00 | 12.52 | 123.78 | 1173.74 | 5.39 |
| 3/9/20 17:30 | 230.04 | 27.00 | 0.00 | 12.52 | 123.44 | 1173.51 | 5.38 |
| 3/9/20 17:31 | 229.80 | 26.93 | 0.00 | 12.52 | 123.48 | 1174.17 | 5.38 |
| 3/9/20 17:32 | 230.47 | 27.07 | 0.00 | 12.52 | 123.43 | 1174.00 | 5.37 |
| 3/9/20 17:33 | 230.03 | 27.04 | 0.00 | 12.52 | 123.31 | 1174.38 | 5.36 |
| 3/9/20 17:34 | 230.27 | 27.05 | 0.00 | 12.52 | 123.55 | 1173.79 | 5.36 |
| 3/9/20 17:35 | 230.28 | 26.97 | 0.00 | 12.52 | 123.86 | 1173.47 | 5.35 |
| 3/9/20 17:36 | 230.19 | 27.02 | 0.00 | 12.52 | 124.09 | 1173.89 | 5.34 |
| 3/9/20 17:37 | 230.33 | 27.01 | 0.00 | 12.51 | 124.53 | 1174.09 | 5.33 |
| 3/9/20 17:38 | 230.62 | 27.09 | 0.00 | 12.50 | 124.37 | 1174.37 | 5.33 |
| 3/9/20 17:39 | 230.28 | 26.96 | 0.00 | 12.49 | 124.65 | 1174.03 | 5.32 |
| 3/9/20 17:40 | 230.45 | 26.99 | 0.00 | 12.48 | 125.14 | 1174.05 | 5.31 |
| 3/9/20 17:41 | 230.47 | 27.01 | 0.00 | 12.47 | 124.80 | 1173.47 | 5.31 |
| 3/9/20 17:42 | 230.48 | 27.02 | 0.00 | 12.46 | 124.15 | 1173.92 | 5.30 |
| 3/9/20 17:43 | 230.52 | 26.98 | 0.00 | 12.45 | 123.53 | 1173.74 | 5.29 |
| 3/9/20 17:44 | 230.88 | 27.06 | 0.00 | 12.43 | 123.57 | 1174.07 | 5.28 |
| 3/9/20 17:45 | 230.73 | 27.08 | 0.00 | 12.42 | 124.11 | 1174.43 | 5.28 |
| 3/9/20 17:46 | 230.89 | 27.01 | 0.00 | 12.41 | 124.66 | 1173.95 | 5.27 |
| 3/9/20 17:47 | 230.64 | 26.98 | 0.00 | 12.40 | 125.10 | 1173.82 | 5.26 |
| 3/9/20 17:48 | 230.58 | 27.01 | 0.00 | 12.39 | 125.18 | 1174.61 | 5.26 |
| 3/9/20 17:49 | 230.50 | 27.03 | 0.00 | 12.38 | 124.81 | 1173.78 | 5.25 |
| 3/9/20 17:50 | 230.44 | 27.02 | 0.00 | 12.37 | 123.96 | 1174.31 | 5.24 |
| 3/9/20 17:51 | 230.57 | 27.07 | 0.00 | 12.36 | 123.93 | 1173.39 | 5.23 |
| 3/9/20 17:52 | 230.40 | 27.01 | 0.00 | 12.35 | 123.93 | 1173.88 | 5.23 |
| 3/9/20 17:53 | 230.73 | 27.06 | 0.00 | 12.36 | 123.98 | 1173.99 | 5.22 |
| 3/9/20 17:54 | 230.76 | 27.11 | 0.00 | 12.38 | 123.82 | 1173.54 | 5.21 |
| 3/9/20 17:55 | 231.05 | 27.10 | 0.00 | 12.39 | 124.22 | 1173.98 | 5.21 |
| 3/9/20 17:56 | 230.91 | 27.06 | 0.00 | 12.41 | 124.18 | 1173.72 | 5.20 |
| 3/9/20 17:57 | 230.86 | 27.10 | 0.00 | 12.42 | 124.02 | 1174.03 | 5.19 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/9 13:30 - 3/9 19:48) | 231.19 | 27.05 | 0.00 | 12.45 | 125.57 | 1172.24 | 5.79 |
| COUNT = 379 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/9/20 17:58 | 231.05 | 27.07 | 0.00 | 12.44 | 124.38 | 1174.51 | 5.18 |
| 3/9/20 17:59 | 230.91 | 27.10 | 0.00 | 12.45 | 124.49 | 1174.27 | 5.18 |
| 3/9/20 18:00 | 231.06 | 27.05 | 0.00 | 12.47 | 124.44 | 1173.80 | 5.17 |
| 3/9/20 18:01 | 230.36 | 27.08 | 0.00 | 12.48 | 124.94 | 1174.47 | 5.16 |
| 3/9/20 18:02 | 230.54 | 26.99 | 0.00 | 12.50 | 124.85 | 1174.08 | 5.16 |
| 3/9/20 18:03 | 230.84 | 27.08 | 0.00 | 12.51 | 124.56 | 1174.34 | 5.15 |
| 3/9/20 18:04 | 230.62 | 27.06 | 0.00 | 12.53 | 123.91 | 1174.30 | 5.14 |
| 3/9/20 18:05 | 231.07 | 27.08 | 0.00 | 12.54 | 124.04 | 1174.29 | 5.13 |
| 3/9/20 18:06 | 231.12 | 27.02 | 0.00 | 12.56 | 124.44 | 1174.14 | 5.13 |
| 3/9/20 18:07 | 231.02 | 27.01 | 0.00 | 12.56 | 124.38 | 1173.84 | 5.12 |
| 3/9/20 18:08 | 230.71 | 27.07 | 0.00 | 12.56 | 124.72 | 1174.23 | 5.11 |
| 3/9/20 18:09 | 230.82 | 27.09 | 0.00 | 12.56 | 124.87 | 1174.15 | 5.11 |
| 3/9/20 18:10 | 230.88 | 27.08 | 0.00 | 12.56 | 124.37 | 1173.83 | 5.10 |
| 3/9/20 18:11 | 230.82 | 27.05 | 0.00 | 12.56 | 124.32 | 1173.83 | 5.09 |
| 3/9/20 18:12 | 230.68 | 27.05 | 0.00 | 12.56 | 124.93 | 1174.14 | 5.08 |
| 3/9/20 18:13 | 230.62 | 27.06 | 0.00 | 12.56 | 124.34 | 1174.32 | 5.08 |
| 3/9/20 18:14 | 230.74 | 26.97 | 0.00 | 12.56 | 124.48 | 1174.54 | 5.07 |
| 3/9/20 18:15 | 230.65 | 27.06 | 0.00 | 12.56 | 124.57 | 1174.03 | 5.06 |
| 3/9/20 18:16 | 230.58 | 27.04 | 0.00 | 12.56 | 124.06 | 1174.59 | 5.06 |
| 3/9/20 18:17 | 231.30 | 27.05 | 0.00 | 12.56 | 123.84 | 1174.79 | 5.05 |
| 3/9/20 18:18 | 231.05 | 27.03 | 0.00 | 12.56 | 123.93 | 1174.14 | 5.04 |
| 3/9/20 18:19 | 230.65 | 27.01 | 0.00 | 12.56 | 125.18 | 1173.94 | 5.03 |
| 3/9/20 18:20 | 230.49 | 27.07 | 0.00 | 12.56 | 125.26 | 1174.09 | 5.03 |
| 3/9/20 18:21 | 230.70 | 27.01 | 0.00 | 12.55 | 125.63 | 1174.24 | 5.02 |
| 3/9/20 18:22 | 230.72 | 27.03 | 0.00 | 12.55 | 124.51 | 1173.86 | 5.01 |
| 3/9/20 18:23 | 230.76 | 27.05 | 0.00 | 12.55 | 124.01 | 1174.50 | 5.01 |
| 3/9/20 18:24 | 230.56 | 27.03 | 0.00 | 12.55 | 123.42 | 1174.72 | 5.00 |
| 3/9/20 18:25 | 231.05 | 27.01 | 0.00 | 12.54 | 123.58 | 1175.02 | 4.99 |
| 3/9/20 18:26 | 230.94 | 27.07 | 0.00 | 12.54 | 123.69 | 1174.17 | 4.98 |
| 3/9/20 18:27 | 230.83 | 27.06 | 0.00 | 12.54 | 124.18 | 1174.27 | 4.98 |
| 3/9/20 18:28 | 230.92 | 27.00 | 0.00 | 12.54 | 124.09 | 1174.29 | 4.97 |
| 3/9/20 18:29 | 231.28 | 27.07 | 0.00 | 12.53 | 124.80 | 1174.51 | 4.96 |
| 3/9/20 18:30 | 231.09 | 26.98 | 0.00 | 12.53 | 125.20 | 1174.32 | 4.96 |
| 3/9/20 18:31 | 231.20 | 27.04 | 0.00 | 12.53 | 124.70 | 1174.64 | 4.95 |
| 3/9/20 18:32 | 230.96 | 27.08 | 0.00 | 12.53 | 124.39 | 1174.08 | 4.94 |
| 3/9/20 18:33 | 230.84 | 27.08 | 0.00 | 12.52 | 124.57 | 1174.33 | 4.94 |
| 3/9/20 18:34 | 231.21 | 27.03 | 0.00 | 12.52 | 124.97 | 1174.44 | 4.93 |
| 3/9/20 18:35 | 231.14 | 27.04 | 0.00 | 12.52 | 125.30 | 1174.71 | 4.92 |
| 3/9/20 18:36 | 231.51 | 27.05 | 0.00 | 12.52 | 124.89 | 1174.82 | 4.91 |
| 3/9/20 18:37 | 231.27 | 27.00 | 0.00 | 12.51 | 124.63 | 1173.90 | 4.91 |
| 3/9/20 18:38 | 231.48 | 27.10 | 0.00 | 12.51 | 125.21 | 1174.16 | 4.90 |
| 3/9/20 18:39 | 231.49 | 27.05 | 0.00 | 12.51 | 124.66 | 1174.46 | 4.89 |
| 3/9/20 18:40 | 231.07 | 27.05 | 0.00 | 12.51 | 124.68 | 1174.19 | 4.89 |
| 3/9/20 18:41 | 231.64 | 27.08 | 0.00 | 12.51 | 124.98 | 1174.36 | 4.89 |
| 3/9/20 18:42 | 231.67 | 27.05 | 0.00 | 12.51 | 125.02 | 1174.14 | 4.89 |
| 3/9/20 18:43 | 231.59 | 27.05 | 0.00 | 12.52 | 125.13 | 1174.46 | 4.89 |
| 3/9/20 18:44 | 231.65 | 27.08 | 0.00 | 12.53 | 125.74 | 1174.72 | 4.89 |
| 3/9/20 18:45 | 231.64 | 27.10 | 0.00 | 12.53 | 126.03 | 1174.35 | 4.88 |
| 3/9/20 18:46 | 231.91 | 27.12 | 0.00 | 12.54 | 125.44 | 1175.10 | 4.88 |
| 3/9/20 18:47 | 231.79 | 27.12 | 0.00 | 12.55 | 125.30 | 1174.62 | 4.88 |
| 3/9/20 18:48 | 231.44 | 27.10 | 0.00 | 12.55 | 125.31 | 1174.98 | 4.88 |
| 3/9/20 18:49 | 231.86 | 27.14 | 0.00 | 12.56 | 124.95 | 1174.66 | 4.88 |
| 3/9/20 18:50 | 231.93 | 27.03 | 0.00 | 12.57 | 125.09 | 1174.61 | 4.88 |
| 3/9/20 18:51 | 231.46 | 27.09 | 0.00 | 12.57 | 125.55 | 1174.61 | 4.88 |
| 3/9/20 18:52 | 231.71 | 27.10 | 0.00 | 12.58 | 125.24 | 1174.24 | 4.88 |
| 3/9/20 18:53 | 232.07 | 27.14 | 0.00 | 12.59 | 125.01 | 1175.11 | 4.88 |
| 3/9/20 18:54 | 231.76 | 27.15 | 0.00 | 12.59 | 124.44 | 1174.88 | 4.88 |
| 3/9/20 18:55 | 231.85 | 27.14 | 0.00 | 12.60 | 124.90 | 1175.06 | 4.88 |
| 3/9/20 18:56 | 232.28 | 27.12 | 0.00 | 12.61 | 125.28 | 1175.44 | 4.88 |
| 3/9/20 18:57 | 232.39 | 27.14 | 0.00 | 12.61 | 125.62 | 1174.73 | 4.88 |
| 3/9/20 18:58 | 232.43 | 27.10 | 0.00 | 12.62 | 126.54 | 1175.01 | 4.88 |
| 3/9/20 18:59 | 232.34 | 27.17 | 0.00 | 12.63 | 126.18 | 1174.75 | 4.88 |
| 3/9/20 19:00 | 232.44 | 27.16 | 0.00 | 12.63 | 126.86 | 1174.73 | 4.87 |
| 3/9/20 19:01 | 232.53 | 27.18 | 0.00 | 12.64 | 126.79 | 1174.81 | 4.87 |
| 3/9/20 19:02 | 232.49 | 27.22 | 0.00 | 12.65 | 126.77 | 1174.95 | 4.87 |
| 3/9/20 19:03 | 232.64 | 27.13 | 0.00 | 12.65 | 126.89 | 1175.82 | 4.87 |
| 3/9/20 19:04 | 232.37 | 27.16 | 0.00 | 12.66 | 127.06 | 1175.06 | 4.87 |

| Description | | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/9 13:30 - 3/9 19:48) | | 231.19 | 27.05 | 0.00 | 12.45 | 125.57 | 1172.24 | 5.79 |
| COUNT = 379 | | | | | | | | |
| Signal Tagname | | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| | 3/9/20 19:05 | 232.56 | 27.19 | 0.00 | 12.67 | 129.57 | 1175.44 | 4.87 |
| | 3/9/20 19:06 | 232.65 | 27.16 | 0.00 | 12.67 | 128.19 | 1175.28 | 4.87 |
| | 3/9/20 19:07 | 232.90 | 27.22 | 0.00 | 12.67 | 127.12 | 1175.09 | 4.87 |
| | 3/9/20 19:08 | 232.85 | 27.26 | 0.00 | 12.66 | 127.02 | 1175.18 | 4.87 |
| | 3/9/20 19:09 | 232.68 | 27.12 | 0.00 | 12.66 | 127.42 | 1175.61 | 4.87 |
| | 3/9/20 19:10 | 232.75 | 27.21 | 0.00 | 12.65 | 127.98 | 1175.07 | 4.87 |
| | 3/9/20 19:11 | 232.94 | 27.18 | 0.00 | 12.65 | 127.63 | 1175.33 | 4.87 |
| | 3/9/20 19:12 | 232.38 | 27.14 | 0.00 | 12.65 | 127.64 | 1174.87 | 4.87 |
| | 3/9/20 19:13 | 232.83 | 27.22 | 0.00 | 12.64 | 127.08 | 1175.76 | 4.87 |
| | 3/9/20 19:14 | 232.77 | 27.26 | 0.00 | 12.64 | 126.81 | 1175.61 | 4.87 |
| | 3/9/20 19:15 | 232.84 | 27.16 | 0.00 | 12.63 | 126.74 | 1175.05 | 4.86 |
| | 3/9/20 19:16 | 232.62 | 27.21 | 0.00 | 12.63 | 127.40 | 1175.95 | 4.86 |
| | 3/9/20 19:17 | 232.88 | 27.19 | 0.00 | 12.62 | 127.33 | 1175.80 | 4.86 |
| | 3/9/20 19:18 | 232.87 | 27.22 | 0.00 | 12.62 | 127.99 | 1174.79 | 4.86 |
| | 3/9/20 19:19 | 232.85 | 27.17 | 0.00 | 12.62 | 127.59 | 1175.40 | 4.86 |
| | 3/9/20 19:20 | 232.67 | 27.22 | 0.00 | 12.61 | 129.04 | 1175.63 | 4.86 |
| | 3/9/20 19:21 | 232.91 | 27.19 | 0.00 | 12.61 | 127.81 | 1175.12 | 4.86 |
| | 3/9/20 19:22 | 233.12 | 27.22 | 0.00 | 12.60 | 127.24 | 1175.52 | 4.86 |
| | 3/9/20 19:23 | 233.31 | 27.25 | 0.00 | 12.60 | 127.29 | 1174.98 | 4.86 |
| | 3/9/20 19:24 | 233.22 | 27.21 | 0.00 | 12.59 | 127.69 | 1175.27 | 4.86 |
| | 3/9/20 19:25 | 233.40 | 27.23 | 0.00 | 12.59 | 128.14 | 1175.14 | 4.86 |
| | 3/9/20 19:26 | 233.44 | 27.20 | 0.00 | 12.59 | 128.65 | 1175.56 | 4.86 |
| | 3/9/20 19:27 | 233.72 | 27.24 | 0.00 | 12.58 | 128.97 | 1175.68 | 4.86 |
| | 3/9/20 19:28 | 233.48 | 27.28 | 0.00 | 12.58 | 129.57 | 1175.25 | 4.86 |
| | 3/9/20 19:29 | 233.24 | 27.17 | 0.00 | 12.57 | 130.07 | 1175.57 | 4.86 |
| | 3/9/20 19:30 | 232.77 | 27.23 | 0.00 | 12.57 | 129.77 | 1175.64 | 4.85 |
| | 3/9/20 19:31 | 233.14 | 27.17 | 0.00 | 12.56 | 128.55 | 1175.89 | 4.85 |
| | 3/9/20 19:32 | 233.37 | 27.24 | 0.00 | 12.57 | 127.52 | 1175.09 | 4.85 |
| | 3/9/20 19:33 | 233.29 | 27.19 | 0.00 | 12.57 | 127.30 | 1175.81 | 4.85 |
| | 3/9/20 19:34 | 233.66 | 27.26 | 0.00 | 12.57 | 128.00 | 1175.32 | 4.85 |
| | 3/9/20 19:35 | 233.21 | 27.19 | 0.00 | 12.57 | 128.49 | 1174.62 | 4.85 |
| | 3/9/20 19:36 | 233.65 | 27.22 | 0.00 | 12.57 | 129.04 | 1175.29 | 4.85 |
| | 3/9/20 19:37 | 233.71 | 27.27 | 0.00 | 12.57 | 129.38 | 1175.39 | 4.85 |
| | 3/9/20 19:38 | 233.58 | 27.19 | 0.00 | 12.57 | 129.77 | 1175.68 | 4.85 |
| | 3/9/20 19:39 | 233.59 | 27.26 | 0.00 | 12.57 | 129.23 | 1175.81 | 4.85 |
| | 3/9/20 19:40 | 233.94 | 27.26 | 0.00 | 12.57 | 128.38 | 1175.96 | 4.85 |
| | 3/9/20 19:41 | 233.61 | 27.29 | 0.00 | 12.57 | 128.04 | 1175.60 | 4.85 |
| | 3/9/20 19:42 | 233.82 | 27.27 | 0.00 | 12.57 | 128.49 | 1176.09 | 4.85 |
| | 3/9/20 19:43 | 233.70 | 27.27 | 0.00 | 12.57 | 129.43 | 1175.40 | 4.85 |
| | 3/9/20 19:44 | 233.90 | 27.30 | 0.00 | 12.57 | 129.54 | 1175.84 | 4.85 |
| | 3/9/20 19:45 | 234.23 | 27.29 | 0.00 | 12.57 | 130.60 | 1176.11 | 4.85 |
| | 3/9/20 19:46 | 234.07 | 27.29 | 0.00 | 12.57 | 131.01 | 1175.76 | 4.84 |
| | 3/9/20 19:47 | 234.57 | 27.33 | 0.00 | 12.57 | 131.85 | 1175.78 | 4.84 |
| | 3/9/20 19:48 | 234.43 | 27.33 | 0.00 | 12.57 | 131.66 | 1175.73 | 4.84 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/10 7:23 - 3/10 12:15) | 237.11 | 27.49 | 0.94 | 12.31 | 144.47 | 1170.02 | 4.46 |
| COUNT = 293 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/10/20 7:23 | 240.29 | 27.78 | 1.54 | 12.36 | 168.57 | 1171.79 | 4.49 |
| 3/10/20 7:24 | 240.52 | 27.76 | 1.53 | 12.35 | 168.58 | 1172.20 | 4.49 |
| 3/10/20 7:25 | 240.50 | 27.77 | 1.52 | 12.34 | 168.54 | 1171.77 | 4.49 |
| 3/10/20 7:26 | 240.24 | 27.72 | 1.52 | 12.33 | 168.40 | 1171.44 | 4.49 |
| 3/10/20 7:27 | 240.15 | 27.72 | 1.51 | 12.32 | 168.55 | 1172.17 | 4.49 |
| 3/10/20 7:28 | 240.28 | 27.75 | 1.50 | 12.31 | 168.70 | 1171.16 | 4.49 |
| 3/10/20 7:29 | 240.29 | 27.72 | 1.50 | 12.31 | 168.74 | 1171.65 | 4.49 |
| 3/10/20 7:30 | 240.07 | 27.76 | 1.49 | 12.30 | 168.70 | 1171.54 | 4.49 |
| 3/10/20 7:31 | 239.88 | 27.75 | 1.48 | 12.29 | 168.93 | 1171.46 | 4.49 |
| 3/10/20 7:32 | 240.36 | 27.72 | 1.48 | 12.28 | 168.73 | 1172.08 | 4.49 |
| 3/10/20 7:33 | 240.32 | 27.71 | 1.47 | 12.27 | 169.91 | 1171.58 | 4.49 |
| 3/10/20 7:34 | 239.87 | 27.66 | 1.47 | 12.26 | 169.56 | 1171.46 | 4.49 |
| 3/10/20 7:35 | 240.14 | 27.74 | 1.46 | 12.25 | 168.79 | 1171.34 | 4.49 |
| 3/10/20 7:36 | 240.30 | 27.80 | 1.45 | 12.23 | 168.42 | 1171.61 | 4.49 |
| 3/10/20 7:37 | 239.96 | 27.75 | 1.45 | 12.22 | 168.59 | 1171.39 | 4.49 |
| 3/10/20 7:38 | 240.16 | 27.72 | 1.44 | 12.20 | 169.01 | 1171.11 | 4.49 |
| 3/10/20 7:39 | 240.00 | 27.81 | 1.43 | 12.20 | 168.74 | 1171.43 | 4.48 |
| 3/10/20 7:40 | 239.94 | 27.71 | 1.43 | 12.20 | 168.76 | 1171.30 | 4.48 |
| 3/10/20 7:41 | 240.01 | 27.78 | 1.42 | 12.20 | 168.52 | 1171.32 | 4.48 |
| 3/10/20 7:42 | 239.85 | 27.72 | 1.41 | 12.20 | 168.17 | 1171.08 | 4.48 |
| 3/10/20 7:43 | 239.75 | 27.68 | 1.41 | 12.21 | 166.67 | 1171.61 | 4.48 |
| 3/10/20 7:44 | 239.89 | 27.78 | 1.40 | 12.21 | 165.67 | 1171.45 | 4.48 |
| 3/10/20 7:45 | 239.64 | 27.71 | 1.39 | 12.21 | 166.43 | 1171.38 | 4.48 |
| 3/10/20 7:46 | 239.64 | 27.69 | 1.39 | 12.22 | 165.12 | 1171.88 | 4.48 |
| 3/10/20 7:47 | 239.68 | 27.65 | 1.38 | 12.22 | 164.20 | 1171.73 | 4.48 |
| 3/10/20 7:48 | 239.99 | 27.61 | 1.37 | 12.22 | 162.97 | 1171.44 | 4.48 |
| 3/10/20 7:49 | 239.59 | 27.69 | 1.37 | 12.23 | 162.66 | 1171.70 | 4.48 |
| 3/10/20 7:50 | 239.63 | 27.66 | 1.36 | 12.23 | 161.87 | 1171.71 | 4.48 |
| 3/10/20 7:51 | 239.53 | 27.74 | 1.36 | 12.23 | 162.41 | 1171.23 | 4.48 |
| 3/10/20 7:52 | 239.56 | 27.65 | 1.35 | 12.23 | 161.56 | 1170.66 | 4.48 |
| 3/10/20 7:53 | 239.59 | 27.69 | 1.34 | 12.24 | 161.37 | 1171.93 | 4.48 |
| 3/10/20 7:54 | 239.73 | 27.62 | 1.34 | 12.24 | 161.94 | 1170.72 | 4.48 |
| 3/10/20 7:55 | 239.54 | 27.78 | 1.33 | 12.24 | 162.51 | 1171.13 | 4.48 |
| 3/10/20 7:56 | 239.43 | 27.65 | 1.32 | 12.25 | 162.67 | 1171.16 | 4.48 |
| 3/10/20 7:57 | 239.43 | 27.63 | 1.32 | 12.25 | 163.49 | 1171.23 | 4.48 |
| 3/10/20 7:58 | 239.40 | 27.68 | 1.31 | 12.25 | 163.28 | 1170.50 | 4.48 |
| 3/10/20 7:59 | 239.29 | 27.69 | 1.30 | 12.25 | 162.70 | 1171.16 | 4.48 |
| 3/10/20 8:00 | 239.30 | 27.61 | 1.30 | 12.25 | 161.29 | 1171.08 | 4.48 |
| 3/10/20 8:01 | 239.15 | 27.64 | 1.29 | 12.25 | 160.97 | 1170.62 | 4.48 |
| 3/10/20 8:02 | 239.20 | 27.62 | 1.28 | 12.25 | 159.83 | 1170.64 | 4.48 |
| 3/10/20 8:03 | 239.20 | 27.66 | 1.28 | 12.25 | 160.32 | 1170.82 | 4.48 |
| 3/10/20 8:04 | 239.26 | 27.69 | 1.27 | 12.25 | 159.72 | 1170.86 | 4.48 |
| 3/10/20 8:05 | 239.32 | 27.67 | 1.27 | 12.25 | 158.36 | 1170.97 | 4.48 |
| 3/10/20 8:06 | 239.05 | 27.63 | 1.26 | 12.25 | 158.26 | 1170.38 | 4.48 |
| 3/10/20 8:07 | 239.06 | 27.65 | 1.25 | 12.25 | 157.70 | 1170.85 | 4.48 |
| 3/10/20 8:08 | 239.04 | 27.60 | 1.25 | 12.25 | 158.25 | 1170.86 | 4.48 |
| 3/10/20 8:09 | 238.73 | 27.51 | 1.24 | 12.26 | 157.82 | 1170.07 | 4.48 |
| 3/10/20 8:10 | 238.80 | 27.58 | 1.23 | 12.26 | 157.74 | 1170.48 | 4.48 |
| 3/10/20 8:11 | 239.00 | 27.67 | 1.23 | 12.26 | 156.82 | 1171.13 | 4.48 |
| 3/10/20 8:12 | 238.97 | 27.62 | 1.22 | 12.26 | 157.13 | 1170.93 | 4.48 |
| 3/10/20 8:13 | 239.13 | 27.67 | 1.21 | 12.26 | 155.91 | 1171.12 | 4.47 |
| 3/10/20 8:14 | 239.04 | 27.61 | 1.21 | 12.26 | 156.62 | 1171.44 | 4.47 |
| 3/10/20 8:15 | 239.28 | 27.68 | 1.20 | 12.26 | 156.77 | 1171.04 | 4.47 |
| 3/10/20 8:16 | 239.08 | 27.71 | 1.19 | 12.26 | 158.40 | 1171.18 | 4.47 |
| 3/10/20 8:17 | 239.21 | 27.59 | 1.19 | 12.26 | 157.77 | 1171.67 | 4.47 |
| 3/10/20 8:18 | 239.07 | 27.65 | 1.18 | 12.26 | 157.38 | 1171.09 | 4.47 |
| 3/10/20 8:19 | 238.97 | 27.67 | 1.17 | 12.26 | 157.01 | 1171.43 | 4.47 |
| 3/10/20 8:20 | 239.41 | 27.62 | 1.17 | 12.26 | 157.11 | 1171.47 | 4.47 |
| 3/10/20 8:21 | 239.17 | 27.69 | 1.16 | 12.26 | 156.85 | 1172.18 | 4.47 |
| 3/10/20 8:22 | 238.92 | 27.62 | 1.16 | 12.26 | 156.91 | 1170.84 | 4.47 |
| 3/10/20 8:23 | 239.09 | 27.64 | 1.15 | 12.26 | 156.45 | 1171.24 | 4.47 |
| 3/10/20 8:24 | 238.81 | 27.63 | 1.14 | 12.26 | 156.88 | 1171.29 | 4.47 |
| 3/10/20 8:25 | 238.98 | 27.54 | 1.14 | 12.26 | 155.64 | 1171.22 | 4.47 |
| 3/10/20 8:26 | 238.96 | 27.58 | 1.13 | 12.26 | 155.26 | 1170.61 | 4.47 |
| 3/10/20 8:27 | 238.64 | 27.66 | 1.12 | 12.26 | 154.51 | 1171.01 | 4.47 |
| 3/10/20 8:28 | 238.73 | 27.62 | 1.12 | 12.26 | 154.16 | 1170.60 | 4.47 |
| 3/10/20 8:29 | 238.85 | 27.64 | 1.11 | 12.26 | 153.67 | 1171.01 | 4.47 |

| Description | | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/10 7:23 - 3/10 12:15) | | 237.11 | 27.49 | 0.94 | 12.31 | 144.47 | 1170.02 | 4.46 |
| COUNT = 293 | | | | | | | | |
| Signal Tagname | | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| | 3/10/20 8:30 | 238.69 | 27.62 | 1.10 | 12.26 | 154.42 | 1170.41 | 4.47 |
| | 3/10/20 8:31 | 238.78 | 27.58 | 1.10 | 12.26 | 154.36 | 1171.48 | 4.47 |
| | 3/10/20 8:32 | 238.77 | 27.61 | 1.09 | 12.26 | 155.02 | 1170.83 | 4.47 |
| | 3/10/20 8:33 | 238.92 | 27.70 | 1.08 | 12.26 | 154.75 | 1171.05 | 4.47 |
| | 3/10/20 8:34 | 238.99 | 27.55 | 1.08 | 12.27 | 154.22 | 1171.52 | 4.47 |
| | 3/10/20 8:35 | 238.84 | 27.57 | 1.07 | 12.27 | 153.58 | 1171.17 | 4.47 |
| | 3/10/20 8:36 | 239.08 | 27.62 | 1.06 | 12.27 | 153.66 | 1171.64 | 4.47 |
| | 3/10/20 8:37 | 238.95 | 27.63 | 1.06 | 12.27 | 153.83 | 1171.34 | 4.47 |
| | 3/10/20 8:38 | 238.93 | 27.68 | 1.05 | 12.27 | 154.29 | 1170.91 | 4.47 |
| | 3/10/20 8:39 | 239.25 | 27.60 | 1.05 | 12.28 | 155.24 | 1171.30 | 4.47 |
| | 3/10/20 8:40 | 238.99 | 27.68 | 1.04 | 12.28 | 154.87 | 1170.59 | 4.47 |
| | 3/10/20 8:41 | 238.91 | 27.75 | 1.03 | 12.28 | 155.20 | 1171.27 | 4.47 |
| | 3/10/20 8:42 | 238.96 | 27.59 | 1.03 | 12.28 | 156.20 | 1171.06 | 4.47 |
| | 3/10/20 8:43 | 238.90 | 27.60 | 1.02 | 12.28 | 156.77 | 1171.09 | 4.47 |
| | 3/10/20 8:44 | 238.79 | 27.65 | 1.01 | 12.28 | 156.81 | 1170.92 | 4.47 |
| | 3/10/20 8:45 | 238.63 | 27.57 | 1.01 | 12.27 | 156.75 | 1171.17 | 4.47 |
| | 3/10/20 8:46 | 238.86 | 27.67 | 1.00 | 12.27 | 157.03 | 1170.81 | 4.46 |
| | 3/10/20 8:47 | 238.80 | 27.61 | 0.99 | 12.27 | 156.16 | 1170.91 | 4.46 |
| | 3/10/20 8:48 | 238.57 | 27.67 | 0.99 | 12.26 | 155.02 | 1170.95 | 4.46 |
| | 3/10/20 8:49 | 238.55 | 27.66 | 0.98 | 12.26 | 153.00 | 1170.84 | 4.46 |
| | 3/10/20 8:50 | 238.56 | 27.54 | 0.97 | 12.25 | 152.02 | 1170.54 | 4.46 |
| | 3/10/20 8:51 | 238.55 | 27.59 | 0.97 | 12.24 | 151.78 | 1170.38 | 4.46 |
| | 3/10/20 8:52 | 238.53 | 27.59 | 0.96 | 12.23 | 151.14 | 1170.66 | 4.46 |
| | 3/10/20 8:53 | 238.53 | 27.62 | 0.95 | 12.21 | 151.44 | 1170.38 | 4.46 |
| | 3/10/20 8:54 | 238.20 | 27.50 | 0.95 | 12.20 | 152.58 | 1171.29 | 4.46 |
| | 3/10/20 8:55 | 238.34 | 27.56 | 0.94 | 12.20 | 152.35 | 1170.90 | 4.46 |
| | 3/10/20 8:56 | 238.39 | 27.54 | 0.94 | 12.22 | 151.26 | 1170.41 | 4.46 |
| | 3/10/20 8:57 | 238.08 | 27.55 | 0.93 | 12.24 | 149.96 | 1170.77 | 4.46 |
| | 3/10/20 8:58 | 238.22 | 27.57 | 0.92 | 12.26 | 149.31 | 1170.42 | 4.46 |
| | 3/10/20 8:59 | 238.00 | 27.55 | 0.92 | 12.28 | 148.65 | 1170.44 | 4.46 |
| | 3/10/20 9:00 | 238.22 | 27.51 | 0.91 | 12.30 | 149.12 | 1170.67 | 4.46 |
| | 3/10/20 9:01 | 237.96 | 27.56 | 0.90 | 12.32 | 148.79 | 1170.42 | 4.46 |
| | 3/10/20 9:02 | 238.20 | 27.60 | 0.90 | 12.34 | 148.19 | 1170.52 | 4.46 |
| | 3/10/20 9:03 | 238.11 | 27.56 | 0.89 | 12.36 | 147.86 | 1170.52 | 4.46 |
| | 3/10/20 9:04 | 238.07 | 27.64 | 0.88 | 12.36 | 147.72 | 1170.00 | 4.46 |
| | 3/10/20 9:05 | 238.05 | 27.58 | 0.88 | 12.35 | 147.88 | 1170.64 | 4.46 |
| | 3/10/20 9:06 | 238.16 | 27.57 | 0.87 | 12.35 | 148.66 | 1170.64 | 4.46 |
| | 3/10/20 9:07 | 238.18 | 27.53 | 0.86 | 12.34 | 149.17 | 1171.00 | 4.46 |
| | 3/10/20 9:08 | 238.18 | 27.50 | 0.86 | 12.34 | 149.33 | 1170.84 | 4.46 |
| | 3/10/20 9:09 | 237.86 | 27.56 | 0.85 | 12.33 | 149.44 | 1170.56 | 4.46 |
| | 3/10/20 9:10 | 237.97 | 27.57 | 0.84 | 12.33 | 149.08 | 1170.77 | 4.46 |
| | 3/10/20 9:11 | 237.74 | 27.60 | 0.84 | 12.32 | 148.97 | 1170.29 | 4.46 |
| | 3/10/20 9:12 | 237.97 | 27.48 | 0.83 | 12.32 | 147.99 | 1170.58 | 4.46 |
| | 3/10/20 9:13 | 237.90 | 27.61 | 0.83 | 12.31 | 148.04 | 1170.22 | 4.46 |
| | 3/10/20 9:14 | 237.98 | 27.61 | 0.82 | 12.31 | 148.34 | 1170.17 | 4.46 |
| | 3/10/20 9:15 | 238.04 | 27.54 | 0.81 | 12.30 | 147.95 | 1170.79 | 4.46 |
| | 3/10/20 9:16 | 237.88 | 27.55 | 0.81 | 12.30 | 147.80 | 1170.66 | 4.46 |
| | 3/10/20 9:17 | 237.85 | 27.45 | 0.80 | 12.29 | 147.04 | 1170.83 | 4.46 |
| | 3/10/20 9:18 | 237.76 | 27.51 | 0.79 | 12.29 | 145.25 | 1170.59 | 4.46 |
| | 3/10/20 9:19 | 237.60 | 27.53 | 0.79 | 12.28 | 145.61 | 1170.45 | 4.46 |
| | 3/10/20 9:20 | 237.66 | 27.48 | 0.78 | 12.28 | 144.41 | 1170.69 | 4.45 |
| | 3/10/20 9:21 | 237.61 | 27.54 | 0.77 | 12.27 | 143.91 | 1170.89 | 4.45 |
| | 3/10/20 9:22 | 237.55 | 27.51 | 0.77 | 12.27 | 143.51 | 1170.30 | 4.45 |
| | 3/10/20 9:23 | 237.66 | 27.57 | 0.76 | 12.26 | 143.51 | 1170.58 | 4.45 |
| | 3/10/20 9:24 | 237.46 | 27.57 | 0.75 | 12.26 | 143.63 | 1169.80 | 4.45 |
| | 3/10/20 9:25 | 237.82 | 27.53 | 0.75 | 12.25 | 142.85 | 1170.76 | 4.45 |
| | 3/10/20 9:26 | 237.49 | 27.56 | 0.74 | 12.25 | 141.60 | 1170.63 | 4.45 |
| | 3/10/20 9:27 | 237.61 | 27.45 | 0.74 | 12.25 | 143.40 | 1171.22 | 4.45 |
| | 3/10/20 9:28 | 237.52 | 27.48 | 0.73 | 12.26 | 143.33 | 1170.17 | 4.45 |
| | 3/10/20 9:29 | 237.44 | 27.53 | 0.72 | 12.26 | 143.56 | 1170.90 | 4.45 |
| | 3/10/20 9:30 | 237.52 | 27.45 | 0.72 | 12.27 | 143.03 | 1170.88 | 4.45 |
| | 3/10/20 9:31 | 237.33 | 27.58 | 0.71 | 12.28 | 141.74 | 1170.58 | 4.45 |
| | 3/10/20 9:32 | 237.47 | 27.49 | 0.70 | 12.28 | 142.19 | 1170.99 | 4.45 |
| | 3/10/20 9:33 | 237.46 | 27.50 | 0.70 | 12.29 | 143.34 | 1171.09 | 4.45 |
| | 3/10/20 9:34 | 237.43 | 27.58 | 0.69 | 12.30 | 143.85 | 1170.82 | 4.45 |
| | 3/10/20 9:35 | 237.55 | 27.41 | 0.68 | 12.31 | 144.16 | 1170.71 | 4.45 |
| | 3/10/20 9:36 | 237.31 | 27.53 | 0.68 | 12.31 | 144.75 | 1170.38 | 4.45 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/10 7:23 - 3/10 12:15) | 237.11 | 27.49 | 0.94 | 12.31 | 144.47 | 1170.02 | 4.46 |
| COUNT = 293 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/10/20 9:37 | 237.55 | 27.51 | 0.67 | 12.32 | 145.49 | 1170.11 | 4.45 |
| 3/10/20 9:38 | 237.59 | 27.46 | 0.66 | 12.33 | 145.63 | 1171.07 | 4.45 |
| 3/10/20 9:39 | 237.22 | 27.54 | 0.66 | 12.33 | 144.21 | 1170.26 | 4.45 |
| 3/10/20 9:40 | 237.45 | 27.50 | 0.65 | 12.34 | 142.36 | 1170.45 | 4.45 |
| 3/10/20 9:41 | 237.47 | 27.51 | 0.64 | 12.35 | 141.16 | 1170.66 | 4.45 |
| 3/10/20 9:42 | 237.14 | 27.40 | 0.64 | 12.36 | 141.26 | 1170.57 | 4.45 |
| 3/10/20 9:43 | 237.28 | 27.42 | 0.63 | 12.36 | 142.54 | 1170.75 | 4.45 |
| 3/10/20 9:44 | 237.37 | 27.49 | 0.63 | 12.37 | 142.28 | 1170.90 | 4.45 |
| 3/10/20 9:45 | 237.04 | 27.53 | 0.62 | 12.38 | 142.40 | 1170.32 | 4.45 |
| 3/10/20 9:46 | 237.17 | 27.53 | 0.61 | 12.38 | 141.88 | 1170.96 | 4.45 |
| 3/10/20 9:47 | 237.34 | 27.58 | 0.61 | 12.39 | 141.23 | 1171.14 | 4.45 |
| 3/10/20 9:48 | 237.23 | 27.44 | 0.60 | 12.40 | 141.35 | 1170.44 | 4.45 |
| 3/10/20 9:49 | 237.24 | 27.45 | 0.59 | 12.40 | 140.41 | 1170.69 | 4.45 |
| 3/10/20 9:50 | 237.37 | 27.50 | 0.59 | 12.41 | 141.18 | 1171.24 | 4.45 |
| 3/10/20 9:51 | 237.03 | 27.49 | 0.58 | 12.42 | 140.56 | 1169.71 | 4.45 |
| 3/10/20 9:52 | 237.10 | 27.51 | 0.57 | 12.42 | 141.25 | 1170.66 | 4.45 |
| 3/10/20 9:53 | 237.29 | 27.49 | 0.57 | 12.43 | 142.07 | 1170.82 | 4.45 |
| 3/10/20 9:54 | 237.44 | 27.50 | 0.56 | 12.44 | 141.61 | 1170.29 | 4.44 |
| 3/10/20 9:55 | 237.28 | 27.46 | 0.55 | 12.45 | 141.00 | 1170.69 | 4.44 |
| 3/10/20 9:56 | 237.33 | 27.52 | 0.55 | 12.45 | 141.38 | 1170.30 | 4.44 |
| 3/10/20 9:57 | 237.24 | 27.42 | 0.54 | 12.46 | 140.60 | 1170.70 | 4.44 |
| 3/10/20 9:58 | 237.13 | 27.49 | 0.53 | 12.47 | 140.15 | 1170.67 | 4.44 |
| 3/10/20 9:59 | 237.08 | 27.44 | 0.53 | 12.47 | 140.04 | 1171.49 | 4.44 |
| 3/10/20 10:00 | 237.15 | 27.48 | 0.52 | 12.48 | 138.65 | 1170.59 | 4.44 |
| 3/10/20 10:01 | 236.98 | 27.48 | 0.52 | 12.49 | 139.22 | 1170.53 | 4.44 |
| 3/10/20 10:02 | 236.77 | 27.51 | 0.51 | 12.49 | 139.30 | 1170.18 | 4.44 |
| 3/10/20 10:03 | 236.87 | 27.50 | 0.50 | 12.49 | 138.76 | 1171.01 | 4.44 |
| 3/10/20 10:04 | 236.97 | 27.47 | 0.50 | 12.49 | 138.55 | 1170.59 | 4.44 |
| 3/10/20 10:05 | 237.09 | 27.47 | 0.49 | 12.49 | 139.06 | 1170.58 | 4.44 |
| 3/10/20 10:06 | 236.91 | 27.47 | 0.48 | 12.49 | 139.10 | 1170.13 | 4.44 |
| 3/10/20 10:07 | 237.07 | 27.43 | 0.48 | 12.49 | 139.19 | 1170.45 | 4.44 |
| 3/10/20 10:08 | 236.79 | 27.47 | 0.47 | 12.49 | 139.63 | 1170.19 | 4.44 |
| 3/10/20 10:09 | 236.79 | 27.51 | 0.46 | 12.49 | 140.44 | 1169.50 | 4.44 |
| 3/10/20 10:10 | 237.09 | 27.50 | 0.46 | 12.49 | 139.92 | 1170.50 | 4.44 |
| 3/10/20 10:11 | 236.66 | 27.48 | 0.45 | 12.49 | 139.97 | 1169.95 | 4.44 |
| 3/10/20 10:12 | 237.00 | 27.44 | 0.44 | 12.49 | 140.00 | 1170.15 | 4.44 |
| 3/10/20 10:13 | 236.92 | 27.49 | 0.44 | 12.48 | 139.99 | 1169.62 | 4.44 |
| 3/10/20 10:14 | 236.86 | 27.43 | 0.43 | 12.48 | 139.84 | 1169.58 | 4.44 |
| 3/10/20 10:15 | 236.53 | 27.46 | 0.42 | 12.48 | 139.69 | 1169.62 | 4.44 |
| 3/10/20 10:16 | 236.87 | 27.42 | 0.42 | 12.48 | 140.01 | 1169.00 | 4.44 |
| 3/10/20 10:17 | 236.77 | 27.45 | 0.41 | 12.48 | 140.07 | 1169.97 | 4.44 |
| 3/10/20 10:18 | 236.77 | 27.51 | 0.41 | 12.48 | 139.39 | 1169.87 | 4.44 |
| 3/10/20 10:19 | 236.73 | 27.51 | 0.40 | 12.48 | 139.21 | 1169.44 | 4.44 |
| 3/10/20 10:20 | 236.63 | 27.47 | 0.39 | 12.47 | 139.38 | 1170.04 | 4.44 |
| 3/10/20 10:21 | 236.79 | 27.41 | 0.39 | 12.46 | 139.02 | 1169.59 | 4.44 |
| 3/10/20 10:22 | 236.77 | 27.46 | 0.38 | 12.44 | 139.13 | 1169.55 | 4.44 |
| 3/10/20 10:23 | 236.73 | 27.44 | 0.37 | 12.42 | 139.31 | 1169.71 | 4.44 |
| 3/10/20 10:24 | 236.58 | 27.46 | 0.37 | 12.40 | 139.78 | 1169.71 | 4.44 |
| 3/10/20 10:25 | 236.72 | 27.46 | 0.36 | 12.39 | 139.13 | 1170.62 | 4.44 |
| 3/10/20 10:26 | 236.98 | 27.43 | 0.35 | 12.37 | 138.37 | 1170.33 | 4.44 |
| 3/10/20 10:27 | 236.65 | 27.46 | 0.35 | 12.35 | 138.24 | 1170.02 | 4.44 |
| 3/10/20 10:28 | 236.69 | 27.43 | 0.34 | 12.33 | 138.50 | 1170.37 | 4.43 |
| 3/10/20 10:29 | 236.68 | 27.43 | 0.33 | 12.32 | 138.02 | 1169.79 | 4.43 |
| 3/10/20 10:30 | 236.67 | 27.47 | 0.33 | 12.30 | 138.64 | 1169.90 | 4.43 |
| 3/10/20 10:31 | 236.89 | 27.46 | 0.32 | 12.28 | 138.73 | 1170.04 | 4.43 |
| 3/10/20 10:32 | 236.25 | 27.44 | 0.31 | 12.28 | 138.89 | 1168.70 | 4.44 |
| 3/10/20 10:33 | 236.67 | 27.47 | 0.31 | 12.28 | 138.71 | 1169.59 | 4.44 |
| 3/10/20 10:34 | 236.66 | 27.36 | 0.30 | 12.28 | 138.32 | 1170.04 | 4.44 |
| 3/10/20 10:35 | 236.60 | 27.46 | 0.30 | 12.28 | 137.72 | 1169.60 | 4.44 |
| 3/10/20 10:36 | 236.44 | 27.46 | 0.29 | 12.27 | 137.50 | 1169.96 | 4.44 |
| 3/10/20 10:37 | 236.30 | 27.47 | 0.28 | 12.27 | 137.66 | 1169.38 | 4.44 |
| 3/10/20 10:38 | 236.15 | 27.40 | 0.28 | 12.27 | 137.11 | 1169.73 | 4.44 |
| 3/10/20 10:39 | 236.30 | 27.44 | 0.27 | 12.27 | 136.86 | 1169.94 | 4.44 |
| 3/10/20 10:40 | 236.22 | 27.39 | 0.26 | 12.27 | 135.73 | 1169.09 | 4.44 |
| 3/10/20 10:41 | 236.24 | 27.40 | 0.26 | 12.27 | 135.77 | 1169.34 | 4.44 |
| 3/10/20 10:42 | 236.19 | 27.49 | 0.25 | 12.26 | 137.07 | 1169.71 | 4.44 |
| 3/10/20 10:43 | 235.97 | 27.42 | 0.24 | 12.26 | 136.69 | 1169.57 | 4.44 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/10 7:23 - 3/10 12:15) | 237.11 | 27.49 | 0.94 | 12.31 | 144.47 | 1170.02 | 4.46 |
| COUNT = 293 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/10/20 10:44 | 235.89 | 27.44 | 0.24 | 12.26 | 136.93 | 1169.63 | 4.44 |
| 3/10/20 10:45 | 235.60 | 27.36 | 0.23 | 12.26 | 136.15 | 1169.35 | 4.44 |
| 3/10/20 10:46 | 235.85 | 27.40 | 0.22 | 12.26 | 135.98 | 1169.20 | 4.44 |
| 3/10/20 10:47 | 235.76 | 27.38 | 0.22 | 12.26 | 135.35 | 1169.24 | 4.44 |
| 3/10/20 10:48 | 236.02 | 27.38 | 0.21 | 12.25 | 135.64 | 1169.27 | 4.44 |
| 3/10/20 10:49 | 235.99 | 27.40 | 0.21 | 12.25 | 135.33 | 1169.14 | 4.44 |
| 3/10/20 10:50 | 235.85 | 27.41 | 0.20 | 12.25 | 135.52 | 1169.43 | 4.44 |
| 3/10/20 10:51 | 235.72 | 27.34 | 0.19 | 12.25 | 135.57 | 1169.18 | 4.44 |
| 3/10/20 10:52 | 235.60 | 27.36 | 0.19 | 12.25 | 135.08 | 1169.26 | 4.44 |
| 3/10/20 10:53 | 235.78 | 27.31 | 0.18 | 12.25 | 134.26 | 1169.10 | 4.44 |
| 3/10/20 10:54 | 235.55 | 27.32 | 0.17 | 12.24 | 134.41 | 1169.31 | 4.44 |
| 3/10/20 10:55 | 235.70 | 27.33 | 0.17 | 12.24 | 134.14 | 1168.97 | 4.44 |
| 3/10/20 10:56 | 235.31 | 27.36 | 0.16 | 12.24 | 133.99 | 1168.80 | 4.44 |
| 3/10/20 10:57 | 235.49 | 27.39 | 0.15 | 12.24 | 133.88 | 1169.35 | 4.44 |
| 3/10/20 10:58 | 235.46 | 27.34 | 0.15 | 12.24 | 134.16 | 1169.01 | 4.45 |
| 3/10/20 10:59 | 235.27 | 27.35 | 0.14 | 12.24 | 133.76 | 1168.84 | 4.45 |
| 3/10/20 11:00 | 235.42 | 27.38 | 0.13 | 12.23 | 133.99 | 1168.59 | 4.45 |
| 3/10/20 11:01 | 235.50 | 27.39 | 0.13 | 12.23 | 134.29 | 1168.82 | 4.45 |
| 3/10/20 11:02 | 235.26 | 27.33 | 0.12 | 12.23 | 134.86 | 1168.90 | 4.45 |
| 3/10/20 11:03 | 234.95 | 27.25 | 0.11 | 12.23 | 134.94 | 1168.78 | 4.45 |
| 3/10/20 11:04 | 234.91 | 27.37 | 0.11 | 12.23 | 134.66 | 1168.81 | 4.45 |
| 3/10/20 11:05 | 234.59 | 27.25 | 0.10 | 12.23 | 134.18 | 1169.33 | 4.45 |
| 3/10/20 11:06 | 234.72 | 27.28 | 0.10 | 12.22 | 133.48 | 1169.17 | 4.45 |
| 3/10/20 11:07 | 234.57 | 27.24 | 0.09 | 12.22 | 133.24 | 1169.54 | 4.45 |
| 3/10/20 11:08 | 234.72 | 27.34 | 0.08 | 12.22 | 132.44 | 1169.53 | 4.45 |
| 3/10/20 11:09 | 234.62 | 27.26 | 0.08 | 12.22 | 131.58 | 1169.51 | 4.45 |
| 3/10/20 11:10 | 234.68 | 27.30 | 0.07 | 12.22 | 131.25 | 1168.73 | 4.45 |
| 3/10/20 11:11 | 234.22 | 27.24 | 0.06 | 12.22 | 131.36 | 1168.41 | 4.45 |
| 3/10/20 11:12 | 234.44 | 27.36 | 0.06 | 12.21 | 131.42 | 1169.46 | 4.45 |
| 3/10/20 11:13 | 234.56 | 27.25 | 0.05 | 12.21 | 131.45 | 1169.20 | 4.45 |
| 3/10/20 11:14 | 234.32 | 27.30 | 0.04 | 12.22 | 131.29 | 1169.00 | 4.45 |
| 3/10/20 11:15 | 234.65 | 27.23 | 0.04 | 12.24 | 130.83 | 1169.43 | 4.45 |
| 3/10/20 11:16 | 234.56 | 27.29 | 0.03 | 12.25 | 130.80 | 1169.22 | 4.45 |
| 3/10/20 11:17 | 234.57 | 27.25 | 0.02 | 12.27 | 131.38 | 1169.23 | 4.45 |
| 3/10/20 11:18 | 234.60 | 27.24 | 0.02 | 12.28 | 131.56 | 1169.03 | 4.45 |
| 3/10/20 11:19 | 234.89 | 27.27 | 0.01 | 12.30 | 132.35 | 1169.64 | 4.45 |
| 3/10/20 11:20 | 234.65 | 27.26 | 0.00 | 12.32 | 132.31 | 1169.38 | 4.45 |
| 3/10/20 11:21 | 234.77 | 27.29 | 0.02 | 12.35 | 131.78 | 1170.17 | 4.45 |
| 3/10/20 11:22 | 234.60 | 27.28 | 0.08 | 12.38 | 131.64 | 1169.14 | 4.45 |
| 3/10/20 11:23 | 234.60 | 27.33 | 0.14 | 12.40 | 131.46 | 1169.25 | 4.45 |
| 3/10/20 11:24 | 234.87 | 27.37 | 0.20 | 12.43 | 131.66 | 1169.37 | 4.46 |
| 3/10/20 11:25 | 234.76 | 27.29 | 0.26 | 12.46 | 131.41 | 1169.33 | 4.46 |
| 3/10/20 11:26 | 234.57 | 27.32 | 0.32 | 12.47 | 131.93 | 1169.17 | 4.46 |
| 3/10/20 11:27 | 234.42 | 27.29 | 0.38 | 12.48 | 132.11 | 1168.94 | 4.46 |
| 3/10/20 11:28 | 234.52 | 27.36 | 0.45 | 12.44 | 131.98 | 1168.96 | 4.46 |
| 3/10/20 11:29 | 234.53 | 27.22 | 0.51 | 12.40 | 131.64 | 1168.97 | 4.46 |
| 3/10/20 11:30 | 234.37 | 27.25 | 0.57 | 12.37 | 131.16 | 1168.82 | 4.46 |
| 3/10/20 11:31 | 234.58 | 27.30 | 0.63 | 12.36 | 130.96 | 1168.36 | 4.46 |
| 3/10/20 11:32 | 234.64 | 27.35 | 0.69 | 12.35 | 130.63 | 1169.23 | 4.46 |
| 3/10/20 11:33 | 234.48 | 27.24 | 0.75 | 12.34 | 130.74 | 1168.42 | 4.46 |
| 3/10/20 11:34 | 234.64 | 27.36 | 0.81 | 12.33 | 130.81 | 1168.81 | 4.46 |
| 3/10/20 11:35 | 234.40 | 27.21 | 0.87 | 12.32 | 131.20 | 1168.91 | 4.46 |
| 3/10/20 11:36 | 234.13 | 27.24 | 0.94 | 12.31 | 130.38 | 1167.82 | 4.46 |
| 3/10/20 11:37 | 234.36 | 27.23 | 1.00 | 12.30 | 130.25 | 1168.54 | 4.46 |
| 3/10/20 11:38 | 234.25 | 27.31 | 1.06 | 12.29 | 129.52 | 1168.42 | 4.46 |
| 3/10/20 11:39 | 234.35 | 27.32 | 1.12 | 12.28 | 129.69 | 1168.18 | 4.46 |
| 3/10/20 11:40 | 234.56 | 27.19 | 1.18 | 12.27 | 129.74 | 1168.44 | 4.46 |
| 3/10/20 11:41 | 234.48 | 27.30 | 1.24 | 12.27 | 130.44 | 1167.95 | 4.46 |
| 3/10/20 11:42 | 234.78 | 27.25 | 1.30 | 12.27 | 130.58 | 1167.97 | 4.46 |
| 3/10/20 11:43 | 234.74 | 27.25 | 1.36 | 12.26 | 129.94 | 1168.14 | 4.46 |
| 3/10/20 11:44 | 234.66 | 27.38 | 1.43 | 12.26 | 130.23 | 1168.11 | 4.46 |
| 3/10/20 11:45 | 234.70 | 27.33 | 1.49 | 12.25 | 129.38 | 1169.08 | 4.46 |
| 3/10/20 11:46 | 234.79 | 27.36 | 1.55 | 12.25 | 129.21 | 1168.00 | 4.46 |
| 3/10/20 11:47 | 234.68 | 27.27 | 1.61 | 12.25 | 128.69 | 1168.34 | 4.46 |
| 3/10/20 11:48 | 234.66 | 27.29 | 1.67 | 12.24 | 130.71 | 1168.32 | 4.46 |
| 3/10/20 11:49 | 234.45 | 27.25 | 1.73 | 12.24 | 131.12 | 1168.30 | 4.46 |
| 3/10/20 11:50 | 234.34 | 27.27 | 1.79 | 12.23 | 130.56 | 1168.39 | 4.47 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/10 7:23 - 3/10 12:15) | 237.11 | 27.49 | 0.94 | 12.31 | 144.47 | 1170.02 | 4.46 |
| COUNT = 293 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/10/20 11:51 | 234.43 | 27.30 | 1.85 | 12.23 | 129.48 | 1167.79 | 4.47 |
| 3/10/20 11:52 | 234.37 | 27.35 | 1.92 | 12.23 | 128.75 | 1167.93 | 4.47 |
| 3/10/20 11:53 | 234.47 | 27.33 | 1.98 | 12.26 | 128.74 | 1168.30 | 4.47 |
| 3/10/20 11:54 | 234.45 | 27.31 | 2.04 | 12.33 | 128.70 | 1168.28 | 4.47 |
| 3/10/20 11:55 | 234.41 | 27.29 | 2.10 | 12.40 | 129.04 | 1168.00 | 4.47 |
| 3/10/20 11:56 | 234.59 | 27.35 | 2.16 | 12.47 | 129.06 | 1167.86 | 4.47 |
| 3/10/20 11:57 | 234.48 | 27.30 | 2.22 | 12.54 | 129.36 | 1167.78 | 4.47 |
| 3/10/20 11:58 | 234.81 | 27.33 | 2.28 | 12.55 | 128.65 | 1167.67 | 4.47 |
| 3/10/20 11:59 | 234.42 | 27.33 | 2.34 | 12.53 | 128.54 | 1166.71 | 4.47 |
| 3/10/20 12:00 | 234.52 | 27.31 | 2.40 | 12.50 | 128.19 | 1167.24 | 4.47 |
| 3/10/20 12:01 | 234.37 | 27.31 | 2.47 | 12.48 | 128.31 | 1167.41 | 4.47 |
| 3/10/20 12:02 | 233.97 | 27.26 | 2.53 | 12.46 | 128.31 | 1168.03 | 4.47 |
| 3/10/20 12:03 | 234.27 | 27.28 | 2.59 | 12.44 | 128.22 | 1167.30 | 4.47 |
| 3/10/20 12:04 | 233.94 | 27.22 | 2.65 | 12.42 | 128.39 | 1166.87 | 4.47 |
| 3/10/20 12:05 | 234.46 | 27.21 | 2.71 | 12.39 | 127.16 | 1167.09 | 4.47 |
| 3/10/20 12:06 | 234.16 | 27.27 | 2.77 | 12.39 | 126.88 | 1166.89 | 4.47 |
| 3/10/20 12:07 | 234.42 | 27.29 | 2.83 | 12.40 | 127.45 | 1167.01 | 4.47 |
| 3/10/20 12:08 | 234.13 | 27.26 | 2.89 | 12.40 | 128.42 | 1166.84 | 4.47 |
| 3/10/20 12:09 | 234.49 | 27.27 | 2.96 | 12.41 | 129.02 | 1167.23 | 4.47 |
| 3/10/20 12:10 | 234.21 | 27.25 | 3.02 | 12.41 | 129.60 | 1166.85 | 4.47 |
| 3/10/20 12:11 | 234.15 | 27.29 | 3.08 | 12.41 | 129.52 | 1166.69 | 4.47 |
| 3/10/20 12:12 | 234.11 | 27.22 | 3.14 | 12.41 | 129.08 | 1167.29 | 4.47 |
| 3/10/20 12:13 | 234.02 | 27.24 | 3.20 | 12.41 | 128.69 | 1166.77 | 4.47 |
| 3/10/20 12:14 | 234.04 | 27.26 | 3.26 | 12.41 | 128.54 | 1166.88 | 4.47 |
| 3/10/20 12:15 | 234.02 | 27.18 | 3.32 | 12.42 | 128.62 | 1166.39 | 4.47 |

# EMISSION DATA RECORDS

## Operating Data Base Load
## (provided by Cricket Valley Energy Center LLC)
## SAM

| Description | | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/9 8:6 - 3/9 10:6) | | 240.08 | 27.65 | 0.00 | 12.28 | 164.25 | 1173.06 | 475.06 |
| COUNT = 121 | | | | | | | | |
| Signal Tagname | | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| | 3/9/20 8:06 | 242.01 | 27.76 | 0.00 | 12.26 | 178.67 | 1173.73 | 480.58 |
| | 3/9/20 8:07 | 241.75 | 27.83 | 0.00 | 12.25 | 178.75 | 1173.40 | 480.28 |
| | 3/9/20 8:08 | 241.95 | 27.80 | 0.00 | 12.24 | 179.32 | 1173.62 | 480.13 |
| | 3/9/20 8:09 | 242.16 | 27.79 | 0.00 | 12.23 | 180.96 | 1174.13 | 479.82 |
| | 3/9/20 8:10 | 242.19 | 27.80 | 0.00 | 12.22 | 181.97 | 1174.17 | 479.04 |
| | 3/9/20 8:11 | 242.03 | 27.78 | 0.00 | 12.21 | 183.08 | 1174.00 | 478.25 |
| | 3/9/20 8:12 | 242.03 | 27.77 | 0.00 | 12.20 | 182.77 | 1173.67 | 477.47 |
| | 3/9/20 8:13 | 242.02 | 27.76 | 0.00 | 12.19 | 182.94 | 1173.43 | 477.33 |
| | 3/9/20 8:14 | 241.79 | 27.76 | 0.00 | 12.18 | 182.68 | 1173.53 | 477.22 |
| | 3/9/20 8:15 | 241.72 | 27.82 | 0.00 | 12.17 | 181.22 | 1173.32 | 476.96 |
| | 3/9/20 8:16 | 242.02 | 27.78 | 0.00 | 12.16 | 180.99 | 1173.82 | 476.48 |
| | 3/9/20 8:17 | 241.70 | 27.77 | 0.00 | 12.14 | 180.55 | 1173.21 | 476.13 |
| | 3/9/20 8:18 | 241.62 | 27.78 | 0.00 | 12.13 | 179.42 | 1173.07 | 476.94 |
| | 3/9/20 8:19 | 241.33 | 27.88 | 0.00 | 12.12 | 178.34 | 1173.26 | 477.75 |
| | 3/9/20 8:20 | 241.58 | 27.73 | 0.00 | 12.11 | 177.73 | 1173.80 | 478.44 |
| | 3/9/20 8:21 | 241.59 | 27.75 | 0.00 | 12.10 | 178.03 | 1173.38 | 478.80 |
| | 3/9/20 8:22 | 241.52 | 27.79 | 0.00 | 12.09 | 177.67 | 1173.52 | 479.16 |
| | 3/9/20 8:23 | 241.32 | 27.72 | 0.00 | 12.09 | 176.76 | 1173.07 | 479.52 |
| | 3/9/20 8:24 | 241.31 | 27.77 | 0.00 | 12.10 | 175.34 | 1173.09 | 479.88 |
| | 3/9/20 8:25 | 241.32 | 27.78 | 0.00 | 12.10 | 174.79 | 1173.46 | 479.57 |
| | 3/9/20 8:26 | 241.44 | 27.73 | 0.00 | 12.11 | 174.49 | 1173.15 | 478.83 |
| | 3/9/20 8:27 | 241.54 | 27.74 | 0.00 | 12.11 | 175.11 | 1173.44 | 478.09 |
| | 3/9/20 8:28 | 241.67 | 27.77 | 0.00 | 12.11 | 175.90 | 1173.24 | 477.35 |
| | 3/9/20 8:29 | 241.61 | 27.70 | 0.00 | 12.12 | 176.73 | 1172.99 | 476.63 |
| | 3/9/20 8:30 | 241.35 | 27.82 | 0.00 | 12.12 | 177.28 | 1172.89 | 475.90 |
| | 3/9/20 8:31 | 241.47 | 27.84 | 0.00 | 12.12 | 177.39 | 1172.78 | 475.18 |
| | 3/9/20 8:32 | 241.68 | 27.83 | 0.00 | 12.12 | 176.53 | 1173.60 | 474.92 |
| | 3/9/20 8:33 | 241.43 | 27.74 | 0.00 | 12.12 | 176.25 | 1173.76 | 475.07 |
| | 3/9/20 8:34 | 241.64 | 27.90 | 0.00 | 12.12 | 176.95 | 1173.04 | 475.23 |
| | 3/9/20 8:35 | 241.38 | 27.78 | 0.00 | 12.13 | 178.82 | 1172.89 | 475.38 |
| | 3/9/20 8:36 | 241.40 | 27.74 | 0.00 | 12.13 | 177.88 | 1173.51 | 475.53 |
| | 3/9/20 8:37 | 241.56 | 27.70 | 0.00 | 12.13 | 177.36 | 1173.56 | 475.68 |
| | 3/9/20 8:38 | 240.97 | 27.63 | 0.00 | 12.13 | 176.88 | 1172.47 | 475.84 |
| | 3/9/20 8:39 | 241.51 | 27.81 | 0.00 | 12.13 | 176.03 | 1173.02 | 475.99 |
| | 3/9/20 8:40 | 241.07 | 27.76 | 0.00 | 12.13 | 173.93 | 1173.26 | 476.14 |
| | 3/9/20 8:41 | 241.27 | 27.74 | 0.00 | 12.13 | 173.35 | 1172.82 | 475.88 |
| | 3/9/20 8:42 | 241.25 | 27.68 | 0.00 | 12.13 | 173.07 | 1172.93 | 475.60 |
| | 3/9/20 8:43 | 241.36 | 27.74 | 0.00 | 12.13 | 173.98 | 1173.07 | 475.33 |
| | 3/9/20 8:44 | 241.12 | 27.66 | 0.00 | 12.13 | 175.08 | 1172.73 | 475.05 |
| | 3/9/20 8:45 | 241.07 | 27.65 | 0.00 | 12.13 | 175.75 | 1173.23 | 474.77 |
| | 3/9/20 8:46 | 240.91 | 27.71 | 0.00 | 12.14 | 175.37 | 1172.88 | 474.53 |
| | 3/9/20 8:47 | 240.92 | 27.78 | 0.00 | 12.14 | 174.47 | 1173.05 | 474.43 |
| | 3/9/20 8:48 | 240.93 | 27.68 | 0.00 | 12.14 | 173.12 | 1172.78 | 474.33 |
| | 3/9/20 8:49 | 240.92 | 27.64 | 0.00 | 12.15 | 171.80 | 1173.07 | 474.24 |
| | 3/9/20 8:50 | 241.12 | 27.72 | 0.00 | 12.15 | 171.90 | 1172.46 | 474.14 |
| | 3/9/20 8:51 | 240.85 | 27.74 | 0.00 | 12.15 | 171.23 | 1172.61 | 474.04 |
| | 3/9/20 8:52 | 240.96 | 27.72 | 0.00 | 12.16 | 171.80 | 1172.72 | 473.95 |
| | 3/9/20 8:53 | 240.82 | 27.72 | 0.00 | 12.16 | 171.97 | 1172.91 | 473.85 |
| | 3/9/20 8:54 | 240.82 | 27.76 | 0.00 | 12.17 | 171.51 | 1172.99 | 473.76 |
| | 3/9/20 8:55 | 240.81 | 27.73 | 0.00 | 12.17 | 170.89 | 1173.07 | 473.66 |
| | 3/9/20 8:56 | 240.54 | 27.66 | 0.00 | 12.18 | 170.17 | 1172.42 | 473.62 |
| | 3/9/20 8:57 | 240.45 | 27.66 | 0.00 | 12.18 | 170.53 | 1173.05 | 473.63 |
| | 3/9/20 8:58 | 240.55 | 27.67 | 0.00 | 12.18 | 169.33 | 1172.54 | 474.58 |
| | 3/9/20 8:59 | 240.55 | 27.65 | 0.00 | 12.19 | 168.17 | 1173.41 | 478.01 |
| | 3/9/20 9:00 | 240.55 | 27.70 | 0.00 | 12.19 | 168.00 | 1173.16 | 477.43 |
| | 3/9/20 9:01 | 240.50 | 27.67 | 0.00 | 12.20 | 168.41 | 1172.66 | 476.85 |
| | 3/9/20 9:02 | 240.57 | 27.66 | 0.00 | 12.21 | 168.36 | 1172.23 | 476.27 |
| | 3/9/20 9:03 | 240.39 | 27.63 | 0.00 | 12.23 | 169.10 | 1173.43 | 475.69 |
| | 3/9/20 9:04 | 240.06 | 27.68 | 0.00 | 12.24 | 170.07 | 1172.73 | 475.11 |
| | 3/9/20 9:05 | 240.20 | 27.61 | 0.00 | 12.26 | 168.39 | 1173.74 | 474.53 |
| | 3/9/20 9:06 | 240.04 | 27.68 | 0.00 | 12.27 | 165.17 | 1173.02 | 473.94 |
| | 3/9/20 9:07 | 239.72 | 27.62 | 0.00 | 12.29 | 163.71 | 1172.98 | 473.36 |
| | 3/9/20 9:08 | 240.03 | 27.61 | 0.00 | 12.30 | 161.82 | 1173.00 | 473.01 |
| | 3/9/20 9:09 | 239.88 | 27.66 | 0.00 | 12.32 | 161.64 | 1172.95 | 474.29 |
| | 3/9/20 9:10 | 240.19 | 27.68 | 0.00 | 12.33 | 161.89 | 1172.77 | 474.92 |
| | 3/9/20 9:11 | 239.84 | 27.61 | 0.00 | 12.35 | 161.60 | 1172.41 | 474.60 |
| | 3/9/20 9:12 | 239.80 | 27.66 | 0.00 | 12.36 | 161.96 | 1172.60 | 474.28 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/9 8:6 - 3/9 10:6) | 240.08 | 27.65 | 0.00 | 12.28 | 164.25 | 1173.06 | 475.06 |
| COUNT = 121 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/9/20 9:13 | 239.66 | 27.61 | 0.00 | 12.37 | 161.61 | 1172.72 | 473.96 |
| 3/9/20 9:14 | 239.75 | 27.70 | 0.00 | 12.39 | 161.24 | 1173.24 | 473.63 |
| 3/9/20 9:15 | 239.58 | 27.64 | 0.00 | 12.40 | 160.51 | 1172.29 | 473.31 |
| 3/9/20 9:16 | 239.49 | 27.65 | 0.00 | 12.42 | 160.27 | 1172.54 | 472.99 |
| 3/9/20 9:17 | 239.66 | 27.62 | 0.00 | 12.43 | 160.44 | 1172.62 | 472.74 |
| 3/9/20 9:18 | 239.59 | 27.65 | 0.00 | 12.44 | 159.58 | 1172.81 | 474.10 |
| 3/9/20 9:19 | 239.32 | 27.59 | 0.00 | 12.46 | 159.00 | 1172.81 | 475.46 |
| 3/9/20 9:20 | 239.44 | 27.54 | 0.00 | 12.47 | 157.69 | 1172.98 | 476.55 |
| 3/9/20 9:21 | 239.50 | 27.62 | 0.00 | 12.48 | 157.35 | 1172.69 | 476.54 |
| 3/9/20 9:22 | 239.59 | 27.62 | 0.00 | 12.50 | 156.44 | 1172.67 | 476.52 |
| 3/9/20 9:23 | 239.37 | 27.62 | 0.00 | 12.51 | 156.31 | 1172.95 | 476.51 |
| 3/9/20 9:24 | 239.26 | 27.59 | 0.00 | 12.51 | 155.47 | 1173.26 | 476.49 |
| 3/9/20 9:25 | 239.41 | 27.63 | 0.00 | 12.51 | 153.49 | 1173.50 | 475.55 |
| 3/9/20 9:26 | 238.78 | 27.64 | 0.00 | 12.51 | 153.31 | 1172.69 | 474.36 |
| 3/9/20 9:27 | 239.00 | 27.60 | 0.00 | 12.52 | 153.41 | 1173.06 | 473.17 |
| 3/9/20 9:28 | 239.22 | 27.55 | 0.00 | 12.52 | 153.47 | 1173.04 | 473.49 |
| 3/9/20 9:29 | 239.28 | 27.53 | 0.00 | 12.52 | 153.92 | 1172.76 | 474.00 |
| 3/9/20 9:30 | 238.72 | 27.54 | 0.00 | 12.52 | 153.88 | 1172.97 | 474.51 |
| 3/9/20 9:31 | 238.76 | 27.49 | 0.00 | 12.52 | 152.76 | 1172.44 | 475.53 |
| 3/9/20 9:32 | 239.04 | 27.57 | 0.00 | 12.53 | 150.91 | 1173.10 | 474.81 |
| 3/9/20 9:33 | 239.13 | 27.55 | 0.00 | 12.53 | 150.60 | 1173.44 | 471.72 |
| 3/9/20 9:34 | 239.21 | 27.55 | 0.00 | 12.53 | 152.52 | 1173.37 | 472.53 |
| 3/9/20 9:35 | 239.05 | 27.54 | 0.00 | 12.53 | 152.71 | 1172.97 | 476.08 |
| 3/9/20 9:36 | 238.86 | 27.52 | 0.00 | 12.54 | 153.49 | 1172.56 | 475.03 |
| 3/9/20 9:37 | 239.06 | 27.48 | 0.00 | 12.54 | 153.04 | 1173.55 | 473.88 |
| 3/9/20 9:38 | 238.79 | 27.53 | 0.00 | 12.54 | 152.49 | 1172.49 | 473.91 |
| 3/9/20 9:39 | 238.52 | 27.51 | 0.00 | 12.54 | 152.82 | 1173.03 | 475.77 |
| 3/9/20 9:40 | 238.62 | 27.59 | 0.00 | 12.52 | 152.38 | 1173.33 | 475.03 |
| 3/9/20 9:41 | 238.49 | 27.58 | 0.00 | 12.50 | 151.07 | 1173.01 | 474.28 |
| 3/9/20 9:42 | 238.72 | 27.55 | 0.00 | 12.47 | 149.18 | 1173.16 | 473.54 |
| 3/9/20 9:43 | 238.58 | 27.57 | 0.00 | 12.45 | 148.38 | 1173.45 | 472.61 |
| 3/9/20 9:44 | 238.64 | 27.56 | 0.00 | 12.42 | 148.44 | 1172.55 | 471.18 |
| 3/9/20 9:45 | 238.69 | 27.49 | 0.00 | 12.40 | 149.13 | 1173.38 | 470.88 |
| 3/9/20 9:46 | 238.43 | 27.59 | 0.00 | 12.37 | 149.50 | 1172.32 | 471.14 |
| 3/9/20 9:47 | 238.43 | 27.57 | 0.00 | 12.34 | 150.53 | 1172.80 | 470.86 |
| 3/9/20 9:48 | 238.63 | 27.56 | 0.00 | 12.32 | 150.37 | 1172.79 | 470.36 |
| 3/9/20 9:49 | 238.69 | 27.55 | 0.00 | 12.29 | 150.48 | 1172.34 | 470.36 |
| 3/9/20 9:50 | 238.59 | 27.50 | 0.00 | 12.27 | 149.23 | 1172.90 | 471.14 |
| 3/9/20 9:51 | 238.63 | 27.55 | 0.00 | 12.24 | 149.42 | 1173.14 | 471.88 |
| 3/9/20 9:52 | 238.41 | 27.59 | 0.00 | 12.22 | 149.87 | 1173.20 | 472.51 |
| 3/9/20 9:53 | 238.61 | 27.54 | 0.00 | 12.20 | 150.20 | 1173.21 | 473.13 |
| 3/9/20 9:54 | 238.33 | 27.50 | 0.00 | 12.21 | 150.70 | 1173.05 | 474.58 |
| 3/9/20 9:55 | 238.28 | 27.53 | 0.00 | 12.22 | 148.69 | 1173.04 | 473.60 |
| 3/9/20 9:56 | 238.28 | 27.45 | 0.00 | 12.24 | 146.53 | 1173.01 | 472.10 |
| 3/9/20 9:57 | 238.14 | 27.54 | 0.00 | 12.25 | 146.03 | 1173.00 | 472.36 |
| 3/9/20 9:58 | 238.18 | 27.53 | 0.00 | 12.26 | 146.48 | 1173.04 | 472.90 |
| 3/9/20 9:59 | 238.10 | 27.60 | 0.00 | 12.27 | 146.85 | 1173.38 | 473.33 |
| 3/9/20 10:00 | 238.14 | 27.40 | 0.00 | 12.28 | 147.29 | 1173.15 | 473.75 |
| 3/9/20 10:01 | 238.15 | 27.46 | 0.00 | 12.29 | 146.88 | 1172.88 | 474.17 |
| 3/9/20 10:02 | 237.81 | 27.51 | 0.00 | 12.30 | 147.08 | 1172.86 | 474.59 |
| 3/9/20 10:03 | 238.16 | 27.51 | 0.00 | 12.31 | 147.47 | 1172.86 | 475.01 |
| 3/9/20 10:04 | 237.98 | 27.45 | 0.00 | 12.32 | 147.05 | 1172.88 | 475.07 |
| 3/9/20 10:05 | 237.52 | 27.49 | 0.00 | 12.33 | 146.91 | 1172.64 | 473.33 |
| 3/9/20 10:06 | 237.80 | 27.47 | 0.00 | 12.34 | 146.30 | 1173.08 | 471.75 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/9 11:49 - 3/9 13:49) | 232.32 | 27.09 | 0.00 | 12.28 | 128.41 | 1170.10 | 7.38 |
| COUNT = 121 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/9/20 11:49 | 233.72 | 27.23 | 0.00 | 12.37 | 127.91 | 1170.77 | 7.81 |
| 3/9/20 11:50 | 234.10 | 27.29 | 0.00 | 12.37 | 128.76 | 1171.27 | 7.80 |
| 3/9/20 11:51 | 233.79 | 27.28 | 0.00 | 12.38 | 129.43 | 1171.70 | 7.80 |
| 3/9/20 11:52 | 233.95 | 27.26 | 0.00 | 12.38 | 129.99 | 1171.58 | 7.79 |
| 3/9/20 11:53 | 234.06 | 27.21 | 0.00 | 12.38 | 130.02 | 1171.05 | 7.78 |
| 3/9/20 11:54 | 233.95 | 27.26 | 0.00 | 12.39 | 130.48 | 1170.99 | 7.77 |
| 3/9/20 11:55 | 234.10 | 27.24 | 0.00 | 12.39 | 131.05 | 1171.30 | 7.77 |
| 3/9/20 11:56 | 233.96 | 27.19 | 0.00 | 12.39 | 131.04 | 1171.21 | 7.76 |
| 3/9/20 11:57 | 233.73 | 27.16 | 0.00 | 12.40 | 130.92 | 1171.74 | 7.75 |
| 3/9/20 11:58 | 233.93 | 27.18 | 0.00 | 12.40 | 131.31 | 1171.88 | 7.75 |
| 3/9/20 11:59 | 233.59 | 27.23 | 0.00 | 12.40 | 130.46 | 1171.39 | 7.74 |
| 3/9/20 12:00 | 233.56 | 27.21 | 0.00 | 12.41 | 129.79 | 1171.78 | 7.73 |
| 3/9/20 12:01 | 233.43 | 27.22 | 0.00 | 12.41 | 129.46 | 1171.39 | 7.72 |
| 3/9/20 12:02 | 233.38 | 27.14 | 0.00 | 12.41 | 128.16 | 1171.22 | 7.72 |
| 3/9/20 12:03 | 233.80 | 27.17 | 0.00 | 12.42 | 127.85 | 1171.22 | 7.71 |
| 3/9/20 12:04 | 233.46 | 27.18 | 0.00 | 12.42 | 128.59 | 1171.04 | 7.70 |
| 3/9/20 12:05 | 233.52 | 27.19 | 0.00 | 12.42 | 129.18 | 1170.82 | 7.70 |
| 3/9/20 12:06 | 233.59 | 27.07 | 0.00 | 12.43 | 130.60 | 1171.28 | 7.69 |
| 3/9/20 12:07 | 233.23 | 27.21 | 0.00 | 12.43 | 130.39 | 1170.90 | 7.68 |
| 3/9/20 12:08 | 233.13 | 27.16 | 0.00 | 12.43 | 130.80 | 1170.82 | 7.68 |
| 3/9/20 12:09 | 232.98 | 27.23 | 0.00 | 12.41 | 130.38 | 1170.44 | 7.67 |
| 3/9/20 12:10 | 233.22 | 27.07 | 0.00 | 12.39 | 129.12 | 1171.15 | 7.66 |
| 3/9/20 12:11 | 233.21 | 27.15 | 0.00 | 12.37 | 129.11 | 1170.58 | 7.65 |
| 3/9/20 12:12 | 233.12 | 27.22 | 0.00 | 12.35 | 128.73 | 1170.89 | 7.65 |
| 3/9/20 12:13 | 233.50 | 27.24 | 0.00 | 12.34 | 129.36 | 1171.45 | 7.64 |
| 3/9/20 12:14 | 233.36 | 27.13 | 0.00 | 12.32 | 129.41 | 1170.64 | 7.63 |
| 3/9/20 12:15 | 233.31 | 27.20 | 0.00 | 12.30 | 129.86 | 1170.39 | 7.63 |
| 3/9/20 12:16 | 233.42 | 27.18 | 0.00 | 12.28 | 130.17 | 1171.26 | 7.62 |
| 3/9/20 12:17 | 233.04 | 27.05 | 0.00 | 12.26 | 130.83 | 1170.54 | 7.61 |
| 3/9/20 12:18 | 233.58 | 27.17 | 0.00 | 12.25 | 131.37 | 1171.74 | 7.60 |
| 3/9/20 12:19 | 233.26 | 27.13 | 0.00 | 12.23 | 131.52 | 1171.15 | 7.60 |
| 3/9/20 12:20 | 233.12 | 27.23 | 0.00 | 12.21 | 132.00 | 1171.09 | 7.59 |
| 3/9/20 12:21 | 233.05 | 27.11 | 0.00 | 12.19 | 131.64 | 1170.95 | 7.58 |
| 3/9/20 12:22 | 232.54 | 27.16 | 0.00 | 12.17 | 130.82 | 1170.22 | 7.58 |
| 3/9/20 12:23 | 233.10 | 27.17 | 0.00 | 12.18 | 131.21 | 1170.56 | 7.57 |
| 3/9/20 12:24 | 232.97 | 27.11 | 0.00 | 12.18 | 131.00 | 1170.51 | 7.56 |
| 3/9/20 12:25 | 232.69 | 27.11 | 0.00 | 12.18 | 131.58 | 1170.61 | 7.55 |
| 3/9/20 12:26 | 232.59 | 27.09 | 0.00 | 12.18 | 132.27 | 1170.24 | 7.55 |
| 3/9/20 12:27 | 232.42 | 27.17 | 0.00 | 12.18 | 132.75 | 1170.44 | 7.54 |
| 3/9/20 12:28 | 232.76 | 27.09 | 0.00 | 12.18 | 132.84 | 1170.46 | 7.53 |
| 3/9/20 12:29 | 232.51 | 27.08 | 0.00 | 12.18 | 132.85 | 1170.09 | 7.53 |
| 3/9/20 12:30 | 231.90 | 27.04 | 0.00 | 12.19 | 131.65 | 1170.58 | 7.52 |
| 3/9/20 12:31 | 232.05 | 27.04 | 0.00 | 12.19 | 131.28 | 1169.96 | 7.51 |
| 3/9/20 12:32 | 232.04 | 27.09 | 0.00 | 12.19 | 131.20 | 1170.33 | 7.50 |
| 3/9/20 12:33 | 232.40 | 27.10 | 0.00 | 12.19 | 130.22 | 1169.75 | 7.50 |
| 3/9/20 12:34 | 232.63 | 27.12 | 0.00 | 12.19 | 130.01 | 1169.97 | 7.49 |
| 3/9/20 12:35 | 232.92 | 27.12 | 0.00 | 12.20 | 129.54 | 1170.83 | 7.48 |
| 3/9/20 12:36 | 232.71 | 27.14 | 0.00 | 12.22 | 131.02 | 1170.60 | 7.48 |
| 3/9/20 12:37 | 232.80 | 27.15 | 0.00 | 12.24 | 131.06 | 1169.84 | 7.47 |
| 3/9/20 12:38 | 232.23 | 27.11 | 0.00 | 12.26 | 131.55 | 1170.25 | 7.46 |
| 3/9/20 12:39 | 232.23 | 27.05 | 0.00 | 12.26 | 131.12 | 1170.13 | 7.45 |
| 3/9/20 12:40 | 231.87 | 27.03 | 0.00 | 12.26 | 131.15 | 1169.65 | 7.45 |
| 3/9/20 12:41 | 232.07 | 27.13 | 0.00 | 12.26 | 131.12 | 1170.34 | 7.44 |
| 3/9/20 12:42 | 231.84 | 27.01 | 0.00 | 12.27 | 130.62 | 1170.31 | 7.43 |
| 3/9/20 12:43 | 232.09 | 27.05 | 0.00 | 12.27 | 129.55 | 1170.77 | 7.43 |
| 3/9/20 12:44 | 232.03 | 27.05 | 0.00 | 12.27 | 129.03 | 1170.33 | 7.42 |
| 3/9/20 12:45 | 231.91 | 27.08 | 0.00 | 12.28 | 128.36 | 1169.60 | 7.41 |
| 3/9/20 12:46 | 231.79 | 27.12 | 0.00 | 12.28 | 128.20 | 1169.36 | 7.40 |
| 3/9/20 12:47 | 231.87 | 27.08 | 0.00 | 12.28 | 128.11 | 1170.09 | 7.40 |
| 3/9/20 12:48 | 232.28 | 27.06 | 0.00 | 12.28 | 127.90 | 1170.60 | 7.39 |
| 3/9/20 12:49 | 232.53 | 27.05 | 0.00 | 12.29 | 128.73 | 1169.90 | 7.38 |
| 3/9/20 12:50 | 232.68 | 27.08 | 0.00 | 12.29 | 128.56 | 1170.65 | 7.38 |
| 3/9/20 12:51 | 232.01 | 27.05 | 0.00 | 12.29 | 129.56 | 1170.17 | 7.37 |
| 3/9/20 12:52 | 231.92 | 27.06 | 0.00 | 12.30 | 129.54 | 1169.51 | 7.36 |
| 3/9/20 12:53 | 232.22 | 27.07 | 0.00 | 12.30 | 129.47 | 1169.83 | 7.35 |
| 3/9/20 12:54 | 232.19 | 27.10 | 0.00 | 12.30 | 128.58 | 1169.70 | 7.35 |
| 3/9/20 12:55 | 232.22 | 27.15 | 0.00 | 12.31 | 127.46 | 1169.93 | 7.34 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/9 11:49 - 3/9 13:49) | 232.32 | 27.09 | 0.00 | 12.28 | 128.41 | 1170.10 | 7.38 |
| COUNT = 121 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/9/20 12:56 | 232.12 | 27.05 | 0.00 | 12.31 | 127.90 | 1170.58 | 7.33 |
| 3/9/20 12:57 | 232.27 | 27.18 | 0.00 | 12.31 | 126.80 | 1170.47 | 7.33 |
| 3/9/20 12:58 | 231.95 | 27.08 | 0.00 | 12.32 | 126.97 | 1170.49 | 7.32 |
| 3/9/20 12:59 | 231.97 | 27.15 | 0.00 | 12.34 | 127.03 | 1170.08 | 7.31 |
| 3/9/20 13:00 | 232.07 | 27.10 | 0.00 | 12.36 | 126.65 | 1169.50 | 7.31 |
| 3/9/20 13:01 | 231.64 | 27.04 | 0.00 | 12.38 | 126.57 | 1169.76 | 7.30 |
| 3/9/20 13:02 | 231.78 | 26.97 | 0.00 | 12.40 | 125.90 | 1170.48 | 7.29 |
| 3/9/20 13:03 | 232.04 | 27.13 | 0.00 | 12.40 | 125.72 | 1170.39 | 7.28 |
| 3/9/20 13:04 | 231.84 | 27.03 | 0.00 | 12.37 | 125.13 | 1170.03 | 7.28 |
| 3/9/20 13:05 | 232.04 | 27.03 | 0.00 | 12.35 | 125.32 | 1170.06 | 7.27 |
| 3/9/20 13:06 | 231.90 | 27.09 | 0.00 | 12.32 | 125.90 | 1169.78 | 7.26 |
| 3/9/20 13:07 | 231.84 | 27.03 | 0.00 | 12.29 | 126.92 | 1169.67 | 7.26 |
| 3/9/20 13:08 | 231.57 | 26.98 | 0.00 | 12.26 | 127.06 | 1169.52 | 7.25 |
| 3/9/20 13:09 | 231.71 | 27.07 | 0.00 | 12.25 | 127.11 | 1169.73 | 7.24 |
| 3/9/20 13:10 | 231.51 | 26.97 | 0.00 | 12.24 | 127.29 | 1169.53 | 7.23 |
| 3/9/20 13:11 | 231.97 | 27.07 | 0.00 | 12.24 | 126.83 | 1170.34 | 7.23 |
| 3/9/20 13:12 | 232.05 | 26.97 | 0.00 | 12.24 | 126.77 | 1169.62 | 7.22 |
| 3/9/20 13:13 | 231.75 | 27.10 | 0.00 | 12.24 | 126.19 | 1169.45 | 7.21 |
| 3/9/20 13:14 | 231.85 | 27.01 | 0.00 | 12.24 | 126.55 | 1170.20 | 7.21 |
| 3/9/20 13:15 | 231.44 | 27.08 | 0.00 | 12.24 | 126.67 | 1169.14 | 7.20 |
| 3/9/20 13:16 | 231.55 | 27.04 | 0.00 | 12.24 | 127.21 | 1169.79 | 7.19 |
| 3/9/20 13:17 | 231.25 | 27.07 | 0.00 | 12.24 | 126.98 | 1169.32 | 7.18 |
| 3/9/20 13:18 | 231.81 | 27.06 | 0.00 | 12.24 | 126.61 | 1169.52 | 7.18 |
| 3/9/20 13:19 | 231.17 | 27.02 | 0.00 | 12.24 | 124.57 | 1169.78 | 7.17 |
| 3/9/20 13:20 | 231.34 | 27.03 | 0.00 | 12.24 | 124.21 | 1168.72 | 7.16 |
| 3/9/20 13:21 | 231.82 | 26.98 | 0.00 | 12.24 | 124.71 | 1169.39 | 7.16 |
| 3/9/20 13:22 | 231.70 | 27.04 | 0.00 | 12.24 | 124.30 | 1169.65 | 7.15 |
| 3/9/20 13:23 | 231.71 | 27.06 | 0.00 | 12.24 | 124.98 | 1169.55 | 7.14 |
| 3/9/20 13:24 | 231.63 | 26.97 | 0.00 | 12.24 | 125.85 | 1168.99 | 7.13 |
| 3/9/20 13:25 | 231.52 | 27.07 | 0.00 | 12.24 | 126.57 | 1169.59 | 7.13 |
| 3/9/20 13:26 | 231.84 | 27.08 | 0.00 | 12.24 | 127.27 | 1169.49 | 7.12 |
| 3/9/20 13:27 | 231.74 | 27.06 | 0.00 | 12.24 | 127.29 | 1169.14 | 7.11 |
| 3/9/20 13:28 | 231.74 | 27.04 | 0.00 | 12.24 | 127.33 | 1168.74 | 7.11 |
| 3/9/20 13:29 | 231.47 | 26.96 | 0.00 | 12.24 | 125.47 | 1169.00 | 7.10 |
| 3/9/20 13:30 | 231.63 | 27.06 | 0.00 | 12.24 | 125.53 | 1169.21 | 7.09 |
| 3/9/20 13:31 | 231.84 | 27.03 | 0.00 | 12.24 | 125.78 | 1168.91 | 7.08 |
| 3/9/20 13:32 | 231.85 | 27.04 | 0.00 | 12.24 | 126.82 | 1168.95 | 7.08 |
| 3/9/20 13:33 | 231.51 | 27.03 | 0.00 | 12.24 | 127.42 | 1168.99 | 7.07 |
| 3/9/20 13:34 | 231.60 | 26.99 | 0.00 | 12.24 | 127.18 | 1169.24 | 7.06 |
| 3/9/20 13:35 | 231.34 | 26.98 | 0.00 | 12.23 | 126.79 | 1168.44 | 7.06 |
| 3/9/20 13:36 | 230.91 | 27.02 | 0.00 | 12.23 | 127.22 | 1169.08 | 7.05 |
| 3/9/20 13:37 | 231.23 | 26.94 | 0.00 | 12.23 | 126.86 | 1169.17 | 7.04 |
| 3/9/20 13:38 | 231.18 | 27.04 | 0.00 | 12.23 | 125.46 | 1169.40 | 7.03 |
| 3/9/20 13:39 | 231.15 | 26.99 | 0.00 | 12.23 | 125.48 | 1169.46 | 7.03 |
| 3/9/20 13:40 | 231.07 | 27.03 | 0.00 | 12.23 | 125.46 | 1168.59 | 7.02 |
| 3/9/20 13:41 | 231.42 | 26.99 | 0.00 | 12.23 | 125.09 | 1169.03 | 7.01 |
| 3/9/20 13:42 | 231.38 | 27.01 | 0.00 | 12.23 | 125.85 | 1168.89 | 7.01 |
| 3/9/20 13:43 | 231.12 | 26.85 | 0.00 | 12.23 | 126.87 | 1168.64 | 7.00 |
| 3/9/20 13:44 | 231.12 | 26.95 | 0.00 | 12.23 | 126.32 | 1169.24 | 6.99 |
| 3/9/20 13:45 | 231.35 | 26.93 | 0.00 | 12.23 | 125.94 | 1168.86 | 6.98 |
| 3/9/20 13:46 | 231.20 | 26.97 | 0.00 | 12.23 | 125.77 | 1168.30 | 6.98 |
| 3/9/20 13:47 | 231.31 | 26.91 | 0.00 | 12.23 | 125.61 | 1168.79 | 6.97 |
| 3/9/20 13:48 | 230.76 | 27.06 | 0.00 | 12.23 | 125.95 | 1168.89 | 6.96 |
| 3/9/20 13:49 | 231.30 | 26.92 | 0.00 | 12.23 | 125.54 | 1168.82 | 6.96 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/9 15:17 - 3/9 17:17) | 230.60 | 27.04 | 0.00 | 12.42 | 124.24 | 1172.60 | 5.90 |
| COUNT = 121 | | | | | | | |

| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
|---|---|---|---|---|---|---|---|
| 3/9/20 15:17 | 230.97 | 26.93 | 0.00 | 12.30 | 126.86 | 1167.74 | 6.33 |
| 3/9/20 15:18 | 230.72 | 26.96 | 0.00 | 12.29 | 128.31 | 1168.45 | 6.32 |
| 3/9/20 15:19 | 230.89 | 26.88 | 0.00 | 12.28 | 128.35 | 1168.18 | 6.32 |
| 3/9/20 15:20 | 230.60 | 26.96 | 0.00 | 12.27 | 127.18 | 1167.65 | 6.31 |
| 3/9/20 15:21 | 230.56 | 26.99 | 0.00 | 12.26 | 126.67 | 1168.15 | 6.30 |
| 3/9/20 15:22 | 230.62 | 26.87 | 0.00 | 12.25 | 126.53 | 1167.45 | 6.29 |
| 3/9/20 15:23 | 230.82 | 26.92 | 0.00 | 12.24 | 126.42 | 1168.26 | 6.29 |
| 3/9/20 15:24 | 230.67 | 26.96 | 0.00 | 12.24 | 126.08 | 1167.88 | 6.28 |
| 3/9/20 15:25 | 230.63 | 26.92 | 0.00 | 12.25 | 126.79 | 1167.53 | 6.27 |
| 3/9/20 15:26 | 230.46 | 27.00 | 0.00 | 12.28 | 126.78 | 1167.78 | 6.27 |
| 3/9/20 15:27 | 230.22 | 26.91 | 0.00 | 12.30 | 126.72 | 1167.24 | 6.26 |
| 3/9/20 15:28 | 230.33 | 26.89 | 0.00 | 12.33 | 126.66 | 1167.17 | 6.25 |
| 3/9/20 15:29 | 230.78 | 26.98 | 0.00 | 12.35 | 127.09 | 1168.06 | 6.24 |
| 3/9/20 15:30 | 230.59 | 26.91 | 0.00 | 12.38 | 126.53 | 1168.19 | 6.24 |
| 3/9/20 15:31 | 230.60 | 26.90 | 0.00 | 12.40 | 127.18 | 1168.18 | 6.23 |
| 3/9/20 15:32 | 230.87 | 26.95 | 0.00 | 12.43 | 127.38 | 1168.39 | 6.22 |
| 3/9/20 15:33 | 230.79 | 26.98 | 0.00 | 12.45 | 126.33 | 1167.80 | 6.22 |
| 3/9/20 15:34 | 230.60 | 26.93 | 0.00 | 12.48 | 125.84 | 1167.46 | 6.21 |
| 3/9/20 15:35 | 230.69 | 27.02 | 0.00 | 12.50 | 125.96 | 1167.68 | 6.20 |
| 3/9/20 15:36 | 230.53 | 26.93 | 0.00 | 12.53 | 126.59 | 1167.93 | 6.19 |
| 3/9/20 15:37 | 230.58 | 26.90 | 0.00 | 12.56 | 126.63 | 1168.15 | 6.19 |
| 3/9/20 15:38 | 230.64 | 27.01 | 0.00 | 12.36 | 126.52 | 1167.44 | 6.18 |
| 3/9/20 15:39 | 230.35 | 26.94 | 0.00 | 12.37 | 126.87 | 1167.83 | 6.17 |
| 3/9/20 15:40 | 230.59 | 26.95 | 0.00 | 12.38 | 126.63 | 1167.89 | 6.17 |
| 3/9/20 15:41 | 230.92 | 26.98 | 0.00 | 12.39 | 125.63 | 1167.47 | 6.16 |
| 3/9/20 15:42 | 230.76 | 26.98 | 0.00 | 12.40 | 125.34 | 1167.64 | 6.15 |
| 3/9/20 15:43 | 230.52 | 26.98 | 0.00 | 12.40 | 124.58 | 1167.55 | 6.15 |
| 3/9/20 15:44 | 230.51 | 26.96 | 0.00 | 12.41 | 125.50 | 1166.82 | 6.14 |
| 3/9/20 15:45 | 230.49 | 26.94 | 0.00 | 12.42 | 124.62 | 1167.02 | 6.13 |
| 3/9/20 15:46 | 230.54 | 26.93 | 0.00 | 12.43 | 124.69 | 1166.88 | 6.12 |
| 3/9/20 15:47 | 230.35 | 26.90 | 0.00 | 12.44 | 124.60 | 1167.57 | 6.12 |
| 3/9/20 15:48 | 230.36 | 26.96 | 0.00 | 12.45 | 124.46 | 1167.13 | 6.11 |
| 3/9/20 15:49 | 231.25 | 27.07 | 0.00 | 12.45 | 125.55 | 1174.35 | 6.10 |
| 3/9/20 15:50 | 230.85 | 27.10 | 0.00 | 12.46 | 126.11 | 1175.13 | 6.10 |
| 3/9/20 15:51 | 230.86 | 27.14 | 0.00 | 12.44 | 126.54 | 1174.67 | 6.09 |
| 3/9/20 15:52 | 230.58 | 27.10 | 0.00 | 12.43 | 126.01 | 1174.62 | 6.08 |
| 3/9/20 15:53 | 230.81 | 27.11 | 0.00 | 12.41 | 124.92 | 1175.08 | 6.07 |
| 3/9/20 15:54 | 230.98 | 27.08 | 0.00 | 12.39 | 123.25 | 1174.33 | 6.07 |
| 3/9/20 15:55 | 230.89 | 27.09 | 0.00 | 12.38 | 123.20 | 1174.30 | 6.06 |
| 3/9/20 15:56 | 230.78 | 27.13 | 0.00 | 12.37 | 124.14 | 1174.82 | 6.05 |
| 3/9/20 15:57 | 230.24 | 27.09 | 0.00 | 12.41 | 124.92 | 1174.58 | 6.05 |
| 3/9/20 15:58 | 230.54 | 27.05 | 0.00 | 12.45 | 124.22 | 1174.66 | 6.04 |
| 3/9/20 15:59 | 231.10 | 27.16 | 0.00 | 12.49 | 122.75 | 1174.74 | 6.03 |
| 3/9/20 16:00 | 230.85 | 27.06 | 0.00 | 12.53 | 122.54 | 1174.32 | 6.02 |
| 3/9/20 16:01 | 230.84 | 27.03 | 0.00 | 12.52 | 123.03 | 1174.65 | 6.02 |
| 3/9/20 16:02 | 230.96 | 27.12 | 0.00 | 12.50 | 123.85 | 1174.41 | 6.01 |
| 3/9/20 16:03 | 230.93 | 27.07 | 0.00 | 12.47 | 123.62 | 1174.42 | 6.00 |
| 3/9/20 16:04 | 231.08 | 27.10 | 0.00 | 12.44 | 124.70 | 1174.79 | 6.00 |
| 3/9/20 16:05 | 231.11 | 27.09 | 0.00 | 12.41 | 125.02 | 1174.88 | 5.99 |
| 3/9/20 16:06 | 231.26 | 27.09 | 0.00 | 12.39 | 125.10 | 1174.92 | 5.98 |
| 3/9/20 16:07 | 231.20 | 27.16 | 0.00 | 12.36 | 125.07 | 1174.73 | 5.97 |
| 3/9/20 16:08 | 231.21 | 27.17 | 0.00 | 12.43 | 124.74 | 1175.15 | 5.97 |
| 3/9/20 16:09 | 231.26 | 27.07 | 0.00 | 12.47 | 124.40 | 1174.28 | 5.96 |
| 3/9/20 16:10 | 231.38 | 27.10 | 0.00 | 12.48 | 123.80 | 1174.58 | 5.95 |
| 3/9/20 16:11 | 230.96 | 27.08 | 0.00 | 12.49 | 123.69 | 1174.58 | 5.95 |
| 3/9/20 16:12 | 230.84 | 27.04 | 0.00 | 12.50 | 123.37 | 1174.61 | 5.94 |
| 3/9/20 16:13 | 230.40 | 27.07 | 0.00 | 12.50 | 122.92 | 1174.46 | 5.93 |
| 3/9/20 16:14 | 230.54 | 27.09 | 0.00 | 12.51 | 122.48 | 1174.43 | 5.92 |
| 3/9/20 16:15 | 230.75 | 27.14 | 0.00 | 12.51 | 122.61 | 1174.45 | 5.92 |
| 3/9/20 16:16 | 231.05 | 27.08 | 0.00 | 12.50 | 122.84 | 1174.51 | 5.91 |
| 3/9/20 16:17 | 230.75 | 27.04 | 0.00 | 12.49 | 122.55 | 1174.16 | 5.90 |
| 3/9/20 16:18 | 230.72 | 27.03 | 0.00 | 12.48 | 122.99 | 1174.71 | 5.90 |
| 3/9/20 16:19 | 230.54 | 27.02 | 0.00 | 12.48 | 122.62 | 1173.96 | 5.89 |
| 3/9/20 16:20 | 230.66 | 27.05 | 0.00 | 12.47 | 122.61 | 1174.19 | 5.88 |
| 3/9/20 16:21 | 230.79 | 27.12 | 0.00 | 12.46 | 123.18 | 1174.64 | 5.87 |
| 3/9/20 16:22 | 231.16 | 27.13 | 0.00 | 12.45 | 122.87 | 1175.04 | 5.87 |
| 3/9/20 16:23 | 230.83 | 27.11 | 0.00 | 12.44 | 123.33 | 1174.50 | 5.86 |

| Description | | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/9 15:17 - 3/9 17:17) | | 230.60 | 27.04 | 0.00 | 12.42 | 124.24 | 1172.60 | 5.90 |
| COUNT = 121 | | | | | | | | |
| Signal Tagname | | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| | 3/9/20 16:24 | 230.94 | 27.13 | 0.00 | 12.43 | 123.18 | 1174.71 | 5.85 |
| | 3/9/20 16:25 | 230.98 | 27.12 | 0.00 | 12.42 | 123.42 | 1174.40 | 5.85 |
| | 3/9/20 16:26 | 230.75 | 27.13 | 0.00 | 12.41 | 124.40 | 1174.75 | 5.84 |
| | 3/9/20 16:27 | 231.02 | 27.08 | 0.00 | 12.42 | 123.86 | 1174.29 | 5.83 |
| | 3/9/20 16:28 | 231.19 | 27.11 | 0.00 | 12.44 | 123.56 | 1174.23 | 5.82 |
| | 3/9/20 16:29 | 230.81 | 27.06 | 0.00 | 12.45 | 123.54 | 1173.95 | 5.82 |
| | 3/9/20 16:30 | 230.38 | 27.10 | 0.00 | 12.47 | 123.45 | 1174.24 | 5.81 |
| | 3/9/20 16:31 | 230.46 | 27.03 | 0.00 | 12.49 | 123.75 | 1174.45 | 5.80 |
| | 3/9/20 16:32 | 230.64 | 27.05 | 0.00 | 12.51 | 123.01 | 1174.60 | 5.80 |
| | 3/9/20 16:33 | 230.74 | 27.08 | 0.00 | 12.49 | 122.52 | 1174.00 | 5.79 |
| | 3/9/20 16:34 | 230.92 | 27.03 | 0.00 | 12.46 | 122.63 | 1174.61 | 5.78 |
| | 3/9/20 16:35 | 231.14 | 27.21 | 0.00 | 12.44 | 123.50 | 1174.39 | 5.77 |
| | 3/9/20 16:36 | 230.93 | 27.10 | 0.00 | 12.42 | 123.90 | 1174.62 | 5.77 |
| | 3/9/20 16:37 | 230.60 | 27.11 | 0.00 | 12.39 | 123.12 | 1174.43 | 5.76 |
| | 3/9/20 16:38 | 230.51 | 27.14 | 0.00 | 12.37 | 123.44 | 1174.95 | 5.75 |
| | 3/9/20 16:39 | 230.62 | 27.06 | 0.00 | 12.34 | 123.72 | 1174.32 | 5.75 |
| | 3/9/20 16:40 | 230.69 | 27.15 | 0.00 | 12.32 | 123.34 | 1174.84 | 5.74 |
| | 3/9/20 16:41 | 230.81 | 27.01 | 0.00 | 12.29 | 123.35 | 1174.57 | 5.73 |
| | 3/9/20 16:42 | 230.35 | 27.00 | 0.00 | 12.39 | 123.65 | 1174.18 | 5.73 |
| | 3/9/20 16:43 | 230.14 | 27.01 | 0.00 | 12.45 | 123.58 | 1174.65 | 5.72 |
| | 3/9/20 16:44 | 229.95 | 27.07 | 0.00 | 12.45 | 123.01 | 1174.22 | 5.71 |
| | 3/9/20 16:45 | 229.94 | 27.04 | 0.00 | 12.44 | 121.50 | 1174.13 | 5.70 |
| | 3/9/20 16:46 | 230.06 | 26.99 | 0.00 | 12.44 | 121.07 | 1174.91 | 5.70 |
| | 3/9/20 16:47 | 230.17 | 27.00 | 0.00 | 12.43 | 121.37 | 1173.54 | 5.69 |
| | 3/9/20 16:48 | 230.40 | 27.04 | 0.00 | 12.43 | 121.40 | 1174.14 | 5.68 |
| | 3/9/20 16:49 | 230.01 | 27.07 | 0.00 | 12.43 | 122.46 | 1174.81 | 5.68 |
| | 3/9/20 16:50 | 230.01 | 27.04 | 0.00 | 12.42 | 122.57 | 1174.18 | 5.67 |
| | 3/9/20 16:51 | 229.89 | 26.94 | 0.00 | 12.42 | 122.98 | 1173.74 | 5.66 |
| | 3/9/20 16:52 | 230.02 | 27.03 | 0.00 | 12.41 | 123.54 | 1173.94 | 5.65 |
| | 3/9/20 16:53 | 230.07 | 27.00 | 0.00 | 12.41 | 122.84 | 1174.12 | 5.65 |
| | 3/9/20 16:54 | 230.20 | 27.00 | 0.00 | 12.41 | 122.17 | 1174.28 | 5.64 |
| | 3/9/20 16:55 | 230.58 | 27.09 | 0.00 | 12.40 | 122.66 | 1174.37 | 5.63 |
| | 3/9/20 16:56 | 230.57 | 27.10 | 0.00 | 12.40 | 123.58 | 1174.09 | 5.63 |
| | 3/9/20 16:57 | 230.80 | 27.10 | 0.00 | 12.40 | 124.30 | 1174.41 | 5.62 |
| | 3/9/20 16:58 | 230.32 | 27.00 | 0.00 | 12.39 | 124.83 | 1174.05 | 5.61 |
| | 3/9/20 16:59 | 230.46 | 27.03 | 0.00 | 12.39 | 125.13 | 1174.49 | 5.60 |
| | 3/9/20 17:00 | 230.33 | 27.00 | 0.00 | 12.38 | 124.47 | 1174.49 | 5.60 |
| | 3/9/20 17:01 | 230.31 | 27.02 | 0.00 | 12.38 | 123.10 | 1174.33 | 5.59 |
| | 3/9/20 17:02 | 230.79 | 27.08 | 0.00 | 12.38 | 122.63 | 1174.35 | 5.58 |
| | 3/9/20 17:03 | 230.41 | 27.08 | 0.00 | 12.37 | 122.41 | 1174.19 | 5.58 |
| | 3/9/20 17:04 | 230.48 | 27.08 | 0.00 | 12.37 | 122.74 | 1173.75 | 5.57 |
| | 3/9/20 17:05 | 230.48 | 27.05 | 0.00 | 12.37 | 123.38 | 1173.90 | 5.56 |
| | 3/9/20 17:06 | 230.38 | 27.10 | 0.00 | 12.36 | 123.53 | 1174.00 | 5.55 |
| | 3/9/20 17:07 | 230.35 | 27.03 | 0.00 | 12.37 | 124.13 | 1173.28 | 5.55 |
| | 3/9/20 17:08 | 230.09 | 27.12 | 0.00 | 12.39 | 124.09 | 1174.07 | 5.54 |
| | 3/9/20 17:09 | 230.40 | 27.09 | 0.00 | 12.41 | 124.53 | 1173.69 | 5.53 |
| | 3/9/20 17:10 | 230.14 | 27.01 | 0.00 | 12.43 | 123.96 | 1173.53 | 5.53 |
| | 3/9/20 17:11 | 230.13 | 27.01 | 0.00 | 12.45 | 123.59 | 1174.15 | 5.52 |
| | 3/9/20 17:12 | 229.85 | 27.01 | 0.00 | 12.47 | 122.91 | 1173.75 | 5.51 |
| | 3/9/20 17:13 | 229.50 | 26.98 | 0.00 | 12.49 | 122.63 | 1174.08 | 5.50 |
| | 3/9/20 17:14 | 230.06 | 27.02 | 0.00 | 12.51 | 122.54 | 1173.61 | 5.50 |
| | 3/9/20 17:15 | 229.97 | 26.98 | 0.00 | 12.52 | 122.96 | 1173.66 | 5.49 |
| | 3/9/20 17:16 | 229.83 | 26.96 | 0.00 | 12.52 | 123.71 | 1173.75 | 5.48 |
| | 3/9/20 17:17 | 230.26 | 27.01 | 0.00 | 12.52 | 123.53 | 1173.67 | 5.48 |

# EMISSION DATA RECORDS

## Operating Data Base Load
## (provided by Cricket Valley Energy Center LLC)
## Opacity

| Description | | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/9 10:52 - 3/9 11:52) | | 234.96 | 27.29 | 0.00 | 12.42 | 132.34 | 1172.06 | 8.00 |
| COUNT = 61 | | | | | | | | |
| Signal Tagname | | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| | 3/9/20 10:52 | 236.27 | 27.38 | 0.00 | 12.36 | 135.12 | 1173.00 | 8.22 |
| | 3/9/20 10:53 | 236.29 | 27.33 | 0.00 | 12.34 | 136.03 | 1173.24 | 8.21 |
| | 3/9/20 10:54 | 236.16 | 27.33 | 0.00 | 12.33 | 136.19 | 1172.72 | 8.20 |
| | 3/9/20 10:55 | 236.22 | 27.40 | 0.00 | 12.32 | 135.96 | 1172.62 | 8.19 |
| | 3/9/20 10:56 | 235.92 | 27.43 | 0.00 | 12.30 | 136.11 | 1172.58 | 8.19 |
| | 3/9/20 10:57 | 235.94 | 27.35 | 0.00 | 12.29 | 135.99 | 1172.56 | 8.18 |
| | 3/9/20 10:58 | 235.79 | 27.39 | 0.00 | 12.29 | 135.42 | 1172.31 | 8.17 |
| | 3/9/20 10:59 | 235.93 | 27.36 | 0.00 | 12.31 | 134.54 | 1172.91 | 8.17 |
| | 3/9/20 11:00 | 236.08 | 27.32 | 0.00 | 12.34 | 134.78 | 1172.46 | 8.16 |
| | 3/9/20 11:01 | 235.98 | 27.33 | 0.00 | 12.36 | 134.21 | 1172.56 | 8.15 |
| | 3/9/20 11:02 | 235.65 | 27.29 | 0.00 | 12.38 | 134.65 | 1172.93 | 8.14 |
| | 3/9/20 11:03 | 235.77 | 27.34 | 0.00 | 12.41 | 134.68 | 1172.33 | 8.14 |
| | 3/9/20 11:04 | 235.85 | 27.35 | 0.00 | 12.43 | 134.35 | 1172.39 | 8.13 |
| | 3/9/20 11:05 | 235.61 | 27.31 | 0.00 | 12.45 | 134.34 | 1172.28 | 8.12 |
| | 3/9/20 11:06 | 235.93 | 27.36 | 0.00 | 12.48 | 134.84 | 1172.78 | 8.12 |
| | 3/9/20 11:07 | 235.81 | 27.32 | 0.00 | 12.50 | 134.87 | 1172.09 | 8.11 |
| | 3/9/20 11:08 | 235.73 | 27.39 | 0.00 | 12.51 | 134.75 | 1172.56 | 8.10 |
| | 3/9/20 11:09 | 235.77 | 27.35 | 0.00 | 12.51 | 134.76 | 1172.41 | 8.10 |
| | 3/9/20 11:10 | 235.69 | 27.33 | 0.00 | 12.50 | 134.77 | 1172.99 | 8.09 |
| | 3/9/20 11:11 | 235.87 | 27.36 | 0.00 | 12.50 | 135.39 | 1172.83 | 8.08 |
| | 3/9/20 11:12 | 235.92 | 27.37 | 0.00 | 12.50 | 135.33 | 1172.63 | 8.07 |
| | 3/9/20 11:13 | 235.81 | 27.34 | 0.00 | 12.50 | 136.23 | 1172.97 | 8.07 |
| | 3/9/20 11:14 | 236.24 | 27.37 | 0.00 | 12.50 | 135.98 | 1173.45 | 8.06 |
| | 3/9/20 11:15 | 235.69 | 27.34 | 0.00 | 12.50 | 135.39 | 1171.82 | 8.05 |
| | 3/9/20 11:16 | 235.68 | 27.35 | 0.00 | 12.50 | 134.75 | 1172.08 | 8.05 |
| | 3/9/20 11:17 | 235.55 | 27.37 | 0.00 | 12.50 | 133.79 | 1171.94 | 8.04 |
| | 3/9/20 11:18 | 235.25 | 27.30 | 0.00 | 12.50 | 133.36 | 1171.57 | 8.03 |
| | 3/9/20 11:19 | 235.50 | 27.28 | 0.00 | 12.49 | 132.99 | 1172.51 | 8.02 |
| | 3/9/20 11:20 | 235.26 | 27.30 | 0.00 | 12.49 | 131.90 | 1172.24 | 8.02 |
| | 3/9/20 11:21 | 235.23 | 27.30 | 0.00 | 12.49 | 131.83 | 1171.42 | 8.01 |
| | 3/9/20 11:22 | 235.06 | 27.28 | 0.00 | 12.49 | 132.31 | 1171.85 | 8.00 |
| | 3/9/20 11:23 | 235.17 | 27.35 | 0.00 | 12.49 | 132.81 | 1172.44 | 8.00 |
| | 3/9/20 11:24 | 234.48 | 27.36 | 0.00 | 12.49 | 132.73 | 1171.58 | 7.99 |
| | 3/9/20 11:25 | 234.73 | 27.20 | 0.00 | 12.49 | 132.73 | 1172.31 | 7.98 |
| | 3/9/20 11:26 | 234.43 | 27.30 | 0.00 | 12.49 | 132.19 | 1172.06 | 7.97 |
| | 3/9/20 11:27 | 234.95 | 27.27 | 0.00 | 12.49 | 131.29 | 1172.38 | 7.97 |
| | 3/9/20 11:28 | 235.05 | 27.25 | 0.00 | 12.48 | 130.83 | 1172.10 | 7.96 |
| | 3/9/20 11:29 | 234.99 | 27.30 | 0.00 | 12.48 | 130.67 | 1171.92 | 7.95 |
| | 3/9/20 11:30 | 234.61 | 27.25 | 0.00 | 12.48 | 130.60 | 1171.07 | 7.95 |
| | 3/9/20 11:31 | 234.44 | 27.22 | 0.00 | 12.48 | 130.95 | 1171.57 | 7.94 |
| | 3/9/20 11:32 | 234.45 | 27.22 | 0.00 | 12.48 | 131.17 | 1171.66 | 7.93 |
| | 3/9/20 11:33 | 234.35 | 27.23 | 0.00 | 12.48 | 131.41 | 1171.58 | 7.92 |
| | 3/9/20 11:34 | 234.11 | 27.24 | 0.00 | 12.47 | 131.12 | 1171.49 | 7.92 |
| | 3/9/20 11:35 | 233.91 | 27.23 | 0.00 | 12.44 | 131.02 | 1170.73 | 7.91 |
| | 3/9/20 11:36 | 233.99 | 27.22 | 0.00 | 12.40 | 129.96 | 1171.71 | 7.90 |
| | 3/9/20 11:37 | 233.80 | 27.25 | 0.00 | 12.37 | 127.87 | 1171.92 | 7.90 |
| | 3/9/20 11:38 | 234.12 | 27.25 | 0.00 | 12.34 | 127.89 | 1172.41 | 7.89 |
| | 3/9/20 11:39 | 233.66 | 27.24 | 0.00 | 12.33 | 127.26 | 1171.25 | 7.88 |
| | 3/9/20 11:40 | 233.79 | 27.21 | 0.00 | 12.33 | 128.34 | 1171.61 | 7.87 |
| | 3/9/20 11:41 | 234.11 | 27.20 | 0.00 | 12.34 | 128.91 | 1171.70 | 7.87 |
| | 3/9/20 11:42 | 233.63 | 27.19 | 0.00 | 12.34 | 129.82 | 1171.37 | 7.86 |
| | 3/9/20 11:43 | 233.66 | 27.23 | 0.00 | 12.35 | 129.78 | 1171.47 | 7.85 |
| | 3/9/20 11:44 | 233.79 | 27.14 | 0.00 | 12.35 | 128.43 | 1171.51 | 7.85 |
| | 3/9/20 11:45 | 233.32 | 27.16 | 0.00 | 12.35 | 128.15 | 1171.48 | 7.84 |
| | 3/9/20 11:46 | 233.28 | 27.19 | 0.00 | 12.36 | 128.60 | 1171.42 | 7.83 |
| | 3/9/20 11:47 | 233.19 | 27.17 | 0.00 | 12.36 | 128.32 | 1171.22 | 7.82 |
| | 3/9/20 11:48 | 233.46 | 27.15 | 0.00 | 12.37 | 128.21 | 1171.30 | 7.82 |
| | 3/9/20 11:49 | 233.72 | 27.23 | 0.00 | 12.37 | 127.91 | 1170.77 | 7.81 |
| | 3/9/20 11:50 | 234.10 | 27.29 | 0.00 | 12.37 | 128.76 | 1171.27 | 7.80 |
| | 3/9/20 11:51 | 233.79 | 27.28 | 0.00 | 12.38 | 129.43 | 1171.70 | 7.80 |
| | 3/9/20 11:52 | 233.95 | 27.26 | 0.00 | 12.38 | 129.99 | 1171.58 | 7.79 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/9 11:52 - 3/9 12:52) | 232.90 | 27.13 | 0.00 | 12.29 | 130.30 | 1170.66 | 7.58 |
| COUNT = 61 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/9/20 11:52 | 233.95 | 27.26 | 0.00 | 12.38 | 129.99 | 1171.58 | 7.79 |
| 3/9/20 11:53 | 234.06 | 27.21 | 0.00 | 12.38 | 130.02 | 1171.05 | 7.78 |
| 3/9/20 11:54 | 233.95 | 27.26 | 0.00 | 12.39 | 130.48 | 1170.99 | 7.77 |
| 3/9/20 11:55 | 234.10 | 27.24 | 0.00 | 12.39 | 131.05 | 1171.30 | 7.77 |
| 3/9/20 11:56 | 233.96 | 27.19 | 0.00 | 12.39 | 131.04 | 1171.21 | 7.76 |
| 3/9/20 11:57 | 233.73 | 27.16 | 0.00 | 12.40 | 130.92 | 1171.74 | 7.75 |
| 3/9/20 11:58 | 233.93 | 27.18 | 0.00 | 12.40 | 131.31 | 1171.88 | 7.75 |
| 3/9/20 11:59 | 233.59 | 27.23 | 0.00 | 12.40 | 130.46 | 1171.39 | 7.74 |
| 3/9/20 12:00 | 233.56 | 27.21 | 0.00 | 12.41 | 129.79 | 1171.78 | 7.73 |
| 3/9/20 12:01 | 233.43 | 27.22 | 0.00 | 12.41 | 129.46 | 1171.39 | 7.72 |
| 3/9/20 12:02 | 233.38 | 27.14 | 0.00 | 12.41 | 128.16 | 1171.22 | 7.72 |
| 3/9/20 12:03 | 233.80 | 27.17 | 0.00 | 12.42 | 127.85 | 1171.22 | 7.71 |
| 3/9/20 12:04 | 233.46 | 27.18 | 0.00 | 12.42 | 128.59 | 1171.04 | 7.70 |
| 3/9/20 12:05 | 233.52 | 27.19 | 0.00 | 12.42 | 129.18 | 1170.82 | 7.70 |
| 3/9/20 12:06 | 233.59 | 27.07 | 0.00 | 12.43 | 130.60 | 1171.28 | 7.69 |
| 3/9/20 12:07 | 233.23 | 27.21 | 0.00 | 12.43 | 130.39 | 1170.90 | 7.68 |
| 3/9/20 12:08 | 233.13 | 27.16 | 0.00 | 12.43 | 130.80 | 1170.82 | 7.68 |
| 3/9/20 12:09 | 232.98 | 27.23 | 0.00 | 12.41 | 130.38 | 1170.44 | 7.67 |
| 3/9/20 12:10 | 233.22 | 27.07 | 0.00 | 12.39 | 129.12 | 1171.15 | 7.66 |
| 3/9/20 12:11 | 233.21 | 27.15 | 0.00 | 12.37 | 129.11 | 1170.58 | 7.65 |
| 3/9/20 12:12 | 233.12 | 27.22 | 0.00 | 12.35 | 128.73 | 1170.89 | 7.65 |
| 3/9/20 12:13 | 233.50 | 27.24 | 0.00 | 12.34 | 129.36 | 1171.45 | 7.64 |
| 3/9/20 12:14 | 233.36 | 27.13 | 0.00 | 12.32 | 129.41 | 1170.64 | 7.63 |
| 3/9/20 12:15 | 233.31 | 27.20 | 0.00 | 12.30 | 129.86 | 1170.39 | 7.63 |
| 3/9/20 12:16 | 233.42 | 27.18 | 0.00 | 12.28 | 130.17 | 1171.26 | 7.62 |
| 3/9/20 12:17 | 233.04 | 27.05 | 0.00 | 12.26 | 130.83 | 1170.54 | 7.61 |
| 3/9/20 12:18 | 233.58 | 27.17 | 0.00 | 12.25 | 131.37 | 1171.74 | 7.60 |
| 3/9/20 12:19 | 233.26 | 27.13 | 0.00 | 12.23 | 131.52 | 1171.15 | 7.60 |
| 3/9/20 12:20 | 233.12 | 27.23 | 0.00 | 12.21 | 132.00 | 1171.09 | 7.59 |
| 3/9/20 12:21 | 233.05 | 27.11 | 0.00 | 12.19 | 131.64 | 1170.95 | 7.58 |
| 3/9/20 12:22 | 232.54 | 27.16 | 0.00 | 12.17 | 130.82 | 1170.22 | 7.58 |
| 3/9/20 12:23 | 233.10 | 27.17 | 0.00 | 12.18 | 131.21 | 1170.56 | 7.57 |
| 3/9/20 12:24 | 232.97 | 27.11 | 0.00 | 12.18 | 131.00 | 1170.51 | 7.56 |
| 3/9/20 12:25 | 232.69 | 27.11 | 0.00 | 12.18 | 131.58 | 1170.61 | 7.55 |
| 3/9/20 12:26 | 232.59 | 27.09 | 0.00 | 12.18 | 132.27 | 1170.24 | 7.55 |
| 3/9/20 12:27 | 232.42 | 27.17 | 0.00 | 12.18 | 132.75 | 1170.44 | 7.54 |
| 3/9/20 12:28 | 232.76 | 27.09 | 0.00 | 12.18 | 132.84 | 1170.46 | 7.53 |
| 3/9/20 12:29 | 232.51 | 27.08 | 0.00 | 12.18 | 132.85 | 1170.09 | 7.53 |
| 3/9/20 12:30 | 231.90 | 27.04 | 0.00 | 12.19 | 131.65 | 1170.58 | 7.52 |
| 3/9/20 12:31 | 232.05 | 27.04 | 0.00 | 12.19 | 131.28 | 1169.96 | 7.51 |
| 3/9/20 12:32 | 232.04 | 27.09 | 0.00 | 12.19 | 131.20 | 1170.33 | 7.50 |
| 3/9/20 12:33 | 232.40 | 27.10 | 0.00 | 12.19 | 130.22 | 1169.75 | 7.50 |
| 3/9/20 12:34 | 232.63 | 27.12 | 0.00 | 12.19 | 130.01 | 1169.97 | 7.49 |
| 3/9/20 12:35 | 232.92 | 27.12 | 0.00 | 12.20 | 129.54 | 1170.83 | 7.48 |
| 3/9/20 12:36 | 232.71 | 27.14 | 0.00 | 12.22 | 131.02 | 1170.60 | 7.48 |
| 3/9/20 12:37 | 232.80 | 27.15 | 0.00 | 12.24 | 131.06 | 1169.84 | 7.47 |
| 3/9/20 12:38 | 232.23 | 27.11 | 0.00 | 12.26 | 131.55 | 1170.25 | 7.46 |
| 3/9/20 12:39 | 232.23 | 27.05 | 0.00 | 12.26 | 131.12 | 1170.13 | 7.45 |
| 3/9/20 12:40 | 231.87 | 27.03 | 0.00 | 12.26 | 131.15 | 1169.65 | 7.45 |
| 3/9/20 12:41 | 232.07 | 27.13 | 0.00 | 12.26 | 131.12 | 1170.34 | 7.44 |
| 3/9/20 12:42 | 231.84 | 27.01 | 0.00 | 12.27 | 130.62 | 1170.31 | 7.43 |
| 3/9/20 12:43 | 232.09 | 27.05 | 0.00 | 12.27 | 129.55 | 1170.77 | 7.43 |
| 3/9/20 12:44 | 232.03 | 27.05 | 0.00 | 12.27 | 129.03 | 1170.33 | 7.42 |
| 3/9/20 12:45 | 231.91 | 27.08 | 0.00 | 12.28 | 128.36 | 1169.60 | 7.41 |
| 3/9/20 12:46 | 231.79 | 27.12 | 0.00 | 12.28 | 128.20 | 1169.36 | 7.40 |
| 3/9/20 12:47 | 231.87 | 27.08 | 0.00 | 12.28 | 128.11 | 1170.09 | 7.40 |
| 3/9/20 12:48 | 232.28 | 27.06 | 0.00 | 12.28 | 127.90 | 1170.60 | 7.39 |
| 3/9/20 12:49 | 232.53 | 27.05 | 0.00 | 12.29 | 128.73 | 1169.90 | 7.38 |
| 3/9/20 12:50 | 232.68 | 27.08 | 0.00 | 12.29 | 128.56 | 1170.65 | 7.38 |
| 3/9/20 12:51 | 232.01 | 27.05 | 0.00 | 12.29 | 129.56 | 1170.17 | 7.37 |
| 3/9/20 12:52 | 231.92 | 27.06 | 0.00 | 12.30 | 129.54 | 1169.51 | 7.36 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/9 12:52 - 3/9 13:52) | 231.62 | 27.03 | 0.00 | 12.26 | 126.43 | 1169.38 | 7.15 |
| COUNT = 61 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/9/20 12:52 | 231.92 | 27.06 | 0.00 | 12.30 | 129.54 | 1169.51 | 7.36 |
| 3/9/20 12:53 | 232.22 | 27.07 | 0.00 | 12.30 | 129.47 | 1169.83 | 7.35 |
| 3/9/20 12:54 | 232.19 | 27.10 | 0.00 | 12.30 | 128.58 | 1169.70 | 7.35 |
| 3/9/20 12:55 | 232.22 | 27.15 | 0.00 | 12.31 | 127.46 | 1169.93 | 7.34 |
| 3/9/20 12:56 | 232.12 | 27.05 | 0.00 | 12.31 | 127.90 | 1170.58 | 7.33 |
| 3/9/20 12:57 | 232.27 | 27.18 | 0.00 | 12.31 | 126.80 | 1170.47 | 7.33 |
| 3/9/20 12:58 | 231.95 | 27.08 | 0.00 | 12.32 | 126.97 | 1170.49 | 7.32 |
| 3/9/20 12:59 | 231.97 | 27.15 | 0.00 | 12.34 | 127.03 | 1170.08 | 7.31 |
| 3/9/20 13:00 | 232.07 | 27.10 | 0.00 | 12.36 | 126.65 | 1169.50 | 7.31 |
| 3/9/20 13:01 | 231.64 | 27.04 | 0.00 | 12.38 | 126.57 | 1169.76 | 7.30 |
| 3/9/20 13:02 | 231.78 | 26.97 | 0.00 | 12.40 | 125.90 | 1170.48 | 7.29 |
| 3/9/20 13:03 | 232.04 | 27.13 | 0.00 | 12.40 | 125.72 | 1170.39 | 7.28 |
| 3/9/20 13:04 | 231.84 | 27.03 | 0.00 | 12.37 | 125.13 | 1170.03 | 7.28 |
| 3/9/20 13:05 | 232.04 | 27.03 | 0.00 | 12.35 | 125.32 | 1170.06 | 7.27 |
| 3/9/20 13:06 | 231.90 | 27.09 | 0.00 | 12.32 | 125.90 | 1169.78 | 7.26 |
| 3/9/20 13:07 | 231.84 | 27.03 | 0.00 | 12.29 | 126.92 | 1169.67 | 7.26 |
| 3/9/20 13:08 | 231.57 | 26.98 | 0.00 | 12.26 | 127.06 | 1169.52 | 7.25 |
| 3/9/20 13:09 | 231.71 | 27.07 | 0.00 | 12.25 | 127.11 | 1169.73 | 7.24 |
| 3/9/20 13:10 | 231.51 | 26.97 | 0.00 | 12.24 | 127.29 | 1169.53 | 7.23 |
| 3/9/20 13:11 | 231.97 | 27.07 | 0.00 | 12.24 | 126.83 | 1170.34 | 7.23 |
| 3/9/20 13:12 | 232.05 | 26.97 | 0.00 | 12.24 | 126.77 | 1169.62 | 7.22 |
| 3/9/20 13:13 | 231.75 | 27.10 | 0.00 | 12.24 | 126.19 | 1169.45 | 7.21 |
| 3/9/20 13:14 | 231.85 | 27.01 | 0.00 | 12.24 | 126.55 | 1170.20 | 7.21 |
| 3/9/20 13:15 | 231.44 | 27.08 | 0.00 | 12.24 | 126.67 | 1169.14 | 7.20 |
| 3/9/20 13:16 | 231.55 | 27.04 | 0.00 | 12.24 | 127.21 | 1169.79 | 7.19 |
| 3/9/20 13:17 | 231.25 | 27.07 | 0.00 | 12.24 | 126.98 | 1169.32 | 7.18 |
| 3/9/20 13:18 | 231.81 | 27.06 | 0.00 | 12.24 | 126.61 | 1169.52 | 7.18 |
| 3/9/20 13:19 | 231.17 | 27.02 | 0.00 | 12.24 | 124.57 | 1169.78 | 7.17 |
| 3/9/20 13:20 | 231.34 | 27.03 | 0.00 | 12.24 | 124.21 | 1168.72 | 7.16 |
| 3/9/20 13:21 | 231.82 | 26.98 | 0.00 | 12.24 | 124.71 | 1169.39 | 7.16 |
| 3/9/20 13:22 | 231.70 | 27.04 | 0.00 | 12.24 | 124.30 | 1169.65 | 7.15 |
| 3/9/20 13:23 | 231.71 | 27.06 | 0.00 | 12.24 | 124.98 | 1169.55 | 7.14 |
| 3/9/20 13:24 | 231.63 | 26.97 | 0.00 | 12.24 | 125.85 | 1168.99 | 7.13 |
| 3/9/20 13:25 | 231.52 | 27.07 | 0.00 | 12.24 | 126.57 | 1169.59 | 7.13 |
| 3/9/20 13:26 | 231.84 | 27.08 | 0.00 | 12.24 | 127.27 | 1169.49 | 7.12 |
| 3/9/20 13:27 | 231.74 | 27.06 | 0.00 | 12.24 | 127.29 | 1169.14 | 7.11 |
| 3/9/20 13:28 | 231.74 | 27.04 | 0.00 | 12.24 | 127.33 | 1168.74 | 7.11 |
| 3/9/20 13:29 | 231.47 | 26.96 | 0.00 | 12.24 | 125.47 | 1169.00 | 7.10 |
| 3/9/20 13:30 | 231.63 | 27.06 | 0.00 | 12.24 | 125.53 | 1169.21 | 7.09 |
| 3/9/20 13:31 | 231.84 | 27.03 | 0.00 | 12.24 | 125.78 | 1168.91 | 7.08 |
| 3/9/20 13:32 | 231.85 | 27.04 | 0.00 | 12.24 | 126.82 | 1168.95 | 7.08 |
| 3/9/20 13:33 | 231.51 | 27.03 | 0.00 | 12.24 | 127.42 | 1168.99 | 7.07 |
| 3/9/20 13:34 | 231.60 | 26.99 | 0.00 | 12.24 | 127.18 | 1169.24 | 7.06 |
| 3/9/20 13:35 | 231.34 | 26.98 | 0.00 | 12.23 | 126.79 | 1168.44 | 7.06 |
| 3/9/20 13:36 | 230.91 | 27.02 | 0.00 | 12.23 | 127.22 | 1169.08 | 7.05 |
| 3/9/20 13:37 | 231.23 | 26.94 | 0.00 | 12.23 | 126.86 | 1169.17 | 7.04 |
| 3/9/20 13:38 | 231.18 | 27.04 | 0.00 | 12.23 | 125.46 | 1169.40 | 7.03 |
| 3/9/20 13:39 | 231.15 | 26.99 | 0.00 | 12.23 | 125.48 | 1169.46 | 7.03 |
| 3/9/20 13:40 | 231.07 | 27.03 | 0.00 | 12.23 | 125.46 | 1168.59 | 7.02 |
| 3/9/20 13:41 | 231.42 | 26.99 | 0.00 | 12.23 | 125.09 | 1169.03 | 7.01 |
| 3/9/20 13:42 | 231.38 | 27.01 | 0.00 | 12.23 | 125.85 | 1168.89 | 7.01 |
| 3/9/20 13:43 | 231.12 | 26.85 | 0.00 | 12.23 | 126.87 | 1168.64 | 7.00 |
| 3/9/20 13:44 | 231.12 | 26.95 | 0.00 | 12.23 | 126.32 | 1169.24 | 6.99 |
| 3/9/20 13:45 | 231.35 | 26.93 | 0.00 | 12.23 | 125.94 | 1168.86 | 6.98 |
| 3/9/20 13:46 | 231.20 | 26.97 | 0.00 | 12.23 | 125.77 | 1168.30 | 6.98 |
| 3/9/20 13:47 | 231.31 | 26.91 | 0.00 | 12.23 | 125.61 | 1168.79 | 6.97 |
| 3/9/20 13:48 | 230.76 | 27.06 | 0.00 | 12.23 | 125.95 | 1168.89 | 6.96 |
| 3/9/20 13:49 | 231.30 | 26.92 | 0.00 | 12.23 | 125.54 | 1168.82 | 6.96 |
| 3/9/20 13:50 | 231.48 | 26.99 | 0.00 | 12.23 | 125.81 | 1168.48 | 6.95 |
| 3/9/20 13:51 | 231.38 | 26.98 | 0.00 | 12.26 | 126.49 | 1168.62 | 6.94 |
| 3/9/20 13:52 | 231.38 | 26.97 | 0.00 | 12.30 | 127.06 | 1167.95 | 6.93 |

# EMISSION DATA RECORDS

## Operating Data Base+DB Load
## (provided by Cricket Valley Energy Center LLC)
## NOx, CO, VOC, and $NH_3$

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/10 15:27 - 3/10 16:26) | 231.82 | 27.09 | 9.93 | 12.64 | 151.65 | 1162.48 | 4.56 |
| COUNT = 60 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/10/20 15:27 | 231.82 | 27.08 | 9.86 | 12.77 | 153.36 | 1162.69 | 4.55 |
| 3/10/20 15:28 | 231.72 | 27.10 | 9.86 | 12.76 | 153.13 | 1163.04 | 4.55 |
| 3/10/20 15:29 | 231.49 | 27.10 | 9.86 | 12.74 | 151.55 | 1163.36 | 4.55 |
| 3/10/20 15:30 | 231.80 | 27.07 | 9.86 | 12.70 | 150.35 | 1162.75 | 4.55 |
| 3/10/20 15:31 | 231.67 | 27.08 | 9.87 | 12.70 | 149.99 | 1163.10 | 4.55 |
| 3/10/20 15:32 | 231.74 | 27.06 | 9.87 | 12.71 | 152.84 | 1162.12 | 4.55 |
| 3/10/20 15:33 | 231.79 | 27.05 | 9.87 | 12.72 | 152.46 | 1162.82 | 4.55 |
| 3/10/20 15:34 | 231.65 | 27.07 | 9.88 | 12.74 | 153.25 | 1162.62 | 4.55 |
| 3/10/20 15:35 | 231.63 | 27.12 | 9.88 | 12.75 | 153.71 | 1162.53 | 4.55 |
| 3/10/20 15:36 | 231.73 | 27.07 | 9.88 | 12.76 | 152.85 | 1162.39 | 4.55 |
| 3/10/20 15:37 | 231.82 | 27.14 | 9.88 | 12.77 | 154.04 | 1162.57 | 4.55 |
| 3/10/20 15:38 | 231.61 | 27.07 | 9.89 | 12.78 | 152.27 | 1161.98 | 4.55 |
| 3/10/20 15:39 | 231.67 | 27.11 | 9.89 | 12.79 | 152.02 | 1162.48 | 4.55 |
| 3/10/20 15:40 | 231.83 | 27.09 | 9.89 | 12.80 | 151.68 | 1162.50 | 4.55 |
| 3/10/20 15:41 | 231.67 | 27.00 | 9.89 | 12.81 | 151.53 | 1162.63 | 4.55 |
| 3/10/20 15:42 | 231.52 | 27.05 | 9.90 | 12.82 | 151.70 | 1162.49 | 4.55 |
| 3/10/20 15:43 | 231.75 | 27.11 | 9.90 | 12.83 | 151.57 | 1162.39 | 4.55 |
| 3/10/20 15:44 | 231.67 | 27.07 | 9.90 | 12.83 | 151.81 | 1162.45 | 4.55 |
| 3/10/20 15:45 | 231.72 | 27.08 | 9.90 | 12.83 | 151.95 | 1162.89 | 4.56 |
| 3/10/20 15:46 | 232.07 | 27.06 | 9.91 | 12.83 | 152.08 | 1162.81 | 4.56 |
| 3/10/20 15:47 | 231.91 | 27.03 | 9.91 | 12.83 | 151.27 | 1162.53 | 4.56 |
| 3/10/20 15:48 | 232.09 | 27.06 | 9.91 | 12.83 | 151.36 | 1162.60 | 4.56 |
| 3/10/20 15:49 | 231.76 | 27.11 | 9.91 | 12.75 | 150.75 | 1162.71 | 4.56 |
| 3/10/20 15:50 | 231.82 | 27.12 | 9.92 | 12.61 | 152.16 | 1162.74 | 4.56 |
| 3/10/20 15:51 | 231.59 | 27.15 | 9.92 | 12.55 | 151.94 | 1162.86 | 4.56 |
| 3/10/20 15:52 | 231.65 | 27.06 | 9.92 | 12.54 | 151.82 | 1162.32 | 4.56 |
| 3/10/20 15:53 | 231.88 | 27.15 | 9.92 | 12.54 | 151.45 | 1162.04 | 4.56 |
| 3/10/20 15:54 | 231.67 | 27.02 | 9.93 | 12.54 | 151.33 | 1162.77 | 4.56 |
| 3/10/20 15:55 | 231.59 | 27.04 | 9.93 | 12.55 | 151.85 | 1162.18 | 4.56 |
| 3/10/20 15:56 | 231.77 | 27.04 | 9.93 | 12.55 | 151.14 | 1162.22 | 4.56 |
| 3/10/20 15:57 | 231.58 | 27.03 | 9.93 | 12.55 | 151.25 | 1162.41 | 4.56 |
| 3/10/20 15:58 | 231.82 | 27.16 | 9.94 | 12.55 | 151.05 | 1162.67 | 4.56 |
| 3/10/20 15:59 | 231.78 | 27.10 | 9.94 | 12.56 | 151.64 | 1162.54 | 4.56 |
| 3/10/20 16:00 | 231.88 | 27.08 | 9.94 | 12.56 | 152.21 | 1162.71 | 4.56 |
| 3/10/20 16:01 | 231.73 | 27.06 | 9.94 | 12.56 | 152.37 | 1162.28 | 4.56 |
| 3/10/20 16:02 | 231.37 | 27.08 | 9.95 | 12.56 | 152.60 | 1162.23 | 4.56 |
| 3/10/20 16:03 | 231.77 | 27.08 | 9.95 | 12.56 | 152.06 | 1162.44 | 4.56 |
| 3/10/20 16:04 | 231.99 | 27.10 | 9.95 | 12.57 | 151.86 | 1162.69 | 4.56 |
| 3/10/20 16:05 | 231.95 | 27.08 | 9.95 | 12.57 | 149.53 | 1162.41 | 4.56 |
| 3/10/20 16:06 | 232.15 | 27.06 | 9.96 | 12.57 | 150.11 | 1162.59 | 4.56 |
| 3/10/20 16:07 | 232.10 | 27.08 | 9.96 | 12.57 | 150.60 | 1162.26 | 4.56 |
| 3/10/20 16:08 | 231.82 | 27.05 | 9.96 | 12.58 | 151.64 | 1162.18 | 4.56 |
| 3/10/20 16:09 | 231.97 | 27.11 | 9.96 | 12.58 | 151.56 | 1161.92 | 4.56 |
| 3/10/20 16:10 | 231.77 | 27.09 | 9.97 | 12.57 | 152.04 | 1162.09 | 4.56 |
| 3/10/20 16:11 | 231.99 | 27.14 | 9.97 | 12.57 | 151.67 | 1162.68 | 4.57 |
| 3/10/20 16:12 | 232.27 | 27.13 | 9.97 | 12.57 | 152.46 | 1162.18 | 4.57 |
| 3/10/20 16:13 | 231.93 | 27.11 | 9.97 | 12.57 | 151.57 | 1162.32 | 4.57 |
| 3/10/20 16:14 | 231.85 | 27.12 | 9.98 | 12.56 | 151.10 | 1162.52 | 4.57 |
| 3/10/20 16:15 | 231.72 | 27.08 | 9.98 | 12.56 | 151.13 | 1162.17 | 4.57 |
| 3/10/20 16:16 | 231.75 | 27.05 | 9.98 | 12.56 | 150.92 | 1162.43 | 4.57 |
| 3/10/20 16:17 | 232.22 | 27.05 | 9.98 | 12.56 | 151.28 | 1162.64 | 4.57 |
| 3/10/20 16:18 | 231.87 | 27.11 | 9.99 | 12.55 | 151.42 | 1162.36 | 4.57 |
| 3/10/20 16:19 | 231.84 | 27.09 | 9.99 | 12.55 | 151.56 | 1162.37 | 4.57 |
| 3/10/20 16:20 | 231.85 | 27.19 | 9.99 | 12.55 | 151.49 | 1162.37 | 4.57 |
| 3/10/20 16:21 | 231.94 | 27.10 | 10.00 | 12.55 | 150.92 | 1162.55 | 4.57 |
| 3/10/20 16:22 | 231.97 | 27.11 | 10.00 | 12.54 | 151.34 | 1162.44 | 4.57 |
| 3/10/20 16:23 | 232.20 | 27.11 | 10.00 | 12.54 | 151.07 | 1162.21 | 4.57 |
| 3/10/20 16:24 | 232.02 | 27.13 | 10.00 | 12.54 | 150.51 | 1162.47 | 4.57 |
| 3/10/20 16:25 | 232.00 | 27.15 | 10.01 | 12.53 | 151.23 | 1162.02 | 4.57 |
| 3/10/20 16:26 | 231.96 | 27.07 | 10.01 | 12.53 | 149.81 | 1162.08 | 4.57 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/10 17:35 - 3/10 18:34) | 232.05 | 27.08 | 10.26 | 12.66 | 149.83 | 1161.66 | 4.61 |
| COUNT = 60 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/10/20 17:35 | 232.26 | 27.10 | 10.18 | 12.76 | 149.44 | 1161.86 | 4.60 |
| 3/10/20 17:36 | 232.22 | 27.08 | 10.19 | 12.77 | 149.77 | 1161.62 | 4.60 |
| 3/10/20 17:37 | 232.10 | 27.04 | 10.19 | 12.77 | 150.40 | 1161.69 | 4.60 |
| 3/10/20 17:38 | 232.07 | 27.10 | 10.19 | 12.78 | 151.18 | 1161.61 | 4.60 |
| 3/10/20 17:39 | 231.96 | 27.07 | 10.19 | 12.78 | 152.15 | 1161.45 | 4.60 |
| 3/10/20 17:40 | 231.76 | 27.11 | 10.20 | 12.79 | 151.41 | 1161.93 | 4.60 |
| 3/10/20 17:41 | 231.97 | 27.02 | 10.20 | 12.79 | 151.44 | 1161.62 | 4.60 |
| 3/10/20 17:42 | 231.74 | 27.10 | 10.20 | 12.79 | 151.27 | 1161.57 | 4.60 |
| 3/10/20 17:43 | 231.95 | 27.10 | 10.20 | 12.80 | 151.55 | 1161.33 | 4.60 |
| 3/10/20 17:44 | 232.00 | 27.11 | 10.21 | 12.80 | 151.37 | 1161.69 | 4.60 |
| 3/10/20 17:45 | 231.89 | 27.08 | 10.21 | 12.81 | 151.21 | 1161.72 | 4.60 |
| 3/10/20 17:46 | 231.91 | 27.05 | 10.21 | 12.81 | 151.15 | 1161.75 | 4.60 |
| 3/10/20 17:47 | 232.17 | 27.15 | 10.21 | 12.81 | 150.20 | 1161.84 | 4.60 |
| 3/10/20 17:48 | 231.93 | 27.08 | 10.22 | 12.79 | 149.55 | 1161.83 | 4.60 |
| 3/10/20 17:49 | 232.16 | 27.10 | 10.22 | 12.76 | 149.36 | 1161.69 | 4.60 |
| 3/10/20 17:50 | 232.15 | 27.05 | 10.22 | 12.74 | 149.22 | 1161.75 | 4.60 |
| 3/10/20 17:51 | 232.17 | 27.06 | 10.22 | 12.71 | 149.22 | 1161.97 | 4.60 |
| 3/10/20 17:52 | 232.10 | 27.09 | 10.23 | 12.69 | 149.98 | 1161.20 | 4.60 |
| 3/10/20 17:53 | 231.90 | 27.08 | 10.23 | 12.66 | 150.21 | 1161.73 | 4.60 |
| 3/10/20 17:54 | 232.06 | 27.03 | 10.23 | 12.64 | 149.71 | 1161.99 | 4.60 |
| 3/10/20 17:55 | 232.21 | 27.11 | 10.23 | 12.61 | 149.67 | 1161.74 | 4.61 |
| 3/10/20 17:56 | 231.91 | 27.08 | 10.24 | 12.59 | 150.42 | 1161.53 | 4.61 |
| 3/10/20 17:57 | 232.12 | 27.13 | 10.24 | 12.56 | 150.25 | 1160.95 | 4.61 |
| 3/10/20 17:58 | 232.01 | 27.06 | 10.24 | 12.54 | 149.91 | 1161.33 | 4.61 |
| 3/10/20 17:59 | 232.03 | 27.10 | 10.25 | 12.52 | 150.16 | 1161.62 | 4.61 |
| 3/10/20 18:00 | 231.89 | 27.12 | 10.25 | 12.50 | 149.48 | 1161.78 | 4.61 |
| 3/10/20 18:01 | 232.24 | 27.06 | 10.25 | 12.49 | 148.74 | 1161.80 | 4.61 |
| 3/10/20 18:02 | 231.94 | 27.12 | 10.25 | 12.47 | 149.92 | 1161.57 | 4.61 |
| 3/10/20 18:03 | 232.35 | 27.10 | 10.26 | 12.46 | 149.81 | 1162.18 | 4.61 |
| 3/10/20 18:04 | 231.94 | 27.06 | 10.26 | 12.45 | 150.07 | 1161.54 | 4.61 |
| 3/10/20 18:05 | 232.04 | 27.11 | 10.26 | 12.44 | 149.42 | 1161.80 | 4.61 |
| 3/10/20 18:06 | 232.03 | 27.12 | 10.26 | 12.43 | 150.33 | 1161.55 | 4.61 |
| 3/10/20 18:07 | 232.11 | 27.10 | 10.27 | 12.44 | 149.66 | 1161.44 | 4.61 |
| 3/10/20 18:08 | 232.49 | 27.06 | 10.27 | 12.47 | 148.70 | 1161.50 | 4.61 |
| 3/10/20 18:09 | 232.01 | 27.05 | 10.27 | 12.50 | 149.18 | 1161.90 | 4.61 |
| 3/10/20 18:10 | 231.91 | 27.00 | 10.27 | 12.53 | 149.11 | 1161.25 | 4.61 |
| 3/10/20 18:11 | 232.05 | 26.98 | 10.28 | 12.53 | 149.26 | 1161.51 | 4.61 |
| 3/10/20 18:12 | 231.89 | 27.08 | 10.28 | 12.53 | 149.67 | 1161.30 | 4.61 |
| 3/10/20 18:13 | 231.84 | 27.07 | 10.28 | 12.53 | 149.88 | 1161.37 | 4.61 |
| 3/10/20 18:14 | 232.06 | 27.04 | 10.28 | 12.52 | 149.66 | 1161.78 | 4.61 |
| 3/10/20 18:15 | 232.03 | 27.10 | 10.29 | 12.52 | 149.73 | 1161.91 | 4.61 |
| 3/10/20 18:16 | 231.97 | 27.03 | 10.29 | 12.52 | 149.69 | 1161.49 | 4.61 |
| 3/10/20 18:17 | 231.74 | 27.06 | 10.29 | 12.58 | 148.84 | 1161.92 | 4.61 |
| 3/10/20 18:18 | 232.07 | 27.09 | 10.29 | 12.67 | 148.63 | 1161.71 | 4.61 |
| 3/10/20 18:19 | 232.07 | 26.99 | 10.30 | 12.72 | 148.25 | 1161.77 | 4.61 |
| 3/10/20 18:20 | 232.03 | 27.08 | 10.30 | 12.69 | 147.89 | 1161.59 | 4.61 |
| 3/10/20 18:21 | 232.08 | 27.03 | 10.30 | 12.67 | 148.63 | 1161.52 | 4.62 |
| 3/10/20 18:22 | 232.06 | 27.11 | 10.30 | 12.64 | 148.40 | 1161.28 | 4.62 |
| 3/10/20 18:23 | 232.09 | 27.03 | 10.31 | 12.65 | 148.41 | 1161.86 | 4.62 |
| 3/10/20 18:24 | 232.05 | 27.10 | 10.31 | 12.67 | 148.89 | 1161.73 | 4.62 |
| 3/10/20 18:25 | 232.08 | 27.08 | 10.31 | 12.70 | 149.48 | 1162.01 | 4.62 |
| 3/10/20 18:26 | 232.28 | 27.08 | 10.31 | 12.72 | 150.26 | 1161.71 | 4.62 |
| 3/10/20 18:27 | 232.10 | 27.10 | 10.32 | 12.74 | 150.64 | 1161.61 | 4.62 |
| 3/10/20 18:28 | 232.31 | 27.09 | 10.32 | 12.76 | 150.42 | 1161.50 | 4.62 |
| 3/10/20 18:29 | 232.18 | 27.06 | 10.32 | 12.79 | 149.58 | 1161.96 | 4.62 |
| 3/10/20 18:30 | 232.22 | 27.07 | 10.32 | 12.81 | 149.58 | 1161.73 | 4.62 |
| 3/10/20 18:31 | 232.13 | 27.08 | 10.33 | 12.83 | 150.44 | 1162.04 | 4.62 |
| 3/10/20 18:32 | 231.94 | 27.16 | 10.33 | 12.86 | 150.08 | 1161.55 | 4.62 |
| 3/10/20 18:33 | 231.95 | 27.10 | 10.33 | 12.87 | 149.18 | 1161.66 | 4.62 |
| 3/10/20 18:34 | 232.19 | 27.06 | 10.33 | 12.87 | 149.76 | 1162.03 | 4.62 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/10 18:35 - 3/10 19:34) | 232.57 | 27.12 | 10.41 | 12.71 | 149.17 | 1161.63 | 4.62 |
| COUNT = 60 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/10/20 18:35 | 232.34 | 27.07 | 10.34 | 12.86 | 149.00 | 1161.79 | 4.62 |
| 3/10/20 18:36 | 232.26 | 27.15 | 10.34 | 12.85 | 149.92 | 1162.09 | 4.62 |
| 3/10/20 18:37 | 232.12 | 27.09 | 10.34 | 12.84 | 149.15 | 1161.83 | 4.62 |
| 3/10/20 18:38 | 232.19 | 27.06 | 10.34 | 12.83 | 149.35 | 1161.56 | 4.62 |
| 3/10/20 18:39 | 232.18 | 27.07 | 10.35 | 12.83 | 149.05 | 1161.72 | 4.62 |
| 3/10/20 18:40 | 232.05 | 27.08 | 10.35 | 12.82 | 149.58 | 1161.95 | 4.62 |
| 3/10/20 18:41 | 232.44 | 27.11 | 10.35 | 12.81 | 149.62 | 1161.55 | 4.62 |
| 3/10/20 18:42 | 232.23 | 27.12 | 10.35 | 12.80 | 149.47 | 1161.85 | 4.62 |
| 3/10/20 18:43 | 232.41 | 27.08 | 10.36 | 12.79 | 149.66 | 1161.79 | 4.62 |
| 3/10/20 18:44 | 232.51 | 27.08 | 10.36 | 12.78 | 150.09 | 1161.64 | 4.62 |
| 3/10/20 18:45 | 232.55 | 27.00 | 10.36 | 12.78 | 149.95 | 1162.08 | 4.62 |
| 3/10/20 18:46 | 232.16 | 27.11 | 10.36 | 12.77 | 149.92 | 1161.54 | 4.62 |
| 3/10/20 18:47 | 232.01 | 27.14 | 10.37 | 12.76 | 149.70 | 1161.53 | 4.62 |
| 3/10/20 18:48 | 232.21 | 27.09 | 10.37 | 12.75 | 150.51 | 1161.57 | 4.62 |
| 3/10/20 18:49 | 232.52 | 27.03 | 10.37 | 12.74 | 150.57 | 1161.81 | 4.62 |
| 3/10/20 18:50 | 232.02 | 27.13 | 10.38 | 12.73 | 149.66 | 1161.14 | 4.62 |
| 3/10/20 18:51 | 232.28 | 27.14 | 10.38 | 12.73 | 150.17 | 1161.77 | 4.62 |
| 3/10/20 18:52 | 232.51 | 27.11 | 10.38 | 12.74 | 150.15 | 1161.49 | 4.62 |
| 3/10/20 18:53 | 232.18 | 27.17 | 10.38 | 12.74 | 148.71 | 1161.32 | 4.62 |
| 3/10/20 18:54 | 232.53 | 27.13 | 10.39 | 12.75 | 150.09 | 1161.84 | 4.62 |
| 3/10/20 18:55 | 232.47 | 27.13 | 10.39 | 12.75 | 148.29 | 1161.97 | 4.62 |
| 3/10/20 18:56 | 232.56 | 27.17 | 10.39 | 12.75 | 149.19 | 1161.71 | 4.62 |
| 3/10/20 18:57 | 232.61 | 27.09 | 10.39 | 12.76 | 148.98 | 1162.00 | 4.62 |
| 3/10/20 18:58 | 232.77 | 27.11 | 10.40 | 12.76 | 149.46 | 1161.46 | 4.62 |
| 3/10/20 18:59 | 232.45 | 27.15 | 10.40 | 12.77 | 149.48 | 1161.75 | 4.62 |
| 3/10/20 19:00 | 232.83 | 27.14 | 10.40 | 12.77 | 149.84 | 1161.92 | 4.62 |
| 3/10/20 19:01 | 232.90 | 27.16 | 10.40 | 12.77 | 149.45 | 1161.68 | 4.62 |
| 3/10/20 19:02 | 232.72 | 27.14 | 10.41 | 12.78 | 148.53 | 1161.70 | 4.62 |
| 3/10/20 19:03 | 232.75 | 27.17 | 10.41 | 12.78 | 148.47 | 1161.60 | 4.62 |
| 3/10/20 19:04 | 232.70 | 27.09 | 10.41 | 12.79 | 147.61 | 1162.04 | 4.62 |
| 3/10/20 19:05 | 232.76 | 27.13 | 10.41 | 12.79 | 147.86 | 1161.66 | 4.62 |
| 3/10/20 19:06 | 232.70 | 27.13 | 10.42 | 12.66 | 148.50 | 1161.50 | 4.62 |
| 3/10/20 19:07 | 232.72 | 27.21 | 10.42 | 12.61 | 148.44 | 1161.45 | 4.62 |
| 3/10/20 19:08 | 232.56 | 27.14 | 10.42 | 12.58 | 148.96 | 1161.62 | 4.62 |
| 3/10/20 19:09 | 232.38 | 27.14 | 10.42 | 12.58 | 148.81 | 1161.63 | 4.62 |
| 3/10/20 19:10 | 232.67 | 27.13 | 10.43 | 12.61 | 148.95 | 1161.32 | 4.62 |
| 3/10/20 19:11 | 232.72 | 27.12 | 10.43 | 12.64 | 149.81 | 1161.40 | 4.62 |
| 3/10/20 19:12 | 232.81 | 27.14 | 10.43 | 12.66 | 149.79 | 1161.53 | 4.62 |
| 3/10/20 19:13 | 232.76 | 27.13 | 10.43 | 12.66 | 149.05 | 1161.52 | 4.62 |
| 3/10/20 19:14 | 232.92 | 27.13 | 10.44 | 12.66 | 149.29 | 1160.87 | 4.62 |
| 3/10/20 19:15 | 232.72 | 27.09 | 10.44 | 12.65 | 148.98 | 1162.00 | 4.62 |
| 3/10/20 19:16 | 232.44 | 27.17 | 10.44 | 12.64 | 149.37 | 1161.16 | 4.62 |
| 3/10/20 19:17 | 232.57 | 27.04 | 10.44 | 12.63 | 149.67 | 1161.34 | 4.62 |
| 3/10/20 19:18 | 232.62 | 27.14 | 10.45 | 12.61 | 149.08 | 1161.33 | 4.62 |
| 3/10/20 19:19 | 232.73 | 27.13 | 10.45 | 12.61 | 148.59 | 1161.39 | 4.62 |
| 3/10/20 19:20 | 232.88 | 27.10 | 10.45 | 12.64 | 148.23 | 1161.83 | 4.62 |
| 3/10/20 19:21 | 232.83 | 27.18 | 10.45 | 12.67 | 147.87 | 1161.63 | 4.62 |
| 3/10/20 19:22 | 232.86 | 27.13 | 10.46 | 12.70 | 148.60 | 1162.36 | 4.62 |
| 3/10/20 19:23 | 232.85 | 27.12 | 10.46 | 12.69 | 148.21 | 1161.65 | 4.62 |
| 3/10/20 19:24 | 232.92 | 27.15 | 10.46 | 12.68 | 148.43 | 1161.44 | 4.62 |
| 3/10/20 19:25 | 233.12 | 27.12 | 10.46 | 12.68 | 149.10 | 1161.65 | 4.62 |
| 3/10/20 19:26 | 232.83 | 27.14 | 10.47 | 12.67 | 149.33 | 1161.53 | 4.62 |
| 3/10/20 19:27 | 232.54 | 27.09 | 10.47 | 12.66 | 149.41 | 1161.55 | 4.62 |
| 3/10/20 19:28 | 232.71 | 27.12 | 10.47 | 12.65 | 149.22 | 1161.34 | 4.62 |
| 3/10/20 19:29 | 232.65 | 27.16 | 10.47 | 12.64 | 148.31 | 1161.71 | 4.62 |
| 3/10/20 19:30 | 232.66 | 27.09 | 10.48 | 12.64 | 148.51 | 1161.58 | 4.62 |
| 3/10/20 19:31 | 232.67 | 27.11 | 10.48 | 12.63 | 148.14 | 1161.93 | 4.62 |
| 3/10/20 19:32 | 232.75 | 27.19 | 10.48 | 12.62 | 149.45 | 1161.22 | 4.62 |
| 3/10/20 19:33 | 232.72 | 27.03 | 10.48 | 12.60 | 149.43 | 1161.46 | 4.62 |
| 3/10/20 19:34 | 232.66 | 27.13 | 10.49 | 12.58 | 149.49 | 1161.35 | 4.62 |

# EMISSION DATA RECORDS

## Operating Data Base+DB Load
## (provided by Cricket Valley Energy Center LLC)
## $PM_{10}$

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/10 14:12 - 3/10 18:40) | 231.92 | 27.08 | 10.01 | 12.64 | 151.49 | 1162.44 | 4.57 |
| COUNT = 269 | | | | | | | |

| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
|---|---|---|---|---|---|---|---|
| 3/10/20 14:12 | 232.52 | 27.14 | 9.67 | 12.55 | 156.47 | 1164.01 | 4.52 |
| 3/10/20 14:13 | 232.29 | 27.10 | 9.67 | 12.55 | 156.10 | 1163.92 | 4.52 |
| 3/10/20 14:14 | 232.50 | 27.13 | 9.67 | 12.55 | 156.36 | 1163.76 | 4.52 |
| 3/10/20 14:15 | 232.45 | 27.12 | 9.67 | 12.55 | 155.31 | 1164.40 | 4.52 |
| 3/10/20 14:16 | 232.57 | 27.19 | 9.68 | 12.56 | 153.82 | 1164.16 | 4.52 |
| 3/10/20 14:17 | 232.06 | 27.15 | 9.68 | 12.57 | 153.95 | 1164.04 | 4.52 |
| 3/10/20 14:18 | 231.93 | 27.03 | 9.68 | 12.59 | 154.62 | 1164.14 | 4.52 |
| 3/10/20 14:19 | 232.05 | 27.12 | 9.68 | 12.61 | 154.11 | 1164.03 | 4.52 |
| 3/10/20 14:20 | 232.08 | 27.09 | 9.69 | 12.63 | 155.98 | 1164.00 | 4.52 |
| 3/10/20 14:21 | 232.12 | 27.12 | 9.69 | 12.62 | 154.17 | 1164.23 | 4.52 |
| 3/10/20 14:22 | 231.76 | 27.15 | 9.69 | 12.61 | 154.96 | 1164.03 | 4.52 |
| 3/10/20 14:23 | 232.10 | 27.04 | 9.69 | 12.60 | 154.92 | 1164.42 | 4.52 |
| 3/10/20 14:24 | 231.78 | 27.06 | 9.70 | 12.59 | 155.54 | 1164.38 | 4.52 |
| 3/10/20 14:25 | 231.84 | 27.14 | 9.70 | 12.59 | 155.54 | 1164.03 | 4.52 |
| 3/10/20 14:26 | 231.74 | 27.00 | 9.70 | 12.58 | 154.89 | 1163.69 | 4.52 |
| 3/10/20 14:27 | 231.92 | 27.08 | 9.70 | 12.57 | 155.01 | 1163.77 | 4.53 |
| 3/10/20 14:28 | 232.22 | 27.07 | 9.71 | 12.57 | 155.43 | 1163.85 | 4.53 |
| 3/10/20 14:29 | 231.90 | 27.09 | 9.71 | 12.56 | 154.85 | 1163.59 | 4.53 |
| 3/10/20 14:30 | 231.81 | 27.11 | 9.71 | 12.56 | 155.65 | 1163.65 | 4.53 |
| 3/10/20 14:31 | 231.91 | 27.13 | 9.71 | 12.56 | 155.14 | 1163.28 | 4.53 |
| 3/10/20 14:32 | 231.97 | 27.05 | 9.72 | 12.55 | 154.69 | 1163.82 | 4.53 |
| 3/10/20 14:33 | 231.88 | 27.09 | 9.72 | 12.55 | 154.23 | 1163.76 | 4.53 |
| 3/10/20 14:34 | 231.85 | 27.14 | 9.72 | 12.55 | 154.50 | 1164.07 | 4.53 |
| 3/10/20 14:35 | 231.91 | 27.10 | 9.72 | 12.54 | 154.77 | 1163.52 | 4.53 |
| 3/10/20 14:36 | 231.97 | 27.03 | 9.73 | 12.54 | 154.94 | 1163.09 | 4.53 |
| 3/10/20 14:37 | 231.69 | 27.10 | 9.73 | 12.54 | 154.50 | 1163.58 | 4.53 |
| 3/10/20 14:38 | 231.98 | 27.07 | 9.73 | 12.53 | 153.89 | 1163.34 | 4.53 |
| 3/10/20 14:39 | 231.83 | 27.14 | 9.73 | 12.53 | 153.49 | 1163.66 | 4.53 |
| 3/10/20 14:40 | 231.50 | 27.06 | 9.74 | 12.53 | 154.79 | 1163.33 | 4.53 |
| 3/10/20 14:41 | 231.71 | 27.09 | 9.74 | 12.52 | 155.23 | 1163.16 | 4.53 |
| 3/10/20 14:42 | 231.95 | 27.12 | 9.74 | 12.52 | 155.42 | 1163.52 | 4.53 |
| 3/10/20 14:43 | 231.65 | 27.08 | 9.74 | 12.52 | 156.22 | 1163.78 | 4.53 |
| 3/10/20 14:44 | 231.77 | 27.14 | 9.75 | 12.51 | 155.64 | 1163.62 | 4.53 |
| 3/10/20 14:45 | 231.90 | 27.07 | 9.75 | 12.51 | 155.09 | 1163.72 | 4.53 |
| 3/10/20 14:46 | 231.84 | 27.06 | 9.75 | 12.51 | 154.70 | 1163.64 | 4.53 |
| 3/10/20 14:47 | 231.92 | 27.03 | 9.76 | 12.52 | 154.76 | 1163.77 | 4.53 |
| 3/10/20 14:48 | 231.97 | 27.08 | 9.76 | 12.53 | 154.50 | 1163.45 | 4.53 |
| 3/10/20 14:49 | 231.83 | 27.03 | 9.76 | 12.54 | 154.46 | 1162.65 | 4.53 |
| 3/10/20 14:50 | 232.00 | 27.08 | 9.76 | 12.55 | 153.84 | 1163.73 | 4.53 |
| 3/10/20 14:51 | 231.60 | 27.04 | 9.77 | 12.56 | 154.16 | 1163.47 | 4.53 |
| 3/10/20 14:52 | 231.66 | 27.13 | 9.77 | 12.56 | 153.27 | 1163.39 | 4.53 |
| 3/10/20 14:53 | 231.91 | 27.07 | 9.77 | 12.57 | 153.47 | 1163.42 | 4.54 |
| 3/10/20 14:54 | 231.74 | 27.08 | 9.77 | 12.58 | 153.38 | 1163.10 | 4.54 |
| 3/10/20 14:55 | 231.64 | 27.07 | 9.78 | 12.58 | 154.04 | 1163.32 | 4.54 |
| 3/10/20 14:56 | 231.52 | 27.06 | 9.78 | 12.58 | 153.48 | 1163.32 | 4.54 |
| 3/10/20 14:57 | 231.77 | 27.05 | 9.78 | 12.57 | 153.04 | 1163.56 | 4.54 |
| 3/10/20 14:58 | 231.66 | 27.08 | 9.78 | 12.56 | 152.20 | 1163.48 | 4.54 |
| 3/10/20 14:59 | 231.59 | 27.05 | 9.79 | 12.55 | 152.46 | 1163.35 | 4.54 |
| 3/10/20 15:00 | 231.73 | 27.14 | 9.79 | 12.54 | 152.44 | 1162.98 | 4.54 |
| 3/10/20 15:01 | 231.58 | 27.08 | 9.79 | 12.54 | 152.38 | 1163.98 | 4.54 |
| 3/10/20 15:02 | 231.61 | 27.08 | 9.79 | 12.53 | 153.15 | 1163.00 | 4.54 |
| 3/10/20 15:03 | 231.43 | 27.11 | 9.80 | 12.54 | 153.03 | 1162.82 | 4.54 |
| 3/10/20 15:04 | 231.68 | 27.08 | 9.80 | 12.55 | 152.38 | 1162.70 | 4.54 |
| 3/10/20 15:05 | 231.36 | 27.03 | 9.80 | 12.55 | 152.38 | 1163.02 | 4.54 |
| 3/10/20 15:06 | 231.66 | 27.11 | 9.80 | 12.56 | 152.74 | 1163.04 | 4.54 |
| 3/10/20 15:07 | 231.68 | 27.11 | 9.81 | 12.57 | 152.72 | 1163.13 | 4.54 |
| 3/10/20 15:08 | 231.81 | 27.05 | 9.81 | 12.58 | 152.72 | 1163.29 | 4.54 |
| 3/10/20 15:09 | 231.78 | 27.03 | 9.81 | 12.59 | 153.21 | 1163.46 | 4.54 |
| 3/10/20 15:10 | 231.70 | 27.08 | 9.81 | 12.60 | 152.76 | 1163.18 | 4.54 |
| 3/10/20 15:11 | 231.84 | 27.04 | 9.82 | 12.60 | 152.73 | 1163.03 | 4.54 |
| 3/10/20 15:12 | 231.48 | 27.11 | 9.82 | 12.61 | 152.92 | 1162.51 | 4.54 |
| 3/10/20 15:13 | 231.65 | 27.10 | 9.82 | 12.62 | 153.85 | 1163.12 | 4.54 |
| 3/10/20 15:14 | 231.85 | 27.03 | 9.82 | 12.63 | 153.04 | 1163.27 | 4.54 |
| 3/10/20 15:15 | 231.69 | 27.15 | 9.83 | 12.64 | 152.08 | 1162.51 | 4.54 |
| 3/10/20 15:16 | 231.68 | 27.06 | 9.83 | 12.65 | 151.68 | 1163.07 | 4.54 |
| 3/10/20 15:17 | 231.76 | 27.03 | 9.83 | 12.65 | 151.59 | 1163.44 | 4.54 |
| 3/10/20 15:18 | 231.80 | 27.05 | 9.83 | 12.66 | 152.12 | 1163.21 | 4.54 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/10 14:12 - 3/10 18:40) | 231.92 | 27.08 | 10.01 | 12.64 | 151.49 | 1162.44 | 4.57 |
| COUNT = 269 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/10/20 15:19 | 231.39 | 27.14 | 9.84 | 12.67 | 152.37 | 1162.97 | 4.55 |
| 3/10/20 15:20 | 231.76 | 27.04 | 9.84 | 12.69 | 152.52 | 1163.16 | 4.55 |
| 3/10/20 15:21 | 231.61 | 27.08 | 9.84 | 12.72 | 152.68 | 1162.77 | 4.55 |
| 3/10/20 15:22 | 231.83 | 27.02 | 9.84 | 12.75 | 152.73 | 1162.71 | 4.55 |
| 3/10/20 15:23 | 231.58 | 27.05 | 9.85 | 12.78 | 152.84 | 1162.74 | 4.55 |
| 3/10/20 15:24 | 231.89 | 27.05 | 9.85 | 12.80 | 152.76 | 1162.62 | 4.55 |
| 3/10/20 15:25 | 231.70 | 27.05 | 9.85 | 12.80 | 153.18 | 1162.65 | 4.55 |
| 3/10/20 15:26 | 232.07 | 27.10 | 9.85 | 12.79 | 152.54 | 1163.55 | 4.55 |
| 3/10/20 15:27 | 231.82 | 27.08 | 9.86 | 12.77 | 153.36 | 1162.69 | 4.55 |
| 3/10/20 15:28 | 231.72 | 27.10 | 9.86 | 12.76 | 153.13 | 1163.04 | 4.55 |
| 3/10/20 15:29 | 231.49 | 27.10 | 9.86 | 12.74 | 151.55 | 1163.36 | 4.55 |
| 3/10/20 15:30 | 231.80 | 27.07 | 9.86 | 12.70 | 150.35 | 1162.75 | 4.55 |
| 3/10/20 15:31 | 231.67 | 27.08 | 9.87 | 12.70 | 149.99 | 1163.10 | 4.55 |
| 3/10/20 15:32 | 231.74 | 27.06 | 9.87 | 12.71 | 152.84 | 1162.12 | 4.55 |
| 3/10/20 15:33 | 231.79 | 27.05 | 9.87 | 12.72 | 152.46 | 1162.82 | 4.55 |
| 3/10/20 15:34 | 231.65 | 27.07 | 9.88 | 12.74 | 153.25 | 1162.62 | 4.55 |
| 3/10/20 15:35 | 231.63 | 27.12 | 9.88 | 12.75 | 153.71 | 1162.53 | 4.55 |
| 3/10/20 15:36 | 231.73 | 27.07 | 9.88 | 12.76 | 152.85 | 1162.39 | 4.55 |
| 3/10/20 15:37 | 231.82 | 27.14 | 9.88 | 12.77 | 154.04 | 1162.57 | 4.55 |
| 3/10/20 15:38 | 231.61 | 27.07 | 9.89 | 12.78 | 152.27 | 1161.98 | 4.55 |
| 3/10/20 15:39 | 231.67 | 27.11 | 9.89 | 12.79 | 152.02 | 1162.48 | 4.55 |
| 3/10/20 15:40 | 231.83 | 27.09 | 9.89 | 12.80 | 151.68 | 1162.50 | 4.55 |
| 3/10/20 15:41 | 231.67 | 27.00 | 9.89 | 12.81 | 151.53 | 1162.63 | 4.55 |
| 3/10/20 15:42 | 231.52 | 27.05 | 9.90 | 12.82 | 151.70 | 1162.49 | 4.55 |
| 3/10/20 15:43 | 231.75 | 27.11 | 9.90 | 12.83 | 151.57 | 1162.39 | 4.55 |
| 3/10/20 15:44 | 231.67 | 27.07 | 9.90 | 12.83 | 151.81 | 1162.45 | 4.55 |
| 3/10/20 15:45 | 231.72 | 27.08 | 9.90 | 12.83 | 151.95 | 1162.89 | 4.56 |
| 3/10/20 15:46 | 232.07 | 27.06 | 9.91 | 12.83 | 152.08 | 1162.81 | 4.56 |
| 3/10/20 15:47 | 231.91 | 27.03 | 9.91 | 12.83 | 151.27 | 1162.53 | 4.56 |
| 3/10/20 15:48 | 232.09 | 27.06 | 9.91 | 12.83 | 151.36 | 1162.60 | 4.56 |
| 3/10/20 15:49 | 231.76 | 27.11 | 9.91 | 12.75 | 150.75 | 1162.71 | 4.56 |
| 3/10/20 15:50 | 231.82 | 27.12 | 9.92 | 12.61 | 152.16 | 1162.74 | 4.56 |
| 3/10/20 15:51 | 231.59 | 27.15 | 9.92 | 12.55 | 151.94 | 1162.86 | 4.56 |
| 3/10/20 15:52 | 231.65 | 27.06 | 9.92 | 12.54 | 151.82 | 1162.32 | 4.56 |
| 3/10/20 15:53 | 231.88 | 27.15 | 9.92 | 12.54 | 151.45 | 1162.04 | 4.56 |
| 3/10/20 15:54 | 231.67 | 27.02 | 9.93 | 12.54 | 151.33 | 1162.77 | 4.56 |
| 3/10/20 15:55 | 231.59 | 27.04 | 9.93 | 12.55 | 151.85 | 1162.18 | 4.56 |
| 3/10/20 15:56 | 231.77 | 27.04 | 9.93 | 12.55 | 151.14 | 1162.22 | 4.56 |
| 3/10/20 15:57 | 231.58 | 27.03 | 9.93 | 12.55 | 151.25 | 1162.41 | 4.56 |
| 3/10/20 15:58 | 231.82 | 27.16 | 9.94 | 12.55 | 151.05 | 1162.67 | 4.56 |
| 3/10/20 15:59 | 231.78 | 27.10 | 9.94 | 12.56 | 151.64 | 1162.54 | 4.56 |
| 3/10/20 16:00 | 231.88 | 27.08 | 9.94 | 12.56 | 152.21 | 1162.71 | 4.56 |
| 3/10/20 16:01 | 231.73 | 27.06 | 9.94 | 12.56 | 152.37 | 1162.28 | 4.56 |
| 3/10/20 16:02 | 231.37 | 27.08 | 9.95 | 12.56 | 152.60 | 1162.23 | 4.56 |
| 3/10/20 16:03 | 231.77 | 27.08 | 9.95 | 12.56 | 152.06 | 1162.44 | 4.56 |
| 3/10/20 16:04 | 231.99 | 27.10 | 9.95 | 12.57 | 151.86 | 1162.69 | 4.56 |
| 3/10/20 16:05 | 231.95 | 27.08 | 9.95 | 12.57 | 149.53 | 1162.41 | 4.56 |
| 3/10/20 16:06 | 232.15 | 27.06 | 9.96 | 12.57 | 150.11 | 1162.59 | 4.56 |
| 3/10/20 16:07 | 232.10 | 27.08 | 9.96 | 12.57 | 150.60 | 1162.26 | 4.56 |
| 3/10/20 16:08 | 231.82 | 27.05 | 9.96 | 12.58 | 151.64 | 1162.18 | 4.56 |
| 3/10/20 16:09 | 231.97 | 27.11 | 9.96 | 12.58 | 151.56 | 1161.92 | 4.56 |
| 3/10/20 16:10 | 231.77 | 27.09 | 9.97 | 12.57 | 152.04 | 1162.09 | 4.56 |
| 3/10/20 16:11 | 231.99 | 27.14 | 9.97 | 12.57 | 151.67 | 1162.68 | 4.57 |
| 3/10/20 16:12 | 232.27 | 27.13 | 9.97 | 12.57 | 152.46 | 1162.18 | 4.57 |
| 3/10/20 16:13 | 231.93 | 27.11 | 9.97 | 12.57 | 151.57 | 1162.32 | 4.57 |
| 3/10/20 16:14 | 231.85 | 27.12 | 9.98 | 12.56 | 151.10 | 1162.52 | 4.57 |
| 3/10/20 16:15 | 231.72 | 27.08 | 9.98 | 12.56 | 151.13 | 1162.17 | 4.57 |
| 3/10/20 16:16 | 231.75 | 27.05 | 9.98 | 12.56 | 150.92 | 1162.43 | 4.57 |
| 3/10/20 16:17 | 232.22 | 27.05 | 9.98 | 12.56 | 151.28 | 1162.64 | 4.57 |
| 3/10/20 16:18 | 231.87 | 27.11 | 9.99 | 12.55 | 151.42 | 1162.36 | 4.57 |
| 3/10/20 16:19 | 231.84 | 27.09 | 9.99 | 12.55 | 151.56 | 1162.37 | 4.57 |
| 3/10/20 16:20 | 231.85 | 27.19 | 9.99 | 12.55 | 151.49 | 1162.37 | 4.57 |
| 3/10/20 16:21 | 231.94 | 27.10 | 10.00 | 12.55 | 150.92 | 1162.55 | 4.57 |
| 3/10/20 16:22 | 231.97 | 27.11 | 10.00 | 12.54 | 151.34 | 1162.44 | 4.57 |
| 3/10/20 16:23 | 232.20 | 27.11 | 10.00 | 12.54 | 151.07 | 1162.21 | 4.57 |
| 3/10/20 16:24 | 232.02 | 27.13 | 10.00 | 12.54 | 150.51 | 1162.47 | 4.57 |
| 3/10/20 16:25 | 232.00 | 27.15 | 10.01 | 12.53 | 151.23 | 1162.02 | 4.57 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/10 14:12 - 3/10 18:40) | 231.92 | 27.08 | 10.01 | 12.64 | 151.49 | 1162.44 | 4.57 |
| COUNT = 269 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/10/20 16:26 | 231.96 | 27.07 | 10.01 | 12.53 | 149.81 | 1162.08 | 4.57 |
| 3/10/20 16:27 | 231.97 | 27.07 | 10.01 | 12.53 | 151.02 | 1162.44 | 4.57 |
| 3/10/20 16:28 | 231.84 | 27.05 | 10.01 | 12.53 | 150.10 | 1162.60 | 4.57 |
| 3/10/20 16:29 | 232.02 | 27.09 | 10.02 | 12.54 | 149.83 | 1162.01 | 4.57 |
| 3/10/20 16:30 | 232.07 | 27.11 | 10.02 | 12.54 | 149.98 | 1162.13 | 4.57 |
| 3/10/20 16:31 | 231.98 | 27.06 | 10.02 | 12.55 | 150.46 | 1162.43 | 4.57 |
| 3/10/20 16:32 | 231.91 | 27.06 | 10.02 | 12.56 | 150.86 | 1162.35 | 4.57 |
| 3/10/20 16:33 | 231.98 | 27.10 | 10.03 | 12.56 | 151.31 | 1161.89 | 4.57 |
| 3/10/20 16:34 | 232.06 | 27.17 | 10.03 | 12.57 | 151.36 | 1162.31 | 4.57 |
| 3/10/20 16:35 | 231.98 | 27.07 | 10.03 | 12.57 | 151.58 | 1162.09 | 4.57 |
| 3/10/20 16:36 | 231.98 | 27.09 | 10.03 | 12.58 | 151.76 | 1161.99 | 4.57 |
| 3/10/20 16:37 | 232.21 | 27.14 | 10.04 | 12.58 | 151.56 | 1162.55 | 4.58 |
| 3/10/20 16:38 | 232.32 | 27.08 | 10.04 | 12.59 | 151.22 | 1162.65 | 4.58 |
| 3/10/20 16:39 | 231.87 | 27.03 | 10.04 | 12.60 | 152.04 | 1162.12 | 4.58 |
| 3/10/20 16:40 | 231.92 | 27.04 | 10.04 | 12.60 | 152.10 | 1162.03 | 4.58 |
| 3/10/20 16:41 | 232.08 | 27.09 | 10.05 | 12.61 | 150.58 | 1161.95 | 4.58 |
| 3/10/20 16:42 | 232.05 | 27.10 | 10.05 | 12.61 | 150.93 | 1162.20 | 4.58 |
| 3/10/20 16:43 | 231.89 | 27.06 | 10.05 | 12.62 | 150.34 | 1162.38 | 4.58 |
| 3/10/20 16:44 | 232.15 | 27.01 | 10.05 | 12.62 | 150.92 | 1162.04 | 4.58 |
| 3/10/20 16:45 | 232.05 | 27.12 | 10.06 | 12.63 | 150.10 | 1162.42 | 4.58 |
| 3/10/20 16:46 | 231.95 | 27.11 | 10.06 | 12.64 | 150.18 | 1162.41 | 4.58 |
| 3/10/20 16:47 | 232.19 | 27.08 | 10.06 | 12.64 | 149.21 | 1162.19 | 4.58 |
| 3/10/20 16:48 | 231.67 | 27.07 | 10.06 | 12.65 | 150.13 | 1161.79 | 4.58 |
| 3/10/20 16:49 | 232.04 | 27.17 | 10.07 | 12.65 | 150.56 | 1161.81 | 4.58 |
| 3/10/20 16:50 | 231.93 | 27.08 | 10.07 | 12.66 | 151.12 | 1162.15 | 4.58 |
| 3/10/20 16:51 | 231.99 | 27.06 | 10.07 | 12.66 | 150.67 | 1161.89 | 4.58 |
| 3/10/20 16:52 | 232.00 | 27.11 | 10.07 | 12.67 | 150.37 | 1161.81 | 4.58 |
| 3/10/20 16:53 | 231.99 | 27.05 | 10.08 | 12.68 | 150.76 | 1162.13 | 4.58 |
| 3/10/20 16:54 | 231.83 | 27.08 | 10.08 | 12.68 | 150.43 | 1162.21 | 4.58 |
| 3/10/20 16:55 | 232.16 | 27.02 | 10.08 | 12.69 | 150.53 | 1161.66 | 4.58 |
| 3/10/20 16:56 | 232.04 | 27.07 | 10.08 | 12.69 | 150.89 | 1162.17 | 4.58 |
| 3/10/20 16:57 | 231.80 | 27.10 | 10.09 | 12.70 | 150.40 | 1161.89 | 4.58 |
| 3/10/20 16:58 | 231.89 | 27.07 | 10.09 | 12.73 | 150.59 | 1161.80 | 4.58 |
| 3/10/20 16:59 | 232.06 | 27.10 | 10.09 | 12.75 | 150.88 | 1161.95 | 4.58 |
| 3/10/20 17:00 | 232.23 | 27.12 | 10.09 | 12.78 | 150.21 | 1162.13 | 4.58 |
| 3/10/20 17:01 | 231.94 | 27.07 | 10.10 | 12.80 | 149.97 | 1162.25 | 4.58 |
| 3/10/20 17:02 | 231.97 | 26.99 | 10.10 | 12.82 | 149.57 | 1162.00 | 4.58 |
| 3/10/20 17:03 | 231.82 | 27.11 | 10.10 | 12.83 | 149.88 | 1161.60 | 4.59 |
| 3/10/20 17:04 | 232.13 | 27.09 | 10.10 | 12.79 | 150.47 | 1162.16 | 4.59 |
| 3/10/20 17:05 | 231.90 | 27.04 | 10.11 | 12.75 | 150.31 | 1162.00 | 4.59 |
| 3/10/20 17:06 | 232.16 | 27.17 | 10.11 | 12.71 | 150.31 | 1161.73 | 4.59 |
| 3/10/20 17:07 | 232.04 | 27.11 | 10.11 | 12.67 | 150.22 | 1162.04 | 4.59 |
| 3/10/20 17:08 | 231.90 | 27.08 | 10.11 | 12.63 | 150.10 | 1161.92 | 4.59 |
| 3/10/20 17:09 | 232.02 | 27.11 | 10.12 | 12.59 | 150.22 | 1162.00 | 4.59 |
| 3/10/20 17:10 | 231.94 | 27.05 | 10.12 | 12.55 | 150.83 | 1162.61 | 4.59 |
| 3/10/20 17:11 | 231.82 | 27.13 | 10.12 | 12.51 | 149.91 | 1161.51 | 4.59 |
| 3/10/20 17:12 | 231.91 | 27.06 | 10.13 | 12.47 | 150.50 | 1162.05 | 4.59 |
| 3/10/20 17:13 | 232.03 | 27.01 | 10.13 | 12.49 | 150.09 | 1161.72 | 4.59 |
| 3/10/20 17:14 | 232.09 | 27.06 | 10.13 | 12.51 | 150.04 | 1161.78 | 4.59 |
| 3/10/20 17:15 | 231.80 | 27.05 | 10.13 | 12.53 | 150.19 | 1161.59 | 4.59 |
| 3/10/20 17:16 | 231.91 | 27.07 | 10.14 | 12.54 | 150.07 | 1161.73 | 4.59 |
| 3/10/20 17:17 | 231.76 | 27.04 | 10.14 | 12.56 | 150.52 | 1161.96 | 4.59 |
| 3/10/20 17:18 | 231.75 | 27.08 | 10.14 | 12.58 | 150.23 | 1161.74 | 4.59 |
| 3/10/20 17:19 | 232.17 | 27.06 | 10.14 | 12.60 | 149.71 | 1161.92 | 4.59 |
| 3/10/20 17:20 | 231.95 | 27.03 | 10.15 | 12.62 | 149.39 | 1161.85 | 4.59 |
| 3/10/20 17:21 | 232.13 | 27.06 | 10.15 | 12.64 | 149.83 | 1162.63 | 4.59 |
| 3/10/20 17:22 | 231.97 | 27.11 | 10.15 | 12.66 | 149.71 | 1161.80 | 4.59 |
| 3/10/20 17:23 | 232.01 | 27.07 | 10.15 | 12.68 | 149.64 | 1162.00 | 4.59 |
| 3/10/20 17:24 | 231.77 | 27.05 | 10.16 | 12.70 | 150.41 | 1161.30 | 4.59 |
| 3/10/20 17:25 | 231.69 | 27.13 | 10.16 | 12.72 | 151.16 | 1161.74 | 4.59 |
| 3/10/20 17:26 | 232.20 | 27.10 | 10.16 | 12.73 | 150.04 | 1161.97 | 4.59 |
| 3/10/20 17:27 | 231.93 | 27.07 | 10.16 | 12.74 | 149.69 | 1161.84 | 4.59 |
| 3/10/20 17:28 | 231.71 | 27.12 | 10.17 | 12.74 | 150.10 | 1161.99 | 4.59 |
| 3/10/20 17:29 | 231.83 | 27.08 | 10.17 | 12.74 | 148.87 | 1162.13 | 4.60 |
| 3/10/20 17:30 | 231.78 | 27.18 | 10.17 | 12.74 | 149.85 | 1161.98 | 4.60 |
| 3/10/20 17:31 | 231.77 | 27.06 | 10.17 | 12.75 | 149.55 | 1161.90 | 4.60 |
| 3/10/20 17:32 | 231.66 | 27.08 | 10.18 | 12.75 | 148.97 | 1161.62 | 4.60 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/10 14:12 - 3/10 18:40) | 231.92 | 27.08 | 10.01 | 12.64 | 151.49 | 1162.44 | 4.57 |
| COUNT = 269 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/10/20 17:33 | 232.00 | 27.17 | 10.18 | 12.75 | 149.12 | 1161.46 | 4.60 |
| 3/10/20 17:34 | 231.91 | 27.07 | 10.18 | 12.76 | 148.46 | 1162.01 | 4.60 |
| 3/10/20 17:35 | 232.26 | 27.10 | 10.18 | 12.76 | 149.44 | 1161.86 | 4.60 |
| 3/10/20 17:36 | 232.22 | 27.08 | 10.19 | 12.77 | 149.77 | 1161.62 | 4.60 |
| 3/10/20 17:37 | 232.10 | 27.04 | 10.19 | 12.77 | 150.40 | 1161.69 | 4.60 |
| 3/10/20 17:38 | 232.07 | 27.10 | 10.19 | 12.78 | 151.18 | 1161.61 | 4.60 |
| 3/10/20 17:39 | 231.96 | 27.07 | 10.19 | 12.78 | 152.15 | 1161.45 | 4.60 |
| 3/10/20 17:40 | 231.76 | 27.11 | 10.20 | 12.79 | 151.41 | 1161.93 | 4.60 |
| 3/10/20 17:41 | 231.97 | 27.02 | 10.20 | 12.79 | 151.44 | 1161.62 | 4.60 |
| 3/10/20 17:42 | 231.74 | 27.10 | 10.20 | 12.79 | 151.27 | 1161.57 | 4.60 |
| 3/10/20 17:43 | 231.95 | 27.10 | 10.20 | 12.80 | 151.55 | 1161.33 | 4.60 |
| 3/10/20 17:44 | 232.00 | 27.11 | 10.21 | 12.80 | 151.37 | 1161.69 | 4.60 |
| 3/10/20 17:45 | 231.89 | 27.08 | 10.21 | 12.81 | 151.21 | 1161.72 | 4.60 |
| 3/10/20 17:46 | 231.91 | 27.05 | 10.21 | 12.81 | 151.15 | 1161.75 | 4.60 |
| 3/10/20 17:47 | 232.17 | 27.15 | 10.21 | 12.81 | 150.20 | 1161.84 | 4.60 |
| 3/10/20 17:48 | 231.93 | 27.08 | 10.22 | 12.79 | 149.55 | 1161.83 | 4.60 |
| 3/10/20 17:49 | 232.16 | 27.10 | 10.22 | 12.76 | 149.36 | 1161.69 | 4.60 |
| 3/10/20 17:50 | 232.15 | 27.05 | 10.22 | 12.74 | 149.22 | 1161.75 | 4.60 |
| 3/10/20 17:51 | 232.17 | 27.06 | 10.22 | 12.71 | 149.22 | 1161.97 | 4.60 |
| 3/10/20 17:52 | 232.10 | 27.09 | 10.23 | 12.69 | 149.98 | 1161.20 | 4.60 |
| 3/10/20 17:53 | 231.90 | 27.08 | 10.23 | 12.66 | 150.21 | 1161.73 | 4.60 |
| 3/10/20 17:54 | 232.06 | 27.03 | 10.23 | 12.64 | 149.71 | 1161.99 | 4.60 |
| 3/10/20 17:55 | 232.21 | 27.11 | 10.23 | 12.61 | 149.67 | 1161.74 | 4.61 |
| 3/10/20 17:56 | 231.91 | 27.08 | 10.24 | 12.59 | 150.42 | 1161.53 | 4.61 |
| 3/10/20 17:57 | 232.12 | 27.13 | 10.24 | 12.56 | 150.25 | 1160.95 | 4.61 |
| 3/10/20 17:58 | 232.01 | 27.06 | 10.24 | 12.54 | 149.91 | 1161.33 | 4.61 |
| 3/10/20 17:59 | 232.03 | 27.10 | 10.25 | 12.52 | 150.16 | 1161.62 | 4.61 |
| 3/10/20 18:00 | 231.89 | 27.12 | 10.25 | 12.50 | 149.48 | 1161.78 | 4.61 |
| 3/10/20 18:01 | 232.24 | 27.06 | 10.25 | 12.49 | 148.74 | 1161.80 | 4.61 |
| 3/10/20 18:02 | 231.94 | 27.12 | 10.25 | 12.47 | 149.92 | 1161.57 | 4.61 |
| 3/10/20 18:03 | 232.35 | 27.10 | 10.26 | 12.46 | 149.81 | 1162.18 | 4.61 |
| 3/10/20 18:04 | 231.94 | 27.06 | 10.26 | 12.45 | 150.07 | 1161.54 | 4.61 |
| 3/10/20 18:05 | 232.04 | 27.11 | 10.26 | 12.44 | 149.42 | 1161.80 | 4.61 |
| 3/10/20 18:06 | 232.03 | 27.12 | 10.26 | 12.43 | 150.33 | 1161.55 | 4.61 |
| 3/10/20 18:07 | 232.11 | 27.10 | 10.27 | 12.44 | 149.66 | 1161.44 | 4.61 |
| 3/10/20 18:08 | 232.49 | 27.06 | 10.27 | 12.47 | 148.70 | 1161.50 | 4.61 |
| 3/10/20 18:09 | 232.01 | 27.05 | 10.27 | 12.50 | 149.18 | 1161.90 | 4.61 |
| 3/10/20 18:10 | 231.91 | 27.00 | 10.27 | 12.53 | 149.11 | 1161.25 | 4.61 |
| 3/10/20 18:11 | 232.05 | 26.98 | 10.28 | 12.53 | 149.26 | 1161.51 | 4.61 |
| 3/10/20 18:12 | 231.89 | 27.08 | 10.28 | 12.53 | 149.67 | 1161.30 | 4.61 |
| 3/10/20 18:13 | 231.84 | 27.07 | 10.28 | 12.53 | 149.88 | 1161.37 | 4.61 |
| 3/10/20 18:14 | 232.06 | 27.04 | 10.28 | 12.52 | 149.66 | 1161.78 | 4.61 |
| 3/10/20 18:15 | 232.03 | 27.10 | 10.29 | 12.52 | 149.73 | 1161.91 | 4.61 |
| 3/10/20 18:16 | 231.97 | 27.03 | 10.29 | 12.52 | 149.69 | 1161.49 | 4.61 |
| 3/10/20 18:17 | 231.74 | 27.06 | 10.29 | 12.58 | 148.84 | 1161.92 | 4.61 |
| 3/10/20 18:18 | 232.07 | 27.09 | 10.29 | 12.67 | 148.63 | 1161.71 | 4.61 |
| 3/10/20 18:19 | 232.07 | 26.99 | 10.30 | 12.72 | 148.25 | 1161.77 | 4.61 |
| 3/10/20 18:20 | 232.03 | 27.08 | 10.30 | 12.69 | 147.89 | 1161.59 | 4.61 |
| 3/10/20 18:21 | 232.08 | 27.03 | 10.30 | 12.67 | 148.63 | 1161.52 | 4.62 |
| 3/10/20 18:22 | 232.06 | 27.11 | 10.30 | 12.64 | 148.40 | 1161.28 | 4.62 |
| 3/10/20 18:23 | 232.09 | 27.03 | 10.31 | 12.65 | 148.41 | 1161.86 | 4.62 |
| 3/10/20 18:24 | 232.05 | 27.10 | 10.31 | 12.67 | 148.89 | 1161.73 | 4.62 |
| 3/10/20 18:25 | 232.08 | 27.08 | 10.31 | 12.70 | 149.48 | 1162.01 | 4.62 |
| 3/10/20 18:26 | 232.28 | 27.08 | 10.31 | 12.72 | 150.26 | 1161.71 | 4.62 |
| 3/10/20 18:27 | 232.10 | 27.10 | 10.32 | 12.74 | 150.64 | 1161.61 | 4.62 |
| 3/10/20 18:28 | 232.31 | 27.09 | 10.32 | 12.76 | 150.42 | 1161.50 | 4.62 |
| 3/10/20 18:29 | 232.18 | 27.06 | 10.32 | 12.79 | 149.58 | 1161.96 | 4.62 |
| 3/10/20 18:30 | 232.22 | 27.07 | 10.32 | 12.81 | 149.58 | 1161.73 | 4.62 |
| 3/10/20 18:31 | 232.13 | 27.08 | 10.33 | 12.83 | 150.44 | 1162.04 | 4.62 |
| 3/10/20 18:32 | 231.94 | 27.16 | 10.33 | 12.86 | 150.08 | 1161.55 | 4.62 |
| 3/10/20 18:33 | 231.95 | 27.10 | 10.33 | 12.87 | 149.18 | 1161.66 | 4.62 |
| 3/10/20 18:34 | 232.19 | 27.06 | 10.33 | 12.87 | 149.76 | 1162.03 | 4.62 |
| 3/10/20 18:35 | 232.34 | 27.07 | 10.34 | 12.86 | 149.00 | 1161.79 | 4.62 |
| 3/10/20 18:36 | 232.26 | 27.15 | 10.34 | 12.85 | 149.92 | 1162.09 | 4.62 |
| 3/10/20 18:37 | 232.12 | 27.09 | 10.34 | 12.84 | 149.15 | 1161.83 | 4.62 |
| 3/10/20 18:38 | 232.19 | 27.06 | 10.34 | 12.83 | 149.35 | 1161.56 | 4.62 |
| 3/10/20 18:39 | 232.18 | 27.07 | 10.35 | 12.83 | 149.05 | 1161.72 | 4.62 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/10 14:12 - 3/10 18:40) COUNT = 269 | 231.92 | 27.08 | 10.01 | 12.64 | 151.49 | 1162.44 | 4.57 |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/10/20 18:40 | 232.05 | 27.08 | 10.35 | 12.82 | 149.58 | 1161.95 | 4.62 |

| Description | | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/11 6:23 - 3/11 11:17) | | 240.66 | 27.71 | 10.57 | 12.65 | 180.46 | 1176.26 | 4.37 |
| COUNT = 295 | | | | | | | | |
| Signal Tagname | | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| | 3/11/20 6:23 | 241.92 | 27.81 | 10.57 | 12.62 | 215.51 | 1172.17 | 4.47 |
| | 3/11/20 6:24 | 242.26 | 27.83 | 10.57 | 12.59 | 217.02 | 1172.23 | 4.47 |
| | 3/11/20 6:25 | 242.11 | 27.90 | 10.57 | 12.56 | 212.61 | 1172.22 | 4.47 |
| | 3/11/20 6:26 | 241.99 | 27.83 | 10.57 | 12.54 | 208.34 | 1171.97 | 4.47 |
| | 3/11/20 6:27 | 242.18 | 27.83 | 10.57 | 12.51 | 206.86 | 1172.03 | 4.47 |
| | 3/11/20 6:28 | 242.33 | 27.84 | 10.57 | 12.49 | 207.27 | 1172.77 | 4.46 |
| | 3/11/20 6:29 | 242.35 | 27.89 | 10.57 | 12.50 | 209.88 | 1171.83 | 4.46 |
| | 3/11/20 6:30 | 242.17 | 27.86 | 10.57 | 12.50 | 211.73 | 1172.31 | 4.46 |
| | 3/11/20 6:31 | 242.32 | 27.83 | 10.57 | 12.51 | 211.25 | 1172.13 | 4.46 |
| | 3/11/20 6:32 | 241.91 | 27.87 | 10.57 | 12.52 | 211.75 | 1171.71 | 4.46 |
| | 3/11/20 6:33 | 241.96 | 27.79 | 10.57 | 12.52 | 212.97 | 1171.98 | 4.46 |
| | 3/11/20 6:34 | 241.94 | 27.96 | 10.57 | 12.53 | 213.22 | 1171.78 | 4.46 |
| | 3/11/20 6:35 | 242.33 | 27.88 | 10.57 | 12.53 | 213.79 | 1171.59 | 4.46 |
| | 3/11/20 6:36 | 242.15 | 27.81 | 10.57 | 12.54 | 213.91 | 1171.44 | 4.46 |
| | 3/11/20 6:37 | 242.12 | 27.80 | 10.57 | 12.54 | 213.95 | 1171.79 | 4.46 |
| | 3/11/20 6:38 | 241.99 | 27.90 | 10.57 | 12.55 | 214.03 | 1171.77 | 4.46 |
| | 3/11/20 6:39 | 242.43 | 27.89 | 10.57 | 12.55 | 214.94 | 1172.52 | 4.46 |
| | 3/11/20 6:40 | 241.98 | 27.88 | 10.57 | 12.51 | 216.84 | 1171.78 | 4.46 |
| | 3/11/20 6:41 | 241.97 | 27.95 | 10.57 | 12.48 | 218.89 | 1171.99 | 4.46 |
| | 3/11/20 6:42 | 242.56 | 27.80 | 10.57 | 12.45 | 218.63 | 1172.47 | 4.45 |
| | 3/11/20 6:43 | 242.27 | 27.91 | 10.57 | 12.42 | 217.07 | 1172.16 | 4.45 |
| | 3/11/20 6:44 | 242.12 | 27.89 | 10.57 | 12.39 | 215.76 | 1172.09 | 4.45 |
| | 3/11/20 6:45 | 242.13 | 27.85 | 10.57 | 12.35 | 215.95 | 1172.25 | 4.45 |
| | 3/11/20 6:46 | 242.12 | 27.84 | 10.57 | 12.32 | 217.86 | 1171.59 | 4.45 |
| | 3/11/20 6:47 | 242.38 | 27.93 | 10.57 | 12.35 | 218.31 | 1172.36 | 4.45 |
| | 3/11/20 6:48 | 242.33 | 27.90 | 10.57 | 12.40 | 216.88 | 1171.41 | 4.45 |
| | 3/11/20 6:49 | 242.12 | 27.78 | 10.57 | 12.44 | 215.52 | 1171.86 | 4.45 |
| | 3/11/20 6:50 | 242.01 | 27.88 | 10.57 | 12.48 | 217.38 | 1171.83 | 4.45 |
| | 3/11/20 6:51 | 238.67 | 27.57 | 10.57 | 12.57 | 217.42 | 1175.48 | 4.45 |
| | 3/11/20 6:52 | 239.66 | 27.62 | 10.57 | 12.68 | 178.95 | 1180.09 | 4.45 |
| | 3/11/20 6:53 | 240.18 | 27.71 | 10.57 | 12.67 | 174.46 | 1176.81 | 4.45 |
| | 3/11/20 6:54 | 242.04 | 27.80 | 10.57 | 12.66 | 166.58 | 1173.63 | 4.45 |
| | 3/11/20 6:55 | 239.58 | 27.67 | 10.57 | 12.66 | 197.44 | 1174.32 | 4.45 |
| | 3/11/20 6:56 | 240.66 | 27.64 | 10.57 | 12.65 | 166.61 | 1178.27 | 4.44 |
| | 3/11/20 6:57 | 241.80 | 27.88 | 10.58 | 12.65 | 168.67 | 1173.64 | 4.44 |
| | 3/11/20 6:58 | 241.28 | 27.80 | 10.58 | 12.64 | 210.52 | 1174.60 | 4.44 |
| | 3/11/20 6:59 | 241.15 | 27.83 | 10.58 | 12.64 | 186.52 | 1174.39 | 4.44 |
| | 3/11/20 7:00 | 241.25 | 27.73 | 10.58 | 12.63 | 187.74 | 1175.37 | 4.44 |
| | 3/11/20 7:01 | 242.34 | 27.91 | 10.58 | 12.63 | 188.49 | 1171.89 | 4.44 |
| | 3/11/20 7:02 | 242.36 | 27.95 | 10.58 | 12.62 | 188.32 | 1172.20 | 4.44 |
| | 3/11/20 7:03 | 242.19 | 27.95 | 10.58 | 12.62 | 188.72 | 1171.35 | 4.44 |
| | 3/11/20 7:04 | 241.97 | 27.89 | 10.58 | 12.61 | 188.70 | 1172.01 | 4.44 |
| | 3/11/20 7:05 | 242.37 | 27.91 | 10.58 | 12.61 | 188.57 | 1172.58 | 4.44 |
| | 3/11/20 7:06 | 241.73 | 27.92 | 10.58 | 12.60 | 188.20 | 1170.79 | 4.44 |
| | 3/11/20 7:07 | 241.93 | 27.96 | 10.58 | 12.60 | 188.65 | 1171.36 | 4.44 |
| | 3/11/20 7:08 | 242.23 | 27.91 | 10.58 | 12.59 | 188.40 | 1170.93 | 4.44 |
| | 3/11/20 7:09 | 242.32 | 27.86 | 10.58 | 12.59 | 188.59 | 1171.59 | 4.44 |
| | 3/11/20 7:10 | 241.75 | 27.85 | 10.58 | 12.58 | 188.11 | 1171.27 | 4.43 |
| | 3/11/20 7:11 | 242.00 | 27.88 | 10.58 | 12.57 | 187.41 | 1170.80 | 4.43 |
| | 3/11/20 7:12 | 241.89 | 27.94 | 10.58 | 12.57 | 187.93 | 1171.33 | 4.43 |
| | 3/11/20 7:13 | 242.22 | 27.90 | 10.58 | 12.56 | 187.59 | 1171.46 | 4.43 |
| | 3/11/20 7:14 | 241.98 | 27.84 | 10.58 | 12.58 | 187.60 | 1171.45 | 4.43 |
| | 3/11/20 7:15 | 241.85 | 27.88 | 10.58 | 12.63 | 187.46 | 1171.05 | 4.43 |
| | 3/11/20 7:16 | 242.20 | 27.88 | 10.58 | 12.68 | 187.59 | 1171.55 | 4.43 |
| | 3/11/20 7:17 | 241.84 | 27.88 | 10.58 | 12.72 | 188.21 | 1171.37 | 4.43 |
| | 3/11/20 7:18 | 236.96 | 27.33 | 10.58 | 12.77 | 188.46 | 1180.71 | 4.43 |
| | 3/11/20 7:19 | 239.16 | 27.54 | 10.58 | 12.77 | 188.19 | 1179.16 | 4.43 |
| | 3/11/20 7:20 | 239.53 | 27.63 | 10.58 | 12.76 | 188.56 | 1177.31 | 4.43 |
| | 3/11/20 7:21 | 239.58 | 27.63 | 10.58 | 12.76 | 188.59 | 1177.58 | 4.43 |
| | 3/11/20 7:22 | 239.71 | 27.57 | 10.58 | 12.75 | 187.95 | 1176.94 | 4.43 |
| | 3/11/20 7:23 | 239.88 | 27.74 | 10.58 | 12.74 | 188.01 | 1175.89 | 4.43 |
| | 3/11/20 7:24 | 240.41 | 27.71 | 10.58 | 12.74 | 187.75 | 1175.10 | 4.42 |
| | 3/11/20 7:25 | 240.17 | 27.67 | 10.58 | 12.73 | 188.07 | 1175.81 | 4.42 |
| | 3/11/20 7:26 | 240.09 | 27.68 | 10.58 | 12.73 | 188.12 | 1175.98 | 4.42 |
| | 3/11/20 7:27 | 238.06 | 27.45 | 10.58 | 12.72 | 187.86 | 1181.10 | 4.42 |
| | 3/11/20 7:28 | 238.83 | 27.52 | 10.58 | 12.70 | 187.99 | 1179.35 | 4.42 |
| | 3/11/20 7:29 | 238.93 | 27.57 | 10.58 | 12.69 | 187.37 | 1179.13 | 4.42 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/11 6:23 - 3/11 11:17) | 240.66 | 27.71 | 10.57 | 12.65 | 180.46 | 1176.26 | 4.37 |
| COUNT = 295 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/11/20 7:30 | 239.63 | 27.54 | 10.58 | 12.67 | 187.75 | 1178.31 | 4.42 |
| 3/11/20 7:31 | 238.89 | 27.53 | 10.58 | 12.65 | 188.15 | 1178.81 | 4.42 |
| 3/11/20 7:32 | 240.20 | 27.69 | 10.58 | 12.64 | 188.05 | 1176.89 | 4.42 |
| 3/11/20 7:33 | 240.26 | 27.77 | 10.58 | 12.62 | 188.37 | 1176.26 | 4.42 |
| 3/11/20 7:34 | 239.68 | 27.62 | 10.58 | 12.60 | 188.23 | 1176.61 | 4.42 |
| 3/11/20 7:35 | 240.31 | 27.65 | 10.58 | 12.59 | 188.13 | 1177.56 | 4.42 |
| 3/11/20 7:36 | 240.46 | 27.72 | 10.58 | 12.57 | 188.16 | 1175.84 | 4.42 |
| 3/11/20 7:37 | 238.88 | 27.51 | 10.58 | 12.55 | 187.88 | 1181.96 | 4.42 |
| 3/11/20 7:38 | 240.33 | 27.71 | 10.58 | 12.54 | 187.86 | 1177.72 | 4.41 |
| 3/11/20 7:39 | 240.69 | 27.65 | 10.58 | 12.52 | 187.79 | 1177.56 | 4.41 |
| 3/11/20 7:40 | 241.91 | 27.87 | 10.58 | 12.56 | 184.34 | 1171.95 | 4.41 |
| 3/11/20 7:41 | 241.13 | 27.81 | 10.58 | 12.63 | 219.04 | 1175.62 | 4.41 |
| 3/11/20 7:42 | 240.96 | 27.72 | 10.58 | 12.70 | 199.34 | 1175.35 | 4.41 |
| 3/11/20 7:43 | 241.17 | 27.68 | 10.58 | 12.77 | 185.80 | 1175.24 | 4.41 |
| 3/11/20 7:44 | 241.05 | 27.76 | 10.58 | 12.78 | 185.97 | 1175.91 | 4.41 |
| 3/11/20 7:45 | 241.28 | 27.75 | 10.58 | 12.76 | 183.09 | 1174.87 | 4.41 |
| 3/11/20 7:46 | 240.97 | 27.78 | 10.58 | 12.74 | 179.09 | 1175.15 | 4.41 |
| 3/11/20 7:47 | 240.79 | 27.85 | 10.58 | 12.73 | 176.21 | 1176.00 | 4.41 |
| 3/11/20 7:48 | 240.81 | 27.71 | 10.58 | 12.71 | 174.62 | 1175.67 | 4.41 |
| 3/11/20 7:49 | 240.68 | 27.65 | 10.58 | 12.67 | 171.12 | 1176.18 | 4.41 |
| 3/11/20 7:50 | 240.95 | 27.68 | 10.58 | 12.61 | 166.02 | 1177.08 | 4.41 |
| 3/11/20 7:51 | 240.95 | 27.76 | 10.58 | 12.56 | 164.03 | 1176.25 | 4.41 |
| 3/11/20 7:52 | 240.89 | 27.63 | 10.58 | 12.52 | 163.75 | 1176.22 | 4.40 |
| 3/11/20 7:53 | 240.34 | 27.71 | 10.58 | 12.54 | 163.03 | 1176.45 | 4.40 |
| 3/11/20 7:54 | 238.55 | 27.45 | 10.58 | 12.55 | 159.08 | 1181.66 | 4.40 |
| 3/11/20 7:55 | 238.36 | 27.40 | 10.58 | 12.57 | 156.77 | 1183.08 | 4.40 |
| 3/11/20 7:56 | 239.96 | 27.66 | 10.58 | 12.59 | 154.65 | 1179.44 | 4.40 |
| 3/11/20 7:57 | 240.02 | 27.69 | 10.58 | 12.61 | 152.16 | 1178.42 | 4.40 |
| 3/11/20 7:58 | 240.37 | 27.66 | 10.58 | 12.62 | 151.77 | 1177.87 | 4.40 |
| 3/11/20 7:59 | 239.87 | 27.67 | 10.58 | 12.62 | 146.33 | 1177.63 | 4.40 |
| 3/11/20 8:00 | 240.14 | 27.68 | 10.58 | 12.61 | 145.27 | 1177.22 | 4.40 |
| 3/11/20 8:01 | 239.99 | 27.58 | 10.58 | 12.61 | 145.90 | 1177.77 | 4.40 |
| 3/11/20 8:02 | 240.27 | 27.74 | 10.58 | 12.61 | 146.26 | 1178.08 | 4.40 |
| 3/11/20 8:03 | 240.25 | 27.61 | 10.58 | 12.60 | 146.16 | 1177.82 | 4.40 |
| 3/11/20 8:04 | 240.19 | 27.64 | 10.58 | 12.60 | 145.41 | 1178.31 | 4.40 |
| 3/11/20 8:05 | 239.97 | 27.61 | 10.58 | 12.59 | 144.99 | 1177.57 | 4.40 |
| 3/11/20 8:06 | 239.43 | 27.56 | 10.58 | 12.59 | 145.46 | 1179.12 | 4.39 |
| 3/11/20 8:07 | 239.14 | 27.59 | 10.58 | 12.58 | 141.26 | 1180.92 | 4.39 |
| 3/11/20 8:08 | 239.96 | 27.63 | 10.58 | 12.58 | 135.54 | 1179.06 | 4.39 |
| 3/11/20 8:09 | 239.84 | 27.64 | 10.58 | 12.57 | 133.12 | 1178.32 | 4.39 |
| 3/11/20 8:10 | 240.83 | 27.63 | 10.58 | 12.57 | 135.64 | 1178.22 | 4.39 |
| 3/11/20 8:11 | 242.09 | 27.88 | 10.58 | 12.59 | 156.84 | 1171.98 | 4.39 |
| 3/11/20 8:12 | 239.11 | 27.49 | 10.58 | 12.62 | 212.88 | 1179.14 | 4.39 |
| 3/11/20 8:13 | 238.52 | 27.51 | 10.58 | 12.65 | 132.63 | 1182.69 | 4.39 |
| 3/11/20 8:14 | 239.60 | 27.52 | 10.58 | 12.69 | 131.09 | 1181.47 | 4.39 |
| 3/11/20 8:15 | 239.46 | 27.55 | 10.58 | 12.72 | 160.99 | 1180.28 | 4.39 |
| 3/11/20 8:16 | 239.85 | 27.64 | 10.58 | 12.75 | 168.70 | 1179.34 | 4.39 |
| 3/11/20 8:17 | 240.10 | 27.67 | 10.58 | 12.79 | 163.09 | 1178.58 | 4.39 |
| 3/11/20 8:18 | 239.61 | 27.61 | 10.58 | 12.80 | 154.26 | 1179.71 | 4.39 |
| 3/11/20 8:19 | 240.28 | 27.71 | 10.58 | 12.80 | 146.92 | 1177.87 | 4.39 |
| 3/11/20 8:20 | 240.49 | 27.68 | 10.58 | 12.81 | 143.85 | 1178.63 | 4.38 |
| 3/11/20 8:21 | 240.38 | 27.72 | 10.58 | 12.81 | 143.37 | 1178.30 | 4.38 |
| 3/11/20 8:22 | 239.50 | 27.54 | 10.58 | 12.81 | 144.52 | 1179.63 | 4.38 |
| 3/11/20 8:23 | 239.84 | 27.60 | 10.58 | 12.82 | 143.92 | 1180.33 | 4.38 |
| 3/11/20 8:24 | 239.43 | 27.53 | 10.58 | 12.82 | 140.70 | 1179.73 | 4.38 |
| 3/11/20 8:25 | 239.44 | 27.51 | 10.58 | 12.83 | 136.61 | 1180.79 | 4.38 |
| 3/11/20 8:26 | 240.11 | 27.56 | 10.58 | 12.83 | 135.07 | 1179.76 | 4.38 |
| 3/11/20 8:27 | 239.92 | 27.64 | 10.58 | 12.84 | 134.52 | 1179.82 | 4.38 |
| 3/11/20 8:28 | 239.89 | 27.62 | 10.58 | 12.84 | 137.20 | 1179.61 | 4.38 |
| 3/11/20 8:29 | 239.73 | 27.58 | 10.58 | 12.85 | 138.72 | 1179.77 | 4.38 |
| 3/11/20 8:30 | 240.18 | 27.62 | 10.58 | 12.85 | 139.53 | 1180.85 | 4.38 |
| 3/11/20 8:31 | 241.38 | 27.72 | 10.58 | 12.85 | 136.63 | 1176.69 | 4.38 |
| 3/11/20 8:32 | 241.43 | 27.70 | 10.58 | 12.86 | 173.37 | 1176.16 | 4.38 |
| 3/11/20 8:33 | 239.42 | 27.55 | 10.58 | 12.86 | 179.57 | 1180.30 | 4.38 |
| 3/11/20 8:34 | 239.13 | 27.53 | 10.58 | 12.86 | 148.42 | 1181.65 | 4.37 |
| 3/11/20 8:35 | 239.52 | 27.54 | 10.58 | 12.85 | 148.39 | 1180.98 | 4.37 |
| 3/11/20 8:36 | 239.58 | 27.60 | 10.58 | 12.83 | 150.32 | 1180.16 | 4.37 |

| Description | | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/11 6:23 - 3/11 11:17) | | 240.66 | 27.71 | 10.57 | 12.65 | 180.46 | 1176.26 | 4.37 |
| COUNT = 295 | | | | | | | | |
| Signal Tagname | | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| | 3/11/20 8:37 | 239.70 | 27.54 | 10.58 | 12.82 | 152.59 | 1180.46 | 4.37 |
| | 3/11/20 8:38 | 240.26 | 27.66 | 10.58 | 12.81 | 152.26 | 1178.63 | 4.37 |
| | 3/11/20 8:39 | 240.23 | 27.71 | 10.58 | 12.80 | 149.33 | 1178.30 | 4.37 |
| | 3/11/20 8:40 | 240.35 | 27.68 | 10.58 | 12.78 | 146.71 | 1178.18 | 4.37 |
| | 3/11/20 8:41 | 240.59 | 27.67 | 10.58 | 12.76 | 146.36 | 1177.87 | 4.37 |
| | 3/11/20 8:42 | 240.40 | 27.65 | 10.58 | 12.74 | 146.15 | 1178.25 | 4.37 |
| | 3/11/20 8:43 | 238.82 | 27.46 | 10.58 | 12.72 | 146.76 | 1180.29 | 4.37 |
| | 3/11/20 8:44 | 238.83 | 27.54 | 10.58 | 12.70 | 144.07 | 1182.54 | 4.37 |
| | 3/11/20 8:45 | 238.94 | 27.54 | 10.58 | 12.68 | 145.36 | 1180.68 | 4.37 |
| | 3/11/20 8:46 | 240.27 | 27.62 | 10.58 | 12.66 | 142.60 | 1179.37 | 4.37 |
| | 3/11/20 8:47 | 240.02 | 27.62 | 10.58 | 12.61 | 140.94 | 1178.45 | 4.37 |
| | 3/11/20 8:48 | 240.09 | 27.59 | 10.58 | 12.52 | 140.36 | 1177.73 | 4.37 |
| | 3/11/20 8:49 | 240.26 | 27.63 | 10.58 | 12.47 | 143.07 | 1178.01 | 4.36 |
| | 3/11/20 8:50 | 238.97 | 27.54 | 10.58 | 12.52 | 146.79 | 1181.25 | 4.36 |
| | 3/11/20 8:51 | 239.21 | 27.52 | 10.58 | 12.56 | 148.81 | 1179.95 | 4.36 |
| | 3/11/20 8:52 | 238.91 | 27.34 | 10.58 | 12.61 | 144.67 | 1183.73 | 4.36 |
| | 3/11/20 8:53 | 240.89 | 27.67 | 10.58 | 12.65 | 142.16 | 1176.99 | 4.36 |
| | 3/11/20 8:54 | 242.21 | 27.77 | 10.58 | 12.64 | 147.84 | 1173.13 | 4.36 |
| | 3/11/20 8:55 | 242.07 | 27.89 | 10.58 | 12.64 | 199.62 | 1172.79 | 4.36 |
| | 3/11/20 8:56 | 242.44 | 27.92 | 10.58 | 12.63 | 210.15 | 1173.53 | 4.36 |
| | 3/11/20 8:57 | 242.23 | 27.90 | 10.58 | 12.63 | 194.04 | 1173.61 | 4.36 |
| | 3/11/20 8:58 | 242.03 | 27.91 | 10.58 | 12.62 | 205.98 | 1173.70 | 4.36 |
| | 3/11/20 8:59 | 242.03 | 27.81 | 10.58 | 12.62 | 212.41 | 1173.18 | 4.36 |
| | 3/11/20 9:00 | 242.29 | 27.78 | 10.58 | 12.61 | 215.84 | 1173.97 | 4.36 |
| | 3/11/20 9:01 | 242.35 | 27.88 | 10.58 | 12.61 | 222.35 | 1173.69 | 4.36 |
| | 3/11/20 9:02 | 241.86 | 27.84 | 10.58 | 12.61 | 220.66 | 1173.80 | 4.36 |
| | 3/11/20 9:03 | 242.26 | 27.87 | 10.58 | 12.63 | 221.21 | 1173.27 | 4.35 |
| | 3/11/20 9:04 | 241.94 | 27.90 | 10.58 | 12.65 | 220.29 | 1173.44 | 4.35 |
| | 3/11/20 9:05 | 242.04 | 27.84 | 10.58 | 12.67 | 218.11 | 1174.03 | 4.35 |
| | 3/11/20 9:06 | 242.23 | 27.80 | 10.58 | 12.69 | 218.65 | 1173.63 | 4.35 |
| | 3/11/20 9:07 | 242.22 | 27.82 | 10.58 | 12.71 | 216.96 | 1173.66 | 4.35 |
| | 3/11/20 9:08 | 241.83 | 27.93 | 10.58 | 12.73 | 218.49 | 1173.16 | 4.35 |
| | 3/11/20 9:09 | 237.79 | 27.30 | 10.58 | 12.74 | 220.15 | 1183.64 | 4.35 |
| | 3/11/20 9:10 | 239.67 | 27.55 | 10.58 | 12.75 | 178.61 | 1180.21 | 4.35 |
| | 3/11/20 9:11 | 239.74 | 27.63 | 10.58 | 12.76 | 171.04 | 1179.51 | 4.35 |
| | 3/11/20 9:12 | 239.52 | 27.60 | 10.58 | 12.77 | 164.77 | 1179.78 | 4.35 |
| | 3/11/20 9:13 | 240.84 | 27.66 | 10.58 | 12.78 | 157.84 | 1177.81 | 4.35 |
| | 3/11/20 9:14 | 240.98 | 27.75 | 10.58 | 12.78 | 159.13 | 1175.50 | 4.35 |
| | 3/11/20 9:15 | 241.23 | 27.74 | 10.58 | 12.79 | 166.66 | 1176.51 | 4.35 |
| | 3/11/20 9:16 | 237.45 | 27.38 | 10.58 | 12.80 | 172.57 | 1181.51 | 4.35 |
| | 3/11/20 9:17 | 241.00 | 27.71 | 10.58 | 12.79 | 170.68 | 1177.42 | 4.34 |
| | 3/11/20 9:18 | 241.11 | 27.73 | 10.58 | 12.78 | 166.66 | 1175.83 | 4.34 |
| | 3/11/20 9:19 | 241.93 | 27.79 | 10.58 | 12.77 | 172.30 | 1173.99 | 4.34 |
| | 3/11/20 9:20 | 242.04 | 27.85 | 10.58 | 12.75 | 208.65 | 1173.88 | 4.34 |
| | 3/11/20 9:21 | 241.89 | 27.88 | 10.57 | 12.74 | 213.08 | 1174.02 | 4.34 |
| | 3/11/20 9:22 | 241.86 | 27.92 | 10.57 | 12.73 | 214.09 | 1174.23 | 4.34 |
| | 3/11/20 9:23 | 241.91 | 27.85 | 10.57 | 12.72 | 210.73 | 1173.90 | 4.34 |
| | 3/11/20 9:24 | 241.78 | 27.82 | 10.57 | 12.71 | 209.48 | 1175.18 | 4.34 |
| | 3/11/20 9:25 | 242.16 | 27.83 | 10.57 | 12.70 | 208.12 | 1175.24 | 4.34 |
| | 3/11/20 9:26 | 241.88 | 27.74 | 10.57 | 12.68 | 205.52 | 1174.89 | 4.34 |
| | 3/11/20 9:27 | 242.26 | 27.86 | 10.57 | 12.67 | 205.10 | 1174.78 | 4.34 |
| | 3/11/20 9:28 | 241.75 | 27.88 | 10.57 | 12.66 | 210.81 | 1174.21 | 4.34 |
| | 3/11/20 9:29 | 242.06 | 27.85 | 10.57 | 12.65 | 212.56 | 1174.01 | 4.34 |
| | 3/11/20 9:30 | 241.92 | 27.91 | 10.57 | 12.64 | 213.91 | 1173.96 | 4.34 |
| | 3/11/20 9:31 | 242.04 | 27.77 | 10.57 | 12.63 | 214.13 | 1173.31 | 4.33 |
| | 3/11/20 9:32 | 242.06 | 27.83 | 10.57 | 12.62 | 214.53 | 1174.11 | 4.33 |
| | 3/11/20 9:33 | 242.09 | 27.88 | 10.57 | 12.60 | 214.61 | 1174.17 | 4.33 |
| | 3/11/20 9:34 | 242.14 | 27.90 | 10.57 | 12.59 | 214.21 | 1174.80 | 4.33 |
| | 3/11/20 9:35 | 241.98 | 27.83 | 10.57 | 12.57 | 213.38 | 1174.41 | 4.33 |
| | 3/11/20 9:36 | 242.11 | 27.81 | 10.57 | 12.55 | 213.76 | 1173.99 | 4.33 |
| | 3/11/20 9:37 | 241.93 | 27.81 | 10.57 | 12.53 | 213.81 | 1173.75 | 4.33 |
| | 3/11/20 9:38 | 242.17 | 27.78 | 10.57 | 12.51 | 214.77 | 1174.78 | 4.33 |
| | 3/11/20 9:39 | 241.99 | 27.87 | 10.57 | 12.49 | 213.50 | 1174.08 | 4.33 |
| | 3/11/20 9:40 | 242.27 | 27.82 | 10.57 | 12.51 | 213.90 | 1174.64 | 4.33 |
| | 3/11/20 9:41 | 242.00 | 27.83 | 10.57 | 12.57 | 213.44 | 1173.70 | 4.33 |
| | 3/11/20 9:42 | 241.86 | 27.83 | 10.57 | 12.62 | 213.81 | 1173.89 | 4.33 |
| | 3/11/20 9:43 | 241.96 | 27.84 | 10.57 | 12.68 | 214.11 | 1173.88 | 4.33 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/11 6:23 - 3/11 11:17) | 240.66 | 27.71 | 10.57 | 12.65 | 180.46 | 1176.26 | 4.37 |
| COUNT = 295 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/11/20 9:44 | 241.74 | 27.75 | 10.57 | 12.74 | 214.00 | 1174.51 | 4.33 |
| 3/11/20 9:45 | 241.65 | 27.85 | 10.57 | 12.79 | 213.83 | 1174.02 | 4.32 |
| 3/11/20 9:46 | 238.87 | 27.58 | 10.57 | 12.85 | 212.53 | 1179.78 | 4.32 |
| 3/11/20 9:47 | 238.30 | 27.57 | 10.57 | 12.82 | 166.37 | 1183.73 | 4.32 |
| 3/11/20 9:48 | 238.16 | 27.52 | 10.57 | 12.79 | 165.42 | 1183.37 | 4.32 |
| 3/11/20 9:49 | 241.17 | 27.82 | 10.57 | 12.77 | 160.42 | 1177.20 | 4.32 |
| 3/11/20 9:50 | 240.90 | 27.68 | 10.57 | 12.74 | 170.20 | 1176.77 | 4.32 |
| 3/11/20 9:51 | 240.55 | 27.65 | 10.57 | 12.72 | 181.94 | 1177.46 | 4.32 |
| 3/11/20 9:52 | 240.46 | 27.75 | 10.57 | 12.72 | 176.99 | 1176.95 | 4.32 |
| 3/11/20 9:53 | 241.52 | 27.84 | 10.57 | 12.71 | 171.72 | 1174.49 | 4.32 |
| 3/11/20 9:54 | 240.44 | 27.61 | 10.57 | 12.71 | 201.42 | 1178.29 | 4.32 |
| 3/11/20 9:55 | 241.74 | 27.84 | 10.57 | 12.71 | 183.85 | 1173.76 | 4.32 |
| 3/11/20 9:56 | 241.62 | 27.87 | 10.57 | 12.71 | 205.01 | 1174.20 | 4.32 |
| 3/11/20 9:57 | 241.67 | 27.88 | 10.57 | 12.70 | 208.19 | 1174.07 | 4.32 |
| 3/11/20 9:58 | 241.72 | 27.84 | 10.57 | 12.70 | 208.20 | 1174.28 | 4.32 |
| 3/11/20 9:59 | 238.49 | 27.49 | 10.57 | 12.69 | 209.14 | 1179.95 | 4.31 |
| 3/11/20 10:00 | 240.39 | 27.67 | 10.57 | 12.68 | 164.44 | 1180.24 | 4.31 |
| 3/11/20 10:01 | 241.50 | 27.84 | 10.57 | 12.66 | 175.74 | 1173.94 | 4.31 |
| 3/11/20 10:02 | 241.98 | 27.80 | 10.57 | 12.64 | 207.94 | 1173.24 | 4.31 |
| 3/11/20 10:03 | 241.80 | 27.75 | 10.57 | 12.63 | 211.59 | 1173.91 | 4.31 |
| 3/11/20 10:04 | 241.63 | 27.80 | 10.57 | 12.61 | 213.26 | 1173.45 | 4.31 |
| 3/11/20 10:05 | 241.35 | 27.87 | 10.57 | 12.60 | 211.81 | 1173.74 | 4.31 |
| 3/11/20 10:06 | 241.62 | 27.83 | 10.57 | 12.60 | 211.18 | 1174.73 | 4.31 |
| 3/11/20 10:07 | 241.69 | 27.85 | 10.57 | 12.60 | 209.53 | 1174.39 | 4.31 |
| 3/11/20 10:08 | 241.89 | 27.84 | 10.57 | 12.59 | 209.35 | 1174.41 | 4.31 |
| 3/11/20 10:09 | 241.34 | 27.82 | 10.57 | 12.59 | 212.27 | 1173.96 | 4.31 |
| 3/11/20 10:10 | 241.78 | 27.79 | 10.57 | 12.59 | 213.16 | 1174.35 | 4.31 |
| 3/11/20 10:11 | 241.33 | 27.79 | 10.57 | 12.58 | 212.55 | 1173.99 | 4.31 |
| 3/11/20 10:12 | 241.31 | 27.80 | 10.57 | 12.58 | 212.38 | 1173.11 | 4.31 |
| 3/11/20 10:13 | 241.28 | 27.80 | 10.57 | 12.58 | 212.52 | 1173.37 | 4.30 |
| 3/11/20 10:14 | 241.32 | 27.81 | 10.57 | 12.57 | 212.17 | 1173.89 | 4.30 |
| 3/11/20 10:15 | 241.35 | 27.69 | 10.57 | 12.57 | 212.43 | 1173.95 | 4.30 |
| 3/11/20 10:16 | 241.32 | 27.68 | 10.57 | 12.57 | 212.38 | 1173.28 | 4.30 |
| 3/11/20 10:17 | 239.41 | 27.55 | 10.57 | 12.56 | 203.88 | 1178.37 | 4.30 |
| 3/11/20 10:18 | 239.41 | 27.56 | 10.57 | 12.56 | 164.40 | 1179.53 | 4.30 |
| 3/11/20 10:19 | 239.75 | 27.60 | 10.57 | 12.56 | 158.17 | 1178.95 | 4.30 |
| 3/11/20 10:20 | 239.59 | 27.56 | 10.57 | 12.55 | 153.44 | 1179.42 | 4.30 |
| 3/11/20 10:21 | 239.40 | 27.58 | 10.57 | 12.55 | 151.15 | 1180.07 | 4.30 |
| 3/11/20 10:22 | 240.24 | 27.69 | 10.57 | 12.55 | 151.78 | 1177.49 | 4.30 |
| 3/11/20 10:23 | 240.77 | 27.72 | 10.57 | 12.54 | 157.75 | 1175.64 | 4.30 |
| 3/11/20 10:24 | 240.60 | 27.78 | 10.57 | 12.54 | 183.54 | 1175.88 | 4.31 |
| 3/11/20 10:25 | 240.60 | 27.72 | 10.57 | 12.54 | 183.53 | 1174.86 | 4.31 |
| 3/11/20 10:26 | 240.36 | 27.59 | 10.57 | 12.54 | 181.45 | 1176.24 | 4.31 |
| 3/11/20 10:27 | 240.63 | 27.72 | 10.57 | 12.53 | 177.71 | 1176.15 | 4.31 |
| 3/11/20 10:28 | 240.43 | 27.73 | 10.57 | 12.53 | 175.53 | 1175.03 | 4.31 |
| 3/11/20 10:29 | 240.43 | 27.71 | 10.57 | 12.53 | 173.61 | 1175.72 | 4.31 |
| 3/11/20 10:30 | 240.34 | 27.64 | 10.57 | 12.52 | 173.12 | 1176.01 | 4.31 |
| 3/11/20 10:31 | 238.86 | 27.52 | 10.57 | 12.52 | 173.03 | 1180.98 | 4.31 |
| 3/11/20 10:32 | 238.86 | 27.58 | 10.57 | 12.52 | 161.44 | 1179.59 | 4.31 |
| 3/11/20 10:33 | 239.53 | 27.65 | 10.57 | 12.51 | 153.07 | 1178.91 | 4.31 |
| 3/11/20 10:34 | 239.54 | 27.55 | 10.57 | 12.51 | 148.55 | 1178.69 | 4.31 |
| 3/11/20 10:35 | 239.37 | 27.60 | 10.57 | 12.51 | 147.10 | 1177.39 | 4.31 |
| 3/11/20 10:36 | 240.20 | 27.60 | 10.57 | 12.50 | 148.50 | 1177.55 | 4.31 |
| 3/11/20 10:37 | 240.17 | 27.67 | 10.57 | 12.51 | 152.39 | 1176.72 | 4.31 |
| 3/11/20 10:38 | 240.20 | 27.59 | 10.57 | 12.53 | 161.32 | 1176.86 | 4.31 |
| 3/11/20 10:39 | 237.27 | 27.37 | 10.57 | 12.54 | 163.29 | 1178.48 | 4.31 |
| 3/11/20 10:40 | 238.23 | 27.42 | 10.57 | 12.55 | 157.48 | 1183.35 | 4.31 |
| 3/11/20 10:41 | 239.32 | 27.68 | 10.57 | 12.56 | 155.02 | 1179.98 | 4.31 |
| 3/11/20 10:42 | 239.09 | 27.46 | 10.57 | 12.57 | 150.09 | 1179.59 | 4.31 |
| 3/11/20 10:43 | 240.22 | 27.66 | 10.57 | 12.59 | 146.68 | 1177.29 | 4.31 |
| 3/11/20 10:44 | 240.12 | 27.69 | 10.57 | 12.62 | 150.70 | 1176.68 | 4.31 |
| 3/11/20 10:45 | 239.49 | 27.59 | 10.57 | 12.65 | 158.77 | 1176.47 | 4.31 |
| 3/11/20 10:46 | 240.01 | 27.57 | 10.57 | 12.69 | 160.73 | 1178.36 | 4.32 |
| 3/11/20 10:47 | 240.02 | 27.68 | 10.57 | 12.72 | 162.13 | 1177.38 | 4.32 |
| 3/11/20 10:48 | 239.92 | 27.59 | 10.57 | 12.76 | 158.10 | 1177.33 | 4.32 |
| 3/11/20 10:49 | 236.53 | 27.30 | 10.57 | 12.79 | 157.88 | 1179.73 | 4.32 |
| 3/11/20 10:50 | 240.39 | 27.61 | 10.57 | 12.83 | 153.59 | 1177.10 | 4.32 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/11 6:23 - 3/11 11:17) | 240.66 | 27.71 | 10.57 | 12.65 | 180.46 | 1176.26 | 4.37 |
| COUNT = 295 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/11/20 10:51 | 237.78 | 27.38 | 10.57 | 12.86 | 156.96 | 1180.68 | 4.32 |
| 3/11/20 10:52 | 238.36 | 27.43 | 10.57 | 12.85 | 154.07 | 1182.63 | 4.32 |
| 3/11/20 10:53 | 238.59 | 27.47 | 10.57 | 12.81 | 153.50 | 1179.90 | 4.32 |
| 3/11/20 10:54 | 240.70 | 27.69 | 10.57 | 12.78 | 149.60 | 1175.40 | 4.32 |
| 3/11/20 10:55 | 239.68 | 27.61 | 10.57 | 12.74 | 164.56 | 1177.74 | 4.32 |
| 3/11/20 10:56 | 239.01 | 27.53 | 10.57 | 12.70 | 156.02 | 1180.42 | 4.32 |
| 3/11/20 10:57 | 240.17 | 27.71 | 10.57 | 12.67 | 149.44 | 1176.81 | 4.32 |
| 3/11/20 10:58 | 237.80 | 27.40 | 10.57 | 12.63 | 158.75 | 1181.48 | 4.32 |
| 3/11/20 10:59 | 239.98 | 27.59 | 10.57 | 12.60 | 157.54 | 1176.88 | 4.32 |
| 3/11/20 11:00 | 240.24 | 27.69 | 10.57 | 12.61 | 159.37 | 1176.22 | 4.32 |
| 3/11/20 11:01 | 240.45 | 27.68 | 10.57 | 12.63 | 161.93 | 1176.13 | 4.32 |
| 3/11/20 11:02 | 240.38 | 27.70 | 10.57 | 12.64 | 167.49 | 1176.33 | 4.32 |
| 3/11/20 11:03 | 240.25 | 27.70 | 10.57 | 12.66 | 165.60 | 1176.75 | 4.32 |
| 3/11/20 11:04 | 240.26 | 27.61 | 10.57 | 12.67 | 167.67 | 1177.21 | 4.32 |
| 3/11/20 11:05 | 240.01 | 27.64 | 10.57 | 12.69 | 168.11 | 1175.99 | 4.32 |
| 3/11/20 11:06 | 240.22 | 27.67 | 10.57 | 12.70 | 166.38 | 1176.21 | 4.32 |
| 3/11/20 11:07 | 241.32 | 27.80 | 10.57 | 12.72 | 172.59 | 1174.21 | 4.32 |
| 3/11/20 11:08 | 241.14 | 27.74 | 10.57 | 12.73 | 213.56 | 1173.21 | 4.33 |
| 3/11/20 11:09 | 238.20 | 27.42 | 10.57 | 12.74 | 214.92 | 1179.51 | 4.33 |
| 3/11/20 11:10 | 238.11 | 27.43 | 10.57 | 12.74 | 156.92 | 1182.02 | 4.33 |
| 3/11/20 11:11 | 238.53 | 27.44 | 10.57 | 12.74 | 151.93 | 1181.51 | 4.33 |
| 3/11/20 11:12 | 238.70 | 27.53 | 10.57 | 12.72 | 149.40 | 1180.44 | 4.33 |
| 3/11/20 11:13 | 240.12 | 27.66 | 10.57 | 12.70 | 148.25 | 1177.61 | 4.33 |
| 3/11/20 11:14 | 240.03 | 27.54 | 10.57 | 12.68 | 149.41 | 1176.17 | 4.33 |
| 3/11/20 11:15 | 240.56 | 27.65 | 10.57 | 12.66 | 163.62 | 1174.98 | 4.33 |
| 3/11/20 11:16 | 240.76 | 27.69 | 10.57 | 12.64 | 187.82 | 1175.36 | 4.33 |
| 3/11/20 11:17 | 240.70 | 27.68 | 10.57 | 12.62 | 189.19 | 1173.68 | 4.33 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/11 12:30 - 3/11 17:15) | 239.41 | 27.51 | 10.55 | 12.65 | 197.78 | 1172.84 | 4.43 |
| COUNT = 286 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/11/20 12:30 | 235.32 | 27.13 | 10.56 | 12.88 | 170.31 | 1176.14 | 4.36 |
| 3/11/20 12:31 | 240.39 | 27.71 | 10.56 | 12.85 | 161.30 | 1174.78 | 4.36 |
| 3/11/20 12:32 | 240.18 | 27.71 | 10.56 | 12.83 | 198.58 | 1173.87 | 4.36 |
| 3/11/20 12:33 | 240.11 | 27.68 | 10.56 | 12.80 | 212.76 | 1173.19 | 4.36 |
| 3/11/20 12:34 | 240.38 | 27.65 | 10.56 | 12.78 | 213.09 | 1174.42 | 4.36 |
| 3/11/20 12:35 | 240.20 | 27.65 | 10.56 | 12.75 | 209.43 | 1173.54 | 4.37 |
| 3/11/20 12:36 | 240.26 | 27.71 | 10.56 | 12.73 | 207.90 | 1173.81 | 4.37 |
| 3/11/20 12:37 | 240.22 | 27.67 | 10.56 | 12.70 | 208.13 | 1173.10 | 4.37 |
| 3/11/20 12:38 | 240.45 | 27.66 | 10.56 | 12.68 | 208.90 | 1174.53 | 4.37 |
| 3/11/20 12:39 | 240.37 | 27.72 | 10.56 | 12.66 | 208.97 | 1174.26 | 4.37 |
| 3/11/20 12:40 | 240.33 | 27.65 | 10.56 | 12.63 | 209.23 | 1174.92 | 4.37 |
| 3/11/20 12:41 | 240.12 | 27.62 | 10.56 | 12.61 | 208.90 | 1173.64 | 4.37 |
| 3/11/20 12:42 | 240.02 | 27.62 | 10.56 | 12.59 | 208.71 | 1173.42 | 4.37 |
| 3/11/20 12:43 | 239.93 | 27.62 | 10.56 | 12.58 | 207.60 | 1173.32 | 4.37 |
| 3/11/20 12:44 | 240.23 | 27.66 | 10.56 | 12.58 | 206.77 | 1172.64 | 4.37 |
| 3/11/20 12:45 | 240.03 | 27.66 | 10.56 | 12.57 | 206.29 | 1173.54 | 4.37 |
| 3/11/20 12:46 | 240.31 | 27.68 | 10.56 | 12.57 | 206.76 | 1174.31 | 4.37 |
| 3/11/20 12:47 | 240.34 | 27.64 | 10.56 | 12.57 | 206.58 | 1173.81 | 4.37 |
| 3/11/20 12:48 | 240.18 | 27.61 | 10.56 | 12.56 | 205.71 | 1173.33 | 4.37 |
| 3/11/20 12:49 | 239.88 | 27.60 | 10.56 | 12.56 | 204.76 | 1172.75 | 4.37 |
| 3/11/20 12:50 | 240.05 | 27.68 | 10.56 | 12.55 | 204.30 | 1173.44 | 4.37 |
| 3/11/20 12:51 | 239.69 | 27.57 | 10.56 | 12.55 | 204.95 | 1173.90 | 4.37 |
| 3/11/20 12:52 | 240.06 | 27.67 | 10.56 | 12.55 | 205.52 | 1173.25 | 4.37 |
| 3/11/20 12:53 | 240.43 | 27.62 | 10.56 | 12.54 | 204.91 | 1173.84 | 4.37 |
| 3/11/20 12:54 | 239.99 | 27.64 | 10.56 | 12.54 | 203.68 | 1174.14 | 4.37 |
| 3/11/20 12:55 | 239.80 | 27.64 | 10.56 | 12.53 | 202.84 | 1173.71 | 4.37 |
| 3/11/20 12:56 | 240.00 | 27.64 | 10.56 | 12.53 | 200.96 | 1173.50 | 4.38 |
| 3/11/20 12:57 | 239.70 | 27.57 | 10.56 | 12.53 | 200.02 | 1173.49 | 4.38 |
| 3/11/20 12:58 | 240.01 | 27.64 | 10.56 | 12.52 | 201.24 | 1173.11 | 4.38 |
| 3/11/20 12:59 | 239.49 | 27.62 | 10.56 | 12.53 | 201.61 | 1173.37 | 4.38 |
| 3/11/20 13:00 | 239.71 | 27.61 | 10.56 | 12.54 | 200.21 | 1173.64 | 4.38 |
| 3/11/20 13:01 | 239.87 | 27.62 | 10.56 | 12.54 | 199.16 | 1173.48 | 4.38 |
| 3/11/20 13:02 | 239.88 | 27.59 | 10.56 | 12.55 | 198.70 | 1174.21 | 4.38 |
| 3/11/20 13:03 | 239.79 | 27.57 | 10.56 | 12.56 | 201.32 | 1172.89 | 4.38 |
| 3/11/20 13:04 | 239.79 | 27.62 | 10.56 | 12.56 | 203.28 | 1173.38 | 4.38 |
| 3/11/20 13:05 | 239.79 | 27.64 | 10.56 | 12.57 | 203.72 | 1173.35 | 4.38 |
| 3/11/20 13:06 | 239.98 | 27.58 | 10.56 | 12.57 | 203.72 | 1173.54 | 4.38 |
| 3/11/20 13:07 | 239.91 | 27.61 | 10.56 | 12.58 | 203.62 | 1173.04 | 4.38 |
| 3/11/20 13:08 | 239.83 | 27.60 | 10.56 | 12.59 | 203.46 | 1172.37 | 4.38 |
| 3/11/20 13:09 | 240.07 | 27.61 | 10.56 | 12.59 | 204.27 | 1173.65 | 4.38 |
| 3/11/20 13:10 | 239.82 | 27.59 | 10.56 | 12.60 | 204.47 | 1173.47 | 4.38 |
| 3/11/20 13:11 | 240.06 | 27.66 | 10.56 | 12.61 | 202.87 | 1173.19 | 4.38 |
| 3/11/20 13:12 | 239.69 | 27.60 | 10.56 | 12.61 | 201.89 | 1173.18 | 4.38 |
| 3/11/20 13:13 | 239.92 | 27.59 | 10.56 | 12.62 | 204.19 | 1173.96 | 4.38 |
| 3/11/20 13:14 | 239.79 | 27.53 | 10.56 | 12.60 | 203.97 | 1173.86 | 4.38 |
| 3/11/20 13:15 | 239.66 | 27.62 | 10.56 | 12.58 | 204.23 | 1173.65 | 4.38 |
| 3/11/20 13:16 | 239.68 | 27.65 | 10.56 | 12.56 | 203.74 | 1173.44 | 4.38 |
| 3/11/20 13:17 | 239.48 | 27.50 | 10.56 | 12.54 | 200.98 | 1172.70 | 4.38 |
| 3/11/20 13:18 | 239.78 | 27.69 | 10.56 | 12.55 | 202.31 | 1173.16 | 4.39 |
| 3/11/20 13:19 | 240.00 | 27.57 | 10.56 | 12.56 | 203.04 | 1173.62 | 4.39 |
| 3/11/20 13:20 | 240.08 | 27.66 | 10.56 | 12.58 | 203.42 | 1174.00 | 4.39 |
| 3/11/20 13:21 | 239.78 | 27.62 | 10.56 | 12.59 | 204.19 | 1172.58 | 4.39 |
| 3/11/20 13:22 | 239.63 | 27.51 | 10.56 | 12.60 | 204.11 | 1173.48 | 4.39 |
| 3/11/20 13:23 | 239.87 | 27.62 | 10.56 | 12.62 | 202.76 | 1173.81 | 4.39 |
| 3/11/20 13:24 | 239.59 | 27.57 | 10.56 | 12.63 | 202.53 | 1172.86 | 4.39 |
| 3/11/20 13:25 | 239.71 | 27.56 | 10.56 | 12.64 | 201.73 | 1172.88 | 4.39 |
| 3/11/20 13:26 | 239.89 | 27.61 | 10.56 | 12.65 | 202.27 | 1172.17 | 4.39 |
| 3/11/20 13:27 | 239.81 | 27.62 | 10.56 | 12.65 | 204.02 | 1173.61 | 4.39 |
| 3/11/20 13:28 | 240.11 | 27.55 | 10.56 | 12.65 | 203.60 | 1172.74 | 4.39 |
| 3/11/20 13:29 | 239.71 | 27.58 | 10.56 | 12.65 | 204.43 | 1172.74 | 4.39 |
| 3/11/20 13:30 | 239.51 | 27.48 | 10.56 | 12.65 | 204.45 | 1172.76 | 4.39 |
| 3/11/20 13:31 | 239.74 | 27.59 | 10.56 | 12.65 | 202.28 | 1173.48 | 4.39 |
| 3/11/20 13:32 | 239.77 | 27.73 | 10.56 | 12.65 | 200.87 | 1172.90 | 4.39 |
| 3/11/20 13:33 | 239.69 | 27.67 | 10.56 | 12.65 | 201.60 | 1172.93 | 4.39 |
| 3/11/20 13:34 | 240.14 | 27.67 | 10.55 | 12.65 | 202.49 | 1173.24 | 4.39 |
| 3/11/20 13:35 | 239.68 | 27.58 | 10.55 | 12.66 | 203.39 | 1173.10 | 4.39 |
| 3/11/20 13:36 | 239.70 | 27.50 | 10.55 | 12.66 | 203.74 | 1172.62 | 4.39 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/11 12:30 - 3/11 17:15) | 239.41 | 27.51 | 10.55 | 12.65 | 197.78 | 1172.84 | 4.43 |
| COUNT = 286 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/11/20 13:37 | 239.85 | 27.60 | 10.55 | 12.66 | 201.91 | 1172.90 | 4.39 |
| 3/11/20 13:38 | 239.96 | 27.60 | 10.55 | 12.66 | 201.08 | 1173.52 | 4.39 |
| 3/11/20 13:39 | 240.23 | 27.56 | 10.55 | 12.66 | 201.51 | 1173.16 | 4.39 |
| 3/11/20 13:40 | 239.44 | 27.56 | 10.55 | 12.66 | 202.74 | 1172.66 | 4.40 |
| 3/11/20 13:41 | 239.49 | 27.55 | 10.55 | 12.66 | 203.52 | 1172.93 | 4.40 |
| 3/11/20 13:42 | 239.84 | 27.56 | 10.55 | 12.66 | 201.05 | 1173.69 | 4.40 |
| 3/11/20 13:43 | 239.81 | 27.63 | 10.55 | 12.66 | 199.05 | 1172.55 | 4.40 |
| 3/11/20 13:44 | 239.73 | 27.47 | 10.55 | 12.64 | 200.32 | 1172.56 | 4.40 |
| 3/11/20 13:45 | 239.49 | 27.51 | 10.55 | 12.61 | 202.24 | 1172.75 | 4.40 |
| 3/11/20 13:46 | 239.47 | 27.59 | 10.55 | 12.57 | 201.21 | 1173.52 | 4.40 |
| 3/11/20 13:47 | 239.61 | 27.58 | 10.55 | 12.54 | 201.06 | 1172.92 | 4.40 |
| 3/11/20 13:48 | 239.52 | 27.58 | 10.55 | 12.50 | 200.46 | 1173.25 | 4.40 |
| 3/11/20 13:49 | 239.22 | 27.62 | 10.55 | 12.47 | 200.53 | 1172.79 | 4.40 |
| 3/11/20 13:50 | 239.77 | 27.55 | 10.55 | 12.51 | 198.78 | 1173.18 | 4.40 |
| 3/11/20 13:51 | 239.76 | 27.63 | 10.55 | 12.55 | 198.29 | 1172.90 | 4.40 |
| 3/11/20 13:52 | 239.65 | 27.59 | 10.55 | 12.55 | 198.77 | 1173.51 | 4.40 |
| 3/11/20 13:53 | 239.60 | 27.55 | 10.55 | 12.53 | 200.24 | 1172.35 | 4.40 |
| 3/11/20 13:54 | 239.58 | 27.58 | 10.55 | 12.52 | 201.77 | 1172.45 | 4.40 |
| 3/11/20 13:55 | 239.50 | 27.53 | 10.55 | 12.50 | 201.86 | 1172.56 | 4.40 |
| 3/11/20 13:56 | 239.81 | 27.51 | 10.55 | 12.48 | 201.75 | 1172.82 | 4.40 |
| 3/11/20 13:57 | 239.62 | 27.57 | 10.55 | 12.47 | 202.97 | 1173.09 | 4.40 |
| 3/11/20 13:58 | 239.49 | 27.56 | 10.55 | 12.47 | 203.75 | 1172.41 | 4.40 |
| 3/11/20 13:59 | 239.85 | 27.59 | 10.55 | 12.49 | 203.03 | 1173.39 | 4.40 |
| 3/11/20 14:00 | 239.82 | 27.58 | 10.55 | 12.52 | 201.91 | 1173.15 | 4.40 |
| 3/11/20 14:01 | 239.93 | 27.63 | 10.55 | 12.54 | 203.01 | 1172.19 | 4.40 |
| 3/11/20 14:02 | 239.81 | 27.57 | 10.55 | 12.60 | 203.56 | 1173.10 | 4.41 |
| 3/11/20 14:03 | 239.83 | 27.54 | 10.55 | 12.57 | 203.24 | 1172.73 | 4.41 |
| 3/11/20 14:04 | 239.89 | 27.56 | 10.55 | 12.55 | 204.08 | 1172.82 | 4.41 |
| 3/11/20 14:05 | 239.74 | 27.60 | 10.55 | 12.52 | 204.20 | 1173.07 | 4.41 |
| 3/11/20 14:06 | 239.78 | 27.55 | 10.55 | 12.49 | 204.27 | 1172.79 | 4.41 |
| 3/11/20 14:07 | 239.81 | 27.58 | 10.55 | 12.46 | 203.07 | 1173.36 | 4.41 |
| 3/11/20 14:08 | 239.63 | 27.60 | 10.55 | 12.43 | 202.75 | 1172.68 | 4.41 |
| 3/11/20 14:09 | 240.12 | 27.59 | 10.55 | 12.43 | 203.04 | 1173.05 | 4.41 |
| 3/11/20 14:10 | 239.35 | 27.52 | 10.55 | 12.46 | 201.60 | 1172.62 | 4.41 |
| 3/11/20 14:11 | 239.33 | 27.52 | 10.55 | 12.49 | 200.68 | 1172.43 | 4.41 |
| 3/11/20 14:12 | 239.73 | 27.55 | 10.55 | 12.52 | 201.04 | 1172.93 | 4.41 |
| 3/11/20 14:13 | 239.40 | 27.52 | 10.55 | 12.55 | 199.72 | 1172.53 | 4.41 |
| 3/11/20 14:14 | 239.59 | 27.54 | 10.55 | 12.59 | 200.22 | 1172.95 | 4.41 |
| 3/11/20 14:15 | 239.42 | 27.65 | 10.55 | 12.71 | 200.32 | 1172.82 | 4.41 |
| 3/11/20 14:16 | 239.96 | 27.60 | 10.55 | 12.78 | 200.57 | 1172.99 | 4.41 |
| 3/11/20 14:17 | 239.43 | 27.58 | 10.55 | 12.76 | 200.83 | 1172.85 | 4.41 |
| 3/11/20 14:18 | 239.63 | 27.46 | 10.55 | 12.74 | 200.14 | 1173.06 | 4.41 |
| 3/11/20 14:19 | 239.95 | 27.57 | 10.55 | 12.72 | 199.71 | 1173.06 | 4.41 |
| 3/11/20 14:20 | 239.68 | 27.63 | 10.55 | 12.70 | 199.87 | 1172.68 | 4.41 |
| 3/11/20 14:21 | 240.10 | 27.54 | 10.55 | 12.69 | 200.87 | 1173.12 | 4.41 |
| 3/11/20 14:22 | 239.76 | 27.57 | 10.55 | 12.67 | 201.74 | 1173.39 | 4.41 |
| 3/11/20 14:23 | 239.87 | 27.51 | 10.55 | 12.67 | 201.72 | 1173.01 | 4.42 |
| 3/11/20 14:24 | 239.82 | 27.54 | 10.55 | 12.67 | 202.30 | 1172.75 | 4.42 |
| 3/11/20 14:25 | 240.09 | 27.54 | 10.55 | 12.67 | 202.54 | 1173.12 | 4.42 |
| 3/11/20 14:26 | 239.72 | 27.56 | 10.55 | 12.67 | 202.78 | 1172.71 | 4.42 |
| 3/11/20 14:27 | 239.92 | 27.55 | 10.55 | 12.67 | 202.73 | 1173.50 | 4.42 |
| 3/11/20 14:28 | 239.85 | 27.57 | 10.55 | 12.67 | 200.14 | 1173.69 | 4.42 |
| 3/11/20 14:29 | 239.78 | 27.54 | 10.55 | 12.67 | 202.41 | 1173.01 | 4.42 |
| 3/11/20 14:30 | 239.74 | 27.56 | 10.55 | 12.67 | 201.96 | 1172.42 | 4.42 |
| 3/11/20 14:31 | 240.23 | 27.60 | 10.55 | 12.67 | 203.45 | 1173.51 | 4.42 |
| 3/11/20 14:32 | 239.46 | 27.60 | 10.55 | 12.67 | 204.13 | 1172.63 | 4.42 |
| 3/11/20 14:33 | 239.83 | 27.54 | 10.55 | 12.67 | 204.28 | 1172.36 | 4.42 |
| 3/11/20 14:34 | 239.37 | 27.55 | 10.55 | 12.67 | 203.38 | 1173.33 | 4.42 |
| 3/11/20 14:35 | 239.57 | 27.58 | 10.55 | 12.66 | 202.49 | 1172.31 | 4.42 |
| 3/11/20 14:36 | 239.74 | 27.52 | 10.55 | 12.65 | 200.97 | 1172.65 | 4.42 |
| 3/11/20 14:37 | 239.81 | 27.55 | 10.55 | 12.63 | 198.31 | 1173.11 | 4.42 |
| 3/11/20 14:38 | 239.31 | 27.43 | 10.55 | 12.62 | 199.22 | 1172.89 | 4.42 |
| 3/11/20 14:39 | 239.71 | 27.51 | 10.55 | 12.60 | 199.91 | 1173.79 | 4.42 |
| 3/11/20 14:40 | 239.17 | 27.52 | 10.55 | 12.59 | 199.08 | 1172.28 | 4.42 |
| 3/11/20 14:41 | 239.68 | 27.51 | 10.55 | 12.58 | 197.26 | 1173.24 | 4.42 |
| 3/11/20 14:42 | 239.62 | 27.55 | 10.55 | 12.56 | 199.04 | 1173.04 | 4.42 |
| 3/11/20 14:43 | 239.49 | 27.55 | 10.55 | 12.55 | 199.05 | 1172.93 | 4.42 |

| Description | | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/11 12:30 - 3/11 17:15) | | 239.41 | 27.51 | 10.55 | 12.65 | 197.78 | 1172.84 | 4.43 |
| COUNT = 286 | | | | | | | | |
| Signal Tagname | | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| | 3/11/20 14:44 | 239.46 | 27.49 | 10.55 | 12.53 | 198.69 | 1173.08 | 4.42 |
| | 3/11/20 14:45 | 239.45 | 27.53 | 10.55 | 12.52 | 196.99 | 1172.73 | 4.43 |
| | 3/11/20 14:46 | 239.38 | 27.57 | 10.55 | 12.51 | 198.35 | 1171.85 | 4.43 |
| | 3/11/20 14:47 | 239.69 | 27.55 | 10.55 | 12.49 | 196.83 | 1172.70 | 4.43 |
| | 3/11/20 14:48 | 239.86 | 27.56 | 10.55 | 12.48 | 198.36 | 1172.57 | 4.43 |
| | 3/11/20 14:49 | 239.83 | 27.47 | 10.55 | 12.46 | 200.12 | 1173.43 | 4.43 |
| | 3/11/20 14:50 | 240.12 | 27.55 | 10.55 | 12.46 | 201.09 | 1172.64 | 4.43 |
| | 3/11/20 14:51 | 239.41 | 27.53 | 10.55 | 12.47 | 202.17 | 1172.92 | 4.43 |
| | 3/11/20 14:52 | 239.46 | 27.55 | 10.55 | 12.49 | 199.82 | 1172.75 | 4.43 |
| | 3/11/20 14:53 | 239.61 | 27.50 | 10.55 | 12.50 | 200.00 | 1172.14 | 4.43 |
| | 3/11/20 14:54 | 239.23 | 27.47 | 10.55 | 12.52 | 197.15 | 1172.05 | 4.43 |
| | 3/11/20 14:55 | 239.65 | 27.60 | 10.55 | 12.53 | 197.69 | 1172.45 | 4.43 |
| | 3/11/20 14:56 | 239.40 | 27.53 | 10.55 | 12.55 | 195.36 | 1171.55 | 4.43 |
| | 3/11/20 14:57 | 239.80 | 27.63 | 10.55 | 12.56 | 197.32 | 1171.83 | 4.43 |
| | 3/11/20 14:58 | 239.69 | 27.60 | 10.55 | 12.57 | 199.38 | 1171.44 | 4.43 |
| | 3/11/20 14:59 | 239.35 | 27.45 | 10.55 | 12.58 | 199.40 | 1172.08 | 4.43 |
| | 3/11/20 15:00 | 239.75 | 27.53 | 10.55 | 12.59 | 200.18 | 1173.46 | 4.43 |
| | 3/11/20 15:01 | 239.45 | 27.51 | 10.55 | 12.60 | 198.33 | 1172.56 | 4.43 |
| | 3/11/20 15:02 | 239.47 | 27.50 | 10.55 | 12.61 | 196.60 | 1172.19 | 4.43 |
| | 3/11/20 15:03 | 239.48 | 27.50 | 10.55 | 12.61 | 197.34 | 1172.73 | 4.43 |
| | 3/11/20 15:04 | 239.81 | 27.56 | 10.55 | 12.62 | 197.36 | 1172.48 | 4.43 |
| | 3/11/20 15:05 | 239.38 | 27.50 | 10.55 | 12.63 | 197.75 | 1172.16 | 4.43 |
| | 3/11/20 15:06 | 239.55 | 27.47 | 10.55 | 12.64 | 198.91 | 1172.29 | 4.43 |
| | 3/11/20 15:07 | 239.61 | 27.45 | 10.55 | 12.65 | 199.04 | 1172.78 | 4.44 |
| | 3/11/20 15:08 | 239.65 | 27.48 | 10.55 | 12.66 | 197.36 | 1172.32 | 4.44 |
| | 3/11/20 15:09 | 239.54 | 27.53 | 10.55 | 12.67 | 199.59 | 1172.40 | 4.44 |
| | 3/11/20 15:10 | 239.56 | 27.56 | 10.55 | 12.68 | 199.58 | 1171.72 | 4.44 |
| | 3/11/20 15:11 | 239.14 | 27.48 | 10.55 | 12.69 | 197.09 | 1171.87 | 4.44 |
| | 3/11/20 15:12 | 239.68 | 27.49 | 10.55 | 12.70 | 196.89 | 1172.53 | 4.44 |
| | 3/11/20 15:13 | 239.36 | 27.48 | 10.55 | 12.71 | 199.25 | 1172.28 | 4.44 |
| | 3/11/20 15:14 | 239.63 | 27.42 | 10.55 | 12.72 | 201.00 | 1172.50 | 4.44 |
| | 3/11/20 15:15 | 239.43 | 27.45 | 10.55 | 12.73 | 197.36 | 1172.78 | 4.44 |
| | 3/11/20 15:16 | 239.57 | 27.52 | 10.55 | 12.74 | 196.84 | 1172.18 | 4.44 |
| | 3/11/20 15:17 | 239.45 | 27.50 | 10.55 | 12.75 | 197.43 | 1172.71 | 4.44 |
| | 3/11/20 15:18 | 239.28 | 27.47 | 10.55 | 12.76 | 195.26 | 1172.18 | 4.44 |
| | 3/11/20 15:19 | 239.80 | 27.53 | 10.55 | 12.77 | 195.42 | 1172.85 | 4.44 |
| | 3/11/20 15:20 | 239.39 | 27.55 | 10.55 | 12.78 | 195.76 | 1172.22 | 4.44 |
| | 3/11/20 15:21 | 239.34 | 27.51 | 10.55 | 12.79 | 196.78 | 1172.87 | 4.44 |
| | 3/11/20 15:22 | 239.32 | 27.41 | 10.55 | 12.79 | 196.55 | 1172.32 | 4.44 |
| | 3/11/20 15:23 | 239.79 | 27.58 | 10.55 | 12.77 | 195.89 | 1172.55 | 4.44 |
| | 3/11/20 15:24 | 239.61 | 27.47 | 10.55 | 12.76 | 197.43 | 1172.83 | 4.44 |
| | 3/11/20 15:25 | 239.44 | 27.46 | 10.55 | 12.75 | 199.17 | 1172.18 | 4.44 |
| | 3/11/20 15:26 | 239.04 | 27.50 | 10.55 | 12.73 | 197.19 | 1172.83 | 4.44 |
| | 3/11/20 15:27 | 239.19 | 27.38 | 10.55 | 12.72 | 195.69 | 1172.64 | 4.44 |
| | 3/11/20 15:28 | 238.94 | 27.44 | 10.55 | 12.71 | 195.10 | 1172.31 | 4.44 |
| | 3/11/20 15:29 | 239.18 | 27.41 | 10.55 | 12.69 | 194.46 | 1173.12 | 4.45 |
| | 3/11/20 15:30 | 239.54 | 27.45 | 10.55 | 12.68 | 194.80 | 1173.21 | 4.45 |
| | 3/11/20 15:31 | 238.95 | 27.46 | 10.55 | 12.66 | 194.65 | 1172.30 | 4.45 |
| | 3/11/20 15:32 | 239.18 | 27.43 | 10.55 | 12.65 | 195.85 | 1171.81 | 4.45 |
| | 3/11/20 15:33 | 239.33 | 27.41 | 10.55 | 12.64 | 195.04 | 1172.17 | 4.45 |
| | 3/11/20 15:34 | 239.45 | 27.49 | 10.55 | 12.62 | 195.85 | 1172.45 | 4.45 |
| | 3/11/20 15:35 | 239.79 | 27.51 | 10.55 | 12.61 | 198.22 | 1172.39 | 4.45 |
| | 3/11/20 15:36 | 239.48 | 27.47 | 10.55 | 12.60 | 199.35 | 1172.77 | 4.45 |
| | 3/11/20 15:37 | 239.26 | 27.46 | 10.55 | 12.58 | 198.65 | 1172.41 | 4.45 |
| | 3/11/20 15:38 | 239.34 | 27.54 | 10.55 | 12.59 | 199.40 | 1172.09 | 4.45 |
| | 3/11/20 15:39 | 239.25 | 27.50 | 10.55 | 12.63 | 196.34 | 1172.89 | 4.45 |
| | 3/11/20 15:40 | 239.29 | 27.47 | 10.54 | 12.66 | 196.39 | 1172.18 | 4.45 |
| | 3/11/20 15:41 | 238.94 | 27.35 | 10.54 | 12.69 | 197.91 | 1172.28 | 4.45 |
| | 3/11/20 15:42 | 238.87 | 27.41 | 10.54 | 12.72 | 195.43 | 1172.34 | 4.45 |
| | 3/11/20 15:43 | 239.12 | 27.40 | 10.54 | 12.75 | 193.05 | 1172.68 | 4.45 |
| | 3/11/20 15:44 | 238.83 | 27.46 | 10.54 | 12.78 | 191.71 | 1172.41 | 4.45 |
| | 3/11/20 15:45 | 239.14 | 27.41 | 10.54 | 12.75 | 191.58 | 1172.72 | 4.45 |
| | 3/11/20 15:46 | 238.87 | 27.49 | 10.54 | 12.73 | 192.61 | 1172.80 | 4.45 |
| | 3/11/20 15:47 | 238.93 | 27.35 | 10.54 | 12.71 | 192.87 | 1172.48 | 4.45 |
| | 3/11/20 15:48 | 239.30 | 27.49 | 10.54 | 12.68 | 191.98 | 1172.68 | 4.45 |
| | 3/11/20 15:49 | 239.14 | 27.45 | 10.54 | 12.66 | 191.93 | 1172.11 | 4.45 |
| | 3/11/20 15:50 | 239.12 | 27.36 | 10.54 | 12.64 | 193.76 | 1172.44 | 4.46 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/11 12:30 - 3/11 17:15) | 239.41 | 27.51 | 10.55 | 12.65 | 197.78 | 1172.84 | 4.43 |
| COUNT = 286 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/11/20 15:51 | 239.03 | 27.41 | 10.54 | 12.61 | 196.31 | 1172.29 | 4.46 |
| 3/11/20 15:52 | 238.90 | 27.33 | 10.54 | 12.60 | 195.17 | 1172.62 | 4.46 |
| 3/11/20 15:53 | 239.18 | 27.53 | 10.54 | 12.61 | 194.69 | 1172.92 | 4.46 |
| 3/11/20 15:54 | 239.10 | 27.46 | 10.54 | 12.61 | 193.45 | 1171.77 | 4.46 |
| 3/11/20 15:55 | 239.08 | 27.39 | 10.54 | 12.62 | 195.10 | 1173.04 | 4.46 |
| 3/11/20 15:56 | 239.00 | 27.48 | 10.54 | 12.62 | 194.45 | 1172.14 | 4.46 |
| 3/11/20 15:57 | 239.05 | 27.37 | 10.54 | 12.63 | 194.14 | 1172.82 | 4.46 |
| 3/11/20 15:58 | 239.05 | 27.42 | 10.54 | 12.63 | 192.01 | 1172.18 | 4.46 |
| 3/11/20 15:59 | 238.94 | 27.50 | 10.55 | 12.64 | 191.36 | 1172.33 | 4.46 |
| 3/11/20 16:00 | 238.45 | 27.37 | 10.55 | 12.65 | 193.68 | 1171.73 | 4.46 |
| 3/11/20 16:01 | 238.59 | 27.44 | 10.55 | 12.66 | 194.25 | 1172.91 | 4.46 |
| 3/11/20 16:02 | 238.84 | 27.39 | 10.55 | 12.67 | 191.52 | 1172.98 | 4.46 |
| 3/11/20 16:03 | 238.97 | 27.40 | 10.55 | 12.68 | 187.14 | 1172.63 | 4.46 |
| 3/11/20 16:04 | 238.86 | 27.47 | 10.55 | 12.70 | 190.29 | 1172.26 | 4.46 |
| 3/11/20 16:05 | 238.87 | 27.38 | 10.55 | 12.71 | 193.44 | 1172.73 | 4.46 |
| 3/11/20 16:06 | 239.29 | 27.43 | 10.55 | 12.72 | 194.00 | 1172.49 | 4.46 |
| 3/11/20 16:07 | 238.99 | 27.47 | 10.55 | 12.73 | 192.43 | 1172.39 | 4.46 |
| 3/11/20 16:08 | 238.87 | 27.42 | 10.55 | 12.74 | 194.13 | 1172.58 | 4.46 |
| 3/11/20 16:09 | 239.18 | 27.48 | 10.55 | 12.75 | 193.14 | 1172.46 | 4.46 |
| 3/11/20 16:10 | 238.85 | 27.40 | 10.55 | 12.76 | 192.53 | 1171.55 | 4.46 |
| 3/11/20 16:11 | 239.17 | 27.43 | 10.55 | 12.77 | 192.55 | 1172.69 | 4.46 |
| 3/11/20 16:12 | 239.11 | 27.52 | 10.55 | 12.78 | 194.55 | 1172.12 | 4.47 |
| 3/11/20 16:13 | 239.03 | 27.36 | 10.55 | 12.79 | 195.53 | 1172.11 | 4.47 |
| 3/11/20 16:14 | 238.86 | 27.39 | 10.55 | 12.80 | 195.04 | 1172.32 | 4.47 |
| 3/11/20 16:15 | 238.60 | 27.46 | 10.55 | 12.81 | 192.34 | 1172.05 | 4.47 |
| 3/11/20 16:16 | 238.95 | 27.43 | 10.55 | 12.82 | 192.12 | 1172.72 | 4.47 |
| 3/11/20 16:17 | 238.69 | 27.43 | 10.55 | 12.83 | 189.09 | 1172.31 | 4.47 |
| 3/11/20 16:18 | 238.80 | 27.46 | 10.55 | 12.84 | 190.13 | 1172.72 | 4.47 |
| 3/11/20 16:19 | 239.03 | 27.36 | 10.55 | 12.85 | 189.55 | 1172.35 | 4.47 |
| 3/11/20 16:20 | 238.92 | 27.46 | 10.55 | 12.86 | 191.93 | 1172.66 | 4.47 |
| 3/11/20 16:21 | 238.86 | 27.36 | 10.55 | 12.86 | 189.88 | 1172.49 | 4.47 |
| 3/11/20 16:22 | 238.84 | 27.36 | 10.55 | 12.86 | 192.50 | 1173.38 | 4.47 |
| 3/11/20 16:23 | 238.61 | 27.50 | 10.55 | 12.86 | 190.86 | 1172.15 | 4.47 |
| 3/11/20 16:24 | 238.44 | 27.33 | 10.55 | 12.85 | 189.02 | 1172.72 | 4.47 |
| 3/11/20 16:25 | 238.77 | 27.39 | 10.55 | 12.85 | 188.73 | 1172.88 | 4.47 |
| 3/11/20 16:26 | 239.09 | 27.45 | 10.55 | 12.85 | 187.18 | 1172.63 | 4.47 |
| 3/11/20 16:27 | 238.67 | 27.40 | 10.55 | 12.85 | 187.89 | 1171.82 | 4.47 |
| 3/11/20 16:28 | 238.90 | 27.52 | 10.55 | 12.84 | 189.90 | 1171.78 | 4.47 |
| 3/11/20 16:29 | 239.12 | 27.44 | 10.55 | 12.84 | 192.65 | 1174.28 | 4.47 |
| 3/11/20 16:30 | 238.89 | 27.51 | 10.55 | 12.84 | 193.66 | 1175.26 | 4.47 |
| 3/11/20 16:31 | 238.83 | 27.52 | 10.55 | 12.84 | 193.79 | 1175.29 | 4.47 |
| 3/11/20 16:32 | 239.18 | 27.42 | 10.55 | 12.83 | 191.15 | 1176.22 | 4.47 |
| 3/11/20 16:33 | 238.86 | 27.51 | 10.55 | 12.82 | 189.22 | 1175.41 | 4.47 |
| 3/11/20 16:34 | 239.06 | 27.48 | 10.55 | 12.80 | 187.53 | 1174.70 | 4.48 |
| 3/11/20 16:35 | 239.41 | 27.57 | 10.55 | 12.78 | 187.10 | 1175.44 | 4.48 |
| 3/11/20 16:36 | 239.08 | 27.53 | 10.55 | 12.76 | 189.14 | 1174.36 | 4.48 |
| 3/11/20 16:37 | 239.10 | 27.41 | 10.55 | 12.74 | 189.39 | 1174.25 | 4.48 |
| 3/11/20 16:38 | 238.93 | 27.48 | 10.55 | 12.72 | 190.20 | 1174.59 | 4.48 |
| 3/11/20 16:39 | 239.33 | 27.43 | 10.55 | 12.69 | 188.15 | 1174.32 | 4.48 |
| 3/11/20 16:40 | 238.83 | 27.46 | 10.55 | 12.67 | 189.46 | 1174.90 | 4.48 |
| 3/11/20 16:41 | 238.85 | 27.44 | 10.55 | 12.66 | 190.12 | 1175.03 | 4.48 |
| 3/11/20 16:42 | 238.98 | 27.45 | 10.55 | 12.66 | 191.67 | 1173.31 | 4.48 |
| 3/11/20 16:43 | 238.65 | 27.43 | 10.55 | 12.65 | 190.67 | 1171.47 | 4.48 |
| 3/11/20 16:44 | 238.51 | 27.39 | 10.55 | 12.64 | 189.53 | 1171.89 | 4.48 |
| 3/11/20 16:45 | 238.73 | 27.39 | 10.55 | 12.63 | 189.98 | 1171.75 | 4.48 |
| 3/11/20 16:46 | 238.70 | 27.44 | 10.55 | 12.63 | 190.92 | 1172.22 | 4.48 |
| 3/11/20 16:47 | 238.36 | 27.34 | 10.55 | 12.62 | 193.21 | 1171.71 | 4.48 |
| 3/11/20 16:48 | 238.78 | 27.50 | 10.55 | 12.61 | 192.17 | 1171.92 | 4.48 |
| 3/11/20 16:49 | 238.69 | 27.33 | 10.55 | 12.61 | 192.10 | 1171.70 | 4.48 |
| 3/11/20 16:50 | 238.49 | 27.37 | 10.55 | 12.60 | 190.70 | 1171.41 | 4.48 |
| 3/11/20 16:51 | 238.57 | 27.41 | 10.55 | 12.66 | 191.52 | 1171.77 | 4.48 |
| 3/11/20 16:52 | 238.71 | 27.35 | 10.55 | 12.71 | 191.44 | 1171.77 | 4.48 |
| 3/11/20 16:53 | 238.57 | 27.34 | 10.55 | 12.77 | 191.59 | 1171.04 | 4.48 |
| 3/11/20 16:54 | 238.59 | 27.27 | 10.55 | 12.77 | 188.97 | 1171.66 | 4.48 |
| 3/11/20 16:55 | 238.68 | 27.35 | 10.55 | 12.76 | 190.20 | 1170.98 | 4.48 |
| 3/11/20 16:56 | 238.48 | 27.36 | 10.55 | 12.75 | 188.07 | 1171.50 | 4.49 |
| 3/11/20 16:57 | 238.59 | 27.39 | 10.55 | 12.74 | 190.48 | 1172.61 | 4.49 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/11 12:30 - 3/11 17:15) | 239.41 | 27.51 | 10.55 | 12.65 | 197.78 | 1172.84 | 4.43 |
| COUNT = 286 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/11/20 16:58 | 238.92 | 27.38 | 10.55 | 12.73 | 188.87 | 1172.22 | 4.49 |
| 3/11/20 16:59 | 238.70 | 27.36 | 10.55 | 12.72 | 188.31 | 1171.91 | 4.49 |
| 3/11/20 17:00 | 238.77 | 27.42 | 10.55 | 12.70 | 189.88 | 1171.95 | 4.49 |
| 3/11/20 17:01 | 238.89 | 27.44 | 10.55 | 12.72 | 191.55 | 1172.02 | 4.49 |
| 3/11/20 17:02 | 239.17 | 27.40 | 10.55 | 12.74 | 192.61 | 1172.38 | 4.49 |
| 3/11/20 17:03 | 238.68 | 27.42 | 10.55 | 12.77 | 192.19 | 1171.99 | 4.49 |
| 3/11/20 17:04 | 238.66 | 27.40 | 10.55 | 12.79 | 192.95 | 1171.89 | 4.49 |
| 3/11/20 17:05 | 238.71 | 27.36 | 10.55 | 12.76 | 192.08 | 1171.50 | 4.49 |
| 3/11/20 17:06 | 238.67 | 27.35 | 10.55 | 12.72 | 192.78 | 1171.93 | 4.49 |
| 3/11/20 17:07 | 238.53 | 27.30 | 10.55 | 12.69 | 191.30 | 1171.37 | 4.49 |
| 3/11/20 17:08 | 238.66 | 27.37 | 10.55 | 12.69 | 191.24 | 1171.94 | 4.49 |
| 3/11/20 17:09 | 238.53 | 27.45 | 10.55 | 12.69 | 192.63 | 1171.66 | 4.49 |
| 3/11/20 17:10 | 238.62 | 27.43 | 10.55 | 12.68 | 192.15 | 1171.68 | 4.49 |
| 3/11/20 17:11 | 238.68 | 27.48 | 10.55 | 12.68 | 191.51 | 1171.83 | 4.49 |
| 3/11/20 17:12 | 238.56 | 27.35 | 10.55 | 12.68 | 190.27 | 1171.60 | 4.49 |
| 3/11/20 17:13 | 238.75 | 27.47 | 10.55 | 12.67 | 189.85 | 1171.32 | 4.49 |
| 3/11/20 17:14 | 238.69 | 27.33 | 10.55 | 12.67 | 189.26 | 1171.62 | 4.49 |
| 3/11/20 17:15 | 238.58 | 27.35 | 10.55 | 12.67 | 189.55 | 1171.31 | 4.49 |

# EMISSION DATA RECORDS

## Operating Data Base+DB Load
## (provided by Cricket Valley Energy Center LLC)
## SAM

| Description | | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/11 5:46 - 3/11 7:46) | | 240.79 | 27.73 | 10.57 | 12.63 | 189.62 | 1174.75 | 4.45 |
| COUNT = 121 | | | | | | | | |
| Signal Tagname | | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| | 3/11/20 5:46 | 239.79 | 27.58 | 10.57 | 12.57 | 165.33 | 1176.46 | 4.49 |
| | 3/11/20 5:47 | 239.32 | 27.47 | 10.57 | 12.57 | 163.78 | 1176.49 | 4.49 |
| | 3/11/20 5:48 | 240.09 | 27.69 | 10.57 | 12.58 | 161.72 | 1174.94 | 4.49 |
| | 3/11/20 5:49 | 241.58 | 27.82 | 10.57 | 12.59 | 157.04 | 1171.31 | 4.49 |
| | 3/11/20 5:50 | 238.69 | 27.45 | 10.57 | 12.60 | 209.83 | 1176.69 | 4.49 |
| | 3/11/20 5:51 | 237.33 | 27.31 | 10.57 | 12.61 | 188.81 | 1180.10 | 4.49 |
| | 3/11/20 5:52 | 236.14 | 27.26 | 10.57 | 12.62 | 186.93 | 1178.25 | 4.49 |
| | 3/11/20 5:53 | 239.29 | 27.57 | 10.57 | 12.62 | 183.44 | 1178.69 | 4.49 |
| | 3/11/20 5:54 | 237.75 | 27.36 | 10.57 | 12.63 | 179.79 | 1180.20 | 4.49 |
| | 3/11/20 5:55 | 238.96 | 27.48 | 10.57 | 12.64 | 170.38 | 1179.43 | 4.49 |
| | 3/11/20 5:56 | 239.81 | 27.64 | 10.57 | 12.65 | 165.27 | 1177.43 | 4.49 |
| | 3/11/20 5:57 | 239.54 | 27.68 | 10.57 | 12.66 | 159.82 | 1175.40 | 4.49 |
| | 3/11/20 5:58 | 238.47 | 27.43 | 10.57 | 12.67 | 158.50 | 1179.68 | 4.49 |
| | 3/11/20 5:59 | 238.18 | 27.44 | 10.57 | 12.68 | 154.82 | 1181.15 | 4.49 |
| | 3/11/20 6:00 | 237.17 | 27.37 | 10.57 | 12.70 | 152.59 | 1181.69 | 4.48 |
| | 3/11/20 6:01 | 240.08 | 27.66 | 10.57 | 12.71 | 148.17 | 1177.05 | 4.48 |
| | 3/11/20 6:02 | 237.00 | 27.42 | 10.57 | 12.72 | 148.34 | 1181.86 | 4.48 |
| | 3/11/20 6:03 | 238.13 | 27.49 | 10.57 | 12.72 | 148.04 | 1179.65 | 4.48 |
| | 3/11/20 6:04 | 239.80 | 27.61 | 10.57 | 12.72 | 146.51 | 1177.24 | 4.48 |
| | 3/11/20 6:05 | 240.77 | 27.77 | 10.57 | 12.73 | 148.81 | 1174.35 | 4.48 |
| | 3/11/20 6:06 | 237.81 | 27.36 | 10.57 | 12.73 | 158.05 | 1181.97 | 4.48 |
| | 3/11/20 6:07 | 238.16 | 27.43 | 10.57 | 12.73 | 160.41 | 1181.25 | 4.48 |
| | 3/11/20 6:08 | 240.10 | 27.61 | 10.57 | 12.74 | 158.75 | 1176.36 | 4.48 |
| | 3/11/20 6:09 | 241.93 | 27.74 | 10.57 | 12.74 | 153.52 | 1173.78 | 4.48 |
| | 3/11/20 6:10 | 241.75 | 27.80 | 10.57 | 12.74 | 197.09 | 1172.23 | 4.48 |
| | 3/11/20 6:11 | 241.96 | 27.78 | 10.57 | 12.75 | 210.50 | 1171.72 | 4.48 |
| | 3/11/20 6:12 | 241.94 | 27.86 | 10.57 | 12.75 | 197.60 | 1172.49 | 4.48 |
| | 3/11/20 6:13 | 241.65 | 27.85 | 10.57 | 12.75 | 197.50 | 1171.45 | 4.48 |
| | 3/11/20 6:14 | 242.00 | 27.85 | 10.57 | 12.76 | 201.72 | 1171.61 | 4.47 |
| | 3/11/20 6:15 | 242.04 | 27.83 | 10.57 | 12.76 | 204.27 | 1172.10 | 4.47 |
| | 3/11/20 6:16 | 241.56 | 27.91 | 10.57 | 12.76 | 206.65 | 1172.05 | 4.47 |
| | 3/11/20 6:17 | 241.98 | 27.79 | 10.57 | 12.77 | 206.48 | 1172.88 | 4.47 |
| | 3/11/20 6:18 | 239.53 | 27.69 | 10.57 | 12.77 | 207.30 | 1174.23 | 4.47 |
| | 3/11/20 6:19 | 240.19 | 27.56 | 10.57 | 12.74 | 166.79 | 1177.79 | 4.47 |
| | 3/11/20 6:20 | 241.08 | 27.77 | 10.57 | 12.71 | 158.05 | 1174.48 | 4.47 |
| | 3/11/20 6:21 | 240.97 | 27.73 | 10.57 | 12.68 | 160.68 | 1174.90 | 4.47 |
| | 3/11/20 6:22 | 242.25 | 27.83 | 10.57 | 12.65 | 174.67 | 1171.89 | 4.47 |
| | 3/11/20 6:23 | 241.92 | 27.81 | 10.57 | 12.62 | 215.51 | 1172.17 | 4.47 |
| | 3/11/20 6:24 | 242.26 | 27.83 | 10.57 | 12.59 | 217.02 | 1172.23 | 4.47 |
| | 3/11/20 6:25 | 242.11 | 27.90 | 10.57 | 12.56 | 212.61 | 1172.22 | 4.47 |
| | 3/11/20 6:26 | 241.99 | 27.83 | 10.57 | 12.54 | 208.34 | 1171.97 | 4.47 |
| | 3/11/20 6:27 | 242.18 | 27.83 | 10.57 | 12.51 | 206.86 | 1172.03 | 4.47 |
| | 3/11/20 6:28 | 242.33 | 27.84 | 10.57 | 12.49 | 207.27 | 1172.77 | 4.46 |
| | 3/11/20 6:29 | 242.35 | 27.89 | 10.57 | 12.50 | 209.88 | 1171.83 | 4.46 |
| | 3/11/20 6:30 | 242.17 | 27.86 | 10.57 | 12.50 | 211.73 | 1172.31 | 4.46 |
| | 3/11/20 6:31 | 242.32 | 27.83 | 10.57 | 12.51 | 211.25 | 1172.13 | 4.46 |
| | 3/11/20 6:32 | 241.91 | 27.87 | 10.57 | 12.52 | 211.75 | 1171.71 | 4.46 |
| | 3/11/20 6:33 | 241.96 | 27.79 | 10.57 | 12.52 | 212.97 | 1171.98 | 4.46 |
| | 3/11/20 6:34 | 241.94 | 27.96 | 10.57 | 12.53 | 213.22 | 1171.78 | 4.46 |
| | 3/11/20 6:35 | 242.33 | 27.88 | 10.57 | 12.53 | 213.79 | 1171.59 | 4.46 |
| | 3/11/20 6:36 | 242.15 | 27.81 | 10.57 | 12.54 | 213.91 | 1171.44 | 4.46 |
| | 3/11/20 6:37 | 242.12 | 27.80 | 10.57 | 12.54 | 213.95 | 1171.79 | 4.46 |
| | 3/11/20 6:38 | 241.99 | 27.90 | 10.57 | 12.55 | 214.03 | 1171.77 | 4.46 |
| | 3/11/20 6:39 | 242.43 | 27.89 | 10.57 | 12.55 | 214.94 | 1172.52 | 4.46 |
| | 3/11/20 6:40 | 241.98 | 27.88 | 10.57 | 12.51 | 216.84 | 1171.78 | 4.46 |
| | 3/11/20 6:41 | 241.97 | 27.95 | 10.57 | 12.48 | 218.89 | 1171.99 | 4.46 |
| | 3/11/20 6:42 | 242.56 | 27.80 | 10.57 | 12.45 | 218.63 | 1172.47 | 4.45 |
| | 3/11/20 6:43 | 242.27 | 27.91 | 10.57 | 12.42 | 217.07 | 1172.16 | 4.45 |
| | 3/11/20 6:44 | 242.12 | 27.89 | 10.57 | 12.39 | 215.76 | 1172.09 | 4.45 |
| | 3/11/20 6:45 | 242.13 | 27.85 | 10.57 | 12.35 | 215.95 | 1172.25 | 4.45 |
| | 3/11/20 6:46 | 242.12 | 27.84 | 10.57 | 12.32 | 217.86 | 1171.59 | 4.45 |
| | 3/11/20 6:47 | 242.38 | 27.93 | 10.57 | 12.35 | 218.31 | 1172.36 | 4.45 |
| | 3/11/20 6:48 | 242.33 | 27.90 | 10.57 | 12.40 | 216.88 | 1171.41 | 4.45 |
| | 3/11/20 6:49 | 242.12 | 27.78 | 10.57 | 12.44 | 215.52 | 1171.86 | 4.45 |
| | 3/11/20 6:50 | 242.01 | 27.88 | 10.57 | 12.48 | 217.38 | 1171.83 | 4.45 |
| | 3/11/20 6:51 | 238.67 | 27.57 | 10.57 | 12.57 | 217.42 | 1175.48 | 4.45 |
| | 3/11/20 6:52 | 239.66 | 27.62 | 10.57 | 12.68 | 178.95 | 1180.09 | 4.45 |

| Description | | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/11 5:46 - 3/11 7:46) | | 240.79 | 27.73 | 10.57 | 12.63 | 189.62 | 1174.75 | 4.45 |
| COUNT = 121 | | | | | | | | |
| Signal Tagname | | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| | 3/11/20 6:53 | 240.18 | 27.71 | 10.57 | 12.67 | 174.46 | 1176.81 | 4.45 |
| | 3/11/20 6:54 | 242.04 | 27.80 | 10.57 | 12.66 | 166.58 | 1173.63 | 4.45 |
| | 3/11/20 6:55 | 239.58 | 27.67 | 10.57 | 12.66 | 197.44 | 1174.32 | 4.45 |
| | 3/11/20 6:56 | 240.66 | 27.64 | 10.57 | 12.65 | 166.61 | 1178.27 | 4.44 |
| | 3/11/20 6:57 | 241.80 | 27.88 | 10.58 | 12.65 | 168.67 | 1173.64 | 4.44 |
| | 3/11/20 6:58 | 241.28 | 27.80 | 10.58 | 12.64 | 210.52 | 1174.60 | 4.44 |
| | 3/11/20 6:59 | 241.15 | 27.83 | 10.58 | 12.64 | 186.52 | 1174.39 | 4.44 |
| | 3/11/20 7:00 | 241.25 | 27.73 | 10.58 | 12.63 | 187.74 | 1175.37 | 4.44 |
| | 3/11/20 7:01 | 242.34 | 27.91 | 10.58 | 12.63 | 188.49 | 1171.89 | 4.44 |
| | 3/11/20 7:02 | 242.36 | 27.95 | 10.58 | 12.62 | 188.32 | 1172.20 | 4.44 |
| | 3/11/20 7:03 | 242.19 | 27.95 | 10.58 | 12.62 | 188.72 | 1171.35 | 4.44 |
| | 3/11/20 7:04 | 241.97 | 27.89 | 10.58 | 12.61 | 188.70 | 1172.01 | 4.44 |
| | 3/11/20 7:05 | 242.37 | 27.91 | 10.58 | 12.61 | 188.57 | 1172.58 | 4.44 |
| | 3/11/20 7:06 | 241.73 | 27.92 | 10.58 | 12.60 | 188.20 | 1170.79 | 4.44 |
| | 3/11/20 7:07 | 241.93 | 27.96 | 10.58 | 12.60 | 188.65 | 1171.36 | 4.44 |
| | 3/11/20 7:08 | 242.23 | 27.91 | 10.58 | 12.59 | 188.40 | 1170.93 | 4.44 |
| | 3/11/20 7:09 | 242.32 | 27.86 | 10.58 | 12.59 | 188.59 | 1171.59 | 4.44 |
| | 3/11/20 7:10 | 241.75 | 27.85 | 10.58 | 12.58 | 188.11 | 1171.27 | 4.43 |
| | 3/11/20 7:11 | 242.00 | 27.88 | 10.58 | 12.57 | 187.41 | 1170.80 | 4.43 |
| | 3/11/20 7:12 | 241.89 | 27.94 | 10.58 | 12.57 | 187.93 | 1171.33 | 4.43 |
| | 3/11/20 7:13 | 242.22 | 27.90 | 10.58 | 12.56 | 187.59 | 1171.46 | 4.43 |
| | 3/11/20 7:14 | 241.98 | 27.84 | 10.58 | 12.58 | 187.60 | 1171.45 | 4.43 |
| | 3/11/20 7:15 | 241.85 | 27.88 | 10.58 | 12.63 | 187.46 | 1171.05 | 4.43 |
| | 3/11/20 7:16 | 242.20 | 27.88 | 10.58 | 12.68 | 187.59 | 1171.55 | 4.43 |
| | 3/11/20 7:17 | 241.84 | 27.88 | 10.58 | 12.72 | 188.21 | 1171.37 | 4.43 |
| | 3/11/20 7:18 | 236.96 | 27.33 | 10.58 | 12.77 | 188.46 | 1180.71 | 4.43 |
| | 3/11/20 7:19 | 239.16 | 27.54 | 10.58 | 12.77 | 188.19 | 1179.16 | 4.43 |
| | 3/11/20 7:20 | 239.53 | 27.63 | 10.58 | 12.76 | 188.56 | 1177.31 | 4.43 |
| | 3/11/20 7:21 | 239.58 | 27.63 | 10.58 | 12.76 | 188.59 | 1177.58 | 4.43 |
| | 3/11/20 7:22 | 239.71 | 27.57 | 10.58 | 12.75 | 187.95 | 1176.94 | 4.43 |
| | 3/11/20 7:23 | 239.88 | 27.74 | 10.58 | 12.74 | 188.01 | 1175.89 | 4.43 |
| | 3/11/20 7:24 | 240.41 | 27.71 | 10.58 | 12.74 | 187.75 | 1175.10 | 4.42 |
| | 3/11/20 7:25 | 240.17 | 27.67 | 10.58 | 12.73 | 188.07 | 1175.81 | 4.42 |
| | 3/11/20 7:26 | 240.09 | 27.68 | 10.58 | 12.73 | 188.12 | 1175.98 | 4.42 |
| | 3/11/20 7:27 | 238.06 | 27.45 | 10.58 | 12.72 | 187.86 | 1181.10 | 4.42 |
| | 3/11/20 7:28 | 238.83 | 27.52 | 10.58 | 12.70 | 187.99 | 1179.35 | 4.42 |
| | 3/11/20 7:29 | 238.93 | 27.57 | 10.58 | 12.69 | 187.37 | 1179.13 | 4.42 |
| | 3/11/20 7:30 | 239.63 | 27.54 | 10.58 | 12.67 | 187.75 | 1178.31 | 4.42 |
| | 3/11/20 7:31 | 238.89 | 27.53 | 10.58 | 12.65 | 188.15 | 1178.81 | 4.42 |
| | 3/11/20 7:32 | 240.20 | 27.69 | 10.58 | 12.64 | 188.05 | 1176.89 | 4.42 |
| | 3/11/20 7:33 | 240.26 | 27.77 | 10.58 | 12.62 | 188.37 | 1176.26 | 4.42 |
| | 3/11/20 7:34 | 239.68 | 27.62 | 10.58 | 12.60 | 188.23 | 1176.61 | 4.42 |
| | 3/11/20 7:35 | 240.31 | 27.65 | 10.58 | 12.59 | 188.13 | 1177.56 | 4.42 |
| | 3/11/20 7:36 | 240.46 | 27.72 | 10.58 | 12.57 | 188.16 | 1175.84 | 4.42 |
| | 3/11/20 7:37 | 238.88 | 27.51 | 10.58 | 12.55 | 187.88 | 1181.96 | 4.42 |
| | 3/11/20 7:38 | 240.33 | 27.71 | 10.58 | 12.54 | 187.86 | 1177.72 | 4.41 |
| | 3/11/20 7:39 | 240.69 | 27.65 | 10.58 | 12.52 | 187.79 | 1177.56 | 4.41 |
| | 3/11/20 7:40 | 241.91 | 27.87 | 10.58 | 12.56 | 184.34 | 1171.95 | 4.41 |
| | 3/11/20 7:41 | 241.13 | 27.81 | 10.58 | 12.63 | 219.04 | 1175.62 | 4.41 |
| | 3/11/20 7:42 | 240.96 | 27.72 | 10.58 | 12.70 | 199.34 | 1175.35 | 4.41 |
| | 3/11/20 7:43 | 241.17 | 27.68 | 10.58 | 12.77 | 185.80 | 1175.24 | 4.41 |
| | 3/11/20 7:44 | 241.05 | 27.76 | 10.58 | 12.78 | 185.97 | 1175.91 | 4.41 |
| | 3/11/20 7:45 | 241.28 | 27.75 | 10.58 | 12.76 | 183.09 | 1174.87 | 4.41 |
| | 3/11/20 7:46 | 240.97 | 27.78 | 10.58 | 12.74 | 179.09 | 1175.15 | 4.41 |

| Description | | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/11 8:40 - 3/11 10:40) | | 240.88 | 27.72 | 10.57 | 12.64 | 187.45 | 1176.22 | 4.33 |
| COUNT = 121 | | | | | | | | |
| Signal Tagname | | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| | 3/11/20 8:40 | 240.35 | 27.68 | 10.58 | 12.78 | 146.71 | 1178.18 | 4.37 |
| | 3/11/20 8:41 | 240.59 | 27.67 | 10.58 | 12.76 | 146.36 | 1177.87 | 4.37 |
| | 3/11/20 8:42 | 240.40 | 27.65 | 10.58 | 12.74 | 146.15 | 1178.25 | 4.37 |
| | 3/11/20 8:43 | 238.82 | 27.46 | 10.58 | 12.72 | 146.76 | 1180.29 | 4.37 |
| | 3/11/20 8:44 | 238.83 | 27.54 | 10.58 | 12.70 | 144.07 | 1182.54 | 4.37 |
| | 3/11/20 8:45 | 238.94 | 27.54 | 10.58 | 12.68 | 145.36 | 1180.68 | 4.37 |
| | 3/11/20 8:46 | 240.27 | 27.62 | 10.58 | 12.66 | 142.60 | 1179.37 | 4.37 |
| | 3/11/20 8:47 | 240.02 | 27.62 | 10.58 | 12.61 | 140.94 | 1178.45 | 4.37 |
| | 3/11/20 8:48 | 240.09 | 27.59 | 10.58 | 12.52 | 140.36 | 1177.73 | 4.37 |
| | 3/11/20 8:49 | 240.26 | 27.63 | 10.58 | 12.47 | 143.07 | 1178.01 | 4.36 |
| | 3/11/20 8:50 | 238.97 | 27.54 | 10.58 | 12.52 | 146.79 | 1181.25 | 4.36 |
| | 3/11/20 8:51 | 239.21 | 27.52 | 10.58 | 12.56 | 148.81 | 1179.95 | 4.36 |
| | 3/11/20 8:52 | 238.91 | 27.34 | 10.58 | 12.61 | 144.67 | 1183.73 | 4.36 |
| | 3/11/20 8:53 | 240.89 | 27.67 | 10.58 | 12.65 | 142.16 | 1176.99 | 4.36 |
| | 3/11/20 8:54 | 242.21 | 27.77 | 10.58 | 12.64 | 147.84 | 1173.13 | 4.36 |
| | 3/11/20 8:55 | 242.07 | 27.89 | 10.58 | 12.64 | 199.62 | 1172.79 | 4.36 |
| | 3/11/20 8:56 | 242.44 | 27.92 | 10.58 | 12.63 | 210.15 | 1173.53 | 4.36 |
| | 3/11/20 8:57 | 242.23 | 27.90 | 10.58 | 12.63 | 194.04 | 1173.61 | 4.36 |
| | 3/11/20 8:58 | 242.03 | 27.91 | 10.58 | 12.62 | 205.98 | 1173.70 | 4.36 |
| | 3/11/20 8:59 | 242.03 | 27.81 | 10.58 | 12.62 | 212.41 | 1173.18 | 4.36 |
| | 3/11/20 9:00 | 242.29 | 27.78 | 10.58 | 12.61 | 215.84 | 1173.97 | 4.36 |
| | 3/11/20 9:01 | 242.35 | 27.88 | 10.58 | 12.61 | 222.35 | 1173.69 | 4.36 |
| | 3/11/20 9:02 | 241.86 | 27.84 | 10.58 | 12.61 | 220.66 | 1173.80 | 4.36 |
| | 3/11/20 9:03 | 242.26 | 27.87 | 10.58 | 12.63 | 221.21 | 1173.27 | 4.35 |
| | 3/11/20 9:04 | 241.94 | 27.90 | 10.58 | 12.65 | 220.29 | 1173.44 | 4.35 |
| | 3/11/20 9:05 | 242.04 | 27.84 | 10.58 | 12.67 | 218.11 | 1174.03 | 4.35 |
| | 3/11/20 9:06 | 242.23 | 27.80 | 10.58 | 12.69 | 218.65 | 1173.63 | 4.35 |
| | 3/11/20 9:07 | 242.22 | 27.82 | 10.58 | 12.71 | 216.96 | 1173.66 | 4.35 |
| | 3/11/20 9:08 | 241.83 | 27.93 | 10.58 | 12.73 | 218.49 | 1173.16 | 4.35 |
| | 3/11/20 9:09 | 237.79 | 27.30 | 10.58 | 12.74 | 220.15 | 1183.64 | 4.35 |
| | 3/11/20 9:10 | 239.67 | 27.55 | 10.58 | 12.75 | 178.61 | 1180.21 | 4.35 |
| | 3/11/20 9:11 | 239.74 | 27.63 | 10.58 | 12.76 | 171.04 | 1179.51 | 4.35 |
| | 3/11/20 9:12 | 239.52 | 27.60 | 10.58 | 12.77 | 164.77 | 1179.78 | 4.35 |
| | 3/11/20 9:13 | 240.84 | 27.66 | 10.58 | 12.78 | 157.84 | 1177.81 | 4.35 |
| | 3/11/20 9:14 | 240.98 | 27.75 | 10.58 | 12.78 | 159.13 | 1175.50 | 4.35 |
| | 3/11/20 9:15 | 241.23 | 27.74 | 10.58 | 12.79 | 166.66 | 1176.51 | 4.35 |
| | 3/11/20 9:16 | 237.45 | 27.38 | 10.58 | 12.80 | 172.57 | 1181.51 | 4.35 |
| | 3/11/20 9:17 | 241.00 | 27.71 | 10.58 | 12.79 | 170.68 | 1177.42 | 4.34 |
| | 3/11/20 9:18 | 241.11 | 27.73 | 10.58 | 12.78 | 166.66 | 1175.83 | 4.34 |
| | 3/11/20 9:19 | 241.93 | 27.79 | 10.58 | 12.77 | 172.30 | 1173.99 | 4.34 |
| | 3/11/20 9:20 | 242.04 | 27.85 | 10.58 | 12.75 | 208.65 | 1173.88 | 4.34 |
| | 3/11/20 9:21 | 241.89 | 27.88 | 10.57 | 12.74 | 213.08 | 1174.02 | 4.34 |
| | 3/11/20 9:22 | 241.86 | 27.92 | 10.57 | 12.73 | 214.09 | 1174.23 | 4.34 |
| | 3/11/20 9:23 | 241.91 | 27.85 | 10.57 | 12.72 | 210.73 | 1173.90 | 4.34 |
| | 3/11/20 9:24 | 241.78 | 27.82 | 10.57 | 12.71 | 209.48 | 1175.18 | 4.34 |
| | 3/11/20 9:25 | 242.16 | 27.83 | 10.57 | 12.70 | 208.12 | 1175.24 | 4.34 |
| | 3/11/20 9:26 | 241.88 | 27.74 | 10.57 | 12.68 | 205.52 | 1174.89 | 4.34 |
| | 3/11/20 9:27 | 242.26 | 27.86 | 10.57 | 12.67 | 205.10 | 1174.78 | 4.34 |
| | 3/11/20 9:28 | 241.75 | 27.88 | 10.57 | 12.66 | 210.81 | 1174.21 | 4.34 |
| | 3/11/20 9:29 | 242.06 | 27.85 | 10.57 | 12.65 | 212.56 | 1174.01 | 4.34 |
| | 3/11/20 9:30 | 241.92 | 27.91 | 10.57 | 12.64 | 213.91 | 1173.96 | 4.34 |
| | 3/11/20 9:31 | 242.04 | 27.77 | 10.57 | 12.63 | 214.13 | 1173.31 | 4.33 |
| | 3/11/20 9:32 | 242.06 | 27.83 | 10.57 | 12.62 | 214.53 | 1174.11 | 4.33 |
| | 3/11/20 9:33 | 242.09 | 27.88 | 10.57 | 12.60 | 214.61 | 1174.17 | 4.33 |
| | 3/11/20 9:34 | 242.14 | 27.90 | 10.57 | 12.59 | 214.21 | 1174.80 | 4.33 |
| | 3/11/20 9:35 | 241.98 | 27.83 | 10.57 | 12.57 | 213.38 | 1174.41 | 4.33 |
| | 3/11/20 9:36 | 242.11 | 27.81 | 10.57 | 12.55 | 213.76 | 1173.99 | 4.33 |
| | 3/11/20 9:37 | 241.93 | 27.81 | 10.57 | 12.53 | 213.81 | 1173.75 | 4.33 |
| | 3/11/20 9:38 | 242.17 | 27.78 | 10.57 | 12.51 | 214.77 | 1174.78 | 4.33 |
| | 3/11/20 9:39 | 241.99 | 27.87 | 10.57 | 12.49 | 213.50 | 1174.08 | 4.33 |
| | 3/11/20 9:40 | 242.27 | 27.82 | 10.57 | 12.51 | 213.90 | 1174.64 | 4.33 |
| | 3/11/20 9:41 | 242.00 | 27.83 | 10.57 | 12.57 | 213.44 | 1173.70 | 4.33 |
| | 3/11/20 9:42 | 241.86 | 27.83 | 10.57 | 12.62 | 213.81 | 1173.89 | 4.33 |
| | 3/11/20 9:43 | 241.96 | 27.84 | 10.57 | 12.68 | 214.11 | 1173.88 | 4.33 |
| | 3/11/20 9:44 | 241.74 | 27.75 | 10.57 | 12.74 | 214.00 | 1174.51 | 4.33 |
| | 3/11/20 9:45 | 241.65 | 27.85 | 10.57 | 12.79 | 213.83 | 1174.02 | 4.32 |
| | 3/11/20 9:46 | 238.87 | 27.58 | 10.57 | 12.85 | 212.53 | 1179.78 | 4.32 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/11 8:40 - 3/11 10:40) | 240.88 | 27.72 | 10.57 | 12.64 | 187.45 | 1176.22 | 4.33 |
| COUNT = 121 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/11/20 9:47 | 238.30 | 27.57 | 10.57 | 12.82 | 166.37 | 1183.73 | 4.32 |
| 3/11/20 9:48 | 238.16 | 27.52 | 10.57 | 12.79 | 165.42 | 1183.37 | 4.32 |
| 3/11/20 9:49 | 241.17 | 27.82 | 10.57 | 12.77 | 160.42 | 1177.20 | 4.32 |
| 3/11/20 9:50 | 240.90 | 27.68 | 10.57 | 12.74 | 170.20 | 1176.77 | 4.32 |
| 3/11/20 9:51 | 240.55 | 27.65 | 10.57 | 12.72 | 181.94 | 1177.46 | 4.32 |
| 3/11/20 9:52 | 240.46 | 27.75 | 10.57 | 12.72 | 176.99 | 1176.95 | 4.32 |
| 3/11/20 9:53 | 241.52 | 27.84 | 10.57 | 12.71 | 171.72 | 1174.49 | 4.32 |
| 3/11/20 9:54 | 240.44 | 27.61 | 10.57 | 12.71 | 201.42 | 1178.29 | 4.32 |
| 3/11/20 9:55 | 241.74 | 27.84 | 10.57 | 12.71 | 183.85 | 1173.76 | 4.32 |
| 3/11/20 9:56 | 241.62 | 27.87 | 10.57 | 12.71 | 205.01 | 1174.20 | 4.32 |
| 3/11/20 9:57 | 241.67 | 27.88 | 10.57 | 12.70 | 208.19 | 1174.07 | 4.32 |
| 3/11/20 9:58 | 241.72 | 27.84 | 10.57 | 12.70 | 208.20 | 1174.28 | 4.32 |
| 3/11/20 9:59 | 238.49 | 27.49 | 10.57 | 12.69 | 209.14 | 1179.95 | 4.31 |
| 3/11/20 10:00 | 240.39 | 27.67 | 10.57 | 12.68 | 164.44 | 1180.24 | 4.31 |
| 3/11/20 10:01 | 241.50 | 27.84 | 10.57 | 12.66 | 175.74 | 1173.94 | 4.31 |
| 3/11/20 10:02 | 241.98 | 27.80 | 10.57 | 12.64 | 207.94 | 1173.24 | 4.31 |
| 3/11/20 10:03 | 241.80 | 27.75 | 10.57 | 12.63 | 211.59 | 1173.91 | 4.31 |
| 3/11/20 10:04 | 241.63 | 27.80 | 10.57 | 12.61 | 213.26 | 1173.45 | 4.31 |
| 3/11/20 10:05 | 241.35 | 27.87 | 10.57 | 12.60 | 211.81 | 1173.74 | 4.31 |
| 3/11/20 10:06 | 241.62 | 27.83 | 10.57 | 12.60 | 211.18 | 1174.73 | 4.31 |
| 3/11/20 10:07 | 241.69 | 27.85 | 10.57 | 12.60 | 209.53 | 1174.39 | 4.31 |
| 3/11/20 10:08 | 241.89 | 27.84 | 10.57 | 12.59 | 209.35 | 1174.41 | 4.31 |
| 3/11/20 10:09 | 241.34 | 27.82 | 10.57 | 12.59 | 212.27 | 1173.96 | 4.31 |
| 3/11/20 10:10 | 241.78 | 27.79 | 10.57 | 12.59 | 213.16 | 1174.35 | 4.31 |
| 3/11/20 10:11 | 241.33 | 27.79 | 10.57 | 12.58 | 212.55 | 1173.99 | 4.31 |
| 3/11/20 10:12 | 241.31 | 27.80 | 10.57 | 12.58 | 212.38 | 1173.11 | 4.31 |
| 3/11/20 10:13 | 241.28 | 27.80 | 10.57 | 12.58 | 212.52 | 1173.37 | 4.30 |
| 3/11/20 10:14 | 241.32 | 27.81 | 10.57 | 12.57 | 212.17 | 1173.89 | 4.30 |
| 3/11/20 10:15 | 241.35 | 27.69 | 10.57 | 12.57 | 212.43 | 1173.95 | 4.30 |
| 3/11/20 10:16 | 241.32 | 27.68 | 10.57 | 12.57 | 212.38 | 1173.28 | 4.30 |
| 3/11/20 10:17 | 239.41 | 27.55 | 10.57 | 12.56 | 203.88 | 1178.37 | 4.30 |
| 3/11/20 10:18 | 239.41 | 27.56 | 10.57 | 12.56 | 164.40 | 1179.53 | 4.30 |
| 3/11/20 10:19 | 239.75 | 27.60 | 10.57 | 12.56 | 158.17 | 1178.95 | 4.30 |
| 3/11/20 10:20 | 239.59 | 27.56 | 10.57 | 12.55 | 153.44 | 1179.42 | 4.30 |
| 3/11/20 10:21 | 239.40 | 27.58 | 10.57 | 12.55 | 151.15 | 1180.07 | 4.30 |
| 3/11/20 10:22 | 240.24 | 27.69 | 10.57 | 12.55 | 151.78 | 1177.49 | 4.30 |
| 3/11/20 10:23 | 240.77 | 27.72 | 10.57 | 12.54 | 157.75 | 1175.64 | 4.30 |
| 3/11/20 10:24 | 240.60 | 27.78 | 10.57 | 12.54 | 183.54 | 1175.88 | 4.31 |
| 3/11/20 10:25 | 240.60 | 27.72 | 10.57 | 12.54 | 183.53 | 1174.86 | 4.31 |
| 3/11/20 10:26 | 240.36 | 27.59 | 10.57 | 12.54 | 181.45 | 1176.24 | 4.31 |
| 3/11/20 10:27 | 240.63 | 27.72 | 10.57 | 12.53 | 177.71 | 1176.15 | 4.31 |
| 3/11/20 10:28 | 240.43 | 27.73 | 10.57 | 12.53 | 175.53 | 1175.03 | 4.31 |
| 3/11/20 10:29 | 240.43 | 27.71 | 10.57 | 12.53 | 173.61 | 1175.72 | 4.31 |
| 3/11/20 10:30 | 240.34 | 27.64 | 10.57 | 12.52 | 173.12 | 1176.01 | 4.31 |
| 3/11/20 10:31 | 238.86 | 27.52 | 10.57 | 12.52 | 173.03 | 1180.98 | 4.31 |
| 3/11/20 10:32 | 238.86 | 27.58 | 10.57 | 12.52 | 161.44 | 1179.59 | 4.31 |
| 3/11/20 10:33 | 239.53 | 27.65 | 10.57 | 12.51 | 153.07 | 1178.91 | 4.31 |
| 3/11/20 10:34 | 239.54 | 27.55 | 10.57 | 12.51 | 148.55 | 1178.69 | 4.31 |
| 3/11/20 10:35 | 239.37 | 27.60 | 10.57 | 12.51 | 147.10 | 1177.39 | 4.31 |
| 3/11/20 10:36 | 240.20 | 27.60 | 10.57 | 12.50 | 148.50 | 1177.55 | 4.31 |
| 3/11/20 10:37 | 240.17 | 27.67 | 10.57 | 12.51 | 152.39 | 1176.72 | 4.31 |
| 3/11/20 10:38 | 240.20 | 27.59 | 10.57 | 12.53 | 161.32 | 1176.86 | 4.31 |
| 3/11/20 10:39 | 237.27 | 27.37 | 10.57 | 12.54 | 163.29 | 1178.48 | 4.31 |
| 3/11/20 10:40 | 238.23 | 27.42 | 10.57 | 12.55 | 157.48 | 1183.35 | 4.31 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/11 11:33 - 3/11 13:33) | 239.86 | 27.62 | 10.56 | 12.65 | 196.91 | 1174.46 | 4.36 |
| COUNT = 121 | | | | | | | |

| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
|---|---|---|---|---|---|---|---|
| 3/11/20 11:33 | 240.95 | 27.80 | 10.56 | 12.66 | 205.42 | 1173.78 | 4.34 |
| 3/11/20 11:34 | 240.78 | 27.75 | 10.56 | 12.67 | 207.29 | 1174.01 | 4.34 |
| 3/11/20 11:35 | 240.80 | 27.72 | 10.56 | 12.67 | 206.69 | 1173.77 | 4.34 |
| 3/11/20 11:36 | 240.75 | 27.71 | 10.56 | 12.68 | 206.08 | 1173.15 | 4.34 |
| 3/11/20 11:37 | 240.97 | 27.71 | 10.56 | 12.69 | 206.16 | 1173.98 | 4.34 |
| 3/11/20 11:38 | 240.65 | 27.73 | 10.56 | 12.70 | 207.18 | 1173.62 | 4.34 |
| 3/11/20 11:39 | 240.70 | 27.71 | 10.56 | 12.71 | 206.98 | 1173.67 | 4.34 |
| 3/11/20 11:40 | 240.83 | 27.77 | 10.56 | 12.72 | 207.34 | 1173.96 | 4.34 |
| 3/11/20 11:41 | 240.62 | 27.62 | 10.56 | 12.72 | 206.34 | 1174.33 | 4.34 |
| 3/11/20 11:42 | 240.90 | 27.72 | 10.56 | 12.73 | 205.44 | 1174.35 | 4.34 |
| 3/11/20 11:43 | 241.26 | 27.81 | 10.56 | 12.74 | 204.29 | 1174.34 | 4.34 |
| 3/11/20 11:44 | 240.63 | 27.70 | 10.56 | 12.75 | 207.25 | 1173.42 | 4.34 |
| 3/11/20 11:45 | 240.95 | 27.64 | 10.56 | 12.76 | 208.82 | 1174.88 | 4.34 |
| 3/11/20 11:46 | 240.49 | 27.67 | 10.56 | 12.77 | 209.05 | 1174.45 | 4.34 |
| 3/11/20 11:47 | 240.60 | 27.73 | 10.56 | 12.77 | 208.01 | 1174.14 | 4.34 |
| 3/11/20 11:48 | 239.96 | 27.65 | 10.56 | 12.78 | 206.97 | 1174.54 | 4.34 |
| 3/11/20 11:49 | 237.44 | 27.32 | 10.56 | 12.79 | 196.51 | 1182.50 | 4.34 |
| 3/11/20 11:50 | 237.91 | 27.54 | 10.56 | 12.80 | 164.56 | 1179.17 | 4.34 |
| 3/11/20 11:51 | 240.11 | 27.71 | 10.56 | 12.81 | 156.40 | 1175.76 | 4.35 |
| 3/11/20 11:52 | 240.86 | 27.76 | 10.56 | 12.81 | 182.67 | 1174.61 | 4.35 |
| 3/11/20 11:53 | 240.45 | 27.68 | 10.56 | 12.82 | 196.66 | 1172.98 | 4.35 |
| 3/11/20 11:54 | 240.73 | 27.78 | 10.56 | 12.83 | 207.20 | 1174.16 | 4.35 |
| 3/11/20 11:55 | 238.51 | 27.43 | 10.56 | 12.84 | 208.77 | 1179.51 | 4.35 |
| 3/11/20 11:56 | 238.73 | 27.54 | 10.56 | 12.84 | 161.14 | 1178.85 | 4.35 |
| 3/11/20 11:57 | 236.86 | 27.36 | 10.56 | 12.83 | 153.56 | 1180.22 | 4.35 |
| 3/11/20 11:58 | 239.77 | 27.63 | 10.56 | 12.82 | 150.96 | 1176.64 | 4.35 |
| 3/11/20 11:59 | 239.65 | 27.59 | 10.56 | 12.81 | 158.77 | 1175.03 | 4.35 |
| 3/11/20 12:00 | 239.27 | 27.55 | 10.56 | 12.80 | 184.10 | 1176.56 | 4.35 |
| 3/11/20 12:01 | 240.52 | 27.70 | 10.56 | 12.78 | 175.93 | 1174.84 | 4.35 |
| 3/11/20 12:02 | 240.38 | 27.68 | 10.56 | 12.77 | 192.05 | 1172.94 | 4.35 |
| 3/11/20 12:03 | 239.87 | 27.66 | 10.56 | 12.76 | 201.15 | 1172.60 | 4.35 |
| 3/11/20 12:04 | 240.28 | 27.66 | 10.56 | 12.71 | 203.68 | 1173.45 | 4.35 |
| 3/11/20 12:05 | 240.14 | 27.69 | 10.56 | 12.62 | 205.81 | 1173.24 | 4.35 |
| 3/11/20 12:06 | 240.68 | 27.72 | 10.56 | 12.53 | 203.43 | 1173.78 | 4.35 |
| 3/11/20 12:07 | 239.20 | 27.58 | 10.56 | 12.51 | 200.89 | 1176.46 | 4.35 |
| 3/11/20 12:08 | 240.56 | 27.65 | 10.56 | 12.52 | 184.20 | 1174.30 | 4.35 |
| 3/11/20 12:09 | 240.72 | 27.60 | 10.56 | 12.52 | 198.43 | 1174.24 | 4.35 |
| 3/11/20 12:10 | 240.01 | 27.70 | 10.56 | 12.52 | 195.40 | 1174.75 | 4.35 |
| 3/11/20 12:11 | 239.54 | 27.64 | 10.56 | 12.52 | 199.63 | 1175.09 | 4.35 |
| 3/11/20 12:12 | 238.71 | 27.49 | 10.56 | 12.52 | 187.50 | 1179.01 | 4.35 |
| 3/11/20 12:13 | 239.58 | 27.54 | 10.56 | 12.53 | 156.61 | 1175.73 | 4.36 |
| 3/11/20 12:14 | 239.63 | 27.58 | 10.56 | 12.53 | 164.72 | 1175.81 | 4.36 |
| 3/11/20 12:15 | 239.88 | 27.57 | 10.56 | 12.53 | 168.27 | 1175.94 | 4.36 |
| 3/11/20 12:16 | 240.15 | 27.59 | 10.56 | 12.54 | 181.23 | 1174.37 | 4.36 |
| 3/11/20 12:17 | 239.87 | 27.67 | 10.56 | 12.54 | 204.93 | 1174.07 | 4.36 |
| 3/11/20 12:18 | 240.07 | 27.62 | 10.56 | 12.55 | 213.37 | 1175.72 | 4.36 |
| 3/11/20 12:19 | 239.70 | 27.64 | 10.56 | 12.57 | 210.99 | 1175.29 | 4.36 |
| 3/11/20 12:20 | 239.65 | 27.58 | 10.56 | 12.59 | 200.45 | 1176.03 | 4.36 |
| 3/11/20 12:21 | 236.95 | 27.27 | 10.56 | 12.61 | 192.64 | 1180.91 | 4.36 |
| 3/11/20 12:22 | 239.56 | 27.64 | 10.56 | 12.63 | 170.95 | 1176.16 | 4.36 |
| 3/11/20 12:23 | 239.08 | 27.59 | 10.56 | 12.65 | 170.98 | 1177.51 | 4.36 |
| 3/11/20 12:24 | 239.13 | 27.55 | 10.56 | 12.72 | 160.89 | 1176.47 | 4.36 |
| 3/11/20 12:25 | 239.46 | 27.60 | 10.56 | 12.78 | 164.53 | 1176.31 | 4.36 |
| 3/11/20 12:26 | 239.73 | 27.58 | 10.56 | 12.85 | 168.02 | 1177.20 | 4.36 |
| 3/11/20 12:27 | 239.44 | 27.53 | 10.56 | 12.92 | 171.92 | 1176.32 | 4.36 |
| 3/11/20 12:28 | 238.62 | 27.50 | 10.56 | 12.93 | 177.73 | 1175.71 | 4.36 |
| 3/11/20 12:29 | 237.77 | 27.31 | 10.56 | 12.90 | 172.62 | 1181.66 | 4.36 |
| 3/11/20 12:30 | 235.32 | 27.13 | 10.56 | 12.88 | 170.31 | 1176.14 | 4.36 |
| 3/11/20 12:31 | 240.39 | 27.71 | 10.56 | 12.85 | 161.30 | 1174.78 | 4.36 |
| 3/11/20 12:32 | 240.18 | 27.71 | 10.56 | 12.83 | 198.58 | 1173.87 | 4.36 |
| 3/11/20 12:33 | 240.11 | 27.68 | 10.56 | 12.80 | 212.76 | 1173.19 | 4.36 |
| 3/11/20 12:34 | 240.38 | 27.65 | 10.56 | 12.78 | 213.09 | 1174.42 | 4.36 |
| 3/11/20 12:35 | 240.20 | 27.65 | 10.56 | 12.75 | 209.43 | 1173.54 | 4.37 |
| 3/11/20 12:36 | 240.26 | 27.71 | 10.56 | 12.73 | 207.90 | 1173.81 | 4.37 |
| 3/11/20 12:37 | 240.22 | 27.67 | 10.56 | 12.70 | 208.13 | 1173.10 | 4.37 |
| 3/11/20 12:38 | 240.45 | 27.66 | 10.56 | 12.68 | 208.90 | 1174.53 | 4.37 |
| 3/11/20 12:39 | 240.37 | 27.72 | 10.56 | 12.66 | 208.97 | 1174.26 | 4.37 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/11 11:33 - 3/11 13:33) | 239.86 | 27.62 | 10.56 | 12.65 | 196.91 | 1174.46 | 4.36 |
| COUNT = 121 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/11/20 12:40 | 240.33 | 27.65 | 10.56 | 12.63 | 209.23 | 1174.92 | 4.37 |
| 3/11/20 12:41 | 240.12 | 27.62 | 10.56 | 12.61 | 208.90 | 1173.64 | 4.37 |
| 3/11/20 12:42 | 240.02 | 27.62 | 10.56 | 12.59 | 208.71 | 1173.42 | 4.37 |
| 3/11/20 12:43 | 239.93 | 27.62 | 10.56 | 12.58 | 207.60 | 1173.32 | 4.37 |
| 3/11/20 12:44 | 240.23 | 27.66 | 10.56 | 12.58 | 206.77 | 1172.64 | 4.37 |
| 3/11/20 12:45 | 240.03 | 27.66 | 10.56 | 12.57 | 206.29 | 1173.54 | 4.37 |
| 3/11/20 12:46 | 240.31 | 27.68 | 10.56 | 12.57 | 206.76 | 1174.31 | 4.37 |
| 3/11/20 12:47 | 240.34 | 27.64 | 10.56 | 12.57 | 206.58 | 1173.81 | 4.37 |
| 3/11/20 12:48 | 240.18 | 27.61 | 10.56 | 12.56 | 205.71 | 1173.33 | 4.37 |
| 3/11/20 12:49 | 239.88 | 27.60 | 10.56 | 12.56 | 204.76 | 1172.75 | 4.37 |
| 3/11/20 12:50 | 240.05 | 27.68 | 10.56 | 12.55 | 204.30 | 1173.44 | 4.37 |
| 3/11/20 12:51 | 239.69 | 27.57 | 10.56 | 12.55 | 204.95 | 1173.90 | 4.37 |
| 3/11/20 12:52 | 240.06 | 27.67 | 10.56 | 12.55 | 205.52 | 1173.25 | 4.37 |
| 3/11/20 12:53 | 240.43 | 27.62 | 10.56 | 12.54 | 204.91 | 1173.84 | 4.37 |
| 3/11/20 12:54 | 239.99 | 27.64 | 10.56 | 12.54 | 203.68 | 1174.14 | 4.37 |
| 3/11/20 12:55 | 239.80 | 27.64 | 10.56 | 12.53 | 202.84 | 1173.71 | 4.37 |
| 3/11/20 12:56 | 240.00 | 27.64 | 10.56 | 12.53 | 200.96 | 1173.50 | 4.38 |
| 3/11/20 12:57 | 239.70 | 27.57 | 10.56 | 12.53 | 200.02 | 1173.49 | 4.38 |
| 3/11/20 12:58 | 240.01 | 27.64 | 10.56 | 12.52 | 201.24 | 1173.11 | 4.38 |
| 3/11/20 12:59 | 239.49 | 27.62 | 10.56 | 12.53 | 201.61 | 1173.37 | 4.38 |
| 3/11/20 13:00 | 239.71 | 27.61 | 10.56 | 12.54 | 200.21 | 1173.64 | 4.38 |
| 3/11/20 13:01 | 239.87 | 27.62 | 10.56 | 12.54 | 199.16 | 1173.48 | 4.38 |
| 3/11/20 13:02 | 239.88 | 27.59 | 10.56 | 12.55 | 198.70 | 1174.21 | 4.38 |
| 3/11/20 13:03 | 239.79 | 27.57 | 10.56 | 12.56 | 201.32 | 1172.89 | 4.38 |
| 3/11/20 13:04 | 239.79 | 27.62 | 10.56 | 12.56 | 203.28 | 1173.38 | 4.38 |
| 3/11/20 13:05 | 239.79 | 27.64 | 10.56 | 12.57 | 203.72 | 1173.35 | 4.38 |
| 3/11/20 13:06 | 239.98 | 27.58 | 10.56 | 12.57 | 203.72 | 1173.54 | 4.38 |
| 3/11/20 13:07 | 239.91 | 27.61 | 10.56 | 12.58 | 203.62 | 1173.04 | 4.38 |
| 3/11/20 13:08 | 239.83 | 27.60 | 10.56 | 12.59 | 203.46 | 1172.37 | 4.38 |
| 3/11/20 13:09 | 240.07 | 27.61 | 10.56 | 12.59 | 204.27 | 1173.65 | 4.38 |
| 3/11/20 13:10 | 239.82 | 27.59 | 10.56 | 12.60 | 204.47 | 1173.47 | 4.38 |
| 3/11/20 13:11 | 240.06 | 27.66 | 10.56 | 12.61 | 202.87 | 1173.19 | 4.38 |
| 3/11/20 13:12 | 239.69 | 27.60 | 10.56 | 12.61 | 201.89 | 1173.18 | 4.38 |
| 3/11/20 13:13 | 239.92 | 27.59 | 10.56 | 12.62 | 204.19 | 1173.96 | 4.38 |
| 3/11/20 13:14 | 239.79 | 27.53 | 10.56 | 12.60 | 203.97 | 1173.86 | 4.38 |
| 3/11/20 13:15 | 239.66 | 27.62 | 10.56 | 12.58 | 204.23 | 1173.65 | 4.38 |
| 3/11/20 13:16 | 239.68 | 27.65 | 10.56 | 12.56 | 203.74 | 1173.44 | 4.38 |
| 3/11/20 13:17 | 239.48 | 27.50 | 10.56 | 12.54 | 200.98 | 1172.70 | 4.38 |
| 3/11/20 13:18 | 239.78 | 27.69 | 10.56 | 12.55 | 202.31 | 1173.16 | 4.39 |
| 3/11/20 13:19 | 240.00 | 27.57 | 10.56 | 12.56 | 203.04 | 1173.62 | 4.39 |
| 3/11/20 13:20 | 240.08 | 27.66 | 10.56 | 12.58 | 203.42 | 1174.00 | 4.39 |
| 3/11/20 13:21 | 239.78 | 27.62 | 10.56 | 12.59 | 204.19 | 1172.58 | 4.39 |
| 3/11/20 13:22 | 239.63 | 27.51 | 10.56 | 12.60 | 204.11 | 1173.48 | 4.39 |
| 3/11/20 13:23 | 239.87 | 27.62 | 10.56 | 12.62 | 202.76 | 1173.81 | 4.39 |
| 3/11/20 13:24 | 239.59 | 27.57 | 10.56 | 12.63 | 202.53 | 1172.86 | 4.39 |
| 3/11/20 13:25 | 239.71 | 27.56 | 10.56 | 12.64 | 201.73 | 1172.88 | 4.39 |
| 3/11/20 13:26 | 239.89 | 27.61 | 10.56 | 12.65 | 202.27 | 1172.17 | 4.39 |
| 3/11/20 13:27 | 239.81 | 27.62 | 10.56 | 12.65 | 204.02 | 1173.61 | 4.39 |
| 3/11/20 13:28 | 240.11 | 27.55 | 10.56 | 12.65 | 203.60 | 1172.74 | 4.39 |
| 3/11/20 13:29 | 239.71 | 27.58 | 10.56 | 12.65 | 204.43 | 1172.74 | 4.39 |
| 3/11/20 13:30 | 239.51 | 27.48 | 10.56 | 12.65 | 204.45 | 1172.76 | 4.39 |
| 3/11/20 13:31 | 239.74 | 27.59 | 10.56 | 12.65 | 202.28 | 1173.48 | 4.39 |
| 3/11/20 13:32 | 239.77 | 27.73 | 10.56 | 12.65 | 200.87 | 1172.90 | 4.39 |
| 3/11/20 13:33 | 239.69 | 27.67 | 10.56 | 12.65 | 201.60 | 1172.93 | 4.39 |

# EMISSION DATA RECORDS

## Operating Data Base+DB Load
## (provided by Cricket Valley Energy Center LLC)
## Opacity

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/10 14:30 - 3/10 15:30) | 231.74 | 27.08 | 9.79 | 12.60 | 153.44 | 1163.25 | 4.54 |
| COUNT = 61 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/10/20 14:30 | 231.81 | 27.11 | 9.71 | 12.56 | 155.65 | 1163.65 | 4.53 |
| 3/10/20 14:31 | 231.91 | 27.13 | 9.71 | 12.56 | 155.14 | 1163.28 | 4.53 |
| 3/10/20 14:32 | 231.97 | 27.05 | 9.72 | 12.55 | 154.69 | 1163.82 | 4.53 |
| 3/10/20 14:33 | 231.88 | 27.09 | 9.72 | 12.55 | 154.23 | 1163.76 | 4.53 |
| 3/10/20 14:34 | 231.85 | 27.14 | 9.72 | 12.55 | 154.50 | 1164.07 | 4.53 |
| 3/10/20 14:35 | 231.91 | 27.10 | 9.72 | 12.54 | 154.77 | 1163.52 | 4.53 |
| 3/10/20 14:36 | 231.97 | 27.03 | 9.73 | 12.54 | 154.94 | 1163.09 | 4.53 |
| 3/10/20 14:37 | 231.69 | 27.10 | 9.73 | 12.54 | 154.50 | 1163.58 | 4.53 |
| 3/10/20 14:38 | 231.98 | 27.07 | 9.73 | 12.53 | 153.89 | 1163.34 | 4.53 |
| 3/10/20 14:39 | 231.83 | 27.14 | 9.73 | 12.53 | 153.49 | 1163.66 | 4.53 |
| 3/10/20 14:40 | 231.50 | 27.06 | 9.74 | 12.53 | 154.79 | 1163.33 | 4.53 |
| 3/10/20 14:41 | 231.71 | 27.09 | 9.74 | 12.52 | 155.23 | 1163.16 | 4.53 |
| 3/10/20 14:42 | 231.95 | 27.12 | 9.74 | 12.52 | 155.42 | 1163.52 | 4.53 |
| 3/10/20 14:43 | 231.65 | 27.08 | 9.74 | 12.52 | 156.22 | 1163.78 | 4.53 |
| 3/10/20 14:44 | 231.77 | 27.14 | 9.75 | 12.51 | 155.64 | 1163.62 | 4.53 |
| 3/10/20 14:45 | 231.90 | 27.07 | 9.75 | 12.51 | 155.09 | 1163.72 | 4.53 |
| 3/10/20 14:46 | 231.84 | 27.06 | 9.75 | 12.51 | 154.70 | 1163.64 | 4.53 |
| 3/10/20 14:47 | 231.92 | 27.03 | 9.76 | 12.52 | 154.76 | 1163.77 | 4.53 |
| 3/10/20 14:48 | 231.97 | 27.08 | 9.76 | 12.53 | 154.50 | 1163.45 | 4.53 |
| 3/10/20 14:49 | 231.83 | 27.03 | 9.76 | 12.54 | 154.46 | 1162.65 | 4.53 |
| 3/10/20 14:50 | 232.00 | 27.08 | 9.76 | 12.55 | 153.84 | 1163.73 | 4.53 |
| 3/10/20 14:51 | 231.60 | 27.04 | 9.77 | 12.56 | 154.16 | 1163.47 | 4.53 |
| 3/10/20 14:52 | 231.66 | 27.13 | 9.77 | 12.56 | 153.27 | 1163.39 | 4.53 |
| 3/10/20 14:53 | 231.91 | 27.07 | 9.77 | 12.57 | 153.47 | 1163.42 | 4.54 |
| 3/10/20 14:54 | 231.74 | 27.08 | 9.77 | 12.58 | 153.38 | 1163.10 | 4.54 |
| 3/10/20 14:55 | 231.64 | 27.07 | 9.78 | 12.58 | 154.04 | 1163.32 | 4.54 |
| 3/10/20 14:56 | 231.52 | 27.06 | 9.78 | 12.58 | 153.48 | 1163.32 | 4.54 |
| 3/10/20 14:57 | 231.77 | 27.05 | 9.78 | 12.57 | 153.04 | 1163.56 | 4.54 |
| 3/10/20 14:58 | 231.66 | 27.08 | 9.78 | 12.56 | 152.20 | 1163.48 | 4.54 |
| 3/10/20 14:59 | 231.59 | 27.05 | 9.79 | 12.55 | 152.46 | 1163.35 | 4.54 |
| 3/10/20 15:00 | 231.73 | 27.14 | 9.79 | 12.54 | 152.44 | 1162.98 | 4.54 |
| 3/10/20 15:01 | 231.58 | 27.08 | 9.79 | 12.54 | 152.38 | 1163.98 | 4.54 |
| 3/10/20 15:02 | 231.61 | 27.08 | 9.79 | 12.53 | 153.15 | 1163.00 | 4.54 |
| 3/10/20 15:03 | 231.43 | 27.11 | 9.80 | 12.54 | 153.03 | 1162.82 | 4.54 |
| 3/10/20 15:04 | 231.68 | 27.08 | 9.80 | 12.55 | 152.38 | 1162.70 | 4.54 |
| 3/10/20 15:05 | 231.36 | 27.03 | 9.80 | 12.55 | 152.38 | 1163.02 | 4.54 |
| 3/10/20 15:06 | 231.66 | 27.11 | 9.80 | 12.56 | 152.74 | 1163.04 | 4.54 |
| 3/10/20 15:07 | 231.68 | 27.11 | 9.81 | 12.57 | 152.72 | 1163.13 | 4.54 |
| 3/10/20 15:08 | 231.81 | 27.05 | 9.81 | 12.58 | 152.72 | 1163.29 | 4.54 |
| 3/10/20 15:09 | 231.78 | 27.03 | 9.81 | 12.59 | 153.21 | 1163.46 | 4.54 |
| 3/10/20 15:10 | 231.70 | 27.08 | 9.81 | 12.60 | 152.76 | 1163.18 | 4.54 |
| 3/10/20 15:11 | 231.84 | 27.04 | 9.82 | 12.60 | 152.73 | 1163.03 | 4.54 |
| 3/10/20 15:12 | 231.48 | 27.11 | 9.82 | 12.61 | 152.92 | 1162.51 | 4.54 |
| 3/10/20 15:13 | 231.65 | 27.10 | 9.82 | 12.62 | 153.85 | 1163.12 | 4.54 |
| 3/10/20 15:14 | 231.85 | 27.03 | 9.82 | 12.63 | 153.04 | 1163.27 | 4.54 |
| 3/10/20 15:15 | 231.69 | 27.15 | 9.83 | 12.64 | 152.08 | 1162.51 | 4.54 |
| 3/10/20 15:16 | 231.68 | 27.06 | 9.83 | 12.65 | 151.68 | 1163.07 | 4.54 |
| 3/10/20 15:17 | 231.76 | 27.03 | 9.83 | 12.65 | 151.59 | 1163.44 | 4.54 |
| 3/10/20 15:18 | 231.80 | 27.05 | 9.83 | 12.66 | 152.12 | 1163.21 | 4.54 |
| 3/10/20 15:19 | 231.39 | 27.14 | 9.84 | 12.67 | 152.37 | 1162.97 | 4.55 |
| 3/10/20 15:20 | 231.76 | 27.04 | 9.84 | 12.69 | 152.52 | 1163.16 | 4.55 |
| 3/10/20 15:21 | 231.61 | 27.08 | 9.84 | 12.72 | 152.68 | 1162.77 | 4.55 |
| 3/10/20 15:22 | 231.83 | 27.02 | 9.84 | 12.75 | 152.73 | 1162.71 | 4.55 |
| 3/10/20 15:23 | 231.58 | 27.05 | 9.85 | 12.78 | 152.84 | 1162.74 | 4.55 |
| 3/10/20 15:24 | 231.89 | 27.05 | 9.85 | 12.80 | 152.76 | 1162.62 | 4.55 |
| 3/10/20 15:25 | 231.70 | 27.05 | 9.85 | 12.80 | 153.18 | 1162.65 | 4.55 |
| 3/10/20 15:26 | 232.07 | 27.10 | 9.85 | 12.79 | 152.54 | 1163.55 | 4.55 |
| 3/10/20 15:27 | 231.82 | 27.08 | 9.86 | 12.77 | 153.36 | 1162.69 | 4.55 |
| 3/10/20 15:28 | 231.72 | 27.10 | 9.86 | 12.76 | 153.13 | 1163.04 | 4.55 |
| 3/10/20 15:29 | 231.49 | 27.10 | 9.86 | 12.74 | 151.55 | 1163.36 | 4.55 |
| 3/10/20 15:30 | 231.80 | 27.07 | 9.86 | 12.70 | 150.35 | 1162.75 | 4.55 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/10 15:30 - 3/10 16:30) | 231.84 | 27.09 | 9.94 | 12.63 | 151.51 | 1162.44 | 4.56 |
| COUNT = 61 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/10/20 15:30 | 231.80 | 27.07 | 9.86 | 12.70 | 150.35 | 1162.75 | 4.55 |
| 3/10/20 15:31 | 231.67 | 27.08 | 9.87 | 12.70 | 149.99 | 1163.10 | 4.55 |
| 3/10/20 15:32 | 231.74 | 27.06 | 9.87 | 12.71 | 152.84 | 1162.12 | 4.55 |
| 3/10/20 15:33 | 231.79 | 27.05 | 9.87 | 12.72 | 152.46 | 1162.82 | 4.55 |
| 3/10/20 15:34 | 231.65 | 27.07 | 9.88 | 12.74 | 153.25 | 1162.62 | 4.55 |
| 3/10/20 15:35 | 231.63 | 27.12 | 9.88 | 12.75 | 153.71 | 1162.53 | 4.55 |
| 3/10/20 15:36 | 231.73 | 27.07 | 9.88 | 12.76 | 152.85 | 1162.39 | 4.55 |
| 3/10/20 15:37 | 231.82 | 27.14 | 9.88 | 12.77 | 154.04 | 1162.57 | 4.55 |
| 3/10/20 15:38 | 231.61 | 27.07 | 9.89 | 12.78 | 152.27 | 1161.98 | 4.55 |
| 3/10/20 15:39 | 231.67 | 27.11 | 9.89 | 12.79 | 152.02 | 1162.48 | 4.55 |
| 3/10/20 15:40 | 231.83 | 27.09 | 9.89 | 12.80 | 151.68 | 1162.50 | 4.55 |
| 3/10/20 15:41 | 231.67 | 27.00 | 9.89 | 12.81 | 151.53 | 1162.63 | 4.55 |
| 3/10/20 15:42 | 231.52 | 27.05 | 9.90 | 12.82 | 151.70 | 1162.49 | 4.55 |
| 3/10/20 15:43 | 231.75 | 27.11 | 9.90 | 12.83 | 151.57 | 1162.39 | 4.55 |
| 3/10/20 15:44 | 231.67 | 27.07 | 9.90 | 12.83 | 151.81 | 1162.45 | 4.55 |
| 3/10/20 15:45 | 231.72 | 27.08 | 9.90 | 12.83 | 151.95 | 1162.89 | 4.56 |
| 3/10/20 15:46 | 232.07 | 27.06 | 9.91 | 12.83 | 152.08 | 1162.81 | 4.56 |
| 3/10/20 15:47 | 231.91 | 27.03 | 9.91 | 12.83 | 151.27 | 1162.53 | 4.56 |
| 3/10/20 15:48 | 232.09 | 27.06 | 9.91 | 12.83 | 151.36 | 1162.60 | 4.56 |
| 3/10/20 15:49 | 231.76 | 27.11 | 9.91 | 12.75 | 150.75 | 1162.71 | 4.56 |
| 3/10/20 15:50 | 231.82 | 27.12 | 9.92 | 12.61 | 152.16 | 1162.74 | 4.56 |
| 3/10/20 15:51 | 231.59 | 27.15 | 9.92 | 12.55 | 151.94 | 1162.86 | 4.56 |
| 3/10/20 15:52 | 231.65 | 27.06 | 9.92 | 12.54 | 151.82 | 1162.32 | 4.56 |
| 3/10/20 15:53 | 231.88 | 27.15 | 9.92 | 12.54 | 151.45 | 1162.04 | 4.56 |
| 3/10/20 15:54 | 231.67 | 27.02 | 9.93 | 12.54 | 151.33 | 1162.77 | 4.56 |
| 3/10/20 15:55 | 231.59 | 27.04 | 9.93 | 12.55 | 151.85 | 1162.18 | 4.56 |
| 3/10/20 15:56 | 231.77 | 27.04 | 9.93 | 12.55 | 151.14 | 1162.22 | 4.56 |
| 3/10/20 15:57 | 231.58 | 27.03 | 9.93 | 12.55 | 151.25 | 1162.41 | 4.56 |
| 3/10/20 15:58 | 231.82 | 27.16 | 9.94 | 12.55 | 151.05 | 1162.67 | 4.56 |
| 3/10/20 15:59 | 231.78 | 27.10 | 9.94 | 12.56 | 151.64 | 1162.54 | 4.56 |
| 3/10/20 16:00 | 231.88 | 27.08 | 9.94 | 12.56 | 152.21 | 1162.71 | 4.56 |
| 3/10/20 16:01 | 231.73 | 27.06 | 9.94 | 12.56 | 152.37 | 1162.28 | 4.56 |
| 3/10/20 16:02 | 231.37 | 27.08 | 9.95 | 12.56 | 152.60 | 1162.23 | 4.56 |
| 3/10/20 16:03 | 231.77 | 27.08 | 9.95 | 12.56 | 152.06 | 1162.44 | 4.56 |
| 3/10/20 16:04 | 231.99 | 27.10 | 9.95 | 12.57 | 151.86 | 1162.69 | 4.56 |
| 3/10/20 16:05 | 231.95 | 27.08 | 9.95 | 12.57 | 149.53 | 1162.41 | 4.56 |
| 3/10/20 16:06 | 232.15 | 27.06 | 9.96 | 12.57 | 150.11 | 1162.59 | 4.56 |
| 3/10/20 16:07 | 232.10 | 27.08 | 9.96 | 12.57 | 150.60 | 1162.26 | 4.56 |
| 3/10/20 16:08 | 231.82 | 27.05 | 9.96 | 12.58 | 151.64 | 1162.18 | 4.56 |
| 3/10/20 16:09 | 231.97 | 27.11 | 9.96 | 12.58 | 151.56 | 1161.92 | 4.56 |
| 3/10/20 16:10 | 231.77 | 27.09 | 9.97 | 12.57 | 152.04 | 1162.09 | 4.56 |
| 3/10/20 16:11 | 231.99 | 27.14 | 9.97 | 12.57 | 151.67 | 1162.68 | 4.57 |
| 3/10/20 16:12 | 232.27 | 27.13 | 9.97 | 12.57 | 152.46 | 1162.18 | 4.57 |
| 3/10/20 16:13 | 231.93 | 27.11 | 9.97 | 12.57 | 151.57 | 1162.32 | 4.57 |
| 3/10/20 16:14 | 231.85 | 27.12 | 9.98 | 12.56 | 151.10 | 1162.52 | 4.57 |
| 3/10/20 16:15 | 231.72 | 27.08 | 9.98 | 12.56 | 151.13 | 1162.17 | 4.57 |
| 3/10/20 16:16 | 231.75 | 27.05 | 9.98 | 12.56 | 150.92 | 1162.43 | 4.57 |
| 3/10/20 16:17 | 232.22 | 27.05 | 9.98 | 12.56 | 151.28 | 1162.64 | 4.57 |
| 3/10/20 16:18 | 231.87 | 27.11 | 9.99 | 12.55 | 151.42 | 1162.36 | 4.57 |
| 3/10/20 16:19 | 231.84 | 27.09 | 9.99 | 12.55 | 151.56 | 1162.37 | 4.57 |
| 3/10/20 16:20 | 231.85 | 27.19 | 9.99 | 12.55 | 151.49 | 1162.37 | 4.57 |
| 3/10/20 16:21 | 231.94 | 27.10 | 10.00 | 12.55 | 150.92 | 1162.55 | 4.57 |
| 3/10/20 16:22 | 231.97 | 27.11 | 10.00 | 12.54 | 151.34 | 1162.44 | 4.57 |
| 3/10/20 16:23 | 232.20 | 27.11 | 10.00 | 12.54 | 151.07 | 1162.21 | 4.57 |
| 3/10/20 16:24 | 232.02 | 27.13 | 10.00 | 12.54 | 150.51 | 1162.47 | 4.57 |
| 3/10/20 16:25 | 232.00 | 27.15 | 10.01 | 12.53 | 151.23 | 1162.02 | 4.57 |
| 3/10/20 16:26 | 231.96 | 27.07 | 10.01 | 12.53 | 149.81 | 1162.08 | 4.57 |
| 3/10/20 16:27 | 231.97 | 27.07 | 10.01 | 12.53 | 151.02 | 1162.44 | 4.57 |
| 3/10/20 16:28 | 231.84 | 27.05 | 10.01 | 12.53 | 150.10 | 1162.60 | 4.57 |
| 3/10/20 16:29 | 232.02 | 27.09 | 10.02 | 12.54 | 149.83 | 1162.01 | 4.57 |
| 3/10/20 16:30 | 232.07 | 27.11 | 10.02 | 12.54 | 149.98 | 1162.13 | 4.57 |

| Description | CTG2 Gross output | CT2 gas flow | U2 duct burner gas flow | HRSG2 duct inlet pressure | U2 SCR NH3 flow rate | CT2 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (3/10 16:30 - 3/10 17:30) | 231.97 | 27.08 | 10.09 | 12.64 | 150.42 | 1162.02 | 4.58 |
| COUNT = 61 | | | | | | | |
| Signal Tagname | G2.DWATT | G2.FQG | H2.02JBFT105_MassFlow | H2.02BAPT001 | H2.02BSFIT500 | G2.WEXH | BOPC2.00SBFY061 |
| 3/10/20 16:30 | 232.07 | 27.11 | 10.02 | 12.54 | 149.98 | 1162.13 | 4.57 |
| 3/10/20 16:31 | 231.98 | 27.06 | 10.02 | 12.55 | 150.46 | 1162.43 | 4.57 |
| 3/10/20 16:32 | 231.91 | 27.06 | 10.02 | 12.56 | 150.86 | 1162.35 | 4.57 |
| 3/10/20 16:33 | 231.98 | 27.10 | 10.03 | 12.56 | 151.31 | 1161.89 | 4.57 |
| 3/10/20 16:34 | 232.06 | 27.17 | 10.03 | 12.57 | 151.36 | 1162.31 | 4.57 |
| 3/10/20 16:35 | 231.98 | 27.07 | 10.03 | 12.57 | 151.58 | 1162.09 | 4.57 |
| 3/10/20 16:36 | 231.98 | 27.09 | 10.03 | 12.58 | 151.76 | 1161.99 | 4.57 |
| 3/10/20 16:37 | 232.21 | 27.14 | 10.04 | 12.58 | 151.56 | 1162.55 | 4.58 |
| 3/10/20 16:38 | 232.32 | 27.08 | 10.04 | 12.59 | 151.22 | 1162.65 | 4.58 |
| 3/10/20 16:39 | 231.87 | 27.03 | 10.04 | 12.60 | 152.04 | 1162.12 | 4.58 |
| 3/10/20 16:40 | 231.92 | 27.04 | 10.04 | 12.60 | 152.10 | 1162.03 | 4.58 |
| 3/10/20 16:41 | 232.08 | 27.09 | 10.05 | 12.61 | 150.58 | 1161.95 | 4.58 |
| 3/10/20 16:42 | 232.05 | 27.10 | 10.05 | 12.61 | 150.93 | 1162.20 | 4.58 |
| 3/10/20 16:43 | 231.89 | 27.06 | 10.05 | 12.62 | 150.34 | 1162.38 | 4.58 |
| 3/10/20 16:44 | 232.15 | 27.01 | 10.05 | 12.62 | 150.92 | 1162.04 | 4.58 |
| 3/10/20 16:45 | 232.05 | 27.12 | 10.06 | 12.63 | 150.10 | 1162.42 | 4.58 |
| 3/10/20 16:46 | 231.95 | 27.11 | 10.06 | 12.64 | 150.18 | 1162.41 | 4.58 |
| 3/10/20 16:47 | 232.19 | 27.08 | 10.06 | 12.64 | 149.21 | 1162.19 | 4.58 |
| 3/10/20 16:48 | 231.67 | 27.07 | 10.06 | 12.65 | 150.13 | 1161.79 | 4.58 |
| 3/10/20 16:49 | 232.04 | 27.17 | 10.07 | 12.65 | 150.56 | 1161.81 | 4.58 |
| 3/10/20 16:50 | 231.93 | 27.08 | 10.07 | 12.66 | 151.12 | 1162.15 | 4.58 |
| 3/10/20 16:51 | 231.99 | 27.06 | 10.07 | 12.66 | 150.67 | 1161.89 | 4.58 |
| 3/10/20 16:52 | 232.00 | 27.11 | 10.07 | 12.67 | 150.37 | 1161.81 | 4.58 |
| 3/10/20 16:53 | 231.99 | 27.05 | 10.08 | 12.68 | 150.76 | 1162.13 | 4.58 |
| 3/10/20 16:54 | 231.83 | 27.08 | 10.08 | 12.68 | 150.43 | 1162.21 | 4.58 |
| 3/10/20 16:55 | 232.16 | 27.02 | 10.08 | 12.69 | 150.53 | 1161.66 | 4.58 |
| 3/10/20 16:56 | 232.04 | 27.07 | 10.08 | 12.69 | 150.89 | 1162.17 | 4.58 |
| 3/10/20 16:57 | 231.80 | 27.10 | 10.09 | 12.70 | 150.40 | 1161.89 | 4.58 |
| 3/10/20 16:58 | 231.89 | 27.07 | 10.09 | 12.73 | 150.59 | 1161.80 | 4.58 |
| 3/10/20 16:59 | 232.06 | 27.10 | 10.09 | 12.75 | 150.88 | 1161.95 | 4.58 |
| 3/10/20 17:00 | 232.23 | 27.12 | 10.09 | 12.78 | 150.21 | 1162.13 | 4.58 |
| 3/10/20 17:01 | 231.94 | 27.07 | 10.10 | 12.80 | 149.97 | 1162.25 | 4.58 |
| 3/10/20 17:02 | 231.97 | 26.99 | 10.10 | 12.82 | 149.57 | 1162.00 | 4.58 |
| 3/10/20 17:03 | 231.82 | 27.11 | 10.10 | 12.83 | 149.88 | 1161.60 | 4.59 |
| 3/10/20 17:04 | 232.13 | 27.09 | 10.10 | 12.79 | 150.47 | 1162.16 | 4.59 |
| 3/10/20 17:05 | 231.90 | 27.04 | 10.11 | 12.75 | 150.31 | 1162.00 | 4.59 |
| 3/10/20 17:06 | 232.16 | 27.17 | 10.11 | 12.71 | 150.31 | 1161.73 | 4.59 |
| 3/10/20 17:07 | 232.04 | 27.11 | 10.11 | 12.67 | 150.22 | 1162.04 | 4.59 |
| 3/10/20 17:08 | 231.90 | 27.08 | 10.11 | 12.63 | 150.10 | 1161.92 | 4.59 |
| 3/10/20 17:09 | 232.02 | 27.11 | 10.12 | 12.59 | 150.22 | 1162.00 | 4.59 |
| 3/10/20 17:10 | 231.94 | 27.05 | 10.12 | 12.55 | 150.83 | 1162.61 | 4.59 |
| 3/10/20 17:11 | 231.82 | 27.13 | 10.12 | 12.51 | 149.91 | 1161.51 | 4.59 |
| 3/10/20 17:12 | 231.91 | 27.06 | 10.13 | 12.47 | 150.50 | 1162.05 | 4.59 |
| 3/10/20 17:13 | 232.03 | 27.01 | 10.13 | 12.49 | 150.09 | 1161.72 | 4.59 |
| 3/10/20 17:14 | 232.09 | 27.06 | 10.13 | 12.51 | 150.04 | 1161.78 | 4.59 |
| 3/10/20 17:15 | 231.80 | 27.05 | 10.13 | 12.53 | 150.19 | 1161.59 | 4.59 |
| 3/10/20 17:16 | 231.91 | 27.07 | 10.14 | 12.54 | 150.07 | 1161.73 | 4.59 |
| 3/10/20 17:17 | 231.76 | 27.04 | 10.14 | 12.56 | 150.52 | 1161.96 | 4.59 |
| 3/10/20 17:18 | 231.75 | 27.08 | 10.14 | 12.58 | 150.23 | 1161.74 | 4.59 |
| 3/10/20 17:19 | 232.17 | 27.06 | 10.14 | 12.60 | 149.71 | 1161.92 | 4.59 |
| 3/10/20 17:20 | 231.95 | 27.03 | 10.15 | 12.62 | 149.39 | 1161.85 | 4.59 |
| 3/10/20 17:21 | 232.13 | 27.06 | 10.15 | 12.64 | 149.83 | 1162.63 | 4.59 |
| 3/10/20 17:22 | 231.97 | 27.11 | 10.15 | 12.66 | 149.71 | 1161.80 | 4.59 |
| 3/10/20 17:23 | 232.01 | 27.07 | 10.15 | 12.68 | 149.64 | 1162.00 | 4.59 |
| 3/10/20 17:24 | 231.77 | 27.05 | 10.16 | 12.70 | 150.41 | 1161.30 | 4.59 |
| 3/10/20 17:25 | 231.69 | 27.13 | 10.16 | 12.72 | 151.16 | 1161.74 | 4.59 |
| 3/10/20 17:26 | 232.20 | 27.10 | 10.16 | 12.73 | 150.04 | 1161.97 | 4.59 |
| 3/10/20 17:27 | 231.93 | 27.07 | 10.16 | 12.74 | 149.69 | 1161.84 | 4.59 |
| 3/10/20 17:28 | 231.71 | 27.12 | 10.17 | 12.74 | 150.10 | 1161.99 | 4.59 |
| 3/10/20 17:29 | 231.83 | 27.08 | 10.17 | 12.74 | 148.87 | 1162.13 | 4.60 |
| 3/10/20 17:30 | 231.78 | 27.18 | 10.17 | 12.74 | 149.85 | 1161.98 | 4.60 |

# EMISSION DATA RECORDS

## Reference Method Data
## Base Load
## NOx, CO, VOC, and $NH_3$

**Cricket Valley Energy Center LLC**
**March 9, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,638 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,008 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,617 | lb/min |
| Duct Burner Fuel Flow | 0 | lb/min |
| Total Fuel Flow | 2,195,187 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.28 | in. Hg |
| Relative Humidity | 22 | % |
| Ambient Temperature | 66 | ° F |
| Specific Humidity | 0.002926 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 230.8 | megawatts |
| Heat Input | 2,213 | MMBtu/hr |
| $NH_3$ Flow Rate | 127 | lb/hr |
| Meas. Stack Moisture | 7.6 | % |
| Stack Exhaust Flow (M19) | 51,014,767 | SCFH |

Data from: From PM Run PM U-00002 Base-2

Base Load, Run - 1-1

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 03/09/20 14:44:11 | 1980 | 12.90 | 1.83 | 0.15 | 0.35 | 4.22 | 1.46 |
| 03/09/20 14:44:41 | 2010 | 12.91 | 1.85 | 0.15 | -0.01 | 4.23 | 1.48 |
| 03/09/20 14:45:11 | 2040 | 12.92 | 1.86 | 0.14 | 0.00 | 4.22 | 1.43 |
| 03/09/20 14:45:41 | 2070 | 12.92 | 1.85 | 0.15 | -0.01 | 4.22 | 1.41 |
| 03/09/20 14:46:11 | 2100 | 12.92 | 1.86 | 0.15 | -0.01 | 4.23 | 1.37 |
| 03/09/20 14:46:41 | 2130 | 12.93 | 1.85 | 0.15 | -0.02 | 4.24 | 1.39 |
| 03/09/20 14:47:11 | 2160 | 12.93 | 1.86 | 0.14 | -0.03 | 4.24 | 1.39 |
| 03/09/20 14:47:41 | 2190 | 12.94 | 1.85 | 0.16 | -0.04 | 4.24 | 1.39 |
| 03/09/20 14:48:11 | 2220 | 12.93 | 1.87 | 0.17 | -0.03 | 4.24 | 1.39 |
| 03/09/20 14:48:41 | 2250 | 12.94 | 1.85 | 0.15 | -0.04 | 4.21 | 1.38 |
| 03/09/20 14:49:11 | 2280 | 12.94 | 1.88 | 0.16 | -0.04 | 4.22 | 1.34 |
| 03/09/20 14:49:41 | 2310 | 12.94 | 1.89 | 0.14 | -0.04 | 4.23 | 1.35 |
| 03/09/20 14:50:11 | 2340 | 12.94 | 1.86 | 0.16 | -0.04 | 4.20 | 1.34 |
| 03/09/20 14:50:41 | 2370 | 12.95 | 1.89 | 0.13 | -0.04 | 4.20 | 1.26 |
| 03/09/20 14:51:11 | 2400 | 12.96 | 1.87 | 0.17 | -0.04 | 4.19 | 1.30 |
| 03/09/20 14:51:41 | 2430 | 12.95 | 1.85 | 0.15 | -0.04 | 4.21 | 1.25 |
| 03/09/20 14:52:11 | 2460 | 12.96 | 1.86 | 0.16 | -0.03 | 4.24 | 1.25 |
| 03/09/20 14:52:41 | 2490 | 12.97 | 1.82 | 0.15 | -0.05 | 4.23 | 1.25 |
| 03/09/20 14:53:11 | 2520 | 12.96 | 1.80 | 0.15 | -0.04 | 4.19 | 1.27 |
| 03/09/20 14:53:41 | 2550 | 12.97 | 1.81 | 0.16 | -0.03 | 4.19 | 1.25 |
| 03/09/20 14:54:11 | 2580 | 12.96 | 1.82 | 0.15 | -0.04 | 4.22 | 1.23 |
| 03/09/20 14:54:41 | 2610 | 12.97 | 1.87 | 0.16 | -0.04 | 4.24 | 1.24 |
| 03/09/20 14:55:11 | 2640 | 12.96 | 1.87 | 0.16 | -0.03 | 4.24 | 1.20 |
| 03/09/20 14:55:41 | 2670 | 12.96 | 1.86 | 0.16 | -0.04 | 4.24 | 1.17 |
| 03/09/20 14:56:11 | 2700 | 12.97 | 1.86 | 0.13 | -0.03 | 4.24 | 1.16 |
| 03/09/20 14:56:41 | 2730 | 12.96 | 1.87 | 0.16 | -0.04 | 4.25 | 1.16 |
| 03/09/20 14:57:11 | 2760 | 12.97 | 1.87 | 0.14 | -0.04 | 4.25 | 1.14 |
| 03/09/20 14:57:41 | 2790 | 12.97 | 1.87 | 0.15 | -0.04 | 4.24 | 1.13 |
| 03/09/20 14:58:11 | 2820 | 12.97 | 1.84 | 0.13 | -0.05 | 4.24 | 1.14 |
| 03/09/20 14:58:41 | 2850 | 12.97 | 1.82 | 0.15 | -0.04 | 4.24 | 1.14 |
| 03/09/20 14:59:11 | 2880 | 12.97 | 1.83 | 0.16 | -0.04 | 4.24 | 1.17 |
| 03/09/20 14:59:41 | 2910 | 12.97 | 1.83 | 0.16 | -0.04 | 4.25 | 1.15 |
| 03/09/20 15:00:11 | 2940 | 12.96 | 1.90 | 0.17 | -0.05 | 4.25 | 1.13 |
| 03/09/20 15:00:41 | 2970 | 12.97 | 1.90 | 0.15 | -0.05 | 4.25 | 1.06 |
| 03/09/20 15:01:11 | 3000 | 12.97 | 1.88 | 0.16 | -0.04 | 4.25 | 1.09 |
| 03/09/20 15:01:41 | 3030 | 12.97 | 1.86 | 0.15 | -0.04 | 4.25 | 1.11 |
| 03/09/20 15:02:11 | 3060 | 12.97 | 1.87 | 0.15 | -0.04 | 4.25 | 1.10 |
| 03/09/20 15:02:41 | 3090 | 12.96 | 1.86 | 0.15 | -0.04 | 4.24 | 1.09 |
| 03/09/20 15:03:11 | 3120 | 12.96 | 1.88 | 0.15 | -0.04 | 4.25 | 1.17 |
| 03/09/20 15:03:41 | 3150 | 12.96 | 1.88 | 0.15 | -0.05 | 4.25 | 1.08 |
| 03/09/20 15:04:11 | 3180 | 12.96 | 1.89 | 0.14 | -0.04 | 4.25 | 1.11 |
| 03/09/20 15:04:41 | 3210 | 12.96 | 1.96 | 0.16 | -0.04 | 4.25 | 1.12 |
| 03/09/20 15:05:11 | 3240 | 12.96 | 1.96 | 0.15 | -0.04 | 4.26 | 1.11 |
| 03/09/20 15:05:41 | 3270 | 12.96 | 1.95 | 0.14 | -0.04 | 4.26 | 1.11 |
| 03/09/20 15:06:11 | 3300 | 12.96 | 1.91 | 0.15 | -0.05 | 4.25 | 1.11 |
| 03/09/20 15:06:41 | 3330 | 12.96 | 1.85 | 0.16 | -0.04 | 4.27 | 1.14 |
| 03/09/20 15:07:11 | 3360 | 12.95 | 1.86 | 0.16 | -0.04 | 4.24 | 1.18 |
| 03/09/20 15:07:41 | 3390 | 12.96 | 1.89 | 0.15 | -0.04 | 4.19 | 1.18 |
| 03/09/20 15:08:11 | 3420 | 12.96 | 1.86 | 0.14 | -0.04 | 4.19 | 1.19 |
| 03/09/20 15:08:41 | 3450 | 12.96 | 1.88 | 0.15 | -0.04 | 4.19 | 1.19 |
| 03/09/20 15:09:11 | 3480 | 12.96 | 1.93 | 0.19 | -0.04 | 4.19 | 1.20 |
| 03/09/20 15:09:41 | 3510 | 12.96 | 1.99 | 0.16 | -0.04 | 4.20 | 1.18 |
| 03/09/20 15:10:11 | 3540 | 12.96 | 1.97 | 0.17 | -0.04 | 4.21 | 1.18 |
| 03/09/20 15:10:41 | 3570 | 12.96 | 1.98 | 0.14 | -0.04 | 4.22 | 1.20 |
| 03/09/20 15:11:11 | 3600 | 12.96 | 1.87 | 0.16 | 0.08 | 4.23 | 1.17 |
| 03/09/20 15:11:41 | 3630 | 12.96 | 1.97 | 0.15 | -0.03 | 4.24 | 1.16 |
| 03/09/20 15:12:11 | 3660 | 12.97 | 1.84 | 0.26 | 0.03 | 4.26 | 1.22 |
| 03/09/20 15:12:41 | 3690 | 12.97 | 1.99 | 0.16 | 0.04 | 4.26 | 1.23 |
| 03/09/20 15:13:11 | 3720 | 12.96 | 1.90 | 0.15 | -0.02 | 4.26 | 1.20 |
| 03/09/20 15:13:41 | 3750 | 12.96 | 1.93 | 0.27 | 0.01 | 4.24 | 1.17 |
| 03/09/20 15:14:11 | 3780 | 13.01 | 1.90 | 0.17 | -0.02 | 4.25 | 1.15 |
| 03/09/20 15:14:41 | 3810 | 12.97 | 2.08 | 0.19 | -0.02 | 4.24 | 1.15 |
| 03/09/20 15:15:11 | 3840 | 12.96 | 2.61 | 0.19 | 0.01 | 4.24 | 1.15 |
| 03/09/20 15:15:41 | 3870 | 12.96 | 1.97 | 0.15 | 0.01 | 4.36 | 1.18 |
| 03/09/20 15:16:11 | 3900 | 12.96 | 1.87 | 0.39 | 0.05 | 4.36 | 1.16 |
| 03/09/20 15:16:41 | 3930 | 12.96 | 2.07 | 0.22 | 0.06 | 4.25 | 1.13 |
| 03/09/20 15:17:11 | 3960 | 12.97 | 2.36 | 0.29 | 0.03 | 4.25 | 1.12 |
| 03/09/20 15:17:41 | 3990 | 13.00 | 2.50 | 0.17 | -0.02 | 4.25 | 1.15 |
| 03/09/20 15:18:11 | 4020 | 12.96 | 1.98 | 0.15 | -0.02 | 4.25 | 1.15 |
| 03/09/20 15:18:41 | 4050 | 12.98 | 2.39 | 0.27 | 0.02 | 4.25 | 1.14 |
| 03/09/20 15:19:11 | 4080 | 12.96 | 1.88 | 0.14 | 0.01 | 4.25 | 1.14 |
| 03/09/20 15:19:41 | 4110 | 12.97 | 1.98 | 0.19 | -0.03 | 4.24 | 1.13 |
| 03/09/20 15:20:11 | 4140 | 12.97 | 2.23 | 0.22 | 0.11 | 4.24 | 1.13 |
| 03/09/20 15:20:41 | 4170 | 13.01 | 1.93 | 0.37 | 0.02 | 4.25 | 1.11 |
| 03/09/20 15:21:11 | 4200 | 13.05 | 2.74 | 0.15 | -0.02 | 4.26 | 1.10 |
| 03/09/20 15:21:41 | 4230 | 12.97 | 1.91 | 0.18 | 0.01 | 4.26 | 1.10 |
| 03/09/20 15:22:11 | 4260 | 12.97 | 2.39 | 0.28 | 0.04 | 4.26 | 1.12 |

**Cricket Valley Energy Center LLC**
**March 9, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,638 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,008 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,617 | lb/min |
| Duct Burner Fuel Flow | 0 | lb/min |
| Total Fuel Flow | 2,195,187 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.28 | in. Hg |
| Relative Humidity | 22 | % |
| Ambient Temperature | 66 | °F |
| Specific Humidity | 0.002926 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 230.8 | megawatts |
| Heat Input | 2,213 | MMBtu/hr |
| $NH_3$ Flow Rate | 127 | lb/hr |
| Meas. Stack Moisture | 7.6 | % |
| Stack Exhaust Flow (M19) | 51,014,767 | SCFH |

Data from: From PM Run PM U-00002 Base-2

Base Load, Run - 1-1

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 03/09/20 15:22:41 | 4290 | 13.04 | 1.93 | 0.26 | -0.02 | 4.25 | 1.11 |
| 03/09/20 15:23:11 | 4320 | 12.96 | 2.33 | 0.28 | 0.00 | 4.26 | 1.12 |
| 03/09/20 15:23:41 | 4350 | 12.96 | 2.37 | 0.25 | 0.00 | 4.27 | 1.12 |
| 03/09/20 15:24:11 | 4380 | 12.98 | 2.66 | 0.16 | -0.03 | 4.26 | 1.17 |
| 03/09/20 15:24:41 | 4410 | 12.99 | 2.22 | 0.21 | -0.03 | 4.24 | 1.15 |
| 03/09/20 15:25:11 | 4440 | 12.98 | 2.23 | 0.16 | -0.03 | 4.25 | 1.14 |
| 03/09/20 15:25:41 | 4470 | 12.98 | 2.33 | 0.26 | -0.03 | 4.24 | 1.10 |
| 03/09/20 15:26:11 | 4500 | 12.98 | 2.07 | 0.19 | -0.03 | 4.23 | 1.15 |
| 03/09/20 15:26:41 | 4530 | 12.96 | 3.19 | 0.34 | 0.04 | 4.24 | 1.17 |
| 03/09/20 15:27:11 | 4560 | 12.99 | 1.94 | 0.19 | 0.07 | 4.25 | 1.17 |
| 03/09/20 15:27:41 | 4590 | 13.15 | 3.28 | 0.34 | 0.06 | 4.22 | 1.18 |
| 03/09/20 15:28:11 | 4620 | 13.17 | 2.98 | 0.16 | -0.03 | 4.22 | 1.17 |
| 03/09/20 15:28:41 | 4650 | 12.96 | 2.34 | 0.22 | -0.01 | 4.19 | 1.15 |
| 03/09/20 15:29:11 | 4680 | 12.97 | 2.01 | 0.25 | -0.01 | 4.23 | 1.21 |
| 03/09/20 15:29:41 | 4710 | 13.00 | 2.66 | 0.18 | 0.15 | 4.23 | 1.23 |
| 03/09/20 15:30:11 | 4740 | 12.97 | 2.22 | 0.18 | -0.01 | 4.23 | 1.23 |
| 03/09/20 15:30:41 | 4770 | 12.97 | 2.49 | 0.20 | 0.04 | 4.25 | 1.18 |
| 03/09/20 15:31:11 | 4800 | 12.97 | 2.35 | 0.25 | -0.02 | 4.26 | 1.17 |
| 03/09/20 15:31:41 | 4830 | 13.01 | 2.26 | 0.47 | 0.01 | 4.27 | 1.19 |
| 03/09/20 15:32:11 | 4860 | 12.99 | 2.41 | 0.19 | -0.03 | 4.26 | 1.19 |
| 03/09/20 15:32:41 | 4890 | 13.01 | 2.24 | 0.17 | -0.01 | 4.26 | 1.20 |
| 03/09/20 15:33:11 | 4920 | 12.99 | 2.87 | 0.18 | -0.03 | 4.26 | 1.21 |
| 03/09/20 15:33:41 | 4950 | 12.97 | 1.87 | 0.16 | 0.15 | 4.25 | 1.21 |
| 03/09/20 15:34:11 | 4980 | 12.96 | 2.37 | 0.15 | 0.03 | 4.26 | 1.23 |
| 03/09/20 15:34:41 | 5010 | 12.97 | 2.03 | 0.20 | -0.03 | 4.25 | 1.24 |
| 03/09/20 15:35:11 | 5040 | 12.97 | 2.35 | 0.21 | -0.02 | 4.25 | 1.24 |
| 03/09/20 15:35:41 | 5070 | 12.97 | 2.11 | 0.18 | -0.02 | 4.25 | 1.22 |
| 03/09/20 15:36:11 | 5100 | 12.97 | 2.46 | 0.25 | -0.03 | 4.25 | 1.22 |
| 03/09/20 15:36:41 | 5130 | 12.98 | 3.35 | 0.16 | 0.01 | 4.26 | 1.23 |
| 03/09/20 15:37:11 | 5160 | 12.97 | 2.13 | 0.19 | 0.07 | 4.24 | 1.29 |
| 03/09/20 15:37:41 | 5190 | 12.97 | 2.86 | 0.25 | -0.02 | 4.22 | 1.23 |
| 03/09/20 15:38:11 | 5220 | 12.97 | 1.91 | 0.15 | -0.01 | 4.24 | 1.21 |
| 03/09/20 15:38:41 | 5250 | 13.04 | 2.37 | 0.28 | -0.01 | 4.23 | 1.23 |
| 03/09/20 15:39:11 | 5280 | 12.96 | 1.95 | 0.22 | 0.02 | 4.21 | 1.24 |
| 03/09/20 15:39:41 | 5310 | 12.96 | 2.26 | 0.14 | 0.00 | 4.22 | 1.26 |
| 03/09/20 15:40:11 | 5340 | 12.96 | 2.21 | 0.18 | 0.01 | 4.23 | 1.32 |
| 03/09/20 15:40:41 | 5370 | 12.88 | 2.13 | 0.24 | 0.27 | 4.23 | 1.26 |
| 03/09/20 15:41:11 | 5400 | 12.87 | 2.17 | 0.27 | 0.10 | 4.24 | 1.27 |
| 03/09/20 15:41:41 | 5430 | 12.96 | 2.01 | 0.35 | 0.07 | 4.25 | 1.24 |
| 03/09/20 15:42:11 | 5460 | 12.96 | 1.94 | 0.26 | 0.20 | 4.25 | 1.23 |
| 03/09/20 15:42:41 | 5490 | 12.97 | 2.12 | 0.31 | 0.15 | 4.24 | 1.28 |
| 03/09/20 15:43:11 | 5520 | 12.98 | 2.55 | 0.15 | 0.13 | 4.25 | 1.28 |
| 03/09/20 15:43:41 | 5550 | 12.97 | 1.91 | 0.15 | -0.03 | 4.23 | 1.23 |
| **RAW AVERAGE** | | **12.97** | **2.08** | **0.19** | **0.00** | **4.24** | **1.20** |

| | | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|---|
| | **Serial Number:** | inst-02-0024 | inst-nx-0031 | inst-co-0029 | inst-th-0013 | inst-c2-0016 | inst-ir-0004 |
| | | (%) | (ppmvd) | (ppmvd) | (ppmvw) | (%) | |
| Bias | **Initial Zero** | 0.11 | -0.10 | -0.01 | -0.03 | 0.01 | |
| Bias | **Final Zero** | 0.10 | -0.05 | -0.04 | -0.04 | -0.04 | |
| Bias | **Avg. Zero** | 0.11 | -0.08 | -0.03 | -0.04 | -0.02 | |
| Bias | **Initial UpScale** | 11.94 | 4.84 | 5.08 | 3.17 | 9.06 | |
| Bias | **Final UpScale** | 11.89 | 4.93 | 5.07 | 3.23 | 8.92 | |
| Bias | **Avg. UpScale** | 11.92 | 4.89 | 5.08 | 3.20 | 8.99 | |
| **Upscale Cal Gas** | | 12.00 | 4.91 | 5.09 | 3.37 | 8.94 | |

| **EMISSIONS DATA** | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 13.07 | 2.14 | 0.21 | 0.00 | 4.22 | 1.30 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.61 | 0.16 | 0.00 | N/A | 0.98 |

Non-Bias Adjusted Averages Include: *

**Cricket Valley Energy Center LLC**
**March 9, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,638 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,008 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,624 | lb/min |
| Duct Burner Fuel Flow | 0 | lb/min |
| Total Fuel Flow | 2,205,298 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.28 | in. Hg |
| Relative Humidity | 25 | % |
| Ambient Temperature | 67 | °F |
| Specific Humidity | 0.003445 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 230.6 | megawatts |
| Heat Input | 2,223 | MMBtu/hr |
| $NH_3$ Flow Rate | 123 | lb/hr |
| Meas. Stack Moisture | 7.6 | % |
| Stack Exhaust Flow (M19) | 51,447,204 | SCFH |

Data from: From PM Run PM U-00002 Base-2

Base Load, Run - 1-2

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 03/09/20 16:05:11 | 6840 | 12.97 | 1.86 | 0.16 | -0.03 | 4.89 | 0.87 |
| 03/09/20 16:05:41 | 6870 | 12.82 | 1.93 | 0.44 | 0.03 | 4.72 | 0.88 |
| 03/09/20 16:06:11 | 6900 | 12.80 | 1.89 | 0.19 | -0.03 | 4.74 | 0.89 |
| 03/09/20 16:06:41 | 6930 | 12.98 | 3.63 | 0.15 | -0.02 | 4.80 | 0.89 |
| 03/09/20 16:07:11 | 6960 | 12.97 | 1.92 | 0.17 | -0.02 | 4.79 | 0.90 |
| 03/09/20 16:07:41 | 6990 | 12.97 | 2.20 | 0.22 | 0.01 | 4.80 | 0.91 |
| 03/09/20 16:08:11 | 7020 | 12.99 | 1.86 | 0.26 | 0.16 | 4.80 | 0.92 |
| 03/09/20 16:08:41 | 7050 | 12.97 | 3.25 | 0.19 | 0.01 | 4.75 | 0.95 |
| 03/09/20 16:09:11 | 7080 | 12.97 | 2.23 | 0.17 | -0.01 | 4.85 | 0.94 |
| 03/09/20 16:09:41 | 7110 | 13.02 | 1.88 | 0.23 | -0.02 | 4.98 | 0.96 |
| 03/09/20 16:10:11 | 7140 | 12.96 | 1.88 | 0.19 | -0.04 | 5.03 | 0.94 |
| 03/09/20 16:10:41 | 7170 | 12.97 | 1.84 | 0.13 | -0.05 | 5.06 | 0.94 |
| 03/09/20 16:11:11 | 7200 | 13.00 | 2.28 | 0.32 | 0.17 | 4.98 | 0.97 |
| 03/09/20 16:11:41 | 7230 | 12.97 | 2.17 | 0.26 | -0.03 | 4.77 | 0.91 |
| 03/09/20 16:12:11 | 7260 | 13.01 | 2.06 | 0.16 | -0.01 | 4.74 | 0.94 |
| 03/09/20 16:12:41 | 7290 | 12.97 | 2.11 | 0.28 | -0.01 | 5.00 | 0.94 |
| 03/09/20 16:13:11 | 7320 | 12.96 | 2.30 | 0.34 | -0.03 | 4.91 | 0.94 |
| 03/09/20 16:13:41 | 7350 | 13.00 | 2.01 | 0.21 | -0.03 | 5.08 | 1.00 |
| 03/09/20 16:14:11 | 7380 | 12.96 | 2.11 | 0.20 | -0.01 | 5.21 | 0.96 |
| 03/09/20 16:14:41 | 7410 | 12.97 | 1.94 | 0.25 | 0.07 | 5.04 | 0.98 |
| 03/09/20 16:15:11 | 7440 | 12.97 | 3.18 | 0.29 | -0.03 | 5.01 | 0.98 |
| 03/09/20 16:15:41 | 7470 | 13.00 | 2.41 | 0.19 | -0.03 | 4.98 | 1.03 |
| 03/09/20 16:16:11 | 7500 | 13.00 | 2.00 | 0.16 | -0.01 | 4.92 | 1.02 |
| 03/09/20 16:16:41 | 7530 | 12.98 | 2.01 | 0.16 | -0.02 | 4.83 | 1.06 |
| 03/09/20 16:17:11 | 7560 | 12.98 | 1.90 | 0.20 | 0.15 | 4.75 | 1.04 |
| 03/09/20 16:17:41 | 7590 | 12.98 | 2.44 | 0.22 | 0.11 | 4.58 | 1.06 |
| 03/09/20 16:18:11 | 7620 | 12.97 | 1.98 | 0.14 | -0.03 | 4.60 | 1.08 |
| 03/09/20 16:18:41 | 7650 | 12.98 | 2.26 | 0.31 | 0.10 | 4.61 | 1.10 |
| 03/09/20 16:19:11 | 7680 | 12.96 | 1.91 | 0.17 | -0.01 | 4.67 | 1.12 |
| 03/09/20 16:19:41 | 7710 | 12.95 | 2.10 | 0.21 | 0.25 | 4.61 | 1.15 |
| 03/09/20 16:20:11 | 7740 | 12.97 | 2.09 | 0.35 | 0.00 | 4.59 | 1.13 |
| 03/09/20 16:20:41 | 7770 | 12.97 | 1.98 | 0.18 | 0.02 | 4.60 | 1.13 |
| 03/09/20 16:21:11 | 7800 | 12.99 | 2.01 | 0.18 | 0.06 | 4.58 | 1.14 |
| 03/09/20 16:21:41 | 7830 | 12.99 | 2.08 | 0.40 | -0.01 | 4.56 | 1.11 |
| 03/09/20 16:22:11 | 7860 | 12.99 | 1.88 | 0.24 | -0.02 | 4.56 | 1.15 |
| 03/09/20 16:22:41 | 7890 | 12.96 | 1.97 | 0.28 | 0.11 | 4.55 | 1.15 |
| 03/09/20 16:23:11 | 7920 | 12.97 | 2.63 | 0.15 | 0.13 | 4.54 | 1.15 |
| 03/09/20 16:23:41 | 7950 | 12.97 | 1.99 | 0.16 | 0.06 | 4.54 | 1.14 |
| 03/09/20 16:24:11 | 7980 | 12.98 | 1.96 | 0.25 | 0.04 | 4.55 | 1.17 |
| 03/09/20 16:24:41 | 8010 | 12.97 | 2.10 | 0.18 | -0.03 | 4.56 | 1.16 |
| 03/09/20 16:25:11 | 8040 | 12.97 | 2.84 | 0.19 | -0.03 | 4.57 | 1.14 |
| 03/09/20 16:25:41 | 8070 | 12.97 | 1.92 | 0.14 | 0.00 | 4.64 | 1.18 |
| 03/09/20 16:26:11 | 8100 | 12.96 | 2.12 | 0.23 | 0.05 | 5.07 | 1.18 |
| 03/09/20 16:26:41 | 8130 | 12.96 | 2.00 | 0.15 | -0.01 | 5.14 | 1.20 |
| 03/09/20 16:27:11 | 8160 | 12.99 | 2.38 | 0.17 | 0.01 | 4.85 | 1.16 |
| 03/09/20 16:27:41 | 8190 | 12.96 | 1.91 | 0.20 | -0.03 | 4.66 | 1.22 |
| 03/09/20 16:28:11 | 8220 | 12.98 | 2.70 | 0.21 | 0.01 | 4.54 | 1.20 |
| 03/09/20 16:28:41 | 8250 | 12.97 | 1.91 | 0.21 | 0.00 | 4.60 | 1.22 |
| 03/09/20 16:29:11 | 8280 | 12.97 | 1.89 | 0.16 | 0.04 | 4.95 | 1.19 |
| 03/09/20 16:29:41 | 8310 | 13.01 | 1.88 | 0.18 | 0.06 | 4.80 | 1.19 |
| 03/09/20 16:30:11 | 8340 | 13.03 | 2.10 | 0.15 | -0.02 | 4.93 | 1.20 |
| 03/09/20 16:30:41 | 8370 | 12.97 | 2.09 | 0.38 | 0.09 | 4.77 | 1.20 |
| 03/09/20 16:31:11 | 8400 | 12.98 | 1.88 | 0.21 | -0.03 | 4.71 | 1.16 |
| 03/09/20 16:31:41 | 8430 | 12.99 | 2.26 | 0.18 | 0.00 | 4.99 | 1.17 |
| 03/09/20 16:32:11 | 8460 | 12.98 | 2.34 | 0.24 | 0.09 | 4.92 | 1.22 |
| 03/09/20 16:32:41 | 8490 | 12.97 | 1.99 | 0.17 | 0.03 | 5.07 | 1.22 |
| 03/09/20 16:33:11 | 8520 | 12.97 | 1.94 | 0.25 | -0.01 | 5.00 | 1.25 |
| 03/09/20 16:33:41 | 8550 | 12.96 | 2.16 | 0.18 | 0.04 | 4.91 | 1.23 |
| 03/09/20 16:34:11 | 8580 | 12.96 | 2.16 | 0.16 | -0.02 | 4.86 | 1.21 |
| 03/09/20 16:34:41 | 8610 | 12.97 | 2.19 | 0.20 | 0.07 | 4.73 | 1.18 |
| 03/09/20 16:35:11 | 8640 | 12.98 | 2.27 | 0.19 | -0.03 | 4.79 | 1.17 |
| 03/09/20 16:35:41 | 8670 | 12.97 | 2.12 | 0.16 | 0.00 | 4.78 | 1.14 |
| 03/09/20 16:36:11 | 8700 | 12.97 | 2.11 | 0.17 | -0.02 | 4.78 | 1.15 |
| 03/09/20 16:36:41 | 8730 | 13.00 | 2.77 | 0.16 | -0.03 | 4.73 | 1.14 |
| 03/09/20 16:37:11 | 8760 | 12.97 | 1.96 | 0.19 | 0.00 | 4.81 | 1.16 |
| 03/09/20 16:37:41 | 8790 | 12.97 | 2.06 | 0.17 | -0.02 | 4.83 | 1.18 |
| 03/09/20 16:38:11 | 8820 | 12.97 | 2.08 | 0.15 | 0.09 | 4.84 | 1.21 |
| 03/09/20 16:38:41 | 8850 | 12.99 | 2.10 | 0.22 | -0.02 | 4.79 | 1.19 |
| 03/09/20 16:39:11 | 8880 | 12.98 | 2.65 | 0.22 | 0.13 | 4.73 | 1.19 |
| 03/09/20 16:39:41 | 8910 | 12.99 | 2.06 | 0.17 | -0.02 | 4.73 | 1.19 |
| 03/09/20 16:40:11 | 8940 | 12.96 | 2.92 | 0.30 | 0.04 | 4.62 | 1.19 |
| 03/09/20 16:40:41 | 8970 | 12.96 | 1.91 | 0.15 | 0.09 | 4.59 | 1.20 |
| 03/09/20 16:41:11 | 9000 | 12.97 | 1.91 | 0.25 | -0.03 | 4.59 | 1.22 |
| 03/09/20 16:41:41 | 9030 | 13.02 | 1.91 | 0.15 | -0.02 | 4.55 | 1.19 |
| 03/09/20 16:42:11 | 9060 | 12.99 | 1.90 | 0.33 | 0.01 | 4.52 | 1.22 |
| 03/09/20 16:42:41 | 9090 | 12.97 | 2.05 | 0.21 | -0.01 | 4.52 | 1.24 |
| 03/09/20 16:43:11 | 9120 | 12.96 | 1.89 | 0.17 | 0.01 | 4.53 | 1.24 |

**Cricket Valley Energy Center LLC**
**March 9, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,638 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,008 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,624 | lb/min |
| Duct Burner Fuel Flow | 0 | lb/min |
| Total Fuel Flow | 2,205,298 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.28 | in. Hg |
| Relative Humidity | 25 | % |
| Ambient Temperature | 67 | °F |
| Specific Humidity | 0.003445 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 230.6 | megawatts |
| Heat Input | 2,223 | MMBtu/hr |
| $NH_3$ Flow Rate | 123 | lb/hr |
| Meas. Stack Moisture | 7.6 | % |
| Stack Exhaust Flow (M19) | 51,447,204 | SCFH |

Data from: From PM Run PM U-00002 Base-2

Base Load, Run - 1-2

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 03/09/20 16:43:41 | 9150 | 12.97 | 2.43 | 0.25 | 0.03 | 4.52 | 1.25 |
| 03/09/20 16:44:11 | 9180 | 12.96 | 2.78 | 0.14 | 0.07 | 4.52 | 1.24 |
| 03/09/20 16:44:41 | 9210 | 12.97 | 1.96 | 0.14 | -0.01 | 4.52 | 1.23 |
| 03/09/20 16:45:11 | 9240 | 12.97 | 1.93 | 0.17 | -0.02 | 4.53 | 1.25 |
| 03/09/20 16:45:41 | 9270 | 12.96 | 1.93 | 0.14 | -0.03 | 4.53 | 1.25 |
| 03/09/20 16:46:11 | 9300 | 12.96 | 2.49 | 0.21 | 0.00 | 4.53 | 1.26 |
| 03/09/20 16:46:41 | 9330 | 12.97 | 1.99 | 0.16 | -0.03 | 4.54 | 1.23 |
| 03/09/20 16:47:11 | 9360 | 12.96 | 2.49 | 0.19 | 0.07 | 4.54 | 1.21 |
| 03/09/20 16:47:41 | 9390 | 12.97 | 2.29 | 0.19 | -0.02 | 4.54 | 1.20 |
| 03/09/20 16:48:11 | 9420 | 12.98 | 1.98 | 0.18 | -0.03 | 4.52 | 1.21 |
| 03/09/20 16:48:41 | 9450 | 12.96 | 2.55 | 0.17 | 0.05 | 4.54 | 1.19 |
| 03/09/20 16:49:11 | 9480 | 12.95 | 3.15 | 0.17 | -0.03 | 4.71 | 1.21 |
| 03/09/20 16:49:41 | 9510 | 12.97 | 2.39 | 0.24 | -0.02 | 4.99 | 1.19 |
| 03/09/20 16:50:11 | 9540 | 12.98 | 2.66 | 0.20 | 0.02 | 4.97 | 1.20 |
| 03/09/20 16:50:41 | 9570 | 12.97 | 1.91 | 0.20 | -0.03 | 4.81 | 1.20 |
| 03/09/20 16:51:11 | 9600 | 12.97 | 1.97 | 0.17 | -0.02 | 4.62 | 1.23 |
| 03/09/20 16:51:41 | 9630 | 13.02 | 2.05 | 0.17 | -0.03 | 4.62 | 1.23 |
| 03/09/20 16:52:11 | 9660 | 12.96 | 1.99 | 0.15 | 0.04 | 4.55 | 1.22 |
| 03/09/20 16:52:41 | 9690 | 12.96 | 2.11 | 0.15 | -0.03 | 4.61 | 1.21 |
| 03/09/20 16:53:11 | 9720 | 12.97 | 1.91 | 0.14 | 0.02 | 4.59 | 1.24 |
| 03/09/20 16:53:41 | 9750 | 12.96 | 3.07 | 0.17 | 0.22 | 4.59 | 1.26 |
| 03/09/20 16:54:11 | 9780 | 12.97 | 3.86 | 0.28 | 0.01 | 4.60 | 1.25 |
| 03/09/20 16:54:41 | 9810 | 12.96 | 2.05 | 0.16 | 0.01 | 4.60 | 1.27 |
| 03/09/20 16:55:11 | 9840 | 12.95 | 1.91 | 0.15 | -0.03 | 4.59 | 1.27 |
| 03/09/20 16:55:41 | 9870 | 12.95 | 1.92 | 0.16 | -0.03 | 4.57 | 1.31 |
| 03/09/20 16:56:11 | 9900 | 12.96 | 1.92 | 0.13 | 0.00 | 4.60 | 1.27 |
| 03/09/20 16:56:41 | 9930 | 12.97 | 1.73 | 0.17 | 0.00 | 4.58 | 1.28 |
| 03/09/20 16:57:11 | 9960 | 12.95 | 1.79 | 0.11 | -0.03 | 4.57 | 1.36 |
| 03/09/20 16:57:41 | 9990 | 12.94 | 1.94 | 0.19 | -0.02 | 4.57 | 1.33 |
| 03/09/20 16:58:11 | 10020 | 12.95 | 2.29 | 0.17 | -0.02 | 4.61 | 1.36 |
| 03/09/20 16:58:41 | 10050 | 13.02 | 1.96 | 0.38 | -0.02 | 4.76 | 1.34 |
| 03/09/20 16:59:11 | 10080 | 12.95 | 1.95 | 0.19 | -0.01 | 4.87 | 1.33 |
| 03/09/20 16:59:41 | 10110 | 12.96 | 2.01 | 0.20 | 0.00 | 4.77 | 1.32 |
| 03/09/20 17:00:11 | 10140 | 12.95 | 2.55 | 0.17 | 0.03 | 4.91 | 1.37 |
| 03/09/20 17:00:41 | 10170 | 12.95 | 1.98 | 0.15 | 0.01 | 4.88 | 1.36 |
| 03/09/20 17:01:11 | 10200 | 12.98 | 2.41 | 0.16 | 0.10 | 4.86 | 1.36 |
| 03/09/20 17:01:41 | 10230 | 12.95 | 2.01 | 0.16 | -0.03 | 4.87 | 1.37 |
| 03/09/20 17:02:11 | 10260 | 12.98 | 2.47 | 0.15 | -0.04 | 4.90 | 1.35 |
| 03/09/20 17:02:41 | 10290 | 12.98 | 1.89 | 0.24 | -0.04 | 4.87 | 1.33 |
| 03/09/20 17:03:11 | 10320 | 13.01 | 1.90 | 0.18 | -0.04 | 4.88 | 1.37 |
| 03/09/20 17:03:41 | 10350 | 12.95 | 1.87 | 0.16 | -0.04 | 4.95 | 1.37 |
| 03/09/20 17:04:11 | 10380 | 12.96 | 2.04 | 0.16 | -0.04 | 4.89 | 1.37 |
| 03/09/20 17:04:41 | 10410 | 12.96 | 1.96 | 0.20 | -0.04 | 4.92 | 1.35 |
| **RAW AVERAGE** | | **12.97** | **2.17** | **0.20** | **0.01** | **4.74** | **1.17** |

| | | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| | **Serial Number:** | inst-02-0024 | inst-nx-0031 | inst-co-0029 | inst-th-0013 | inst-c2-0016 | inst-ir-0004 |
| **Bias** | **Initial Zero** | 0.10 | -0.05 | -0.04 | -0.04 | -0.04 | |
| | **Final Zero** | 0.11 | 0.09 | 0.01 | 0.05 | 0.00 | |
| | **Avg. Zero** | 0.11 | 0.02 | -0.02 | 0.00 | -0.02 | |
| | **Initial UpScale** | 11.89 | 4.93 | 5.07 | 3.23 | 8.92 | |
| | **Final UpScale** | 11.89 | 4.91 | 5.03 | 3.32 | 8.96 | |
| | **Avg. UpScale** | 11.89 | 4.92 | 5.05 | 3.28 | 8.94 | |
| **Upscale Cal Gas** | | 12.00 | 4.91 | 5.09 | 3.37 | 8.94 | |

| **EMISSIONS DATA** | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 13.10 | 2.15 | 0.22 | 0.01 | 4.75 | 1.26 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.63 | 0.16 | 0.01 | N/A | 0.95 |

Non-Bias Adjusted Averages Include: *

**Cricket Valley Energy Center LLC**
**March 9, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,638 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,008 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,622 | lb/min |
| Duct Burner Fuel Flow | 0 | lb/min |
| Total Fuel Flow | 2,202,317 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.30 | in. Hg |
| Relative Humidity | 28 | % |
| Ambient Temperature | 65 | °F |
| Specific Humidity | 0.003599 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 230.5 | megawatts |
| Heat Input | 2,220 | MMBtu/hr |
| $NH_3$ Flow Rate | 124 | lb/hr |
| Meas. Stack Moisture | 7.6 | % |
| Stack Exhaust Flow (M19) | 50,992,328 | SCFH |

Data from: From PM Run PM U-00002 Base-2

Base Load, Run - 1-3

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 03/09/20 17:18:11 | 11220 | 12.87 | 1.92 | 0.15 | -0.02 | 4.39 | 1.54 |
| 03/09/20 17:18:41 | 11250 | 12.89 | 1.91 | 0.15 | 0.00 | 4.37 | 1.48 |
| 03/09/20 17:19:11 | 11280 | 12.88 | 1.91 | 0.15 | 0.00 | 4.34 | 1.46 |
| 03/09/20 17:19:41 | 11310 | 12.89 | 1.92 | 0.14 | -0.04 | 4.37 | 1.49 |
| 03/09/20 17:20:11 | 11340 | 12.89 | 1.92 | 0.14 | -0.04 | 4.35 | 1.48 |
| 03/09/20 17:20:41 | 11370 | 12.91 | 1.91 | 0.14 | -0.05 | 4.36 | 1.42 |
| 03/09/20 17:21:11 | 11400 | 12.89 | 1.93 | 0.15 | -0.05 | 4.38 | 1.38 |
| 03/09/20 17:21:41 | 11430 | 12.91 | 1.88 | 0.16 | -0.05 | 4.39 | 1.36 |
| 03/09/20 17:22:11 | 11460 | 12.90 | 1.86 | 0.15 | 0.00 | 4.39 | 1.35 |
| 03/09/20 17:22:41 | 11490 | 12.91 | 1.88 | 0.17 | -0.05 | 4.38 | 1.31 |
| 03/09/20 17:23:11 | 11520 | 12.90 | 1.87 | 0.15 | -0.05 | 4.38 | 1.33 |
| 03/09/20 17:23:41 | 11550 | 12.91 | 1.86 | 0.16 | -0.04 | 4.39 | 1.32 |
| 03/09/20 17:24:11 | 11580 | 12.90 | 1.90 | 0.15 | -0.04 | 4.39 | 1.27 |
| 03/09/20 17:24:41 | 11610 | 12.91 | 1.92 | 0.17 | -0.04 | 4.38 | 1.24 |
| 03/09/20 17:25:11 | 11640 | 12.91 | 1.87 | 0.15 | -0.04 | 4.38 | 1.28 |
| 03/09/20 17:25:41 | 11670 | 12.90 | 1.91 | 0.15 | -0.05 | 4.39 | 1.28 |
| 03/09/20 17:26:11 | 11700 | 12.92 | 1.91 | 0.14 | -0.05 | 4.40 | 1.26 |
| 03/09/20 17:26:41 | 11730 | 12.90 | 1.90 | 0.15 | -0.04 | 4.39 | 1.22 |
| 03/09/20 17:27:11 | 11760 | 12.91 | 1.90 | 0.14 | -0.03 | 4.39 | 1.23 |
| 03/09/20 17:27:41 | 11790 | 12.90 | 1.91 | 0.15 | 0.01 | 4.39 | 1.22 |
| 03/09/20 17:28:11 | 11820 | 12.90 | 1.91 | 0.15 | -0.04 | 4.37 | 1.22 |
| 03/09/20 17:28:41 | 11850 | 12.92 | 1.92 | 0.13 | -0.04 | 4.38 | 1.19 |
| 03/09/20 17:29:11 | 11880 | 12.90 | 1.91 | 0.15 | -0.05 | 4.39 | 1.16 |
| 03/09/20 17:29:41 | 11910 | 12.91 | 1.92 | 0.14 | -0.05 | 4.40 | 1.19 |
| 03/09/20 17:30:11 | 11940 | 12.91 | 1.92 | 0.16 | -0.04 | 4.40 | 1.16 |
| 03/09/20 17:30:41 | 11970 | 12.90 | 1.92 | 0.16 | -0.04 | 4.40 | 1.16 |
| 03/09/20 17:31:11 | 12000 | 12.92 | 1.92 | 0.16 | -0.05 | 4.38 | 1.14 |
| 03/09/20 17:31:41 | 12030 | 12.90 | 1.92 | 0.16 | -0.04 | 4.37 | 1.15 |
| 03/09/20 17:32:11 | 12060 | 12.90 | 1.93 | 0.15 | -0.05 | 4.37 | 1.17 |
| 03/09/20 17:32:41 | 12090 | 12.91 | 1.92 | 0.16 | -0.04 | 4.37 | 1.14 |
| 03/09/20 17:33:11 | 12120 | 12.90 | 1.92 | 0.14 | -0.04 | 4.37 | 1.14 |
| 03/09/20 17:33:41 | 12150 | 12.91 | 1.90 | 0.17 | -0.04 | 4.37 | 1.15 |
| 03/09/20 17:34:11 | 12180 | 12.90 | 1.92 | 0.15 | -0.04 | 4.38 | 1.17 |
| 03/09/20 17:34:41 | 12210 | 12.90 | 1.92 | 0.16 | -0.04 | 4.38 | 1.16 |
| 03/09/20 17:35:11 | 12240 | 12.91 | 1.91 | 0.13 | -0.05 | 4.38 | 1.13 |
| 03/09/20 17:35:41 | 12270 | 12.91 | 1.90 | 0.16 | -0.03 | 4.39 | 1.16 |
| 03/09/20 17:36:11 | 12300 | 12.90 | 1.91 | 0.13 | -0.02 | 4.39 | 1.16 |
| 03/09/20 17:36:41 | 12330 | 12.91 | 1.95 | 0.14 | -0.02 | 4.39 | 1.16 |
| 03/09/20 17:37:11 | 12360 | 12.90 | 1.92 | 0.14 | -0.05 | 4.39 | 1.19 |
| 03/09/20 17:37:41 | 12390 | 12.90 | 1.92 | 0.12 | -0.05 | 4.40 | 1.23 |
| 03/09/20 17:38:11 | 12420 | 12.90 | 1.91 | 0.15 | -0.04 | 4.41 | 1.25 |
| 03/09/20 17:38:41 | 12450 | 12.90 | 1.93 | 0.15 | -0.04 | 4.38 | 1.23 |
| 03/09/20 17:39:11 | 12480 | 12.91 | 1.92 | 0.15 | -0.05 | 4.39 | 1.22 |
| 03/09/20 17:39:41 | 12510 | 12.90 | 1.94 | 0.15 | -0.04 | 4.40 | 1.26 |
| 03/09/20 17:40:11 | 12540 | 12.89 | 1.93 | 0.16 | -0.05 | 4.40 | 1.27 |
| 03/09/20 17:40:41 | 12570 | 12.91 | 1.92 | 0.24 | -0.04 | 4.41 | 1.23 |
| 03/09/20 17:41:11 | 12600 | 12.90 | 1.92 | 0.19 | -0.04 | 4.41 | 1.22 |
| 03/09/20 17:41:41 | 12630 | 12.90 | 1.91 | 0.15 | -0.05 | 4.41 | 1.20 |
| 03/09/20 17:42:11 | 12660 | 12.90 | 1.91 | 0.15 | -0.05 | 4.40 | 1.21 |
| 03/09/20 17:42:41 | 12690 | 12.89 | 1.92 | 0.28 | -0.04 | 4.40 | 1.19 |
| 03/09/20 17:43:11 | 12720 | 12.90 | 1.92 | 0.16 | -0.04 | 4.39 | 1.17 |
| 03/09/20 17:43:41 | 12750 | 12.89 | 1.92 | 0.16 | -0.05 | 4.40 | 1.17 |
| 03/09/20 17:44:11 | 12780 | 12.89 | 1.92 | 0.16 | -0.04 | 4.40 | 1.17 |
| 03/09/20 17:44:41 | 12810 | 12.91 | 1.92 | 0.14 | -0.05 | 4.40 | 1.19 |
| 03/09/20 17:45:11 | 12840 | 12.90 | 1.92 | 0.17 | 0.02 | 4.40 | 1.20 |
| 03/09/20 17:45:41 | 12870 | 12.90 | 1.91 | 0.15 | -0.05 | 4.41 | 1.17 |
| 03/09/20 17:46:11 | 12900 | 12.90 | 1.91 | 0.15 | -0.03 | 4.41 | 1.18 |
| 03/09/20 17:46:41 | 12930 | 12.89 | 2.13 | 0.15 | -0.05 | 4.41 | 1.18 |
| 03/09/20 17:47:11 | 12960 | 12.90 | 2.02 | 0.14 | -0.04 | 4.41 | 1.20 |
| 03/09/20 17:47:41 | 12990 | 12.90 | 1.99 | 0.15 | -0.05 | 4.41 | 1.19 |
| 03/09/20 17:48:11 | 13020 | 12.89 | 1.94 | 0.15 | -0.04 | 4.41 | 1.14 |
| 03/09/20 17:48:41 | 13050 | 12.91 | 1.94 | 0.15 | -0.05 | 4.41 | 1.16 |
| 03/09/20 17:49:11 | 13080 | 12.89 | 2.00 | 0.16 | -0.05 | 4.41 | 1.20 |
| 03/09/20 17:49:41 | 13110 | 12.90 | 2.32 | 0.14 | -0.04 | 4.40 | 1.18 |
| 03/09/20 17:50:11 | 13140 | 12.90 | 1.99 | 0.16 | -0.04 | 4.36 | 1.15 |
| 03/09/20 17:50:41 | 13170 | 12.89 | 1.94 | 0.15 | 0.06 | 4.35 | 1.14 |
| 03/09/20 17:51:11 | 13200 | 12.91 | 1.94 | 0.17 | -0.04 | 4.34 | 1.15 |
| 03/09/20 17:51:41 | 13230 | 12.90 | 1.92 | 0.14 | -0.05 | 4.35 | 1.18 |
| 03/09/20 17:52:11 | 13260 | 12.90 | 1.92 | 0.14 | -0.04 | 4.36 | 1.20 |
| 03/09/20 17:52:41 | 13290 | 12.91 | 1.91 | 0.15 | -0.04 | 4.38 | 1.19 |
| 03/09/20 17:53:11 | 13320 | 12.90 | 1.95 | 0.16 | -0.04 | 4.38 | 1.19 |
| 03/09/20 17:53:41 | 13350 | 12.90 | 1.89 | 0.14 | -0.04 | 4.38 | 1.23 |
| 03/09/20 17:54:11 | 13380 | 12.89 | 1.90 | 0.16 | -0.04 | 4.41 | 1.26 |
| 03/09/20 17:54:41 | 13410 | 12.89 | 2.10 | 0.17 | -0.04 | 4.41 | 1.27 |
| 03/09/20 17:55:11 | 13440 | 12.90 | 2.39 | 0.14 | -0.02 | 4.41 | 1.24 |
| 03/09/20 17:55:41 | 13470 | 12.89 | 2.22 | 0.15 | -0.04 | 4.41 | 1.20 |
| 03/09/20 17:56:11 | 13500 | 12.90 | 2.37 | 0.15 | -0.04 | 4.38 | 1.25 |

**Cricket Valley Energy Center LLC**
**March 9, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,638 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,008 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,622 | lb/min |
| Duct Burner Fuel Flow | 0 | lb/min |
| Total Fuel Flow | 2,202,317 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.30 | in. Hg |
| Relative Humidity | 28 | % |
| Ambient Temperature | 65 | ° F |
| Specific Humidity | 0.003599 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 230.5 | megawatts |
| Heat Input | 2,220 | MMBtu/hr |
| $NH_3$ Flow Rate | 124 | lb/hr |
| Meas. Stack Moisture | 7.6 | % |
| Stack Exhaust Flow (M19) | 50,992,328 | SCFH |

Data from: From PM Run PM U-00002 Base-2

Base Load, Run - 1-3

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 03/09/20 17:56:41 | 13530 | 12.90 | 2.09 | 0.15 | -0.04 | 4.40 | 1.26 |
| 03/09/20 17:57:11 | 13560 | 12.89 | 1.96 | 0.14 | -0.05 | 4.41 | 1.24 |
| 03/09/20 17:57:41 | 13590 | 12.90 | 1.98 | 0.16 | -0.05 | 4.42 | 1.36 |
| 03/09/20 17:58:11 | 13620 | 12.88 | 2.10 | 0.16 | -0.04 | 4.42 | 1.38 |
| 03/09/20 17:58:41 | 13650 | 12.89 | 1.99 | 0.15 | -0.05 | 4.42 | 1.43 |
| 03/09/20 17:59:11 | 13680 | 12.89 | 1.99 | 0.16 | -0.04 | 4.39 | 1.40 |
| 03/09/20 17:59:41 | 13710 | 12.88 | 1.95 | 0.17 | -0.05 | 4.42 | 1.39 |
| 03/09/20 18:00:11 | 13740 | 12.90 | 1.95 | 0.18 | -0.05 | 4.42 | 1.36 |
| 03/09/20 18:00:41 | 13770 | 12.88 | 1.95 | 0.15 | -0.05 | 4.42 | 1.39 |
| 03/09/20 18:01:11 | 13800 | 12.89 | 1.99 | 0.16 | -0.05 | 4.42 | 1.38 |
| 03/09/20 18:01:41 | 13830 | 12.89 | 1.99 | 0.14 | -0.04 | 4.43 | 1.34 |
| 03/09/20 18:02:11 | 13860 | 12.88 | 2.02 | 0.15 | -0.05 | 4.43 | 1.35 |
| 03/09/20 18:02:41 | 13890 | 12.89 | 1.96 | 0.15 | -0.05 | 4.42 | 1.36 |
| 03/09/20 18:03:11 | 13920 | 12.88 | 1.96 | 0.15 | 0.01 | 4.43 | 1.36 |
| 03/09/20 18:03:41 | 13950 | 12.89 | 1.93 | 0.15 | 0.02 | 4.42 | 1.38 |
| 03/09/20 18:04:11 | 13980 | 12.89 | 1.94 | 0.16 | -0.05 | 4.42 | 1.32 |
| 03/09/20 18:04:41 | 14010 | 12.88 | 1.92 | 0.13 | -0.05 | 4.42 | 1.31 |
| 03/09/20 18:05:11 | 14040 | 12.89 | 1.92 | 0.16 | -0.05 | 4.42 | 1.36 |
| 03/09/20 18:05:41 | 14070 | 12.88 | 1.93 | 0.15 | -0.04 | 4.41 | 1.32 |
| 03/09/20 18:06:11 | 14100 | 12.90 | 1.93 | 0.16 | -0.04 | 4.41 | 1.35 |
| 03/09/20 18:06:41 | 14130 | 12.89 | 1.95 | 0.16 | -0.05 | 4.42 | 1.26 |
| 03/09/20 18:07:11 | 14160 | 12.89 | 1.97 | 0.14 | -0.04 | 4.42 | 1.23 |
| 03/09/20 18:07:41 | 14190 | 12.90 | 1.96 | 0.16 | -0.04 | 4.42 | 1.26 |
| 03/09/20 18:08:11 | 14220 | 12.88 | 1.96 | 0.14 | -0.05 | 4.42 | 1.26 |
| 03/09/20 18:08:41 | 14250 | 12.89 | 1.97 | 0.15 | -0.04 | 4.42 | 1.27 |
| 03/09/20 18:09:11 | 14280 | 12.88 | 2.00 | 0.15 | -0.05 | 4.42 | 1.22 |
| 03/09/20 18:09:41 | 14310 | 12.89 | 2.02 | 0.20 | -0.04 | 4.43 | 1.14 |
| 03/09/20 18:10:11 | 14340 | 12.90 | 2.01 | 0.16 | -0.04 | 4.43 | 1.19 |
| 03/09/20 18:10:41 | 14370 | 12.89 | 2.43 | 0.18 | -0.04 | 4.43 | 1.15 |
| 03/09/20 18:11:11 | 14400 | 12.89 | 1.96 | 0.17 | -0.05 | 4.43 | 1.15 |
| 03/09/20 18:11:41 | 14430 | 12.90 | 1.95 | 0.15 | -0.04 | 4.38 | 1.22 |
| 03/09/20 18:12:11 | 14460 | 12.89 | 1.95 | 0.16 | -0.05 | 4.32 | 1.09 |
| 03/09/20 18:12:41 | 14490 | 12.90 | 2.15 | 0.14 | -0.04 | 4.32 | 1.13 |
| 03/09/20 18:13:11 | 14520 | 12.89 | 1.97 | 0.16 | -0.05 | 4.33 | 1.20 |
| 03/09/20 18:13:41 | 14550 | 12.88 | 1.96 | 0.15 | -0.04 | 4.33 | 1.13 |
| 03/09/20 18:14:11 | 14580 | 12.89 | 1.95 | 0.16 | -0.04 | 4.36 | 1.18 |
| 03/09/20 18:14:41 | 14610 | 12.89 | 1.99 | 0.16 | -0.04 | 4.36 | 1.15 |
| 03/09/20 18:15:11 | 14640 | 12.88 | 2.02 | 0.28 | -0.04 | 4.38 | 1.19 |
| 03/09/20 18:15:41 | 14670 | 12.88 | 2.04 | 0.15 | -0.05 | 4.38 | 1.09 |
| 03/09/20 18:16:11 | 14700 | 12.89 | 2.07 | 0.16 | -0.04 | 4.40 | 1.11 |
| 03/09/20 18:16:41 | 14730 | 12.87 | 2.00 | 0.16 | -0.05 | 4.38 | 1.03 |
| 03/09/20 18:17:11 | 14760 | 12.88 | 2.01 | 0.16 | -0.04 | 4.38 | 1.10 |
| 03/09/20 18:17:41 | 14790 | 12.89 | 1.98 | 0.17 | -0.05 | 4.37 | 1.10 |
| **RAW AVERAGE** | | **12.90** | **1.96** | **0.16** | **-0.04** | **4.39** | **1.24** |

| | | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|---|
| | **Serial Number:** | inst-02-0024 | inst-nx-0031 | inst-co-0029 | inst-th-0013 | inst-c2-0016 | inst-ir-0004 |
| | | (%) | (ppmvd) | (ppmvd) | (ppmvw) | (%) | |
| Bias | **Initial Zero** | 0.11 | 0.09 | 0.01 | 0.05 | 0.00 | |
| Bias | **Final Zero** | 0.09 | -0.06 | 0.00 | 0.05 | -0.03 | |
| Bias | **Avg. Zero** | 0.10 | 0.02 | 0.01 | 0.05 | -0.02 | |
| Bias | **Initial UpScale** | 11.89 | 4.91 | 5.03 | 3.32 | 8.96 | |
| Bias | **Final UpScale** | 11.86 | 4.93 | 5.05 | 3.21 | 8.85 | |
| Bias | **Avg. UpScale** | 11.88 | 4.92 | 5.04 | 3.27 | 8.91 | |
| **Upscale Cal Gas** | | 12.00 | 4.91 | 5.09 | 3.37 | 8.94 | |

| **EMISSIONS DATA** | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 13.04 | 1.95 | 0.15 | 0.00 | 4.42 | 1.34 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.46 | 0.11 | 0.00 | N/A | 1.01 |
| Non-Bias Adjusted Averages Include: | | | | * | | |

# EMISSION DATA RECORDS

## Reference Method Data
## Base Load
## $PM_{10}$

## METHOD 201A (FRONT) AND 202 (BACK) SOURCE SAMPLING TITLE PAGE

| Source Information | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base |
| **Fuel Type** | Gas, Natural |

| Test Information | | | |
|---|---|---|---|
| **Project #** | | bec-19-cricketvalley.ny-start#2 | |
| **Operator** | | Rob White | |
| **Date for Preliminary Run** | (mm/dd/yy) | 03/09/20 | |
| **Standard Temperature** | | 68 | °F |
| **Standard Pressure** | | 29.92 | in Hg |
| **Required Sample Vol.** | indust. spec. | 50 | scf |
| **Run Duration** | chk Subpart | 240 | minutes |
| **Unit Number** | | U-00002 | |
| **Base Run Number** | | PM U-00002 Base | |
| **Number of Ports Available** | | 4 | |
| **Number of Ports Used** | | 4 | |
| **Port Inside Diameter** | | 6.00 | in |
| **Stack Shape** | | Circular | |

| Test Equipment Information | | | | | |
|---|---|---|---|---|---|
| **Run** | | **1** | **2** | **3** | |
| **Test Date** | (mm/dd/yy) | 03/09/20 | 03/09/20 | 03/10/20 | |
| **Load** | | Base | Base | Base | % or w/DB |
| **Fuel F-Factor** | | 8638.42 | 8638.42 | 8638.67 | dscf/MMBtu |
| **Meter Box Number** | from ACS | Samp-cp-0030 | Samp-cp-0030 | Samp-cp-0030 | |
| **Meter Calibration Factor** | (Y) | 0.974 | 0.974 | 0.974 | |
| **Orifice Meter Coefficient** | ($\Delta H_@$) | 1.878 | 1.878 | 1.878 | in $H_2O$ |
| **Non-Console Manometer Used** | | No | No | No | |
| **Pitot Identification** | from ACS | 4187/10 | 4187/10 | 4187/10 | |
| **Pitot Tube Coefficient** | ($C_p$) | 0.7240 | 0.7240 | 0.7240 | |
| **Nozzle Number** | from ACS | 4b | 4b | 4b | must match cyc nozz tab (e.g. 3a, 4b, etc.) |
| **Nozzle Diameter** | ($D_n$) | 0.156 | 0.156 | 0.156 | in |
| **Probe Number** | from ACS | SAMP-PR-0133 | SAMP-PR-0133 | SAMP-PR-0133 | |
| **Probe Length** | | 120.0 | 120.0 | 120.0 | in |
| **(SS, Glass …. ) Liner Material** | from list | glass | glass | glass | |
| **Sample Case / Oven Number** | from ACS | SAMP-BH-0039 | SAMP-BH-0039 | SAMP-BH-0039 | |
| **Impinger Case Number** | from ACS | SAMP-SBC-0099 | SAMP-SBC-0099 | SAMP-SBC-0099 | |

| Testing Company Information | |
|---|---|
| **Company Name** | Air Hygiene International, Inc. (Tulsa, Oklahoma) |
| **Address** | 1600 W Tacoma Street |
| **City, State Zip** | Broken Arrow, Oklahoma 74012 |
| **Project Manager** | Rob White |
| **Phone Number** | (918) 307-8865 |
| **Fax Number** | (918) 307-9131 |

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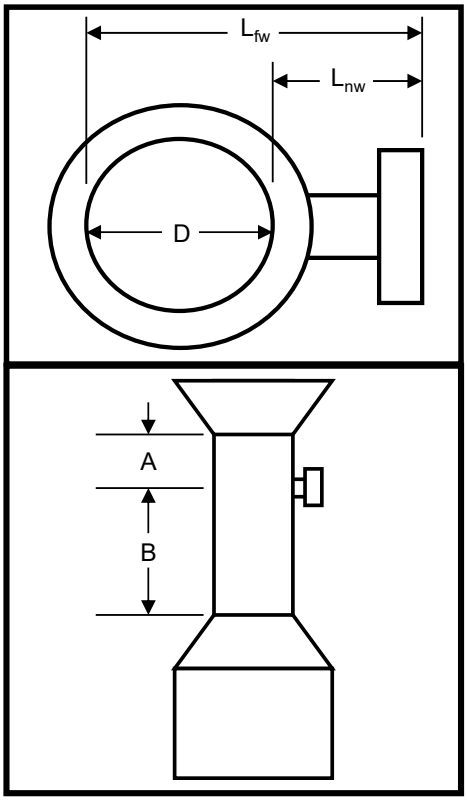
## METHOD 1 - SAMPLE AND VELOCITY TRAVERSES FOR CIRCULAR SOURCES

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Date** | 03/09/20 |
| **Sampling Location** | U-00002 Base | **Stack Type** | Circular |
| **Operator** | Rob White | **Ports Available** | 4 |
| **Project #** | bec-19-cricketvalley.ny-start#2 | **Ports Used** | 4 |
| **Stack Size** | Large (>24 inch diameter) | **Port ID (inches)** | 6.00 |

| **Circular Stack or Duct Diameter** | | | |
|---|---|---|---|
| **Distance to Far Wall of Stack** | ($L_{fw}$) | 236.00 | in |
| **Distance to Near Wall of Stack** | ($L_{nw}$) | 8.00 | in |
| **Diameter of Stack** | (D) | 228.00 | in |
| **Area of Stack** | ($A_s$) | 283.53 | ft² |

| **Distance from Port to Disturbances** | | | |
|---|---|---|---|
| **Distance Upstream** | (A) | 200.40 | in |
| **Diameters Upstream** | ($A_D$) | 0.88 | diameters |
| **Distance Downstream** | (B) | 850.00 | in |
| **Diameters Downstream** | ($B_D$) | 3.73 | diameters |




| **Number of Traverse Points Required** | | | |
|---|---|---|---|
| **Diameters to Flow Disturbance** | | **Minimum Number of[1] Traverse Points** | |
| **Down Stream** | **Up Stream** | **Particulate Points** | **Velocity Points** |
| 2.00-4.99 | 0.50-1.24 | 24 | 16 |
| 5.00-5.99 | 1.25-1.49 | 20 | 16 |
| 6.00-6.99 | 1.50-1.74 | 16 | 12 |
| 7.00-7.99 | 1.75-1.99 | 12 | 12 |
| >= 8.00 | >=2.00 | 8 or 12[2] | 8 or 12[2] |
| **Upstream Spec** | | 24 | 16 |
| **Downstream Spec** | | 24 | 16 |
| **Traverse Pts Required** | | 24 | 16 |

[1] Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.

[2] 8 for Circular Stacks 12 to 24 inches
12 for Circular Stacks over 24 inches

○ Method 1 Trav

◉ 12 Point PM Trav (M201a ONLY)

○ Velocity

| **Number of Traverse Points Used** | | | |
|---|---|---|---|
| 4 | **Ports by** | 3 | **Across** |
| 12 | **Pts Used** | 12 | **Required** |

| **Location of Traverse Points in Circular Stacks** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point Number** | (Fraction of Stack Dimension from Inside Wall to Traverse Point) Number of Traverse Points Across the Stack | | | | | | | | |
| | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 |
| 1 | .146 | .067 | .044 | .032 | .026 | .021 | .018 | .016 | .014 |
| 2 | .854 | .250 | .146 | .105 | .082 | .067 | .057 | .049 | .044 |
| 3 | | .750 | .296 | .194 | .146 | .118 | .099 | .085 | .075 |
| 4 | | .933 | .704 | .323 | .226 | .177 | .146 | .125 | .109 |
| 5 | | | .854 | .677 | .342 | .250 | .201 | .169 | .146 |
| 6 | | | .956 | .806 | .658 | .356 | .269 | .220 | .188 |
| 7 | | | | .895 | .774 | .644 | .366 | .283 | .236 |
| 8 | | | | .968 | .854 | .750 | .634 | .375 | .296 |
| 9 | | | | | .918 | .823 | .731 | .625 | .382 |
| 10 | | | | | .974 | .882 | .799 | .717 | .618 |
| 11 | | | | | | .933 | .854 | .780 | .704 |
| 12 | | | | | | .979 | .901 | .831 | .764 |

| **Traverse Point Locations** | | | |
|---|---|---|---|
| **Traverse Point Number** | **Fraction of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
| | | in | in |
| **1** | 0.044 | 10 | 18 |
| **2** | 0.146 | 33 2/8 | 41 2/8 |
| **3** | 0.296 | 67 4/8 | 75 4/8 |
| **4** | | | |
| **5** | | | |
| **6** | | | |
| **7** | | | |
| **8** | | | |
| **9** | | | |

## METHOD 2 - DETERMINATION OF STACK GAS VELOCITY AND VOLUMETRIC FLOW RATE

| | | | | |
|---|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | | | |
| **Sampling Location** | U-00002 Base | | | |
| **Operator** | Rob White | | | |
| **Project #** | bec-19-cricketvalley.ny-start#2 | | | |
| **Pitot Leak Check** | x | **PreTest** | x | **PostTest** |

| | | | |
|---|---|---|---|
| **Preliminary Run Date** | 03/09/20 | | |
| **Stack Type** | Circular | | |
| **Ports Available** | 4 | | |
| **Thermocouple ID** | SAMP-PR-0133 | | |
| **Pitot Coefficient** | 0.8198 | **Pitot Identification** | A4187 |

| **RM 201A or OTM 27 Blckag.** | **RM 201A or OTM 27 Pitot Coeff.** |
|---|---|
| 5.39E-04 | 0.7240 |

| **Stack Dimensions** | | | |
|---|---|---|---|
| **Area of Stack** | ($A_s$) | 283.53 | ft² |
| **Diameter of Stack** | (D) | 228.00 | in |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.31 | in Hg |
| **Static Pressure** | ($P_{static}$) | -0.89 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.24 | in Hg |

| **Stack Gas Composition** | | | |
|---|---|---|---|
| **Composition Data:** | **Estimated Composition** | | |
| **Carbon Dioxide Concentration** | ($\%CO_2$) | 4.90 | %vd |
| **Oxygen Concentration** | ($\%O_2$) | 13.00 | %vd |
| **Carbon Monoxide Concentration** | (ppmCO) | 0.00 | ppmvd |
| **Nitrogen Concentration** | ($\%N_2$) | 82.10 | %vd |
| **Stack Moisture Content** | ($B_{ws}$) | 8.00 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.30 | lb/lb-mole |
| **Stack Wet Molecular Weight** | ($M_w$) | 28.40 | lb/lb-mole |

| **Results** | | | |
|---|---|---|---|
| **Avg Stack Gas Velocity** | ($v_s$) | 56.77 | ft/sec |
| **Avg Stack Dry Std Flow Rate** | ($Q_{sd}$) | 43,984,321 | dscf/hr |
| **Avg Stack Dry Std Flow Rate** | ($Q_{sd}$) | 733,072 | dscf/min |
| **Avg Stack Wet Flow Rate** | ($Q_{aw}$) | 965,676 | acf/min |
| **Avg Stack Wet Std Flow Rate** | ($Q_{sw}$) | 47,809,045 | ascf/hr |

**40 CFR 60, Method 2G, Section 8.11.1 (but applies to all Method 2 type static pressure measurements):**
If a Type S probe is used for this measurement, position the probe at or between any traverse point(s) and rotate the probe until a null differential pressure reading is obtained. Disconnect the tubing from one of the pressure ports; read and record the ΔP. For pressure devices with one-directional scales, if a deflection in the positive direction is noted with the negative side disconnected, then the static pressure is positive. Likewise, if a deflection in the positive direction is noted with the positive side disconnected, then the static pressure is negative.

**Stack Cross Section Schematic**

| **Velocity Traverse Data** | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Run Number** | | PM U-00002 Base-V1 | | | | | |
| **Run Time** | | 06:44 | **Start** | 07:11 | **End** | | |
| **Traverse Point** | **Velocity Head** ($\Delta p$) | **Null Angle** ($N_a$) | **Zero Deg Pressure** ($0°_a$) | **Stack Temp** ($t_s$) | **Local Velocity** ($v_{s(l)}$) | **Adjusted Velocity Pressure** | **Adjusted Velocity Pressure w/BF, if app** |
| | in $H_2O$ | deg | in $H_2O$ | °F | ft/sec | in $H_2O$ | in $H_2O$ |
| A-1 | 1.50 | 0 | 0.00 | 191 | 74.73 | 1.17 | 1.17 |
| A-2 | 1.40 | 0 | 0.00 | 189 | 72.08 | 1.09 | 1.09 |
| A-3 | 1.50 | -5 | 0.65 | 186 | 74.44 | 1.17 | 1.17 |
| B-1 | 1.40 | 0 | 0.00 | 187 | 71.97 | 1.09 | 1.09 |
| B-2 | 1.40 | 0 | 0.00 | 186 | 71.92 | 1.09 | 1.09 |
| B-3 | 1.30 | 0 | 0.00 | 185 | 69.25 | 1.01 | 1.01 |
| C-1 | 1.50 | 0 | 0.00 | 185 | 74.38 | 1.17 | 1.17 |
| C-2 | 1.60 | -5 | 0.15 | 187 | 76.94 | 1.25 | 1.25 |
| C-3 | 1.50 | -5 | 0.15 | 188 | 74.55 | 1.17 | 1.17 |
| D-1 | 1.30 | 0 | 0.00 | 184 | 69.19 | 1.01 | 1.01 |
| D-2 | 1.40 | 0 | 0.00 | 187 | 71.97 | 1.09 | 1.09 |
| D-3 | 1.40 | 0 | 0.00 | 187 | 71.97 | 1.09 | 1.09 |
| **Average** | 1.43 | 1 | | 187 | | 1.12 | 1.12 |
| | 1.20 | **= Square roots of Δp** | | | | | 1.06 |
| **Standard deviation of null angles =** | | | | 2.3 | | | |

## METHOD 201A and OTM 27 - DETERMINATION OF NOZZLE SIZE AND POST RUN QUALITY CONTROL

| Gas Analysis | Prelim | PM U-00002 Base-1 | PM U-00002 Base-2 | PM U-00002 Base-3 | PM U-00002 Base-4 | PM U-00002 Base-5 | PM U-00002 Base-6 | |
|---|---|---|---|---|---|---|---|---|
| Carbon Dioxide Content | 4.9 | 4.9 | 4.8 | 4.8 | | | | % |
| Oxygen Content | 13.0 | 12.7 | 12.8 | 12.8 | | | | % |
| Stack Moisture Content | 8.0 | 8.4 | 7.6 | 7.2 | | | | % |
| Nitrogen plus CO Content | 82.1 | 82.4 | 82.4 | 82.4 | | | | % |

| Corrected Velocity Head, $\Delta p_{2.5}$ (in $H_2O$) | Min. | 1.01 | Max. | 1.25 |
|---|---|---|---|---|

| Stack and Equipment Information | Prelim | PM U-00002 Base-1 | PM U-00002 Base-2 | PM U-00002 Base-3 | PM U-00002 Base-4 | PM U-00002 Base-5 | PM U-00002 Base-6 | |
|---|---|---|---|---|---|---|---|---|
| Barometric Pressure | 30.31 | 30.30 | 30.25 | 30.14 | | | | in Hg |
| Stack Static Pressure | -0.89 | -0.89 | -0.89 | -0.89 | | | | in $H_2O$ |
| Absolute Stack Pressure | 30.24 | 30.23 | 30.18 | 30.07 | | | | in Hg |
| Average Stack Temp | 187 | 190 | 192 | 190 | | | | 0.00 |
| Average Stack Temp | 647 | 650 | 652 | 650 | | | | °R |
| Average Meter Temp | 85 | 77 | 88 | 79 | | | | 0.00 |
| Orifice Meter Coefficient | 1.878 | 1.878 | 1.878 | 1.878 | | | | in $H_2O$ |
| Pitot Coefficient | 0.724 | 0.724 | 0.724 | 0.724 | | | | |
| Stack Dry Molecular Weight | 29.30 | 29.29 | 29.28 | 29.28 | | | | lb/lb mole |
| Stack Wet Molecular Weight | 28.40 | 28.35 | 28.42 | 28.46 | | | | lb/lb mole |
| Stack Viscosity | 201.52 | 201.67 | 202.96 | 202.93 | | | | µP |
| Cunningham Correction Factor, for a 2.25 µm particle | 1.08 | | | | | | | |
| Cunningham Correction Factor, for a 2.5 µm particle | | 1.07 | 1.07 | 1.07 | | | | |
| Prelim Cut Dia., Cyclone I, $D_{50LL}$, $N_{re}$<3162 | 10.30 | 2.31 | 2.37 | 2.36 | | | | µm |
| Middle Zone Dia., Cyclone I, $D_{50T}$, $N_{re}$<3162 | 10.65 | | | | | | | µm |
| Sampling Rate ($PM_{10}$ & $PM_{2.5}$ Cyc.), $N_{re}$<3162 | 0.48 | | | | | | | dscfm |
| Reynolds Number, Cyc I & IV, $N_{re}$<3162 | 2739.94 | 2802.09 | 2740.48 | 2748.34 | | | | |
| Dia. of 50% Prob. ($D_{50}$) Cyc IV ($N_{re}$<3162) | 2.38 | 2.32 | 2.38 | 2.37 | | | | µm |
| Sampling Rate, Cyc IV, $N_{re}$<3,162 | 0.48 | | | | | | | dscfm |
| Reynolds Number, Cyc IV, $N_{re}$<3162 | 2739.90 | 2802.09 | 2740.48 | 2748.34 | | | | |
| Prelim Cut Dia., Cyclone I, $D_{50LL\geq3162}$ | 10.63 | | | | | | | µm |
| Middle Zone Dia., Cyclone I, $D_{50T\geq3162}$ | 10.81 | | | | | | | µm |
| Sampling Rate ($PM_{10}$ & $PM_{2.5}$ Cyc.)≥3162 | 0.47 | | | | | | | dscfm |
| Reynolds Number, Cyc I & IV, $N_{re}$≥3162 | 2681.40 | | | | | | | |
| Dia. of 50% Prob. ($D_{50}$) CIV ($N_{re}$≥3162) | 2.29 | | | | | | | µm |
| Sampling Rate, Cyc IV, $N_{re}$≥3,162 | 4.71 | | | | | | | dscfm |
| Reynolds Number ≥ 3162 | 26814.13 | | | | | | | |
| Cyclone Flow Rate | 0.48 | 0.50 | 0.49 | 0.49 | | | | ft³/min |
| Recalculated $D_{50-1}$ for $C_{IV}$ | | 2.31 | 2.37 | 2.36 | | | | |
| Recalculated Cunninham | | 1.08 | 1.08 | 1.08 | | | | |
| Z | | 1.00 | 1.00 | 1.00 | | | | |
| Isokinetics | | 97.47 | 98.79 | 97.53 | | | | % |
| No. Sampling Pts. Outside Δp | | 0 | 0 | 0 | | | | |
| Sample Nozzle Diameter | | 0.156 | 0.156 | 0.156 | | | | in |

| Orifice Head and Nozzle Selection Calculation | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nozzle No. | 2a | 2b | 3a | 3b | 4a | 4b | 5a | 5b | 6a | 6b | 7a |
| Nozzle diameter, $D_n$, in. | 0.119 | 0.130 | 0.130 | 0.143 | 0.155 | 0.156 | 0.175 | 0.172 | 0.197 | 0.192 | 0.212 |
| Nozzle velocity, $v_n$, ft/sec | 103.85 | 87.02 | 87.02 | 71.91 | 61.47 | 60.43 | 48.02 | 49.71 | 37.89 | 39.89 | 32.72 |
| $R_{min}$ | 0.77 | 0.76 | 0.76 | 0.74 | 0.73 | 0.73 | 0.69 | 0.70 | 0.63 | 0.65 | 0.58 |
| $v_{min}$, ft/sec | 79.76 | 65.95 | 65.95 | 53.45 | 44.70 | 43.81 | 33.16 | 34.63 | 24.04 | 25.90 | 19.03 |
| $R_{max}$ | 1.22 | 1.23 | 1.23 | 1.24 | 1.25 | 1.25 | 1.27 | 1.27 | 1.30 | 1.29 | 1.32 |
| $v_{max}$, ft/sec | 126.95 | 106.96 | 106.96 | 89.07 | 76.75 | 75.52 | 60.95 | 62.93 | 49.15 | 51.47 | 43.17 |
| $\Delta p_{min}$, in. $H_2O$ @ $t_{s-50}{}^oF$ | 2.39 | 1.63 | 1.63 | 1.07 | 0.75 | 0.72 | 0.41 | 0.45 | 0.22 | 0.25 | 0.14 |
| $\Delta p_{min}$, in. $H_2O$ @ $t_s$ | 2.21 | 1.51 | 1.51 | 0.99 | 0.69 | 0.67 | 0.38 | 0.42 | 0.20 | 0.23 | 0.13 |
| $\Delta p_{max}$, in. $H_2O$ @ $t_s$ | 5.59 | 3.97 | 3.97 | 2.75 | 2.04 | 1.98 | 1.29 | 1.37 | 0.84 | 0.92 | 0.65 |
| $\Delta p_{min}$, in. $H_2O$ @ $t_{s+50}{}^oF$ | 5.19 | 3.68 | 3.68 | 2.55 | 1.90 | 1.84 | 1.20 | 1.27 | 0.78 | 0.85 | 0.60 |
| ΔH, in. $H_2O$ @ $t_s$+50°F | 0.396 | | | | | | | | | | |
| **ΔH, in. $H_2O$ @ $t_s$** | **0.459** | | | | | | | | | | |
| ΔH, in. $H_2O$ @ $t_s$-50°F | 0.539 | | | | | | | | | | |

## METHOD 3a - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

| | | | | | |
|---|---|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Preliminary Run Date** | 03/09/20 | | |
| **Sampling Location** | U-00002 Base | **Operator** | Rob White | | |
| **Project #** | bec-19-cricketvalley.ny-start#2 | **# of Ports Used** | 1 (gas probe) | | |
| **Fuel Type** | Gas, Natural | **Min. Fuel Factor** | 1.600 | **Max. Fuel Factor** | 1.836 |

**Gas Analysis Data**

| **Run Number** | PM U-00002 Base-1 | | **Date** | 03/09/20 | **Run Start Time** | 08:15 | **Run Stop Time** | 13:16 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 05:01 | 4.9 | 12.7 | 0.0 | 82.4 | 29.29 | 1.673 | 140.3 | YES |

**Gas Analysis Data**

| **Run Number** | PM U-00002 Base-2 | | **Date** | 03/09/20 | **Run Start Time** | 13:30 | **Run Stop Time** | 19:48 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 06:18 | 4.8 | 12.8 | 0.0 | 82.4 | 29.28 | 1.688 | 143.0 | YES |

**Gas Analysis Data**

| **Run Number** | PM U-00002 Base-3 | | **Date** | 03/10/20 | **Run Start Time** | 07:23 | **Run Stop Time** | 12:15 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 04:52 | 4.8 | 12.8 | 0.0 | 82.4 | 29.28 | 1.688 | 143.0 | YES |

## METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Preliminary Run Date** | 03/09/20 |
| **Sampling Location** | U-00002 Base | **Operator** | Rob White |
| **Project #** | bec-19-cricketvalley.ny-start#2 | **Ports Used** | 4 |

| **Scale Daily Calibration** | | | | | |
|---|---|---|---|---|---|
| **Scale Number** | SAMP-SC-0028 | **Standard** | **Result** | **Difference** | **Pass/Fail** |
| **Date** | | (g) | (g) | (g) | (± 0.5 g) |
| **Test Day 1** | 03/09/20 | 500 | 499.7 | -0.3 | Pass |
| **Test Day 2** | 03/10/20 | 500 | 499.7 | -0.3 | Pass |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | PM U-00002 Base-1 | | **Date** | 03/09/20 | **Start Time** | 08:15 | **Stop Time** | 13:16 |
| **Meter Box Number** | | Samp-cp-0030 | | | | **Meter Cal Factor** | (Y) | 0.974 | |
| **Total Meter Volume** | | ($V_m$) | 103.900 | dcf | | **Barometric Pressure** | ($P_b$) | 30.30 | in Hg |
| **Average Stack Temp** | | $(t_s)_{avg}$ | 190 | °F | | **Stack Static Pressure** | ($P_{static}$) | -0.89 | in $H_2O$ |
| **Average Meter Temp** | | $(t_m)_{avg}$ | 77 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.46 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | Dry | Dry | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 519.60 | 583.00 | 659.00 | 868.70 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 374.10 | 582.10 | 641.40 | 837.00 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 145.5 | 0.9 | 17.6 | 31.7 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | | ($W_t$) | 195.70 | g | | **Water Vol Weighed** | $(V_{wsg(std)})$ | 9.227 | scf |
| **Std Meter Volume** | | $(V_{m(std)})$ | 100.816 | dscf | | **Sat. Moisture Content** | $(B_{ws(svp)})$ | 62.33 | % |
| **Calc Moisture Content** | | $(B_{ws(calc)})$ | 8.39 | % | | **Final Moisture Content** | ($B_{ws}$) | 8.39 | % |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | PM U-00002 Base-2 | | **Date** | 03/09/20 | **Start Time** | 13:30 | **Stop Time** | 19:48 |
| **Meter Box Number** | | Samp-cp-0030 | | | | **Meter Cal Factor** | (Y) | 0.974 | |
| **Total Meter Volume** | | ($V_m$) | 101.880 | dcf | | **Barometric Pressure** | ($P_b$) | 30.25 | in Hg |
| **Average Stack Temp** | | $(t_s)_{avg}$ | 192 | °F | | **Stack Static Pressure** | ($P_{static}$) | -0.89 | in $H_2O$ |
| **Average Meter Temp** | | $(t_m)_{avg}$ | 88 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.46 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | Dry | Dry | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 473.70 | 587.90 | 747.60 | 849.20 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 359.60 | 585.50 | 718.90 | 825.20 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 114.1 | 2.4 | 28.7 | 24.0 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | | ($W_t$) | 169.20 | g | | **Water Vol Weighed** | $(V_{wsg(std)})$ | 7.978 | scf |
| **Std Meter Volume** | | $(V_{m(std)})$ | 96.846 | dscf | | **Sat. Moisture Content** | $(B_{ws(svp)})$ | 65.40 | % |
| **Calc Moisture Content** | | $(B_{ws(calc)})$ | 7.61 | % | | **Final Moisture Content** | ($B_{ws}$) | 7.61 | % |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | PM U-00002 Base-3 | | **Date** | 03/10/20 | **Start Time** | 07:23 | **Stop Time** | 12:15 |
| **Meter Box Number** | | Samp-cp-0030 | | | | **Meter Cal Factor** | (Y) | 0.974 | |
| **Total Meter Volume** | | ($V_m$) | 102.820 | dcf | | **Barometric Pressure** | ($P_b$) | 30.14 | in Hg |
| **Average Stack Temp** | | $(t_s)_{avg}$ | 190 | °F | | **Stack Static Pressure** | ($P_{static}$) | -0.89 | in $H_2O$ |
| **Average Meter Temp** | | $(t_m)_{avg}$ | 79 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.46 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | Dry | Dry | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 487.90 | 597.90 | 684.70 | 892.00 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 373.50 | 597.40 | 659.00 | 868.70 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 114.4 | 0.5 | 25.7 | 23.3 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | | ($W_t$) | 163.90 | g | | **Water Vol Weighed** | $(V_{wsg(std)})$ | 7.728 | scf |
| **Std Meter Volume** | | $(V_{m(std)})$ | 99.027 | dscf | | **Sat. Moisture Content** | $(B_{ws(svp)})$ | 63.45 | % |
| **Calc Moisture Content** | | $(B_{ws(calc)})$ | 7.24 | % | | **Final Moisture Content** | ($B_{ws}$) | 7.24 | % |

## METHOD 201A (FRONT) AND 202 (BACK) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base |
| **Project #** | bec-19-cricketvalley.ny-start#2 |

| | |
|---|---|
| **Date** | 03/09/20 |
| **Operator** | Rob White |
| **Run Number** | PM U-00002 Base-1 |

| **Filter #** |
|---|
| 19031822 |
| PM U-00002 Base-1-CPM |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | 0.7240 | 4187/10 |
| **Average Stack Temp** | ($t_s$) | 189.7 | °F |
| **Average Meter Temp** | ($t_m$) | 77.3 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.878 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | 1.19 | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | 8.39 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.29 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.75 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | 0.35 | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec (≥60) |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec (≥60) |
| **Pitot** | **Pre (+)** | 0.00 | in $H_2O$ | 3.6 | in $H_2O$ for | 15.0 | sec (≥15) |
| | **Pre (-)** | 0.00 | in $H_2O$ | 3.8 | in $H_2O$ for | 15.0 | sec (≥15) |
| PASS | **Post (+)** | 0.00 | in $H_2O$ | 3.6 | in $H_2O$ for | 15.0 | sec (≥15) |
| | **Post (-)** | 0.00 | in $H_2O$ | 4.1 | in $H_2O$ for | 15.0 | sec (≥15) |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | Samp-cp-0030 | | |
| **Meter Cal Factor** | (Y) | 0.974 | |
| **Nozzle Number** | 4b | | |
| **Average Nozzle Diameter** | ($D_{ns}$) | 0.1560 | in |
| **Suggested Nozzle Diameter** | ($D_n$) | 0.2180 | in |
| **Probe Number** | SAMP-PR-0133 | | in |
| **Probe Length** | 120 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | SAMP-BH-0039 | | |
| **Impinger Case Number** | SAMP-SBC-0099 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.30 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | -0.89 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.23 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.44 | in Hg |

| **Nozzle Measurements** | | | **ID: 4b** | |
|---|---|---|---|---|
| **Pre** | 0.156 | 0.156 | 0.156 | **PASS** |
| **Post** | 0.156 | 0.156 | 0.156 | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 08:15 | **End** | 13:16 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 374.1 | 582.1 | 641.4 | 837.0 | | | | |
| **Post** | 519.6 | 583.0 | 659.0 | 868.7 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | Samp-cp-0030 | Samp-cp-0030 | Samp-cp-0030 | | | SAMP-PR-0133 | SAMP-PR-0133 | SAMP-BH-0039 | SAMP-SBC-0099 | 1048 | 1018 | Samp-cp-0030 | | Samp-cp-0030 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head ($\Delta p$)** | **Desired Orifice ΔH ($\Delta H_@$)** | **Actual Orifice ΔH ($\Delta H_@$)** | **Stack Temp ($t_s$)** | **Probe Temp (248±25°F)** | **Filter Temp (248±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤85°F)** | **CPM Filter Temp (76.5±8.5°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)$_l$** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 364.330 | 1.40 | 0.459 | 0.46 | 191 | 251 | 254 | 52 | 60 | 72 | 62 | 62 | 3.5 | 1.18 | 63.83 | 8.410 | 98.0 | 101.014 |
| A-2 | 22.5 | 00:22:30 | 372.750 | 1.40 | 0.459 | 0.46 | 190 | 251 | 251 | 66 | 77 | 76 | 66 | 66 | 3.5 | 1.18 | 63.78 | 16.717 | 97.3 | 100.392 |
| A-3 | 45.0 | 00:45:00 | 381.130 | 1.30 | 0.459 | 0.46 | 189 | 252 | 254 | 63 | 78 | 77 | 70 | 70 | 3.5 | 1.14 | 61.41 | 24.223 | 96.6 | 98.438 |
| B-1 | 66.5 | 01:06:30 | 388.760 | 1.50 | 0.459 | 0.46 | 190 | 255 | 253 | 64 | 77 | 77 | 74 | 74 | 3.5 | 1.22 | 66.02 | 33.684 | 98.4 | 101.426 |
| B-2 | 89.8 | 01:29:45 | 398.450 | 1.40 | 0.459 | 0.46 | 188 | 250 | 252 | 65 | 77 | 78 | 76 | 76 | 3.5 | 1.18 | 63.68 | 41.806 | 97.6 | 100.651 |
| B-3 | 112.3 | 01:52:15 | 406.800 | 1.40 | 0.459 | 0.46 | 189 | 250 | 251 | 56 | 64 | 73 | 78 | 78 | 3.5 | 1.18 | 63.73 | 49.976 | 97.2 | 100.229 |
| C-1 | 134.8 | 02:14:45 | 415.230 | 1.30 | 0.459 | 0.46 | 190 | 246 | 255 | 58 | 65 | 76 | 80 | 80 | 3.5 | 1.14 | 61.46 | 58.018 | 97.8 | 100.349 |
| C-2 | 156.3 | 02:36:15 | 423.560 | 1.50 | 0.459 | 0.46 | 191 | 259 | 253 | 67 | 74 | 77 | 81 | 81 | 4.0 | 1.22 | 66.07 | 66.904 | 97.7 | 100.729 |
| C-3 | 179.5 | 02:59:30 | 432.780 | 1.40 | 0.459 | 0.46 | 190 | 256 | 250 | 67 | 75 | 78 | 83 | 83 | 4.0 | 1.18 | 63.78 | 75.229 | 97.6 | 100.647 |
| D-1 | 202.0 | 03:22:00 | 441.450 | 1.50 | 0.459 | 0.46 | 189 | 257 | 252 | 63 | 72 | 74 | 84 | 84 | 4.0 | 1.22 | 65.97 | 83.644 | 97.0 | 100.354 |
| D-2 | 225.3 | 03:45:15 | 450.230 | 1.40 | 0.459 | 0.46 | 190 | 255 | 251 | 65 | 74 | 77 | 86 | 86 | 4.0 | 1.18 | 63.78 | 92.133 | 97.1 | 100.501 |
| D-3 | 247.8 | 04:07:45 | 459.120 | 1.40 | 0.459 | 0.46 | 189 | 253 | 251 | 66 | 76 | 77 | 88 | 88 | 4.0 | 1.18 | 63.73 | 100.801 | 97.5 | 100.801 |
| Last Pt | 270.3 | 04:30:15 | 468.230 | | | | | | | | | | | | | | | | | |
| **Final Val** | 270.3 | 04:30:15 | 468.230 | | | | | | | | | | | **Max Vac** | 4.0 | **Final Values** | | 100.801 | 97.5 | |
| **Average Values** | | | | 1.41 | | 0.46 | 190 | 253 | 252 | 63 | 72 | 76 | 77 | 77 | | 1.19 | 63.94 | | | |
| | | | | | | | | | | | | | 77 | | | | | | | |

| **Actual Nozzle Diameter ($D_{na}$)** | **DP to DH Iso Factor (K)** | **Point-by-point Meter Volume ($V_m$)$_{std}$** | **Point-by-point Percent IsoKinetic (I)** | **Point Weighted Average Isokinetics** |
|---|---|---|---|---|
| in | | dscf | % | ($V_m$)$_{std}$ x (I) |
| 0.156 | 0.35 | 8.410 | 98.0 | 824.1 |
| 0.156 | 0.35 | 8.306 | 96.7 | 803.3 |
| 0.156 | 0.35 | 7.506 | 94.8 | 711.8 |
| 0.156 | 0.35 | 9.461 | 103.0 | 974.3 |
| 0.156 | 0.35 | 8.122 | 94.4 | 766.9 |
| 0.156 | 0.35 | 8.170 | 95.0 | 776.4 |
| 0.156 | 0.35 | 8.043 | 101.7 | 817.9 |
| 0.156 | 0.35 | 8.886 | 96.8 | 860.1 |
| 0.156 | 0.35 | 8.325 | 96.9 | 806.8 |
| 0.156 | 0.35 | 8.415 | 91.5 | 770.2 |
| 0.156 | 0.35 | 8.489 | 98.8 | 839.0 |
| 0.156 | 0.35 | 8.668 | 100.8 | 874.0 |
| | | | | |
| 0.156 | 0.35 | 100.801 | | |

| **RM 201A Calculations** | | | | | | |
|---|---|---|---|---|---|---|
| **Trav. Point Estimated Dwell Times ($t_1$), ($t_n$)** | **First Point Dwell Times ($t_1$)** | **First Point Vel. Head Current Trav. ($\Delta p_{RM2}$)** | **Subs. Point Dwell Times Current Trav. ($t_n$)** | **Velocity Velocity Head Current Trav. ($\Delta p_{201A}$)** | **Violations** |
| min | min | in $H_2O$ | min | in $H_2O$ | |
| 22.50 | 22.39 | 1.40 | | 1.40 | 0 |
| 22.50 | 22.39 | 1.40 | 22.39 | 1.40 | 0 |
| 21.50 | 21.58 | 1.30 | 21.58 | 1.30 | 0 |
| 23.25 | 23.18 | 1.50 | | 1.50 | 0 |
| 22.50 | 22.39 | 1.40 | 22.39 | 1.40 | 0 |
| 22.50 | 22.39 | 1.40 | 22.39 | 1.40 | 0 |
| 21.50 | 21.58 | 1.30 | | 1.30 | 0 |
| 23.25 | 23.18 | 1.50 | 23.18 | 1.50 | 0 |
| 22.50 | 22.39 | 1.40 | 22.39 | 1.40 | 0 |
| 23.25 | 23.18 | 1.50 | | 1.50 | 0 |
| 22.50 | 22.39 | 1.40 | 22.39 | 1.40 | 0 |
| 22.50 | 22.39 | 1.40 | 22.39 | 1.40 | 0 |
| | | | | | |

Notes:

Z must be between 0.99 and 1.01, but the initial calculation is based on assumptions of the Cunniham Correction Factor and the Reynolds Number. In cases where your Z value is not between the limits and is producing an error, you need to run a second iteration based on the re-calculated numbers. To do this, copy the value in "Recalculated Cunninham, C =" [BH189] and do a "paste special value only" into "Calculated Cunninham, C =" [BH174]. This sets the initially calculated C equal to the C determined during this test run. At this point the program may recognize the second iteration and your error may go away. If it doesn't it is probably because it is having difficulties deciding between the Reynolds number at the threshold.

| | | | |
|---|---|---|---|
| | Stack Gas Viscosity (μs) | 201.67 | μP |
| | Cyclone Flow Rate ($Q_a$) | 0.50 | ft³/min |
| | Dia. of 50% Prob. ($D_{50}$) CI | 10.45 | μm |
| >> | Calculated Cunninham, C | 1.08 | |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{re}$<3162) | 10.28 | μm |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{re}$≥3162) | | μm |
| | Middle of Zone Dia. ($D_{50T}$) CI | 10.64 | μm |
| | Sampling Rate ($PM_{10}$ and $PM_{2.5}$ Cyc.) | 0.48 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$<3162) | 2.31 | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{re}$<3162) | 0.50 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$≥3162) | | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{re}$≥3162) | | dscfm |
| | Actual Test Run C (2.5 μm) | 1.07 | |
| | Actual Test Run $N_{RE}$ | 2802.09 | |
| | Actual Particle Cut Diameter for CI | 10.45 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$<3162) | 2.32 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$≥3162) | | μm |
| << | Recalculated Cunninham, C = | 1.08 | |
| | Recalculated $D_{50-1}$ for $C_{IV}$ = | 2.31 | |
| >> | Z (limits 0.99 to 1.01) = | 1.00 | |
| | Isokinetics (I) (80 to 120%) = | 97.47 | % |
| | No. Sampling Pts. Outside Δp = | 0 | |
| | Sample Nozzle Diameter = | 0.156 | in |
| | $\Delta p_{min}$ | 0.665 | in $H_2O$ |
| | $\Delta p_{max}$ | 1.977 | in $H_2O$ |

## METHOD 201A (FRONT) AND 202 (BACK) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base |
| **Project #** | bec-19-cricketvalley.ny-start#2 |

| | |
|---|---|
| **Date** | 03/09/20 |
| **Operator** | Rob White |
| **Run Number** | PM U-00002 Base-2 |

| **Filter #** |
|---|
| 19031835 |
| PM U-00002 Base-2-CPM |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | 0.7240 | 4187/10 |
| **Average Stack Temp** | ($t_s$) | 191.8 | °F |
| **Average Meter Temp** | ($t_m$) | 87.6 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.878 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | 1.15 | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | 7.61 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.28 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.37 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | 0.36 | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec ≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | 0.000 | in $H_2O$ | 3.7 | in $H_2O$ for | 15.0 | sec [≥15] |
| PASS | **Pre (-)** | 0.000 | in $H_2O$ | 4.0 | in $H_2O$ for | 15.0 | sec [≥15] |
| | **Post (+)** | 0.000 | in $H_2O$ | 3.7 | in $H_2O$ for | 15.0 | sec [≥15] |
| | **Post (-)** | 0.000 | in $H_2O$ | 4.3 | in $H_2O$ for | 15.0 | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | Samp-cp-0030 | | |
| **Meter Cal Factor** | (Y) | 0.974 | |
| **Nozzle Number** | 4b | | |
| **Average Nozzle Diameter** | ($D_{ns}$) | 0.1560 | in |
| **Suggested Nozzle Diameter** | ($D_n$) | 0.1535 | in |
| **Probe Number** | SAMP-PR-0133 | | in |
| **Probe Length** | 120 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | SAMP-BH-0039 | | |
| **Impinger Case Number** | SAMP-SBC-0099 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.25 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | -0.89 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.18 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.39 | in Hg |

| **Nozzle Measurements** | | | **ID: 4b** | |
|---|---|---|---|---|
| **Pre** | 0.156 | 0.156 | 0.156 | **PASS** |
| **Post** | 0.156 | 0.156 | 0.156 | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 13:30 | **End** | 19:48 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 359.6 | 585.5 | 718.9 | 825.2 | | | | |
| **Post** | 473.7 | 587.9 | 747.6 | 849.2 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | Samp-cp-0030 | Samp-cp-0030 | Samp-cp-0030 | | | SAMP-PR-0133 | SAMP-PR-0133 | SAMP-BH-0039 | SAMP-SBC-0099 | 1026 | 8082 | Samp-cp-0030 | | Samp-cp-0030 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head ($\Delta p$)** | **Desired Orifice ΔH ($\Delta H_a$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (248±25°F)** | **Filter Temp (248±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤85°F)** | **CPM Filter Temp (76.5±8.5°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 468.560 | 1.30 | 0.459 | 0.46 | 189 | 256 | 253 | 60 | 75 | 72 | 83 | 83 | 3.5 | 1.14 | 61.38 | 8.215 | 103.1 | 100.207 |
| A-2 | 21.5 | 00:21:30 | 477.130 | 1.50 | 0.459 | 0.46 | 191 | 257 | 254 | 63 | 77 | 75 | 83 | 83 | 4.0 | 1.22 | 66.03 | 16.939 | 98.7 | 99.266 |
| A-3 | 44.8 | 00:44:45 | 486.230 | 1.40 | 0.459 | 0.46 | 190 | 254 | 250 | 62 | 84 | 78 | 86 | 86 | 4.0 | 1.18 | 63.75 | 25.519 | 98.9 | 99.514 |
| B-1 | 67.3 | 01:07:15 | 495.230 | 1.40 | 0.459 | 0.46 | 189 | 255 | 252 | 63 | 84 | 78 | 91 | 91 | 4.5 | 1.18 | 63.70 | 33.917 | 98.4 | 99.106 |
| B-2 | 89.8 | 01:29:45 | 504.120 | 1.30 | 0.459 | 0.46 | 191 | 250 | 249 | 66 | 85 | 79 | 90 | 90 | 4.5 | 1.14 | 61.48 | 41.271 | 97.4 | 97.287 |
| B-3 | 111.3 | 01:51:15 | 511.890 | 1.30 | 0.459 | 0.46 | 189 | 251 | 247 | 67 | 85 | 80 | 90 | 90 | 4.5 | 1.14 | 61.38 | 49.050 | 97.4 | 96.899 |
| C-1 | 132.8 | 02:12:45 | 520.110 | 1.30 | 0.459 | 0.46 | 190 | 252 | 249 | 65 | 85 | 80 | 91 | 91 | 4.5 | 1.14 | 61.43 | 57.231 | 98.2 | 97.302 |
| C-2 | 154.3 | 02:34:15 | 528.770 | 1.40 | 0.459 | 0.46 | 191 | 250 | 247 | 67 | 83 | 78 | 87 | 87 | 4.5 | 1.18 | 63.80 | 66.119 | 98.8 | 98.103 |
| C-3 | 176.8 | 02:56:45 | 538.110 | 1.30 | 0.459 | 0.46 | 200 | 249 | 248 | 66 | 81 | 81 | 87 | 87 | 4.5 | 1.14 | 61.90 | 74.465 | 99.6 | 98.504 |
| D-1 | 198.3 | 03:18:15 | 546.880 | 1.40 | 0.459 | 0.46 | 198 | 255 | 254 | 66 | 82 | 81 | 88 | 88 | 4.5 | 1.18 | 64.14 | 82.795 | 99.3 | 98.360 |
| D-2 | 220.8 | 03:40:45 | 555.650 | 1.20 | 0.459 | 0.46 | 192 | 254 | 250 | 65 | 80 | 78 | 88 | 88 | 4.5 | 1.10 | 59.11 | 90.204 | 99.4 | 97.954 |
| D-3 | 241.5 | 04:01:30 | 563.450 | 1.20 | 0.459 | 0.46 | 192 | 251 | 250 | 68 | 78 | 77 | 87 | 87 | 4.5 | 1.10 | 59.11 | 96.856 | 98.8 | 96.856 |
| Last Pt | 262.3 | 04:22:15 | 570.440 | | | | | | | | | | | | | | | | | |
| **Final Val** | 262.3 | 04:22:15 | 570.440 | | | | | | | | | | | **Max Vac** | 4.5 | **Final Values** | | 96.856 | 98.8 | |
| **Average Values** | | | | 1.33 | | 0.46 | 192 | 253 | 250 | 65 | 82 | 78 | 88 | 88 | | 1.15 | 62.27 | | | |
| | | | | | | | | | | | | | 88 | | | | | | | |

| **Actual Actual Nozzle Diameter ($D_{na}$)** | **DP to DP to DH Iso Factor (K)** | **Point-by-point Point-by-point Meter Volume ($V_m$)$_{std}$** | **Point-by-point Point-by-point Percent IsoKinetic (I)** | **Point Point Weighted Average Isokinetics** |
|---|---|---|---|---|
| in | | dscf | % | ($V_m$)$_{std}$ x (I) |
| 0.156 | 0.36 | 8.215 | 103.1 | 847.4 |
| 0.156 | 0.36 | 8.723 | 94.4 | 823.8 |
| 0.156 | 0.36 | 8.580 | 99.3 | 851.7 |
| 0.156 | 0.36 | 8.398 | 97.1 | 815.4 |
| 0.156 | 0.36 | 7.354 | 92.5 | 680.0 |
| 0.156 | 0.36 | 7.779 | 97.7 | 759.8 |
| 0.156 | 0.36 | 8.181 | 102.8 | 841.0 |
| 0.156 | 0.36 | 8.888 | 102.9 | 914.7 |
| 0.156 | 0.36 | 8.346 | 105.7 | 881.8 |
| 0.156 | 0.36 | 8.330 | 97.0 | 807.8 |
| 0.156 | 0.36 | 7.409 | 100.5 | 745.0 |
| 0.156 | 0.36 | 6.652 | 90.3 | 600.5 |
| | | | | |
| 0.156 | 0.36 | 96.856 | | |

**RM 201A Calculations**

| **Trav. Point Trav. Point Estimated Dwell Times ($t_1$), ($t_n$)** | **First Point First Point Dwell Times Prelim. Trav. ($t_1$)** | **First Point First Point Vel. Head Current Trav. ($\Delta p_{RM2}$)** | **Subs. Point Subs. Point Dwell Times Current Trav. ($t_n$)** | **Velocity Velocity Head Current Trav. ($\Delta p_{201A}$)** | **Violations** |
|---|---|---|---|---|---|
| min | min | in $H_2O$ | min | in $H_2O$ | |
| 21.50 | 21.58 | 1.30 | | 1.30 | 0 |
| 23.25 | 23.18 | 1.50 | 23.18 | 1.50 | 0 |
| 22.50 | 22.39 | 1.40 | 22.39 | 1.40 | 0 |
| 22.50 | 22.39 | 1.40 | | 1.40 | 0 |
| 21.50 | 21.58 | 1.30 | 21.58 | 1.30 | 0 |
| 21.50 | 21.58 | 1.30 | 21.58 | 1.30 | 0 |
| 21.50 | 21.58 | 1.30 | | 1.30 | 0 |
| 22.50 | 22.39 | 1.40 | 22.39 | 1.40 | 0 |
| 21.50 | 21.58 | 1.30 | 21.58 | 1.30 | 0 |
| 22.50 | 22.39 | 1.40 | | 1.40 | 0 |
| 20.75 | 20.73 | 1.20 | 20.73 | 1.20 | 0 |
| 20.75 | 20.73 | 1.20 | 20.73 | 1.20 | 0 |
| | | | | | |

Z must be between 0.99 and 1.01, but the initial calculation is based on assumptions of the Cunniham Correction Factor and the Reynolds Number. In cases where your Z value is not between the limits and is producing an error, you need to run a second iteration based on the re-calculated numbers. To do this, copy the value in "Recalculated Cunninham, C =" [BH189] and do a "paste special value only" into "Calculated Cunninham, C =" [BH174]. This sets the initially calculated C equal to the C determined during this test run. At this point the program may recognize the second iteration and your error may go away. If it doesn't it is probably because it is having difficulties deciding between the Reynolds number at the threshold.

| | | | |
|---|---|---|---|
| | Stack Gas Viscosity (μs) | 202.96 | μP |
| | Cyclone Flow Rate ($Q_a$) | 0.49 | ft³/min |
| | Dia. of 50% Prob. ($D_{50}$) CI | 10.60 | μm |
| >> | Calculated Cunninham, C | 1.08 | |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{Re}$<3162) | 10.27 | μm |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{Re}$≥3162) | | μm |
| | Middle of Zone Dia. ($D_{50T}$) CI | 10.63 | μm |
| | Sampling Rate ($PM_{10}$ and $PM_{2.5}$ Cyc.) | 0.49 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$<3162) | 2.37 | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{Re}$<3162) | 0.49 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$≥3162) | | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{Re}$≥3162) | | dscfm |
| | Actual Test Run C (2.5 μm) | 1.07 | |
| | Actual Test Run $N_{RE}$ | 2740.48 | |
| | Actual Particle Cut Diameter for CI | 10.60 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$<3162) | 2.38 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$≥3162) | | μm |
| << | Recalculated Cunninham, C = | 1.08 | |
| | Recalculated $D_{50-1}$ for $C_{IV}$ = | 2.37 | |
| >> | Z (limits 0.99 to 1.01) = | 1.00 | |
| | Isokinetics (I) (80 to 120%) = | 98.79 | % |
| | No. Sampling Pts. Outside Δp = | 0 | |
| | Sample Nozzle Diameter = | 0.156 | in |
| | $\Delta p_{min}$ | 0.665 | in $H_2O$ |
| | $\Delta p_{max}$ | 1.977 | in $H_2O$ |

Notes:

## METHOD 201A (FRONT) AND 202 (BACK) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base |
| **Project #** | bec-19-cricketvalley.ny-start#2 |

| | |
|---|---|
| **Date** | 03/10/20 |
| **Operator** | Rob White |
| **Run Number** | PM U-00002 Base-3 |

| **Filter #** |
|---|
| 19031823 |
| PM U-00002 Base-3-CPM |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | 0.7240 | 4187/10 |
| **Average Stack Temp** | ($t_s$) | 190.3 | °F |
| **Average Meter Temp** | ($t_m$) | 78.5 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.878 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | 1.17 | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | 7.24 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.28 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.37 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | 0.36 | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec (≥60) |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec (≥60) |
| **Pitot** | **Pre (+)** | 0.00 | in $H_2O$ | 3.7 | in $H_2O$ for | 15.0 | sec (≥15) |
| PASS | **Pre (-)** | 0.00 | in $H_2O$ | 4.0 | in $H_2O$ for | 15.0 | sec (≥15) |
| | **Post (+)** | 0.00 | in $H_2O$ | 3.6 | in $H_2O$ for | 15.0 | sec (≥15) |
| | **Post (-)** | 0.00 | in $H_2O$ | 4.2 | in $H_2O$ for | 15.0 | sec (≥15) |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | Samp-cp-0030 | | |
| **Meter Cal Factor** | (Y) | 0.974 | |
| **Nozzle Number** | 4b | | |
| **Average Nozzle Diameter** | ($D_{ns}$) | 0.1560 | in |
| **Suggested Nozzle Diameter** | ($D_n$) | 0.1533 | in |
| **Probe Number** | SAMP-PR-0133 | | in |
| **Probe Length** | 120 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | SAMP-BH-0039 | | |
| **Impinger Case Number** | SAMP-SBC-0099 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.14 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | -0.89 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.07 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.28 | in Hg |

| **Nozzle Measurements** | | | **ID: 4b** | |
|---|---|---|---|---|
| **Pre** | 0.156 | 0.156 | 0.156 | **PASS** |
| **Post** | 0.156 | 0.156 | 0.156 | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 07:23 | **End** | 12:15 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 373.5 | 597.4 | 659.0 | 868.7 | | | | |
| **Post** | 487.9 | 597.9 | 684.7 | 892.0 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | Samp-cp-0030 | Samp-cp-0030 | Samp-cp-0030 | | | SAMP-PR-0133 | SAMP-PR-0133 | SAMP-BH-0039 | SAMP-SBC-0099 | 1048 | 1018 | Samp-cp-0030 | | Samp-cp-0030 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head ($\Delta p$)** | **Desired Orifice ΔH ($\Delta H_a$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (248±25°F)** | **Filter Temp (248±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤85°F)** | **CPM Filter Temp (76.5±8.5°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 572.380 | 1.40 | 0.459 | 0.46 | 189 | 250 | 252 | 59 | 58 | 70 | 60 | 60 | 3.0 | 1.18 | 63.77 | 8.448 | 97.5 | 100.153 |
| A-2 | 22.5 | 00:22:30 | 580.850 | 1.30 | 0.459 | 0.46 | 191 | 250 | 253 | 58 | 60 | 72 | 64 | 64 | 3.0 | 1.14 | 61.54 | 16.623 | 100.0 | 100.778 |
| A-3 | 44.0 | 00:44:00 | 589.110 | 1.40 | 0.459 | 0.46 | 191 | 250 | 252 | 57 | 61 | 73 | 72 | 72 | 3.0 | 1.18 | 63.87 | 25.495 | 100.9 | 102.266 |
| B-1 | 66.5 | 01:06:30 | 598.210 | 1.40 | 0.459 | 0.46 | 190 | 249 | 251 | 59 | 62 | 74 | 76 | 76 | 3.0 | 1.18 | 63.82 | 33.352 | 98.5 | 99.961 |
| B-2 | 89.0 | 01:29:00 | 606.330 | 1.30 | 0.459 | 0.46 | 191 | 250 | 251 | 60 | 61 | 75 | 78 | 78 | 3.0 | 1.14 | 61.54 | 41.468 | 99.2 | 100.106 |
| B-3 | 110.5 | 01:50:30 | 614.750 | 1.40 | 0.459 | 0.46 | 190 | 251 | 253 | 63 | 65 | 76 | 80 | 80 | 3.0 | 1.18 | 63.82 | 49.872 | 98.8 | 100.026 |
| C-1 | 133.0 | 02:13:00 | 623.500 | 1.40 | 0.459 | 0.46 | 190 | 251 | 245 | 65 | 70 | 76 | 78 | 78 | 3.0 | 1.18 | 63.82 | 58.182 | 98.4 | 99.807 |
| C-2 | 155.5 | 02:35:30 | 632.120 | 1.50 | 0.459 | 0.46 | 191 | 250 | 244 | 64 | 71 | 77 | 82 | 82 | 3.0 | 1.22 | 66.11 | 67.426 | 98.6 | 100.620 |
| C-3 | 178.8 | 02:58:45 | 641.780 | 1.40 | 0.459 | 0.46 | 190 | 251 | 249 | 66 | 69 | 76 | 85 | 85 | 3.0 | 1.18 | 63.82 | 75.467 | 98.0 | 100.029 |
| D-1 | 201.3 | 03:21:15 | 650.230 | 1.30 | 0.459 | 0.46 | 191 | 252 | 252 | 67 | 71 | 77 | 88 | 88 | 3.0 | 1.14 | 61.54 | 83.246 | 98.0 | 99.690 |
| D-2 | 222.8 | 03:42:45 | 658.450 | 1.40 | 0.459 | 0.46 | 190 | 250 | 251 | 67 | 71 | 77 | 89 | 89 | 3.0 | 1.18 | 63.82 | 91.626 | 97.9 | 99.658 |
| D-3 | 245.3 | 04:05:15 | 667.320 | 1.30 | 0.459 | 0.46 | 189 | 251 | 250 | 68 | 71 | 78 | 90 | 90 | 3.0 | 1.14 | 61.45 | 99.056 | 97.5 | 99.056 |
| Last Pt | 266.8 | 04:26:45 | 675.200 | | | | | | | | | | | | | | | | | |
| **Final Val** | 266.8 | 04:26:45 | 675.200 | | | | | | | | | | | **Max Vac** | 3.0 | **Final Values** | | 99.056 | 97.5 | |
| **Average Values** | | | | 1.38 | | 0.46 | 190 | 250 | 250 | 63 | 66 | 75 | 79 | 79 | | 1.17 | 63.24 | | | |
| | | | | | | | | | | | | | 79 | | | | | | | |

| **Actual** | **DP to** | **Point-by-point** | **Point-by-point** | **Point** |
|---|---|---|---|---|
| **Actual Nozzle Diameter ($D_{na}$)** | **DP to DH Iso Factor (K)** | **Point-by-point Meter Volume ($V_m$)$_{std}$** | **Point-by-point Percent IsoKinetic (I)** | **Point Weighted Average Isokinetics** |
| in | | dscf | % | ($V_m$)$_{std}$ x (I) |
| 0.156 | 0.36 | 8.448 | 97.5 | 823.8 |
| 0.156 | 0.36 | 8.175 | 102.7 | 839.2 |
| 0.156 | 0.36 | 8.871 | 102.6 | 909.9 |
| 0.156 | 0.36 | 7.857 | 90.8 | 713.2 |
| 0.156 | 0.36 | 8.117 | 101.9 | 827.3 |
| 0.156 | 0.36 | 8.404 | 97.1 | 815.9 |
| 0.156 | 0.36 | 8.310 | 96.0 | 797.7 |
| 0.156 | 0.36 | 9.244 | 99.9 | 923.6 |
| 0.156 | 0.36 | 8.041 | 92.9 | 747.0 |
| 0.156 | 0.36 | 7.780 | 97.7 | 759.9 |
| 0.156 | 0.36 | 8.379 | 96.8 | 811.2 |
| 0.156 | 0.36 | 7.431 | 93.2 | 692.2 |
| | | | | |
| 0.156 | 0.36 | 99.056 | | |

**RM 201A Calculations**

| **Trav. Point** | **First Point** | **First Point** | **Subs. Point** | **Velocity** | |
|---|---|---|---|---|---|
| **Trav. Point Estimated Dwell Times ($t_1$), ($t_n$)** | **First Point Dwell Times Prelim. Trav. ($t_1$)** | **First Point Vel. Head Current Trav. ($\Delta p_{RM2}$)** | **Subs. Point Dwell Times Current Trav. ($t_n$)** | **Velocity Head Current Trav. ($\Delta p_{201A}$)** | **Violations** |
| min | min | in $H_2O$ | min | in $H_2O$ | |
| 22.50 | 22.39 | 1.40 | | 1.40 | 0 |
| 21.50 | 21.58 | 1.30 | 21.58 | 1.30 | 0 |
| 22.50 | 22.39 | 1.40 | 22.39 | 1.40 | 0 |
| 22.50 | 22.39 | 1.40 | | 1.40 | 0 |
| 21.50 | 21.58 | 1.30 | 21.58 | 1.30 | 0 |
| 22.50 | 22.39 | 1.40 | 22.39 | 1.40 | 0 |
| 22.50 | 22.39 | 1.40 | | 1.40 | 0 |
| 23.25 | 23.18 | 1.50 | 23.18 | 1.50 | 0 |
| 22.50 | 22.39 | 1.40 | 22.39 | 1.40 | 0 |
| 21.50 | 21.58 | 1.30 | | 1.30 | 0 |
| 22.50 | 22.39 | 1.40 | 22.39 | 1.40 | 0 |
| 21.50 | 21.58 | 1.30 | 21.58 | 1.30 | 0 |
| | | | | | |

Z must be between 0.99 and 1.01, but the initial calculation is based on assumptions of the Cunniham Correction Factor and the Reynolds Number. In cases where your Z value is not between the limits and is producing an error, you need to run a second iteration based on the re-calculated numbers. To do this, copy the value in "Recalculated Cunninham, C =" [BH189] and do a "paste special value only" into "Calculated Cunninham, C =" [BH174]. This sets the initially calculated C equal to the C determined during this test run. At this point the program may recognize the second iteration and your error may go away. If it doesn't it is probably because it is having difficulties deciding between the Reynolds number at the threshold.

| | | | |
|---|---|---|---|
| | Stack Gas Viscosity (μs) | 202.93 | μP |
| | Cyclone Flow Rate ($Q_s$) | 0.49 | ft³/min |
| | Dia. of 50% Prob. ($D_{50}$) CI | 10.58 | μm |
| >> | Calculated Cunninham, C | 1.08 | |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{Re}$<3162) | 10.27 | μm |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{Re}$≥3162) | | μm |
| | Middle of Zone Dia. ($D_{50T}$) CI | 10.64 | μm |
| | Sampling Rate ($PM_{10}$ and $PM_{2.5}$ Cyc.) | 0.49 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$<3162) | 2.36 | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{Re}$<3162) | 0.49 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$≥3162) | | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{Re}$≥3162) | | dscfm |
| | Actual Test Run C (2.5 μm) | 1.07 | |
| | Actual Test Run $N_{RE}$ | 2748.34 | |
| | Actual Particle Cut Diameter for CI | 10.58 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$<3162) | 2.37 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$≥3162) | | μm |
| << | Recalculated Cunninham, C = | 1.08 | |
| | Recalculated $D_{50-1}$ for $C_{IV}$ = | 2.36 | |
| >> | Z (limits 0.99 to 1.01) = | 1.00 | |
| | Isokinetics (I) (80 to 120%) = | 97.53 | % |
| | No. Sampling Pts. Outside Δp = | 0 | |
| | Sample Nozzle Diameter = | 0.156 | in |
| | $\Delta p_{min}$ | 0.665 | in $H_2O$ |
| | $\Delta p_{max}$ | 1.977 | in $H_2O$ |

Notes:

# EMISSION DATA RECORDS

## Reference Method Data
## Base Load
## SAM

## METHOD 8A (CONTROLLED CONDENSATE) SOURCE SAMPLING TITLE PAGE

| Source Information | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base |
| **Fuel Type** | Gas, Natural |

| Test Information | | | |
|---|---|---|---|
| **Project #** | | bec-19-cricketvalley.ny-start#2 | |
| **Operator** | | TW | |
| **Date for Preliminary Run** | (mm/dd/yy) | 03/09/20 | |
| **Standard Temperature** | | 68 | °F |
| **Standard Pressure** | | 29.92 | in Hg |
| **Required Sample Vol.** | 10 L/min | 10.6 | scf |
| **Run Duration** | 8a, 2.4.1.3 | 120 | minutes |
| **Unit Number** | | U-00002 | |
| **Base Run Number** | | SAM U-00002 Base | |
| **Number of Ports Available** | | 4 | |
| **Number of Ports Used** | | 1 | |
| **Port Inside Diameter** | | 6.00 | in |
| **Stack Shape** | | Circular | |

| Test Equipment Information | | | | | |
|---|---|---|---|---|---|
| **Run** | | **1** | **2** | **3** | |
| **Test Date** | (mm/dd/yy) | 03/09/20 | 03/09/20 | 03/09/20 | |
| **Load** | | Base | Base | Base | % or w/DB |
| **Fuel F-Factor** | | 8638.42 | 8638.42 | 8638.42 | dscf/MMBtu |
| **Meter Box Number** | from ACS | samp-cp-0007 | samp-cp-0007 | samp-cp-0007 | |
| **Meter Calibration Factor** | (Y) | 0.985 | 0.985 | 0.985 | |
| **Orifice Meter Coefficient** | ($\Delta H_@$) | 1.731 | 1.731 | 1.731 | in $H_2O$ |
| **Non-Console Manometer Used** | | No | No | No | |
| **Probe Number** | from ACS | SAMP-SAM-01 | SAMP-SAM-01 | SAMP-SAM-01 | |
| **Probe Length** | | 72.0 | 72.0 | 72.0 | in |
| **(SS, Glass …. ) Liner Material** | from list | glass | glass | glass | |
| **Sample Case / Oven Number** | from ACS | samp-ha-0005 | samp-ha-0005 | samp-ha-0005 | |
| **Impinger Case Number** | from ACS | samp-bc-0032 | samp-bc-0032 | samp-bc-0032 | |

| Testing Company Information | |
|---|---|
| **Company Name** | Air Hygiene International, Inc. (Tulsa, Oklahoma) |
| **Address** | 1600 W Tacoma Street |
| **City, State Zip** | Broken Arrow, Oklahoma 74012 |
| **Project Manager** | Rob White |
| **Phone Number** | (918) 307-8865 |
| **Fax Number** | (918) 307-9131 |

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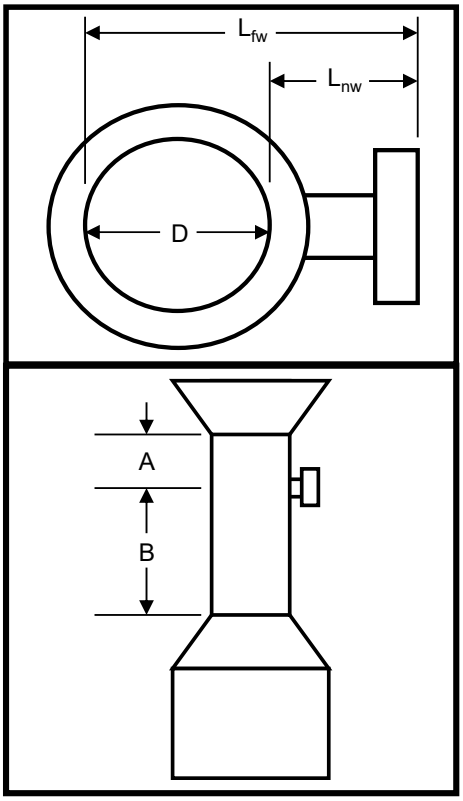
## METHOD 1 - SAMPLE AND VELOCITY TRAVERSES FOR CIRCULAR SOURCES

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Date** | 03/09/20 |
| **Sampling Location** | U-00002 Base | **Stack Type** | Circular |
| **Operator** | TW | **Ports Available** | 4 |
| **Project #** | bec-19-cricketvalley.ny-start#2 | **Ports Used** | 1 |
| **Stack Size** | Large (>24 inch diameter) | **Port ID (inches)** | 6.00 |

| Circular Stack or Duct Diameter | | | |
|---|---|---|---|
| **Distance to Far Wall of Stack** | ($L_{fw}$) | 236.00 | in |
| **Distance to Near Wall of Stack** | ($L_{nw}$) | 8.00 | in |
| **Diameter of Stack** | (D) | 228.00 | in |
| **Area of Stack** | ($A_s$) | 283.53 | ft² |

| Distance from Port to Disturbances | | | |
|---|---|---|---|
| **Distance Upstream** | (A) | 200.40 | in |
| **Diameters Upstream** | ($A_D$) | 0.88 | diameters |
| **Distance Downstream** | (B) | 850.00 | in |
| **Diameters Downstream** | ($B_D$) | 3.73 | diameters |




| Number of Traverse Points Required | | | |
|---|---|---|---|
| **Diameters to Flow Disturbance** | | **Minimum Number of[1] Traverse Points** | |
| **Down Stream** | **Up Stream** | **Particulate Points** | **Velocity Points** |
| 2.00-4.99 | 0.50-1.24 | 24 | 16 |
| 5.00-5.99 | 1.25-1.49 | 20 | 16 |
| 6.00-6.99 | 1.50-1.74 | 16 | 12 |
| 7.00-7.99 | 1.75-1.99 | 12 | 12 |
| >= 8.00 | >=2.00 | 8 or 12[2] | 8 or 12[2] |
| **Upstream Spec** | | 24 | 16 |
| **Downstream Spec** | | 24 | 16 |
| **Traverse Pts Required** | | 24 | 16 |

[1] Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.

[2] 8 for Circular Stacks 12 to 24 inches
12 for Circular Stacks over 24 inches

- (•) Method 1 Trav
- ( ) 12 Point PM Trav (M201a ONLY)
- ( ) Velocity

| Number of Traverse Points Used | | | |
|---|---|---|---|
| 1 | **Ports by** | 1 | **Across** |
| 1 | **Pts Used** | 1 | **Required** |

| Location of Traverse Points in Circular Stacks | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Traverse Point Number | (Fraction of Stack Dimension from Inside Wall to Traverse Point) Number of Traverse Points Across the Stack | | | | | | | | |
| | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 |
| 1 | .146 | .067 | .044 | .032 | .026 | .021 | .018 | .016 | .014 |
| 2 | .854 | .250 | .146 | .105 | .082 | .067 | .057 | .049 | .044 |
| 3 | | .750 | .296 | .194 | .146 | .118 | .099 | .085 | .075 |
| 4 | | .933 | .704 | .323 | .226 | .177 | .146 | .125 | .109 |
| 5 | | | .854 | .677 | .342 | .250 | .201 | .169 | .146 |
| 6 | | | .956 | .806 | .658 | .356 | .269 | .220 | .188 |
| 7 | | | | .895 | .774 | .644 | .366 | .283 | .236 |
| 8 | | | | .968 | .854 | .750 | .634 | .375 | .296 |
| 9 | | | | | .918 | .823 | .731 | .625 | .382 |
| 10 | | | | | .974 | .882 | .799 | .717 | .618 |
| 11 | | | | | | .933 | .854 | .780 | .704 |
| 12 | | | | | | .979 | .901 | .831 | .764 |

| Traverse Point Locations | | | |
|---|---|---|---|
| **Traverse Point Number** | **Fraction of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
| | | in | in |
| **1** | 0.275 | 62 6/8 | 70 6/8 |
| **2** | | | |
| **3** | | | |
| **4** | | | |
| **5** | | | |
| **6** | | | |
| **7** | | | |
| **8** | | | |
| **9** | | | |

## METHOD 3a - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

| | | | | | |
|---|---|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Preliminary Run Date** | 03/09/20 | | |
| **Sampling Location** | U-00002 Base | **Operator** | TW | | |
| **Project #** | bec-19-cricketvalley.ny-start#2 | **# of Ports Used** | 1 (gas probe) | | |
| **Fuel Type** | Gas, Natural | **Min. Fuel Factor** | 1.600 | **Max. Fuel Factor** | 1.836 |

**Gas Analysis Data**

| **Run Number** | SAM U-00002 Base-1 | | **Date** | 03/09/20 | **Run Start Time** | 08:06 | **Run Stop Time** | 10:06 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 02:00 | 4.8 | 12.7 | 0.0 | 82.5 | 29.28 | 1.708 | 139.9 | YES |

**Gas Analysis Data**

| **Run Number** | SAM U-00002 Base-2 | | **Date** | 03/09/20 | **Run Start Time** | 11:49 | **Run Stop Time** | 13:49 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 02:00 | 4.8 | 12.8 | 0.0 | 82.4 | 29.28 | 1.688 | 143.0 | YES |

**Gas Analysis Data**

| **Run Number** | SAM U-00002 Base-3 | | **Date** | 03/09/20 | **Run Start Time** | 15:17 | **Run Stop Time** | 17:17 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 02:00 | 4.8 | 12.8 | 0.0 | 82.4 | 29.28 | 1.688 | 143.0 | YES |

## METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Preliminary Run Date** | 03/09/20 |
| **Sampling Location** | U-00002 Base | **Operator** | TW |
| **Project #** | bec-19-cricketvalley.ny-start#2 | **Ports Used** | 1 |

| **Scale Daily Calibration** | | | | | |
|---|---|---|---|---|---|
| **Scale Number** | SAMP-SC-0028 | **Standard** | **Result** | **Difference** | **Pass/Fail** |
| **Date** | | (g) | (g) | (g) | (± 0.5 g) |
| **Test Day 2** | 03/09/20 | 500 | 499.7 | -0.3 | Pass |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | SAM U-00002 Base-1 | | **Date** | 03/09/20 | **Start Time** | 08:06 | **Stop Time** | 10:06 |
| **Meter Box Number** | | samp-cp-0007 | | | | **Meter Cal Factor** | (Y) | 0.985 | |
| **Total Meter Volume** | | ($V_m$) | 42.560 | dcf | | **Barometric Pressure** | ($P_b$) | 30.30 | in Hg |
| **Average Stack Temp** | | ($t_s$)$_{avg}$ | | °F | | **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Average Meter Temp** | | ($t_m$)$_{avg}$ | 87 | °F | | **Avg Orifice Pressure** | ($\Delta H$)$_{avg}$ | 0.34 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | $H_2O_2$ | $H_2O_2$ | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 753.20 | 743.70 | 618.30 | 971.60 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 703.60 | 734.10 | 614.40 | 963.30 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 49.6 | 9.6 | 3.9 | 8.3 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | | ($W_t$) | 71.40 | g | | **Water Vol Weighed** | ($V_{wsg(std)}$) | 3.367 | scf |
| **Std Meter Volume** | | ($V_{m(std)}$) | 41.004 | dscf | | **Sat. Moisture Content** | ($B_{ws(svp)}$) | | % |
| **Calc Moisture Content** | | ($B_{ws(calc)}$) | 7.59 | % | | **Final Moisture Content** | ($B_{ws}$) | | % |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | SAM U-00002 Base-2 | | **Date** | 03/09/20 | **Start Time** | 11:49 | **Stop Time** | 13:49 |
| **Meter Box Number** | | samp-cp-0007 | | | | **Meter Cal Factor** | (Y) | 0.985 | |
| **Total Meter Volume** | | ($V_m$) | 42.410 | dcf | | **Barometric Pressure** | ($P_b$) | 29.88 | in Hg |
| **Average Stack Temp** | | ($t_s$)$_{avg}$ | | °F | | **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Average Meter Temp** | | ($t_m$)$_{avg}$ | 88 | °F | | **Avg Orifice Pressure** | ($\Delta H$)$_{avg}$ | 0.34 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | $H_2O_2$ | $H_2O_2$ | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 814.10 | 750.00 | 621.00 | 918.00 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 753.20 | 743.70 | 618.30 | 905.80 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 60.9 | 6.3 | 2.7 | 12.2 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | | ($W_t$) | 82.10 | g | | **Water Vol Weighed** | ($V_{wsg(std)}$) | 3.871 | scf |
| **Std Meter Volume** | | ($V_{m(std)}$) | 40.235 | dscf | | **Sat. Moisture Content** | ($B_{ws(svp)}$) | | % |
| **Calc Moisture Content** | | ($B_{ws(calc)}$) | 8.78 | % | | **Final Moisture Content** | ($B_{ws}$) | | % |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | SAM U-00002 Base-3 | | **Date** | 03/09/20 | **Start Time** | 15:17 | **Stop Time** | 17:17 |
| **Meter Box Number** | | samp-cp-0007 | | | | **Meter Cal Factor** | (Y) | 0.985 | |
| **Total Meter Volume** | | ($V_m$) | 42.580 | dcf | | **Barometric Pressure** | ($P_b$) | 30.12 | in Hg |
| **Average Stack Temp** | | ($t_s$)$_{avg}$ | | °F | | **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Average Meter Temp** | | ($t_m$)$_{avg}$ | 91 | °F | | **Avg Orifice Pressure** | ($\Delta H$)$_{avg}$ | 0.34 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | $H_2O_2$ | $H_2O_2$ | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 869.90 | 751.10 | 621.60 | 925.30 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 814.10 | 750.00 | 621.00 | 918.00 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 55.8 | 1.1 | 0.6 | 7.3 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | | ($W_t$) | 64.80 | g | | **Water Vol Weighed** | ($V_{wsg(std)}$) | 3.055 | scf |
| **Std Meter Volume** | | ($V_{m(std)}$) | 40.514 | dscf | | **Sat. Moisture Content** | ($B_{ws(svp)}$) | | % |
| **Calc Moisture Content** | | ($B_{ws(calc)}$) | 7.01 | % | | **Final Moisture Content** | ($B_{ws}$) | | % |

**METHOD 8A (CONTROLLED CONDENSATE) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA**

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base |
| **Project #** | bec-19-cricketvalley.ny-start#2 |

| | |
|---|---|
| **Date** | 03/09/20 |
| **Operator** | TW |
| **Run Number** | SAM U-00002 Base-1 |

| |
|---|
| **Filter #** |
| R0001 |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | | |
| **Average Stack Temp** | ($t_s$) | | °F |
| **Average Meter Temp** | ($t_m$) | 87.1 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.731 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.28 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.75 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Pre (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | samp-cp-0007 | | |
| **Meter Cal Factor** | (Y) | 0.985 | |
| **Nozzle Number** | NA | | |
| **Average Nozzle Diameter** | ($D_{na}$) | | in |
| **Suggested Nozzle Diameter** | ($D_{ni}$) | | in |
| **Probe Number** | SAMP-SAM-01 | | in |
| **Probe Length** | 72 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | samp-ha-0005 | | |
| **Impinger Case Number** | samp-bc-0032 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.30 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.37 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.43 | in Hg |

| **Nozzle Measurements** | | | **ID: NA** |
|---|---|---|---|
| **Pre** | | | **PASS** |
| **Post** | | | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 08:06 | **End** | 10:06 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 703.6 | 734.1 | 614.4 | 963.3 | | | | |
| **Post** | 753.2 | 743.7 | 618.3 | 971.6 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | samp-cp-0007 | samp-cp-0007 | samp-cp-0007 | | | SAMP-SAM-01 | SAMP-SAM-01 | samp-ha-0005 | samp-bc-0032 | TCSAM1 | | samp-cp-0007 | | samp-cp-0007 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head (Δp)** | **Desired Orifice ΔH ($\Delta H_d$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (375±25°F)** | **Filter Temp (525±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤185°F)** | **CPM Filter Temp (--±--°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)$_l$** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 892.500 | -- | 0.342 | 0.34 | -- | 350 | 504 | 54 | 115 | -- | 80 | 76 | 1.0 | | | 1.685 | | 40.445 |
| A-2 | 5.0 | 00:05:00 | 894.220 | -- | 0.342 | 0.34 | -- | 350 | 538 | 56 | 120 | -- | 85 | 77 | 1.0 | | | 3.381 | | 40.567 |
| A-3 | 10.0 | 00:10:00 | 895.960 | -- | 0.342 | 0.34 | -- | 350 | 538 | 60 | 122 | -- | 87 | 77 | 1.0 | | | 5.121 | | 40.971 |
| A-4 | 15.0 | 00:15:00 | 897.750 | -- | 0.342 | 0.34 | -- | 350 | 510 | 53 | 121 | -- | 89 | 79 | 1.0 | | | 6.827 | | 40.961 |
| A-5 | 20.0 | 00:20:00 | 899.510 | -- | 0.342 | 0.34 | -- | 350 | 536 | 64 | 121 | -- | 91 | 79 | 1.0 | | | 8.539 | | 40.986 |
| A-6 | 25.0 | 00:25:00 | 901.280 | -- | 0.342 | 0.34 | -- | 350 | 536 | 64 | 120 | -- | 92 | 78 | 1.0 | | | 10.251 | | 41.003 |
| A-7 | 30.0 | 00:30:00 | 903.050 | -- | 0.342 | 0.34 | -- | 350 | 526 | 64 | 120 | -- | 91 | 80 | 1.0 | | | 11.855 | | 40.645 |
| A-8 | 35.0 | 00:35:00 | 904.710 | -- | 0.342 | 0.34 | -- | 350 | 507 | 63 | 120 | -- | 92 | 81 | 1.0 | | | 13.639 | | 40.917 |
| A-9 | 40.0 | 00:40:00 | 906.560 | -- | 0.342 | 0.34 | -- | 350 | 517 | 59 | 119 | -- | 93 | 80 | 1.0 | | | 15.366 | | 40.975 |
| A-10 | 45.0 | 00:45:00 | 908.350 | -- | 0.342 | 0.34 | -- | 350 | 538 | 58 | 119 | -- | 95 | 81 | 1.0 | | | 17.073 | | 40.975 |
| A-11 | 50.0 | 00:50:00 | 910.125 | -- | 0.342 | 0.34 | -- | 350 | 530 | 59 | 120 | -- | 94 | 82 | 1.0 | | | 18.790 | | 40.996 |
| A-12 | 55.0 | 00:55:00 | 911.910 | -- | 0.342 | 0.34 | -- | 350 | 523 | 59 | 120 | -- | 94 | 82 | 1.0 | | | 20.493 | | 40.985 |
| A-13 | 60.0 | 01:00:00 | 913.680 | -- | 0.342 | 0.34 | -- | 350 | 532 | 61 | 120 | -- | 95 | 83 | 1.0 | | | 22.192 | | 40.970 |
| A-14 | 65.0 | 01:05:00 | 915.450 | -- | 0.342 | 0.34 | -- | 350 | 533 | 62 | 151 | -- | 96 | 82 | 1.0 | | | 23.872 | | 40.924 |
| A-15 | 70.0 | 01:10:00 | 917.200 | -- | 0.342 | 0.34 | -- | 350 | 537 | 65 | 122 | -- | 95 | 84 | 1.0 | | | 25.599 | | 40.958 |
| A-16 | 75.0 | 01:15:00 | 919.000 | -- | 0.342 | 0.34 | -- | 350 | 530 | 64 | 123 | -- | 96 | 84 | 1.0 | | | 27.276 | | 40.914 |
| A-17 | 80.0 | 01:20:00 | 920.750 | -- | 0.342 | 0.34 | -- | 350 | 530 | 62 | 120 | -- | 97 | 83 | 1.0 | | | 28.973 | | 40.902 |
| A-18 | 85.0 | 01:25:00 | 922.520 | -- | 0.342 | 0.34 | -- | 350 | 532 | 62 | 122 | -- | 95 | 84 | 1.0 | | | 30.805 | | 41.073 |
| A-19 | 90.0 | 01:30:00 | 924.430 | -- | 0.342 | 0.34 | -- | 350 | 531 | 62 | 124 | -- | 94 | 84 | 1.0 | | | 32.408 | | 40.937 |
| A-20 | 95.0 | 01:35:00 | 926.100 | -- | 0.342 | 0.34 | -- | 350 | 531 | 64 | 126 | -- | 96 | 84 | 1.0 | | | 34.119 | | 40.943 |
| A-21 | 100.0 | 01:40:00 | 927.885 | -- | 0.342 | 0.34 | -- | 350 | 536 | 65 | 131 | -- | 95 | 84 | 1.0 | | | 35.802 | | 40.917 |
| A-22 | 105.0 | 01:45:00 | 929.640 | -- | 0.342 | 0.34 | -- | 350 | 538 | 66 | 136 | -- | 93 | 85 | 1.0 | | | 37.521 | | 40.932 |
| A-23 | 110.0 | 01:50:00 | 931.430 | -- | 0.342 | 0.34 | -- | 350 | 533 | 65 | 137 | -- | 95 | 84 | 1.0 | | | 39.267 | | 40.974 |
| A-24 | 115.0 | 01:55:00 | 933.250 | -- | 0.342 | 0.34 | -- | 350 | 536 | 65 | 139 | -- | 95 | 84 | 1.0 | | | 41.003 | | 41.003 |
| Last Pt | 120.0 | 02:00:00 | 935.060 | | | | | | | | | | | | | | | | | |
| **Final Val** | 120.0 | 02:00:00 | 935.060 | | | | | | | | | | | **Max Vac** | 1.0 | **Final Values** | | 41.003 | | |
| **Average Values** | | | | | | 0.34 | | 350 | 529 | 62 | 125 | | 93 | 82 | | | | | | |
| | | | | | | | | | | | | | 87 | | | | | | | |

Notes:

## METHOD 8A (CONTROLLED CONDENSATE) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base |
| **Project #** | bec-19-cricketvalley.ny-start#2 |

| | |
|---|---|
| **Date** | 03/09/20 |
| **Operator** | TW |
| **Run Number** | SAM U-00002 Base-2 |

| |
|---|
| **Filter #** |
| R0001 |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | | |
| **Average Stack Temp** | ($t_s$) | | °F |
| **Average Meter Temp** | ($t_m$) | 87.9 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.731 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.28 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.34 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Pre (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | samp-cp-0007 | | |
| **Meter Cal Factor** | (Y) | 0.985 | |
| **Nozzle Number** | NA | | |
| **Average Nozzle Diameter** | ($D_{na}$) | | in |
| **Suggested Nozzle Diameter** | ($D_{ni}$) | | in |
| **Probe Number** | SAMP-SAM-01 | | in |
| **Probe Length** | 72 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | samp-ha-0005 | | |
| **Impinger Case Number** | samp-bc-0032 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 29.88 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 29.95 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.01 | in Hg |

| **Nozzle Measurements** | | | **ID: NA** |
|---|---|---|---|
| **Pre** | | | **PASS** |
| **Post** | | | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 11:49 | **End** | 13:49 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 753.2 | 743.7 | 618.3 | 905.8 | | | | |
| **Post** | 814.1 | 750.0 | 621.0 | 918.0 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | samp-cp-0007 | samp-cp-0007 | samp-cp-0007 | | | SAMP-SAM-01 | SAMP-SAM-01 | samp-ha-0005 | samp-bc-0032 | TCSAM1 | | samp-cp-0007 | | samp-cp-0007 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head (Δp)** | **Desired Orifice ΔH ($\Delta H_d$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (375±25°F)** | **Filter Temp (525±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤185°F)** | **CPM Filter Temp (--±--°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)$_l$** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 942.200 | -- | 0.342 | 0.34 | -- | 350 | 506 | 66 | 117 | -- | 85 | 81 | 1.0 | | | 1.608 | | 38.599 |
| A-2 | 5.0 | 00:05:00 | 943.880 | -- | 0.342 | 0.34 | -- | 350 | 511 | 67 | 121 | -- | 91 | 81 | 1.0 | | | 3.312 | | 39.749 |
| A-3 | 10.0 | 00:10:00 | 945.670 | -- | 0.342 | 0.34 | -- | 350 | 543 | 68 | 120 | -- | 92 | 82 | 1.0 | | | 4.975 | | 39.804 |
| A-4 | 15.0 | 00:15:00 | 947.420 | -- | 0.342 | 0.34 | -- | 350 | 514 | 68 | 121 | -- | 91 | 81 | 1.0 | | | 6.640 | | 39.841 |
| A-5 | 20.0 | 00:20:00 | 949.169 | -- | 0.342 | 0.34 | -- | 350 | 504 | 67 | 119 | -- | 92 | 82 | 1.0 | | | 8.314 | | 39.908 |
| A-6 | 25.0 | 00:25:00 | 950.930 | -- | 0.342 | 0.34 | -- | 350 | 514 | 68 | 120 | -- | 95 | 81 | 1.0 | | | 10.183 | | 40.731 |
| A-7 | 30.0 | 00:30:00 | 952.900 | -- | 0.342 | 0.34 | -- | 350 | 508 | 67 | 118 | -- | 93 | 82 | 1.0 | | | 11.673 | | 40.023 |
| A-8 | 35.0 | 00:35:00 | 954.470 | -- | 0.342 | 0.34 | -- | 350 | 513 | 66 | 119 | -- | 92 | 83 | 1.0 | | | 13.354 | | 40.062 |
| A-9 | 40.0 | 00:40:00 | 956.240 | -- | 0.342 | 0.34 | -- | 350 | 501 | 65 | 118 | -- | 93 | 83 | 1.0 | | | 15.061 | | 40.164 |
| A-10 | 45.0 | 00:45:00 | 958.040 | -- | 0.342 | 0.34 | -- | 350 | 510 | 66 | 120 | -- | 92 | 84 | 1.0 | | | 16.736 | | 40.165 |
| A-11 | 50.0 | 00:50:00 | 959.805 | -- | 0.342 | 0.34 | -- | 350 | 502 | 65 | 121 | -- | 93 | 84 | 1.0 | | | 18.418 | | 40.184 |
| A-12 | 55.0 | 00:55:00 | 961.580 | -- | 0.342 | 0.34 | -- | 350 | 504 | 65 | 118 | -- | 93 | 84 | 1.0 | | | 20.124 | | 40.247 |
| A-13 | 60.0 | 01:00:00 | 963.380 | -- | 0.342 | 0.34 | -- | 350 | 520 | 65 | 119 | -- | 92 | 84 | 1.0 | | | 21.812 | | 40.269 |
| A-14 | 65.0 | 01:05:00 | 965.160 | -- | 0.342 | 0.34 | -- | 350 | 509 | 67 | 121 | -- | 93 | 83 | 1.0 | | | 23.539 | | 40.352 |
| A-15 | 70.0 | 01:10:00 | 966.980 | -- | 0.342 | 0.34 | -- | 350 | 508 | 68 | 120 | -- | 93 | 84 | 1.0 | | | 25.178 | | 40.285 |
| A-16 | 75.0 | 01:15:00 | 968.710 | -- | 0.342 | 0.34 | -- | 350 | 502 | 68 | 119 | -- | 94 | 84 | 1.0 | | | 26.854 | | 40.281 |
| A-17 | 80.0 | 01:20:00 | 970.480 | -- | 0.342 | 0.34 | -- | 350 | 514 | 66 | 119 | -- | 92 | 84 | 1.0 | | | 28.533 | | 40.282 |
| A-18 | 85.0 | 01:25:00 | 972.250 | -- | 0.342 | 0.34 | -- | 350 | 505 | 68 | 120 | -- | 93 | 84 | 1.0 | | | 30.220 | | 40.293 |
| A-19 | 90.0 | 01:30:00 | 974.030 | -- | 0.342 | 0.34 | -- | 350 | 505 | 67 | 119 | -- | 94 | 84 | 1.0 | | | 32.142 | | 40.600 |
| A-20 | 95.0 | 01:35:00 | 976.060 | -- | 0.342 | 0.34 | -- | 350 | 506 | 68 | 121 | -- | 93 | 84 | 1.0 | | | 33.554 | | 40.265 |
| A-21 | 100.0 | 01:40:00 | 977.550 | -- | 0.342 | 0.34 | -- | 350 | 526 | 68 | 121 | -- | 94 | 84 | 1.0 | | | 34.605 | | 39.549 |
| A-22 | 105.0 | 01:45:00 | 978.660 | -- | 0.342 | 0.34 | -- | 350 | 504 | 67 | 118 | -- | 95 | 85 | 1.0 | | | 36.902 | | 40.256 |
| A-23 | 110.0 | 01:50:00 | 981.090 | -- | 0.342 | 0.34 | -- | 350 | 514 | 67 | 118 | -- | 95 | 85 | 1.0 | | | 38.688 | | 40.370 |
| A-24 | 115.0 | 01:55:00 | 982.980 | -- | 0.342 | 0.34 | -- | 350 | 516 | 68 | 120 | -- | 93 | 84 | 1.0 | | | 40.233 | | 40.233 |
| Last Pt | 120.0 | 02:00:00 | 984.610 | | | | | | | | | | | | | | | | | |
| **Final Val** | 120.0 | 02:00:00 | 984.610 | | | | | | | | | | | **Max Vac** | 1.0 | **Final Values** | | 40.233 | | |
| **Average Values** | | | | | | 0.34 | | 350 | 511 | 67 | 119 | | 93 | 83 | | | | | | |
| | | | | | | | | | | | | | 88 | | | | | | | |

Notes:

**METHOD 8A (CONTROLLED CONDENSATE) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA**

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base |
| **Project #** | bec-19-cricketvalley.ny-start#2 |

| | |
|---|---|
| **Date** | 03/09/20 |
| **Operator** | TW |
| **Run Number** | SAM U-00002 Base-3 |

| |
|---|
| **Filter #** |
| R0001 |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | | |
| **Average Stack Temp** | ($t_s$) | | °F |
| **Average Meter Temp** | ($t_m$) | 90.7 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.731 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.28 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.34 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Pre (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | samp-cp-0007 | | |
| **Meter Cal Factor** | (Y) | 0.985 | |
| **Nozzle Number** | NA | | |
| **Average Nozzle Diameter** | ($D_{na}$) | | in |
| **Suggested Nozzle Diameter** | ($D_{ni}$) | | in |
| **Probe Number** | SAMP-SAM-01 | | in |
| **Probe Length** | 72 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | samp-ha-0005 | | |
| **Impinger Case Number** | samp-bc-0032 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.12 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.19 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.25 | in Hg |

| **Nozzle Measurements** | | | **ID: NA** |
|---|---|---|---|
| **Pre** | | | **PASS** |
| **Post** | | | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 15:17 | **End** | 17:17 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 814.1 | 750.0 | 621.0 | 918.0 | | | | |
| **Post** | 869.9 | 751.1 | 621.6 | 925.3 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | samp-cp-0007 | samp-cp-0007 | samp-cp-0007 | | | SAMP-SAM-01 | SAMP-SAM-01 | samp-ha-0005 | samp-bc-0032 | TCSAM1 | | samp-cp-0007 | | samp-cp-0007 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head (Δp)** | **Desired Orifice ΔH ($\Delta H_d$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (375±25°F)** | **Filter Temp (525±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤185°F)** | **CPM Filter Temp (--±--°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)$_l$** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 995.600 | -- | 0.342 | 0.34 | -- | 350 | 518 | 68 | 120 | -- | 88 | 82 | 1.0 | | | 1.721 | | 41.304 |
| A-2 | 5.0 | 00:05:00 | 997.390 | -- | 0.342 | 0.34 | -- | 350 | 531 | 68 | 122 | -- | 89 | 83 | 1.0 | | | 3.352 | | 40.230 |
| A-3 | 10.0 | 00:10:00 | 999.090 | -- | 0.342 | 0.34 | -- | 350 | 501 | 60 | 122 | -- | 91 | 82 | 1.5 | | | 5.002 | | 40.013 |
| A-4 | 15.0 | 00:15:00 | 1000.810 | -- | 0.342 | 0.34 | -- | 350 | 515 | 64 | 126 | -- | 92 | 83 | 1.5 | | | 6.743 | | 40.461 |
| A-5 | 20.0 | 00:20:00 | 1002.630 | -- | 0.342 | 0.34 | -- | 350 | 527 | 66 | 128 | -- | 93 | 83 | 1.5 | | | 8.455 | | 40.584 |
| A-6 | 25.0 | 00:25:00 | 1004.420 | -- | 0.342 | 0.34 | -- | 350 | 501 | 68 | 134 | -- | 94 | 85 | 1.5 | | | 10.133 | | 40.533 |
| A-7 | 30.0 | 00:30:00 | 1006.180 | -- | 0.342 | 0.34 | -- | 350 | 507 | 68 | 134 | -- | 94 | 85 | 1.5 | | | 11.907 | | 40.824 |
| A-8 | 35.0 | 00:35:00 | 1008.040 | -- | 0.342 | 0.34 | -- | 350 | 511 | 68 | 136 | -- | 95 | 86 | 1.5 | | | 13.601 | | 40.804 |
| A-9 | 40.0 | 00:40:00 | 1009.820 | -- | 0.342 | 0.34 | -- | 350 | 538 | 67 | 131 | -- | 94 | 85 | 1.5 | | | 15.327 | | 40.873 |
| A-10 | 45.0 | 00:45:00 | 1011.630 | -- | 0.342 | 0.34 | -- | 350 | 506 | 67 | 132 | -- | 95 | 86 | 1.5 | | | 17.031 | | 40.875 |
| A-11 | 50.0 | 00:50:00 | 1013.420 | -- | 0.342 | 0.34 | -- | 350 | 521 | 66 | 134 | -- | 96 | 86 | 1.5 | | | 18.743 | | 40.893 |
| A-12 | 55.0 | 00:55:00 | 1015.220 | -- | 0.342 | 0.34 | -- | 350 | 520 | 66 | 133 | -- | 96 | 87 | 1.5 | | | 20.444 | | 40.887 |
| A-13 | 60.0 | 01:00:00 | 1017.010 | -- | 0.342 | 0.34 | -- | 350 | 514 | 67 | 137 | -- | 97 | 87 | 1.5 | | | 22.143 | | 40.879 |
| A-14 | 65.0 | 01:05:00 | 1018.800 | -- | 0.342 | 0.34 | -- | 350 | 529 | 52 | 139 | -- | 97 | 88 | 1.5 | | | 23.831 | | 40.853 |
| A-15 | 70.0 | 01:10:00 | 1020.580 | -- | 0.342 | 0.34 | -- | 350 | 513 | 63 | 139 | -- | 96 | 88 | 1.5 | | | 25.549 | | 40.878 |
| A-16 | 75.0 | 01:15:00 | 1022.390 | -- | 0.342 | 0.34 | -- | 350 | 517 | 64 | 140 | -- | 97 | 88 | 1.5 | | | 27.237 | | 40.856 |
| A-17 | 80.0 | 01:20:00 | 1024.170 | -- | 0.342 | 0.34 | -- | 350 | 529 | 65 | 141 | -- | 97 | 88 | 1.5 | | | 28.916 | | 40.822 |
| A-18 | 85.0 | 01:25:00 | 1025.940 | -- | 0.342 | 0.34 | -- | 350 | 522 | 63 | 140 | -- | 97 | 88 | 1.5 | | | 30.623 | | 40.831 |
| A-19 | 90.0 | 01:30:00 | 1027.740 | -- | 0.342 | 0.34 | -- | 350 | 535 | 63 | 140 | -- | 97 | 88 | 1.5 | | | 32.321 | | 40.826 |
| A-20 | 95.0 | 01:35:00 | 1029.530 | -- | 0.342 | 0.34 | -- | 350 | 527 | 64 | 140 | -- | 97 | 89 | 1.5 | | | 33.941 | | 40.729 |
| A-21 | 100.0 | 01:40:00 | 1031.240 | -- | 0.342 | 0.34 | -- | 350 | 514 | 65 | 138 | -- | 97 | 89 | 1.5 | | | 35.628 | | 40.717 |
| A-22 | 105.0 | 01:45:00 | 1033.020 | -- | 0.342 | 0.34 | -- | 350 | 525 | 65 | 135 | -- | 97 | 89 | 1.5 | | | 37.352 | | 40.748 |
| A-23 | 110.0 | 01:50:00 | 1034.840 | -- | 0.342 | 0.34 | -- | 350 | 507 | 67 | 131 | -- | 97 | 89 | 1.5 | | | 39.020 | | 40.716 |
| A-24 | 115.0 | 01:55:00 | 1036.600 | -- | 0.342 | 0.34 | -- | 350 | 506 | 67 | 128 | -- | 98 | 89 | 1.5 | | | 40.516 | | 40.516 |
| Last Pt | 120.0 | 02:00:00 | 1038.180 | | | | | | | | | | | | | | | | | |
| **Final Val** | 120.0 | 02:00:00 | 1038.180 | | | | | | | | | | | **Max Vac** | 1.5 | **Final Values** | | 40.516 | | |
| **Average Values** | | | | | | 0.34 | | 350 | 518 | 65 | 133 | | 95 | 86 | | | | | | |
| | | | | | | | | | | | | | 91 | | | | | | | |

Notes:

# EMISSION DATA RECORDS

## Reference Method Data
## Base Load
## Opacity

W/O DB

Method Used (Circle One)
Method 9 203A 203B Other: _____

Company Name: Air Hygiene
Facility Name: Cricket Valley Energy Plant
Street Address: 16000 N Tacoma St
City: Broken Arrow State: OK Zip: 74012

Process | Unit # 2 | Operating Mode
Control Equipment | Operating Mode No Det

Describe Emissions Pont

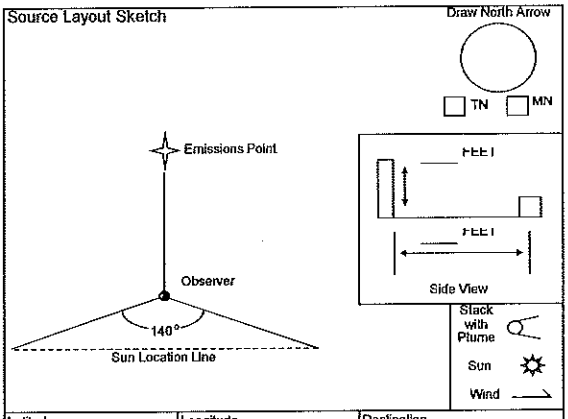
Height of Emiss. Pt. Start 140 End 140
Height of Emiss. Pt. Rel. to Observer Start 150 End 150
Distance to Emiss. Pt. Start 5 End 5
Direction to Emiss. Pt. (Degrees) Start N End N

Vertical Angle to Obs. Pt. Start 10° End 10°
Direction to Obs. Pt. (Degrees) Start End
Distance and Direction to Observation Point from Emission Point Start 145 End 145

Describe Emissions Start NA End NA
Emission Color Start NA End NA
Water Droplet Plume Start NA End NA

Describe Plume Background Start End
Background Color Start Sky Blue End Sky Blue
Sky Conditions Start Clear End Clear
Wind Speed Start 9 End 9
Wind Direction Start N End N
Ambient Temp. Start End
Wet Bulb Temp.
RH Percent

Source Layout Sketch




Latitude | Longitude | Declination

Additional Information

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) Page 1 of 6
Continued on Form Number (AHI Project Code)

Observation Date 3/9/2020 | Time Zone | Start Time 10:52 | End Time 11:22

| Min. \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print) SEAN FIELDS
Observer's Signature Date 3/9/20
Organization Air Hygiene
Certified By CAA Date 1/3/2020

Method Used (Circle One)
Method 9 203A 203B Other: _____

Company Name: Air Hygiene
Facility Name: Cricket Valley Energy Plant
Street Address: 1600 W Tacoma St
City: Broken Arrow State: OK Zip: 74012

Process: Unit # 2 Operating Mode:
Control Equipment: Operating Mode:

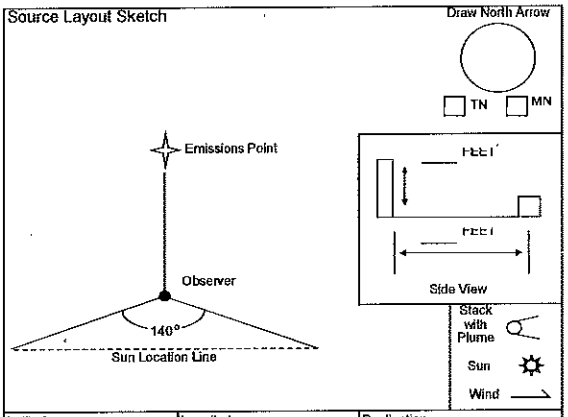
Describe Emissions Pont:
Height of Emiss. Pt. Start 140 End 140
Height of Emiss. Pt. Rel. to Observer Start 150 End 150
Distance to Emiss. Pt. Start 5 End 5
Direction to Emiss. Pt. (Degrees) Start N End N

Vetical Angle to Obs. Pt. Start 10° End 10°
Direction to Obs. Pt. (Degrees) Start End
Distance and Direction to Observation Point from Emission Point Start 145 End 145

Describe Emissions Start NA End NA
Emission Color Start NA End NA
Water Droplet Plume Start NA End NA

Describe Plume Background Start End
Background Color Start Sky Blue End Sky Blue
Sky Conditions Start Clear End Clear
Wind Speed Start 9 End 9
Wind Direction Start N End N
Ambient Temp. Start End
Wet Bulb Temp. RH Percent

Source Layout Sketch




Latitude | Longitude | Declination

Additional Information

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) Page 2 of 6
Continued on Form Number (AHI Project Code)

Observation Date 3/9/2020 Time Zone Start Time 11:22 End Time 11:52

| Min. \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print): SEAN FIELDS
Observer's Signature: [signature] Date: 3/9/20
Organization: Air Hygiene
Certified By: CAA Date: 1/3/2020

Method Used (Circle One)
Method 9 203A 203B Other: _____

Company Name: Air Hygiene
Facility Name: Cricket Valley Energy Plant
Street Address: 16600 W Tacoma St
City: Broken Arrow State: OK Zip: 74012

Process: _____ Unit #: 2 Operating Mode: _____
Control Equipment: _____ Operating Mode: _____

Describe Emissions Pont

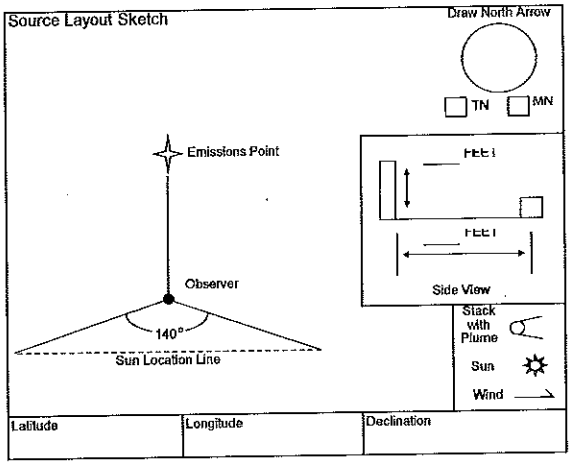
Height of Emiss. Pt. Start 140 End 140
Height of Emiss. Pt. Rel. to Observer Start 150 End 150
Distance to Emiss. Pt. Start 5" End 5"
Direction to Emiss. Pt. (Degrees) Start N End N

Vetical Angle to Obs. Pt. Start 10° End 10°
Direction to Obs. Pt. (Degrees) Start _____ End _____
Distance and Direction to Observation Point from Emission Point Start 145" End 145"

Describe Emissions Start NA End NA
Emission Color Start NA End NA
Water Droplet Plume Start NA End NA

Describe Plume Background Start _____ End _____
Background Color Start Sky Blue End Sky Blue
Sky Conditions Start Clear End Clear
Wind Speed Start 9 End 9
Wind Direction Start N End N
Ambient Temp. Start _____ End _____
Wet Bulb Temp. _____ RH Percent _____

Source Layout Sketch




Latitude _____ Longitude _____ Declination _____

Additional Information

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) _____ Page 2 of 6
Continued on Form Number (AHI Project Code) _____

Observation Date 3/9/2020 Time Zone _____ Start Time 11:52 End Time 12:22

| Min. \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print) SEAN FIELDS
Observer's Signature _____ Date 3/9/20
Organization Air Hygiene
Certified By CAA Date 1/3/2020

Method Used (Circle One)
Method 9 203A 203B Other: _____

Company Name: Air Hygiene
Facility Name: Cricket Valley Energy Plant
Street Address: 1600 W Tacoma St
City: Broken Arrow State: OK Zip: 74012

Process | Unit # 2 | Operating Mode
Control Equipment | Operating Mode

Describe Emissions Pont

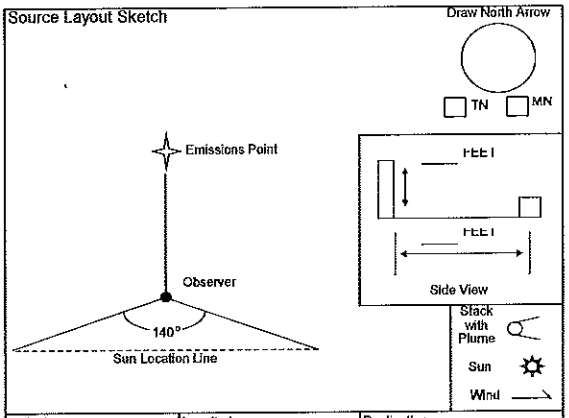
Height of Emiss. Pt. Start 140 End 140
Height of Emiss. Pt. Rel. to Observer Start 150 End 150
Distance to Emiss. Pt. Start 5 End 5
Direction to Emiss. Pt. (Degrees) Start N End N

Vetical Angle to Obs. Pt. Start 10° End 10°
Direction to Obs. Pt. (Degrees) Start End
Distance and Direction to Observation Point from Emission Point Start 145 End 145

Describe Emissions Start NA End NA
Emission Color Start NA End NA
Water Droplet Plume Start NA End NA

Describe Plume Background Start End
Background Color Start Sky Blue End Sky Blue
Sky Conditions Start Clear End Clear
Wind Speed Start 9 End 9
Wind Direction Start N End N
Ambient Temp. Start End
Wet Bulb Temp. RH Percent

Source Layout Sketch




Latitude | Longitude | Declination

Additional Information

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) Page 11 of 16
Continued on Form Number (AHI Project Code)

Observation Date: 3/9/2020 Time Zone: Start Time: 12:22 End Time: 12:52

| Sec. / Min. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print): SEAN FIELDS
Observer's Signature: [signature] Date: 3/9/20
Organization: Air Hygiene
Certified By: CAA Date: 1/3/2020

Method Used (Circle One)
Method 9 203A 203B Other: _____

Company Name: Air Hygiene
Facility Name: Cricket Valley Energy Plant
Street Address: 11000 W Tacoma St
City: Broken Arrow State: OK Zip: 74012

Process | Unit # 2 | Operating Mode
Control Equipment | Operating Mode

Describe Emissions Pont

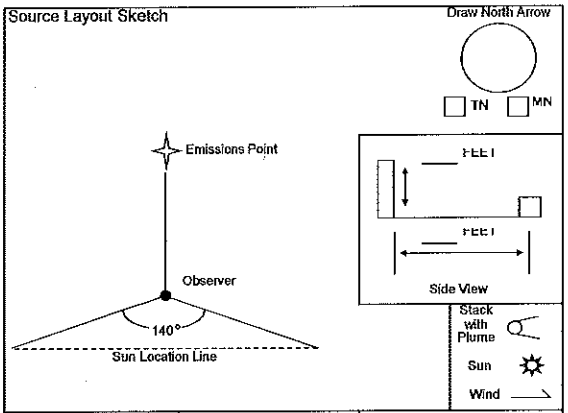
| Height of Emiss. Pt. | | Height of Emiss. Pt. Rel. to Observer | |
|---|---|---|---|
| Start 140 | End 140 | Start 150 | End 150 |
| Distance to Emiss. Pt. | | Direction to Emiss. Pt. (Degrees) | |
| Start 5 | End 5 | Start N | End N |

| Vetical Angle to Obs. Pt. | | Direction to Obs. Pt. (Degrees) | |
|---|---|---|---|
| Start 10° | End 10° | Start | End |
| Distance and Direction to Observation Point from Emission Point | | | |
| Start 145 | | End 145 | |

| Describe Emissions | | | |
|---|---|---|---|
| Start NA | | End NA | |
| Emission Color | | Water Droplet Plume | |
| Start NA | End NA | Start NA | End NA |

| Describe Plume Background | | | |
|---|---|---|---|
| Start | End | | |
| Background Color | | Sky Conditions | |
| Start Sky Blue | End Sky Blue | Start Clear | End Cloud |
| Wind Speed | | Wind Direction | |
| Start 9 | End 9 | Start N | End N |
| Ambient Temp. | | Wet Bulb Temp. | RH Percent |
| Start | End | | |

Source Layout Sketch




| Latitude | Longitude | Declination |
|---|---|---|
| | | |

Addition Information

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) Page 5 of 6
Continued on Form Number (AHI Project Code)

| Observation Date | Time Zone | Start Time | End Time |
|---|---|---|---|
| 3/9/2020 | | 12:52 | 1:22 |

| Min. \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

| | |
|---|---|
| Observer's Name (Print) | SEAN FIELDS |
| Observer's Signature | [signature] Date 3/9/20 |
| Organization | Air Hygiene |
| Certified By | CAA Date 1/3/2020 |

Method Used (Circle One)
Method 9 203A 203B Other: _____

Company Name: Air Hygiene
Facility Name: Cricket Valley Energy Plant
Street Address: 1600 W Tacoma St
City: Broken Arrow State: OK Zip: 74012

Process: Unit # 2 Operating Mode:
Control Equipment: Operating Mode:

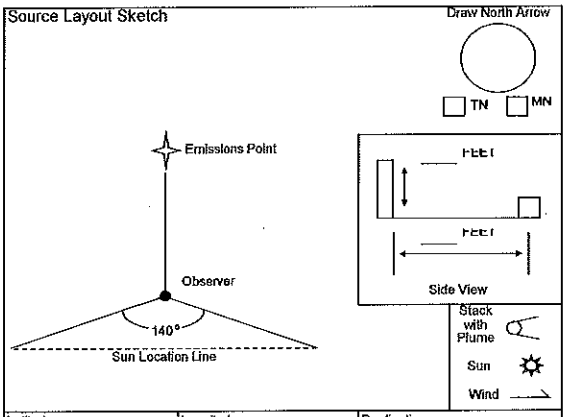
Describe Emissions Point:
Height of Emiss. Pt. Start 140 End 140
Height of Emiss. Pt. Rel. to Observer Start 150 End 150
Distance to Emiss. Pt. Start 5 End 5
Direction to Emiss. Pt. (Degrees) Start N End N

Vertical Angle to Obs. Pt. Start 10° End 10°
Direction to Obs. Pt. (Degrees) Start End
Distance and Direction to Observation Point from Emission Point Start 145' End 145'

Describe Emissions Start NA End NA
Emission Color Start NA End NA
Water Droplet Plume Start NA End NA

Describe Plume Background Start End
Background Color Start Sky Blue End Sky Blue
Sky Conditions Start Clear End Clear
Wind Speed Start 9 End 9
Wind Direction Start N End N
Ambient Temp. Start End
Wet Bulb Temp. RH Percent

Source Layout Sketch




Latitude | Longitude | Declination

Additional Information

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) Page 6 of 6
Continued on Form Number (AHI Project Code)

Observation Date 3/9/2020 Time Zone Start Time 1122 End Time 1152

| Min. \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print): SEAN FIELDS
Observer's Signature: [signature] Date: 3/9/20
Organization: Air Hygiene
Certified By: CAA Date: 1/3/2020

# EMISSION DATA RECORDS

## Reference Method Data
## Base+DB Load
## NOx, CO, VOC, and $NH_3$

**Cricket Valley Energy Center LLC**
**March 10, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,639 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,011 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,625 | lb/min |
| Duct Burner Fuel Flow | 166 | lb/min |
| Total Fuel Flow | 2,431,495 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.17 | in. Hg |
| Relative Humidity | 53 | % |
| Ambient Temperature | 52 | ° F |
| Specific Humidity | 0.004296 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 231.8 | megawatts |
| Heat Input | 2,459 | MMBtu/hr |
| $NH_3$ Flow Rate | 152 | lb/hr |
| Meas. Stack Moisture | 6.7 | % |
| Stack Exhaust Flow (M19) | 50,273,314 | SCFH |

Data from: From PM Run PM U-00001 Base+DB-2

Base+Db Load, Run - 2-1

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 03/10/20 15:27:20 | 30 | 12.04 | 2.37 | 0.16 | -0.05 | 5.01 | 1.49 |
| 03/10/20 15:27:50 | 60 | 12.03 | 2.30 | 0.24 | -0.04 | 5.01 | 1.41 |
| 03/10/20 15:28:20 | 90 | 12.08 | 2.36 | 0.17 | -0.05 | 5.01 | 1.33 |
| 03/10/20 15:28:50 | 120 | 12.03 | 2.31 | 0.16 | -0.02 | 5.01 | 1.31 |
| 03/10/20 15:29:20 | 150 | 12.04 | 2.27 | 0.17 | -0.05 | 5.01 | 1.31 |
| 03/10/20 15:29:50 | 180 | 12.03 | 2.45 | 0.21 | -0.04 | 5.01 | 1.29 |
| 03/10/20 15:30:20 | 210 | 12.04 | 2.27 | 0.19 | -0.05 | 5.01 | 1.26 |
| 03/10/20 15:30:50 | 240 | 12.06 | 2.53 | 0.18 | -0.04 | 5.01 | 1.21 |
| 03/10/20 15:31:20 | 270 | 12.06 | 2.34 | 0.17 | -0.05 | 5.02 | 1.24 |
| 03/10/20 15:31:50 | 300 | 12.05 | 2.32 | 0.16 | -0.05 | 5.01 | 1.28 |
| 03/10/20 15:32:20 | 330 | 12.04 | 2.34 | 0.15 | -0.05 | 5.01 | 1.20 |
| 03/10/20 15:32:50 | 360 | 12.04 | 2.36 | 0.16 | -0.05 | 5.01 | 1.20 |
| 03/10/20 15:33:20 | 390 | 12.03 | 2.40 | 0.17 | -0.04 | 5.02 | 1.22 |
| 03/10/20 15:33:50 | 420 | 12.03 | 2.86 | 0.33 | -0.03 | 5.02 | 1.23 |
| 03/10/20 15:34:20 | 450 | 12.04 | 2.43 | 0.15 | -0.04 | 5.02 | 1.22 |
| 03/10/20 15:34:50 | 480 | 12.05 | 2.37 | 0.17 | 0.07 | 5.02 | 1.22 |
| 03/10/20 15:35:20 | 510 | 12.05 | 2.31 | 0.16 | -0.02 | 5.01 | 1.22 |
| 03/10/20 15:35:50 | 540 | 12.03 | 2.35 | 0.16 | -0.04 | 5.01 | 1.26 |
| 03/10/20 15:36:20 | 570 | 12.03 | 2.26 | 0.16 | -0.04 | 5.01 | 1.29 |
| 03/10/20 15:36:50 | 600 | 12.04 | 2.35 | 0.23 | -0.04 | 5.01 | 1.35 |
| 03/10/20 15:37:20 | 630 | 12.04 | 2.33 | 0.15 | -0.05 | 5.02 | 1.25 |
| 03/10/20 15:37:50 | 660 | 12.02 | 2.80 | 0.18 | -0.04 | 5.02 | 1.28 |
| 03/10/20 15:38:20 | 690 | 12.03 | 2.34 | 0.17 | -0.04 | 5.01 | 1.30 |
| 03/10/20 15:38:50 | 720 | 12.04 | 2.33 | 0.19 | -0.05 | 5.02 | 1.35 |
| 03/10/20 15:39:20 | 750 | 12.04 | 2.32 | 0.19 | -0.04 | 5.01 | 1.31 |
| 03/10/20 15:39:50 | 780 | 12.04 | 2.47 | 0.17 | -0.04 | 5.01 | 1.35 |
| 03/10/20 15:40:20 | 810 | 12.05 | 3.14 | 0.18 | 0.00 | 5.01 | 1.33 |
| 03/10/20 15:40:50 | 840 | 12.05 | 2.64 | 0.19 | 0.01 | 5.02 | 1.38 |
| 03/10/20 15:41:20 | 870 | 12.09 | 2.37 | 0.17 | -0.05 | 5.02 | 1.42 |
| 03/10/20 15:41:50 | 900 | 12.05 | 2.39 | 0.17 | -0.05 | 5.02 | 1.43 |
| 03/10/20 15:42:20 | 930 | 12.05 | 2.45 | 0.16 | -0.04 | 5.03 | 1.42 |
| 03/10/20 15:42:50 | 960 | 12.03 | 2.37 | 0.20 | -0.04 | 5.02 | 1.51 |
| 03/10/20 15:43:20 | 990 | 12.05 | 2.46 | 0.16 | -0.04 | 5.02 | 1.55 |
| 03/10/20 15:43:50 | 1020 | 12.05 | 2.46 | 0.15 | -0.04 | 5.02 | 1.54 |
| 03/10/20 15:44:20 | 1050 | 12.05 | 2.37 | 0.16 | -0.04 | 5.03 | 1.58 |
| 03/10/20 15:44:50 | 1080 | 12.03 | 2.40 | 0.16 | -0.04 | 5.02 | 1.63 |
| 03/10/20 15:45:20 | 1110 | 12.04 | 2.34 | 0.16 | -0.04 | 5.02 | 1.71 |
| 03/10/20 15:45:50 | 1140 | 12.04 | 2.37 | 0.14 | -0.04 | 5.02 | 1.70 |
| 03/10/20 15:46:20 | 1170 | 12.04 | 2.90 | 0.20 | -0.02 | 5.02 | 1.67 |
| 03/10/20 15:46:50 | 1200 | 12.05 | 2.31 | 0.17 | 0.04 | 5.01 | 1.61 |
| 03/10/20 15:47:20 | 1230 | 12.06 | 2.38 | 0.31 | -0.03 | 5.01 | 1.63 |
| 03/10/20 15:47:50 | 1260 | 12.05 | 2.34 | 0.16 | -0.05 | 5.02 | 1.64 |
| 03/10/20 15:48:20 | 1290 | 12.04 | 2.32 | 0.15 | -0.05 | 5.02 | 1.69 |
| 03/10/20 15:48:50 | 1320 | 12.03 | 2.29 | 0.16 | -0.04 | 5.01 | 1.68 |
| 03/10/20 15:49:20 | 1350 | 12.03 | 2.63 | 0.16 | -0.04 | 5.03 | 1.67 |
| 03/10/20 15:49:50 | 1380 | 12.03 | 2.40 | 0.16 | -0.02 | 5.02 | 1.61 |
| 03/10/20 15:50:20 | 1410 | 12.11 | 2.39 | 0.25 | -0.04 | 5.03 | 1.55 |
| 03/10/20 15:50:50 | 1440 | 12.05 | 2.38 | 0.16 | -0.03 | 5.02 | 1.60 |
| 03/10/20 15:51:20 | 1470 | 12.05 | 2.30 | 0.17 | -0.04 | 5.01 | 1.65 |
| 03/10/20 15:51:50 | 1500 | 12.06 | 2.31 | 0.16 | -0.01 | 5.02 | 1.69 |
| 03/10/20 15:52:20 | 1530 | 12.06 | 2.34 | 0.16 | -0.04 | 5.02 | 1.61 |
| 03/10/20 15:52:50 | 1560 | 12.06 | 2.31 | 0.15 | -0.04 | 5.02 | 1.61 |
| 03/10/20 15:53:20 | 1590 | 12.06 | 2.42 | 0.17 | -0.04 | 5.02 | 1.57 |
| 03/10/20 15:53:50 | 1620 | 12.05 | 2.34 | 0.16 | -0.04 | 5.02 | 1.63 |
| 03/10/20 15:54:20 | 1650 | 12.04 | 2.39 | 0.17 | 0.05 | 5.01 | 1.67 |
| 03/10/20 15:54:50 | 1680 | 12.03 | 2.36 | 0.17 | -0.04 | 5.02 | 1.72 |
| 03/10/20 15:55:20 | 1710 | 12.03 | 2.41 | 0.16 | -0.04 | 5.02 | 1.68 |
| 03/10/20 15:55:50 | 1740 | 12.03 | 2.44 | 0.16 | 0.10 | 5.02 | 1.67 |
| 03/10/20 15:56:20 | 1770 | 12.05 | 2.36 | 0.15 | -0.04 | 5.02 | 1.75 |
| 03/10/20 15:56:50 | 1800 | 12.05 | 2.46 | 0.24 | -0.04 | 5.02 | 1.76 |
| 03/10/20 15:57:20 | 1830 | 12.05 | 2.41 | 0.17 | -0.04 | 5.02 | 1.76 |
| 03/10/20 15:57:50 | 1860 | 12.04 | 2.36 | 0.16 | -0.04 | 5.02 | 1.75 |
| 03/10/20 15:58:20 | 1890 | 12.03 | 2.41 | 0.16 | -0.04 | 5.02 | 1.75 |
| 03/10/20 15:58:50 | 1920 | 12.03 | 2.35 | 0.17 | -0.04 | 5.02 | 1.70 |
| 03/10/20 15:59:20 | 1950 | 12.03 | 2.42 | 0.17 | -0.03 | 5.02 | 1.66 |
| 03/10/20 15:59:50 | 1980 | 12.03 | 2.43 | 0.16 | 0.03 | 5.02 | 1.66 |
| 03/10/20 16:00:20 | 2010 | 12.03 | 2.45 | 0.26 | -0.04 | 5.02 | 1.81 |
| 03/10/20 16:00:50 | 2040 | 12.04 | 2.39 | 0.17 | -0.04 | 5.01 | 1.80 |
| 03/10/20 16:01:20 | 2070 | 12.05 | 2.37 | 0.17 | -0.04 | 5.02 | 1.84 |
| 03/10/20 16:01:50 | 2100 | 12.06 | 2.40 | 0.15 | -0.04 | 5.02 | 1.83 |
| 03/10/20 16:02:20 | 2130 | 12.04 | 2.35 | 0.27 | -0.04 | 5.02 | 1.82 |
| 03/10/20 16:02:50 | 2160 | 12.03 | 2.38 | 0.17 | -0.04 | 5.02 | 1.77 |
| 03/10/20 16:03:20 | 2190 | 12.04 | 2.36 | 0.17 | -0.02 | 5.02 | 1.81 |
| 03/10/20 16:03:50 | 2220 | 12.03 | 2.23 | 0.15 | -0.05 | 5.01 | 1.77 |
| 03/10/20 16:04:20 | 2250 | 12.04 | 2.33 | 0.18 | -0.04 | 5.02 | 1.77 |
| 03/10/20 16:04:50 | 2280 | 12.04 | 2.31 | 0.16 | 0.06 | 5.02 | 1.79 |
| 03/10/20 16:05:20 | 2310 | 12.03 | 2.33 | 0.17 | -0.05 | 5.02 | 1.83 |

**Cricket Valley Energy Center LLC**
**March 10, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,639 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,011 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,625 | lb/min |
| Duct Burner Fuel Flow | 166 | lb/min |
| Total Fuel Flow | 2,431,495 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.17 | in. Hg |
| Relative Humidity | 53 | % |
| Ambient Temperature | 52 | °F |
| Specific Humidity | 0.004296 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 231.8 | megawatts |
| Heat Input | 2,459 | MMBtu/hr |
| $NH_3$ Flow Rate | 152 | lb/hr |
| Meas. Stack Moisture | 6.7 | % |
| Stack Exhaust Flow (M19) | 50,273,314 | SCFH |

Data from: From PM Run PM U-00001 Base+DB-2

Base+Db Load, Run - 2-1

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 03/10/20 16:05:50 | 2340 | 12.03 | 2.30 | 0.16 | -0.04 | 5.02 | 1.80 |
| 03/10/20 16:06:20 | 2370 | 12.02 | 2.39 | 0.16 | -0.04 | 5.03 | 1.73 |
| 03/10/20 16:06:50 | 2400 | 12.03 | 2.40 | 0.16 | -0.05 | 5.03 | 1.73 |
| 03/10/20 16:07:20 | 2430 | 12.03 | 2.39 | 0.14 | -0.04 | 5.02 | 1.74 |
| 03/10/20 16:07:50 | 2460 | 12.03 | 2.43 | 0.17 | -0.04 | 5.02 | 1.75 |
| 03/10/20 16:08:20 | 2490 | 12.03 | 2.40 | 0.17 | -0.04 | 5.02 | 1.73 |
| 03/10/20 16:08:50 | 2520 | 12.03 | 2.32 | 0.19 | -0.02 | 5.01 | 1.68 |
| 03/10/20 16:09:20 | 2550 | 12.05 | 2.61 | 0.20 | -0.04 | 5.02 | 1.62 |
| 03/10/20 16:09:50 | 2580 | 12.05 | 2.35 | 0.16 | -0.04 | 5.02 | 1.65 |
| 03/10/20 16:10:20 | 2610 | 12.03 | 2.37 | 0.18 | -0.04 | 5.02 | 1.65 |
| 03/10/20 16:10:50 | 2640 | 12.02 | 2.45 | 0.16 | -0.04 | 5.03 | 1.65 |
| 03/10/20 16:11:20 | 2670 | 12.13 | 2.77 | 0.18 | -0.04 | 5.02 | 1.58 |
| 03/10/20 16:11:50 | 2700 | 12.04 | 3.15 | 0.24 | -0.02 | 5.01 | 1.62 |
| 03/10/20 16:12:20 | 2730 | 12.07 | 2.35 | 0.17 | -0.04 | 5.02 | 1.67 |
| 03/10/20 16:12:50 | 2760 | 12.02 | 2.30 | 0.16 | -0.04 | 5.02 | 1.68 |
| 03/10/20 16:13:20 | 2790 | 12.02 | 2.37 | 0.16 | -0.04 | 5.02 | 1.69 |
| 03/10/20 16:13:50 | 2820 | 12.03 | 2.33 | 0.17 | -0.04 | 5.02 | 1.66 |
| 03/10/20 16:14:20 | 2850 | 12.02 | 3.04 | 0.17 | -0.04 | 5.02 | 1.64 |
| 03/10/20 16:14:50 | 2880 | 12.03 | 2.43 | 0.16 | -0.04 | 5.02 | 1.72 |
| 03/10/20 16:15:20 | 2910 | 12.03 | 2.38 | 0.17 | -0.04 | 5.02 | 1.82 |
| 03/10/20 16:15:50 | 2940 | 12.02 | 3.09 | 0.16 | -0.03 | 5.02 | 1.78 |
| 03/10/20 16:16:20 | 2970 | 12.03 | 2.31 | 0.16 | -0.04 | 5.02 | 1.76 |
| 03/10/20 16:16:50 | 3000 | 12.02 | 2.29 | 0.15 | -0.04 | 5.02 | 1.77 |
| 03/10/20 16:17:20 | 3030 | 12.03 | 2.31 | 0.18 | -0.05 | 5.02 | 1.85 |
| 03/10/20 16:17:50 | 3060 | 12.02 | 2.40 | 0.19 | -0.05 | 5.03 | 1.83 |
| 03/10/20 16:18:20 | 3090 | 12.03 | 2.45 | 0.16 | -0.05 | 5.03 | 1.81 |
| 03/10/20 16:18:50 | 3120 | 12.02 | 2.41 | 0.19 | -0.04 | 5.02 | 1.75 |
| 03/10/20 16:19:20 | 3150 | 12.03 | 2.30 | 0.15 | -0.04 | 5.03 | 1.72 |
| 03/10/20 16:19:50 | 3180 | 12.03 | 2.31 | 0.17 | -0.04 | 5.03 | 1.69 |
| 03/10/20 16:20:20 | 3210 | 12.04 | 2.98 | 0.17 | 0.02 | 5.04 | 1.72 |
| 03/10/20 16:20:50 | 3240 | 12.04 | 2.55 | 0.20 | -0.04 | 5.02 | 1.65 |
| 03/10/20 16:21:20 | 3270 | 12.02 | 2.45 | 0.16 | -0.04 | 5.03 | 1.63 |
| 03/10/20 16:21:50 | 3300 | 12.02 | 2.33 | 0.18 | -0.04 | 5.02 | 1.64 |
| 03/10/20 16:22:20 | 3330 | 12.03 | 2.58 | 0.17 | -0.05 | 5.03 | 1.64 |
| 03/10/20 16:22:50 | 3360 | 12.03 | 2.33 | 0.17 | -0.03 | 5.03 | 1.68 |
| 03/10/20 16:23:20 | 3390 | 12.03 | 2.50 | 0.18 | -0.01 | 5.02 | 1.65 |
| 03/10/20 16:23:50 | 3420 | 12.02 | 2.35 | 0.18 | -0.05 | 5.03 | 1.61 |
| 03/10/20 16:24:20 | 3450 | 12.03 | 2.37 | 0.17 | -0.04 | 5.02 | 1.61 |
| 03/10/20 16:24:50 | 3480 | 12.02 | 2.31 | 0.17 | -0.04 | 5.02 | 1.64 |
| 03/10/20 16:25:20 | 3510 | 12.02 | 2.62 | 0.27 | -0.04 | 5.03 | 1.66 |
| 03/10/20 16:25:50 | 3540 | 12.03 | 2.66 | 0.16 | -0.05 | 5.03 | 1.70 |
| 03/10/20 16:26:20 | 3570 | 12.02 | 2.36 | 0.14 | -0.04 | 5.02 | 1.70 |
| 03/10/20 16:26:50 | 3600 | 12.03 | 2.37 | 0.09 | -0.04 | 5.02 | 1.65 |
| **RAW AVERAGE** | | **12.04** | **2.43** | **0.17** | **-0.03** | **5.02** | **1.59** |

| | | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| | **Serial Number:** | inst-02-0024 | inst-nx-0031 | inst-co-0029 | inst-th-0013 | inst-c2-0016 | inst-ir-0004 |
| **Bias** | **Initial Zero** | 0.06 | -0.05 | 0.03 | 0.02 | 0.04 | |
| | **Final Zero** | 0.07 | 0.09 | -0.10 | -0.04 | 0.00 | |
| | **Avg. Zero** | 0.07 | 0.02 | -0.04 | -0.01 | 0.02 | |
| | **Initial UpScale** | 11.96 | 4.86 | 5.05 | 3.40 | 8.80 | |
| | **Final UpScale** | 11.98 | 4.88 | 4.98 | 3.30 | 8.87 | |
| | **Avg. UpScale** | 11.97 | 4.87 | 5.02 | 3.35 | 8.83 | |
| **Upscale Cal Gas** | | 12.00 | 4.91 | 5.09 | 3.37 | 8.94 | |

| **EMISSIONS DATA** | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 12.07 | 2.44 | 0.21 | 0.00 | 5.07 | 1.70 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.63 | 0.14 | 0.00 | N/A | 1.14 |

Non-Bias Adjusted Averages Include: *

**Cricket Valley Energy Center LLC**
**March 10, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,639 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,011 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,625 | lb/min |
| Duct Burner Fuel Flow | 171 | lb/min |
| Total Fuel Flow | 2,438,066 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.15 | in. Hg |
| Relative Humidity | 70 | % |
| Ambient Temperature | 49 | °F |
| Specific Humidity | 0.005086 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 232.1 | megawatts |
| Heat Input | 2,465 | MMBtu/hr |
| $NH_3$ Flow Rate | 150 | lb/hr |
| Meas. Stack Moisture | 6.7 | % |
| Stack Exhaust Flow (M19) | 49,918,813 | SCFH |

Data from: From PM Run PM U-00001 Base+DB-2

Base+Db Load, Run - 2-2

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 03/10/20 17:35:20 | 7710 | 12.00 | 2.33 | 0.13 | -0.04 | 4.99 | 1.78 |
| 03/10/20 17:35:50 | 7740 | 12.00 | 2.34 | 0.09 | 0.03 | 4.99 | 1.70 |
| 03/10/20 17:36:20 | 7770 | 11.98 | 2.78 | 0.07 | 0.09 | 4.97 | 1.61 |
| 03/10/20 17:36:50 | 7800 | 12.02 | 2.92 | 0.13 | 0.00 | 4.98 | 1.59 |
| 03/10/20 17:37:20 | 7830 | 11.98 | 2.34 | 0.09 | -0.03 | 4.98 | 1.53 |
| 03/10/20 17:37:50 | 7860 | 11.99 | 2.30 | 0.14 | -0.02 | 4.98 | 1.52 |
| 03/10/20 17:38:20 | 7890 | 11.98 | 2.90 | 0.12 | -0.02 | 4.98 | 1.47 |
| 03/10/20 17:38:50 | 7920 | 12.07 | 2.39 | 0.11 | -0.04 | 4.98 | 1.46 |
| 03/10/20 17:39:20 | 7950 | 12.00 | 2.39 | 0.09 | 0.07 | 4.98 | 1.44 |
| 03/10/20 17:39:50 | 7980 | 12.01 | 2.54 | 0.16 | 0.03 | 4.98 | 1.40 |
| 03/10/20 17:40:20 | 8010 | 11.99 | 2.54 | 0.08 | -0.02 | 5.00 | 1.40 |
| 03/10/20 17:40:50 | 8040 | 12.00 | 2.66 | 0.09 | 0.05 | 5.00 | 1.35 |
| 03/10/20 17:41:20 | 8070 | 11.99 | 2.43 | 0.07 | 0.09 | 5.00 | 1.33 |
| 03/10/20 17:41:50 | 8100 | 12.04 | 3.28 | 0.07 | -0.02 | 5.01 | 1.30 |
| 03/10/20 17:42:20 | 8130 | 11.99 | 2.33 | 0.10 | -0.02 | 5.01 | 1.31 |
| 03/10/20 17:42:50 | 8160 | 12.02 | 2.30 | 0.08 | -0.02 | 5.00 | 1.32 |
| 03/10/20 17:43:20 | 8190 | 12.04 | 2.28 | 0.06 | -0.04 | 5.00 | 1.33 |
| 03/10/20 17:43:50 | 8220 | 11.99 | 2.36 | 0.15 | -0.01 | 5.00 | 1.36 |
| 03/10/20 17:44:20 | 8250 | 11.98 | 3.10 | 0.09 | -0.01 | 5.02 | 1.33 |
| 03/10/20 17:44:50 | 8280 | 11.99 | 2.52 | 0.20 | -0.04 | 5.01 | 1.37 |
| 03/10/20 17:45:20 | 8310 | 12.05 | 2.44 | 0.21 | 0.00 | 5.01 | 1.43 |
| 03/10/20 17:45:50 | 8340 | 12.02 | 3.17 | 0.12 | -0.04 | 5.01 | 1.38 |
| 03/10/20 17:46:20 | 8370 | 12.00 | 3.19 | 0.19 | 0.03 | 5.01 | 1.34 |
| 03/10/20 17:46:50 | 8400 | 12.05 | 2.45 | 0.23 | -0.04 | 5.01 | 1.37 |
| 03/10/20 17:47:20 | 8430 | 12.01 | 2.52 | 0.12 | -0.03 | 5.00 | 1.36 |
| 03/10/20 17:47:50 | 8460 | 12.03 | 2.29 | 0.09 | -0.04 | 5.01 | 1.36 |
| 03/10/20 17:48:20 | 8490 | 11.99 | 2.26 | 0.14 | -0.04 | 5.02 | 1.38 |
| 03/10/20 17:48:50 | 8520 | 12.00 | 2.76 | 0.07 | 0.12 | 5.01 | 1.37 |
| 03/10/20 17:49:20 | 8550 | 12.03 | 2.78 | 0.17 | -0.01 | 5.00 | 1.37 |
| 03/10/20 17:49:50 | 8580 | 12.02 | 2.38 | 0.08 | -0.04 | 5.01 | 1.38 |
| 03/10/20 17:50:20 | 8610 | 11.99 | 2.47 | 0.08 | -0.03 | 5.01 | 1.42 |
| 03/10/20 17:50:50 | 8640 | 12.00 | 2.34 | 0.11 | -0.04 | 5.03 | 1.51 |
| 03/10/20 17:51:20 | 8670 | 12.00 | 2.37 | 0.08 | -0.03 | 5.01 | 1.50 |
| 03/10/20 17:51:50 | 8700 | 12.00 | 2.35 | 0.11 | -0.01 | 5.01 | 1.51 |
| 03/10/20 17:52:20 | 8730 | 11.99 | 2.34 | 0.07 | -0.04 | 5.02 | 1.49 |
| 03/10/20 17:52:50 | 8760 | 12.00 | 3.18 | 0.23 | 0.03 | 5.02 | 1.53 |
| 03/10/20 17:53:20 | 8790 | 11.99 | 2.32 | 0.07 | -0.04 | 5.00 | 1.55 |
| 03/10/20 17:53:50 | 8820 | 12.03 | 2.30 | 0.15 | 0.02 | 5.02 | 1.55 |
| 03/10/20 17:54:20 | 8850 | 12.01 | 2.29 | 0.12 | 0.01 | 5.02 | 1.55 |
| 03/10/20 17:54:50 | 8880 | 12.00 | 2.67 | 0.08 | 0.03 | 5.01 | 1.60 |
| 03/10/20 17:55:20 | 8910 | 12.06 | 2.69 | 0.16 | 0.06 | 5.00 | 1.67 |
| 03/10/20 17:55:50 | 8940 | 12.06 | 2.40 | 0.13 | 0.10 | 5.02 | 1.65 |
| 03/10/20 17:56:20 | 8970 | 12.00 | 2.31 | 0.08 | 0.00 | 5.01 | 1.61 |
| 03/10/20 17:56:50 | 9000 | 12.05 | 2.50 | 0.06 | -0.03 | 5.01 | 1.62 |
| 03/10/20 17:57:20 | 9030 | 12.01 | 2.38 | 0.08 | 0.01 | 5.01 | 1.65 |
| 03/10/20 17:57:50 | 9060 | 12.02 | 2.67 | 0.23 | -0.01 | 5.01 | 1.64 |
| 03/10/20 17:58:20 | 9090 | 12.00 | 2.58 | 0.30 | 0.10 | 5.01 | 1.61 |
| 03/10/20 17:58:50 | 9120 | 12.00 | 2.64 | 0.10 | -0.04 | 5.01 | 1.56 |
| 03/10/20 17:59:20 | 9150 | 12.00 | 2.57 | 0.17 | -0.03 | 5.01 | 1.53 |
| 03/10/20 17:59:50 | 9180 | 12.05 | 2.32 | 0.07 | -0.01 | 5.01 | 1.60 |
| 03/10/20 18:00:20 | 9210 | 12.00 | 2.42 | 0.07 | -0.04 | 5.02 | 1.58 |
| 03/10/20 18:00:50 | 9240 | 12.00 | 2.75 | 0.31 | 0.09 | 5.02 | 1.59 |
| 03/10/20 18:01:20 | 9270 | 12.04 | 2.42 | 0.09 | -0.04 | 5.01 | 1.55 |
| 03/10/20 18:01:50 | 9300 | 12.02 | 3.47 | 0.13 | -0.03 | 5.01 | 1.55 |
| 03/10/20 18:02:20 | 9330 | 12.01 | 2.75 | 0.10 | -0.03 | 5.02 | 1.59 |
| 03/10/20 18:02:50 | 9360 | 12.00 | 2.33 | 0.08 | -0.04 | 5.02 | 1.58 |
| 03/10/20 18:03:20 | 9390 | 12.01 | 2.33 | 0.16 | -0.04 | 5.02 | 1.55 |
| 03/10/20 18:03:50 | 9420 | 12.00 | 2.41 | 0.08 | 0.00 | 5.01 | 1.64 |
| 03/10/20 18:04:20 | 9450 | 12.00 | 2.64 | 0.22 | 0.02 | 5.01 | 1.71 |
| 03/10/20 18:04:50 | 9480 | 12.01 | 3.32 | 0.09 | -0.03 | 5.01 | 1.75 |
| 03/10/20 18:05:20 | 9510 | 12.01 | 2.82 | 0.14 | 0.02 | 5.01 | 1.77 |
| 03/10/20 18:05:50 | 9540 | 11.99 | 2.73 | 0.10 | -0.03 | 5.01 | 1.74 |
| 03/10/20 18:06:20 | 9570 | 12.00 | 2.42 | 0.11 | -0.04 | 5.02 | 1.78 |
| 03/10/20 18:06:50 | 9600 | 12.01 | 3.15 | 0.12 | -0.04 | 5.00 | 1.80 |
| 03/10/20 18:07:20 | 9630 | 12.00 | 2.40 | 0.10 | 0.00 | 5.01 | 1.82 |
| 03/10/20 18:07:50 | 9660 | 11.99 | 2.39 | 0.18 | -0.03 | 5.02 | 1.76 |
| 03/10/20 18:08:20 | 9690 | 12.00 | 3.47 | 0.22 | 0.26 | 5.01 | 1.71 |
| 03/10/20 18:08:50 | 9720 | 12.04 | 2.44 | 0.21 | 0.01 | 5.02 | 1.77 |
| 03/10/20 18:09:20 | 9750 | 12.01 | 2.40 | 0.09 | -0.02 | 5.01 | 1.76 |
| 03/10/20 18:09:50 | 9780 | 12.00 | 2.42 | 0.11 | 0.02 | 5.01 | 1.73 |
| 03/10/20 18:10:20 | 9810 | 12.00 | 2.40 | 0.09 | 0.01 | 5.02 | 1.67 |
| 03/10/20 18:10:50 | 9840 | 12.01 | 2.34 | 0.16 | -0.04 | 5.01 | 1.65 |
| 03/10/20 18:11:20 | 9870 | 12.01 | 2.52 | 0.16 | -0.01 | 5.02 | 1.65 |
| 03/10/20 18:11:50 | 9900 | 12.01 | 2.57 | 0.10 | -0.04 | 5.03 | 1.67 |
| 03/10/20 18:12:20 | 9930 | 12.00 | 2.36 | 0.08 | -0.04 | 5.02 | 1.58 |
| 03/10/20 18:12:50 | 9960 | 12.00 | 2.76 | 0.13 | -0.04 | 5.02 | 1.61 |
| 03/10/20 18:13:20 | 9990 | 11.99 | 2.59 | 0.07 | -0.04 | 5.05 | 1.58 |

**Cricket Valley Energy Center LLC**
**March 10, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,639 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,011 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,625 | lb/min |
| Duct Burner Fuel Flow | 171 | lb/min |
| Total Fuel Flow | 2,438,066 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.15 | in. Hg |
| Relative Humidity | 70 | % |
| Ambient Temperature | 49 | °F |
| Specific Humidity | 0.005086 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 232.1 | megawatts |
| Heat Input | 2,465 | MMBtu/hr |
| $NH_3$ Flow Rate | 150 | lb/hr |
| Meas. Stack Moisture | 6.7 | % |
| Stack Exhaust Flow (M19) | 49,918,813 | SCFH |

Data from: From PM Run PM U-00001 Base+DB-2

Base+Db Load, Run - 2-2

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 03/10/20 18:13:50 | 10020 | 12.02 | 2.60 | 0.08 | -0.04 | 5.04 | 1.57 |
| 03/10/20 18:14:20 | 10050 | 11.99 | 2.39 | 0.15 | 0.10 | 5.02 | 1.57 |
| 03/10/20 18:14:50 | 10080 | 12.02 | 2.48 | 0.10 | -0.04 | 5.01 | 1.58 |
| 03/10/20 18:15:20 | 10110 | 12.01 | 2.57 | 0.08 | -0.04 | 5.02 | 1.64 |
| 03/10/20 18:15:50 | 10140 | 12.00 | 2.62 | 0.08 | 0.00 | 5.02 | 1.63 |
| 03/10/20 18:16:20 | 10170 | 11.98 | 2.45 | 0.07 | -0.02 | 5.02 | 1.57 |
| 03/10/20 18:16:50 | 10200 | 11.96 | 2.37 | 0.07 | -0.03 | 5.02 | 1.59 |
| 03/10/20 18:17:20 | 10230 | 12.00 | 2.53 | 0.15 | -0.04 | 4.97 | 1.64 |
| 03/10/20 18:17:50 | 10260 | 11.99 | 2.56 | 0.12 | -0.03 | 4.97 | 1.65 |
| 03/10/20 18:18:20 | 10290 | 12.02 | 2.54 | 0.11 | 0.04 | 4.97 | 1.62 |
| 03/10/20 18:18:50 | 10320 | 12.02 | 2.53 | 0.13 | -0.02 | 4.94 | 1.60 |
| 03/10/20 18:19:20 | 10350 | 12.00 | 2.93 | 0.22 | 0.02 | 4.93 | 1.60 |
| 03/10/20 18:19:50 | 10380 | 12.01 | 2.94 | 0.19 | -0.02 | 4.92 | 1.62 |
| 03/10/20 18:20:20 | 10410 | 11.99 | 2.31 | 0.11 | -0.02 | 4.94 | 1.61 |
| 03/10/20 18:20:50 | 10440 | 12.04 | 2.35 | 0.11 | 0.01 | 4.95 | 1.57 |
| 03/10/20 18:21:20 | 10470 | 12.01 | 2.46 | 0.09 | -0.04 | 4.94 | 1.54 |
| 03/10/20 18:21:50 | 10500 | 12.03 | 2.51 | 0.17 | -0.02 | 4.93 | 1.62 |
| 03/10/20 18:22:20 | 10530 | 12.01 | 2.87 | 0.07 | -0.03 | 4.93 | 1.56 |
| 03/10/20 18:22:50 | 10560 | 12.01 | 3.30 | 0.14 | 0.03 | 4.94 | 1.56 |
| 03/10/20 18:23:20 | 10590 | 12.02 | 2.50 | 0.08 | -0.02 | 4.94 | 1.55 |
| 03/10/20 18:23:50 | 10620 | 12.01 | 2.35 | 0.10 | -0.04 | 4.95 | 1.54 |
| 03/10/20 18:24:20 | 10650 | 12.00 | 2.41 | 0.10 | -0.04 | 4.95 | 1.66 |
| 03/10/20 18:24:50 | 10680 | 11.99 | 2.54 | 0.11 | -0.04 | 4.97 | 1.63 |
| 03/10/20 18:25:20 | 10710 | 12.06 | 2.55 | 0.10 | -0.03 | 5.01 | 1.63 |
| 03/10/20 18:25:50 | 10740 | 11.99 | 2.68 | 0.11 | -0.01 | 5.02 | 1.61 |
| 03/10/20 18:26:20 | 10770 | 12.08 | 2.37 | 0.08 | -0.04 | 5.02 | 1.65 |
| 03/10/20 18:26:50 | 10800 | 12.06 | 2.36 | 0.09 | -0.02 | 5.02 | 1.68 |
| 03/10/20 18:27:20 | 10830 | 12.02 | 2.63 | 0.13 | 0.01 | 5.02 | 1.71 |
| 03/10/20 18:27:50 | 10860 | 12.00 | 2.43 | 0.09 | -0.04 | 5.02 | 1.68 |
| 03/10/20 18:28:20 | 10890 | 12.01 | 2.37 | 0.25 | -0.04 | 5.02 | 1.64 |
| 03/10/20 18:28:50 | 10920 | 12.01 | 2.38 | 0.08 | -0.03 | 5.03 | 1.63 |
| 03/10/20 18:29:20 | 10950 | 12.00 | 2.84 | 0.09 | -0.04 | 5.02 | 1.65 |
| 03/10/20 18:29:50 | 10980 | 11.99 | 2.90 | 0.10 | 0.01 | 5.02 | 1.65 |
| 03/10/20 18:30:20 | 11010 | 11.99 | 3.23 | 0.08 | -0.03 | 5.02 | 1.69 |
| 03/10/20 18:30:50 | 11040 | 12.00 | 2.59 | 0.08 | 0.08 | 5.01 | 1.72 |
| 03/10/20 18:31:20 | 11070 | 12.25 | 2.47 | 0.06 | -0.02 | 5.02 | 1.68 |
| 03/10/20 18:31:50 | 11100 | 12.25 | 2.60 | 0.10 | -0.04 | 5.02 | 1.64 |
| 03/10/20 18:32:20 | 11130 | 12.01 | 2.33 | 0.13 | -0.04 | 5.03 | 1.58 |
| 03/10/20 18:32:50 | 11160 | 11.99 | 2.33 | 0.18 | -0.03 | 5.03 | 1.60 |
| 03/10/20 18:33:20 | 11190 | 11.99 | 2.30 | 0.13 | 0.17 | 5.02 | 1.63 |
| 03/10/20 18:33:50 | 11220 | 12.09 | 2.44 | 0.10 | 0.01 | 5.02 | 1.63 |
| 03/10/20 18:34:20 | 11250 | 11.99 | 2.80 | 0.18 | -0.04 | 5.03 | 1.64 |
| 03/10/20 18:34:50 | 11280 | 12.00 | 2.47 | 0.10 | 0.02 | 5.02 | 1.60 |
| **RAW AVERAGE** | | **12.01** | **2.57** | **0.12** | **-0.01** | **5.00** | **1.57** |

| | | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| | **Serial Number:** | inst-02-0024 | inst-nx-0031 | inst-co-0029 | inst-th-0013 | inst-c2-0016 | inst-ir-0004 |
| **Bias** | **Initial Zero** | 0.07 | 0.09 | -0.10 | -0.04 | 0.00 | |
| | **Final Zero** | 0.08 | 0.06 | -0.07 | -0.04 | -0.01 | |
| | **Avg. Zero** | 0.08 | 0.08 | -0.09 | -0.04 | -0.01 | |
| | **Initial UpScale** | 11.98 | 4.88 | 4.98 | 3.30 | 8.87 | |
| | **Final UpScale** | 12.08 | 4.94 | 5.02 | 3.32 | 8.82 | |
| | **Avg. UpScale** | 12.03 | 4.91 | 5.00 | 3.31 | 8.84 | |
| **Upscale Cal Gas** | | 12.00 | 4.91 | 5.09 | 3.37 | 8.94 | |

| **EMISSIONS DATA** | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 11.98 | 2.53 | 0.21 | 0.00 | 5.06 | 1.69 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.68 | 0.14 | 0.00 | N/A | 1.12 |

Non-Bias Adjusted Averages Include: *

**Cricket Valley Energy Center LLC**
**March 10, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,639 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,011 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,627 | lb/min |
| Duct Burner Fuel Flow | 174 | lb/min |
| Total Fuel Flow | 2,444,977 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.12 | in. Hg |
| Relative Humidity | 73 | % |
| Ambient Temperature | 46 | °F |
| Specific Humidity | 0.004740 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 232.6 | megawatts |
| Heat Input | 2,472 | MMBtu/hr |
| $NH_3$ Flow Rate | 149 | lb/hr |
| Meas. Stack Moisture | 6.7 | % |
| Stack Exhaust Flow (M19) | 49,882,005 | SCFH |

Data from: From PM Run PM U-00001 Base+DB-2

Base+Db Load, Run - 2-3

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 03/10/20 18:35:20 | 11310 | 12.00 | 2.45 | 0.15 | -0.01 | 5.02 | 1.59 |
| 03/10/20 18:35:50 | 11340 | 11.99 | 2.35 | 0.10 | -0.04 | 5.01 | 1.65 |
| 03/10/20 18:36:20 | 11370 | 12.00 | 2.89 | 0.09 | -0.03 | 5.03 | 1.65 |
| 03/10/20 18:36:50 | 11400 | 11.99 | 2.67 | 0.23 | 0.03 | 5.02 | 1.64 |
| 03/10/20 18:37:20 | 11430 | 12.01 | 2.48 | 0.33 | 0.07 | 5.01 | 1.63 |
| 03/10/20 18:37:50 | 11460 | 12.00 | 2.49 | 0.07 | -0.04 | 5.02 | 1.69 |
| 03/10/20 18:38:20 | 11490 | 12.03 | 2.41 | 0.17 | -0.01 | 5.03 | 1.71 |
| 03/10/20 18:38:50 | 11520 | 12.00 | 2.76 | 0.10 | -0.02 | 5.02 | 1.66 |
| 03/10/20 18:39:20 | 11550 | 12.00 | 3.11 | 0.16 | -0.04 | 5.02 | 1.64 |
| 03/10/20 18:39:50 | 11580 | 12.00 | 2.91 | 0.14 | -0.04 | 5.03 | 1.62 |
| 03/10/20 18:40:20 | 11610 | 12.07 | 2.86 | 0.09 | -0.02 | 5.03 | 1.65 |
| 03/10/20 18:40:50 | 11640 | 12.00 | 2.35 | 0.10 | 0.00 | 5.03 | 1.67 |
| 03/10/20 18:41:20 | 11670 | 12.01 | 2.96 | 0.19 | 0.01 | 5.02 | 1.63 |
| 03/10/20 18:41:50 | 11700 | 12.04 | 2.88 | 0.22 | -0.03 | 5.02 | 1.59 |
| 03/10/20 18:42:20 | 11730 | 12.02 | 2.52 | 0.10 | -0.02 | 5.02 | 1.53 |
| 03/10/20 18:42:50 | 11760 | 12.01 | 2.55 | 0.11 | -0.03 | 5.03 | 1.55 |
| 03/10/20 18:43:20 | 11790 | 12.00 | 2.37 | 0.08 | -0.05 | 5.03 | 1.54 |
| 03/10/20 18:43:50 | 11820 | 12.03 | 2.78 | 0.17 | -0.03 | 5.02 | 1.52 |
| 03/10/20 18:44:20 | 11850 | 12.01 | 2.46 | 0.08 | -0.05 | 5.03 | 1.47 |
| 03/10/20 18:44:50 | 11880 | 11.99 | 2.49 | 0.09 | -0.04 | 5.02 | 1.47 |
| 03/10/20 18:45:20 | 11910 | 12.06 | 2.91 | 0.07 | -0.04 | 5.03 | 1.49 |
| 03/10/20 18:45:50 | 11940 | 12.00 | 2.48 | 0.09 | -0.03 | 5.03 | 1.60 |
| 03/10/20 18:46:20 | 11970 | 12.00 | 2.49 | 0.11 | -0.02 | 5.04 | 1.68 |
| 03/10/20 18:46:50 | 12000 | 12.01 | 2.53 | 0.21 | -0.01 | 5.02 | 1.72 |
| 03/10/20 18:47:20 | 12030 | 11.99 | 2.43 | 0.13 | -0.02 | 5.03 | 1.77 |
| 03/10/20 18:47:50 | 12060 | 12.00 | 2.44 | 0.11 | 0.09 | 5.03 | 1.82 |
| 03/10/20 18:48:20 | 12090 | 12.02 | 3.69 | 0.11 | -0.04 | 5.02 | 1.87 |
| 03/10/20 18:48:50 | 12120 | 11.99 | 2.47 | 0.08 | -0.04 | 5.02 | 1.83 |
| 03/10/20 18:49:20 | 12150 | 12.00 | 2.87 | 0.20 | 0.01 | 5.02 | 1.82 |
| 03/10/20 18:49:50 | 12180 | 11.99 | 2.47 | 0.08 | -0.04 | 5.02 | 1.84 |
| 03/10/20 18:50:20 | 12210 | 11.99 | 2.79 | 0.10 | 0.03 | 5.04 | 1.79 |
| 03/10/20 18:50:50 | 12240 | 11.99 | 2.43 | 0.08 | -0.04 | 5.04 | 1.76 |
| 03/10/20 18:51:20 | 12270 | 11.98 | 2.49 | 0.17 | 0.01 | 5.03 | 1.71 |
| 03/10/20 18:51:50 | 12300 | 12.00 | 2.52 | 0.07 | 0.13 | 5.04 | 1.70 |
| 03/10/20 18:52:20 | 12330 | 11.99 | 2.45 | 0.09 | -0.04 | 5.03 | 1.71 |
| 03/10/20 18:52:50 | 12360 | 11.98 | 2.34 | 0.09 | -0.04 | 5.04 | 1.64 |
| 03/10/20 18:53:20 | 12390 | 11.96 | 2.38 | 0.09 | 0.03 | 5.04 | 1.60 |
| 03/10/20 18:53:50 | 12420 | 11.96 | 2.41 | 0.27 | 0.11 | 5.05 | 1.58 |
| 03/10/20 18:54:20 | 12450 | 11.98 | 2.51 | 0.18 | 0.10 | 5.04 | 1.61 |
| 03/10/20 18:54:50 | 12480 | 11.97 | 2.51 | 0.12 | 0.01 | 5.04 | 1.60 |
| 03/10/20 18:55:20 | 12510 | 12.03 | 2.84 | 0.19 | -0.03 | 5.04 | 1.61 |
| 03/10/20 18:55:50 | 12540 | 11.99 | 2.88 | 0.19 | 0.05 | 5.04 | 1.60 |
| 03/10/20 18:56:20 | 12570 | 12.00 | 2.50 | 0.14 | -0.04 | 5.03 | 1.63 |
| 03/10/20 18:56:50 | 12600 | 11.99 | 2.36 | 0.16 | -0.04 | 5.04 | 1.63 |
| 03/10/20 18:57:20 | 12630 | 11.98 | 2.72 | 0.08 | -0.04 | 5.04 | 1.70 |
| 03/10/20 18:57:50 | 12660 | 11.99 | 2.42 | 0.12 | -0.04 | 5.04 | 1.67 |
| 03/10/20 18:58:20 | 12690 | 11.99 | 2.79 | 0.12 | -0.02 | 5.04 | 1.69 |
| 03/10/20 18:58:50 | 12720 | 11.99 | 2.34 | 0.10 | -0.04 | 5.06 | 1.74 |
| 03/10/20 18:59:20 | 12750 | 11.99 | 2.40 | 0.25 | 0.03 | 5.04 | 1.75 |
| 03/10/20 18:59:50 | 12780 | 11.99 | 2.98 | 0.28 | -0.03 | 5.03 | 1.74 |
| 03/10/20 19:00:20 | 12810 | 12.02 | 3.64 | 0.28 | 0.05 | 5.01 | 1.69 |
| 03/10/20 19:00:50 | 12840 | 11.99 | 2.38 | 0.14 | -0.01 | 5.03 | 1.68 |
| 03/10/20 19:01:20 | 12870 | 11.98 | 2.88 | 0.18 | -0.04 | 5.02 | 1.74 |
| 03/10/20 19:01:50 | 12900 | 12.02 | 2.61 | 0.36 | -0.02 | 5.03 | 1.76 |
| 03/10/20 19:02:20 | 12930 | 11.99 | 2.44 | 0.20 | 0.04 | 5.04 | 1.74 |
| 03/10/20 19:02:50 | 12960 | 12.01 | 3.26 | 0.19 | -0.03 | 5.04 | 1.70 |
| 03/10/20 19:03:20 | 12990 | 12.02 | 2.61 | 0.26 | -0.01 | 5.03 | 1.72 |
| 03/10/20 19:03:50 | 13020 | 11.98 | 3.53 | 0.11 | -0.02 | 5.04 | 1.69 |
| 03/10/20 19:04:20 | 13050 | 11.99 | 2.79 | 0.11 | 0.01 | 5.04 | 1.68 |
| 03/10/20 19:04:50 | 13080 | 11.97 | 2.39 | 0.08 | 0.02 | 5.04 | 1.65 |
| 03/10/20 19:05:20 | 13110 | 11.98 | 3.15 | 0.10 | -0.04 | 5.05 | 1.67 |
| 03/10/20 19:05:50 | 13140 | 11.98 | 2.43 | 0.11 | -0.04 | 5.05 | 1.72 |
| 03/10/20 19:06:20 | 13170 | 11.99 | 2.86 | 0.09 | -0.02 | 5.04 | 1.75 |
| 03/10/20 19:06:50 | 13200 | 11.98 | 2.38 | 0.29 | -0.04 | 5.04 | 1.73 |
| 03/10/20 19:07:20 | 13230 | 12.02 | 3.63 | 0.10 | -0.04 | 5.04 | 1.69 |
| 03/10/20 19:07:50 | 13260 | 11.99 | 2.52 | 0.11 | -0.02 | 5.03 | 1.68 |
| 03/10/20 19:08:20 | 13290 | 11.99 | 2.57 | 0.14 | -0.04 | 5.04 | 1.70 |
| 03/10/20 19:08:50 | 13320 | 11.99 | 2.78 | 0.15 | -0.04 | 5.03 | 1.70 |
| 03/10/20 19:09:20 | 13350 | 11.97 | 2.49 | 0.08 | -0.04 | 5.03 | 1.68 |
| 03/10/20 19:09:50 | 13380 | 11.98 | 2.76 | 0.08 | -0.02 | 5.04 | 1.64 |
| 03/10/20 19:10:20 | 13410 | 11.98 | 2.41 | 0.10 | 0.02 | 5.03 | 1.66 |
| 03/10/20 19:10:50 | 13440 | 11.99 | 2.47 | 0.11 | -0.03 | 5.03 | 1.70 |
| 03/10/20 19:11:20 | 13470 | 11.98 | 2.34 | 0.09 | -0.03 | 5.03 | 1.71 |
| 03/10/20 19:11:50 | 13500 | 12.03 | 2.74 | 0.19 | -0.01 | 5.03 | 1.68 |
| 03/10/20 19:12:20 | 13530 | 12.00 | 2.38 | 0.12 | 0.13 | 5.03 | 1.70 |
| 03/10/20 19:12:50 | 13560 | 11.99 | 2.71 | 0.14 | 0.12 | 5.03 | 1.76 |
| 03/10/20 19:13:20 | 13590 | 11.98 | 3.08 | 0.10 | 0.02 | 5.03 | 1.80 |

**Cricket Valley Energy Center LLC**
**March 10, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,639 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,011 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,627 | lb/min |
| Duct Burner Fuel Flow | 174 | lb/min |
| Total Fuel Flow | 2,444,977 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.12 | in. Hg |
| Relative Humidity | 73 | % |
| Ambient Temperature | 46 | °F |
| Specific Humidity | 0.004740 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 232.6 | megawatts |
| Heat Input | 2,472 | MMBtu/hr |
| $NH_3$ Flow Rate | 149 | lb/hr |
| Meas. Stack Moisture | 6.7 | % |
| Stack Exhaust Flow (M19) | 49,882,005 | SCFH |

Data from: From PM Run PM U-00001 Base+DB-2

Base+Db Load, Run - 2-3

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 03/10/20 19:13:50 | 13620 | 11.98 | 2.86 | 0.11 | -0.04 | 5.04 | 1.76 |
| 03/10/20 19:14:20 | 13650 | 11.98 | 3.01 | 0.12 | -0.04 | 5.04 | 1.69 |
| 03/10/20 19:14:50 | 13680 | 11.97 | 2.49 | 0.24 | -0.01 | 5.04 | 1.67 |
| 03/10/20 19:15:20 | 13710 | 11.98 | 2.34 | 0.10 | -0.04 | 5.04 | 1.78 |
| 03/10/20 19:15:50 | 13740 | 11.97 | 2.37 | 0.10 | 0.03 | 5.03 | 1.85 |
| 03/10/20 19:16:20 | 13770 | 11.99 | 2.56 | 0.20 | -0.03 | 5.04 | 1.89 |
| 03/10/20 19:16:50 | 13800 | 11.97 | 2.45 | 0.15 | -0.02 | 5.04 | 1.91 |
| 03/10/20 19:17:20 | 13830 | 11.99 | 2.56 | 0.16 | -0.04 | 5.04 | 1.85 |
| 03/10/20 19:17:50 | 13860 | 11.99 | 2.38 | 0.12 | -0.04 | 5.04 | 1.86 |
| 03/10/20 19:18:20 | 13890 | 11.97 | 2.62 | 0.08 | 0.04 | 5.04 | 1.83 |
| 03/10/20 19:18:50 | 13920 | 11.98 | 2.33 | 0.08 | -0.05 | 5.04 | 1.79 |
| 03/10/20 19:19:20 | 13950 | 11.98 | 2.32 | 0.08 | -0.04 | 5.03 | 1.77 |
| 03/10/20 19:19:50 | 13980 | 11.98 | 2.40 | 0.08 | -0.04 | 5.03 | 1.82 |
| 03/10/20 19:20:20 | 14010 | 11.99 | 2.33 | 0.27 | 0.07 | 5.04 | 1.84 |
| 03/10/20 19:20:50 | 14040 | 11.99 | 3.01 | 0.12 | -0.03 | 5.04 | 1.84 |
| 03/10/20 19:21:20 | 14070 | 11.98 | 2.87 | 0.11 | -0.03 | 5.04 | 1.81 |
| 03/10/20 19:21:50 | 14100 | 11.98 | 2.36 | 0.12 | 0.01 | 5.04 | 1.81 |
| 03/10/20 19:22:20 | 14130 | 12.01 | 2.91 | 0.09 | 0.03 | 5.04 | 1.83 |
| 03/10/20 19:22:50 | 14160 | 11.98 | 2.40 | 0.18 | -0.04 | 5.04 | 1.80 |
| 03/10/20 19:23:20 | 14190 | 11.99 | 2.88 | 0.16 | 0.00 | 5.05 | 1.73 |
| 03/10/20 19:23:50 | 14220 | 11.98 | 2.83 | 0.14 | -0.04 | 5.05 | 1.74 |
| 03/10/20 19:24:20 | 14250 | 11.99 | 2.98 | 0.08 | -0.04 | 5.05 | 1.76 |
| 03/10/20 19:24:50 | 14280 | 12.02 | 3.36 | 0.18 | 0.03 | 5.04 | 1.74 |
| 03/10/20 19:25:20 | 14310 | 12.00 | 3.02 | 0.09 | -0.05 | 5.05 | 1.69 |
| 03/10/20 19:25:50 | 14340 | 12.01 | 2.42 | 0.26 | -0.03 | 5.04 | 1.71 |
| 03/10/20 19:26:20 | 14370 | 11.99 | 2.38 | 0.15 | -0.04 | 5.03 | 1.73 |
| 03/10/20 19:26:50 | 14400 | 11.98 | 2.41 | 0.10 | 0.03 | 5.04 | 1.71 |
| 03/10/20 19:27:20 | 14430 | 11.99 | 3.29 | 0.10 | -0.04 | 5.04 | 1.73 |
| 03/10/20 19:27:50 | 14460 | 11.98 | 2.83 | 0.20 | -0.01 | 5.04 | 1.72 |
| 03/10/20 19:28:20 | 14490 | 12.00 | 2.51 | 0.12 | -0.04 | 5.04 | 1.72 |
| 03/10/20 19:28:50 | 14520 | 11.99 | 2.51 | 0.10 | 0.01 | 5.03 | 1.72 |
| 03/10/20 19:29:20 | 14550 | 11.98 | 2.39 | 0.38 | -0.04 | 5.03 | 1.73 |
| 03/10/20 19:29:50 | 14580 | 11.99 | 2.34 | 0.11 | 0.01 | 5.04 | 1.68 |
| 03/10/20 19:30:20 | 14610 | 12.02 | 2.79 | 0.11 | 0.07 | 5.04 | 1.72 |
| 03/10/20 19:30:50 | 14640 | 11.98 | 2.42 | 0.13 | -0.04 | 5.04 | 1.77 |
| 03/10/20 19:31:20 | 14670 | 12.00 | 2.92 | 0.22 | -0.04 | 5.04 | 1.82 |
| 03/10/20 19:31:50 | 14700 | 11.97 | 2.81 | 0.11 | -0.04 | 5.04 | 1.79 |
| 03/10/20 19:32:20 | 14730 | 12.01 | 2.58 | 0.11 | -0.04 | 5.04 | 1.78 |
| 03/10/20 19:32:50 | 14760 | 11.99 | 2.43 | 0.08 | -0.04 | 5.04 | 1.78 |
| 03/10/20 19:33:20 | 14790 | 12.00 | 3.21 | 0.17 | -0.04 | 5.03 | 1.77 |
| 03/10/20 19:33:50 | 14820 | 11.98 | 3.02 | 0.27 | -0.04 | 5.03 | 1.81 |
| 03/10/20 19:34:20 | 14850 | 12.00 | 2.45 | 0.18 | 0.00 | 5.04 | 1.73 |
| 03/10/20 19:34:50 | 14880 | 11.98 | 2.41 | 0.08 | -0.04 | 5.04 | 1.69 |
| **RAW AVERAGE** | | **11.99** | **2.66** | **0.14** | **-0.01** | **5.03** | **1.71** |

| | | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|---|
| | **Serial Number:** | inst-02-0024 | inst-nx-0031 | inst-co-0029 | inst-th-0013 | inst-c2-0016 | inst-ir-0004 |
| | | (%) | (ppmvd) | (ppmvd) | (ppmvw) | (%) | |
| Bias | **Initial Zero** | 0.08 | 0.06 | -0.07 | -0.04 | -0.01 | |
| Bias | **Final Zero** | 0.07 | 0.06 | -0.06 | -0.04 | -0.03 | |
| Bias | **Avg. Zero** | 0.08 | 0.06 | -0.07 | -0.04 | -0.02 | |
| Bias | **Initial UpScale** | 12.08 | 4.94 | 5.02 | 3.32 | 8.82 | |
| Bias | **Final UpScale** | 12.01 | 5.17 | 5.03 | 3.21 | 8.94 | |
| Bias | **Avg. UpScale** | 12.04 | 5.06 | 5.03 | 3.27 | 8.88 | |
| **Upscale Cal Gas** | | 12.00 | 4.91 | 5.09 | 3.37 | 8.94 | |

| **EMISSIONS DATA** | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 11.95 | 2.55 | 0.21 | 0.00 | 5.08 | 1.83 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.68 | 0.14 | 0.00 | N/A | 1.21 |

Non-Bias Adjusted Averages Include: *

# EMISSION DATA RECORDS

## Reference Method Data
## Base+DB Load
## $PM_{10}$

## METHOD 201A (FRONT) AND 202 (BACK) SOURCE SAMPLING TITLE PAGE

| Source Information | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base+DB |
| **Fuel Type** | Gas, Natural |

| Test Information | | | |
|---|---|---|---|
| **Project #** | | bec-19-cricketvalley.ny-start#2 | |
| **Operator** | | Rob White | |
| **Date for Preliminary Run** | (mm/dd/yy) | 03/10/20 | |
| **Standard Temperature** | | 68 | °F |
| **Standard Pressure** | | 29.92 | in Hg |
| **Required Sample Vol.** | indust. spec. | 50 | scf |
| **Run Duration** | chk Subpart | 240 | minutes |
| **Unit Number** | | U-00002 | |
| **Base Run Number** | | PM U-00002 Base+DB | |
| **Number of Ports Available** | | 4 | |
| **Number of Ports Used** | | 4 | |
| **Port Inside Diameter** | | 6.00 | in |
| **Stack Shape** | | Circular | |

| Test Equipment Information | | | | | |
|---|---|---|---|---|---|
| **Run** | | **1** | **2** | **3** | |
| **Test Date** | (mm/dd/yy) | 03/10/20 | 03/11/20 | 03/11/20 | |
| **Load** | | Base+DB | Base+DB | Base+DB | % or w/DB |
| **Fuel F-Factor** | | 8638.67 | 8636.30 | 8636.30 | dscf/MMBtu |
| **Meter Box Number** | from ACS | Samp-cp-0030 | Samp-cp-0030 | Samp-cp-0030 | |
| **Meter Calibration Factor** | (Y) | 0.974 | 0.974 | 0.974 | |
| **Orifice Meter Coefficient** | ($\Delta H_@$) | 1.878 | 1.878 | 1.878 | in $H_2O$ |
| **Non-Console Manometer Used** | | No | No | No | |
| **Pitot Identification** | from ACS | 4187/10 | 4187/10 | 4187/10 | |
| **Pitot Tube Coefficient** | ($C_p$) | 0.7240 | 0.7240 | 0.7240 | |
| **Nozzle Number** | from ACS | 4b | 4b | 4b | must match cyc nozz tab (e.g. 3a, 4b, etc.) |
| **Nozzle Diameter** | ($D_n$) | 0.156 | 0.156 | 0.156 | in |
| **Probe Number** | from ACS | SAMP-PR-0133 | SAMP-PR-0133 | SAMP-PR-0133 | |
| **Probe Length** | | 120.0 | 120.0 | 120.0 | in |
| **(SS, Glass …. ) Liner Material** | from list | glass | glass | glass | |
| **Sample Case / Oven Number** | from ACS | SAMP-BH-0039 | SAMP-BH-0039 | SAMP-BH-0039 | |
| **Impinger Case Number** | from ACS | SAMP-SBC-0099 | SAMP-SBC-0099 | SAMP-SBC-0099 | |

| Testing Company Information | |
|---|---|
| **Company Name** | Air Hygiene International, Inc. (Tulsa, Oklahoma) |
| **Address** | 1600 W Tacoma Street |
| **City, State Zip** | Broken Arrow, Oklahoma 74012 |
| **Project Manager** | Rob White |
| **Phone Number** | (918) 307-8865 |
| **Fax Number** | (918) 307-9131 |

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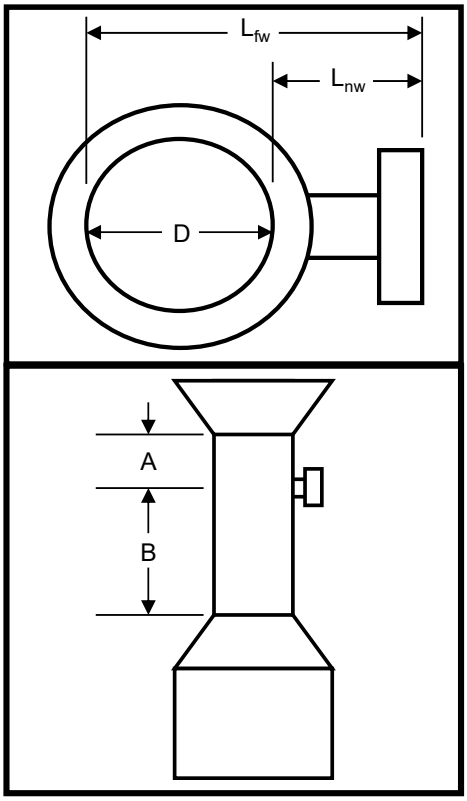
## METHOD 1 - SAMPLE AND VELOCITY TRAVERSES FOR CIRCULAR SOURCES

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Date** | 03/10/20 |
| **Sampling Location** | U-00002 Base+DB | **Stack Type** | Circular |
| **Operator** | Rob White | **Ports Available** | 4 |
| **Project #** | bec-19-cricketvalley.ny-start#2 | **Ports Used** | 4 |
| **Stack Size** | Large (>24 inch diameter) | **Port ID (inches)** | 6.00 |

| **Circular Stack or Duct Diameter** | | | |
|---|---|---|---|
| **Distance to Far Wall of Stack** | ($L_{fw}$) | 236.00 | in |
| **Distance to Near Wall of Stack** | ($L_{nw}$) | 8.00 | in |
| **Diameter of Stack** | (D) | 228.00 | in |
| **Area of Stack** | ($A_s$) | 283.53 | ft² |

| **Distance from Port to Disturbances** | | | |
|---|---|---|---|
| **Distance Upstream** | (A) | 200.40 | in |
| **Diameters Upstream** | ($A_D$) | 0.88 | diameters |
| **Distance Downstream** | (B) | 850.00 | in |
| **Diameters Downstream** | ($B_D$) | 3.73 | diameters |




| **Number of Traverse Points Required** | | | |
|---|---|---|---|
| **Diameters to Flow Disturbance** | | **Minimum Number of[1] Traverse Points** | |
| **Down Stream** | **Up Stream** | **Particulate Points** | **Velocity Points** |
| 2.00-4.99 | 0.50-1.24 | 24 | 16 |
| 5.00-5.99 | 1.25-1.49 | 20 | 16 |
| 6.00-6.99 | 1.50-1.74 | 16 | 12 |
| 7.00-7.99 | 1.75-1.99 | 12 | 12 |
| >= 8.00 | >=2.00 | 8 or 12[2] | 8 or 12[2] |
| **Upstream Spec** | | 24 | 16 |
| **Downstream Spec** | | 24 | 16 |
| **Traverse Pts Required** | | 24 | 16 |

[1] Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.

[2] 8 for Circular Stacks 12 to 24 inches
12 for Circular Stacks over 24 inches

○ Method 1 Trav

◉ 12 Point PM Trav (M201a ONLY)

○ Velocity

| **Number of Traverse Points Used** | | | |
|---|---|---|---|
| 4 | **Ports by** | 3 | **Across** |
| 12 | **Pts Used** | 12 | **Required** |

| **Location of Traverse Points in Circular Stacks** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point Number** | (Fraction of Stack Dimension from Inside Wall to Traverse Point) Number of Traverse Points Across the Stack | | | | | | | | |
| | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 |
| 1 | .146 | .067 | .044 | .032 | .026 | .021 | .018 | .016 | .014 |
| 2 | .854 | .250 | .146 | .105 | .082 | .067 | .057 | .049 | .044 |
| 3 | | .750 | .296 | .194 | .146 | .118 | .099 | .085 | .075 |
| 4 | | .933 | .704 | .323 | .226 | .177 | .146 | .125 | .109 |
| 5 | | | .854 | .677 | .342 | .250 | .201 | .169 | .146 |
| 6 | | | .956 | .806 | .658 | .356 | .269 | .220 | .188 |
| 7 | | | | .895 | .774 | .644 | .366 | .283 | .236 |
| 8 | | | | .968 | .854 | .750 | .634 | .375 | .296 |
| 9 | | | | | .918 | .823 | .731 | .625 | .382 |
| 10 | | | | | .974 | .882 | .799 | .717 | .618 |
| 11 | | | | | | .933 | .854 | .780 | .704 |
| 12 | | | | | | .979 | .901 | .831 | .764 |

| **Traverse Point Locations** | | | |
|---|---|---|---|
| **Traverse Point Number** | **Fraction of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
| | | in | in |
| **1** | 0.044 | 10 | 18 |
| **2** | 0.146 | 33 2/8 | 41 2/8 |
| **3** | 0.296 | 67 4/8 | 75 4/8 |
| **4** | | | |
| **5** | | | |
| **6** | | | |
| **7** | | | |
| **8** | | | |
| **9** | | | |

## METHOD 2 - DETERMINATION OF STACK GAS VELOCITY AND VOLUMETRIC FLOW RATE

| | | | | |
|---|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | | | |
| **Sampling Location** | U-00002 Base+DB | | | |
| **Operator** | Rob White | | | |
| **Project #** | bec-19-cricketvalley.ny-start#2 | | | |
| **Pitot Leak Check** | x | **PreTest** | x | **PostTest** |

| | | | |
|---|---|---|---|
| **Preliminary Run Date** | 03/10/20 | | |
| **Stack Type** | Circular | | |
| **Ports Available** | 4 | | |
| **Thermocouple ID** | SAMP-PR-0133 | | |
| **Pitot Coefficient** | 0.8198 | **Pitot Identification** | A4187 |

| **RM 201A or OTM 27 Blckag.** | **RM 201A or OTM 27 Pitot Coeff.** |
|---|---|
| 5.39E-04 | 0.7240 |

| **Stack Dimensions** | | | |
|---|---|---|---|
| **Area of Stack** | ($A_s$) | 283.53 | ft² |
| **Diameter of Stack** | (D) | 228.00 | in |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.14 | in Hg |
| **Static Pressure** | ($P_{static}$) | -0.89 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.07 | in Hg |

| **Stack Gas Composition** | | | |
|---|---|---|---|
| **Composition Data:** | **Estimated Composition** | | |
| **Carbon Dioxide Concentration** | ($\%CO_2$) | 11.90 | %vd |
| **Oxygen Concentration** | ($\%O_2$) | 5.20 | %vd |
| **Carbon Monoxide Concentration** | (ppmCO) | 0.00 | ppmvd |
| **Nitrogen Concentration** | ($\%N_2$) | 82.90 | %vd |
| **Stack Moisture Content** | ($B_{ws}$) | 8.00 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 30.11 | lb/lb-mole |
| **Stack Wet Molecular Weight** | ($M_w$) | 29.14 | lb/lb-mole |

| **Results** | | | |
|---|---|---|---|
| **Avg Stack Gas Velocity** | ($v_s$) | 52.41 | ft/sec |
| **Avg Stack Dry Std Flow Rate** | ($Q_{sd}$) | 40,756,962 | dscf/hr |
| **Avg Stack Dry Std Flow Rate** | ($Q_{sd}$) | 679,283 | dscf/min |
| **Avg Stack Wet Flow Rate** | ($Q_{aw}$) | 891,531 | acf/min |
| **Avg Stack Wet Std Flow Rate** | ($Q_{sw}$) | 44,301,046 | ascf/hr |

**40 CFR 60, Method 2G, Section 8.11.1 (but applies to all Method 2 type static pressure measurements):**
If a Type S probe is used for this measurement, position the probe at or between any traverse point(s) and rotate the probe until a null differential pressure reading is obtained. Disconnect the tubing from one of the pressure ports; read and record the ΔP. For pressure devices with one-directional scales, if a deflection in the positive direction is noted with the negative side disconnected, then the static pressure is positive. Likewise, if a deflection in the positive direction is noted with the positive side disconnected, then the static pressure is negative.

**Stack Cross Section Schematic**

| **Velocity Traverse Data** | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Run Number** | | PM U-00002 Base+DB-V1 | | | | | |
| **Run Time** | | 13:08 | **Start** | 13:24 | **End** | | |
| **Traverse Point** | **Velocity Head** ($\Delta p$) | **Null Angle** ($N_a$) | **Zero Deg Pressure** ($0°_a$) | **Stack Temp** ($t_s$) | **Local Velocity** ($v_{s(l)}$) | **Adjusted Velocity Pressure** | **Adjusted Velocity Pressure w/BF, if app** |
| | in $H_2O$ | deg | in $H_2O$ | °F | ft/sec | in $H_2O$ | in $H_2O$ |
| A-1 | 1.30 | 0 | 0.00 | 186 | 68.60 | 1.01 | 1.01 |
| A-2 | 1.20 | -5 | 0.15 | 185 | 65.86 | 0.94 | 0.94 |
| A-3 | 1.10 | 0 | 0.00 | 183 | 62.96 | 0.86 | 0.86 |
| B-1 | 1.30 | 0 | 0.00 | 182 | 68.39 | 1.01 | 1.01 |
| B-2 | 1.30 | -5 | 0.11 | 182 | 68.39 | 1.01 | 1.01 |
| B-3 | 1.20 | 0 | 0.00 | 180 | 65.60 | 0.94 | 0.94 |
| C-1 | 1.30 | 0 | 0.00 | 180 | 68.28 | 1.01 | 1.01 |
| C-2 | 1.40 | 0 | 0.00 | 179 | 70.81 | 1.09 | 1.09 |
| C-3 | 1.20 | 0 | 0.00 | 178 | 65.50 | 0.94 | 0.94 |
| D-1 | 1.30 | 0 | 0.00 | 177 | 68.12 | 1.01 | 1.01 |
| D-2 | 1.30 | 0 | 0.00 | 179 | 68.23 | 1.01 | 1.01 |
| D-3 | 1.20 | -5 | 0.14 | 179 | 65.55 | 0.94 | 0.94 |
| **Average** | 1.26 | 1 | | 181 | | 0.98 | 0.98 |
| | 1.12 | **= Square roots of Δp** | | | | | 0.99 |
| **Standard deviation of null angles =** | | | | 2.3 | | | |

## METHOD 201A and OTM 27 - DETERMINATION OF NOZZLE SIZE AND POST RUN QUALITY CONTROL

| Gas Analysis | Prelim | PM U-00002 Base+DB-1 | PM U-00002 Base+DB-2 | PM U-00002 Base+DB-3 | PM U-00002 Base+DB-4 | PM U-00002 Base+DB-5 | PM U-00002 Base+DB-6 | |
|---|---|---|---|---|---|---|---|---|
| Carbon Dioxide Content | 11.9 | 5.3 | 5.3 | 5.3 | | | | % |
| Oxygen Content | 5.2 | 11.7 | 11.7 | 11.7 | | | | % |
| Stack Moisture Content | 8.0 | 9.2 | 10.3 | 10.0 | | | | % |
| Nitrogen plus CO Content | 82.9 | 83.0 | 83.0 | 83.0 | | | | % |

| Corrected Velocity Head, $\Delta p_{2.5}$ (in $H_2O$) | Min. | 0.86 | Max. | 1.09 |
|---|---|---|---|---|

| Stack and Equipment Information | Prelim | PM U-00002 Base+DB-1 | PM U-00002 Base+DB-2 | PM U-00002 Base+DB-3 | PM U-00002 Base+DB-4 | PM U-00002 Base+DB-5 | PM U-00002 Base+DB-6 | |
|---|---|---|---|---|---|---|---|---|
| Barometric Pressure | 30.14 | 30.14 | 30.12 | 30.11 | | | | in Hg |
| Stack Static Pressure | -0.89 | -0.89 | -0.89 | -0.89 | | | | in $H_2O$ |
| Absolute Stack Pressure | 30.07 | 30.07 | 30.05 | 30.04 | | | | in Hg |
| Average Stack Temp | 181 | 189 | 182 | 181 | | | | 0.00 |
| Average Stack Temp | 641 | 649 | 642 | 641 | | | | °R |
| Average Meter Temp | 85 | 87 | 81 | 83 | | | | 0.00 |
| Orifice Meter Coefficient | 1.878 | 1.878 | 1.878 | 1.878 | | | | in $H_2O$ |
| Pitot Coefficient | 0.724 | 0.724 | 0.724 | 0.724 | | | | |
| Stack Dry Molecular Weight | 30.11 | 29.32 | 29.31 | 29.31 | | | | lb/lb mole |
| Stack Wet Molecular Weight | 29.14 | 28.28 | 28.15 | 28.18 | | | | lb/lb mole |
| Stack Viscosity | 195.85 | 200.23 | 197.41 | 197.64 | | | | µP |
| Cunningham Correction Factor, for a 2.25 µm particle | 1.08 | | | | | | | |
| Cunningham Correction Factor, for a 2.5 µm particle | | 1.07 | 1.07 | 1.07 | | | | |
| Prelim Cut Dia., Cyclone I, $D_{50LL}$, $N_{re}$<3162 | 10.35 | 2.42 | 2.28 | 2.36 | | | | µm |
| Middle Zone Dia., Cyclone I, $D_{50T}$, $N_{re}$<3162 | 10.67 | | | | | | | µm |
| Sampling Rate ($PM_{10}$ & $PM_{2.5}$ Cyc.), $N_{re}$<3162 | 0.46 | | | | | | | dscfm |
| Reynolds Number, Cyc I & IV, $N_{re}$<3162 | 2788.06 | 2692.23 | 2834.63 | 2759.69 | | | | |
| Dia. of 50% Prob. ($D_{50}$) Cyc IV ($N_{re}$<3162) | 2.37 | 2.42 | 2.29 | 2.36 | | | | µm |
| Sampling Rate, Cyc IV, $N_{re}$<3,162 | 0.46 | | | | | | | dscfm |
| Reynolds Number, Cyc IV, $N_{re}$<3162 | 2788.01 | 2692.23 | 2834.63 | 2759.69 | | | | |
| Prelim Cut Dia., Cyclone I, $D_{50LL\geq3162}$ | 10.63 | | | | | | | µm |
| Middle Zone Dia., Cyclone I, $D_{50T\geq3162}$ | 10.82 | | | | | | | µm |
| Sampling Rate ($PM_{10}$ & $PM_{2.5}$ Cyc.)≥3162 | 0.45 | | | | | | | dscfm |
| Reynolds Number, Cyc I & IV, $N_{re}$≥3162 | 2736.91 | | | | | | | |
| Dia. of 50% Prob. ($D_{50}$) CIV ($N_{re}$≥3162) | 2.29 | | | | | | | µm |
| Sampling Rate, Cyc IV, $N_{re}$≥3,162 | 4.54 | | | | | | | dscfm |
| Reynolds Number ≥ 3162 | 27369.31 | | | | | | | |
| Cyclone Flow Rate | 0.46 | 0.48 | 0.49 | 0.48 | | | | ft³/min |
| Recalculated $D_{50-1}$ for $C_{IV}$ | | 2.42 | 2.28 | 2.36 | | | | |
| Recalculated Cunninham | | 1.08 | 1.08 | 1.08 | | | | |
| Z | | 1.00 | 1.00 | 1.00 | | | | |
| Isokinetics | | 98.77 | 100.19 | 98.57 | | | | % |
| No. Sampling Pts. Outside Δp | | 0 | 0 | 0 | | | | |
| Sample Nozzle Diameter | | 0.156 | 0.156 | 0.156 | | | | in |

| Orifice Head and Nozzle Selection Calculation | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nozzle No. | 2a | 2b | 3a | 3b | 4a | 4b | 5a | 5b | 6a | 6b | 7a |
| Nozzle diameter, $D_n$, in. | 0.119 | 0.130 | 0.130 | 0.143 | 0.155 | 0.156 | 0.175 | 0.172 | 0.197 | 0.192 | 0.212 |
| Nozzle velocity, $v_n$, ft/sec | 99.71 | 83.55 | 83.55 | 69.05 | 59.03 | 58.02 | 46.11 | 47.73 | 36.38 | 38.30 | 31.42 |
| $R_{min}$ | 0.77 | 0.76 | 0.76 | 0.74 | 0.73 | 0.72 | 0.69 | 0.70 | 0.63 | 0.65 | 0.58 |
| $v_{min}$, ft/sec | 76.54 | 63.28 | 63.28 | 51.27 | 42.86 | 42.01 | 31.77 | 33.18 | 23.00 | 24.78 | 18.16 |
| $R_{max}$ | 1.22 | 1.23 | 1.23 | 1.24 | 1.25 | 1.25 | 1.27 | 1.27 | 1.30 | 1.29 | 1.32 |
| $v_{max}$, ft/sec | 121.92 | 102.73 | 102.73 | 85.56 | 73.73 | 72.55 | 58.56 | 60.46 | 47.24 | 49.46 | 41.50 |
| $\Delta p_{min}$, in. $H_2O$ @ $t_{s-50}o_F$ | 2.27 | 1.55 | 1.55 | 1.02 | 0.71 | 0.68 | 0.39 | 0.43 | 0.20 | 0.24 | 0.13 |
| $\Delta p_{min}$, in. $H_2O$ @ $t_s$ | 2.09 | 1.43 | 1.43 | 0.94 | 0.66 | 0.63 | 0.36 | 0.39 | 0.19 | 0.22 | 0.12 |
| $\Delta p_{max}$, in. $H_2O$ @ $t_s$ | 5.31 | 3.77 | 3.77 | 2.61 | 1.94 | 1.88 | 1.22 | 1.31 | 0.80 | 0.87 | 0.61 |
| $\Delta p_{min}$, in. $H_2O$ @ $t_{s+50}o_F$ | 4.92 | 3.50 | 3.50 | 2.42 | 1.80 | 1.74 | 1.14 | 1.21 | 0.74 | 0.81 | 0.57 |
| ΔH, in. $H_2O$ @ $t_s$+50°F | 0.379 | | | | | | | | | | |
| **ΔH, in. $H_2O$ @ $t_s$** | **0.441** | | | | | | | | | | |
| ΔH, in. $H_2O$ @ $t_s$-50°F | 0.519 | | | | | | | | | | |

## METHOD 3a - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

| | | | | | |
|---|---|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Preliminary Run Date** | 03/10/20 | | |
| **Sampling Location** | U-00002 Base+DB | **Operator** | Rob White | | |
| **Project #** | bec-19-cricketvalley.ny-start#2 | **# of Ports Used** | 1 (gas probe) | | |
| **Fuel Type** | Gas, Natural | **Min. Fuel Factor** | 1.600 | **Max. Fuel Factor** | 1.836 |

**Gas Analysis Data**

| **Run Number** | PM U-00002 Base+DB-1 | | **Date** | 03/10/20 | **Run Start Time** | 14:12 | **Run Stop Time** | 18:40 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 04:28 | 5.3 | 11.7 | 0.0 | 83.0 | 29.32 | 1.740 | 114.1 | YES |

**Gas Analysis Data**

| **Run Number** | PM U-00002 Base+DB-2 | | **Date** | 03/11/20 | **Run Start Time** | 06:23 | **Run Stop Time** | 11:17 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 04:54 | 5.3 | 11.7 | 0.0 | 83.0 | 29.31 | 1.742 | 113.9 | YES |

**Gas Analysis Data**

| **Run Number** | PM U-00002 Base+DB-3 | | **Date** | 03/11/20 | **Run Start Time** | 12:30 | **Run Stop Time** | 17:15 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 04:45 | 5.3 | 11.7 | 0.0 | 83.0 | 29.31 | 1.746 | 114.0 | YES |

## METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Preliminary Run Date** | 03/10/20 |
| **Sampling Location** | U-00002 Base+DB | **Operator** | Rob White |
| **Project #** | bec-19-cricketvalley.ny-start#2 | **Ports Used** | 4 |

| **Scale Daily Calibration** | | | | | |
|---|---|---|---|---|---|
| **Scale Number** | SAMP-SC-0028 | **Standard** | **Result** | **Difference** | **Pass/Fail** |
| **Date** | | (g) | (g) | (g) | (± 0.5 g) |
| **Preliminary Date** | 03/10/20 | 500 | 499.7 | -0.3 | Pass |
| **Test Day 1** | 03/11/20 | 500 | 499.7 | -0.3 | Pass |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | PM U-00002 Base+DB-1 | | **Date** | 03/10/20 | **Start Time** | 14:12 | **Stop Time** | 18:40 |
| **Meter Box Number** | | Samp-cp-0030 | | | | **Meter Cal Factor** | (Y) | 0.974 | |
| **Total Meter Volume** | | ($V_m$) | 101.590 | dcf | | **Barometric Pressure** | ($P_b$) | 30.14 | in Hg |
| **Average Stack Temp** | | $(t_s)_{avg}$ | 189 | °F | | **Stack Static Pressure** | ($P_{static}$) | -0.89 | in $H_2O$ |
| **Average Meter Temp** | | $(t_m)_{avg}$ | 87 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.44 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | Dry | Dry | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 515.40 | 590.10 | 777.00 | 868.30 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 358.70 | 590.10 | 747.40 | 848.50 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 156.7 | 0.0 | 29.6 | 19.8 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | | ($W_t$) | 206.10 | g | | **Water Vol Weighed** | $(V_{wsg(std)})$ | 9.718 | scf |
| **Std Meter Volume** | | $(V_{m(std)})$ | 96.288 | dscf | | **Sat. Moisture Content** | $(B_{ws(svp)})$ | 61.77 | % |
| **Calc Moisture Content** | | $(B_{ws(calc)})$ | 9.17 | % | | **Final Moisture Content** | ($B_{ws}$) | 9.17 | % |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | PM U-00002 Base+DB-2 | | **Date** | 03/11/20 | **Start Time** | 06:23 | **Stop Time** | 11:17 |
| **Meter Box Number** | | Samp-cp-0030 | | | | **Meter Cal Factor** | (Y) | 0.974 | |
| **Total Meter Volume** | | ($V_m$) | 105.540 | dcf | | **Barometric Pressure** | ($P_b$) | 30.12 | in Hg |
| **Average Stack Temp** | | $(t_s)_{avg}$ | 182 | °F | | **Stack Static Pressure** | ($P_{static}$) | -0.89 | in $H_2O$ |
| **Average Meter Temp** | | $(t_m)_{avg}$ | 81 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.44 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | Dry | Dry | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 569.60 | 597.00 | 687.40 | 912.10 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 373.70 | 596.80 | 658.00 | 891.60 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 195.9 | 0.2 | 29.4 | 20.5 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | | ($W_t$) | 246.00 | g | | **Water Vol Weighed** | $(V_{wsg(std)})$ | 11.599 | scf |
| **Std Meter Volume** | | $(V_{m(std)})$ | 101.167 | dscf | | **Sat. Moisture Content** | $(B_{ws(svp)})$ | 52.49 | % |
| **Calc Moisture Content** | | $(B_{ws(calc)})$ | 10.29 | % | | **Final Moisture Content** | ($B_{ws}$) | 10.29 | % |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | PM U-00002 Base+DB-3 | | **Date** | 03/11/20 | **Start Time** | 12:30 | **Stop Time** | 17:15 |
| **Meter Box Number** | | Samp-cp-0030 | | | | **Meter Cal Factor** | (Y) | 0.974 | |
| **Total Meter Volume** | | ($V_m$) | 102.600 | dcf | | **Barometric Pressure** | ($P_b$) | 30.11 | in Hg |
| **Average Stack Temp** | | $(t_s)_{avg}$ | 181 | °F | | **Stack Static Pressure** | ($P_{static}$) | -0.89 | in $H_2O$ |
| **Average Meter Temp** | | $(t_m)_{avg}$ | 83 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.44 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | Dry | Dry | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 540.00 | 589.30 | 806.30 | 888.80 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 359.10 | 589.50 | 777.00 | 868.30 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 180.9 | -0.2 | 29.3 | 20.5 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | | ($W_t$) | 230.50 | g | | **Water Vol Weighed** | $(V_{wsg(std)})$ | 10.868 | scf |
| **Std Meter Volume** | | $(V_{m(std)})$ | 97.841 | dscf | | **Sat. Moisture Content** | $(B_{ws(svp)})$ | 52.31 | % |
| **Calc Moisture Content** | | $(B_{ws(calc)})$ | 10.00 | % | | **Final Moisture Content** | ($B_{ws}$) | 10.00 | % |

## METHOD 201A (FRONT) AND 202 (BACK) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#2 |

| | |
|---|---|
| **Date** | 03/10/20 |
| **Operator** | Rob White |
| **Run Number** | PM U-00002 Base+DB-1 |

| **Filter #** |
|---|
| 19031837 |
| PM U-00002 Base+DB-1-CPM |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | 0.7240 | 4187/10 |
| **Average Stack Temp** | ($t_s$) | 189.0 | °F |
| **Average Meter Temp** | ($t_m$) | 87.2 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.878 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | 1.12 | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | 9.17 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.32 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.75 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | 0.35 | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | 0.00 | in $H_2O$ | 3.4 | in $H_2O$ for | 15.0 | sec [≥15] |
| PASS | **Pre (-)** | 0.00 | in $H_2O$ | 3.7 | in $H_2O$ for | 15.0 | sec [≥15] |
| | **Post (+)** | 0.00 | in $H_2O$ | 3.6 | in $H_2O$ for | 15.0 | sec [≥15] |
| | **Post (-)** | 0.00 | in $H_2O$ | 4.0 | in $H_2O$ for | 15.0 | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | Samp-cp-0030 | | |
| **Meter Cal Factor** | (Y) | 0.974 | |
| **Nozzle Number** | 4b | | |
| **Average Nozzle Diameter** | ($D_{ns}$) | 0.1560 | in |
| **Suggested Nozzle Diameter** | ($D_n$) | 0.2187 | in |
| **Probe Number** | SAMP-PR-0133 | | in |
| **Probe Length** | 120 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | SAMP-BH-0039 | | |
| **Impinger Case Number** | SAMP-SBC-0099 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.14 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | -0.89 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.07 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.28 | in Hg |

| **Nozzle Measurements** | | | **ID: 4b** | |
|---|---|---|---|---|
| **Pre** | 0.156 | 0.156 | 0.156 | **PASS** |
| **Post** | 0.156 | 0.156 | 0.156 | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 14:12 | **End** | 18:40 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 358.7 | 590.1 | 747.4 | 848.5 | | | | |
| **Post** | 515.4 | 590.1 | 777.0 | 868.3 | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Wash Volumes** | | | | | | ml |
| | | | | | | ml |

| **Identification Nos.** | | Samp-cp-0030 | Samp-cp-0030 | Samp-cp-0030 | | | SAMP-PR-0133 | SAMP-PR-0133 | SAMP-BH-0039 | SAMP-SBC-0099 | 1048 | 1018 | Samp-cp-0030 | | Samp-cp-0030 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head ($\Delta p$)** | **Desired Orifice ΔH ($\Delta H_@$)** | **Actual Orifice ΔH ($\Delta H_@$)** | **Stack Temp ($t_s$)** | **Probe Temp (248±25°F)** | **Filter Temp (248±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤85°F)** | **CPM Filter Temp (76.5±8.5°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 675.750 | 1.30 | 0.441 | 0.44 | 187 | 245 | 251 | 64 | 76 | 73 | 78 | 78 | 3.5 | 1.14 | 61.55 | 8.483 | 101.0 | 100.411 |
| A-2 | 23.0 | 00:23:00 | 684.550 | 1.20 | 0.441 | 0.44 | 188 | 250 | 252 | 65 | 77 | 76 | 81 | 81 | 3.5 | 1.10 | 59.18 | 15.816 | 97.8 | 95.159 |
| A-3 | 45.3 | 00:45:15 | 692.200 | 1.20 | 0.441 | 0.44 | 186 | 250 | 248 | 66 | 78 | 78 | 82 | 82 | 3.5 | 1.10 | 59.09 | 23.902 | 99.7 | 96.403 |
| B-1 | 67.5 | 01:07:30 | 700.650 | 1.30 | 0.441 | 0.44 | 188 | 254 | 250 | 65 | 77 | 78 | 86 | 86 | 3.5 | 1.14 | 61.60 | 31.614 | 97.8 | 95.105 |
| B-2 | 90.5 | 01:30:30 | 708.770 | 1.10 | 0.441 | 0.44 | 187 | 248 | 251 | 62 | 78 | 79 | 88 | 88 | 3.5 | 1.05 | 56.62 | 38.504 | 97.6 | 93.804 |
| B-3 | 111.8 | 01:51:45 | 716.050 | 1.30 | 0.441 | 0.44 | 189 | 248 | 254 | 64 | 75 | 77 | 90 | 90 | 3.5 | 1.14 | 61.65 | 46.424 | 97.1 | 93.796 |
| C-1 | 134.8 | 02:14:45 | 724.450 | 1.30 | 0.441 | 0.44 | 190 | 250 | 251 | 65 | 76 | 77 | 89 | 89 | 3.5 | 1.14 | 61.70 | 54.605 | 97.2 | 94.239 |
| C-2 | 157.8 | 02:37:45 | 733.110 | 1.40 | 0.441 | 0.44 | 191 | 253 | 255 | 66 | 77 | 78 | 91 | 91 | 3.5 | 1.18 | 64.07 | 64.262 | 98.6 | 96.260 |
| C-3 | 181.8 | 03:01:45 | 743.370 | 1.30 | 0.441 | 0.44 | 190 | 256 | 251 | 63 | 71 | 75 | 91 | 91 | 3.5 | 1.14 | 61.70 | 72.507 | 98.6 | 96.410 |
| D-1 | 204.8 | 03:24:45 | 752.130 | 1.20 | 0.441 | 0.44 | 191 | 254 | 251 | 64 | 72 | 73 | 90 | 90 | 3.5 | 1.10 | 59.32 | 80.559 | 99.1 | 96.618 |
| D-2 | 227.0 | 03:47:00 | 760.670 | 1.20 | 0.441 | 0.44 | 190 | 252 | 250 | 63 | 74 | 76 | 90 | 90 | 4.0 | 1.10 | 59.28 | 87.980 | 98.7 | 96.099 |
| D-3 | 249.3 | 04:09:15 | 768.540 | 1.30 | 0.441 | 0.44 | 191 | 251 | 250 | 66 | 76 | 77 | 90 | 90 | 4.0 | 1.14 | 61.74 | 96.278 | 98.8 | 96.278 |
| Last Pt | 272.3 | 04:32:15 | 777.340 | | | | | | | | | | | | | | | | | |
| **Final Val** | 272.3 | 04:32:15 | 777.340 | | | | | | | | | | | **Max Vac** | 4.0 | **Final Values** | | 96.278 | 98.8 | |
| **Average Values** | | | | 1.26 | | 0.44 | 189 | 251 | 251 | 64 | 76 | 76 | 87 | 87 | | 1.12 | 60.63 | | | |
| | | | | | | | | | | | | | 87 | | | | | | | |

| **Actual** | **DP to** | **Point-by-point** | **Point-by-point** | **Point** |
|---|---|---|---|---|
| **Actual Nozzle Diameter ($D_{na}$)** | **DP to DH Iso Factor (K)** | **Point-by-point Meter Volume ($V_m$)$_{std}$** | **Point-by-point Percent IsoKinetic (I)** | **Point Weighted Average Isokinetics** |
| in | | dscf | % | ($V_m$)$_{std}$ x (I) |
| 0.156 | 0.35 | 8.483 | 101.0 | 857.1 |
| 0.156 | 0.35 | 7.333 | 94.0 | 689.7 |
| 0.156 | 0.35 | 8.085 | 103.5 | 837.1 |
| 0.156 | 0.35 | 7.713 | 91.9 | 709.1 |
| 0.156 | 0.35 | 6.890 | 96.6 | 665.2 |
| 0.156 | 0.35 | 7.921 | 94.5 | 748.4 |
| 0.156 | 0.35 | 8.181 | 97.7 | 798.9 |
| 0.156 | 0.35 | 9.657 | 106.5 | 1028.9 |
| 0.156 | 0.35 | 8.245 | 98.4 | 811.6 |
| 0.156 | 0.35 | 8.053 | 103.5 | 833.5 |
| 0.156 | 0.35 | 7.421 | 95.3 | 707.3 |
| 0.156 | 0.35 | 8.298 | 99.1 | 822.6 |
| | | | | |
| 0.156 | 0.35 | 96.278 | | |

| **RM 201A Calculations** | | | | | |
|---|---|---|---|---|---|
| **Trav. Point** | **First Point** | **First Point** | **Subs. Point** | **Velocity** | |
| **Trav. Point Estimated Dwell Times ($t_1$), ($t_n$)** | **First Point Dwell Times ($t_1$)** | **First Point Vel. Head Prelim. Trav. ($\Delta p_{RM2}$)** | **Subs. Point Dwell Times Current Trav. ($t_n$)** | **Velocity Head Current Trav. ($\Delta p_{201A}$)** | **Violations** |
| min | min | in $H_2O$ | min | in $H_2O$ | |
| 23.00 | 23.03 | 1.30 | | 1.30 | 0 |
| 22.25 | 22.13 | 1.20 | 22.13 | 1.20 | 0 |
| 22.25 | 22.13 | 1.20 | 22.13 | 1.20 | 0 |
| 23.00 | 23.03 | 1.30 | | 1.30 | 0 |
| 21.25 | 21.18 | 1.10 | 21.18 | 1.10 | 0 |
| 23.00 | 23.03 | 1.30 | 23.03 | 1.30 | 0 |
| 23.00 | 23.03 | 1.30 | | 1.30 | 0 |
| 24.00 | 23.90 | 1.40 | 23.90 | 1.40 | 0 |
| 23.00 | 23.03 | 1.30 | 23.03 | 1.30 | 0 |
| 22.25 | 22.13 | 1.20 | | 1.20 | 0 |
| 22.25 | 22.13 | 1.20 | 22.13 | 1.20 | 0 |
| 23.00 | 23.03 | 1.30 | 23.03 | 1.30 | 0 |
| | | | | | |

Notes:

Z must be between 0.99 and 1.01, but the initial calculation is based on assumptions of the Cunniham Correction Factor and the Reynolds Number. In cases where your Z value is not between the limits and is producing an error, you need to run a second iteration based on the re-calculated numbers. To do this, copy the value in "Recalculated Cunninham, C =" [BH189] and do a "paste special value only" into "Calculated Cunninham, C =" [BH174]. This sets the initially calculated C equal to the C determined during this test run. At this point the program may recognize the second iteration and your error may go away. If it doesn't it is probably because it is having difficulties deciding between the Reynolds number at the threshold.

| | | | |
|---|---|---|---|
| | Stack Gas Viscosity (μs) | 200.23 | μP |
| | Cyclone Flow Rate ($Q_a$) | 0.48 | ft³/min |
| | Dia. of 50% Prob. ($D_{50}$) CI | 10.71 | μm |
| >> | Calculated Cunninham, C | 1.08 | |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{re}$<3162) | 10.25 | μm |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{re}$≥3162) | | μm |
| | Middle of Zone Dia. ($D_{50T}$) CI | 10.63 | μm |
| | Sampling Rate ($PM_{10}$ and $PM_{2.5}$ Cyc.) | 0.48 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$<3162) | 2.42 | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{re}$<3162) | 0.48 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$≥3162) | | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{re}$≥3162) | | dscfm |
| | Actual Test Run C (2.5 μm) | 1.07 | |
| | Actual Test Run $N_{RE}$ | 2692.23 | |
| | Actual Particle Cut Diameter for CI | 10.71 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$<3162) | 2.42 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$≥3162) | | μm |
| << | Recalculated Cunninham, C = | 1.08 | |
| | Recalculated $D_{50-1}$ for $C_{IV}$ = | 2.42 | |
| >> | Z (limits 0.99 to 1.01) = | 1.00 | |
| | Isokinetics (I) (80 to 120%) = | 98.77 | % |
| | No. Sampling Pts. Outside Δp = | 0 | |
| | Sample Nozzle Diameter = | 0.156 | in |
| | $\Delta p_{min}$ | 0.630 | in $H_2O$ |
| | $\Delta p_{max}$ | 1.879 | in $H_2O$ |

## METHOD 201A (FRONT) AND 202 (BACK) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#2 |

| | |
|---|---|
| **Date** | 03/11/20 |
| **Operator** | Rob White |
| **Run Number** | PM U-00002 Base+DB-2 |

| **Filter #** |
|---|
| 19031838 |
| PM U-00002 Base+DB-2-CPM |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | 0.7240 | 4187/10 |
| **Average Stack Temp** | ($t_s$) | 181.5 | °F |
| **Average Meter Temp** | ($t_m$) | 80.7 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.878 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | 1.14 | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | 10.29 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.31 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.35 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | 0.35 | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec ≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec ≥60] |
| **Pitot** | **Pre (+)** | 0.000 | in $H_2O$ | 3.2 | in $H_2O$ for | 15.0 | sec ≥15] |
| PASS | **Pre (-)** | 0.000 | in $H_2O$ | 3.5 | in $H_2O$ for | 15.0 | sec ≥15] |
| | **Post (+)** | 0.000 | in $H_2O$ | 3.4 | in $H_2O$ for | 15.0 | sec ≥15] |
| | **Post (-)** | 0.000 | in $H_2O$ | 4.1 | in $H_2O$ for | 15.0 | sec ≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | Samp-cp-0030 | | |
| **Meter Cal Factor** | (Y) | 0.974 | |
| **Nozzle Number** | 4b | | |
| **Average Nozzle Diameter** | ($D_{ns}$) | 0.1560 | in |
| **Suggested Nozzle Diameter** | ($D_n$) | 0.1497 | in |
| **Probe Number** | SAMP-PR-0133 | | in |
| **Probe Length** | 120 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | SAMP-BH-0039 | | |
| **Impinger Case Number** | SAMP-SBC-0099 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.12 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | -0.89 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.05 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.26 | in Hg |

| **Nozzle Measurements** | | | **ID: 4b** | |
|---|---|---|---|---|
| **Pre** | 0.156 | 0.156 | 0.156 | **PASS** |
| **Post** | 0.156 | 0.156 | 0.156 | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 06:23 | **End** | 11:17 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 373.7 | 596.8 | 658.0 | 891.6 | | | | |
| **Post** | 569.6 | 597.0 | 687.4 | 912.1 | | | | |

| **Wash Volumes** | | | | | ml |
|---|---|---|---|---|---|
| | | | | | ml |

| **Identification Nos.** | | Samp-cp-0030 | Samp-cp-0030 | Samp-cp-0030 | | | SAMP-PR-0133 | SAMP-PR-0133 | SAMP-BH-0039 | SAMP-SBC-0099 | 1026 | 8082 | Samp-cp-0030 | | Samp-cp-0030 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head ($\Delta p$)** | **Desired Orifice ΔH ($\Delta H_a$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (248±25°F)** | **Filter Temp (248±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤85°F)** | **CPM Filter Temp (76.5±8.5°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 778.770 | 1.30 | 0.441 | 0.44 | 183 | 250 | 250 | 42 | 58 | 72 | 67 | 67 | 3.5 | 1.14 | 61.52 | 8.162 | 97.9 | 98.570 |
| A-2 | 23.0 | 00:23:00 | 787.070 | 1.20 | 0.441 | 0.44 | 181 | 252 | 260 | 42 | 41 | 70 | 71 | 71 | 3.5 | 1.10 | 59.02 | 16.019 | 99.6 | 98.329 |
| A-3 | 45.3 | 00:45:15 | 795.120 | 1.40 | 0.441 | 0.44 | 182 | 253 | 261 | 42 | 42 | 72 | 75 | 75 | 3.5 | 1.18 | 63.79 | 25.474 | 101.5 | 102.172 |
| B-1 | 69.3 | 01:09:15 | 804.880 | 1.30 | 0.441 | 0.44 | 181 | 251 | 248 | 45 | 47 | 71 | 81 | 81 | 4.0 | 1.14 | 61.43 | 33.473 | 100.1 | 100.782 |
| B-2 | 92.3 | 01:32:15 | 813.230 | 1.30 | 0.441 | 0.44 | 182 | 250 | 251 | 45 | 48 | 72 | 81 | 81 | 4.0 | 1.14 | 61.47 | 42.296 | 101.3 | 101.933 |
| B-3 | 115.3 | 01:55:15 | 822.440 | 1.40 | 0.441 | 0.44 | 182 | 252 | 248 | 45 | 49 | 70 | 81 | 81 | 4.0 | 1.18 | 63.79 | 51.263 | 100.9 | 102.250 |
| C-1 | 139.3 | 02:19:15 | 831.800 | 1.30 | 0.441 | 0.44 | 179 | 251 | 249 | 47 | 45 | 71 | 80 | 80 | 4.0 | 1.14 | 61.33 | 59.766 | 101.1 | 102.312 |
| C-2 | 162.3 | 02:42:15 | 840.660 | 1.20 | 0.441 | 0.44 | 182 | 253 | 250 | 47 | 46 | 72 | 83 | 83 | 4.0 | 1.10 | 59.06 | 67.068 | 100.3 | 100.965 |
| C-3 | 184.5 | 03:04:30 | 848.310 | 1.30 | 0.441 | 0.44 | 181 | 254 | 251 | 48 | 48 | 73 | 84 | 84 | 4.0 | 1.14 | 61.43 | 75.937 | 101.0 | 101.646 |
| D-1 | 207.5 | 03:27:30 | 857.620 | 1.40 | 0.441 | 0.44 | 181 | 255 | 253 | 50 | 51 | 73 | 87 | 87 | 4.0 | 1.18 | 63.74 | 84.616 | 100.5 | 101.521 |
| D-2 | 231.5 | 03:51:30 | 866.780 | 1.40 | 0.441 | 0.44 | 183 | 249 | 252 | 51 | 52 | 74 | 89 | 89 | 4.0 | 1.18 | 63.84 | 93.424 | 100.2 | 101.560 |
| D-3 | 255.5 | 04:15:30 | 876.110 | 1.20 | 0.441 | 0.44 | 181 | 250 | 251 | 52 | 54 | 75 | 89 | 89 | 4.0 | 1.10 | 59.02 | 101.165 | 100.2 | 101.165 |
| Last Pt | 277.8 | 04:37:45 | 884.310 | | | | | | | | | | | | | | | | | |
| **Final Val** | 277.8 | 04:37:45 | 884.310 | | | | | | | | | | | **Max Vac** | 4.0 | **Final Values** | | 101.165 | 100.2 | |
| **Average Values** | | | | 1.31 | | 0.44 | 182 | 252 | 252 | 46 | 48 | 72 | 81 | 81 | | 1.14 | 61.62 | | | |
| | | | | | | | | | | | | | 81 | | | | | | | |

| **Actual Actual Nozzle Diameter ($D_{na}$)** | **DP to DP to DH Iso Factor (K)** | **Point-by-point Point-by-point Meter Volume ($V_m$)$_{std}$** | **Point-by-point Percent IsoKinetic (I)** | **Point Point Weighted Average Isokinetics** |
|---|---|---|---|---|
| in | | dscf | % | ($V_m$)$_{std}$ x (I) |
| 0.156 | 0.35 | 8.162 | 97.9 | 799.4 |
| 0.156 | 0.35 | 7.857 | 101.3 | 795.7 |
| 0.156 | 0.35 | 9.455 | 104.7 | 989.7 |
| 0.156 | 0.35 | 7.999 | 95.8 | 766.6 |
| 0.156 | 0.35 | 8.823 | 105.8 | 933.3 |
| 0.156 | 0.35 | 8.967 | 99.3 | 890.2 |
| 0.156 | 0.35 | 8.503 | 101.7 | 864.9 |
| 0.156 | 0.35 | 7.302 | 94.2 | 687.7 |
| 0.156 | 0.35 | 8.870 | 106.3 | 942.5 |
| 0.156 | 0.35 | 8.679 | 96.0 | 833.3 |
| 0.156 | 0.35 | 8.808 | 97.6 | 859.6 |
| 0.156 | 0.35 | 7.741 | 99.8 | 772.4 |
| | | | | |
| 0.156 | 0.35 | 101.165 | | |

| **RM 201A Calculations** | | | | | |
|---|---|---|---|---|---|
| **Trav. Point Trav. Point Estimated Dwell Times ($t_1$), ($t_n$)** | **First Point First Point Dwell Times ($t_1$)** | **First Point Vel. Head Current Trav. ($\Delta p_{RM2}$)** | **Subs. Point Subs. Point Dwell Times Current Trav. ($t_n$)** | **Velocity Velocity Head Current Trav. ($\Delta p_{201A}$)** | **Violations** |
| min | min | in $H_2O$ | min | in $H_2O$ | |
| 23.00 | 23.03 | 1.30 | | 1.30 | 0 |
| 22.25 | 22.13 | 1.20 | 22.13 | 1.20 | 0 |
| 24.00 | 23.90 | 1.40 | 23.90 | 1.40 | 0 |
| 23.00 | 23.03 | 1.30 | | 1.30 | 0 |
| 23.00 | 23.03 | 1.30 | 23.03 | 1.30 | 0 |
| 24.00 | 23.90 | 1.40 | 23.90 | 1.40 | 0 |
| 23.00 | 23.03 | 1.30 | | 1.30 | 0 |
| 22.25 | 22.13 | 1.20 | 22.13 | 1.20 | 0 |
| 23.00 | 23.03 | 1.30 | 23.03 | 1.30 | 0 |
| 24.00 | 23.90 | 1.40 | | 1.40 | 0 |
| 24.00 | 23.90 | 1.40 | 23.90 | 1.40 | 0 |
| 22.25 | 22.13 | 1.20 | 22.13 | 1.20 | 0 |
| | | | | | |

Z must be between 0.99 and 1.01, but the initial calculation is based on assumptions of the Cunniham Correction Factor and the Reynolds Number. In cases where your Z value is not between the limits and is producing an error, you need to run a second iteration based on the re-calculated numbers. To do this, copy the value in "Recalculated Cunninham, C =" [BH189] and do a "paste special value only" into "Calculated Cunninham, C =" [BH174]. This sets the initially calculated C equal to the C determined during this test run. At this point the program may recognize the second iteration and your error may go away. If it doesn't it is probably because it is having difficulties deciding between the Reynolds number at the threshold.

| | | | |
|---|---|---|---|
| | Stack Gas Viscosity (μs) | 197.41 | μP |
| | Cyclone Flow Rate ($Q_s$) | 0.49 | ft³/min |
| | Dia. of 50% Prob. ($D_{50}$) CI | 10.36 | μm |
| >> | Calculated Cunninham, C | 1.08 | |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{Re}$<3162) | 10.28 | μm |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{Re}$≥3162) | | μm |
| | Middle of Zone Dia. ($D_{50T}$) CI | 10.64 | μm |
| | Sampling Rate ($PM_{10}$ and $PM_{2.5}$ Cyc.) | 0.47 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$<3162) | 2.28 | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{Re}$<3162) | 0.49 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$≥3162) | | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{Re}$≥3162) | | dscfm |
| | Actual Test Run C (2.5 μm) | 1.07 | |
| | Actual Test Run $N_{RE}$ | 2834.63 | |
| | Actual Particle Cut Diameter for CI | 10.36 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$<3162) | 2.29 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$≥3162) | | μm |
| << | Recalculated Cunninham, C = | 1.08 | |
| | Recalculated $D_{50-1}$ for $C_{IV}$ = | 2.28 | |
| >> | Z (limits 0.99 to 1.01) = | 1.00 | |
| | Isokinetics (I) (80 to 120%) = | 100.19 | % |
| | No. Sampling Pts. Outside Δp = | 0 | |
| | Sample Nozzle Diameter = | 0.156 | in |
| | $\Delta p_{min}$ | 0.630 | in $H_2O$ |
| | $\Delta p_{max}$ | 1.879 | in $H_2O$ |

Notes:

## METHOD 201A (FRONT) AND 202 (BACK) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#2 |

| | |
|---|---|
| **Date** | 03/11/20 |
| **Operator** | Rob White |
| **Run Number** | PM U-00002 Base+DB-3 |

| **Filter #** |
|---|
| 19031825 |
| PM U-00002 Base+DB-3-CPM |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | 0.7240 | 4187/10 |
| **Average Stack Temp** | ($t_s$) | 181.3 | °F |
| **Average Meter Temp** | ($t_m$) | 83.3 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.878 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | 1.13 | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | 10.00 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.31 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.36 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | 0.35 | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec ≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | 0.00 | in $H_2O$ | 3.1 | in $H_2O$ for | 15.0 | sec [≥15] |
| PASS | **Pre (-)** | 0.00 | in $H_2O$ | 3.3 | in $H_2O$ for | 15.0 | sec [≥15] |
| | **Post (+)** | 0.00 | in $H_2O$ | 3.2 | in $H_2O$ for | 15.0 | sec [≥15] |
| | **Post (-)** | 0.00 | in $H_2O$ | 3.6 | in $H_2O$ for | 15.0 | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | Samp-cp-0030 | | |
| **Meter Cal Factor** | (Y) | 0.974 | |
| **Nozzle Number** | 4b | | |
| **Average Nozzle Diameter** | ($D_{ns}$) | 0.1560 | in |
| **Suggested Nozzle Diameter** | ($D_n$) | 0.1519 | in |
| **Probe Number** | SAMP-PR-0133 | | in |
| **Probe Length** | 120 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | SAMP-BH-0039 | | |
| **Impinger Case Number** | SAMP-SBC-0099 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.11 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | -0.89 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.04 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.25 | in Hg |

| **Nozzle Measurements** | | | **ID: 4b** | |
|---|---|---|---|---|
| **Pre** | 0.156 | 0.156 | 0.156 | **PASS** |
| **Post** | 0.156 | 0.156 | 0.156 | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 12:30 | **End** | 17:15 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 359.1 | 589.5 | 777.0 | 868.3 | | | | |
| **Post** | 540.0 | 589.3 | 806.3 | 888.8 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | Samp-cp-0030 | Samp-cp-0030 | Samp-cp-0030 | | | SAMP-PR-0133 | SAMP-PR-0133 | SAMP-BH-0039 | SAMP-SBC-0099 | 1048 | 1018 | Samp-cp-0030 | | Samp-cp-0030 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head ($\Delta p$)** | **Desired Orifice ΔH ($\Delta H_@$)** | **Actual Orifice ΔH ($\Delta H_@$)** | **Stack Temp ($t_s$)** | **Probe Temp (248±25°F)** | **Filter Temp (248±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤85°F)** | **CPM Filter Temp (76.5±8.5°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 884.600 | 1.30 | 0.441 | 0.44 | 182 | 252 | 260 | 55 | 59 | 71 | 78 | 78 | 3.5 | 1.14 | 61.45 | 8.108 | 97.0 | 96.949 |
| A-2 | 23.0 | 00:23:00 | 893.020 | 1.40 | 0.441 | 0.44 | 181 | 250 | 261 | 56 | 61 | 73 | 78 | 78 | 3.5 | 1.18 | 63.72 | 17.507 | 100.6 | 102.437 |
| A-3 | 47.0 | 00:47:00 | 902.780 | 1.30 | 0.441 | 0.44 | 180 | 252 | 261 | 57 | 62 | 71 | 82 | 82 | 3.5 | 1.14 | 61.36 | 25.690 | 99.7 | 100.924 |
| B-1 | 70.0 | 01:10:00 | 911.340 | 1.30 | 0.441 | 0.44 | 182 | 250 | 254 | 54 | 62 | 72 | 82 | 82 | 3.5 | 1.14 | 61.45 | 34.063 | 99.8 | 100.725 |
| B-2 | 93.0 | 01:33:00 | 920.100 | 1.20 | 0.441 | 0.44 | 183 | 251 | 255 | 55 | 56 | 73 | 84 | 85 | 4.0 | 1.10 | 59.09 | 41.685 | 99.5 | 99.465 |
| B-3 | 115.3 | 01:55:15 | 928.110 | 1.40 | 0.441 | 0.44 | 181 | 250 | 253 | 57 | 57 | 74 | 86 | 86 | 4.0 | 1.18 | 63.72 | 50.642 | 99.4 | 100.012 |
| C-1 | 139.3 | 02:19:15 | 937.550 | 1.40 | 0.441 | 0.44 | 180 | 252 | 254 | 50 | 53 | 72 | 85 | 85 | 4.0 | 1.18 | 63.67 | 59.502 | 99.1 | 100.234 |
| C-2 | 163.3 | 02:43:15 | 946.870 | 1.20 | 0.441 | 0.44 | 181 | 250 | 251 | 51 | 54 | 73 | 85 | 85 | 4.0 | 1.10 | 58.99 | 66.803 | 98.6 | 99.034 |
| C-3 | 185.5 | 03:05:30 | 954.550 | 1.30 | 0.441 | 0.44 | 183 | 252 | 253 | 55 | 55 | 74 | 85 | 85 | 4.0 | 1.14 | 61.50 | 75.055 | 98.6 | 98.993 |
| D-1 | 208.5 | 03:28:30 | 963.230 | 1.30 | 0.441 | 0.44 | 182 | 251 | 252 | 54 | 55 | 75 | 84 | 84 | 4.0 | 1.14 | 61.45 | 84.045 | 99.5 | 99.838 |
| D-2 | 231.5 | 03:51:30 | 972.670 | 1.20 | 0.441 | 0.44 | 181 | 253 | 255 | 55 | 55 | 75 | 85 | 85 | 4.0 | 1.10 | 58.99 | 91.222 | 99.0 | 98.862 |
| D-3 | 253.8 | 04:13:45 | 980.220 | 1.10 | 0.441 | 0.44 | 180 | 251 | 262 | 56 | 57 | 74 | 85 | 85 | 4.0 | 1.05 | 56.44 | 97.858 | 98.6 | 97.858 |
| Last Pt | 275.0 | 04:35:00 | 987.200 | | | | | | | | | | | | | | | | | |
| **Final Val** | 275.0 | 04:35:00 | 987.200 | | | | | | | | | | | **Max Vac** | 4.0 | **Final Values** | | 97.858 | 98.6 | |
| **Average Values** | | | | 1.28 | | 0.44 | 181 | 251 | 256 | 55 | 57 | 73 | 83 | 83 | | 1.13 | 60.99 | | | |
| | | | | | | | | | | | | | 83 | | | | | | | |

| **Actual Nozzle Diameter ($D_{na}$)** | **DP to DP to DH Iso Factor (K)** | **Point-by-point Meter Volume ($V_m$)$_{std}$** | **Point-by-point Percent IsoKinetic (I)** | **Point Point Weighted Average Isokinetics** |
|---|---|---|---|---|
| in | | dscf | % | ($V_m$)$_{std}$ x (I) |
| 0.156 | 0.35 | 8.108 | 97.0 | 786.3 |
| 0.156 | 0.35 | 9.399 | 103.7 | 974.9 |
| 0.156 | 0.35 | 8.182 | 97.7 | 799.5 |
| 0.156 | 0.35 | 8.374 | 100.1 | 838.6 |
| 0.156 | 0.35 | 7.622 | 98.1 | 748.0 |
| 0.156 | 0.35 | 8.958 | 98.9 | 885.5 |
| 0.156 | 0.35 | 8.860 | 97.7 | 865.6 |
| 0.156 | 0.35 | 7.301 | 93.9 | 685.3 |
| 0.156 | 0.35 | 8.251 | 98.8 | 814.9 |
| 0.156 | 0.35 | 8.990 | 107.5 | 966.7 |
| 0.156 | 0.35 | 7.177 | 92.3 | 662.3 |
| 0.156 | 0.35 | 6.635 | 93.2 | 618.6 |
| | | | | |
| 0.156 | 0.35 | 97.858 | | |

| **RM 201A Calculations** | | | | | | |
|---|---|---|---|---|---|---|
| **Trav. Point Estimated Dwell Times ($t_1$), ($t_n$)** | **First Point Dwell Times ($t_1$)** | **First Point Vel. Head Prelim. Trav. ($\Delta p_{RM2}$)** | **Subs. Point Dwell Times Current Trav. ($t_n$)** | **Velocity Velocity Head Current Trav. ($\Delta p_{201A}$)** | **Violations** |
| min | min | in $H_2O$ | min | in $H_2O$ | |
| 23.00 | 23.03 | 1.30 | | 1.30 | 0 |
| 24.00 | 23.90 | 1.40 | 23.90 | 1.40 | 0 |
| 23.00 | 23.03 | 1.30 | 23.03 | 1.30 | 0 |
| 23.00 | 23.03 | 1.30 | | 1.30 | 0 |
| 22.25 | 22.13 | 1.20 | 22.13 | 1.20 | 0 |
| 24.00 | 23.90 | 1.40 | 23.90 | 1.40 | 0 |
| 24.00 | 23.90 | 1.40 | | 1.40 | 0 |
| 22.25 | 22.13 | 1.20 | 22.13 | 1.20 | 0 |
| 23.00 | 23.03 | 1.30 | 23.03 | 1.30 | 0 |
| 23.00 | 23.03 | 1.30 | | 1.30 | 0 |
| 22.25 | 22.13 | 1.20 | 22.13 | 1.20 | 0 |
| 21.25 | 21.18 | 1.10 | 21.18 | 1.10 | 0 |
| | | | | | |

Z must be between 0.99 and 1.01, but the initial calculation is based on assumptions of the Cunniham Correction Factor and the Reynolds Number. In cases where your Z value is not between the limits and is producing an error, you need to run a second iteration based on the re-calculated numbers. To do this, copy the value in "Recalculated Cunninham, C =" [BH189] and do a "paste special value only" into "Calculated Cunninham, C =" [BH174]. This sets the initially calculated C equal to the C determined during this test run. At this point the program may recognize the second iteration and your error may go away. If it doesn't it is probably because it is having difficulties deciding between the Reynolds number at the threshold.

| | | | |
|---|---|---|---|
| | Stack Gas Viscosity (μs) | 197.64 | μP |
| | Cyclone Flow Rate ($Q_s$) | 0.48 | ft³/min |
| | Dia. of 50% Prob. ($D_{50}$) CI | 10.56 | μm |
| >> | Calculated Cunninham, C | 1.08 | |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{Re}$<3162) | 10.27 | μm |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{Re}$≥3162) | | μm |
| | Middle of Zone Dia. ($D_{50T}$) CI | 10.64 | μm |
| | Sampling Rate ($PM_{10}$ and $PM_{2.5}$ Cyc.) | 0.47 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$<3162) | 2.36 | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{Re}$<3162) | 0.48 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$≥3162) | | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{Re}$≥3162) | | dscfm |
| | Actual Test Run C (2.5 μm) | 1.07 | |
| | Actual Test Run $N_{RE}$ | 2759.69 | |
| | Actual Particle Cut Diameter for CI | 10.56 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$<3162) | 2.36 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$≥3162) | | μm |
| << | Recalculated Cunninham, C = | 1.08 | |
| | Recalculated $D_{50-1}$ for $C_{IV}$ = | 2.36 | |
| >> | Z (limits 0.99 to 1.01) = | 1.00 | |
| | Isokinetics (I) (80 to 120%) = | 98.57 | % |
| | No. Sampling Pts. Outside Δp = | 0 | |
| | Sample Nozzle Diameter = | 0.156 | in |
| | $\Delta p_{min}$ | 0.630 | in $H_2O$ |
| | $\Delta p_{max}$ | 1.879 | in $H_2O$ |

Notes:

# EMISSION DATA RECORDS

## Reference Method Data
## Base+DB Load
## SAM

## METHOD 8A (CONTROLLED CONDENSATE) SOURCE SAMPLING TITLE PAGE

| Source Information | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base+DB |
| **Fuel Type** | Gas, Natural |

| Test Information | | | |
|---|---|---|---|
| **Project #** | | bec-19-cricketvalley.ny-start#2 | |
| **Operator** | | TW | |
| **Date for Preliminary Run** | (mm/dd/yy) | 03/11/20 | |
| **Standard Temperature** | | 68 | °F |
| **Standard Pressure** | | 29.92 | in Hg |
| **Required Sample Vol.** | 10 L/min | 10.6 | scf |
| **Run Duration** | 8a, 2.4.1.3 | 120 | minutes |
| **Unit Number** | | U-00002 | |
| **Base Run Number** | | SAM U-00002 Base+DB | |
| **Number of Ports Available** | | 4 | |
| **Number of Ports Used** | | 1 | |
| **Port Inside Diameter** | | 6.00 | in |
| **Stack Shape** | | Circular | |

| Test Equipment Information | | | | | |
|---|---|---|---|---|---|
| **Run** | | **1** | **2** | **3** | |
| **Test Date** | (mm/dd/yy) | 03/11/20 | 03/11/20 | 03/11/20 | |
| **Load** | | Base+DB | Base+DB | Base+DB | % or w/DB |
| **Fuel F-Factor** | | 8636.30 | 8636.30 | 8636.30 | dscf/MMBtu |
| **Meter Box Number** | from ACS | samp-cp-0007 | samp-cp-0007 | samp-cp-0007 | |
| **Meter Calibration Factor** | (Y) | 0.985 | 0.985 | 0.985 | |
| **Orifice Meter Coefficient** | ($\Delta H_@$) | 1.731 | 1.731 | 1.731 | in $H_2O$ |
| **Non-Console Manometer Used** | | No | No | No | |
| **Probe Number** | from ACS | SAMP-SAM-01 | SAMP-SAM-01 | SAMP-SAM-01 | |
| **Probe Length** | | 72.0 | 72.0 | 72.0 | in |
| **(SS, Glass …. ) Liner Material** | from list | glass | glass | glass | |
| **Sample Case / Oven Number** | from ACS | samp-ha-0005 | samp-ha-0005 | samp-ha-0005 | |
| **Impinger Case Number** | from ACS | samp-bc-0032 | samp-bc-0032 | samp-bc-0032 | |

| Testing Company Information | |
|---|---|
| **Company Name** | Air Hygiene International, Inc. (Tulsa, Oklahoma) |
| **Address** | 1600 W Tacoma Street |
| **City, State Zip** | Broken Arrow, Oklahoma 74012 |
| **Project Manager** | Rob White |
| **Phone Number** | (918) 307-8865 |
| **Fax Number** | (918) 307-9131 |

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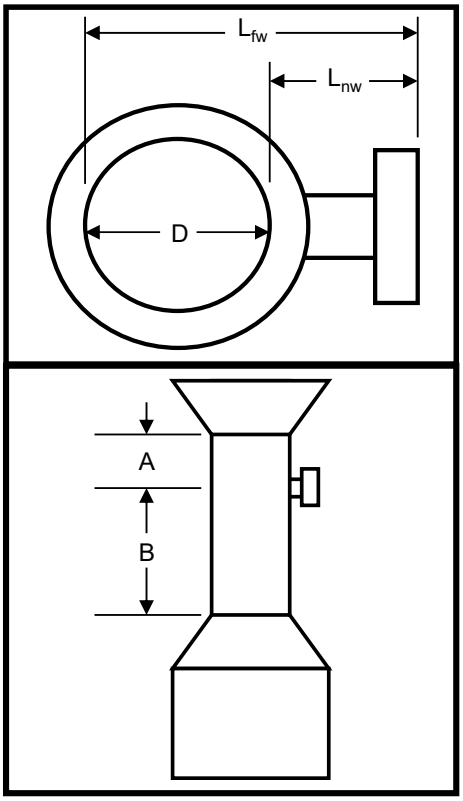
## METHOD 1 - SAMPLE AND VELOCITY TRAVERSES FOR CIRCULAR SOURCES

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Date** | 03/11/20 |
| **Sampling Location** | U-00002 Base+DB | **Stack Type** | Circular |
| **Operator** | TW | **Ports Available** | 4 |
| **Project #** | bec-19-cricketvalley.ny-start#2 | **Ports Used** | 1 |
| **Stack Size** | Large (>24 inch diameter) | **Port ID (inches)** | 6.00 |

| **Circular Stack or Duct Diameter** | | | |
|---|---|---|---|
| **Distance to Far Wall of Stack** | ($L_{fw}$) | 236.00 | in |
| **Distance to Near Wall of Stack** | ($L_{nw}$) | 8.00 | in |
| **Diameter of Stack** | (D) | 228.00 | in |
| **Area of Stack** | ($A_s$) | 283.53 | ft² |

| **Distance from Port to Disturbances** | | | |
|---|---|---|---|
| **Distance Upstream** | (A) | 200.40 | in |
| **Diameters Upstream** | ($A_D$) | 0.88 | diameters |
| **Distance Downstream** | (B) | 850.00 | in |
| **Diameters Downstream** | ($B_D$) | 3.73 | diameters |




| **Number of Traverse Points Required** | | | |
|---|---|---|---|
| **Diameters to Flow Disturbance** | | **Minimum Number of[1] Traverse Points** | |
| **Down Stream** | **Up Stream** | **Particulate Points** | **Velocity Points** |
| 2.00-4.99 | 0.50-1.24 | 24 | 16 |
| 5.00-5.99 | 1.25-1.49 | 20 | 16 |
| 6.00-6.99 | 1.50-1.74 | 16 | 12 |
| 7.00-7.99 | 1.75-1.99 | 12 | 12 |
| >= 8.00 | >=2.00 | 8 or 12[2] | 8 or 12[2] |
| **Upstream Spec** | | 24 | 16 |
| **Downstream Spec** | | 24 | 16 |
| **Traverse Pts Required** | | 24 | 16 |

[1] Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.

[2] 8 for Circular Stacks 12 to 24 inches
12 for Circular Stacks over 24 inches

◉ Method 1 Trav

○ 12 Point PM Trav (M201a ONLY)

○ Velocity

| **Number of Traverse Points Used** | | | |
|---|---|---|---|
| 1 | **Ports by** | 1 | **Across** |
| 1 | **Pts Used** | 1 | **Required** |

| Location of Traverse Points in Circular Stacks | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Traverse Point | (Fraction of Stack Dimension from Inside Wall to Traverse Point) Number of Traverse Points Across the Stack | | | | | | | | |
| Number | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 |
| 1 | .146 | .067 | .044 | .032 | .026 | .021 | .018 | .016 | .014 |
| 2 | .854 | .250 | .146 | .105 | .082 | .067 | .057 | .049 | .044 |
| 3 | | .750 | .296 | .194 | .146 | .118 | .099 | .085 | .075 |
| 4 | | .933 | .704 | .323 | .226 | .177 | .146 | .125 | .109 |
| 5 | | | .854 | .677 | .342 | .250 | .201 | .169 | .146 |
| 6 | | | .956 | .806 | .658 | .356 | .269 | .220 | .188 |
| 7 | | | | .895 | .774 | .644 | .366 | .283 | .236 |
| 8 | | | | .968 | .854 | .750 | .634 | .375 | .296 |
| 9 | | | | | .918 | .823 | .731 | .625 | .382 |
| 10 | | | | | .974 | .882 | .799 | .717 | .618 |
| 11 | | | | | | .933 | .854 | .780 | .704 |
| 12 | | | | | | .979 | .901 | .831 | .764 |

| **Traverse Point Locations** | | | |
|---|---|---|---|
| **Traverse Point Number** | **Fraction of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
| | | in | in |
| **1** | 0.275 | 62 6/8 | 70 6/8 |
| **2** | | | |
| **3** | | | |
| **4** | | | |
| **5** | | | |
| **6** | | | |
| **7** | | | |
| **8** | | | |
| **9** | | | |

## METHOD 3a - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

| | | | | | |
|---|---|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Preliminary Run Date** | 03/11/20 | | |
| **Sampling Location** | U-00002 Base+DB | **Operator** | TW | | |
| **Project #** | bec-19-cricketvalley.ny-start#2 | **# of Ports Used** | 1 (gas probe) | | |
| **Fuel Type** | Gas, Natural | **Min. Fuel Factor** | 1.600 | **Max. Fuel Factor** | 1.836 |

**Gas Analysis Data**

| **Run Number** | SAM U-00002 Base+DB-1 | | **Date** | 03/11/20 | **Run Start Time** | 05:46 | **Run Stop Time** | 07:46 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 02:00 | 5.3 | 11.7 | 0.0 | 83.0 | 29.32 | 1.736 | 114.6 | YES |

**Gas Analysis Data**

| **Run Number** | SAM U-00002 Base+DB-2 | | **Date** | 03/11/20 | **Run Start Time** | 08:40 | **Run Stop Time** | 10:40 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 02:00 | 5.3 | 11.7 | 0.0 | 83.0 | 29.32 | 1.736 | 114.6 | YES |

**Gas Analysis Data**

| **Run Number** | SAM U-00002 Base+DB-3 | | **Date** | 03/11/20 | **Run Start Time** | 11:33 | **Run Stop Time** | 13:33 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 02:00 | 5.3 | 11.7 | 0.0 | 83.0 | 29.32 | 1.736 | 114.6 | YES |

## METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Preliminary Run Date** | 03/11/20 |
| **Sampling Location** | U-00002 Base+DB | **Operator** | TW |
| **Project #** | bec-19-cricketvalley.ny-start#2 | **Ports Used** | 1 |

| **Scale Daily Calibration** | | | | | |
|---|---|---|---|---|---|
| **Scale Number** | SAMP-SC-0028 | **Standard** | **Result** | **Difference** | **Pass/Fail** |
| **Date** | | (g) | (g) | (g) | (± 0.5 g) |
| **Test Day 1** | 03/11/20 | 500 | 499.7 | -0.3 | Pass |
| **Test Day 2** | 03/12/20 | 500 | 499.7 | -0.3 | Pass |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | SAM U-00002 Base+DB-1 | | **Date** | 03/11/20 | **Start Time** | 05:46 | **Stop Time** | 07:46 |
| **Meter Box Number** | | samp-cp-0007 | | | | **Meter Cal Factor** | (Y) | 0.985 | |
| **Total Meter Volume** | | ($V_m$) | 40.960 | dcf | | **Barometric Pressure** | ($P_b$) | 30.09 | in Hg |
| **Average Stack Temp** | | $(t_s)_{avg}$ | | °F | | **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Average Meter Temp** | | $(t_m)_{avg}$ | 83 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.34 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | $H_2O_2$ | $H_2O_2$ | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 752.50 | 753.60 | 621.70 | 933.70 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 698.30 | 751.10 | 621.60 | 925.30 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 54.2 | 2.5 | 0.1 | 8.4 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | | ($W_t$) | 65.20 | g | | **Water Vol Weighed** | ($V_{wsg(std)}$) | 3.074 | scf |
| **Std Meter Volume** | | ($V_{m(std)}$) | 39.479 | dscf | | **Sat. Moisture Content** | ($B_{ws(svp)}$) | | % |
| **Calc Moisture Content** | | ($B_{ws(calc)}$) | 7.22 | % | | **Final Moisture Content** | ($B_{ws}$) | | % |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | SAM U-00002 Base+DB-2 | | **Date** | 03/11/20 | **Start Time** | 08:40 | **Stop Time** | 10:40 |
| **Meter Box Number** | | samp-cp-0007 | | | | **Meter Cal Factor** | (Y) | 0.985 | |
| **Total Meter Volume** | | ($V_m$) | 41.810 | dcf | | **Barometric Pressure** | ($P_b$) | 30.15 | in Hg |
| **Average Stack Temp** | | $(t_s)_{avg}$ | | °F | | **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Average Meter Temp** | | $(t_m)_{avg}$ | 86 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.34 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | $H_2O_2$ | $H_2O_2$ | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 808.40 | 761.40 | 624.10 | 942.00 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 752.50 | 753.60 | 621.70 | 933.70 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 55.9 | 7.8 | 2.4 | 8.3 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | | ($W_t$) | 74.40 | g | | **Water Vol Weighed** | ($V_{wsg(std)}$) | 3.508 | scf |
| **Std Meter Volume** | | ($V_{m(std)}$) | 40.149 | dscf | | **Sat. Moisture Content** | ($B_{ws(svp)}$) | | % |
| **Calc Moisture Content** | | ($B_{ws(calc)}$) | 8.04 | % | | **Final Moisture Content** | ($B_{ws}$) | | % |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | SAM U-00002 Base+DB-3 | | **Date** | 03/11/20 | **Start Time** | 11:33 | **Stop Time** | 13:33 |
| **Meter Box Number** | | samp-cp-0007 | | | | **Meter Cal Factor** | (Y) | 0.985 | |
| **Total Meter Volume** | | ($V_m$) | 41.300 | dcf | | **Barometric Pressure** | ($P_b$) | 30.14 | in Hg |
| **Average Stack Temp** | | $(t_s)_{avg}$ | | °F | | **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Average Meter Temp** | | $(t_m)_{avg}$ | 89 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.34 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | $H_2O_2$ | $H_2O_2$ | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 861.00 | 767.80 | 626.70 | 948.80 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 808.40 | 761.40 | 624.10 | 942.00 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 52.6 | 6.4 | 2.6 | 6.8 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | | ($W_t$) | 68.40 | g | | **Water Vol Weighed** | ($V_{wsg(std)}$) | 3.225 | scf |
| **Std Meter Volume** | | ($V_{m(std)}$) | 39.466 | dscf | | **Sat. Moisture Content** | ($B_{ws(svp)}$) | | % |
| **Calc Moisture Content** | | ($B_{ws(calc)}$) | 7.55 | % | | **Final Moisture Content** | ($B_{ws}$) | | % |

**METHOD 8A (CONTROLLED CONDENSATE) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA**

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#2 |

| | |
|---|---|
| **Date** | 03/11/20 |
| **Operator** | TW |
| **Run Number** | SAM U-00002 Base+DB-1 |

| |
|---|
| **Filter #** |
| R0001 |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | | |
| **Average Stack Temp** | ($t_s$) | | °F |
| **Average Meter Temp** | ($t_m$) | 83.1 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.731 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.32 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.75 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Pre (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | samp-cp-0007 | | |
| **Meter Cal Factor** | (Y) | 0.985 | |
| **Nozzle Number** | NA | | |
| **Average Nozzle Diameter** | ($D_{na}$) | | in |
| **Suggested Nozzle Diameter** | ($D_{ni}$) | | in |
| **Probe Number** | SAMP-SAM-01 | | in |
| **Probe Length** | 72 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | samp-ha-0005 | | |
| **Impinger Case Number** | samp-bc-0032 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.09 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.16 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.22 | in Hg |

| **Nozzle Measurements** | | | **ID: NA** |
|---|---|---|---|
| **Pre** | | | **PASS** |
| **Post** | | | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 05:46 | **End** | 07:46 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 698.3 | 751.1 | 621.6 | 925.3 | | | | |
| **Post** | 752.5 | 753.6 | 621.7 | 933.7 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | samp-cp-0007 | samp-cp-0007 | samp-cp-0007 | | | SAMP-SAM-01 | SAMP-SAM-01 | samp-ha-0005 | samp-bc-0032 | TCSAM1 | | samp-cp-0007 | | samp-cp-0007 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head (Δp)** | **Desired Orifice ΔH ($\Delta H_d$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (375±25°F)** | **Filter Temp (525±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤185°F)** | **CPM Filter Temp (--±--°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)$_l$** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 46.270 | -- | 0.342 | 0.34 | -- | 350 | 534 | 47 | 78 | -- | 75 | 75 | 1.0 | | | 1.751 | | 42.034 |
| A-2 | 5.0 | 00:05:00 | 48.060 | -- | 0.342 | 0.34 | -- | 350 | 506 | 48 | 87 | -- | 81 | 74 | 1.0 | | | 3.446 | | 41.352 |
| A-3 | 10.0 | 00:10:00 | 49.800 | -- | 0.342 | 0.34 | -- | 350 | 504 | 49 | 95 | -- | 84 | 74 | 1.0 | | | 5.155 | | 41.242 |
| A-4 | 15.0 | 00:15:00 | 51.560 | -- | 0.342 | 0.34 | -- | 350 | 500 | 50 | 101 | -- | 85 | 74 | 1.0 | | | 6.863 | | 41.178 |
| A-5 | 20.0 | 00:20:00 | 53.320 | -- | 0.342 | 0.34 | -- | 350 | 507 | 51 | 104 | -- | 85 | 76 | 1.0 | | | 8.664 | | 41.589 |
| A-6 | 25.0 | 00:25:00 | 55.180 | -- | 0.342 | 0.34 | -- | 350 | 512 | 50 | 106 | -- | 86 | 76 | 1.0 | | | 10.338 | | 41.353 |
| A-7 | 30.0 | 00:30:00 | 56.910 | -- | 0.342 | 0.34 | -- | 350 | 504 | 51 | 108 | -- | 89 | 77 | 1.0 | | | 11.968 | | 41.032 |
| A-8 | 35.0 | 00:35:00 | 58.600 | -- | 0.342 | 0.34 | -- | 350 | 511 | 52 | 108 | -- | 87 | 77 | 1.0 | | | 13.590 | | 40.770 |
| A-9 | 40.0 | 00:40:00 | 60.280 | -- | 0.342 | 0.34 | -- | 350 | 509 | 54 | 110 | -- | 89 | 78 | 1.0 | | | 15.362 | | 40.966 |
| A-10 | 45.0 | 00:45:00 | 62.120 | -- | 0.342 | 0.34 | -- | 350 | 502 | 53 | 109 | -- | 90 | 77 | 1.0 | | | 17.057 | | 40.938 |
| A-11 | 50.0 | 00:50:00 | 63.880 | -- | 0.342 | 0.34 | -- | 350 | 509 | 52 | 109 | -- | 90 | 78 | 1.0 | | | 18.741 | | 40.890 |
| A-12 | 55.0 | 00:55:00 | 65.630 | -- | 0.342 | 0.34 | -- | 350 | 507 | 52 | 109 | -- | 90 | 79 | 1.0 | | | 20.462 | | 40.925 |
| A-13 | 60.0 | 01:00:00 | 67.420 | -- | 0.342 | 0.34 | -- | 350 | 500 | 52 | 109 | -- | 89 | 79 | 1.0 | | | 22.079 | | 40.761 |
| A-14 | 65.0 | 01:05:00 | 69.100 | -- | 0.342 | 0.34 | -- | 350 | 504 | 52 | 109 | -- | 90 | 79 | 1.0 | | | 23.761 | | 40.734 |
| A-15 | 70.0 | 01:10:00 | 70.850 | -- | 0.342 | 0.34 | -- | 350 | 503 | 51 | 108 | -- | 92 | 79 | 1.0 | | | 25.575 | | 40.920 |
| A-16 | 75.0 | 01:15:00 | 72.740 | -- | 0.342 | 0.34 | -- | 350 | 506 | 51 | 108 | -- | 91 | 80 | 1.0 | | | 27.235 | | 40.853 |
| A-17 | 80.0 | 01:20:00 | 74.470 | -- | 0.342 | 0.34 | -- | 350 | 501 | 50 | 107 | -- | 90 | 80 | 1.0 | | | 28.993 | | 40.931 |
| A-18 | 85.0 | 01:25:00 | 76.300 | -- | 0.342 | 0.34 | -- | 350 | 503 | 50 | 108 | -- | 90 | 80 | 1.0 | | | 30.626 | | 40.834 |
| A-19 | 90.0 | 01:30:00 | 78.000 | -- | 0.342 | 0.34 | -- | 350 | 502 | 50 | 110 | -- | 90 | 80 | 1.0 | | | 31.721 | | 40.068 |
| A-20 | 95.0 | 01:35:00 | 79.140 | -- | 0.342 | 0.34 | -- | 350 | 506 | 50 | 108 | -- | 90 | 80 | 1.0 | | | 33.507 | | 40.209 |
| A-21 | 100.0 | 01:40:00 | 81.000 | -- | 0.342 | 0.34 | -- | 350 | 511 | 50 | 108 | -- | 90 | 80 | 1.0 | | | 34.909 | | 39.896 |
| A-22 | 105.0 | 01:45:00 | 82.460 | -- | 0.342 | 0.34 | -- | 350 | 507 | 51 | 109 | -- | 91 | 80 | 1.0 | | | 36.493 | | 39.810 |
| A-23 | 110.0 | 01:50:00 | 84.110 | -- | 0.342 | 0.34 | -- | 350 | 510 | 50 | 108 | -- | 91 | 80 | 1.0 | | | 37.587 | | 39.221 |
| A-24 | 115.0 | 01:55:00 | 85.250 | -- | 0.342 | 0.34 | -- | 350 | 501 | 50 | 109 | -- | 91 | 81 | 1.0 | | | 39.485 | | 39.485 |
| Last Pt | 120.0 | 02:00:00 | 87.230 | | | | | | | | | | | | | | | | | |
| **Final Val** | 120.0 | 02:00:00 | 87.230 | | | | | | | | | | | **Max Vac** | 1.0 | **Final Values** | | 39.485 | | |
| **Average Values** | | | | | | 0.34 | | 350 | 507 | 51 | 105 | | 88 | 78 | | | | | | |
| | | | | | | | | | | | | | 83 | | | | | | | |

Notes:

## METHOD 8A (CONTROLLED CONDENSATE) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#2 |

| | |
|---|---|
| **Date** | 03/11/20 |
| **Operator** | TW |
| **Run Number** | SAM U-00002 Base+DB-2 |

| |
|---|
| **Filter #** |
| R0001 |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | | |
| **Average Stack Temp** | ($t_s$) | | °F |
| **Average Meter Temp** | ($t_m$) | 86.2 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.731 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.32 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.33 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Pre (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | samp-cp-0007 | | |
| **Meter Cal Factor** | (Y) | 0.985 | |
| **Nozzle Number** | NA | | |
| **Average Nozzle Diameter** | ($D_{na}$) | | in |
| **Suggested Nozzle Diameter** | ($D_{ni}$) | | in |
| **Probe Number** | SAMP-SAM-01 | | in |
| **Probe Length** | 72 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | samp-ha-0005 | | |
| **Impinger Case Number** | samp-bc-0032 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.15 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.22 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.28 | in Hg |

| **Nozzle Measurements** | | | **ID: NA** |
|---|---|---|---|
| **Pre** | | | **PASS** |
| **Post** | | | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 08:40 | **End** | 10:40 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 752.5 | 753.6 | 621.7 | 933.7 | | | | |
| **Post** | 808.4 | 761.4 | 624.1 | 942.0 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | samp-cp-0007 | samp-cp-0007 | samp-cp-0007 | | | SAMP-SAM-01 | SAMP-SAM-01 | samp-ha-0005 | samp-bc-0032 | TCSAM1 | | samp-cp-0007 | | samp-cp-0007 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head (Δp)** | **Desired Orifice ΔH ($\Delta H_d$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (375±25°F)** | **Filter Temp (525±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤185°F)** | **CPM Filter Temp (--±--°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)$_l$** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 94.400 | -- | 0.342 | 0.34 | -- | 350 | 500 | 49 | 87 | -- | 81 | 79 | 1.0 | | | 1.797 | | 43.127 |
| A-2 | 5.0 | 00:05:00 | 96.250 | -- | 0.342 | 0.34 | -- | 350 | 505 | 52 | 154 | -- | 86 | 78 | 1.0 | | | 3.510 | | 42.118 |
| A-3 | 10.0 | 00:10:00 | 98.020 | -- | 0.342 | 0.34 | -- | 350 | 510 | 55 | 180 | -- | 89 | 78 | 1.0 | | | 5.228 | | 41.821 |
| A-4 | 15.0 | 00:15:00 | 99.800 | -- | 0.342 | 0.34 | -- | 350 | 504 | 56 | 181 | -- | 88 | 78 | 1.0 | | | 6.928 | | 41.566 |
| A-5 | 20.0 | 00:20:00 | 101.560 | -- | 0.342 | 0.34 | -- | 350 | 500 | 59 | 172 | -- | 89 | 80 | 1.0 | | | 8.652 | | 41.530 |
| A-6 | 25.0 | 00:25:00 | 103.350 | -- | 0.342 | 0.34 | -- | 350 | 504 | 57 | 178 | -- | 91 | 78 | 1.0 | | | 10.319 | | 41.274 |
| A-7 | 30.0 | 00:30:00 | 105.080 | -- | 0.342 | 0.34 | -- | 350 | 506 | 57 | 178 | -- | 91 | 79 | 1.0 | | | 11.916 | | 40.855 |
| A-8 | 35.0 | 00:35:00 | 106.740 | -- | 0.342 | 0.34 | -- | 350 | 509 | 58 | 177 | -- | 91 | 79 | 1.0 | | | 13.562 | | 40.685 |
| A-9 | 40.0 | 00:40:00 | 108.450 | -- | 0.342 | 0.34 | -- | 350 | 511 | 58 | 178 | -- | 91 | 79 | 1.0 | | | 15.227 | | 40.605 |
| A-10 | 45.0 | 00:45:00 | 110.180 | -- | 0.342 | 0.34 | -- | 350 | 514 | 58 | 178 | -- | 91 | 80 | 1.0 | | | 16.958 | | 40.698 |
| A-11 | 50.0 | 00:50:00 | 111.980 | -- | 0.342 | 0.34 | -- | 350 | 507 | 59 | 178 | -- | 92 | 80 | 1.0 | | | 18.648 | | 40.687 |
| A-12 | 55.0 | 00:55:00 | 113.740 | -- | 0.342 | 0.34 | -- | 350 | 506 | 59 | 179 | -- | 92 | 80 | 1.0 | | | 20.301 | | 40.601 |
| A-13 | 60.0 | 01:00:00 | 115.460 | -- | 0.342 | 0.34 | -- | 350 | 510 | 59 | 156 | -- | 92 | 81 | 1.0 | | | 21.951 | | 40.526 |
| A-14 | 65.0 | 01:05:00 | 117.180 | -- | 0.342 | 0.34 | -- | 350 | 509 | 59 | 145 | -- | 92 | 81 | 1.0 | | | 23.612 | | 40.477 |
| A-15 | 70.0 | 01:10:00 | 118.910 | -- | 0.342 | 0.34 | -- | 350 | 508 | 59 | 137 | -- | 93 | 82 | 1.0 | | | 25.307 | | 40.492 |
| A-16 | 75.0 | 01:15:00 | 120.680 | -- | 0.342 | 0.34 | -- | 350 | 503 | 61 | 135 | -- | 94 | 82 | 1.0 | | | 27.155 | | 40.732 |
| A-17 | 80.0 | 01:20:00 | 122.610 | -- | 0.342 | 0.34 | -- | 350 | 503 | 61 | 136 | -- | 94 | 83 | 1.0 | | | 28.866 | | 40.753 |
| A-18 | 85.0 | 01:25:00 | 124.400 | -- | 0.342 | 0.34 | -- | 350 | 502 | 61 | 134 | -- | 94 | 83 | 1.0 | | | 30.540 | | 40.720 |
| A-19 | 90.0 | 01:30:00 | 126.150 | -- | 0.342 | 0.34 | -- | 350 | 505 | 60 | 132 | -- | 94 | 83 | 1.0 | | | 32.185 | | 40.654 |
| A-20 | 95.0 | 01:35:00 | 127.870 | -- | 0.342 | 0.34 | -- | 350 | 500 | 61 | 131 | -- | 94 | 83 | 1.0 | | | 33.743 | | 40.492 |
| A-21 | 100.0 | 01:40:00 | 129.500 | -- | 0.342 | 0.34 | -- | 350 | 501 | 61 | 130 | -- | 94 | 83 | 1.0 | | | 35.350 | | 40.400 |
| A-22 | 105.0 | 01:45:00 | 131.180 | -- | 0.342 | 0.34 | -- | 350 | 500 | 61 | 129 | -- | 94 | 84 | 1.0 | | | 36.945 | | 40.304 |
| A-23 | 110.0 | 01:50:00 | 132.850 | -- | 0.342 | 0.34 | -- | 350 | 502 | 62 | 128 | -- | 94 | 85 | 1.0 | | | 38.520 | | 40.195 |
| A-24 | 115.0 | 01:55:00 | 134.500 | -- | 0.342 | 0.34 | -- | 350 | 504 | 63 | 128 | -- | 94 | 85 | 1.0 | | | 40.153 | | 40.153 |
| Last Pt | 120.0 | 02:00:00 | 136.210 | | | | | | | | | | | | | | | | | |
| **Final Val** | 120.0 | 02:00:00 | 136.210 | | | | | | | | | | | **Max Vac** | 1.0 | **Final Values** | | 40.153 | | |
| **Average Values** | | | | | | 0.34 | | 350 | 505 | 59 | 152 | | 91 | 81 | | | | | | |
| | | | | | | | | | | | | | 86 | | | | | | | |

Notes:

**METHOD 8A (CONTROLLED CONDENSATE) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA**

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#2 |

| | |
|---|---|
| **Date** | 03/11/20 |
| **Operator** | TW |
| **Run Number** | SAM U-00002 Base+DB-3 |

| |
|---|
| **Filter #** |
| R0001 |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | | |
| **Average Stack Temp** | ($t_s$) | | °F |
| **Average Meter Temp** | ($t_m$) | 88.7 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.731 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.32 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.33 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Pre (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | samp-cp-0007 | | |
| **Meter Cal Factor** | (Y) | 0.985 | |
| **Nozzle Number** | NA | | |
| **Average Nozzle Diameter** | ($D_{na}$) | | in |
| **Suggested Nozzle Diameter** | ($D_{ni}$) | | in |
| **Probe Number** | SAMP-SAM-01 | | in |
| **Probe Length** | 72 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | samp-ha-0005 | | |
| **Impinger Case Number** | samp-bc-0032 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.14 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | 0.95 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.21 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.27 | in Hg |

| **Nozzle Measurements** | | | **ID: NA** |
|---|---|---|---|
| **Pre** | | | **PASS** |
| **Post** | | | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 11:33 | **End** | 13:33 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 808.4 | 761.4 | 624.1 | 942.0 | | | | |
| **Post** | 861.0 | 767.8 | 626.7 | 948.8 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | samp-cp-0007 | samp-cp-0007 | samp-cp-0007 | | | SAMP-SAM-01 | SAMP-SAM-01 | samp-ha-0005 | samp-bc-0032 | TCSAM1 | | samp-cp-0007 | | samp-cp-0007 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head (Δp)** | **Desired Orifice ΔH ($\Delta H_d$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (375±25°F)** | **Filter Temp (525±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤185°F)** | **CPM Filter Temp (--±--°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)$_l$** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 142.600 | -- | 0.342 | 0.34 | -- | 350 | 506 | 57 | 75 | -- | 85 | 83 | 1.5 | | | 1.745 | | 41.870 |
| A-2 | 5.0 | 00:05:00 | 144.410 | -- | 0.342 | 0.34 | -- | 350 | 507 | 56 | 88 | -- | 87 | 82 | 1.5 | | | 3.468 | | 41.620 |
| A-3 | 10.0 | 00:10:00 | 146.200 | -- | 0.342 | 0.34 | -- | 350 | 506 | 57 | 101 | -- | 91 | 82 | 1.5 | | | 5.195 | | 41.562 |
| A-4 | 15.0 | 00:15:00 | 148.000 | -- | 0.342 | 0.34 | -- | 350 | 507 | 57 | 110 | -- | 92 | 83 | 1.5 | | | 6.785 | | 40.711 |
| A-5 | 20.0 | 00:20:00 | 149.660 | -- | 0.342 | 0.34 | -- | 350 | 509 | 57 | 114 | -- | 93 | 83 | 1.5 | | | 8.402 | | 40.330 |
| A-6 | 25.0 | 00:25:00 | 151.350 | -- | 0.342 | 0.34 | -- | 350 | 511 | 58 | 115 | -- | 93 | 83 | 1.5 | | | 9.981 | | 39.923 |
| A-7 | 30.0 | 00:30:00 | 153.000 | -- | 0.342 | 0.34 | -- | 350 | 506 | 59 | 117 | -- | 94 | 83 | 1.5 | | | 11.721 | | 40.185 |
| A-8 | 35.0 | 00:35:00 | 154.820 | -- | 0.342 | 0.34 | -- | 350 | 506 | 60 | 118 | -- | 94 | 83 | 1.5 | | | 13.336 | | 40.009 |
| A-9 | 40.0 | 00:40:00 | 156.510 | -- | 0.342 | 0.34 | -- | 350 | 506 | 61 | 122 | -- | 94 | 83 | 1.5 | | | 14.665 | | 39.107 |
| A-10 | 45.0 | 00:45:00 | 157.900 | -- | 0.342 | 0.34 | -- | 350 | 514 | 61 | 123 | -- | 94 | 84 | 1.5 | | | 16.814 | | 40.354 |
| A-11 | 50.0 | 00:50:00 | 160.150 | -- | 0.342 | 0.34 | -- | 350 | 509 | 62 | 124 | -- | 94 | 85 | 1.5 | | | 18.484 | | 40.328 |
| A-12 | 55.0 | 00:55:00 | 161.900 | -- | 0.342 | 0.34 | -- | 350 | 507 | 62 | 126 | -- | 95 | 84 | 1.5 | | | 20.135 | | 40.269 |
| A-13 | 60.0 | 01:00:00 | 163.630 | -- | 0.342 | 0.34 | -- | 350 | 504 | 62 | 126 | -- | 95 | 84 | 1.5 | | | 21.614 | | 39.902 |
| A-14 | 65.0 | 01:05:00 | 165.180 | -- | 0.342 | 0.34 | -- | 350 | 510 | 61 | 125 | -- | 96 | 84 | 1.5 | | | 23.349 | | 40.026 |
| A-15 | 70.0 | 01:10:00 | 167.000 | -- | 0.342 | 0.34 | -- | 350 | 507 | 60 | 123 | -- | 96 | 84 | 1.5 | | | 25.065 | | 40.104 |
| A-16 | 75.0 | 01:15:00 | 168.800 | -- | 0.342 | 0.34 | -- | 350 | 508 | 60 | 124 | -- | 95 | 86 | 1.5 | | | 26.684 | | 40.026 |
| A-17 | 80.0 | 01:20:00 | 170.500 | -- | 0.342 | 0.34 | -- | 350 | 510 | 60 | 124 | -- | 94 | 85 | 1.5 | | | 28.211 | | 39.827 |
| A-18 | 85.0 | 01:25:00 | 172.100 | -- | 0.342 | 0.34 | -- | 350 | 508 | 58 | 123 | -- | 95 | 85 | 1.5 | | | 29.955 | | 39.940 |
| A-19 | 90.0 | 01:30:00 | 173.930 | -- | 0.342 | 0.34 | -- | 350 | 503 | 59 | 122 | -- | 96 | 85 | 1.5 | | | 31.555 | | 39.860 |
| A-20 | 95.0 | 01:35:00 | 175.610 | -- | 0.342 | 0.34 | -- | 350 | 501 | 58 | 119 | -- | 95 | 84 | 1.5 | | | 33.187 | | 39.825 |
| A-21 | 100.0 | 01:40:00 | 177.320 | -- | 0.342 | 0.34 | -- | 350 | 502 | 58 | 118 | -- | 94 | 85 | 1.5 | | | 34.790 | | 39.760 |
| A-22 | 105.0 | 01:45:00 | 179.000 | -- | 0.342 | 0.34 | -- | 350 | 501 | 56 | 116 | -- | 95 | 85 | 1.5 | | | 36.420 | | 39.731 |
| A-23 | 110.0 | 01:50:00 | 180.710 | -- | 0.342 | 0.34 | -- | 350 | 506 | 56 | 115 | -- | 94 | 84 | 1.5 | | | 38.035 | | 39.688 |
| A-24 | 115.0 | 01:55:00 | 182.400 | -- | 0.342 | 0.34 | -- | 350 | 510 | 55 | 127 | -- | 94 | 84 | 1.5 | | | 39.467 | | 39.467 |
| Last Pt | 120.0 | 02:00:00 | 183.900 | | | | | | | | | | | | | | | | | |
| **Final Val** | 120.0 | 02:00:00 | 183.900 | | | | | | | | | | | **Max Vac** | 1.5 | **Final Values** | | 39.467 | | |
| **Average Values** | | | | | | 0.34 | | 350 | 507 | 59 | 116 | | 94 | 84 | | | | | | |
| | | | | | | | | | | | | | 89 | | | | | | | |

Notes:

# EMISSION DATA RECORDS

## Reference Method Data
## Base+DB Load
## Opacity

W/DB

# VISUAL EMISSIONS OBSERVATION FORM

Method Used (Circle One)
Method 9 203A 203B Other: _____

Company Name: ~~AirHygiene~~ Air Hygiene
Facility Name: Cricket Valley Energy Plant
Street Address: 16000 W Tacoma St
City: Broken Arrow State: OK Zip: 74012

Process: Unit # 2 Operating Mode:
Control Equipment: Duct Fan Operating Mode:

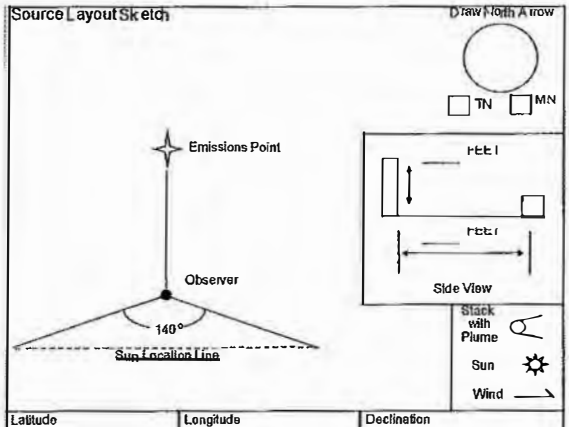
Describe Emissions Pont:
Height of Emiss. Pt. Start 140 End 140
Height of Emiss. Pt. Rel. to Observer Start 150 End 150
Distance to Emiss. Pt. Start 6 End 6
Direction to Emiss. Pt. (Degrees) Start SW End SW

Vetical Angle to Obs. Pt. Start 140 End 140
Direction to Obs. Pt. (Degrees) Start End
Distance and Direction to Observation Point from Emission Point Start 1453-0 End 1440

Describe Emissions Start N/A End N/A
Emission Color Start N/A End N/A
Water Droplet Plume Start N/A End N/A

Describe Plume Background Start End
Background Color Start White End Dark
Sky Conditions Start Cloudy End Cloudy
Wind Speed Start 13 End 13
Wind Direction Start SW End SW
Ambient Temp. Start End
Wet Bulb Temp. RH Percent

Source Layout Sketch




Latitude | Longitude | Declination

Additional Information

Form Number (AHI Project Code) Page 1 of 6
Continued on Form Number (AHI Project Code)

| Observation Date | Time Zone | Start Time | End Time |
|---|---|---|---|
| 3/10/2020 | | 2:30 | 3:00 |

| Min \ Sec | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print): Sean Fields
Observer's Signature: [signature] Date: 3/10/20
Organization: Air Hygiene CAA
Certified By: Date: 1/3/2020

Method Used (Circle One)
Method 9 203A 203B Other: _____

Company Name: Air Hygiene
Facility Name: Cricket Valley Energy Plant
Street Address: 1600 W Tacoma St
City: Broken Arrow State: OK Zip: 74012

Process: Unit # 2 Operating Mode:
Control Equipment: Operating Mode:

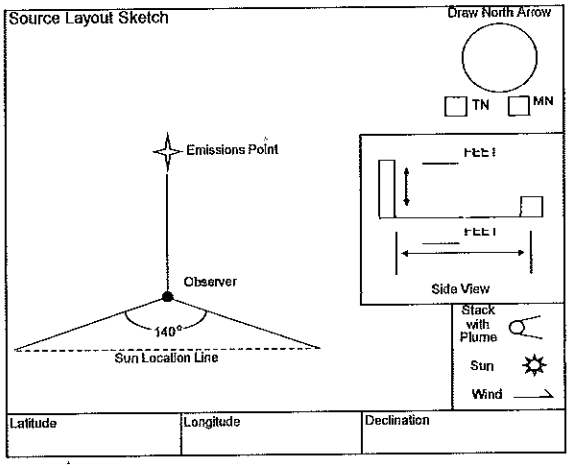
Describe Emissions Pont:
Height of Emiss. Pt. Start 140 End 140
Height of Emiss. Pt. Rel. to Observer Start 150 End 150
Distance to Emiss. Pt. Start 6 End 6
Direction to Emiss. Pt. (Degrees) Start SW End SW

Vetical Angle to Obs. Pt. Start 14° End 14°
Direction to Obs. Pt. (Degrees) Start End
Distance and Direction to Observation Point from Emission Point Start 145 End 144

Describe Emissions Start NA End NA
Emission Color Start NA End NA
Water Droplet Plume Start NA End NA

Describe Plume Background Start End
Background Color Start Clear End Clear
Sky Conditions Start Clear End Clear
Wind Speed Start 13 End 13
Wind Direction Start SW End SW
Ambient Temp. Start End
Wet Bulb Temp. RH Percent

Source Layout Sketch




Latitude | Longitude | Declination

Additional Information

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) Page 2 of 6
Continued on Form Number (AHI Project Code)
Observation Date 3/10/2020 Time Zone Start Time 3:00 End Time 3:30

| Min. \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print): SEAN FIELDS
Observer's Signature: [signature] Date: 3/10/20
Organization: Air Hygiene
Certified By: CAA Date: 1/3/2020

Method Used (Circle One)
Method 9 203A 203B Other: _____

Company Name: Air Hygiene
Facility Name: Cricket Valley Energy Plant
Street Address: 1600 W Tacoma St
City: Broken Arrow State: OK Zip: 74012

Process: Unit # - 2 Operating Mode:
Control Equipment: Operating Mode:

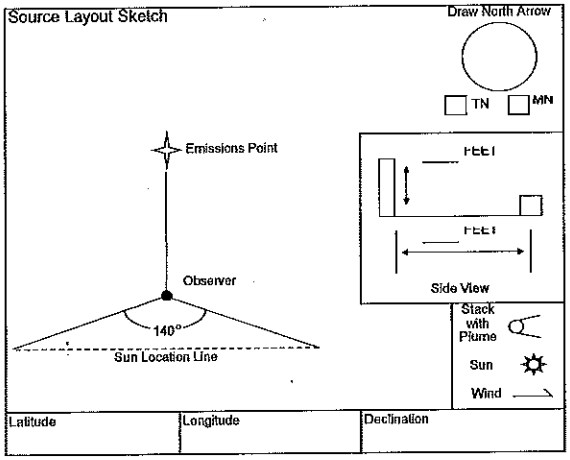
Describe Emissions Pont
Height of Emiss. Pt. Start 140 End 140
Height of Emiss. Pt. Rel. to Observer Start 150 End 150
Distance to Emiss. Pt. Start 6 End 6
Direction to Emiss. Pt. (Degrees) Start SW End SW

Vetical Angle to Obs. Pt. Start 14° End 14°
Direction to Obs. Pt. (Degrees) Start End
Distance and Direction to Observation Point from Emission Point Start 145' End 145'

Describe Emissions Start NA End NA
Emission Color Start NA End NA
Water Droplet Plume Start NA End NA

Describe Plume Background Start End
Background Color Start Clear End Cloudy
Sky Conditions Start Cloudy End Cloudy
Wind Speed Start 12 End 12
Wind Direction Start SW End SW
Ambient Temp. Start End
Wet Bulb Temp. RH Percent

Source Layout Sketch




Latitude | Longitude | Declination

Additional Information

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) Page 3 of 6
Continued on Form Number (AHI Project Code)

Observation Date 3/10/2020 Time Zone Start Time 3:30 End Time 4:30

| Min \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print): SEAN FIELDS
Observer's Signature: [signature] Date: 3/10/20
Organization: Air Hygiene
Certified By: CAA Date: 1/3/2020

Method Used (Circle One)
Method 9 203A 203B Other: _____

Company Name: Air Hygiene
Facility Name: Cricket Valley Energy Plant
Street Address: 1600 W Tacoma St
City: Broken Arrow State: OK Zip: 74012

Process | Unit # 2 | Operating Mode
Control Equipment | Operating Mode

Describe Emissions Pont

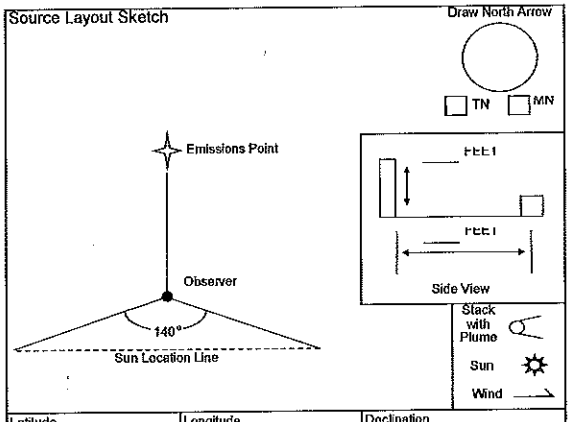
Height of Emiss. Pt. Start 140 End 140
Height of Emiss. Pt. Rel. to Observer Start 149 End 149
Distance to Emiss. Pt. Start 6 End 6
Direction to Emiss. Pt. (Degrees) Start SW End SW

Vetical Angle to Obs. Pt. Start 140 End 140
Direction to Obs. Pt. (Degrees) Start End
Distance and Direction to Observation Point from Emission Point Start 146' End 145'

Describe Emissions Start NA End NA
Emission Color Start NA End NA
Water Droplet Plume Start NA End NA

Describe Plume Background Start End
Background Color Start Cloudy End Clear
Sky Conditions Start Clear End Cloudy
Wind Speed Start 12 End 12
Wind Direction Start SW End SW
Ambient Temp. Start End
Wet Bulb Temp. RH Percent

Source Layout Sketch




Latitude | Longitude | Declination

Additional Information

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) Page 4 of 6
Continued on Form Number (AHI Project Code)

Observation Date 3/10/2020 | Time Zone | Start Time 4:00 | End Time 4:30

| Min. \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print) Seven Fields
Observer's Signature
Date 3/10/20
Organization Air Hygiene
Certified By CAA
Date 1/3/2020

# VISUAL EMISSIONS OBSERVATION FORM

Method Used (Circle One): Method 9 | 203A | 203B | Other: _____

Form Number (AHI Project Code) | Page 5 of 6

Continued on Form Number (AHI Project Code)

Company Name: Air Hygiene
Facility Name: Cricket Valley Energy Plant
Street Address: 1600 W Tacoma St
City: Broken Arrow | State: OK | Zip: 74012

Observation Date: 3/10/2020 | Time Zone | Start Time: 4:30 | End Time: 5:00

Process | Unit #: 2 | Operating Mode
Control Equipment | Operating Mode

Describe Emissions Point

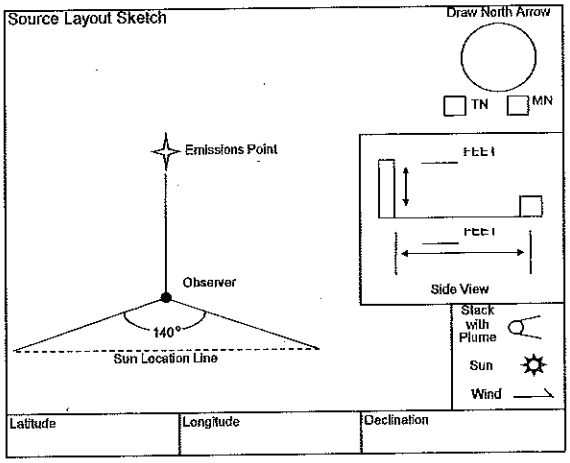
Height of Emiss. Pt. Start 140 End 140 | Height of Emiss. Pt. Rel. to Observer Start 141° End 141°
Distance to Emiss. Pt. Start 6 End 6 | Direction to Emiss. Pt. (Degrees) Start SW End SW

Vetical Angle to Obs. Pt. Start 14° End 14° | Direction to Obs. Pt. (Degrees) Start End
Distance and Direction to Observation Point from Emission Point Start 145 End 145

Describe Emissions Start N/A End N/A
Emission Color Start N/A End N/A | Water Droplet Plume Start N/A End N/A

Describe Plume Background Start End
Background Color Start ~~Light~~ Dark End ~~Cloudy~~ Dark | Sky Conditions Start Cloudy End Cloudy
Wind Speed Start 12 End 12 | Wind Direction Start SW End SW
Ambient Temp. Start End | Wet Bulb Temp. | RH Percent

Source Layout Sketch




Latitude | Longitude | Declination

Additional Information

| Sec. / Min. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print): SEAN FIELDS
Observer's Signature | Date: 3/10/20
Organization: Air Hygiene
Certified By: CAA | Date: 1/3/2020

Method Used (Circle One)
Method 9 203A 203B Other: _____

Company Name: Air Hygiene
Facility Name: Cricket Valley Energy Plant
Street Address: 1600 W Tacoma St
City: Broken Arrow State: OK Zip: 74012

Process: Unit # 2 Operating Mode:
Control Equipment: Operating Mode:

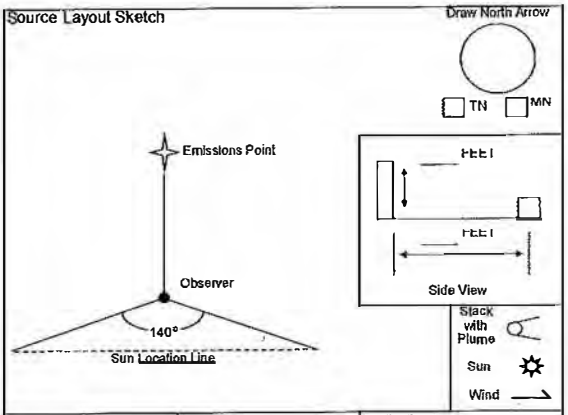
Describe Emissions Pont:
Height of Emiss. Pt. Start 140 End 140
Height of Emiss. Pt. Rel. to Observer Start 150 End 150
Distance to Emiss. Pt. Start 6 End 6
Direction to Emiss. Pt. (Degrees) Start SWS End SW

Vetical Angle to Obs. Pt. Start 140 End 140
Direction to Obs. Pt. (Degrees) Start End
Distance and Direction to Observation Point from Emission Point Start 145 End 145

Describe Emissions Start NA End NA
Emission Color Start NA End NA
Water Droplet Plume Start NA End NA

Describe Plume Background Start End
Background Color Start Dark End Dark
Sky Conditions Start Cloudy End Cloudy
Wind Speed Start 13 End 13
Wind Direction Start SW End SW
Ambient Temp. Start End
Wet Bulb Temp. RH Percent

Source Layout Sketch




Latitude | Longitude | Declination

Additional Information

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) Page 7 of 6
Continued on Form Number (AHI Project Code)
Observation Date 3/10/2020 Time Zone Start Time 5:00 End Time 5:30

| Min. \ Sec | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print): SEAN FIELDS
Observer's Signature: [signature] Date: 3/10/20
Organization: Air Hygiene
Certified By: CAA Date: 1/3/2020

# APPENDIX C

# CALIBRATION GAS CERTIFICATIONS

Assay Laboratory: Red Ball TGS
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150

# CERTIFICATE OF ANALYSIS
## (Zero Ambient Nitrogen)

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0072934 | **Certification Date:** | 05/21/2019 |
| **Product ID Number:** | 121026 | **Expiration Date:** | 05/19/2027 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | RBTGS-Shreveport-LA |
| **COA #** | EB0072934.20190521-0 | **Lot Number:** | EB0072934.20190521 |
| **Customer PO. NO.:** | | **Tracking Number:** | 084249399 |
| **Customer:** | | **Previous Certification Dates:** | |

**This mixture is for laboratory use only, not for drug, household or other use.**
**This mixture is certified in Mole % to be within ±2% of the actual number reported with a confidence of 95%.**
**This mixture was manufactured by scale; weights traceable to N.I.S.T. Certificate #822/266926-02.**
**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

**Composing Material: Zero Ambient Nitrogen, Cert., Sz152**

| Component | Specification | Concentration |
|---|---|---|
| Nitrogen | Balance | Balance |
| Oxygen as Impurity | <1.0 PPM | <1.0 PPM |
| Carbon Dioxide as Impurity | <0.5 PPM | <0.5 PPM |
| Carbon Monoxide as Impurity | <0.5 PPM | <0.5 PPM |
| Total Oxides of Nitrogen as Impurity | <0.1 PPM | <0.1 PPM |
| Sulfur Dioxide as Impurity | <0.1 PPM | <0.1 PPM |
| Total Hydrocarbons as Impurity | <0.1 PPM | <0.1 PPM |

Red Ball Technical Gas Service
PGVP Vendor ID # G12019
Information and Ordering
800-551-8150
Fax (318-425-6309)

Accreditation #62754

Anthony Cyr
Assistant Operations Manager

Version 02-B, Revised on 2015-05-27

RED BALL TECHNICAL GAS SERVICES

PJLA Calibration and Testing
Accreditation #62754

**Red Ball Technical Gas Service**
**555 Craig Kennedy Way**
**Shreveport, LA 71107**
**800-551-8150**
**PGVP Vendor ID # G12018**

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | CC721614 | **Certification Date**: | 11/13/2018 |
| **Product ID Number:** | 124605 | **Expiration Date:** | 11/11/2026 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | CC721614.20181109-0 | **Lot Number:** | CC721614.20181109 |
| **Customer PO. NO.:** | | **Tracking Number:** | 098499636 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Dioxide** | **19.0 %** | ±0.16 % | NDIR | 11/13/2018 |
| **Oxygen** | **21.0 %** | ±0.12 % | MPA | 11/13/2018 |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0004987 | EB0004987.20180323 | 07/15/2026 | GMIS | N2 | CO2 | 19.5 % | 0.767 | 101001 |
| EB0005996 | EB0005996.20170209 | 05/09/2026 | GMIS | N2 | O2 | 20 % | 0.077 | 071001 |
| EB0032246 | EB0032246.20170209 | 08/05/2025 | GMIS | N2 | O2 | 24 % | 0.502 | 071001 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| O2 | MPA | Thermo | 410i | 1162980025 | 11/06/2018 |
| CO2 | NDIR | Thermo | 410i | 1162980025 | 10/24/2018 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Amisha Jewitt**
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Version 02-J, Revised on 2018-09-17

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PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | CC729922 | **Certification Date**: | 08/30/2019 |
| **Product ID Number:** | 124606 | **Expiration Date:** | 08/28/2027 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | CC729922.20190826-0 | **Lot Number:** | CC729922.20190826 |
| **Customer PO. NO.:** | | **Tracking Number:** | 098857760 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Dioxide** | **8.94 %** | ±0.05 % | NDIR | 08/30/2019 |
| **Oxygen** | **12.00 %** | ±0.08 % | MPA | 08/30/2019 |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| D687685 | D687685 | 11/05/2023 | PRM | N2 | CO2 | 25.033 % | 0.0998 | C1579010.02 |
| EB0004987 | EB0004987.20190327 | 06/18/2027 | GMIS | N2 | CO2 | 9.52 % | 0.191 | C1579010.02 |
| EB0005592 | EB0005592.20180118 | 07/21/2026 | GMIS | N2 | O2 | 11.98 % | 0.507 | 071001 |
| EB0069971 | EB0069971.20180504 | 07/21/2026 | GMIS | N2 | O2 | 24 % | 0.497 | 071001 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| CO2 | NDIR | Thermo | 410i | 1162980025 | 08/01/2019 |
| O2 | MPA | Thermo | 410i | 1162980025 | 08/06/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

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PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0040961 | **Certification Date**: | 10/31/2019 |
| **Product ID Number:** | 124737 | **Expiration Date:** | 10/30/2022 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0040961.20191017-0 | **Lot Number:** | EB0040961.20191017 |
| **Customer PO. NO.:** | | **Tracking Number:** | 065159907 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Monoxide** | **9.1 PPM** | ±0.12 PPM | FTIR | 10/30/2019 |
| **Nitric Oxide** | **8.8 PPM** | ±0.10 PPM | Chemiluminescence | 10/23/2019, 10/31/2019 |
| Total Oxides of Nitrogen | 8.9 PPM | | | |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| ALM005307 | ALM0053007.20181025 | 10/09/2022 | GMIS | N2 | NO | 34.2 PPM | 1.062 | 1684B |
| CC202290 | CC202290.20160721 | 01/11/2025 | GMIS | N2 | CO | 12.14 PPM | 1.033 | 091002 |
| EB0076031 | EB0076031.20190205 | 05/27/2027 | GMIS | N2 | CO | 18.7 PPM | 1.036 | 091002 |
| EB0089797 | EB0089797.20171116 | 11/09/2022 | GMIS | N2 | NO | 9.8 PPM | 1.085 | 12100115 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NO | Chemiluminescence | Thermo | T42C | 42C-68400-360 | 10/18/2019 |
| CO | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 09/30/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

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PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0065964 | **Certification Date**: | 07/23/2019 |
| **Product ID Number:** | 125564 | **Expiration Date:** | 07/22/2022 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0065964.20190611-0 | **Lot Number:** | EB0065964.20190611 |
| **Customer PO. NO.:** | | **Tracking Number:** | 083030934 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Monoxide** | **5.09 PPM** | ±0.07 PPM | FTIR | 06/19/2019 |
| **Nitric Oxide** | **4.88 PPM** | ±0.06 PPM | Chemiluminescence | 06/18/2019, 07/08/2019, 07/23/2019 |
| Total Oxides of Nitrogen | 4.91 PPM | | | |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| ALM066143 | ALM066143.20171116 | 11/09/2022 | GMIS | N2 | NO | 9.6 PPM | 1.062 | 12100115 |
| CC202290 | CC202290.20160721 | 01/11/2025 | GMIS | N2 | CO | 12.14 PPM | 1.033 | 091002 |
| EB0032297 | EB0032297.20160725 | 09/06/2025 | GMIS | N2 | CO | 6.15 PPM | 1.067 | 091002 |
| EB0060662 | EB0060662.20151012 | 01/02/2022 | GMIS | N2 | NO | 2.97 PPM | 1.062 | 12100115 |
| EB0078555 | EB0078555.20171116 | 11/09/2022 | GMIS | N2 | NO | 9.8 PPM | 1.113 | 12100115 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NO | Chemiluminescence | Thermo | T42C | 42C-68400-360 | 05/30/2019 |
| CO | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 05/30/2019 |
| NO | Chemiluminescence | Thermo | T42C | 42C-68400-360 | 07/08/2019 |
| NO | Chemiluminescence | Thermo | T42C | 42C-68400-360 | 07/08/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Anthony Cyr**
**Assistant Operations Manager**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

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PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0038438 | **Certification Date:** | 11/27/2018 |
| **Product ID Number:** | 126123 | **Expiration Date:** | 11/25/2026 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0038438.20181121-0 | **Lot Number:** | EB0038438.20181121 |
| **Customer PO. NO.:** | | **Tracking Number:** | 056853515 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Methane** | **8.77 PPM** | ±0.05 PPM | FTIR | 11/27/2018 |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0042063 | EB0042063.20171231 | 03/17/2023 | GMIS | N2 | CH4 | 30.37 PPM | 0.277 | 2751 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| CH4 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 11/27/2018 |

## SMART-CERT

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PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0060640 | **Certification Date:** | 06/08/2018 |
| **Product ID Number:** | 124609 | **Expiration Date:** | 06/06/2026 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0060640.20180604-0 | **Lot Number:** | EB0060640.20180604 |
| **Customer PO. NO.:** | | **Tracking Number:** | 082997030 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Methane** | **4.90 PPM** | ±0.03 PPM | FTIR | 06/08/2018 |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0058163 | EB0058163.201411231g | 03/17/2023 | GMIS | N2 | CH4 | 30.38 PPM | 0.277 | 2751 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| CH4 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 06/08/2018 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Brandon Theus**
**Analytical Chemist**
Assay Laboratory: Red Ball TGS
Version 02-I, Revised on 2017-09-07

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PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0057200 | **Certification Date:** | 09/18/2018 |
| **Product ID Number:** | 125892 | **Expiration Date:** | 09/16/2026 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0057200.20180913-0 | **Lot Number:** | EB0057200.20180913 |
| **Customer PO. NO.:** | | **Tracking Number:** | 074329951 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Methane** | **3.37 PPM** | ±0.03 PPM | FTIR | 09/18/2018 |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0058163 | EB0058163.201411231g | 03/17/2023 | GMIS | N2 | CH4 | 30.38 PPM | 0.277 | 2751 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| CH4 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 09/18/2018 |

## SMART-CERT

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LaMeka Dennis
**Operations Manager**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

RED BALL TECHNICAL GAS SERVICES

PJLA Calibration and Testing
Accreditation #62754

**Red Ball Technical Gas Service**
**555 Craig Kennedy Way**
**Shreveport, LA 71107**
**800-551-8150**
**PGVP Vendor ID # G12019**

# CERTIFIED GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0100161 | **Certification Date**: | 12/30/2019 |
| **Product ID Number:** | 125123 | **Expiration Date:** | 12/29/2020 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0100161.20191230-0 | **Lot Number:** | EB0100161.20191230 |
| **Customer PO. NO.:** | | **Tracking Number:** | 095703088 |
| **Customer:** | | **Previous Certification Dates:** | |

**This mixture is for laboratory use only, not for drug, household or other use.**
**This mixture is certified in Mole % to be within ±2% of the actual number reported with a confidence of 95%.**
**This mixture was manufactured by scale; weights traceable to N.I.S.T. Certificate #822/266926-02.**
**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle |
|---|---|---|---|
| **Ammonia** | **50.4 PPM** | ± 2% NIST | FTIR |
| **Sulfur Hexafluoride** | **9.02 PPM** | ± 2% NIST | FTIR |
| Nitrogen | Balance | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| SA18481 | 70086910005 | 04/12/2020 | PS | N2 | NH3 | 21.1 PPM | 1.2 | 73248226 |
| EB0079029 | EB0079029 | 06/27/2020 | PS | N2 | SF6 | 10.1 PPM | 5 | 191064 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NH3 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | |
| SF6 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | |

## SMART-CERT

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LaMeka Dennis

**LaMeka Dennis**
**Operations Manager**
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PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0098845 | **Certification Date**: | 05/03/2019 |
| **Product ID Number:** | 124731 | **Expiration Date:** | 05/02/2022 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0098845.20190416-0 | **Lot Number:** | EB0098845.20190416 |
| **Customer PO. NO.:** | | **Tracking Number:** | 095689140 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Nitrogen Dioxide** | **48.7 PPM** | ±0.6 PPM | FTIR | 04/26/2019, 05/03/2019 |

Air Balance

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0003640 | EB0003640.20190102 | 03/20/2022 | GMIS | AIR | NO2 | 87.8 PPM | 1.061 | C1579010.01 |
| EB0096848 | EB0096848.20190102 | 03/21/2022 | GMIS | AIR | NO2 | 61.1 PPM | 1.072 | C1579010.01 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NO2 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 04/26/2019 |

## SMART-CERT

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**Brandon Theus**
**Laboratory Supervisor**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

# APPENDIX D

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

# QA/QC PROGRAM

AIR HYGIENE ensures the quality and validity of its emission measurement and reporting procedures through a rigorous quality assurance (QA) program. The program is developed and administered by an internal QA team and encompasses six major areas:

1. Field Qualifications
2. QA reviews of reports, laboratory work, and field testing;
3. Equipment calibration and maintenance;
4. Chain-of-custody;
5. Training; and
6. Knowledge of current test methods

## Field Qualifications

Air Hygiene personnel are required to gain and maintain competence with testing methods and techniques according to their job titles and the roles they play during field testing events. Qualifications for each job description include:

Staff Technician - An entry level position with responsibility to test on the stack by performing duties that include: keep trucks and trailers stocked and clean, travel to and from job site, be the “hands of the test” on the stack; stay on a stack during the sample test, set up and tear down equipment on-site, perform maintenance on equipment in the shop and on-site.

Test Technician or Specialist - Acts as the “hands of the test” on the stack by performing duties that include: stay on a stack during the sample test, migrate to the testing trailer and learn the different analyzers and testing methods used on site, set up and tear down testing equipment on site, learn the system for testing from Testing Managers and Project Managers, travel to and from job site; including driving responsibilities under DOT requirements, follow directions of Testing Managers and Project Managers, learn the proper way to conduct on-site test of stationary stacks

Test Manager or Engineer - Directs and coordinates all aspects of a successful test by performing the following duties personally or through subordinate supervisors including: operating analyzers and consoles during testing along with QA/QC procedures, supervise set up and tear down of equipment on site, writing, reviewing, and revising final test reports, working with the client or state personnel while on the job site, managing pre-test checklists and onsite testing procedures, diagnose and repair any problems that may arise with the equipment, safely operate a man lift and drive a truck with or without a trailer, act as crew leader in the field, write protocols and reports, maintain project log of services performed on the job, verify all equipment needed for a job was loaded on the trailer. Test Managers must hold at least one QSTI certificate.

Project Manager - Directs and coordinates all aspects of a successful test by performing the following duties personally or through subordinate supervisors including: operating analyzers and consoles during testing along with QA/QC procedures, supervise set up and tear down of equipment on site, writing, reviewing, and revising final test reports, working with the client or state personnel while on the job site, managing pre-test checklists and onsite testing procedures, diagnose and repair any problems that may arise with the equipment, safely operate a man lift and drive a truck with or without a trailer, act as crew leader in the field, write protocols and reports, maintain project log of services performed on the job, verify all equipment needed for a job was loaded on the trailer. Project Managers typically hold QSTI certificates in Groups 1 through 4.

## QA Reviews

Air Hygiene’s review procedure includes review of each source test report, along with laboratory and fieldwork, by the QA Team. The most important review is the one that takes place before a test program begins. The QA Team works closely with technical division personnel to prepare and review test protocols. Test protocol review includes selection of appropriate test procedures, evaluation of interferences or other restrictions that might preclude use of standard test procedures, and evaluation and/or development of alternate procedures.

## Equipment Calibration and Maintenance

The equipment used to conduct the emission measurements is maintained according to the manufacturer’s instructions to ensure proper operation. In addition to the maintenance program, calibrations are carried out on each measurement device according to the schedule outlined by the Environmental Protection Agency. Quality control checks are also conducted in the field for each test program. In conformance with ASTM D7036 Section 15.3.15, all metering and monitoring equipment meets or exceeds the uncertainty criteria contained in the method language that pertains to that equipment.

### Chain-of-Custody

Air Hygiene maintains full chain-of-custody documentation on all samples and data sheets. In addition to normal documentation of changes between field sample custodians, laboratory personnel, and field test personnel, Air Hygiene documents every individual who handles any test component in the field (e.g., probe wash, impinger loading and recovery, filter loading and recovery, etc.). Samples are stored in a locked area to which only Air Hygiene personnel have access. Field data sheets are secured at Air Hygiene's offices upon return from the field.

### Training

Personnel's training is essential to ensure quality testing. Air Hygiene has formal and informal training programs, which include:

1. Attendance at EPA-sponsored training courses
2. Enrollment in EPA correspondence courses
3 A requirement for all technicians to read and understand Air Hygiene's QA manual
4. In-house training and QA meetings on a regular basis
5. Maintenance of training records

### Knowledge of Current Test Methods

With the constant updating of standard test methods and the wide variety of emerging test procedures, it is essential that any qualified source tester keep abreast of new developments. Air Hygiene subscribes to services, which provide updates on EPA reference methods, rules, and regulations. Additionally, source test personnel regularly attend and present papers at testing and emission-related seminars and conferences. Air Hygiene personnel maintain membership in the Air and Waste Management Association and the American Industrial Hygiene Association.

### Reproduction and Distribution Policy

Reproducing portions of this test report may omit critical or substantial documentation or be taken out of context and due care must be exercised in this regard. Furthermore, this test report and its associated data shall not be reproduced in full or in part without the written consent of the customer.

### Data Provided by Client

Data provided by the Client is clearly identified in the report. Air Hygiene accepts data provided by the Client as accurate.

# COMBUSTION TESTING QUALITY ASSURANCE ACTIVITIES

In conformance with ASTM D7036 Section 15.3.11 and 13, all testing was performed without any real or apparent errors, with the exception of those that would be listed in Section 2.0 of this report. In addition, all testing was conducted according to the approved testing protocol, test methods, Air Hygiene Quality Manual, or ASTM D7036, with the exception of specifics noted in Section 2.0 of this report. A number of quality assurance activities were undertaken before, during, and after this testing project. This section of the report combined with the documentation in Appendix C describes each of those activities.

Each instrument's response was checked and adjusted in the field prior to the collection of data via multi-point calibration. The instrument's linearity was checked by adjusting its zero and span responses to zero nitrogen and an upscale calibration gas in the range of the expected concentrations. The instrument response was then challenged with other calibration gases of known concentration and accepted as being linear if the response of the other calibration gases agreed within plus or minus two percent of the range of predicted values. $NO_2$ to NO conversion was checked via direct connect with an EPA Protocol certified concentration of $NO_2$ in a balance of air or nitrogen. Conversion was verified to be between 90 and 110 percent.

After each test run, the analyzers were checked for zero and span drift. This allowed each test run to be bracketed by calibrations and documents the precision of the data just collected. The criterion for acceptable data is that the instrument drift is no more than three percent of the full-scale response. The quality assurance worksheets in the following pages summarize all multipoint calibration checks and zero to span checks performed during the tests. These worksheets (as prepared from the data records of Appendix A) show that no drifts in excess of three percent occurred in the zero to span checks following each test run.

The sampling systems were leak checked by demonstrating that a vacuum greater than 10 in Hg could be held for at least one minute with a decline of less than one inch of Hg. A leak test was conducted after the sample system was set up and before the system was dismantled. This test was conducted to ensure that ambient air had not diluted the sample. Any leakage detected prior to the tests would be repaired and another leak check conducted before testing commenced. No leaks were found during the pre or post-test leak checks.

The absence of leaks in the sampling system was also verified by a sampling system bias check. The sampling system's integrity was tested by comparing the responses of the analyzers to the calibration gases introduced via two paths. The first path was directly into the analyzer and the second path via the sample system at the sample probe. Any difference in the instrument responses by these two methods was attributed to sampling system bias or leakage. The criterion for acceptance is agreement within five percent of the span of the analyzer.

The control gases used to calibrate the instruments were analyzed and certified by the compressed gas vendors to plus or minus one percent accuracy for all gases. EPA Protocol No. 1 was used, where applicable to assign the concentration values traceable to the National Institute of Standards and Technology (NIST), Standard Reference Materials (SRM's). The gas calibration sheets as prepared by the vendor are contained in Appendix C.

Air Hygiene collected and reported the enclosed test data in accordance with the procedures and quality assurance activities described in this test report. Air Hygiene makes no warranty as to the suitability of the test methods. Air Hygiene also assumes no liability relating to the interpretation and use of the test data.

## INSTRUMENTAL ANALYSIS
## QUALITY ASSURANCE DATA

Date: March 9-11, 2020
Company: Cricket Valley Energy Center LLC
Location: Dover Plains, New York
Techs: RW / SB / AM / MW / AB / MJ / JJ

**Sample System Leak Check**

| Date | Sample System | Leak Rate (l/min) |
|---|---|---|
| March 9-11, 2020 | 1 | 0 |

# Accredited Laboratory

A2LA has accredited

## AIR HYGIENE INTERNATIONAL, INC.

*Broken Arrow, OK*

for technical competence in the field of

## Environmental Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets the A2LA *R219 – Specific Requirements – TNI Field Sampling and Measurement Organization Accreditation Program*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 18th day of December 2019

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3796.01
Valid to August 31, 2021

*For the tests to which this accreditation applies, please refer to the laboratory's Envrionmental Scope of Accreditation.*

STAC STACK TESTING ACCREDITATION COUNCIL

A2LA American Association for Laboratory Accreditation

# *Accredited Air Emission Testing Body*

A2LA has accredited

## AIR HYGIENE INTERNATIONAL, INC.

In recognition of the successful completion of the joint A2LA and Stack Testing Accreditation Council (STAC) evaluation process, this laboratory is accredited to perform testing activities in compliance with ASTM D7036:2004 - Standard Practice for Competence of Air Emission Testing Bodies.

Presented this 18th day of December 2019.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3796.02
Valid to August 31, 2021

*This accreditation program is not included under the A2LA ILAC Mutual Recognition Arrangement.*

# SOURCE EVALUATION SOCIETY

## Qualified Source Testing Individual

LET IT BE KNOWN THAT

## ROBERT C. WHITE, Jr.

HAS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED EXPERIENCE REQUIREMENTS IN ACCORDANCE WITH THE GUIDELINES ISSUED BY THE SES QUALIFIED SOURCE TEST INDIVIDUAL REVIEW BOARD FOR

***GASEOUS POLLUTANTS INSTRUMENTAL SAMPLING METHODS***

ISSUED THIS 25TH DAY OF OCTOBER 2019 AND EFFECTIVE UNTIL OCTOBER 24TH, 2024

Peter R. Westlin, QSTI/QSTO Review Board

Peter S. Pakalnis, QSTI/QSTO Review Board

Tina Sanderson, QSTI/QSTO Review Board

J. Wade Bice, QSTI/QSTO Review Board

Karen D. Kajiya-Mills , QSTI/QSTO Review Board

Bruce Randall QSTI/QSTO Review Board

CERTIFICATE NO. 2015-898

# Compliance Assurance Associates Inc.

Helping Industry Comply with Environmental Regulations

This is to acknowledge that

## Sean Fields

BRO200103-17227

Certificate verification is available at www.Compliance.Assurance.com/certs.php using the last name and 17227

successfully participated in Visible Emissions Evaluation field training and certification and pursuant to US EPA 40 CFR 60 Appendix A, Reference Method 9, as amended, is certified to evaluate Visible Emissions for a period of six (6) months from the date of this certification.



| Anthony Ferro - Field Manager | Broken Arrow, OK | 01/03/2020 |
|---|---|---|
| | Location | Date |

Compliance Assurance Associates, Inc. 682 Orvil Smith Rd, Harvest, AL, 35749. 901-381-9960. compliance-assurance.com

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

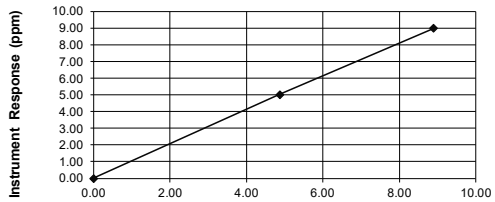
## Daily Reference Method Analyzer Calibration Data

**Calibration Date:** March 9, 2020 **Location:** Cricket Valley Energy Center - Unit U-00002

**Client:** Cricket Valley Energy Center LLC

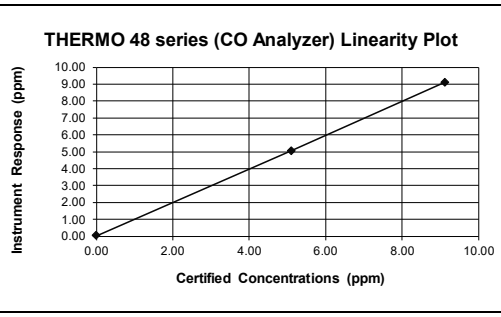
NOx Span (ppm) = 8.90

| THERMO 42 series (NOx Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Absolute Conc. (ppm) | Pass (±2%, ≤0.5ppm) |
| 0.00 | 0.02 | 0.22 | 0.02 | YES (%) |
| 4.88 | 5.05 | 1.91 | 0.17 | YES (%) |
| 8.90 | 9.02 | 1.35 | 0.12 | YES (%) |
| Linearity = 0.988 | | | | |



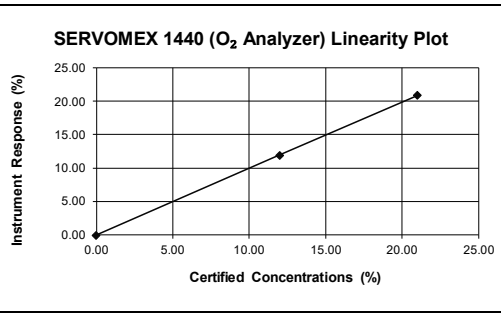

CO Span (ppm) = 9.11

| THERMO 48 series (CO Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Absolute Conc. (ppm) | Pass (±2%, ≤0.5ppm) |
| 0.00 | 0.04 | 0.44 | 0.04 | YES (%) |
| 5.09 | 5.04 | -0.55 | 0.05 | YES (%) |
| 9.11 | 9.11 | 0.00 | 0.00 | YES (%) |
| Linearity = 1.005 | | | | |




$O_2$ Span (%) = 21.00

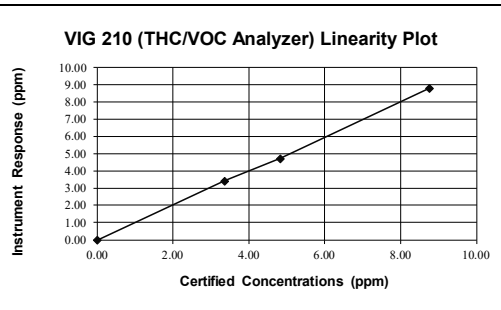
| SERVOMEX 1440 ($O_2$ Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (%) | Instrument Response (%) | Calibration Error (%) | Absolute Conc. (%) | Pass (±2%, ≤0.5%) |
| 0.00 | 0.03 | 0.14 | 0.03 | YES (%) |
| 12.00 | 12.00 | 0.00 | 0.00 | YES (%) |
| 21.00 | 20.95 | -0.24 | 0.05 | YES (%) |
| Linearity = 1.004 | | | | |




VOC (as C1) Range (ppm) = 10.5

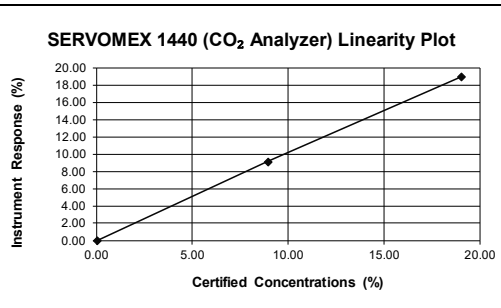
| VIG 210 (THC/VOC Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Estimated Point (ppm) | Pass (±2,5%)[1] |
| 0.00 | 0.00 | 0.01 | N/A | YES |
| 3.37 | 3.43 | 1.19 | 3.39 | YES |
| 4.84 | 4.73 | -2.85 | 4.87 | YES |
| 8.77 | 8.82 | 0.48 | N/A | YES |
| Linearity = 0.992 | | | | |

[1]-zero/high based on 2% of span, low/mid based on 5% of concentration




$CO_2$ Span (%) = 19.00

| SERVOMEX 1440 ($CO_2$ Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (%) | Instrument Response (%) | Calibration Error (%) | Absolute Conc. (%) | Pass (±2%, ≤0.5%) |
| 0.00 | 0.01 | 0.05 | 0.01 | YES (%) |
| 8.94 | 9.15 | 1.11 | 0.21 | YES (%) |
| 19.00 | 19.00 | 0.00 | 0.00 | YES (%) |
| Linearity = 1.001 | | | | |

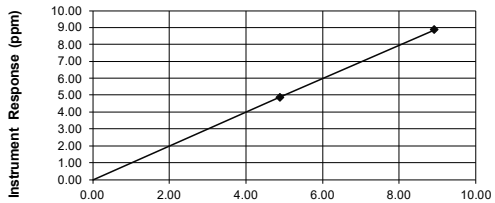


**Calibration Date:** March 10, 2020 **Location:** Cricket Valley Energy Center - Unit U-00002

**Client:** Cricket Valley Energy Center LLC

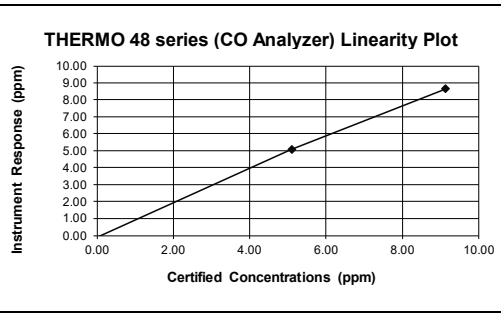
NOx Span (ppm) = 8.90

| THERMO 42 series (NOx Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Absolute Conc. (ppm) | Pass (±2%, ≤0.5ppm) |
| 0.00 | -0.02 | -0.22 | 0.02 | YES (%) |
| 4.88 | 4.88 | 0.00 | 0.00 | YES (%) |
| 8.90 | 8.86 | -0.45 | 0.04 | YES (%) |
| Linearity = 1.002 | | | | |



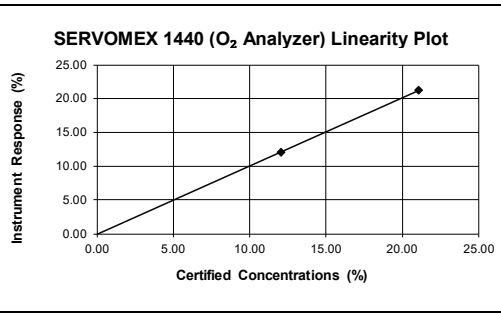

CO Span (ppm) = 9.11

| THERMO 48 series (CO Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Absolute Conc. (ppm) | Pass (±2%, ≤0.5ppm) |
| 0.00 | -0.08 | -0.88 | 0.08 | YES (%) |
| 5.09 | 5.08 | -0.11 | 0.01 | YES (%) |
| 9.11 | 8.65 | -5.05 | 0.46 | YES (abs) |
| Linearity = 1.039 | | | | |




$O_2$ Span (%) = 21.00

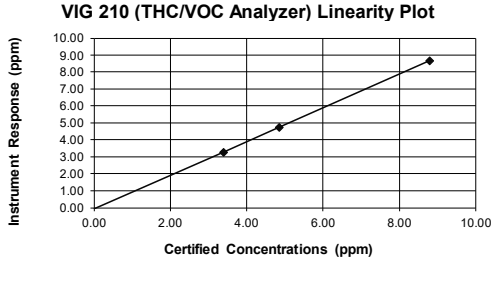
| SERVOMEX 1440 ($O_2$ Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (%) | Instrument Response (%) | Calibration Error (%) | Absolute Conc. (%) | Pass (±2%, ≤0.5%) |
| 0.00 | -0.03 | -0.14 | 0.03 | YES (%) |
| 12.00 | 12.07 | 0.33 | 0.07 | YES (%) |
| 21.00 | 21.17 | 0.81 | 0.17 | YES (%) |
| Linearity = 0.991 | | | | |




VOC (as C1) Range (ppm) = 10.5

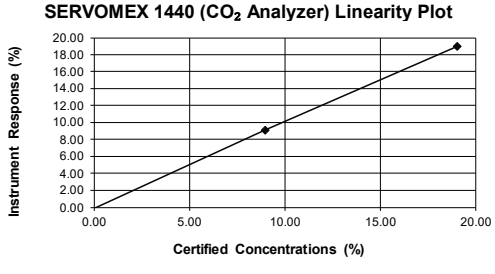
| VIG 210 (THC/VOC Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Estimated Point (ppm) | Pass (±2,5%)[1] |
| 0.00 | -0.05 | -0.43 | N/A | YES |
| 3.37 | 3.26 | -1.30 | 3.30 | YES |
| 4.84 | 4.74 | -0.51 | 4.76 | YES |
| 8.77 | 8.67 | -0.95 | N/A | YES |
| Linearity = 0.999 | | | | |

[1]-zero/high based on 2% of span,low/mid based on 5% of concentration




$CO_2$ Span (%) = 19.00

| SERVOMEX 1440 ($CO_2$ Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (%) | Instrument Response (%) | Calibration Error (%) | Absolute Conc. (%) | Pass (±2%, ≤0.5%) |
| 0.00 | -0.09 | -0.47 | 0.09 | YES (%) |
| 8.94 | 9.06 | 0.63 | 0.12 | YES (%) |
| 19.00 | 19.00 | -0.01 | 0.00 | YES (%) |
| Linearity = 0.996 | | | | |



**NOx Converter Efficiency**

**Date:** March 9, 2020

**Analyzer:** inst-nx-0020

RM 7E, (02-27-14), Sections 7.1.4; 8.2.4.1; 12.7; and 13.5 Introduce $NO_2$ to the analyzer and record the NOx concentration displayed. ... Calculate the converter efficiency using Equation 7E-7. The specification for converter efficiency must be met. ... Air Hygiene also references ALT-0013 for specific $NO_2$ concentration (40-60 ppm) and EPA Traceability Protocol requirements (±2%).

| | | |
|---|---|---|
| **Audit Gas:** | $NO_2$ Concentration ($C_v$), ppmvd | **48.70** |
| **Converter Efficiency Calculations:** | | |
| | Analyzer Reading, NO Channel, ppmvd | **1.29** |
| | Analyzer Reading, NOx Channel, ppmvd | **47.15** |
| | Analyzer Reading, $NO_2$ Channel ($C_{Dir(NO2)}$), ppmvd | **45.86** |
| | Converter Efficiency, % | **94.17** |

RM 7E, (02-27-14), 13.5 $NO_2$ to NO Conversion Efficiency Test (as applicable). The $NO_2$ to NO conversion efficiency, calculated according to Equation 7E-7, must be greater than or equal to 90 percent.

$$Eff_{NO2} = \left(\frac{C_{Dir}}{C_V}\right) \times 100$$

Eq. 7E-7 = $\frac{45.86 \text{ ppmvd}}{48.70 \text{ ppmvd}}$ x 100 = 94.17%

| Date/Time | Elapsed Time | NOx | NO |
|---|---|---|---|
| mm/dd/yy hh:mm:ss | Seconds | ppmvd | ppmvd |
| 03/09/20 05:26:09 | 130 | 37.75 | 1.41 |
| 03/09/20 05:26:19 | 140 | 38.18 | 1.41 |
| 03/09/20 05:26:29 | 150 | 37.58 | 1.40 |
| 03/09/20 05:26:39 | 160 | 41.23 | 1.39 |
| 03/09/20 05:26:49 | 170 | 46.64 | 1.36 |
| 03/09/20 05:26:59 | 180 | 47.25 | 1.35 |
| 03/09/20 05:27:09 | 190 | 47.15 | 1.31 |
| ***03/09/20 05:27:19*** | ***200*** | ***47.15*** | ***1.29*** |
| ***03/09/20 05:27:29*** | ***210*** | ***47.15*** | ***1.29*** |
| 03/09/20 05:27:39 | 220 | 47.14 | 1.26 |
| 03/09/20 05:27:49 | 230 | 47.11 | 1.21 |
| 03/09/20 05:27:59 | 240 | 43.86 | 1.21 |
| 03/09/20 05:28:09 | 250 | 38.56 | 1.21 |
| 03/09/20 05:28:19 | 260 | 37.69 | 1.22 |
| 03/09/20 05:28:29 | 270 | 35.45 | 1.21 |

**NOx Converter Efficiency**

**Date:** March 10, 2020

**Analyzer:** inst-nx-0020

RM 7E, (02-27-14), Sections 7.1.4; 8.2.4.1; 12.7; and 13.5 Introduce $NO_2$ to the analyzer and record the NOx concentration displayed. ... Calculate the converter efficiency using Equation 7E-7. The specification for converter efficiency must be met. ... Air Hygiene also references ALT-0013 for specific $NO_2$ concentration (40-60 ppm) and EPA Traceability Protocol requirements (±2%).

| | | |
|---|---|---|
| **Audit Gas:** | $NO_2$ Concentration ($C_v$), ppmvd | **48.70** |
| **Converter Efficiency Calculations:** | | |
| | Analyzer Reading, NO Channel, ppmvd | **1.13** |
| | Analyzer Reading, NOx Channel, ppmvd | **49.17** |
| | Analyzer Reading, $NO_2$ Channel ($C_{Dir(NO2)}$), ppmvd | **48.04** |
| | Converter Efficiency, % | **98.64** |

RM 7E, (02-27-14), 13.5 $NO_2$ to NO Conversion Efficiency Test (as applicable). The $NO_2$ to NO conversion efficiency, calculated according to Equation 7E-7, must be greater than or equal to 90 percent.

$$Eff_{NO2} = \left(\frac{C_{Dir}}{C_V}\right) \times 100$$

Eq. 7E-7 = $\frac{48.04 \text{ ppmvd}}{48.70 \text{ ppmvd}}$ x 100 = 98.64%

| Date/Time | Elapsed Time | NOx | NO |
|---|---|---|---|
| mm/dd/yy hh:mm:ss | Seconds | ppmvd | ppmvd |
| 03/10/20 05:17:33 | 90 | 35.97 | 1.07 |
| 03/10/20 05:17:43 | 100 | 36.04 | 1.36 |
| 03/10/20 05:17:53 | 110 | 37.45 | 1.36 |
| 03/10/20 05:18:03 | 120 | 49.05 | 1.36 |
| 03/10/20 05:18:13 | 130 | 49.13 | 1.34 |
| 03/10/20 05:18:23 | 140 | 49.19 | 1.30 |
| 03/10/20 05:18:33 | 150 | 49.21 | 1.24 |
| 03/10/20 05:18:43 | 160 | 49.21 | 1.19 |
| 03/10/20 05:18:53 | 170 | 49.17 | 1.14 |
| ***03/10/20 05:19:03*** | ***180*** | ***49.17*** | ***1.13*** |
| 03/10/20 05:19:13 | 190 | 49.18 | 1.11 |
| 03/10/20 05:19:23 | 200 | 49.12 | 1.08 |
| 03/10/20 05:19:33 | 210 | 49.12 | 1.03 |
| 03/10/20 05:19:43 | 220 | 49.11 | 1.03 |
| 03/10/20 05:19:53 | 230 | 49.11 | 1.00 |
| 03/10/20 05:20:03 | 240 | 49.09 | 0.99 |
| 03/10/20 05:20:13 | 250 | 49.04 | 0.99 |

**Cricket Valley Energy Center LLC**
**March 9, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - PRE TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ (%) |
|---|---|---|---|
| 03/09/20 | 13:42:20 | SPIKE_0339.LAB | 9.1650 |
| 03/09/20 | 13:42:30 | SPIKE_0340.LAB | 9.1581 |
| 03/09/20 | 13:42:41 | SPIKE_0341.LAB | 9.1757 |
| 03/09/20 | 13:42:51 | SPIKE_0342.LAB | 9.1604 |
| 03/09/20 | 13:43:02 | SPIKE_0343.LAB | 9.1610 |

**PRE TEST AVERAGE** **9.16**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - POST TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ (%) |
|---|---|---|---|
| 03/09/20 | 19:21:10 | UNIT2ND RUN1_0502.LAB | 8.8916 |
| 03/09/20 | 19:21:40 | UNIT2ND RUN1_0503.LAB | 8.8711 |
| 03/09/20 | 19:22:10 | UNIT2ND RUN1_0504.LAB | 8.8976 |
| 03/09/20 | 19:22:40 | UNIT2ND RUN1_0505.LAB | 8.9130 |
| 03/09/20 | 19:23:10 | UNIT2ND RUN1_0506.LAB | 8.9418 |

**POST TEST AVERAGE** **8.90**

**Analyzer Make:** MKS **Analyzer Model:** 2030

$CO_2$ Cylinder Conc. % = 8.94

| Run ID | Instrument Response (%) | Error (%) | Pass / Fail ±5% |
|---|---|---|---|
| Pre Test | 9.16 | 2.51 | PASS |
| Post Test | 8.90 | -0.41 | PASS |

**Cricket Valley Energy Center LLC**
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**Cricket Valley Energy Center**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - PRE TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ (ppm) |
|---|---|---|---|
| 03/09/20 | 13:54:13 | SPIKE_0408.LAB | 47.9536 |
| 03/09/20 | 13:54:23 | SPIKE_0409.LAB | 48.0893 |
| 03/09/20 | 13:54:34 | SPIKE_0410.LAB | 48.0554 |
| 03/09/20 | 13:54:44 | SPIKE_0411.LAB | 48.0837 |
| 03/09/20 | 13:54:54 | SPIKE_0412.LAB | 48.2405 |

**PRE TEST AVERAGE** **48.08**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - POST TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ (ppm) |
|---|---|---|---|
| 03/09/20 | 19:34:52 | UNIT2ND RUN1_0529.LAB | 48.0999 |
| 03/09/20 | 19:35:23 | UNIT2ND RUN1_0530.LAB | 48.1780 |
| 03/09/20 | 19:35:53 | UNIT2ND RUN1_0531.LAB | 48.1290 |
| 03/09/20 | 19:36:23 | UNIT2ND RUN1_0532.LAB | 48.0657 |
| 03/09/20 | 19:36:53 | UNIT2ND RUN1_0533.LAB | 48.0589 |

**POST TEST AVERAGE** **48.11**

**Analyzer Make:** MKS **Analyzer Model:** 2030

$NH_3$ Cylinder Conc. ppm = 50.40

| Run ID | Instrument Response (%) | Error (%) | Pass / Fail ±5% |
|---|---|---|---|
| Pre Test | 48.08 | -4.59 | PASS |
| Post Test | 48.11 | -4.55 | PASS |

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## Calibration Gas #1

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ ppmvd |
|---|---|---|---|
| 03/09/20 | 13:53:42 | SPIKE_0405.LAB | 47.7809 |
| 03/09/20 | 13:53:52 | SPIKE_0406.LAB | 47.8611 |
| 03/09/20 | 13:54:03 | SPIKE_0407.LAB | 47.8723 |
| 03/09/20 | 13:54:13 | SPIKE_0408.LAB | 47.9536 |
| 03/09/20 | 13:54:23 | SPIKE_0409.LAB | 48.0893 |
| 03/09/20 | 13:54:34 | SPIKE_0410.LAB | 48.0554 |
| 03/09/20 | 13:54:44 | SPIKE_0411.LAB | 48.0837 |
| 03/09/20 | 13:54:54 | SPIKE_0412.LAB | 48.2405 |
| **RAW AVERAGE** | | | **47.992** |

## Calibration Gas #2

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $SF_6$ ppmvd |
|---|---|---|---|
| 03/09/20 | 13:53:42 | SPIKE_0405.LAB | 9.7269 |
| 03/09/20 | 13:53:52 | SPIKE_0406.LAB | 9.7324 |
| 03/09/20 | 13:54:03 | SPIKE_0407.LAB | 9.7234 |
| 03/09/20 | 13:54:13 | SPIKE_0408.LAB | 9.7409 |
| 03/09/20 | 13:54:23 | SPIKE_0409.LAB | 9.7452 |
| 03/09/20 | 13:54:34 | SPIKE_0410.LAB | 9.7502 |
| 03/09/20 | 13:54:44 | SPIKE_0411.LAB | 9.7599 |
| 03/09/20 | 13:54:54 | SPIKE_0412.LAB | 9.7648 |
| **RAW AVERAGE** | | | **9.743** |

## Run #1: Pre-Spike - Native

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $NH_3$ ppmvw | $SF_6$ ppmvw |
|---|---|---|---|---|---|---|
| 03/09/20 | 14:11:10 | SPIKE_0504.LAB | 4.3427 | 6.7363 | 1.4308 | 0.0038 |
| 03/09/20 | 14:11:20 | SPIKE_0505.LAB | 4.3443 | 6.7328 | 1.3905 | 0.0040 |
| 03/09/20 | 14:11:31 | SPIKE_0506.LAB | 4.3472 | 6.7151 | 1.4359 | 0.0055 |
| 03/09/20 | 14:11:41 | SPIKE_0507.LAB | 4.3423 | 6.6539 | 1.4080 | 0.0044 |
| 03/09/20 | 14:11:52 | SPIKE_0508.LAB | 4.3514 | 6.5591 | 1.3615 | 0.0006 |
| 03/09/20 | 14:12:02 | SPIKE_0509.LAB | 4.3691 | 6.4441 | 1.3455 | 0.0043 |
| 03/09/20 | 14:12:12 | SPIKE_0510.LAB | 4.3811 | 6.3868 | 1.3463 | 0.0042 |
| 03/09/20 | 14:12:22 | SPIKE_0511.LAB | 4.3627 | 6.3898 | 1.3151 | 0.0024 |
| **RAW AVERAGE** | | | **4.355** | **6.577** | **1.379** | **0.004** |

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**Run #1: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $SF_6$ ppmvw | $NH_3$ ppmvw |
|---|---|---|---|---|---|---|
| 03/09/20 | 14:18:24 | SPIKE_0546.LAB | 3.9544 | 6.1146 | 0.8793 | 4.5836 |
| 03/09/20 | 14:18:35 | SPIKE_0547.LAB | 3.9395 | 6.1224 | 0.8964 | 4.5124 |
| 03/09/20 | 14:18:45 | SPIKE_0548.LAB | 3.9503 | 6.1453 | 0.8953 | 4.4736 |
| 03/09/20 | 14:18:55 | SPIKE_0549.LAB | 3.9431 | 6.1733 | 0.8986 | 4.4263 |
| 03/09/20 | 14:19:06 | SPIKE_0550.LAB | 3.9468 | 6.1991 | 0.8976 | 4.4081 |
| 03/09/20 | 14:19:16 | SPIKE_0551.LAB | 3.9307 | 6.1724 | 0.8962 | 4.3876 |
| 03/09/20 | 14:19:26 | SPIKE_0552.LAB | 3.9409 | 6.1148 | 0.8945 | 4.3085 |
| 03/09/20 | 14:19:36 | SPIKE_0553.LAB | 3.9331 | 6.0627 | 0.8981 | 4.3190 |
| **RAW AVERAGE** | | | **3.942** | **6.138** | **0.894** | **4.427** |

**Run #2: Pre-Spike - Native**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $NH_3$ ppmvw | $SF_6$ ppmvw |
|---|---|---|---|---|---|---|
| 03/09/20 | 14:27:01 | SPIKE_0596.LAB | 4.2505 | 7.9140 | 1.6867 | 0.0027 |
| 03/09/20 | 14:27:11 | SPIKE_0597.LAB | 4.2539 | 7.9076 | 1.7241 | 0.0050 |
| 03/09/20 | 14:27:21 | SPIKE_0598.LAB | 4.2790 | 7.8449 | 1.6798 | 0.0023 |
| 03/09/20 | 14:27:32 | SPIKE_0599.LAB | 4.2658 | 7.7870 | 1.6623 | 0.0027 |
| 03/09/20 | 14:27:42 | SPIKE_0600.LAB | 4.2727 | 7.7503 | 1.6512 | 0.0013 |
| 03/09/20 | 14:27:52 | SPIKE_0601.LAB | 4.2744 | 7.7181 | 1.6616 | 0.0033 |
| 03/09/20 | 14:28:03 | SPIKE_0602.LAB | 4.2791 | 7.7011 | 1.6553 | 0.0046 |
| 03/09/20 | 14:28:13 | SPIKE_0603.LAB | 4.2631 | 7.9102 | 1.6437 | 0.0028 |
| **RAW AVERAGE** | | | **4.267** | **7.817** | **1.671** | **0.003** |

**Run #2: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $SF_6$ ppmvw | $NH_3$ ppmvw |
|---|---|---|---|---|---|---|
| 03/09/20 | 14:46:08 | SPIKE_0707.LAB | 3.8520 | 8.1124 | 0.8035 | 4.8077 |
| 03/09/20 | 14:46:18 | SPIKE_0708.LAB | 3.8848 | 7.8650 | 0.7998 | 4.6513 |
| 03/09/20 | 14:46:28 | SPIKE_0709.LAB | 3.8762 | 7.7307 | 0.8035 | 4.6812 |
| 03/09/20 | 14:46:39 | SPIKE_0710.LAB | 3.8880 | 7.6559 | 0.8037 | 4.5874 |
| 03/09/20 | 14:46:49 | SPIKE_0711.LAB | 3.8983 | 7.5171 | 0.8036 | 4.5530 |
| 03/09/20 | 14:46:59 | SPIKE_0712.LAB | 3.9088 | 7.3068 | 0.7972 | 4.4767 |
| 03/09/20 | 14:47:10 | SPIKE_0713.LAB | 3.9011 | 7.1650 | 0.8025 | 4.4083 |
| 03/09/20 | 14:47:20 | SPIKE_0714.LAB | 3.9226 | 7.1113 | 0.8004 | 4.4259 |
| **RAW AVERAGE** | | | **3.891** | **7.558** | **0.802** | **4.574** |

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**Run #3: Pre-Spike - Native**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $NH_3$ ppmvw | $SF_6$ ppmvw |
|---|---|---|---|---|---|---|
| 03/09/20 | 14:53:32 | SPIKE_0750.LAB | 4.1550 | 9.4120 | 2.1136 | 0.0028 |
| 03/09/20 | 14:53:42 | SPIKE_0751.LAB | 4.1568 | 9.3515 | 2.1554 | 0.0039 |
| 03/09/20 | 14:53:53 | SPIKE_0752.LAB | 4.1743 | 9.2783 | 2.1189 | 0.0014 |
| 03/09/20 | 14:54:03 | SPIKE_0753.LAB | 4.1790 | 9.1890 | 2.0849 | -0.0011 |
| 03/09/20 | 14:54:14 | SPIKE_0754.LAB | 4.1861 | 9.0972 | 2.1291 | 0.0034 |
| 03/09/20 | 14:54:24 | SPIKE_0755.LAB | 4.1829 | 9.0146 | 2.1246 | 0.0051 |
| 03/09/20 | 14:54:34 | SPIKE_0756.LAB | 4.2057 | 8.9412 | 2.1323 | 0.0045 |
| 03/09/20 | 14:54:44 | SPIKE_0757.LAB | 4.2154 | 8.8814 | 2.1108 | 0.0035 |
| **RAW AVERAGE** | | | **4.182** | **9.146** | **2.121** | **0.003** |

**Run #3: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $SF_6$ ppmvw | $NH_3$ ppmvw |
|---|---|---|---|---|---|---|
| 03/09/20 | 15:03:52 | SPIKE_0810.LAB | 3.8999 | 7.1080 | 0.8270 | 4.9377 |
| 03/09/20 | 15:04:03 | SPIKE_0811.LAB | 3.8870 | 7.1844 | 0.8271 | 4.8873 |
| 03/09/20 | 15:04:13 | SPIKE_0812.LAB | 3.8870 | 7.2632 | 0.8277 | 4.8112 |
| 03/09/20 | 15:04:23 | SPIKE_0813.LAB | 3.8735 | 7.3758 | 0.8248 | 4.7575 |
| 03/09/20 | 15:04:33 | SPIKE_0814.LAB | 3.8649 | 7.6814 | 0.8272 | 4.7971 |
| 03/09/20 | 15:04:44 | SPIKE_0815.LAB | 3.8454 | 7.7866 | 0.8276 | 4.7845 |
| 03/09/20 | 15:04:54 | SPIKE_0816.LAB | 3.8593 | 7.9070 | 0.8299 | 4.7497 |
| 03/09/20 | 15:05:05 | SPIKE_0817.LAB | 3.8599 | 7.9467 | 0.8245 | 4.8081 |
| **RAW AVERAGE** | | | **3.872** | **7.532** | **0.827** | **4.817** |

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| Parameter | Unit | Run 1 | Run 2 | Run 3 |
|---|---|---|---|---|
| Concentration of $NH_3$ Cylinder | ppmvd | 47.99 | 47.99 | 47.99 |
| Concentration of $SF_6$ Cylinder | ppmvd | 9.74 | 9.74 | 9.74 |

Spike A

| | | | | |
|---|---|---|---|---|
| Stack $CO_2$ Concentration | %vd | 4.355 | 4.267 | 4.182 |
| Stack $H_2O$ Concentration | % | 6.577 | 7.817 | 9.146 |
| Stack $NH_3$ Concentration | ppmvw | 1.379 | 1.671 | 2.121 |
| Stack $SF_6$ Concentration | ppmvw | 0.004 | 0.003 | 0.003 |
| Stack + Spike $CO_2$ Concentration | %vd | 3.942 | 3.891 | 3.872 |
| Stack + Spike $H_2O$ Concentration | % | 6.138 | 7.558 | 7.532 |
| Stack + Spike $NH_3$ Concentration | ppmvw | 4.427 | 4.574 | 4.817 |
| Stack + Spike $SF_6$ Concentration | ppmvw | 0.894 | 0.802 | 0.827 |
| Dilution Ratio | | 0.098 | 0.089 | 0.092 |
| Ideal $NH_3$ Spike Yield | ppmvd | 6.026 | 5.923 | 6.526 |
| Percent Recovery $NH_3$ | % | 72.11% | 77.17% | 70.11% |

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**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - PRE TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ (%) |
|---|---|---|---|
| 03/10/20 | 5:50:17 | CAL20200310_0028.LAB | 9.1098 |
| 03/10/20 | 5:50:27 | CAL20200310_0029.LAB | 9.1270 |
| 03/10/20 | 5:50:37 | CAL20200310_0030.LAB | 9.1523 |
| 03/10/20 | 5:50:48 | CAL20200310_0031.LAB | 9.1478 |
| 03/10/20 | 5:50:58 | CAL20200310_0032.LAB | 9.1373 |

**PRE TEST AVERAGE** **9.13**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - POST TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ (%) |
|---|---|---|---|
| 03/10/20 | 19:39:16 | RUN20200310_1825.LAB | 9.1629 |
| 03/10/20 | 19:39:27 | RUN20200310_1826.LAB | 9.1967 |
| 03/10/20 | 19:39:37 | RUN20200310_1827.LAB | 9.1198 |
| 03/10/20 | 19:39:47 | RUN20200310_1828.LAB | 9.1054 |
| 03/10/20 | 19:39:58 | RUN20200310_1829.LAB | 9.2130 |

**POST TEST AVERAGE** **9.16**

**Analyzer Make:** MKS **Analyzer Model:** 2030

$CO_2$ Cylinder Conc. % = 8.94

| Run ID | Instrument Response (%) | Error (%) | Pass / Fail ±5% |
|---|---|---|---|
| Pre Test | 9.13 | 2.18 | PASS |
| Post Test | 9.16 | 2.46 | PASS |

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**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - PRE TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ (ppm) |
|---|---|---|---|
| 03/10/20 | 5:54:35 | CAL20200310_0053.LAB | 48.0507 |
| 03/10/20 | 5:54:45 | CAL20200310_0054.LAB | 48.0672 |
| 03/10/20 | 5:54:55 | CAL20200310_0055.LAB | 48.1462 |
| 03/10/20 | 5:55:06 | CAL20200310_0056.LAB | 48.1023 |
| 03/10/20 | 5:55:16 | CAL20200310_0057.LAB | 48.1750 |

**PRE TEST AVERAGE** **48.11**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - POST TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ (ppm) |
|---|---|---|---|
| 03/10/20 | 19:55:27 | RUN20200310_1919.LAB | 48.6194 |
| 03/10/20 | 19:55:38 | RUN20200310_1920.LAB | 48.6626 |
| 03/10/20 | 19:55:48 | RUN20200310_1921.LAB | 48.6869 |
| 03/10/20 | 19:55:59 | RUN20200310_1922.LAB | 48.9556 |
| 03/10/20 | 19:56:09 | RUN20200310_1923.LAB | 48.7549 |

**POST TEST AVERAGE** **48.74**

**Analyzer Make:** MKS **Analyzer Model:** 2030

$NH_3$ Cylinder Conc. ppm = 50.40

| Run ID | Instrument Response (%) | Error (%) | Pass / Fail ±5% |
|---|---|---|---|
| Pre Test | 48.11 | -4.55 | PASS |
| Post Test | 48.74 | -3.30 | PASS |

**Cricket Valley Energy Center LLC**
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## Calibration Gas #1

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ ppmvd |
|---|---|---|---|
| 03/10/20 | 5:53:43 | CAL20200310_0048.LAB | 47.4675 |
| 03/10/20 | 5:53:54 | CAL20200310_0049.LAB | 47.6681 |
| 03/10/20 | 5:54:04 | CAL20200310_0050.LAB | 47.7388 |
| 03/10/20 | 5:54:15 | CAL20200310_0051.LAB | 47.7531 |
| 03/10/20 | 5:54:25 | CAL20200310_0052.LAB | 47.9393 |
| 03/10/20 | 5:54:35 | CAL20200310_0053.LAB | 48.0507 |
| 03/10/20 | 5:54:45 | CAL20200310_0054.LAB | 48.0672 |
| 03/10/20 | 5:54:55 | CAL20200310_0055.LAB | 48.1462 |
| **RAW AVERAGE** | | | **47.854** |

## Calibration Gas #2

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $SF_6$ ppmvd |
|---|---|---|---|
| 03/10/20 | 5:53:43 | CAL20200310_0048.LAB | 9.7913 |
| 03/10/20 | 5:53:54 | CAL20200310_0049.LAB | 9.7980 |
| 03/10/20 | 5:54:04 | CAL20200310_0050.LAB | 9.7928 |
| 03/10/20 | 5:54:15 | CAL20200310_0051.LAB | 9.7888 |
| 03/10/20 | 5:54:25 | CAL20200310_0052.LAB | 9.7935 |
| 03/10/20 | 5:54:35 | CAL20200310_0053.LAB | 9.7856 |
| 03/10/20 | 5:54:45 | CAL20200310_0054.LAB | 9.7838 |
| 03/10/20 | 5:54:55 | CAL20200310_0055.LAB | 9.7693 |
| **RAW AVERAGE** | | | **9.788** |

## Run #1: Pre-Spike - Native

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $NH_3$ ppmvw | $SF_6$ ppmvw |
|---|---|---|---|---|---|---|
| 03/10/20 | 6:02:30 | CAL20200310_0099.LAB | 4.3015 | 8.4797 | 0.9684 | 0.0020 |
| 03/10/20 | 6:02:41 | CAL20200310_0100.LAB | 4.3158 | 8.4360 | 0.9388 | 0.0005 |
| 03/10/20 | 6:02:51 | CAL20200310_0101.LAB | 4.3043 | 8.4200 | 0.9325 | 0.0012 |
| 03/10/20 | 6:03:01 | CAL20200310_0102.LAB | 4.3115 | 8.4585 | 0.9054 | 0.0016 |
| 03/10/20 | 6:03:12 | CAL20200310_0103.LAB | 4.3151 | 8.4352 | 0.9153 | 0.0048 |
| 03/10/20 | 6:03:22 | CAL20200310_0104.LAB | 4.3121 | 8.4805 | 0.8900 | -0.0019 |
| 03/10/20 | 6:03:32 | CAL20200310_0105.LAB | 4.3096 | 8.4854 | 0.8705 | 0.0007 |
| 03/10/20 | 6:03:42 | CAL20200310_0106.LAB | 4.3010 | 8.7531 | 0.8786 | 0.0003 |
| **RAW AVERAGE** | | | **4.309** | **8.494** | **0.912** | **0.001** |

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**Run #1: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $SF_6$ ppmvw | $NH_3$ ppmvw |
|---|---|---|---|---|---|---|
| 03/10/20 | 6:14:34 | CAL20200310_0169.LAB | 3.8837 | 8.6230 | 0.8386 | 4.8203 |
| 03/10/20 | 6:14:44 | CAL20200310_0170.LAB | 3.8784 | 8.6792 | 0.8421 | 4.7276 |
| 03/10/20 | 6:14:54 | CAL20200310_0171.LAB | 3.8687 | 8.6402 | 0.8419 | 4.5760 |
| 03/10/20 | 6:15:04 | CAL20200310_0172.LAB | 3.8740 | 8.5922 | 0.8359 | 4.5015 |
| 03/10/20 | 6:15:15 | CAL20200310_0173.LAB | 3.8902 | 8.5365 | 0.8398 | 4.4671 |
| 03/10/20 | 6:15:25 | CAL20200310_0174.LAB | 3.8869 | 8.4298 | 0.8398 | 4.4642 |
| 03/10/20 | 6:15:35 | CAL20200310_0175.LAB | 3.8814 | 8.3824 | 0.8389 | 4.4269 |
| 03/10/20 | 6:15:46 | CAL20200310_0176.LAB | 3.8805 | 8.3635 | 0.8391 | 4.3583 |
| **RAW AVERAGE** | | | **3.880** | **8.531** | **0.840** | **4.543** |

**Run #2: Pre-Spike - Native**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $NH_3$ ppmvw | $SF_6$ ppmvw |
|---|---|---|---|---|---|---|
| 03/10/20 | 6:24:02 | CAL20200310_0224.LAB | 4.3051 | 8.7971 | 1.5958 | 0.0003 |
| 03/10/20 | 6:24:12 | CAL20200310_0225.LAB | 4.3115 | 8.7306 | 1.5854 | -0.0016 |
| 03/10/20 | 6:24:22 | CAL20200310_0226.LAB | 4.3261 | 8.6339 | 1.5257 | -0.0027 |
| 03/10/20 | 6:24:33 | CAL20200310_0227.LAB | 4.3117 | 8.5664 | 1.5802 | 0.0018 |
| 03/10/20 | 6:24:44 | CAL20200310_0228.LAB | 4.3089 | 8.6480 | 1.5693 | 0.0010 |
| 03/10/20 | 6:24:54 | CAL20200310_0229.LAB | 4.2970 | 8.8186 | 1.5823 | 0.0019 |
| 03/10/20 | 6:25:04 | CAL20200310_0230.LAB | 4.3021 | 8.9058 | 1.5665 | 0.0003 |
| 03/10/20 | 6:25:14 | CAL20200310_0231.LAB | 4.2761 | 9.1412 | 1.5885 | -0.0005 |
| **RAW AVERAGE** | | | **4.305** | **8.780** | **1.574** | **0.000** |

**Run #2: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $SF_6$ ppmvw | $NH_3$ ppmvw |
|---|---|---|---|---|---|---|
| 03/10/20 | 6:36:15 | CAL20200310_0295.LAB | 3.9524 | 7.5613 | 0.8351 | 5.0092 |
| 03/10/20 | 6:36:26 | CAL20200310_0296.LAB | 3.9484 | 7.5978 | 0.8320 | 4.9628 |
| 03/10/20 | 6:36:36 | CAL20200310_0297.LAB | 3.9638 | 7.5180 | 0.8350 | 4.9963 |
| 03/10/20 | 6:36:47 | CAL20200310_0298.LAB | 3.9607 | 7.4574 | 0.8350 | 4.9615 |
| 03/10/20 | 6:36:57 | CAL20200310_0299.LAB | 3.9487 | 7.4233 | 0.8400 | 4.9970 |
| 03/10/20 | 6:37:07 | CAL20200310_0300.LAB | 3.9554 | 7.4886 | 0.8393 | 5.0146 |
| 03/10/20 | 6:37:18 | CAL20200310_0301.LAB | 3.9534 | 7.5352 | 0.8354 | 5.0378 |
| 03/10/20 | 6:37:28 | CAL20200310_0302.LAB | 3.9623 | 7.4953 | 0.8294 | 5.0133 |
| **RAW AVERAGE** | | | **3.956** | **7.510** | **0.835** | **4.999** |

**Cricket Valley Energy Center LLC**
**March 10, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Run #3: Pre-Spike - Native**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $NH_3$ ppmvw | $SF_6$ ppmvw |
|---|---|---|---|---|---|---|
| 03/10/20 | 6:53:29 | CAL20200310_0395.LAB | 4.2874 | 8.8630 | 1.9617 | -0.0001 |
| 03/10/20 | 6:53:39 | CAL20200310_0396.LAB | 4.3052 | 8.7319 | 1.9673 | -0.0006 |
| 03/10/20 | 6:53:50 | CAL20200310_0397.LAB | 4.2870 | 8.6017 | 1.9294 | -0.0019 |
| 03/10/20 | 6:54:00 | CAL20200310_0398.LAB | 4.3082 | 8.5000 | 1.9315 | -0.0018 |
| 03/10/20 | 6:54:10 | CAL20200310_0399.LAB | 4.3145 | 8.4517 | 1.8742 | -0.0013 |
| 03/10/20 | 6:54:21 | CAL20200310_0400.LAB | 4.3054 | 8.3687 | 1.8920 | -0.0008 |
| 03/10/20 | 6:54:31 | CAL20200310_0401.LAB | 4.3170 | 8.3016 | 1.8709 | -0.0022 |
| 03/10/20 | 6:54:42 | CAL20200310_0402.LAB | 4.3359 | 8.2077 | 1.9219 | 0.0002 |
| **RAW AVERAGE** | | | **4.308** | **8.503** | **1.919** | **-0.001** |

**Run #3: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $SF_6$ ppmvw | $NH_3$ ppmvw |
|---|---|---|---|---|---|---|
| 03/10/20 | 7:04:40 | CAL20200310_0460.LAB | 3.9266 | 7.9162 | 0.8387 | 5.8419 |
| 03/10/20 | 7:04:51 | CAL20200310_0461.LAB | 3.9146 | 7.9760 | 0.8396 | 5.8087 |
| 03/10/20 | 7:05:01 | CAL20200310_0462.LAB | 3.9187 | 7.9475 | 0.8394 | 5.7310 |
| 03/10/20 | 7:05:12 | CAL20200310_0463.LAB | 3.9118 | 8.0489 | 0.8402 | 5.7370 |
| 03/10/20 | 7:05:22 | CAL20200310_0464.LAB | 3.9044 | 8.0993 | 0.8401 | 5.6852 |
| 03/10/20 | 7:05:32 | CAL20200310_0465.LAB | 3.9116 | 8.0309 | 0.8368 | 5.5275 |
| 03/10/20 | 7:05:42 | CAL20200310_0466.LAB | 3.9182 | 8.0022 | 0.8419 | 5.4911 |
| 03/10/20 | 7:05:53 | CAL20200310_0467.LAB | 3.9259 | 7.9475 | 0.8400 | 5.4342 |
| **RAW AVERAGE** | | | **3.916** | **7.996** | **0.840** | **5.657** |

**Cricket Valley Energy Center LLC**
**March 10, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

| Parameter | Unit | Run 1 | Run 2 | Run 3 |
|---|---|---|---|---|
| Concentration of $NH_3$ Cylinder | ppmvd | 47.85 | 47.85 | 47.85 |
| Concentration of $SF_6$ Cylinder | ppmvd | 9.79 | 9.79 | 9.79 |

Spike A

| | | | | |
|---|---|---|---|---|
| Stack $CO_2$ Concentration | %vd | 4.309 | 4.305 | 4.308 |
| Stack $H_2O$ Concentration | % | 8.494 | 8.780 | 8.503 |
| Stack $NH_3$ Concentration | ppmvw | 0.912 | 1.574 | 1.919 |
| Stack $SF_6$ Concentration | ppmvw | 0.001 | 0.000 | -0.001 |
| Stack + Spike $CO_2$ Concentration | %vd | 3.880 | 3.956 | 3.916 |
| Stack + Spike $H_2O$ Concentration | % | 8.531 | 7.510 | 7.996 |
| Stack + Spike $NH_3$ Concentration | ppmvw | 4.543 | 4.999 | 5.657 |
| Stack + Spike $SF_6$ Concentration | ppmvw | 0.840 | 0.835 | 0.840 |
| Dilution Ratio | | 0.094 | 0.092 | 0.093 |
| Ideal $NH_3$ Spike Yield | ppmvd | 5.391 | 5.981 | 6.363 |
| Percent Recovery $NH_3$ | % | 90.54% | 86.94% | 95.20% |

| DRIFT AND BIAS CHECK AND RESPONSE TIME CALCULATOR | | |
|---|---|---|
| **Strat Test Pre and Post QA/QC Check** | **$O_2$** | **NOx** |
| **Initial Zero** | -0.02 | -0.02 |
| **Final Zero** | -0.01 | 0.02 |
| **Avg. Zero** | -0.02 | 0.00 |
| **Initial UpScale** | 12.13 | 5.05 |
| **Final UpScale** | 12.02 | 4.83 |
| **Avg. UpScale** | 12.08 | 4.94 |
| **Sys Resp (Zero)** | -0.01 | 0.00 |
| **Sys Resp (Upscale)** | 12.28 | 5.09 |
| **Upscale Cal Gas** | 11.97 | 4.91 |
| **Initial Zero Bias** | -0.05% | -0.22% |
| **Final Zero Bias** | 0.00% | 0.22% |
| **Zero Drift** | 0.05% | 0.43% |
| **Initial Upscale Bias** | -0.71% | -0.43% |
| **Final Upscale Bias** | -1.24% | -2.83% |
| **Upscale Drift** | 0.52% | 2.39% |
| Alternative Specification Abs Diff **Initial Zero** | 0.01 | 0.02 |
| Alternative Specification Abs Diff **Final Zero** | 0.00 | 0.02 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.15 | 0.04 |
| Alternative Specification Abs Diff **Final Upscale** | 0.26 | 0.26 |
| **Calibration Span** | 21.00 | 9.20 |
| **3% of Cal. Span (drift)** | 0.63 | 0.28 |
| **5% of Cal. Span (bias)** | 1.05 | 0.46 |

| | | |
|---|---|---|
| **Respone Time (min)** | 1.3 | 2.0 |
| **Sys. Response (min)** | 2.0 | |

| Date/Time mm/dd/yy hh:mm:ss | z | $O_2$ %-10 | s | z | NOx ppm-10 | s | INJECTIONS |
|---|---|---|---|---|---|---|---|
| 02/25/20 06:05:32 | | 13.44 | | | 1.36 | | x |
| 02/25/20 06:05:42 | | 13.38 | | | 1.35 | | |
| 02/25/20 06:05:52 | | 13.39 | | | 1.33 | | |
| 02/25/20 06:06:02 | | 13.39 | | | 1.34 | | |
| 02/25/20 06:06:12 | | 13.38 | | | 1.38 | | |
| 02/25/20 06:06:22 | | 8.55 | | | 1.38 | | |
| 02/25/20 06:06:32 | | 0.72 | | | 1.24 | | |
| 02/25/20 06:06:42 | x | **0.16** | | | 2.29 | | |
| 02/25/20 06:06:52 | | **0.11** | | | 4.25 | | |
| 02/25/20 06:07:02 | | **0.07** | | | **4.95** | x | |
| 02/25/20 06:07:12 | | **0.05** | | | **4.89** | | |
| 02/25/20 06:07:22 | | **0.04** | | | **4.94** | | |
| 02/25/20 06:07:32 | | **0.02** | | | **4.91** | | |
| 02/25/20 06:07:42 | | **0.01** | | | **4.95** | | |
| 02/25/20 06:07:52 | | **0.01** | | | **4.94** | | |
| 02/25/20 06:08:02 | | **0.00** | | | **4.94** | | x |
| 02/25/20 06:08:12 | | **-0.01** | | | **4.94** | | |
| 02/25/20 06:08:22 | | **-0.01** | | | **4.94** | | |
| 02/25/20 06:08:32 | | **-0.02** | | | **4.94** | | |
| 02/25/20 06:08:42 | | **-0.03** | | | **4.92** | | |
| 02/25/20 06:08:52 | | **-0.02** | | | **4.89** | | |
| 02/25/20 06:09:02 | | **-0.03** | | | **4.94** | | |
| 02/25/20 06:09:12 | | 5.12 | | | **4.93** | | |
| 02/25/20 06:09:22 | | **11.55** | x | | 4.06 | | |
| 02/25/20 06:09:32 | | **11.85** | | | 3.07 | | |
| 02/25/20 06:09:42 | | **11.89** | | | 2.25 | | |
| 02/25/20 06:09:52 | | **11.91** | | | 0.84 | | |
| 02/25/20 06:10:02 | | **11.93** | | x | **0.12** | | |
| 02/25/20 06:10:12 | | **11.94** | | | **0.09** | | |
| 02/25/20 06:10:22 | | **11.95** | | | **0.05** | | |

| DRIFT AND BIAS CHECK | | | | | |
|---|---|---|---|---|---|
| **Base Load, Run - 1-1** | **$O_2$** | **NOx** | **CO** | **VOC (as C1)** | **$CO_2$** |
| **Raw Average** | 12.97 | 2.08 | 0.19 | 0.00 | 4.24 |
| **Corrected Average** | 13.07 | 2.12 | 0.21 | 0.00 | 4.22 |
| **Initial Zero** | 0.11 | -0.10 | -0.01 | -0.03 | 0.01 |
| **Final Zero** | 0.10 | -0.05 | -0.04 | -0.04 | -0.04 |
| **Avg. Zero** | 0.11 | -0.08 | -0.03 | -0.04 | -0.02 |
| **Initial UpScale** | 11.94 | 4.84 | 5.08 | 3.17 | 9.06 |
| **Final UpScale** | 11.89 | 4.93 | 5.07 | 3.23 | 8.92 |
| **Avg. UpScale** | 11.92 | 4.89 | 5.08 | 3.20 | 8.99 |
| **Sys Resp (Zero)** | 0.03 | 0.02 | 0.04 | 0.00 | 0.01 |
| **Sys Resp (Upscale)** | 12.00 | 5.05 | 5.04 | 3.43 | 9.15 |
| **Upscale Cal Gas** | 12.00 | 4.88 | 5.09 | 3.37 | 8.94 |
| **Initial Zero Bias** | 0.38% | -1.35% | -0.55% | -0.30% | 0.01% |
| **Final Zero Bias** | 0.33% | -0.79% | -0.88% | -0.39% | -0.26% |
| **Zero Drift** | 0.05% | 0.56% | 0.33% | 0.10% | 0.26% |
| **Initial Upscale Bias** | -0.29% | -2.36% | 0.44% | -2.48% | -0.47% |
| **Final Upscale Bias** | -0.52% | -1.35% | 0.33% | -1.90% | -1.21% |
| **Upscale Drift** | 0.24% | 1.01% | 0.11% | 0.57% | 0.74% |
| Alternative Specification Abs Diff **Initial Zero** | 0.08 | 0.12 | 0.05 | -- | 0.00 |
| Alternative Specification Abs Diff **Final Zero** | 0.07 | 0.07 | 0.08 | -- | 0.05 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.06 | 0.21 | 0.04 | -- | 0.09 |
| Alternative Specification Abs Diff **Final Upscale** | 0.11 | 0.12 | 0.03 | -- | 0.23 |
| **Calibration Span** | 21.00 | 8.90 | 9.11 | 10.50 | 19.00 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 | 0.32 | 0.57 |
| **5% of Cal. Span (bias)** | 1.05 | 0.45 | 0.46 | 0.53 | 0.95 |

| DRIFT AND BIAS CHECK | | | | | |
|---|---|---|---|---|---|
| **Base Load, Run - 1-2** | **$O_2$** | **NOx** | **CO** | **VOC (as C1)** | **$CO_2$** |
| **Raw Average** | 12.97 | 2.17 | 0.20 | 0.01 | 4.74 |
| **Corrected Average** | 13.10 | 2.14 | 0.22 | 0.01 | 4.75 |
| **Initial Zero** | 0.10 | -0.05 | -0.04 | -0.04 | -0.04 |
| **Final Zero** | 0.11 | 0.09 | 0.01 | 0.05 | 0.00 |
| **Avg. Zero** | 0.11 | 0.02 | -0.02 | 0.00 | -0.02 |
| **Initial UpScale** | 11.89 | 4.93 | 5.07 | 3.23 | 8.92 |
| **Final UpScale** | 11.89 | 4.91 | 5.03 | 3.32 | 8.96 |
| **Avg. UpScale** | 11.89 | 4.92 | 5.05 | 3.28 | 8.94 |
| **Sys Resp (Zero)** | 0.03 | 0.02 | 0.04 | 0.00 | 0.01 |
| **Sys Resp (Upscale)** | 12.00 | 5.05 | 5.04 | 3.43 | 9.15 |
| **Upscale Cal Gas** | 12.00 | 4.88 | 5.09 | 3.37 | 8.94 |
| **Initial Zero Bias** | 0.33% | -0.79% | -0.88% | -0.39% | -0.26% |
| **Final Zero Bias** | 0.38% | 0.79% | -0.33% | 0.43% | -0.05% |
| **Zero Drift** | 0.05% | 1.57% | 0.55% | 0.82% | 0.21% |
| **Initial Upscale Bias** | -0.52% | -1.35% | 0.33% | -1.90% | -1.21% |
| **Final Upscale Bias** | -0.52% | -1.57% | -0.11% | -1.05% | -1.00% |
| **Upscale Drift** | 0.00% | 0.22% | 0.44% | 0.86% | 0.21% |
| Alternative Specification Abs Diff **Initial Zero** | 0.07 | 0.07 | 0.08 | -- | 0.05 |
| Alternative Specification Abs Diff **Final Zero** | 0.08 | 0.07 | 0.03 | -- | 0.01 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.11 | 0.12 | 0.03 | -- | 0.23 |
| Alternative Specification Abs Diff **Final Upscale** | 0.11 | 0.14 | 0.01 | -- | 0.19 |
| **Calibration Span** | 21.00 | 8.90 | 9.11 | 10.50 | 19.00 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 | 0.32 | 0.57 |
| **5% of Cal. Span (bias)** | 1.05 | 0.45 | 0.46 | 0.53 | 0.95 |

| DRIFT AND BIAS CHECK | | | | | |
|---|---|---|---|---|---|
| **Base Load, Run - 1-3** | **$O_2$** | **NOx** | **CO** | **VOC (as C1)** | **$CO_2$** |
| **Raw Average** | 12.90 | 1.96 | 0.16 | -0.04 | 4.39 |
| **Corrected Average** | 13.04 | 1.94 | 0.15 | 0.00 | 4.42 |
| **Initial Zero** | 0.11 | 0.09 | 0.01 | 0.05 | 0.00 |
| **Final Zero** | 0.09 | -0.06 | 0.00 | 0.05 | -0.03 |
| **Avg. Zero** | 0.10 | 0.02 | 0.01 | 0.05 | -0.02 |
| **Initial UpScale** | 11.89 | 4.91 | 5.03 | 3.32 | 8.96 |
| **Final UpScale** | 11.86 | 4.93 | 5.05 | 3.21 | 8.85 |
| **Avg. UpScale** | 11.88 | 4.92 | 5.04 | 3.27 | 8.91 |
| **Sys Resp (Zero)** | 0.03 | 0.02 | 0.04 | 0.00 | 0.01 |
| **Sys Resp (Upscale)** | 12.00 | 5.05 | 5.04 | 3.43 | 9.15 |
| **Upscale Cal Gas** | 12.00 | 4.88 | 5.09 | 3.37 | 8.94 |
| **Initial Zero Bias** | 0.38% | 0.79% | -0.33% | 0.43% | -0.05% |
| **Final Zero Bias** | 0.29% | -0.90% | -0.44% | 0.47% | -0.21% |
| **Zero Drift** | 0.10% | 1.69% | 0.11% | 0.04% | 0.16% |
| **Initial Upscale Bias** | -0.52% | -1.57% | -0.11% | -1.05% | -1.00% |
| **Final Upscale Bias** | -0.67% | -1.35% | 0.11% | -2.10% | -1.58% |
| **Upscale Drift** | 0.14% | 0.22% | 0.22% | 1.05% | 0.58% |
| Alternative Specification Abs Diff **Initial Zero** | 0.08 | 0.07 | 0.03 | -- | 0.01 |
| Alternative Specification Abs Diff **Final Zero** | 0.06 | 0.08 | 0.04 | -- | 0.04 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.11 | 0.14 | 0.01 | -- | 0.19 |
| Alternative Specification Abs Diff **Final Upscale** | 0.14 | 0.12 | 0.01 | -- | 0.30 |
| **Calibration Span** | 21.00 | 8.90 | 9.11 | 10.50 | 19.00 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 | 0.32 | 0.57 |
| **5% of Cal. Span (bias)** | 1.05 | 0.45 | 0.46 | 0.53 | 0.95 |

| DRIFT AND BIAS CHECK | | | | | |
|---|---|---|---|---|---|
| **Base+Db Load, Run - 2-1** | **$O_2$** | **NOx** | **CO** | **VOC (as C1)** | **$CO_2$** |
| **Raw Average** | 12.04 | 2.43 | 0.17 | -0.03 | 5.02 |
| **Corrected Average** | 12.07 | 2.42 | 0.21 | 0.00 | 5.07 |
| **Initial Zero** | 0.06 | -0.05 | 0.03 | 0.02 | 0.04 |
| **Final Zero** | 0.07 | 0.09 | -0.10 | -0.04 | 0.00 |
| **Avg. Zero** | 0.07 | 0.02 | -0.04 | -0.01 | 0.02 |
| **Initial UpScale** | 11.96 | 4.86 | 5.05 | 3.40 | 8.80 |
| **Final UpScale** | 11.98 | 4.88 | 4.98 | 3.30 | 8.87 |
| **Avg. UpScale** | 11.97 | 4.87 | 5.02 | 3.35 | 8.83 |
| **Sys Resp (Zero)** | -0.03 | -0.02 | -0.08 | -0.05 | -0.09 |
| **Sys Resp (Upscale)** | 12.07 | 4.88 | 5.08 | 3.26 | 9.06 |
| **Upscale Cal Gas** | 12.00 | 4.88 | 5.09 | 3.37 | 8.94 |
| **Initial Zero Bias** | 0.43% | -0.34% | 1.21% | 0.62% | 0.68% |
| **Final Zero Bias** | 0.48% | 1.24% | -0.22% | 0.05% | 0.47% |
| **Zero Drift** | 0.05% | 1.57% | 1.43% | 0.57% | 0.21% |
| **Initial Upscale Bias** | -0.52% | -0.22% | -0.33% | 1.33% | -1.37% |
| **Final Upscale Bias** | -0.43% | 0.00% | -1.10% | 0.38% | -1.02% |
| **Upscale Drift** | 0.10% | 0.22% | 0.77% | 0.95% | 0.35% |
| Alternative Specification Abs Diff **Initial Zero** | 0.09 | 0.03 | 0.11 | -- | 0.13 |
| Alternative Specification Abs Diff **Final Zero** | 0.10 | 0.11 | 0.02 | -- | 0.09 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.11 | 0.02 | 0.03 | -- | 0.26 |
| Alternative Specification Abs Diff **Final Upscale** | 0.09 | 0.00 | 0.10 | -- | 0.19 |
| **Calibration Span** | 21.00 | 8.90 | 9.11 | 10.50 | 19.00 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 | 0.32 | 0.57 |
| **5% of Cal. Span (bias)** | 1.05 | 0.45 | 0.46 | 0.53 | 0.95 |

| DRIFT AND BIAS CHECK | | | | | |
|---|---|---|---|---|---|
| Base+Db Load, Run - 2-2 | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ |
| Raw Average | 12.01 | 2.57 | 0.12 | -0.01 | 5.00 |
| Corrected Average | 11.98 | 2.52 | 0.21 | 0.00 | 5.06 |
| Initial Zero | 0.07 | 0.09 | -0.10 | -0.04 | 0.00 |
| Final Zero | 0.08 | 0.06 | -0.07 | -0.04 | -0.01 |
| Avg. Zero | 0.08 | 0.08 | -0.09 | -0.04 | -0.01 |
| Initial UpScale | 11.98 | 4.88 | 4.98 | 3.30 | 8.87 |
| Final UpScale | 12.08 | 4.94 | 5.02 | 3.32 | 8.82 |
| Avg. UpScale | 12.03 | 4.91 | 5.00 | 3.31 | 8.84 |
| Sys Resp (Zero) | -0.03 | -0.02 | -0.08 | -0.05 | -0.09 |
| Sys Resp (Upscale) | 12.07 | 4.88 | 5.08 | 3.26 | 9.06 |
| Upscale Cal Gas | 12.00 | 4.88 | 5.09 | 3.37 | 8.94 |
| Initial Zero Bias | 0.48% | 1.24% | -0.22% | 0.05% | 0.47% |
| Final Zero Bias | 0.52% | 0.90% | 0.11% | 0.05% | 0.42% |
| Zero Drift | 0.05% | 0.34% | 0.33% | 0.00% | 0.05% |
| Initial Upscale Bias | -0.43% | 0.00% | -1.10% | 0.38% | -1.02% |
| Final Upscale Bias | 0.05% | 0.67% | -0.66% | 0.57% | -1.26% |
| Upscale Drift | 0.48% | 0.67% | 0.44% | 0.19% | 0.25% |
| Alternative Specification Abs Diff: Initial Zero | 0.10 | 0.11 | 0.02 | -- | 0.09 |
| Alternative Specification Abs Diff: Final Zero | 0.11 | 0.08 | 0.01 | -- | 0.08 |
| Alternative Specification Abs Diff: Initial Upscale | 0.09 | 0.00 | 0.10 | -- | 0.19 |
| Alternative Specification Abs Diff: Final Upscale | 0.01 | 0.06 | 0.06 | -- | 0.24 |
| Calibration Span | 21.00 | 8.90 | 9.11 | 10.50 | 19.00 |
| 3% of Cal. Span (drift) | 0.63 | 0.27 | 0.27 | 0.32 | 0.57 |
| 5% of Cal. Span (bias) | 1.05 | 0.45 | 0.46 | 0.53 | 0.95 |

| DRIFT AND BIAS CHECK | | | | | |
|---|---|---|---|---|---|
| Base+Db Load, Run - 2-3 | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ |
| Raw Average | 11.99 | 2.66 | 0.14 | -0.01 | 5.03 |
| Corrected Average | 11.95 | 2.54 | 0.21 | 0.00 | 5.08 |
| Initial Zero | 0.08 | 0.06 | -0.07 | -0.04 | -0.01 |
| Final Zero | 0.07 | 0.06 | -0.06 | -0.04 | -0.03 |
| Avg. Zero | 0.08 | 0.06 | -0.07 | -0.04 | -0.02 |
| Initial UpScale | 12.08 | 4.94 | 5.02 | 3.32 | 8.82 |
| Final UpScale | 12.01 | 5.17 | 5.03 | 3.21 | 8.94 |
| Avg. UpScale | 12.04 | 5.06 | 5.03 | 3.27 | 8.88 |
| Sys Resp (Zero) | -0.03 | -0.02 | -0.08 | -0.05 | -0.09 |
| Sys Resp (Upscale) | 12.07 | 4.88 | 5.08 | 3.26 | 9.06 |
| Upscale Cal Gas | 12.00 | 4.88 | 5.09 | 3.37 | 8.94 |
| Initial Zero Bias | 0.52% | 0.90% | 0.11% | 0.05% | 0.42% |
| Final Zero Bias | 0.48% | 0.90% | 0.22% | 0.05% | 0.32% |
| Zero Drift | 0.05% | 0.00% | 0.11% | 0.00% | 0.11% |
| Initial Upscale Bias | 0.05% | 0.67% | -0.66% | 0.57% | -1.26% |
| Final Upscale Bias | -0.31% | 3.26% | -0.55% | -0.48% | -0.63% |
| Upscale Drift | 0.36% | 2.58% | 0.11% | 1.05% | 0.63% |
| Alternative Specification Abs Diff: Initial Zero | 0.11 | 0.08 | 0.01 | -- | 0.08 |
| Alternative Specification Abs Diff: Final Zero | 0.10 | 0.08 | 0.02 | -- | 0.06 |
| Alternative Specification Abs Diff: Initial Upscale | 0.01 | 0.06 | 0.06 | -- | 0.24 |
| Alternative Specification Abs Diff: Final Upscale | 0.06 | 0.29 | 0.05 | -- | 0.12 |
| Calibration Span | 21.00 | 8.90 | 9.11 | 10.50 | 19.00 |
| 3% of Cal. Span (drift) | 0.63 | 0.27 | 0.27 | 0.32 | 0.57 |
| 5% of Cal. Span (bias) | 1.05 | 0.45 | 0.46 | 0.53 | 0.95 |

# SINGLE LOAD TEST - FIELD DATA SHEET

AIR HYGIENE

| | | | |
|---|---|---|---|
| **Company:** | Bechtel | | |
| **Location:** | Cricket Valley, New York | | |
| **Date:** | 3/9/2020 | **Project Code:** | bec-19-cricketvalley.ny-start#2 |
| **Unit Make and Model:** | | | |
| **Unit Number:** | | | |
| **Serial Number:** | | | |
| **Data Recorded By:** | | | |
| **Tested With AHI Unit(s):** | **Truck(s):** 163 | **Trailer(s):** | 215 |
| **LDEQ Warmup/Cal Req:** | **On (Day/Time):** | **Cal (Day/Time):** | |

| **CYLINDER SERIAL NUMBERS** | | $O_2$ | NOx | CO |
|---|---|---|---|---|
| | **Low** | EB0072934 | EB0072934 | EB0072934 |
| | **Mid** | CC729922 | EB0065964 | EB0065964 |
| | **High** | CC721614 | EB0040961 | EB0040961 |

Stack Dia. = _____
Measured By: _____
Measured With: _____

| **CYLINDER SERIAL NUMBERS** | | THC | $CO_2$ | $SO_2$ |
|---|---|---|---|---|
| | **Low** | EB0057200 | EB0072934 | N/a |
| | **Mid** | EB0060640 | CC729922 | N/a |
| | **High** | EB0038438 | CC721614 | N/a |

| **RUN INFORMATION** | **Load** | | |
|---|---|---|---|
| | _____% #1 | _____% #2 | _____% #3 |
| **Time Start (hh:mm:ss)** | 14:44:11 | 16:05:11 | 17:18:11 |
| **Time Stop (hh:mm:ss)** | 15:43:41 | 17:04:41 | 18:17:41 |
| **Rated Power (MW or hp)** | | | |
| **Actual Power (MW or hp)** | | | |
| **Barometric Pressure (in. Hg)** | | | |
| **Ambient Temperature (°F)** | | | |
| **Relative Humidity (%)** | | | |
| **Fuel Flow (lb/min)** | | | |
| **Fuel Flow (SCF/hr)=(lb/min)*21.7** | | | |
| **Specific Humidity (gr/lb)** | | | |
| **Spec. Hum. (lb $H_2O$/lb air)=(gr/lb)/7000** | | | |
| **PCD (psi)** | | | |
| **PCD (mm Hg)=(psi+14.24)*51.71493** | | | |
| **NOx Water Injection (gpm)** | | | |

| **$NO_2$ CONVERSION** | |
|---|---|
| **$NO_2$ Gas (ppm)** | 48.7 |
| **NO Reading (ppm)** | 1.34 |
| **NOx Reading (ppm)** | 47.15 |
| **Cylinder Num** | EB0098845 |

| **REPORT INFORMATION** | | |
|---|---|---|
| | **INSTRUMENT** | **SERIAL #** |
| **$O_2$** | Sevromex 1440 | Inst-O2-0024 |
| **NOx** | Thermo 42c | Inst-Nx-0031 |
| **CO** | Thermo 48c | Inst-Co-0029 |
| **THC** | Thermo 51i | Inst-Th-0013 |
| **$CO_2$** | Sevromex 1440 | Inst-C2-0016 |
| **$SO_2$** | N/a | N/a |

| **RESPONSE TIME** | | |
|---|---|---|
| | **TIME (hh:mm)** | **RESP (min)** |
| **1st Gas Inject** | | |
| **1st Inst. @ 95%** | | |
| **2nd Inst. @ 95%** | | |
| **3rd Inst. @ 95%** | | |
| **2nd Gas Inject** | | |
| **1st Inst. @ 95%** | | |
| **2nd Inst. @ 95%** | | |
| **3rd Inst. @ 95%** | | |
| **3rd Gas Inject** | | |
| **1st Inst. @ 95%** | | |
| **2nd Inst. @ 95%** | | |
| **3rd Inst. @ 95%** | | |

| **CALIBRATION** | $O_2$ | | NOx | | CO | | THC | | $CO_2$ | | $SO_2$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Conc.** | **Actual** | **Conc.** | **Actual** | **Conc.** | **Actual** | **Conc.** | **Actual** | **Conc.** | **Actual** | **Conc.** | **Actual** |
| **Zero Gas** | 0 | 0.03 | 0 | 0.02 | 0 | 0.04 | 0 | 0 | 0 | 0.01 | N/a | N/a |
| **Low Gas** | N/a | N/a | N/a | N/a | N/a | N/a | 3.37 | 3.43 | N/a | N/a | N/a | N/a |
| **Mid Gas** | 12 | 12 | 4.9 | 5.05 | 5.09 | 5.04 | 4.9 | 4.73 | 8.94 | 9.15 | N/a | N/a |
| **High Gas** | 21 | 20.95 | 8.9 | 9.02 | 9.1 | 9.11 | 8.77 | 8.82 | 19 | 19 | N/a | N/a |

| **BIAS** | $O_2$ | | NOx | | CO | | THC | | $CO_2$ | | $SO_2$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Zero** | **Mid** | **Zero** | **Mid** | **Zero** | **Mid** | **Zero** | **Mid** | **Zero** | **Mid** | **Zero** | **Mid** |
| **Initial Run #1** | 0.11 | 11.94 | -0.1 | 4.84 | -0.01 | 5.08 | -0.01 | 3.17 | 0.01 | 9.06 | N/a | N/a |
| **Run #1 / Run #2** | 0.1 | 11.89 | -0.05 | 4.93 | -0.04 | 5.07 | -0.04 | 3.23 | -0.04 | 8.92 | N/a | N/a |
| **Run #2 / Run #3** | 0.11 | 11.89 | 0.09 | 4.91 | 0.01 | 5.03 | 0.05 | 3.32 | 0 | 8.96 | N/a | N/a |
| **Run #3 / Final** | 0.09 | 11.86 | -0.06 | 4.93 | 0 | 5.05 | 0.05 | 3.21 | -0.03 | 8.85 | N/a | N/a |
| **Bias Gas Actual Conc.** | | 12 | | 4.9 | | 5.09 | | 3.37 | | 8.94 | | N/a |

Signature _____

# SINGLE LOAD TEST - FIELD DATA SHEET

AIR HYGIENE

| | | | |
|---|---|---|---|
| **Company:** | Bechtel | | |
| **Location:** | Cricket Valley, New York | | |
| **Date:** | 3/10/2020 | **Project Code:** | bec-19-cricketvalley.ny-start#2 |
| **Unit Make and Model:** | | | |
| **Unit Number:** | | | |
| **Serial Number:** | | | |
| **Data Recorded By:** | | | |
| **Tested With AHI Unit(s):** | **Truck(s):** 163 | **Trailer(s):** | 215 |
| **LDEQ Warmup/Cal Req:** | **On (Day/Time):** | **Cal (Day/Time):** | |

| **CYLINDER SERIAL NUMBERS** | | $O_2$ | NOx | CO |
|---|---|---|---|---|
| | **Low** | EB0072934 | EB0072934 | EB0072934 |
| | **Mid** | CC729922 | EB0065964 | EB0065964 |
| | **High** | CC721614 | EB0040961 | EB0040961 |

| **CYLINDER SERIAL NUMBERS** | | THC | $CO_2$ | $SO_2$ |
|---|---|---|---|---|
| | **Low** | EB0057200 | EB0072934 | N/a |
| | **Mid** | EB0060640 | CC729922 | N/a |
| | **High** | EB0038438 | CC721614 | N/a |

Stack Dia. = _____
Measured By: _____
Measured With: _____

| **RUN INFORMATION** | **Load** | | |
|---|---|---|---|
| | _____% #1 | _____% #2 | _____% #3 |
| **Time Start (hh:mm:ss)** | 15:27:20 | 17:35:20 | 18:35:20 |
| **Time Stop (hh:mm:ss)** | 16:26:50 | 18:34:50 | 19:34:50 |
| **Rated Power (MW or hp)** | | | |
| **Actual Power (MW or hp)** | | | |
| **Barometric Pressure (in. Hg)** | | | |
| **Ambient Temperature (°F)** | | | |
| **Relative Humidity (%)** | | | |
| **Fuel Flow (lb/min)** | | | |
| **Fuel Flow (SCF/hr)=(lb/min)*21.7** | | | |
| **Specific Humidity (gr/lb)** | | | |
| **Spec. Hum. (lb $H_2O$/lb air)=(gr/lb)/7000** | | | |
| **PCD (psi)** | | | |
| **PCD (mm Hg)=(psi+14.24)*51.71493** | | | |
| **NOx Water Injection (gpm)** | | | |

| **$NO_2$ CONVERSION** | |
|---|---|
| **$NO_2$ Gas (ppm)** | 48.7 |
| **NO Reading (ppm)** | 1.13 |
| **NOx Reading (ppm)** | 49.17 |
| **Cylinder Num** | EB0098845 |

| **REPORT INFORMATION** | | |
|---|---|---|
| | **INSTRUMENT** | **SERIAL #** |
| **$O_2$** | Sevromex 1440 | Inst-O2-0024 |
| **NOx** | Thermo 42c | Inst-Nx-0031 |
| **CO** | Thermo 48c | Inst-Co-0029 |
| **THC** | Thermo 51i | Inst-Th-0013 |
| **$CO_2$** | Sevromex 1440 | Inst-C2-0016 |
| **$SO_2$** | N/a | N/a |

| **RESPONSE TIME** | | |
|---|---|---|
| | **TIME (hh:mm)** | **RESP (min)** |
| **1st Gas Inject** | | |
| **1st Inst. @ 95%** | | |
| **2nd Inst. @ 95%** | | |
| **3rd Inst. @ 95%** | | |
| **2nd Gas Inject** | | |
| **1st Inst. @ 95%** | | |
| **2nd Inst. @ 95%** | | |
| **3rd Inst. @ 95%** | | |
| **3rd Gas Inject** | | |
| **1st Inst. @ 95%** | | |
| **2nd Inst. @ 95%** | | |
| **3rd Inst. @ 95%** | | |

| **CALIBRATION** | $O_2$ | | NOx | | CO | | THC | | $CO_2$ | | $SO_2$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Conc.** | **Actual** | **Conc.** | **Actual** | **Conc.** | **Actual** | **Conc.** | **Actual** | **Conc.** | **Actual** | **Conc.** | **Actual** |
| **Zero Gas** | 0 | -0.03 | 0 | -0.02 | 0 | -0.08 | 0 | -0.05 | 0 | -0.9 | N/a | N/a |
| **Low Gas** | N/a | N/a | N/a | N/a | N/a | N/a | 3.37 | 3.26 | N/a | N/a | N/a | N/a |
| **Mid Gas** | 12 | 12.07 | 4.9 | 4.88 | 5.09 | 5.08 | 4.9 | 4.74 | 8.94 | 9.06 | N/a | N/a |
| **High Gas** | 21 | 21.17 | 8.9 | 8.86 | 9.1 | 8.65 | 8.77 | 8.67 | 19 | 19 | N/a | N/a |

| **BIAS** | $O_2$ | | NOx | | CO | | THC | | $CO_2$ | | $SO_2$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Zero** | **Mid** | **Zero** | **Mid** | **Zero** | **Mid** | **Zero** | **Mid** | **Zero** | **Mid** | **Zero** | **Mid** |
| **Initial Run #1** | 0.06 | 11.96 | -0.05 | 4.86 | 0.03 | 5.05 | 0.03 | 3.4 | 0.04 | 8.8 | N/a | N/a |
| **Run #1 / Run #2** | 0.07 | 11.98 | 0.09 | 4.88 | -0.1 | 4.98 | -0.1 | 3.3 | 0 | 8.87 | N/a | N/a |
| **Run #2 / Run #3** | 0.08 | 12.08 | 0.06 | 4.94 | -0.07 | 5.02 | -0.04 | 3.32 | -0.01 | 8.82 | N/a | N/a |
| **Run #3 / Final** | 0.07 | 12.01 | 0.06 | 5.17 | -0.06 | 5.03 | -0.04 | 3.21 | -0.03 | 8.94 | N/a | N/a |
| **Bias Gas Actual Conc.** | | 12 | | 4.9 | | 5.09 | | 3.37 | | 8.94 | | N/a |

Signature _____

# SINGLE LOAD TEST - FIELD DATA SHEET

AIR HYGIENE

| | | | |
|---|---|---|---|
| **Company:** | Bechtel | | |
| **Location:** | Cricket Valley, New York | | |
| **Date:** | 3/11/2020 | **Project Code:** | bec-19-cricketvalley.ny-start#2 |
| **Unit Make and Model:** | | | |
| **Unit Number:** | | | |
| **Serial Number:** | | | |
| **Data Recorded By:** | | | |
| **Tested With AHI Unit(s):** | **Truck(s):** 163 | **Trailer(s):** | 215 |
| **LDEQ Warmup/Cal Req:** | **On (Day/Time):** | **Cal (Day/Time):** | |

| **CYLINDER SERIAL NUMBERS** | | $O_2$ | NOx | CO |
|---|---|---|---|---|
| | **Low** | EB0072934 | EB0072934 | EB0072934 |
| | **Mid** | CC729922 | EB0065964 | EB0065964 |
| | **High** | CC721614 | EB0040961 | EB0040961 |

Stack Dia. = _____
Measured By: _____
Measured With: _____

| **CYLINDER SERIAL NUMBERS** | | THC | $CO_2$ | $SO_2$ |
|---|---|---|---|---|
| | **Low** | EB0057200 | EB0072934 | N/a |
| | **Mid** | EB0003761 | CC729922 | N/a |
| | **High** | EB0038438 | CC721614 | N/a |

| **RUN INFORMATION** | **Load** | | |
|---|---|---|---|
| | _____% #1 | _____% #2 | _____% #3 |
| **Time Start (hh:mm:ss)** | | | |
| **Time Stop (hh:mm:ss)** | | | |
| **Rated Power (MW or hp)** | | | |
| **Actual Power (MW or hp)** | | | |
| **Barometric Pressure (in. Hg)** | | | |
| **Ambient Temperature (°F)** | | | |
| **Relative Humidity (%)** | | | |
| **Fuel Flow (lb/min)** | | | |
| **Fuel Flow (SCF/hr)=(lb/min)*21.7** | | | |
| **Specific Humidity (gr/lb)** | | | |
| **Spec. Hum. (lb $H_2O$/lb air)=(gr/lb)/7000** | | | |
| **PCD (psi)** | | | |
| **PCD (mm Hg)=(psi+14.24)*51.71493** | | | |
| **NOx Water Injection (gpm)** | | | |

| **$NO_2$ CONVERSION** | |
|---|---|
| **$NO_2$ Gas (ppm)** | 48.7 |
| **NO Reading (ppm)** | |
| **NOx Reading (ppm)** | |
| **Cylinder Num** | EB0098845 |

| **REPORT INFORMATION** | | |
|---|---|---|
| | **INSTRUMENT** | **SERIAL #** |
| **$O_2$** | Sevromex 1440 | Inst-O2-0024 |
| **NOx** | Thermo 42c | Inst-Nx-0031 |
| **CO** | Thermo 48c | Inst-Co-0029 |
| **THC** | Thermo 51i | Inst-Th-0013 |
| **$CO_2$** | Sevromex 1440 | Inst-C2-0016 |
| **$SO_2$** | N/a | N/a |

| **RESPONSE TIME** | | |
|---|---|---|
| | **TIME (hh:mm)** | **RESP (min)** |
| **1st Gas Inject** | | |
| **1st Inst. @ 95%** | | |
| **2nd Inst. @ 95%** | | |
| **3rd Inst. @ 95%** | | |
| **2nd Gas Inject** | | |
| **1st Inst. @ 95%** | | |
| **2nd Inst. @ 95%** | | |
| **3rd Inst. @ 95%** | | |
| **3rd Gas Inject** | | |
| **1st Inst. @ 95%** | | |
| **2nd Inst. @ 95%** | | |
| **3rd Inst. @ 95%** | | |

| **CALIBRATION** | $O_2$ | | NOx | | CO | | THC | | $CO_2$ | | $SO_2$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Conc.** | **Actual** | **Conc.** | **Actual** | **Conc.** | **Actual** | **Conc.** | **Actual** | **Conc.** | **Actual** | **Conc.** | **Actual** |
| **Zero Gas** | 0 | 0 | 0 | | 0 | | 0 | | 0 | -0.08 | N/a | N/a |
| **Low Gas** | N/a | N/a | N/a | N/a | N/a | N/a | 3.37 | | N/a | N/a | N/a | N/a |
| **Mid Gas** | 12 | 12.05 | 4.91 | | 5.09 | | 4.84 | | 8.94 | 9.03 | N/a | N/a |
| **High Gas** | 21 | 21.18 | 8.9 | | 9.1 | | 8.77 | | 19 | 19.09 | N/a | N/a |

| **BIAS** | $O_2$ | | NOx | | CO | | THC | | $CO_2$ | | $SO_2$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Zero** | **Mid** | **Zero** | **Mid** | **Zero** | **Mid** | **Zero** | **Mid** | **Zero** | **Mid** | **Zero** | **Mid** |
| **Initial Run #1** | 0.1 | 12.02 | | | | | | | 0.12 | 9.07 | N/a | N/a |
| **Run #1 / Run #2** | 0.09 | 11.99 | | | | | | | 0.07 | 9.14 | N/a | N/a |
| **Run #2 / Run #3** | | | | | | | | | | | N/a | N/a |
| **Run #3 / Final** | | | | | | | | | | | N/a | N/a |
| **Bias Gas Actual Conc.** | | | | | | | | | | | | N/a |

Signature _____

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

## Laboratory Data Summary Base Load $PM_{10}$

# SAMPLE RECOVERY AND INTEGRITY DATA SHEET

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Date** | 03/09/20 |
| **Sampling Location** | U-00002 Base | **Operator** | Rob White |
| **Project #** | bec-19-cricketvalley.ny-start#2 | | |

| **Run History Data** | | | | |
|---|---|---|---|---|
| **Run Number** | PM U-00002 Base-1 | PM U-00002 Base-2 | PM U-00002 Base-3 | |
| **Run Start Time** | 08:15 | 13:30 | 07:23 | (hh:mm) |
| **Run Stop Time** | 13:16 | 19:48 | 12:15 | (hh:mm) |
| **Train Prepared By** | RW | RW | RW | |
| **Train Recovered By** | RW | RW | RW | |
| **Recovery Date** | 03/09/20 | 03/09/20 | 03/10/20 | (mm/dd/yy) |
| **Relinquished By** | RW | RW | RW | |
| **Received By** | Courier | Courier | Courier | |
| **Relinquished Date** | 03/12/20 | 03/12/20 | 03/12/20 | (mm/dd/yy) |
| **Relinquished Time** | 14:20 | 14:20 | 14:20 | (hh:mm) |

| **Equipment Identification Numbers** | | | |
|---|---|---|---|
| **Impinger Case** | SAMP-BH-0039 | SAMP-BH-0039 | SAMP-BH-0039 |
| **Sample Box** | SAMP-SBC-0099 | SAMP-SBC-0099 | SAMP-SBC-0099 |
| **PM Filter** | 19031822 | 19031835 | 19031823 |
| **CPM Filter** | PM U-00002 Base-1-CPM | PM U-00002 Base-2-CPM | PM U-00002 Base-3-CPM |

Sample Blank Taken ☑ YES

| **Moisture Content Data** | | | | | |
|---|---|---|---|---|---|
| **Impingers 1, 2, and 3 - Liquid Weight** | | | | | |
| **Final Weight** | ($W_f$) | 1761.6 | 1809.2 | 1770.5 | g |
| **Initial Weight** | ($W_i$) | 1597.6 | 1664.0 | 1629.9 | g |
| **Net Weight** | ($W_n$) | 164.0 | 145.2 | 140.6 | g |
| **Comments** | | | | | |
| **Impinger 4 - Silica Gel Weight** | | | | | |
| **Final Weight** | ($W_f$) | 868.7 | 849.2 | 892.0 | g |
| **Initial Weight** | ($W_i$) | 837.0 | 825.2 | 868.7 | g |
| **Net Weight** | ($W_n$) | 31.7 | 24.0 | 23.3 | g |
| **Comments** | | | | | |
| **Total Water Collected** | | | | | |
| **Total Weight** | ($W_{lc}$) | 195.7 | 169.2 | 163.9 | g |
| **Total Volume** | ($V_{lc}$) | 196.1 | 169.5 | 164.2 | ml |

## SAMPLE ANALYTICAL DATA SHEET

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base |
| **Project #** | bec-19-cricketvalley.ny-start#2 |

| **Analytical Data** | | **Run** | PM U-00002 Base-1 | | |
|---|---|---|---|---|---|
| **Sample Leakage Evident** | NO | **Estimated Leak Volume** | | 0.00 | (mg) |

| Sample Type | Sample Number | Date | Time |
|---|---|---|---|
| Filter | BV Labs | | |
| Nozzle Wash PM>10 | BV Labs | | |
| Cyclone Wash 2.5<PM<10 | BV Labs | | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | BV Labs | | |
| Inorganic Impinger Contents | BV Labs | | |
| Organic Impinger Contents | BV Labs | | |

| **Blank and Titration Concentrations** | | | | | |
|---|---|---|---|---|---|
| **Blank Type** | **Weight** | **Volume** | **Concentration** | **Mass** | |
| | (g) | (ml) | (mg/ml) | (mg) | |
| Acetone Blank Weight of Solids | 0.0000 | 201 | 0.000000 | -- | below RDL |
| DI Water Blank Weight of Solids | 0.0000 | 197 | 0.000000 | -- | below RDL |
| Hexane Blank Weight of Solids | 0.0000 | 228 | 0.000000 | -- | below RDL |

| **Gravimetric Concentrations** | | | **Run** | | 1 | **Start Time** | 08:15 |
|---|---|---|---|---|---|---|---|
| **Sample Portion** | **Final** | **Tare** | **Gain** | **Volume** | **Blank Adjustment** | **Adjusted Gain** | |
| | (g) | (g) | (mg) | (ml) | (mg) | (mg) | |
| Filter | | | 0.6000 | -- | -- | 0.6000 | |
| Filter Beaker | | | | -- | -- | | |
| Nozzle Wash PM>10 | | | 9.1 | 61 | 0.0000 | 9.1000 | |
| Cyclone Wash 2.5<PM<10 | | | 0.8 | 65 | 0.0000 | 0.8000 | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | | | 1.3 | 62 | 0.0000 | 1.3000 | |
| Inorganic Impinger Contents | | | 1.7 | 381 | 1.4762 | 0.2238 | |
| Organic Impinger Contents | | | 6.7 | 410 | 0.5238 | 6.1762 | |

## SAMPLE ANALYTICAL DATA SHEET

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base |
| **Project #** | bec-19-cricketvalley.ny-start#2 |

| **Analytical Data** | | **Run** | PM U-00002 Base-2 | | |
|---|---|---|---|---|---|
| **Sample Leakage Evident** | NO | **Estimated Leak Volume** | | 0.00 | (mg) |

| Sample Type | Sample Number | Date | Time |
|---|---|---|---|
| Filter | BV Labs | | |
| Nozzle Wash PM>10 | BV Labs | | |
| Cyclone Wash 2.5<PM<10 | BV Labs | | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | BV Labs | | |
| Inorganic Impinger Contents | BV Labs | | |
| Organic Impinger Contents | BV Labs | | |

| **Blank and Titration Concentrations** | | | | | |
|---|---|---|---|---|---|
| **Blank Type** | **Weight** | **Volume** | **Concentration** | **Mass** | |
| | (g) | (ml) | (mg/ml) | (mg) | |
| Acetone Blank Weight of Solids | 0.0000 | 201 | 0.000000 | -- | below RDL |
| DI Water Blank Weight of Solids | 0.0000 | 197 | 0.000000 | -- | below RDL |
| Hexane Blank Weight of Solids | 0.0000 | 228 | 0.000000 | -- | below RDL |

* Reported at RDL

| **Gravimetric Concentrations** | | | **Run** | | 2 | **Start Time** | 13:30 |
|---|---|---|---|---|---|---|---|
| **Sample Portion** | **Final** | **Tare** | **Gain** | **Volume** | **Blank Adjustment** | **Adjusted Gain** | |
| | (g) | (g) | (mg) | (ml) | (mg) | (mg) | |
| Filter | | * | 0.3000 | -- | -- | 0.3000 | |
| Filter Beaker | | | | -- | -- | | |
| Nozzle Wash PM>10 | | | 1.2 | 87 | 0.0000 | 1.2000 | |
| Cyclone Wash 2.5<PM<10 | | | 1.0 | 67 | 0.0000 | 1.0000 | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | | | 1.8 | 79 | 0.0000 | 1.8000 | |
| Inorganic Impinger Contents | | | 2.2 | 461 | 1.4762 | 0.7238 | |
| Organic Impinger Contents | | | 6.5 | 410 | 0.5238 | 5.9762 | |

## SAMPLE ANALYTICAL DATA SHEET

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base |
| **Project #** | bec-19-cricketvalley.ny-start#2 |

| **Analytical Data** | | **Run** | PM U-00002 Base-3 | | |
|---|---|---|---|---|---|
| **Sample Leakage Evident** | NO | **Estimated Leak Volume** | | 0.00 | (mg) |

| Sample Type | Sample Number | Date | Time |
|---|---|---|---|
| Filter | BV Labs | | |
| Nozzle Wash PM>10 | BV Labs | | |
| Cyclone Wash 2.5<PM<10 | BV Labs | | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | BV Labs | | |
| Inorganic Impinger Contents | BV Labs | | |
| Organic Impinger Contents | BV Labs | | |

| **Blank and Titration Concentrations** | | | | | |
|---|---|---|---|---|---|
| **Blank Type** | **Weight** | **Volume** | **Concentration** | **Mass** | |
| | (g) | (ml) | (mg/ml) | (mg) | |
| Acetone Blank Weight of Solids | 0.0000 | 201 | 0.000000 | -- | below RDL |
| DI Water Blank Weight of Solids | 0.0000 | 197 | 0.000000 | -- | below RDL |
| Hexane Blank Weight of Solids | 0.0000 | 228 | 0.000000 | -- | below RDL |

* Reported at RDL

| **Gravimetric Concentrations** | | | **Run** | | 3 | **Start Time** | 07:23 |
|---|---|---|---|---|---|---|---|
| **Sample Portion** | **Final** | **Tare** | **Gain** | **Volume** | **Blank Adjustment** | **Adjusted Gain** | |
| | (g) | (g) | (mg) | (ml) | (mg) | (mg) | |
| Filter | | * | 0.3000 | -- | -- | 0.3000 | |
| Filter Beaker | | | | -- | -- | | |
| Nozzle Wash PM>10 | | | 14.9 | 75 | 0.0000 | 14.9000 | |
| Cyclone Wash 2.5<PM<10 | | | 0.6 | 56 | 0.0000 | 0.6000 | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | | | 0.8 | 80 | 0.0000 | 0.8000 | |
| Inorganic Impinger Contents | | | 2.7 | 461 | 1.4762 | 1.2238 | |
| Organic Impinger Contents | | | 5.2 | 410 | 0.5238 | 4.6762 | |

## SAMPLE ANALYTICAL DATA SHEET

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base |
| **Project #** | bec-19-cricketvalley.ny-start#2 |

| **Analytical Data** | | **Run** | PM U-00002 Base-FB | | |
|---|---|---|---|---|---|
| **Sample Leakage Evident** | NO | **Estimated Leak Volume** | | 0.00 | (mg) |

| Sample Type | Sample Number | Date | Time |
|---|---|---|---|
| Inorganic Impinger Contents | BV Labs | | |
| Organic Impinger Contents | BV Labs | | |

| Gravimetric Concentrations | | | | | |
|---|---|---|---|---|---|
| **Sample Portion** | **Final** | **Tare** | **Gain** | | **Actual Gain** |
| | (g) | (g) | (mg) | | (mg) |
| Inorganic Impinger Contents | 0.0031 | 0.0000 | 1.4762 | max 2 mg total blank adjustment, proportioned | 3.1000 |
| Organic Impinger Contents | 0.0011 | 0.0000 | 0.5238 | | 1.1000 |

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

## Laboratory Data Summary Base+DB Load $PM_{10}$

# SAMPLE RECOVERY AND INTEGRITY DATA SHEET

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Date** | 03/10/20 |
| **Sampling Location** | U-00002 Base+DB | **Operator** | Rob White |
| **Project #** | bec-19-cricketvalley.ny-start#2 | | |

| **Run History Data** | | | | |
|---|---|---|---|---|
| **Run Number** | PM U-00002 Base+DB-1 | PM U-00002 Base+DB-2 | PM U-00002 Base+DB-3 | |
| **Run Start Time** | 14:12 | 06:23 | 12:30 | (hh:mm) |
| **Run Stop Time** | 18:40 | 11:17 | 17:15 | (hh:mm) |
| **Train Prepared By** | RW | RW | RW | |
| **Train Recovered By** | RW | RW | RW | |
| **Recovery Date** | 03/10/20 | 03/11/20 | 03/11/20 | (mm/dd/yy) |
| **Relinquished By** | RW | RW | RW | |
| **Received By** | Courier | Courier | Courier | |
| **Relinquished Date** | 03/12/20 | 03/12/20 | 03/12/20 | (mm/dd/yy) |
| **Relinquished Time** | 14:20 | 14:20 | 14:20 | (hh:mm) |

| **Equipment Identification Numbers** | | | |
|---|---|---|---|
| **Impinger Case** | SAMP-BH-0039 | SAMP-BH-0039 | SAMP-BH-0039 |
| **Sample Box** | SAMP-SBC-0099 | SAMP-SBC-0099 | SAMP-SBC-0099 |
| **PM Filter** | 19031837 | 19031838 | 19031825 |
| **CPM Filter** | PM U-00002 Base+DB-1-CPM | PM U-00002 Base+DB-2-CPM | PM U-00002 Base+DB-3-CPM |

Sample Blank Taken ☑ YES

| **Moisture Content Data** | | | | | |
|---|---|---|---|---|---|
| **Impingers 1, 2, and 3 - Liquid Weight** | | | | | |
| **Final Weight** | ($W_f$) | 1882.5 | 1854.0 | 1935.6 | g |
| **Initial Weight** | ($W_i$) | 1696.2 | 1628.5 | 1725.6 | g |
| **Net Weight** | ($W_n$) | 186.3 | 225.5 | 210.0 | g |
| **Comments** | | | | | |
| **Impinger 4 - Silica Gel Weight** | | | | | |
| **Final Weight** | ($W_f$) | 868.3 | 912.1 | 888.8 | g |
| **Initial Weight** | ($W_i$) | 848.5 | 891.6 | 868.3 | g |
| **Net Weight** | ($W_n$) | 19.8 | 20.5 | 20.5 | g |
| **Comments** | | | | | |
| **Total Water Collected** | | | | | |
| **Total Weight** | ($W_{lc}$) | 206.1 | 246.0 | 230.5 | g |
| **Total Volume** | ($V_{lc}$) | 206.5 | 246.4 | 230.9 | ml |

## SAMPLE ANALYTICAL DATA SHEET

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#2 |

| **Analytical Data** | | **Run** | PM U-00002 Base+DB-1 | | |
|---|---|---|---|---|---|
| **Sample Leakage Evident** | NO | **Estimated Leak Volume** | | 0.00 | (mg) |

| Sample Type | Sample Number | Date | Time |
|---|---|---|---|
| Filter | BV Labs | | |
| Nozzle Wash PM>10 | BV Labs | | |
| Cyclone Wash 2.5<PM<10 | BV Labs | | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | BV Labs | | |
| Inorganic Impinger Contents | BV Labs | | |
| Organic Impinger Contents | BV Labs | | |

| **Blank and Titration Concentrations** | | | | | |
|---|---|---|---|---|---|
| **Blank Type** | **Weight** | **Volume** | **Concentration** | **Mass** | |
| | (g) | (ml) | (mg/ml) | (mg) | |
| Acetone Blank Weight of Solids | 0.0000 | 201 | 0.000000 | -- | below RDL |
| DI Water Blank Weight of Solids | 0.0000 | 197 | 0.000000 | -- | below RDL |
| Hexane Blank Weight of Solids | 0.0000 | 228 | 0.000000 | -- | below RDL |

| **Gravimetric Concentrations** | | | **Run** | | 1 | **Start Time** | 14:12 |
|---|---|---|---|---|---|---|---|
| **Sample Portion** | **Final** | **Tare** | **Gain** | **Volume** | **Blank Adjustment** | **Adjusted Gain** | |
| | (g) | (g) | (mg) | (ml) | (mg) | (mg) | |
| Filter | | | 1.2000 | -- | -- | 1.2000 | |
| Filter Beaker | | | | -- | -- | | |
| Nozzle Wash PM>10 | | | 10.8 | 96 | 0.0000 | 10.8000 | |
| Cyclone Wash 2.5<PM<10 | | | 0.8 | 88 | 0.0000 | 0.8000 | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | | | 0.9 | 86 | 0.0000 | 0.9000 | |
| Inorganic Impinger Contents | | | 2.0 | 451 | 1.4762 | 0.5238 | |
| Organic Impinger Contents | | | 4.9 | 364 | 0.5238 | 4.3762 | |

## SAMPLE ANALYTICAL DATA SHEET

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#2 |

| **Analytical Data** | | **Run** | PM U-00002 Base+DB-2 | | |
|---|---|---|---|---|---|
| **Sample Leakage Evident** | NO | **Estimated Leak Volume** | | 0.00 | (mg) |

| Sample Type | Sample Number | Date | Time |
|---|---|---|---|
| Filter | BV Labs | | |
| Nozzle Wash PM>10 | BV Labs | | |
| Cyclone Wash 2.5<PM<10 | BV Labs | | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | BV Labs | | |
| Inorganic Impinger Contents | BV Labs | | |
| Organic Impinger Contents | BV Labs | | |

| **Blank and Titration Concentrations** | | | | | |
|---|---|---|---|---|---|
| **Blank Type** | **Weight** | **Volume** | **Concentration** | **Mass** | |
| | (g) | (ml) | (mg/ml) | (mg) | |
| Acetone Blank Weight of Solids | 0.0000 | 201 | 0.000000 | -- | below RDL |
| DI Water Blank Weight of Solids | 0.0000 | 197 | 0.000000 | -- | below RDL |
| Hexane Blank Weight of Solids | 0.0000 | 228 | 0.000000 | -- | below RDL |

* Reported at RDL

| **Gravimetric Concentrations** | | | **Run** | | 2 | **Start Time** | 06:23 |
|---|---|---|---|---|---|---|---|
| **Sample Portion** | **Final** | **Tare** | **Gain** | **Volume** | **Blank Adjustment** | **Adjusted Gain** | |
| | (g) | (g) | (mg) | (ml) | (mg) | (mg) | |
| Filter | | * | 0.3000 | -- | -- | 0.3000 | |
| Filter Beaker | | | | -- | -- | | |
| Nozzle Wash PM>10 | | | 7.4 | 85 | 0.0000 | 7.4000 | |
| Cyclone Wash 2.5<PM<10 | | | 0.6 | 86 | 0.0000 | 0.6000 | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | | | 1.0 | 89 | 0.0000 | 1.0000 | |
| Inorganic Impinger Contents | | | 1.7 | 481 | 1.4762 | 0.2238 | |
| Organic Impinger Contents | | | 3.6 | 288 | 0.5238 | 3.0762 | |

## SAMPLE ANALYTICAL DATA SHEET

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#2 |

| **Analytical Data** | | **Run** | PM U-00002 Base+DB-3 | | |
|---|---|---|---|---|---|
| **Sample Leakage Evident** | NO | **Estimated Leak Volume** | | 0.00 | (mg) |

| Sample Type | Sample Number | Date | Time |
|---|---|---|---|
| Filter | BV Labs | | |
| Nozzle Wash PM>10 | BV Labs | | |
| Cyclone Wash 2.5<PM<10 | BV Labs | | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | BV Labs | | |
| Inorganic Impinger Contents | BV Labs | | |
| Organic Impinger Contents | BV Labs | | |

| **Blank and Titration Concentrations** | | | | | |
|---|---|---|---|---|---|
| **Blank Type** | **Weight** | **Volume** | **Concentration** | **Mass** | |
| | (g) | (ml) | (mg/ml) | (mg) | |
| Acetone Blank Weight of Solids | 0.0000 | 201 | 0.000000 | -- | below RDL |
| DI Water Blank Weight of Solids | 0.0000 | 197 | 0.000000 | -- | below RDL |
| Hexane Blank Weight of Solids | 0.0000 | 228 | 0.000000 | -- | below RDL |

* Reported at RDL

| **Gravimetric Concentrations** | | | **Run** | | 3 | **Start Time** | 12:30 |
|---|---|---|---|---|---|---|---|
| **Sample Portion** | **Final** | **Tare** | **Gain** | **Volume** | **Blank Adjustment** | **Adjusted Gain** | |
| | (g) | (g) | (mg) | (ml) | (mg) | (mg) | |
| Filter | | * | 0.3000 | -- | -- | 0.3000 | |
| Filter Beaker | | | | -- | -- | | |
| Nozzle Wash PM>10 | | | 6.5 | 68 | 0.0000 | 6.5000 | |
| Cyclone Wash 2.5<PM<10 | | | 0.7 | 59 | 0.0000 | 0.7000 | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | | | 0.9 | 97 | 0.0000 | 0.9000 | |
| Inorganic Impinger Contents | | | 1.8 | 421 | 1.4762 | 0.3238 | |
| Organic Impinger Contents | | | 6.6 | 395 | 0.5238 | 6.0762 | |

## SAMPLE ANALYTICAL DATA SHEET

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00002 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#2 |

| **Analytical Data** | | **Run** | PM U-00002 Base+DB-FB | | |
|---|---|---|---|---|---|
| **Sample Leakage Evident** | NO | **Estimated Leak Volume** | | 0.00 | (mg) |

| Sample Type | Sample Number | Date | Time |
|---|---|---|---|
| Inorganic Impinger Contents | BV Labs | | |
| Organic Impinger Contents | BV Labs | | |

| **Gravimetric Concentrations** | | | | | |
|---|---|---|---|---|---|
| **Sample Portion** | **Final** | **Tare** | **Gain** | | **Actual Gain** |
| | (g) | (g) | (mg) | | (mg) |
| Inorganic Impinger Contents | 0.0031 | 0.0000 | 1.4762 | max 2 mg total blank adjustment, proportioned | 3.1000 |
| Organic Impinger Contents | 0.0011 | 0.0000 | 0.5238 | | 1.1000 |

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

## Field Collection Data QA SAM

# SAMPLE RECOVERY AND INTEGRITY DATA SHEET

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Date** | 03/09/20 |
| **Sampling Location** | U-00002 Base | **Operator** | TW |
| **Project #** | bec-19-cricketvalley.ny-start#2 | | |

| **Run History Data** | | | | |
|---|---|---|---|---|
| **Run Number** | SAM U-00002 Base-1 | SAM U-00002 Base-2 | SAM U-00002 Base-3 | |
| **Run Start Time** | 08:06 | 11:49 | 15:17 | (hh:mm) |
| **Run Stop Time** | 10:06 | 13:49 | 17:17 | (hh:mm) |
| **Train Prepared By** | AM | AM | AM | |
| **Train Recovered By** | AM | AM | AM | |
| **Recovery Date** | 03/09/20 | 03/09/20 | 03/09/20 | (mm/dd/yy) |
| **Relinquished By** | RW | RW | RW | |
| **Received By** | Courier | Courier | Courier | |
| **Relinquished Date** | 03/12/20 | 03/12/20 | 03/12/20 | (mm/dd/yy) |
| **Relinquished Time** | 14:20 | 14:20 | 14:20 | (hh:mm) |

| **Equipment Identification Numbers** | | | |
|---|---|---|---|
| **Impinger Case** | samp-ha-0005 | samp-ha-0005 | samp-ha-0005 |
| **Sample Box** | samp-bc-0032 | samp-bc-0032 | samp-bc-0032 |
| **Filter** | R0001 | R0001 | R0001 |

Sample Blank Taken ☑ YES

| **Moisture Content Data** | | | | | |
|---|---|---|---|---|---|
| **Impingers 1, 2, and 3 - Liquid Weight** | | | | | |
| **Final Weight** | ($W_f$) | 2115.2 | 2185.1 | 2242.6 | g |
| **Initial Weight** | ($W_i$) | 2052.1 | 2115.2 | 2185.1 | g |
| **Net Weight** | ($W_n$) | 63.1 | 69.9 | 57.5 | g |
| **Comments** | | | | | |
| **Impinger 4 - Silica Gel Weight** | | | | | |
| **Final Weight** | ($W_f$) | 971.6 | 918.0 | 925.3 | g |
| **Initial Weight** | ($W_i$) | 963.3 | 905.8 | 918.0 | g |
| **Net Weight** | ($W_n$) | 8.3 | 12.2 | 7.3 | g |
| **Comments** | | | | | |
| **Total Water Collected** | | | | | |
| **Total Weight** | ($W_{lc}$) | 71.4 | 82.1 | 64.8 | g |
| **Total Volume** | ($V_{lc}$) | 71.5 | 82.2 | 64.9 | ml |

## SAMPLE RECOVERY AND INTEGRITY DATA SHEET

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Date** | 03/11/20 |
| **Sampling Location** | U-00002 Base+DB | **Operator** | TW |
| **Project #** | bec-19-cricketvalley.ny-start#2 | | |

| **Run History Data** | | | | |
|---|---|---|---|---|
| **Run Number** | SAM U-00002 Base+DB-1 | SAM U-00002 Base+DB-2 | SAM U-00002 Base+DB-3 | |
| **Run Start Time** | 05:46 | 08:40 | 11:33 | (hh:mm) |
| **Run Stop Time** | 07:46 | 10:40 | 13:33 | (hh:mm) |
| **Train Prepared By** | TW | TW | TW | |
| **Train Recovered By** | TW | TW | TW | |
| **Recovery Date** | 03/11/20 | 03/11/20 | 03/11/20 | (mm/dd/yy) |
| **Relinquished By** | RW | RW | RW | |
| **Received By** | Courier | Courier | Courier | |
| **Relinquished Date** | 03/12/20 | 03/12/20 | 03/12/20 | (mm/dd/yy) |
| **Relinquished Time** | 14:20 | 14:20 | 14:20 | (hh:mm) |

| **Equipment Identification Numbers** | | | |
|---|---|---|---|
| **Impinger Case** | samp-ha-0005 | samp-ha-0005 | samp-ha-0005 |
| **Sample Box** | samp-bc-0032 | samp-bc-0032 | samp-bc-0032 |
| **Filter** | R0001 | R0001 | R0001 |

Sample Blank Taken ☑ YES

| **Moisture Content Data** | | | | | |
|---|---|---|---|---|---|
| **Impingers 1, 2, and 3 - Liquid Weight** | | | | | |
| **Final Weight** | ($W_f$) | 2127.8 | 2193.9 | 2255.5 | g |
| **Initial Weight** | ($W_i$) | 2071.0 | 2127.8 | 2193.9 | g |
| **Net Weight** | ($W_n$) | 56.8 | 66.1 | 61.6 | g |
| **Comments** | | | | | |
| **Impinger 4 - Silica Gel Weight** | | | | | |
| **Final Weight** | ($W_f$) | 933.7 | 942.0 | 948.8 | g |
| **Initial Weight** | ($W_i$) | 925.3 | 933.7 | 942.0 | g |
| **Net Weight** | ($W_n$) | 8.4 | 8.3 | 6.8 | g |
| **Comments** | | | | | |
| **Total Water Collected** | | | | | |
| **Total Weight** | ($W_{lc}$) | 65.2 | 74.4 | 68.4 | g |
| **Total Volume** | ($V_{lc}$) | 65.3 | 74.5 | 68.5 | ml |

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

## Laboratory Data $PM_{10}$ and SAM
## BV Labs

Your Project #: BEC-19-CRICKETVALLEY.NY-START

**Attention: Data Reports**

Air Hygiene International Inc
1600 West Tacoma Street
Broken Arrow, OK
USA 74012

**Report Date: 2020/03/27**
Report #: R6126806
Version: 2 - Revision

# CERTIFICATE OF ANALYSIS – REVISED REPORT

**BV LABS JOB #: C067891**
**Received: 2020/03/12, 21:30**

Sample Matrix: Stack Sampling Train
# Samples Received: 18

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Analytical Method |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | 6 | 2020/03/16 | 2020/03/19 | BRL SOP-00118 | EPA 202 m |
| Non Extractable Condensibles (M202) | 6 | 2020/03/16 | 2020/03/19 | BRL SOP-00118 / BRL SOP-00109 | EPA 202 m |
| >10um Particulates in Rinse | 6 | 2020/03/16 | 2020/03/18 | BRL SOP-00109 | EPA M201A |
| 2.5-10um Particulates in Rinse | 6 | 2020/03/16 | 2020/03/18 | BRL SOP-00109 | EPA M201A |
| 2.5 um Particulates on Filter | 6 | N/A | 2020/03/16 | BRL SOP-00109 | EPA M201A |
| <2.5um Particulates in Rinse | 6 | 2020/03/16 | 2020/03/18 | BRL SOP-00109 | EPA M201A |
| H2SO4 Acid Mist in IPA Impinger (M8mod) | 5 | 2020/03/17 | 2020/03/17 | BRL SOP-00105 | EPA 8 m |
| H2SO4 Acid Mist in IPA Impinger (M8mod) | 1 | 2020/03/20 | 2020/03/20 | BRL SOP-00105 | EPA 8 m |
| Sulphuric Acid Mist by Titration (M8A) | 6 | 2020/03/27 | 2020/03/27 | BRL SOP-00116 | EPA CFR PTM 8 m |
| Final Volume of Acetone Probe Rinse | 6 | N/A | 2020/03/16 | BRL SOP-00109 | |
| Final Volume of Impinger | 6 | N/A | 2020/03/19 | | |
| Weight of Solvent from Impingers | 6 | N/A | 2020/03/16 | | |
| Weight of Water from Impingers | 6 | N/A | 2020/03/16 | | |

**Remarks:**

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.



Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Your Project #: BEC-19-CRICKETVALLEY.NY-START

**Attention: Data Reports**

Air Hygiene International Inc
1600 West Tacoma Street
Broken Arrow, OK
USA 74012

**Report Date: 2020/03/27**
Report #: R6126806
Version: 2 - Revision

# CERTIFICATE OF ANALYSIS – REVISED REPORT

**BV LABS JOB #: C067891**
**Received: 2020/03/12, 21:30**

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Marinela Sim
Project Manager
27 Mar 2020 18:41:51

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Clayton Johnson, Project Manager - Air Toxics, Source Evaluation
Email: Clayton.Johnson@bvlabs.com
Phone# (905)817-5769

==========

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

## EPA M201A - PARTICULATES (STACK SAMPLING TRAIN)

| BV Labs ID | | MFT289 | MFT290 | MFT291 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2020/03/10 | 2020/03/11 | 2020/03/11 | | |
| | UNITS | M201A- U2 BASE W/DB- R1 | M201A- U2 BASE W/DB- R2 | M201A- U2 BASE W/DB- R3 | RDL | QC Batch |
| > 10 Particulate Weight in Acetone Rinse | mg | 10.8 | 7.4 | 6.5 | 0.5 | 6637962 |
| < 2.5 Particulate Weight in Acetone Rinse | mg | 0.9 | 1.0 | 0.9 | 0.5 | 6637939 |
| 2.5 - 10 Particulate Weight in Acetone Rinse | mg | 0.8 | 0.6 | 0.7 | 0.5 | 6637959 |
| < 2.5 Particulate Weight on Filter | mg | 1.20 | <0.30 | <0.30 | 0.30 | 6637643 |
| Acetone Rinse Volume (10) | ml | 96 | 85 | 68 | 1 | 6637965 |
| Acetone Rinse Volume (2.5 - 10) | ml | 88 | 86 | 59 | 1 | 6637965 |
| Acetone Rinse Volume (2.5) | ml | 86 | 89 | 97 | 1 | 6637965 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

| BV Labs ID | | MFT292 | MFT293 | MFT294 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2020/03/09 | 2020/03/09 | 2020/02/19 | | |
| | UNITS | M201A- U2 BASE-R1 | M201A- U2 BASE-R2 | M201A- U2 BASE-R3 | RDL | QC Batch |
| > 10 Particulate Weight in Acetone Rinse | mg | 9.1 | 1.2 | 14.9 | 0.5 | 6637962 |
| < 2.5 Particulate Weight in Acetone Rinse | mg | 1.3 | 1.8 | 0.8 | 0.5 | 6637939 |
| 2.5 - 10 Particulate Weight in Acetone Rinse | mg | 0.8 | 1.0 | 0.6 | 0.5 | 6637959 |
| < 2.5 Particulate Weight on Filter | mg | 0.60 | <0.30 | <0.30 | 0.30 | 6637643 |
| Acetone Rinse Volume (10) | ml | 61 | 87 | 75 | 1 | 6637965 |
| Acetone Rinse Volume (2.5 - 10) | ml | 65 | 67 | 56 | 1 | 6637965 |
| Acetone Rinse Volume (2.5) | ml | 62 | 79 | 80 | 1 | 6637965 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## EPA M202 CONDENSIBLE PM (STACK SAMPLING TRAIN)

| BV Labs ID | | MFT282 | MFT283 | MFT284 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2020/03/10 | 2020/03/11 | 2020/03/11 | | |
| | UNITS | M202- U2 BASE W/DB-R1 | M202- U2 BASE W/DB-R2 | M202- U2 BASE W/DB-R3 | RDL | QC Batch |
| | | | | | | |
| Weight | g | 450 | 480 | 420 | 0.1 | 6637919 |
| Weight of Solvent | g | 240 | 190 | 260 | 0.1 | 6637918 |
| **Miscellaneous Parameters** | | | | | | |
| Inorganic Condensibles | mg | 2.0 | 1.7 | 1.8 | 0.5 | 6637921 |
| Organic Condensibles | mg | 4.9 | 3.6 | 6.6 | 1.0 | 6637916 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

| BV Labs ID | | MFT285 | MFT286 | MFT287 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2020/03/09 | 2020/03/09 | 2020/02/19 | | |
| | UNITS | M202- U2 BASE-R1 | M202- U2 BASE-R2 | M202- U2 BASE-R3 | RDL | QC Batch |
| | | | | | | |
| Weight | g | 380 | 460 | 460 | 0.1 | 6637919 |
| Weight of Solvent | g | 270 | 270 | 270 | 0.1 | 6637918 |
| **Miscellaneous Parameters** | | | | | | |
| Inorganic Condensibles | mg | 1.7 | 2.2 | 2.7 | 0.5 | 6637921 |
| Organic Condensibles | mg | 6.7 | 6.5 | 5.2 | 1.0 | 6637916 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

| BV Labs ID | | MFT295 | MFT296 | MFT296 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2020/03/11 | 2020/03/11 | 2020/03/11 | | |
| | UNITS | M8A- U1 BASE W/DB-R1 | M8A- U1 BASE W/DB-R2 | M8A- U1 BASE W/DB-R2 Lab-Dup | RDL | QC Batch |
| Impinger Volume | ml | 154 | 160 | N/A | 1 | 6644533 |
| **Miscellaneous Parameters** | | | | | | |
| Sulphuric Acid Mist | mg | 0.027 | <0.016 | <0.016 | 0.016 | 6639735 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

| BV Labs ID | | MFT297 | | | MFT298 | MFT298 | | |
|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2020/03/11 | | | 2020/03/09 | 2020/03/09 | | |
| | UNITS | M8A- U1 BASE W/DB-R3 | RDL | QC Batch | M8A- U2 BASE- R1 -CW | M8A- U2 BASE- R1 -CW Lab-Dup | RDL | QC Batch |
| Impinger Volume | ml | 144 | 1 | 6644533 | 201 | N/A | 1 | 6647009 |
| **Miscellaneous Parameters** | | | | | | | | |
| Sulphuric Acid Mist | mg | 0.026 | 0.015 | 6639735 | <0.021 | <0.021 | 0.021 | 6646564 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

| BV Labs ID | | MFT299 | MFT300 | | |
|---|---|---|---|---|---|
| Sampling Date | | 2020/03/09 | 2020/03/09 | | |
| | UNITS | M8A- U2 BASE- R2 -CW | M8A- U2 BASE- R3 -CW | RDL | QC Batch |
| Impinger Volume | ml | 138 | 139 | 1 | 6644533 |
| **Miscellaneous Parameters** | | | | | |
| Sulphuric Acid Mist | mg | 0.028 | 0.017 | 0.014 | 6639735 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## INDUSTRIAL HYGIENE (STACK SAMPLING TRAIN)

| BV Labs ID | | MFT295 | | MFT296 | MFT296 | | |
|---|---|---|---|---|---|---|---|
| Sampling Date | | 2020/03/11 | | 2020/03/11 | 2020/03/11 | | |
| | UNITS | M8A- U1 BASE W/DB-R1 | RDL | M8A- U1 BASE W/DB-R2 | M8A- U1 BASE W/DB-R2 Lab-Dup | RDL | QC Batch |
| **Miscellaneous Parameters** | | | | | | | |
| Sulphuric Acid Mist | mg | <0.62 | 0.62 | <0.64 | <0.64 | 0.64 | 6657221 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

| BV Labs ID | | MFT297 | | MFT298 | | MFT299 | | |
|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2020/03/11 | | 2020/03/09 | | 2020/03/09 | | |
| | UNITS | M8A- U1 BASE W/DB-R3 | RDL | M8A- U2 BASE- R1 -CW | RDL | M8A- U2 BASE- R2 -CW | RDL | QC Batch |
| **Miscellaneous Parameters** | | | | | | | | |
| Sulphuric Acid Mist | mg | <0.58 | 0.58 | <0.8 | 0.8 | <0.55 | 0.55 | 6657221 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

| BV Labs ID | | MFT300 | | |
|---|---|---|---|---|
| Sampling Date | | 2020/03/09 | | |
| | UNITS | M8A- U2 BASE- R3 -CW | RDL | QC Batch |
| **Miscellaneous Parameters** | | | | |
| Sulphuric Acid Mist | mg | <0.56 | 0.56 | 6657221 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## TEST SUMMARY

**BV Labs ID:** MFT282
**Sample ID:** M202- U2 BASE W/DB- R1
**Matrix:** Stack Sampling Train

**Collected:** 2020/03/10
**Shipped:**
**Received:** 2020/03/12

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6637916 | 2020/03/16 | 2020/03/19 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6637921 | 2020/03/16 | 2020/03/19 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6637918 | N/A | 2020/03/16 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6637919 | N/A | 2020/03/16 | Muhammad M Rahman |

**BV Labs ID:** MFT283
**Sample ID:** M202- U2 BASE W/DB- R2
**Matrix:** Stack Sampling Train

**Collected:** 2020/03/11
**Shipped:**
**Received:** 2020/03/12

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6637916 | 2020/03/16 | 2020/03/19 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6637921 | 2020/03/16 | 2020/03/19 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6637918 | N/A | 2020/03/16 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6637919 | N/A | 2020/03/16 | Muhammad M Rahman |

**BV Labs ID:** MFT284
**Sample ID:** M202- U2 BASE W/DB- R3
**Matrix:** Stack Sampling Train

**Collected:** 2020/03/11
**Shipped:**
**Received:** 2020/03/12

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6637916 | 2020/03/16 | 2020/03/19 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6637921 | 2020/03/16 | 2020/03/19 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6637918 | N/A | 2020/03/16 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6637919 | N/A | 2020/03/16 | Muhammad M Rahman |

**BV Labs ID:** MFT285
**Sample ID:** M202- U2 BASE- R1
**Matrix:** Stack Sampling Train

**Collected:** 2020/03/09
**Shipped:**
**Received:** 2020/03/12

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6637916 | 2020/03/16 | 2020/03/19 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6637921 | 2020/03/16 | 2020/03/19 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6637918 | N/A | 2020/03/16 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6637919 | N/A | 2020/03/16 | Muhammad M Rahman |

**BV Labs ID:** MFT286
**Sample ID:** M202- U2 BASE- R2
**Matrix:** Stack Sampling Train

**Collected:** 2020/03/09
**Shipped:**
**Received:** 2020/03/12

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6637916 | 2020/03/16 | 2020/03/19 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6637921 | 2020/03/16 | 2020/03/19 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6637918 | N/A | 2020/03/16 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6637919 | N/A | 2020/03/16 | Muhammad M Rahman |



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## TEST SUMMARY

**BV Labs ID:** MFT287 **Collected:** 2020/02/19
**Sample ID:** M202- U2 BASE- R3 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/03/12

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6637916 | 2020/03/16 | 2020/03/19 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6637921 | 2020/03/16 | 2020/03/19 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6637918 | N/A | 2020/03/16 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6637919 | N/A | 2020/03/16 | Muhammad M Rahman |

**BV Labs ID:** MFT289 **Collected:** 2020/03/10
**Sample ID:** M201A- U2 BASE W/DB- R1 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/03/12

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6637962 | 2020/03/16 | 2020/03/18 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6637959 | 2020/03/16 | 2020/03/18 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6637643 | N/A | 2020/03/16 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6637939 | 2020/03/16 | 2020/03/18 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6637965 | N/A | 2020/03/16 | Muhammad M Rahman |

**BV Labs ID:** MFT290 **Collected:** 2020/03/11
**Sample ID:** M201A- U2 BASE W/DB- R2 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/03/12

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6637962 | 2020/03/16 | 2020/03/18 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6637959 | 2020/03/16 | 2020/03/18 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6637643 | N/A | 2020/03/16 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6637939 | 2020/03/16 | 2020/03/18 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6637965 | N/A | 2020/03/16 | Muhammad M Rahman |

**BV Labs ID:** MFT291 **Collected:** 2020/03/11
**Sample ID:** M201A- U2 BASE W/DB- R3 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/03/12

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6637962 | 2020/03/16 | 2020/03/18 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6637959 | 2020/03/16 | 2020/03/18 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6637643 | N/A | 2020/03/16 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6637939 | 2020/03/16 | 2020/03/18 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6637965 | N/A | 2020/03/16 | Muhammad M Rahman |

**BV Labs ID:** MFT292 **Collected:** 2020/03/09
**Sample ID:** M201A- U2 BASE- R1 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/03/12

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6637962 | 2020/03/16 | 2020/03/18 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6637959 | 2020/03/16 | 2020/03/18 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6637643 | N/A | 2020/03/16 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6637939 | 2020/03/16 | 2020/03/18 | Muhammad M Rahman |



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## TEST SUMMARY

**BV Labs ID:** MFT292
**Sample ID:** M201A- U2 BASE- R1
**Matrix:** Stack Sampling Train

**Collected:** 2020/03/09
**Shipped:**
**Received:** 2020/03/12

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Final Volume of Acetone Probe Rinse | | 6637965 | N/A | 2020/03/16 | Muhammad M Rahman |

**BV Labs ID:** MFT293
**Sample ID:** M201A- U2 BASE- R2
**Matrix:** Stack Sampling Train

**Collected:** 2020/03/09
**Shipped:**
**Received:** 2020/03/12

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6637962 | 2020/03/16 | 2020/03/18 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6637959 | 2020/03/16 | 2020/03/18 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6637643 | N/A | 2020/03/16 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6637939 | 2020/03/16 | 2020/03/18 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6637965 | N/A | 2020/03/16 | Muhammad M Rahman |

**BV Labs ID:** MFT294
**Sample ID:** M201A- U2 BASE- R3
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/19
**Shipped:**
**Received:** 2020/03/12

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6637962 | 2020/03/16 | 2020/03/18 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6637959 | 2020/03/16 | 2020/03/18 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6637643 | N/A | 2020/03/16 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6637939 | 2020/03/16 | 2020/03/18 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6637965 | N/A | 2020/03/16 | Muhammad M Rahman |

**BV Labs ID:** MFT295
**Sample ID:** M8A- U1 BASE W/DB- R1
**Matrix:** Stack Sampling Train

**Collected:** 2020/03/11
**Shipped:**
**Received:** 2020/03/12

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6639735 | 2020/03/17 | 2020/03/17 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6657221 | 2020/03/27 | 2020/03/27 | Rupinder Sihota |
| Final Volume of Impinger | | 6644533 | N/A | 2020/03/19 | Ann-Marie Stern |

**BV Labs ID:** MFT296
**Sample ID:** M8A- U1 BASE W/DB- R2
**Matrix:** Stack Sampling Train

**Collected:** 2020/03/11
**Shipped:**
**Received:** 2020/03/12

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6639735 | 2020/03/17 | 2020/03/17 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6657221 | 2020/03/27 | 2020/03/27 | Rupinder Sihota |
| Final Volume of Impinger | | 6644533 | N/A | 2020/03/19 | Ann-Marie Stern |



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## TEST SUMMARY

**BV Labs ID:** MFT296 Dup
**Sample ID:** M8A- U1 BASE W/DB- R2
**Matrix:** Stack Sampling Train

**Collected:** 2020/03/11
**Shipped:**
**Received:** 2020/03/12

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6639735 | 2020/03/17 | 2020/03/17 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6657221 | 2020/03/27 | 2020/03/27 | Rupinder Sihota |

**BV Labs ID:** MFT297
**Sample ID:** M8A- U1 BASE W/DB- R3
**Matrix:** Stack Sampling Train

**Collected:** 2020/03/11
**Shipped:**
**Received:** 2020/03/12

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6639735 | 2020/03/17 | 2020/03/17 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6657221 | 2020/03/27 | 2020/03/27 | Rupinder Sihota |
| Final Volume of Impinger | | 6644533 | N/A | 2020/03/19 | Ann-Marie Stern |

**BV Labs ID:** MFT298
**Sample ID:** M8A- U2 BASE- R1 -CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/03/09
**Shipped:**
**Received:** 2020/03/12

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6646564 | 2020/03/20 | 2020/03/20 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6657221 | 2020/03/27 | 2020/03/27 | Rupinder Sihota |
| Final Volume of Impinger | | 6647009 | N/A | 2020/03/19 | Ann-Marie Stern |

**BV Labs ID:** MFT298 Dup
**Sample ID:** M8A- U2 BASE- R1 -CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/03/09
**Shipped:**
**Received:** 2020/03/12

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6646564 | 2020/03/20 | 2020/03/20 | Lang Le |

**BV Labs ID:** MFT299
**Sample ID:** M8A- U2 BASE- R2 -CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/03/09
**Shipped:**
**Received:** 2020/03/12

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6639735 | 2020/03/17 | 2020/03/17 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6657221 | 2020/03/27 | 2020/03/27 | Rupinder Sihota |
| Final Volume of Impinger | | 6644533 | N/A | 2020/03/19 | Ann-Marie Stern |

**BV Labs ID:** MFT300
**Sample ID:** M8A- U2 BASE- R3 -CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/03/09
**Shipped:**
**Received:** 2020/03/12

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6639735 | 2020/03/17 | 2020/03/17 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6657221 | 2020/03/27 | 2020/03/27 | Rupinder Sihota |
| Final Volume of Impinger | | 6644533 | N/A | 2020/03/19 | Ann-Marie Stern |



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## GENERAL COMMENTS

Sample MFT282 [M202- U2 BASE W/DB- R1] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MFT283 [M202- U2 BASE W/DB- R2] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MFT284 [M202- U2 BASE W/DB- R3] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MFT285 [M202- U2 BASE- R1] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MFT286 [M202- U2 BASE- R2] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MFT287 [M202- U2 BASE- R3] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

**Results relate only to the items tested.**



Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## QUALITY ASSURANCE REPORT

| QA/QC Batch | Init | QC Type | Parameter | Date Analyzed | Value | % Recovery | UNITS | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 6637916 | MOR | Spiked Blank | Organic Condensibles | 2020/03/19 | | 99 | % | 70 - 130 |
| 6637916 | MOR | Method Blank | Organic Condensibles | 2020/03/19 | <1.0 | | mg | |
| 6637921 | MOR | Method Blank | Inorganic Condensibles | 2020/03/19 | <0.5 | | mg | |
| 6637939 | MOR | Method Blank | < 2.5 Particulate Weight in Acetone Rinse | 2020/03/18 | <0.5 | | mg | |
| 6637959 | MOR | Method Blank | 2.5 - 10 Particulate Weight in Acetone Rinse | 2020/03/18 | <0.5 | | mg | |
| 6637962 | MOR | Method Blank | > 10 Particulate Weight in Acetone Rinse | 2020/03/18 | <0.5 | | mg | |
| 6639735 | LLE | Matrix Spike(MFT296) | Sulphuric Acid Mist | 2020/03/17 | | 95 | % | 80 - 120 |
| 6639735 | LLE | Spiked Blank | Sulphuric Acid Mist | 2020/03/17 | | 100 | % | 90 - 110 |
| 6639735 | LLE | Method Blank | Sulphuric Acid Mist | 2020/03/17 | <0.01 | | mg | |
| 6639735 | LLE | RPD - Sample/Sample Dup | Sulphuric Acid Mist | 2020/03/17 | NC | | % | 20 |
| 6646564 | LLE | Matrix Spike(MFT298) | Sulphuric Acid Mist | 2020/03/20 | | 93 | % | 80 - 120 |
| 6646564 | LLE | Spiked Blank | Sulphuric Acid Mist | 2020/03/20 | | 98 | % | 90 - 110 |
| 6646564 | LLE | Method Blank | Sulphuric Acid Mist | 2020/03/20 | <0.01 | | mg | |
| 6646564 | LLE | RPD - Sample/Sample Dup | Sulphuric Acid Mist | 2020/03/20 | NC | | % | 20 |
| 6657221 | RSU | Matrix Spike(MFT296) | Sulphuric Acid Mist | 2020/03/27 | | 99 | % | 80 - 120 |
| 6657221 | RSU | Spiked Blank | Sulphuric Acid Mist | 2020/03/27 | | 101 | % | 90 - 110 |
| 6657221 | RSU | Method Blank | Sulphuric Acid Mist | 2020/03/27 | <0.4 | | mg | |
| 6657221 | RSU | RPD - Sample/Sample Dup | Sulphuric Acid Mist | 2020/03/27 | NC | | % | 20 |

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).



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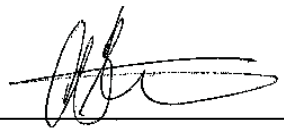
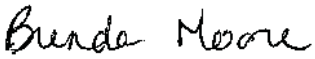
Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Ann-Marie Stern, Team Lead, Inorganic



Brenda Moore, Team Lead, Inorganic

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



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C067891

Requested Standard Analysis - 5-10 business days after receipt at lab

## SAMPLE DESCRIPTION AND LABELING RECORD

Contact Information (deliver results to)
Name: Rob White
Phone: (918) 307-8865
Email: rwhite@airhygiene.com

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com

Project Number: bec-19-cricketvalley.ny-start#1

Person Taking Samples: Rob White

Laboratory Analysis Requested: Gravimetric

| Sample Number | Location | Date | Volume | Analysis Method | | | |
|---|---|---|---|---|---|---|---|
| | | | | RM 201A | RM 202 | -- | -- |
| PM U-00002 Base+DB-1-F | Unit PM U-00002 Base+DB - Run 1 - Filter | 03/10/20 | N/A | X | | | |
| PM U-00002 Base+DB-1-C2 | Unit PM U-00002 Base+DB - Run 1 - Nozzle Wash PM>10 | 03/10/20 | | X | | | |
| PM U-00002 Base+DB-1-C3 | Unit PM U-00002 Base+DB - Run 1 - Cyclone Wash 2.5<PM<10 | 03/10/20 | | X | | | |
| PM U-00002 Base+DB-1-C4 | Unit PM U-00002 Base+DB - Run 1 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 03/10/20 | N/A | X | | | |
| PM U-00002 Base+DB-1-C5 | Unit PM U-00002 Base+DB - Run 1 - Inorganic Impinger Contents | 03/10/20 | | | X | | |
| PM U-00002 Base+DB-1-C6 | Unit PM U-00002 Base+DB - Run 1 - Organic Impinger Contents | 03/10/20 | | | X | | |
| PM U-00002 Base+DB-1-CPM | Unit PM U-00002 Base+DB - Run 1 - CPM Filter | 03/10/20 | N/A | | X | | |
| PM U-00002 Base+DB-2-F | Unit PM U-00002 Base+DB - Run 2 - Filter | 03/11/20 | N/A | X | | | |
| PM U-00002 Base+DB-2-C2 | Unit PM U-00002 Base+DB - Run 2 - Nozzle Wash PM>10 | 03/11/20 | | X | | | |
| PM U-00002 Base+DB-2-C3 | Unit PM U-00002 Base+DB - Run 2 - Cyclone Wash 2.5<PM<10 | 03/11/20 | | X | | | |
| PM U-00002 Base+DB-2-C4 | Unit PM U-00002 Base+DB - Run 2 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 03/11/20 | N/A | X | | | |
| PM U-00002 Base+DB-2-C5 | Unit PM U-00002 Base+DB - Run 2 - Inorganic Impinger Contents | 03/11/20 | | | X | | |
| PM U-00002 Base+DB-2-C6 | Unit PM U-00002 Base+DB - Run 2 - Organic Impinger Contents | 03/11/20 | | | X | | |
| PM U-00002 Base+DB-2-CPM | Unit PM U-00002 Base+DB - Run 2 - CPM Filter | 03/11/20 | N/A | | X | | |
| PM U-00002 Base+DB-3-F | Unit PM U-00002 Base+DB - Run 3 - Filter | 03/11/20 | N/A | X | | | |
| PM U-00002 Base+DB-3-C2 | Unit PM U-00002 Base+DB - Run 3 - Nozzle Wash PM>10 | 03/11/20 | | X | | | |
| PM U-00002 Base+DB-3-C3 | Unit PM U-00002 Base+DB - Run 3 - Cyclone Wash 2.5<PM<10 | 03/11/20 | | X | | | |
| PM U-00002 Base+DB-3-C4 | Unit PM U-00002 Base+DB - Run 3 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 03/11/20 | N/A | X | | | |
| PM U-00002 Base+DB-3-C5 | Unit PM U-00002 Base+DB - Run 3 - Inorganic Impinger Contents | 03/11/20 | | | X | | |
| PM U-00002 Base+DB-3-C6 | Unit PM U-00002 Base+DB - Run 3 - Organic Impinger Contents | 03/11/20 | | | X | | |
| PM U-00002 Base+DB-3-CPM | Unit PM U-00002 Base+DB - Run 3 - CPM Filter | 03/11/20 | N/A | | X | | |

Signature 3/10/20 Date 1350 Time

Signature 3/12/2020 Date 21:30 Time

Signature Date Time

Signature Date Time

bec-19-cricketvalley.ny-start#2-U-00002-PMBaseDB

SD&L

Requested Standard Analysis - 5-10 business days after receipt at lab

## SAMPLE DESCRIPTION AND LABELING RECORD

Contact Information (deliver results to)
Name: Rob White
Phone: (918) 307-8865
Email: rwhite@airhygiene.com

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com

Project Number: bec-19-cricketvalley.ny-start#2
Person Taking Samples: Rob White
Laboratory Analysis Requested:

| Sample Number | Location | Date | Volume | Gravimetric Analysis Method | | | |
|---|---|---|---|---|---|---|---|
| | | | | RM 201A | RM 202 | -- | -- |
| PM U-00002 Base-1-F | Unit PM U-00002 Base - Run 1 - Filter | 03/09/20 | N/A | X | | | |
| PM U-00002 Base-1-C2 | Unit PM U-00002 Base - Run 1 - Nozzle Wash PM>10 | 03/09/20 | | X | | | |
| PM U-00002 Base-1-C3 | Unit PM U-00002 Base - Run 1 - Cyclone Wash 2.5<PM<10 | 03/09/20 | | X | | | |
| PM U-00002 Base-1-C4 | Unit PM U-00002 Base - Run 1 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 03/09/20 | N/A | X | | | |
| PM U-00002 Base-1-C5 | Unit PM U-00002 Base - Run 1 - Inorganic Impinger Contents | 03/09/20 | | | X | | |
| PM U-00002 Base-1-C6 | Unit PM U-00002 Base - Run 1 - Organic Impinger Contents | 03/09/20 | | | X | | |
| PM U-00002 Base-1-CPM | Unit PM U-00002 Base - Run 1 - CPM Filter | 03/09/20 | N/A | | X | | |
| PM U-00002 Base-2-F | Unit PM U-00002 Base - Run 2 - Filter | 03/09/20 | N/A | X | | | |
| PM U-00002 Base-2-C2 | Unit PM U-00002 Base - Run 2 - Nozzle Wash PM>10 | 03/09/20 | | X | | | |
| PM U-00002 Base-2-C3 | Unit PM U-00002 Base - Run 2 - Cyclone Wash 2.5<PM<10 | 03/09/20 | | X | | | |
| PM U-00002 Base-2-C4 | Unit PM U-00002 Base - Run 2 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 03/09/20 | N/A | X | | | |
| PM U-00002 Base-2-C5 | Unit PM U-00002 Base - Run 2 - Inorganic Impinger Contents | 03/09/20 | | | X | | |
| PM U-00002 Base-2-C6 | Unit PM U-00002 Base - Run 2 - Organic Impinger Contents | 03/09/20 | | | X | | |
| PM U-00002 Base-2-CPM | Unit PM U-00002 Base - Run 2 - CPM Filter | 03/09/20 | N/A | | X | | |
| PM U-00002 Base-3-F | Unit PM U-00002 Base - Run 3 - Filter | 02/19/20 | N/A | X | | | |
| PM U-00002 Base-3-C2 | Unit PM U-00002 Base - Run 3 - Nozzle Wash PM>10 | 02/19/20 | | X | | | |
| PM U-00002 Base-3-C3 | Unit PM U-00002 Base - Run 3 - Cyclone Wash 2.5<PM<10 | 02/19/20 | | X | | | |
| PM U-00002 Base-3-C4 | Unit PM U-00002 Base - Run 3 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 02/19/20 | N/A | X | | | |
| PM U-00002 Base-3-C5 | Unit PM U-00002 Base - Run 3 - Inorganic Impinger Contents | 02/19/20 | | | X | | |
| PM U-00002 Base-3-C6 | Unit PM U-00002 Base - Run 3 - Organic Impinger Contents | 02/19/20 | | | X | | |
| PM U-00002 Base-3-CPM | Unit PM U-00002 Base - Run 3 - CPM Filter | 02/19/20 | N/A | | X | | |
| PM U-00002 Base-FB-C3 | Unit PM U-00002 Base - Run FB - Cyclone Wash 2.5<PM<10 | FB | | X | | | |
| PM U-00002 Base-FB-C4 | Unit PM U-00002 Base - Run FB - Cyclone Exit to Front Half of Filter Wash (<2.5) | FB | N/A | X | | | |
| PM U-00002 Base-FB-C5 | Unit PM U-00002 Base - Run FB - Inorganic Impinger Contents | FB | | | X | | |

Signature Date Time

Signature Date Time

Signature Date Time

Signature Date Time

Requested Standard Analysis - 5-10 business days after receipt at lab

## SAMPLE DESCRIPTION AND LABELING RECORD

**Contact Information (deliver results to)**
**Name:** Rob White
**Phone:** (918) 307-8865
**Email:**

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Number: | bec-19-cricketvalley.ny-start#1 | | | Laboratory Analysis Requested: | | | |
| Person Taking Samples: | | TW | | Titration | | | |
| Sample Number | Location | Date | Volume | Analysis Method | | | |
| | | | | Cont Cond | -- | -- | -- |
| SAM U-00001 Base+DB-1-CW | Unit SAM U-00001 Base+DB - Run 1 - Condenser Wash | 03/11/20 | | | | | |
| SAM U-00001 Base+DB-2-CW | Unit SAM U-00001 Base+DB - Run 2 - Condenser Wash | 03/11/20 | | | | | |
| SAM U-00001 Base+DB-3-CW | Unit SAM U-00001 Base+DB - Run 3 - Condenser Wash | 03/11/20 | | | | | |

Signature [signature] Date 3/12/20 Time 1300

Signature [signature] Date 2020/03/12 Time 21:30

Signature Date Time

Signature Date Time

bec-19-cricketvalley.ny-start#2-U-00002-SAMBaseDB

SD&L

Requested Standard Analysis - 5-10 business days after receipt at lab

## SAMPLE DESCRIPTION AND LABELING RECORD

**Contact Information (deliver results to)**

**Name:** Rob White
**Phone:** (918) 307-8865
**Email:** rwhite@airhygiene.com

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com

| Project Number: | bec-19-cricketvalley.ny-start#1 | | | Laboratory Analysis Requested: | | | |
|---|---|---|---|---|---|---|---|
| Person Taking Samples: | TW | | | Titration | | | |
| Sample Number | Location | Date | Volume | Analysis Method | | | |
| | | | | Cont Cond | -- | -- | -- |
| SAM U-00002 Base-1-CW | Unit SAM U-00002 Base - Run 1 - Condenser Wash | 03/09/20 | | | | | |
| SAM U-00002 Base-2-CW | Unit SAM U-00002 Base - Run 2 - Condenser Wash | 03/09/20 | | | | | |
| SAM U-00002 Base-3-CW | Unit SAM U-00002 Base - Run 3 - Condenser Wash | 03/09/20 | | | | | |

| Signature | Date | Time | Signature | Date | Time |
|---|---|---|---|---|---|
| [signature] | 3/12/20 | 1300 | [signature] | 20200313 | 2130 |
| Signature | Date | Time | Signature | Date | Time |

bec-19-cricketvalley.ny-start#2-U-00002-SAMBase

SD&L

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

## Laboratory Data $PM_{10}$ and SAM Blanks
## BV Labs [U-00001 Report]

Your Project #: BEC-19-CRICKETVALLEY.NY-START1

**Attention: Data Reports**

Air Hygiene International Inc
1600 West Tacoma Street
Broken Arrow, OK
USA 74012

**Report Date: 2020/03/03**
Report #: R6096087
Version: 1 - Final

# CERTIFICATE OF ANALYSIS

**BV LABS JOB #: C048069**
**Received: 2020/02/21, 17:15**

Sample Matrix: Stack Sampling Train
# Samples Received: 23

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Analytical Method |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | 9 | 2020/02/27 | 2020/02/26 | BRL SOP-00118 | EPA 202 m |
| Non Extractable Condensibles (M202) | 8 | 2020/02/27 | 2020/02/27 | BRL SOP-00118 / BRL SOP-00109 | EPA 202 m |
| >10um Particulates in Rinse | 7 | 2020/02/27 | 2020/02/28 | BRL SOP-00109 | EPA M201A |
| 2.5-10um Particulates in Rinse | 7 | 2020/02/27 | 2020/02/28 | BRL SOP-00109 | EPA M201A |
| 2.5 um Particulates on Filter | 7 | N/A | 2020/02/26 | BRL SOP-00109 | EPA M201A |
| <2.5um Particulates in Rinse | 7 | 2020/02/27 | 2020/02/28 | BRL SOP-00109 | EPA M201A |
| Sulphuric Acid Mist by Titration (M8A) | 7 | 2020/03/02 | 2020/03/02 | BRL SOP-00116 | EPA CFR PTM 8 m |
| Final Volume of Acetone Probe Rinse | 7 | N/A | 2020/02/26 | BRL SOP-00109 | |
| Final Volume of Impinger | 7 | N/A | 2020/03/02 | | |
| Weight of Solvent from Impingers | 9 | N/A | 2020/02/26 | | |
| Weight of Water from Impingers | 8 | N/A | 2020/02/26 | | |

**Remarks:**

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.



Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Your Project #: BEC-19-CRICKETVALLEY.NY-START1

**Attention: Data Reports**

Air Hygiene International Inc
1600 West Tacoma Street
Broken Arrow, OK
USA 74012

**Report Date: 2020/03/03**
Report #: R6096087
Version: 1 - Final

# CERTIFICATE OF ANALYSIS

**BV LABS JOB #: C048069**
**Received: 2020/02/21, 17:15**

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key




Bureau Veritas Laboratories
03 Mar 2020 16:17:38

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Clayton Johnson, Project Manager - Air Toxics, Source Evaluation
Email: Clayton.Johnson@bvlabs.com
Phone# (905)817-5769

==========

This report has been generated and distributed using a secure automated process.
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



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## EPA M201A - PARTICULATES (STACK SAMPLING TRAIN)

| BV Labs ID | | MBP551 | MBP552 | MBP553 | MBP554 | | |
|---|---|---|---|---|---|---|---|
| Sampling Date | | | 2020/02/18 | 2020/02/18 | 2020/02/18 | | |
| | UNITS | M201A- BLANK | M201A- W/DB-R1 | M201A- W/DB-R2 | M201A- W/DB-R3 | RDL | QC Batch |
| > 10 Particulate Weight in Acetone Rinse | mg | 1.2 | 1.1 | 13.9 | 1.2 | 0.5 | 6608986 |
| < 2.5 Particulate Weight in Acetone Rinse | mg | 1.9 | 1.7 | 1.7 | 1.4 | 0.5 | 6608981 |
| 2.5 - 10 Particulate Weight in Acetone Rinse | mg | 1.7 | 0.9 | 1.4 | 1.8 | 0.5 | 6608984 |
| < 2.5 Particulate Weight on Filter | mg | <0.30 | <0.30 (1) | <0.30 | <0.30 (2) | 0.30 | 6607770 |
| Acetone Rinse Volume (10) | ml | 110 | 140 | 110 | 120 | 1 | 6608983 |
| Acetone Rinse Volume (2.5 - 10) | ml | 91 | 120 | 99 | 130 | 1 | 6608983 |
| Acetone Rinse Volume (2.5) | ml | 100 | 120 | 120 | 130 | 1 | 6608983 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Negative weight observed

LFT Loose filter material in the petri dish
DE Edges of the filter are frayed
(2) Negative weight observed

| BV Labs ID | | MBP556 | MBP557 | MBP558 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2020/02/17 | 2020/02/17 | 2020/02/17 | | |
| | UNITS | M201A- W/ODB-R1 | M201A- W/ODB-R2 | M201A- W/ODB-R3 | RDL | QC Batch |
| > 10 Particulate Weight in Acetone Rinse | mg | 16.2 | 14.5 | 14.0 | 0.5 | 6608986 |
| < 2.5 Particulate Weight in Acetone Rinse | mg | 1.7 | 2.7 | 1.7 | 0.5 | 6608981 |
| 2.5 - 10 Particulate Weight in Acetone Rinse | mg | 1.3 | 1.7 | 1.5 | 0.5 | 6608984 |
| < 2.5 Particulate Weight on Filter | mg | <0.30 (1) | <0.30 (2) | <0.30 (3) | 0.30 | 6607770 |
| Acetone Rinse Volume (10) | ml | 100 | 110 | 97 | 1 | 6608983 |
| Acetone Rinse Volume (2.5 - 10) | ml | 130 | 130 | 85 | 1 | 6608983 |
| Acetone Rinse Volume (2.5) | ml | 130 | 130 | 63 | 1 | 6608983 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Negative weight observed

WET Filters was received wet
(2) Negative weight observed
(3) Negtive results observed

WET Filters were received wet
LFT Loose filter material in the petri dish
DE Edges of the filter are frayed



Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## EPA M202 CONDENSIBLE PM (STACK SAMPLING TRAIN)

| BV Labs ID | | MBP535 | MBP536 | MBP537 | MBP538 | | |
|---|---|---|---|---|---|---|---|
| Sampling Date | | | | | | | |
| | UNITS | M8A/M202- DI WATER BLANK | M202- HEXANE BLANK | M202- ACETONE BLANK | M202- FB | RDL | QC Batch |
| Weight | g | 200 | N/A | N/A | 440 | 0.1 | 6608740 |
| Weight of Solvent | g | N/A | 130 | 150 | 320 | 0.1 | 6608738 |
| **Miscellaneous Parameters** | | | | | | | |
| Inorganic Condensibles | mg | <0.5 | N/A | N/A | 3.1 | 0.5 | 6608739 |
| Organic Condensibles | mg | N/A | <1.0 | <1.0 | 1.1 | 1.0 | 6608735 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

| BV Labs ID | | MBP539 | MBP540 | MBP541 | MBP543 | MBP544 | | |
|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2020/02/18 | 2020/02/18 | 2020/02/18 | 2020/02/17 | 2020/02/17 | | |
| | UNITS | M202- W/DB-R1 | M202- W/DB-R2 | M202- W/DB-R3 | M202- W/ODB-R1 | M202- W/ODB-R2 | RDL | QC Batch |
| Weight | g | 370 | 470 | 390 | 500 | 440 | 0.1 | 6608740 |
| Weight of Solvent | g | 220 | 280 | 210 | 150 | 230 | 0.1 | 6608738 |
| **Miscellaneous Parameters** | | | | | | | | |
| Inorganic Condensibles | mg | 4.6 | 3.7 | 3.8 | 4.6 | 4.2 | 0.5 | 6608739 |
| Organic Condensibles | mg | 1.3 | 1.2 | <1.0 | 1.6 | 2.4 | 1.0 | 6608735 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

| BV Labs ID | | MBP545 | | |
|---|---|---|---|---|
| Sampling Date | | 2020/02/17 | | |
| | UNITS | M202- W/ODB-R3 | RDL | QC Batch |
| Weight | g | 440 | 0.1 | 6608740 |
| Weight of Solvent | g | 230 | 0.1 | 6608738 |
| **Miscellaneous Parameters** | | | | |
| Inorganic Condensibles | mg | 3.6 | 0.5 | 6608739 |
| Organic Condensibles | mg | <1.0 | 1.0 | 6608735 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

| BV Labs ID | | MBP535 | | MBP785 | MBP785 | | |
|---|---|---|---|---|---|---|---|
| Sampling Date | | | | 2020/02/17 | 2020/02/17 | | |
| | UNITS | M8A/M202- DI WATER BLANK | RDL | M8A- W/DB- R1-CW | M8A- W/DB- R1-CW Lab-Dup | RDL | QC Batch |
| Impinger Volume | ml | 196 | 1 | 232 | N/A | 1 | 6613884 |
| **Miscellaneous Parameters** | | | | | | | |
| Sulphuric Acid Mist | mg | <0.78 | 0.78 | <0.93 | <0.93 | 0.93 | 6613883 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

| BV Labs ID | | MBP801 | | MBP802 | | MBP805 | | |
|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2020/02/17 | | 2020/02/17 | | 2020/02/18 | | |
| | UNITS | M8A- W/DB- R2-CW | RDL | M8A- W/DB- R3-CW | RDL | M8A- W/ODB- R1-CW | RDL | QC Batch |
| Impinger Volume | ml | 194 | 1 | 254 | 1 | 191 | 1 | 6613884 |
| **Miscellaneous Parameters** | | | | | | | | |
| Sulphuric Acid Mist | mg | <0.78 | 0.78 | <1 | 1 | <0.76 | 0.76 | 6613883 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

| BV Labs ID | | MBP806 | | MBP807 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2020/02/18 | | 2020/02/18 | | |
| | UNITS | M8A- W/ODB- R2-CW | RDL | M8A- W/ODB- R3-CW | RDL | QC Batch |
| Impinger Volume | ml | 197 | 1 | 232 | 1 | 6613884 |
| **Miscellaneous Parameters** | | | | | | |
| Sulphuric Acid Mist | mg | <0.79 | 0.79 | <0.93 | 0.93 | 6613883 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## TEST SUMMARY

**BV Labs ID:** MBP535 **Collected:**
**Sample ID:** M8A/M202- DI WATER BLANK **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Non Extractable Condensibles (M202) | BAL | 6608739 | 2020/02/27 | 2020/02/27 | Muhammad M Rahman |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |
| Final Volume of Impinger | | 6613884 | N/A | 2020/03/02 | Rupinder Sihota |
| Weight of Water from Impingers | | 6608740 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP536 **Collected:**
**Sample ID:** M202- HEXANE BLANK **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP537 **Collected:**
**Sample ID:** M202- ACETONE BLANK **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP538 **Collected:**
**Sample ID:** M202- FB **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6608739 | 2020/02/27 | 2020/02/27 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6608740 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP539 **Collected:** 2020/02/18
**Sample ID:** M202- W/DB- R1 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6608739 | 2020/02/27 | 2020/02/27 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6608740 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP540 **Collected:** 2020/02/18
**Sample ID:** M202- W/DB- R2 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## TEST SUMMARY

**BV Labs ID:** MBP540
**Sample ID:** M202- W/DB- R2
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Non Extractable Condensibles (M202) | BAL | 6608739 | 2020/02/27 | 2020/02/27 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6608740 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP541
**Sample ID:** M202- W/DB- R3
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6608739 | 2020/02/27 | 2020/02/27 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6608740 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP543
**Sample ID:** M202- W/ODB- R1
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6608739 | 2020/02/27 | 2020/02/27 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6608740 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP544
**Sample ID:** M202- W/ODB- R2
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6608739 | 2020/02/27 | 2020/02/27 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6608740 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP545
**Sample ID:** M202- W/ODB- R3
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6608739 | 2020/02/27 | 2020/02/27 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6608740 | N/A | 2020/02/26 | Muhammad M Rahman |



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## TEST SUMMARY

**BV Labs ID:** MBP551
**Sample ID:** M201A- BLANK
**Matrix:** Stack Sampling Train

**Collected:**
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6608986 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6608984 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6607770 | N/A | 2020/02/26 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6608981 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6608983 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP552
**Sample ID:** M201A- W/DB- R1
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6608986 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6608984 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6607770 | N/A | 2020/02/26 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6608981 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6608983 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP553
**Sample ID:** M201A- W/DB- R2
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6608986 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6608984 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6607770 | N/A | 2020/02/26 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6608981 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6608983 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP554
**Sample ID:** M201A- W/DB- R3
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6608986 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6608984 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6607770 | N/A | 2020/02/26 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6608981 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6608983 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP556
**Sample ID:** M201A- W/ODB- R1
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6608986 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6608984 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6607770 | N/A | 2020/02/26 | Brenda Moore |



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## TEST SUMMARY

**BV Labs ID:** MBP556
**Sample ID:** M201A- W/ODB- R1
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| <2.5um Particulates in Rinse | BAL | 6608981 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6608983 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP557
**Sample ID:** M201A- W/ODB- R2
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6608986 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6608984 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6607770 | N/A | 2020/02/26 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6608981 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6608983 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP558
**Sample ID:** M201A- W/ODB- R3
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6608986 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6608984 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6607770 | N/A | 2020/02/26 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6608981 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6608983 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP785
**Sample ID:** M8A- W/DB- R1- CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |
| Final Volume of Impinger | | 6613884 | N/A | 2020/03/02 | Rupinder Sihota |

**BV Labs ID:** MBP785 Dup
**Sample ID:** M8A- W/DB- R1- CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |

**BV Labs ID:** MBP801
**Sample ID:** M8A- W/DB- R2- CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |
| Final Volume of Impinger | | 6613884 | N/A | 2020/03/02 | Rupinder Sihota |



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## TEST SUMMARY

**BV Labs ID:** MBP802
**Sample ID:** M8A- W/DB- R3- CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |
| Final Volume of Impinger | | 6613884 | N/A | 2020/03/02 | Rupinder Sihota |

**BV Labs ID:** MBP805
**Sample ID:** M8A- W/ODB- R1- CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |
| Final Volume of Impinger | | 6613884 | N/A | 2020/03/02 | Rupinder Sihota |

**BV Labs ID:** MBP806
**Sample ID:** M8A- W/ODB- R2- CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |
| Final Volume of Impinger | | 6613884 | N/A | 2020/03/02 | Rupinder Sihota |

**BV Labs ID:** MBP807
**Sample ID:** M8A- W/ODB- R3- CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |
| Final Volume of Impinger | | 6613884 | N/A | 2020/03/02 | Rupinder Sihota |



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## GENERAL COMMENTS

Sample MBP535 [M8A/M202- DI WATER BLANK] : INORGANIC EXTRACTION: No residue noted in Teflon dish.

Sample MBP536 [M202- HEXANE BLANK] : ORGANIC EXTRACTION: No residue noted in vial.

Sample MBP537 [M202- ACETONE BLANK] : ORGANIC EXTRACTION: No residue noted in vial.

Sample MBP538 [M202- FB] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MBP539 [M202- W/DB- R1] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MBP540 [M202- W/DB- R2] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MBP541 [M202- W/DB- R3] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MBP543 [M202- W/ODB- R1] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MBP544 [M202- W/ODB- R2] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MBP545 [M202- W/ODB- R3] : ORGANIC EXTRACTION : Light oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

**Results relate only to the items tested.**



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## QUALITY ASSURANCE REPORT

| QA/QC Batch | Init | QC Type | Parameter | Date Analyzed | Value | % Recovery | UNITS | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 6608735 | MOR | Spiked Blank | Organic Condensibles | 2020/02/28 | | 98 | % | 70 - 130 |
| 6608735 | MOR | Method Blank | Organic Condensibles | 2020/02/26 | <1.0 | | mg | |
| 6608739 | MOR | Method Blank | Inorganic Condensibles | 2020/03/02 | <0.5 | | mg | |
| 6608981 | MOR | Method Blank | < 2.5 Particulate Weight in Acetone Rinse | 2020/02/28 | <0.5 | | mg | |
| 6608984 | MOR | Method Blank | 2.5 - 10 Particulate Weight in Acetone Rinse | 2020/02/28 | <0.5 | | mg | |
| 6608986 | MOR | Method Blank | > 10 Particulate Weight in Acetone Rinse | 2020/02/28 | <0.5 | | mg | |
| 6613883 | RSU | Matrix Spike(MBP785) | Sulphuric Acid Mist | 2020/03/02 | | 97 | % | 80 - 120 |
| 6613883 | RSU | Spiked Blank | Sulphuric Acid Mist | 2020/03/02 | | 99 | % | 90 - 110 |
| 6613883 | RSU | Method Blank | Sulphuric Acid Mist | 2020/03/02 | <0.2 | | mg | |
| 6613883 | RSU | RPD - Sample/Sample Dup | Sulphuric Acid Mist | 2020/03/02 | NC | | % | 20 |

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).



Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Brenda Moore

Brenda Moore, Team Lead, Inorganic

Frank Mo, B.Sc., Inorganic Lab. Manager

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

C048069

Requested Standard Analysis - 5-10 business days after receipt at lab

# SAMPLE DESCRIPTION AND LABELING RECORD

Contact Information (deliver results to)
Name: Rob White
Phone: (918) 307-8865
Email: rwhite@airhygiene.com

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com

| Project Number: | bec-19-cricketvalley.ny-start#1 | Laboratory Analysis Requested: |
|---|---|---|
| Person Taking Samples: | Aaron Blum | Gravimetric |

| Sample Number | Location | Date | Volume | Analysis Method | | | |
|---|---|---|---|---|---|---|---|
| | | | | RM 201A | RM 202 | -- | -- |
| CTG-0001_W/DB-1-F | Unit CTG-0001_W/DB - Run 1 - Filter | 02/18/20 | N/A | X | | | |
| CTG-0001_W/DB-1-C2 | Unit CTG-0001_W/DB - Run 1 - Nozzle Wash PM>10 | 02/18/20 | | X | | | |
| CTG-0001_W/DB-1-C3 | Unit CTG-0001_W/DB - Run 1 - Cyclone Wash 2.5<PM<10 | 02/18/20 | | X | | | |
| CTG-0001_W/DB-1-C4 | Unit CTG-0001_W/DB - Run 1 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 02/18/20 | N/A | X | | | |
| CTG-0001_W/DB-1-C5 | Unit CTG-0001_W/DB - Run 1 - Inorganic Impinger Contents | 02/18/20 | | | X | | |
| CTG-0001_W/DB-1-C6 | Unit CTG-0001_W/DB - Run 1 - Organic Impinger Contents | 02/18/20 | | | X | | |
| CTG-0001_W/DB-1-CPM | Unit CTG-0001_W/DB - Run 1 - CPM Filter | 02/18/20 | N/A | | X | | |
| CTG-0001_W/DB-2-F | Unit CTG-0001_W/DB - Run 2 - Filter | 02/18/20 | N/A | X | | | |
| CTG-0001_W/DB-2-C2 | Unit CTG-0001_W/DB - Run 2 - Nozzle Wash PM>10 | 02/18/20 | | X | | | |
| CTG-0001_W/DB-2-C3 | Unit CTG-0001_W/DB - Run 2 - Cyclone Wash 2.5<PM<10 | 02/18/20 | | X | | | |
| CTG-0001_W/DB-2-C4 | Unit CTG-0001_W/DB - Run 2 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 02/18/20 | N/A | X | | | |
| CTG-0001_W/DB-2-C5 | Unit CTG-0001_W/DB - Run 2 - Inorganic Impinger Contents | 02/18/20 | | | X | | |
| CTG-0001_W/DB-2-C6 | Unit CTG-0001_W/DB - Run 2 - Organic Impinger Contents | 02/18/20 | | | X | | |
| CTG-0001_W/DB-2-CPM | Unit CTG-0001_W/DB - Run 2 - CPM Filter | 02/18/20 | N/A | | X | | |
| CTG-0001_W/DB-3-F | Unit CTG-0001_W/DB - Run 3 - Filter | 02/18/20 | N/A | X | | | |
| CTG-0001_W/DB-3-C2 | Unit CTG-0001_W/DB - Run 3 - Nozzle Wash PM>10 | 02/18/20 | | X | | | |
| CTG-0001_W/DB-3-C3 | Unit CTG-0001_W/DB - Run 3 - Cyclone Wash 2.5<PM<10 | 02/18/20 | | X | | | |
| CTG-0001_W/DB-3-C4 | Unit CTG-0001_W/DB - Run 3 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 02/18/20 | N/A | X | | | |
| CTG-0001_W/DB-3-C5 | Unit CTG-0001_W/DB - Run 3 - Inorganic Impinger Contents | 02/18/20 | | | X | | |
| CTG-0001_W/DB-3-C6 | Unit CTG-0001_W/DB - Run 3 - Organic Impinger Contents | 02/18/20 | | | X | | |
| CTG-0001_W/DB-3-CPM | Unit CTG-0001_W/DB - Run 3 - CPM Filter | 02/18/20 | N/A | | X | | |
| CTG-0001_W/DB-FB-C3 | Unit CTG-0001_W/DB - Run FB - Cyclone Wash 2.5<PM<10 | FB | | X | | | |
| CTG-0001_W/DB-FB-C4 | Unit CTG-0001_W/DB - Run FB - Cyclone Exit to Front Half of Filter Wash (<2.5) | FB | N/A | X | | | |
| CTG-0001_W/DB-FB-C5 | Unit CTG-0001_W/DB - Run FB - Inorganic Impinger Contents | FB | | | X | | |
| CTG-0001_W/DB-B1-Acetone | Unit CTG-0001_W/DB - Blank - Acetone | | 200 | | X | | |
| CTG-0001_W/DB-B2-DI Water | Unit CTG-0001_W/DB - Blank - DI Water | | 200 | X | | | |
| CTG-0001_W/DB-B3-Hexane | Unit CTG-0001_W/DB - Blank - Hexane | | 200 | | X | | |

Signature: [signature] Date: 2/20/20 Time: AAC

Signature: Date: Time:

FIDELE NTAMWEMEZI
Signature: [signature] Date: 2020/02/21 Time: 17:15

FIDELE NTAMWEMEZI
Signature: [signature] Date: 2020/02/25 Time: 13:40

bec-19-cricketvalley#1-PM_W_DBxlsm.xlsm SD&L

C048-069

Requested Standard Analysis - 5-10 business days after receipt at lab

## SAMPLE DESCRIPTION AND LABELING RECORD


Contact Information (deliver results to)
Name: Rob White
Phone: (918) 307-8865
Email: rwhite@airhygiene.com

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com


Project Number: bec-19-cricketvalley.ny-start#1

Laboratory Analysis Requested:

Person Taking Samples: Aaron Blum

Gravimetric

| Sample Number | Location | Date | Volume | Analysis Method | | | |
|---|---|---|---|---|---|---|---|
| | | | | RM 201A | RM 202 | – | – |
| CTG-0001_W/ODB-1-F | Unit CTG-0001_W/ODB - Run 1 - Filter | 02/17/20 | N/A | X | | | |
| CTG-0001_W/ODB-1-C2 | Unit CTG-0001_W/ODB - Run 1 - Nozzle Wash PM>10 | 02/17/20 | | X | | | |
| CTG-0001_W/ODB-1-C3 | Unit CTG-0001_W/ODB - Run 1 - Cyclone Wash 2.5<PM<10 | 02/17/20 | | X | | | |
| CTG-0001_W/ODB-1-C4 | Unit CTG-0001_W/ODB - Run 1 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 02/17/20 | N/A | X | | | |
| CTG-0001_W/ODB-1-C5 | Unit CTG-0001_W/ODB - Run 1 - Inorganic Impinger Contents | 02/17/20 | | | X | | |
| CTG-0001_W/ODB-1-C6 | Unit CTG-0001_W/ODB - Run 1 - Organic Impinger Contents | 02/17/20 | | | X | | |
| CTG-0001_W/ODB-1-CPM | Unit CTG-0001_W/ODB - Run 1 - CPM Filter | 02/17/20 | N/A | | X | | |
| CTG-0001_W/ODB-2-F | Unit CTG-0001_W/ODB - Run 2 - Filter | 02/17/20 | N/A | X | | | |
| CTG-0001_W/ODB-2-C2 | Unit CTG-0001_W/ODB - Run 2 - Nozzle Wash PM>10 | 02/17/20 | | X | | | |
| CTG-0001_W/ODB-2-C3 | Unit CTG-0001_W/ODB - Run 2 - Cyclone Wash 2.5<PM<10 | 02/17/20 | | X | | | |
| CTG-0001_W/ODB-2-C4 | Unit CTG-0001_W/ODB - Run 2 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 02/17/20 | N/A | X | | | |
| CTG-0001_W/ODB-2-C5 | Unit CTG-0001_W/ODB - Run 2 - Inorganic Impinger Contents | 02/17/20 | | | X | | |
| CTG-0001_W/ODB-2-C6 | Unit CTG-0001_W/ODB - Run 2 - Organic Impinger Contents | 02/17/20 | | | X | | |
| CTG-0001_W/ODB-2-CPM | Unit CTG-0001_W/ODB - Run 2 - CPM Filter | 02/17/20 | N/A | | X | | |
| CTG-0001_W/ODB-3-F | Unit CTG-0001_W/ODB - Run 3 - Filter | 02/17/20 | N/A | X | | | |
| CTG-0001_W/ODB-3-C2 | Unit CTG-0001_W/ODB - Run 3 - Nozzle Wash PM>10 | 02/17/20 | | X | | | |
| CTG-0001_W/ODB-3-C3 | Unit CTG-0001_W/ODB - Run 3 - Cyclone Wash 2.5<PM<10 | 02/17/20 | | X | | | |
| CTG-0001_W/ODB-3-C4 | Unit CTG-0001_W/ODB - Run 3 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 02/17/20 | N/A | X | | | |
| CTG-0001_W/ODB-3-C5 | Unit CTG-0001_W/ODB - Run 3 - Inorganic Impinger Contents | 02/17/20 | | | X | | |
| CTG-0001_W/ODB-3-C6 | Unit CTG-0001_W/ODB - Run 3 - Organic Impinger Contents | 02/17/20 | | | X | | |
| CTG-0001_W/ODB-3-CPM | Unit CTG-0001_W/ODB - Run 3 - CPM Filter | 02/17/20 | N/A | | X | | |
| CTG-0001_W/ODB-FB-C3 | Unit CTG-0001_W/ODB - Run FB - Cyclone Wash 2.5<PM<10 | FB | | X | | | |
| CTG-0001_W/ODB-FB-C4 | Unit CTG-0001_W/ODB - Run FB - Cyclone Exit to Front Half of Filter Wash (<2.5) | FB | N/A | X | | | |
| CTG-0001_W/ODB-FB-C5 | Unit CTG-0001_W/ODB - Run FB - Inorganic Impinger Contents | FB | | | X | | |
| CTG-0001_W/ODB-B1-Acetone | Unit CTG-0001_W/ODB - Blank - Acetone | | 200 | | X | | |
| CTG-0001_W/ODB-B2-DI Water | Unit CTG-0001_W/ODB - Blank - DI Water | | 200 | X | | | |
| CTG-0001_W/ODB-B3-Hexane | Unit CTG-0001_W/ODB - Blank - Hexane | | 200 | | X | | |

Signature Date Time

FIDELE NTAMWEMEZI 2020/02/21 17:15
Signature Date Time

Signature Date Time

FIDELE NTAMWEMEZI 2020/02/25 13:40
Signature Date Time

C048069

Requested Standard Analysis - 5-10 business days after receipt at lab

## SAMPLE DESCRIPTION AND LABELING RECORD

**Contact Information (deliver results to)**

**Name:** Rob White
**Phone:** (918) 307-8865
**Email:** rwhite@airhygiene.com

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com

| Project Number: | bec-19-cricketvalley.ny-start#1 | Laboratory Analysis Requested: |
|---|---|---|
| Person Taking Samples: | Atlas Melchert | Titration |

| Sample Number | Location | Date | Volume | Analysis Method | | | |
|---|---|---|---|---|---|---|---|
| | | | | Cont Cond | -- | -- | -- |
| CT-0001W/DB-1-CW | Unit CT-0001W/DB - Run 1 - Condenser Wash | 02/17/20 | | | | | |
| CT-0001W/DB-2-CW | Unit CT-0001W/DB - Run 2 - Condenser Wash | 02/17/20 | | | | | |
| CT-0001W/DB-3-CW | Unit CT-0001W/DB - Run 3 - Condenser Wash | 02/17/20 | | | | | |
| CT-0001W/DB-B2-DI Water | Unit CT-0001W/DB - Blank - DI Water | | 100 | | | | |
| CT-0001W/DB-B3-$H_2O_2$ | Unit CT-0001W/DB - Blank - $H_2O_2$ | | 100 | | | | |

| Signature | Date | Time | Signature | Date | Time |
|---|---|---|---|---|---|
| [signature] | 2/20/20 | 1420 | FIDELE NTAMWEMEZI [signature] | 2020/02/21 | 17:15 |
| | | | FIDELE NTAMWEMEZI [signature] | 2020/02/25 | 13:40 |

bec-19-cricketvally.ny-start#1-M8a-wDB

SD&L

C048069

Requested Standard Analysis - 5-10 business days after receipt at lab

## SAMPLE DESCRIPTION AND LABELING RECORD

**Contact Information (deliver results to)**

**Name:** Rob White
**Phone:** (918) 307-8865
**Email:** rwhite@airhygiene.com

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com

Project Number: bec-19-cricketvalley.ny-start#1

Person Taking Samples:

Laboratory Analysis Requested: Titration

| Sample Number | Location | Date | Volume | Analysis Method: Cont Cond | -- | -- | -- |
|---|---|---|---|---|---|---|---|
| CT-0001w/oDB-1-CW | Unit CT-0001w/oDB - Run 1 - Condenser Wash | 02/18/20 | | | | | |
| CT-0001w/oDB-2-CW | Unit CT-0001w/oDB - Run 2 - Condenser Wash | 02/18/20 | | | | | |
| CT-0001w/oDB-3-CW | Unit CT-0001w/oDB - Run 3 - Condenser Wash | 02/18/20 | | | | | |
| CT-0001w/oDB-B2-DI Water | Unit CT-0001w/oDB - Blank - DI Water | | 100 | | | | |
| CT-0001w/oDB-B3-$H_2O_2$ | Unit CT-0001w/oDB - Blank - $H_2O_2$ | | 100 | | | | |

| Signature | Date | Time | Signature | Date | Time |
|---|---|---|---|---|---|
| [signature] | 2/20/20 | 1900 | FIDELE NTAMWEMEZI [signature] | 2020/02/21 | 17:15 |
| | | | FIDELE NTAMWEMEZI [signature] | 2020/02/25 | 13:40 |

bec-19-cricketvalley.ny-start#1-woDB-M8A

SD&L

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

## Supplemental Laboratory Data $PM_{10}$ Filters
## BV Labs

**Inorganic Analysis Action / Comment Form**

| | |
|---|---|
| Client ID | Air Hygiene |
| Maxxam Job # | C067891 |
| Maxxam Sample ID's (start) | MFT289-01R |

| Analytical Worksheet(s) | | | |
|---|---|---|---|
| | Filters | 6637643 | |
| | Solvent Rinse | 6637939 | |
| | Solvent Volumes | 6637965 | |
| | | | |

| | |
|---|---|
| Analysis | Particulates |
| Analyst ID | |

| Actions: | *Impacted Sample ID's |
|---|---|
| Bottle discrepancies | |
| Filters damaged | |
| Solvent rinse anomalies | |
| Water impinger anomalies | |
| Filter blank submitted | No |
| Solvent blank submitted | No |
| Water blank submitted | |
| Other | |

Comments

See data sheets for any anomalies of samples

Filter
Particulate Weight Log

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Job # | C067891 | | Metals | No | supplier | Pall | N/A | |
| Client | Air Hygiene | | Filter Blank Submitted | No | p/n | 61631 | N/A | |
| Analysis | Particulate Weight on Filter | | Date of Dessication | 2020/03/13 | lot # | T83173 | N/A | Type |
| Balance ID | 220-BALANAL4 | | Time of Dessication | 1:24 PM | | | | M5 |
| Condition | Dickson THDX S/N 6003123 | | | | | | | |

DE Edges of filter frayed
LPC Loose particulate material in filter containe
FT Filter torn
FCL Filter contains liquid after dessication
LFT Loose filter material

Increment 1

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Analyst | B Moore | B Moore | B Moore | | | | | |
| Weighing Date | 2019.03.18 | 2020/03/16 | 2020/03/17 | | | | | |
| Weighing Time | 12:38 PM | 12:19 PM | 10:00 AM | | | | | |
| Temperature (ºC) | 23 | 22 | 23 | | | | | |
| Humidity (%) | 37 | 32 | 41 | | | | | |

| Worksheet # | # | Maxxam # | Filter Condition | Filter ID # | Pre Weight gm | Weight #1 gm | Weight #2 gm | Weight #3 gm | Weight #4 gm | Weight #5 gm | Weight #6 gm | Weight #7 gm | Final Weight gm | Particulate mg | RDL mg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6637643 | 1 | MFT289-01R | NORMAL | 19031837 | 0.11590 | 0.1171 | 0.1171 | | | | | | 0.1171 | 1.2 | 0.3 |
| 6637643 | 2 | MFT290-01R | NORMAL | 19031838 | 0.11690 | 0.1167 | 0.1167 | | | | | | 0.1167 | -0.2 | 0.3 |
| 6637643 | 3 | MFT291-01R | NORMAL | 19031825 | 0.11320 | 0.1133 | 0.1133 | | | | | | 0.1133 | 0.1 | 0.3 |
| 6637643 | 4 | MFT292-01R | NORMAL | 19031822 | 0.11315 | 0.1137 | 0.1138 | | | | | | 0.1138 | 0.6 | 0.3 |
| 6637643 | 5 | MFT293-01R | NORMAL | 19031835 | 0.11355 | 0.1129 | 0.1128 | | | | | | 0.1128 | -0.8 | 0.3 |
| 6637643 | 6 | MFT294-01R | NORMAL | 19031823 | 0.11365 | 0.1134 | 0.1134 | | | | | | 0.1134 | -0.3 | 0.3 |
| | 7 | | | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | | |
| | 9 | | | | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | | | |
| | | | | zero | 0.0000 | 0.0000 | 0.0000 | | | | | | | | |
| | | | | 0.3000 gm | 0.3000 | 0.3000 | 0.3000 | | | | | | | | |
| | 11 | | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | |
| | 18 | | | | | | | | | | | | | | |
| | 19 | | | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | | | |
| | | | | zero | | | | | | | | | | | |
| | | | | 0.3000 gm | | | | | | | | | | | |
| | 21 | | | | | | | | | | | | | | |
| | 22 | | | | | | | | | | | | | | |
| | 23 | | | | | | | | | | | | | | |
| | 24 | | | | | | | | | | | | | | |
| | 25 | | | | | | | | | | | | | | |
| | 26 | | | | | | | | | | | | | | |
| | 27 | | | | | | | | | | | | | | |
| | 28 | | | | | | | | | | | | | | |
| | 29 | | | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | | | |
| | | | | zero | | | | | | | | | | | |
| | | | | 0.3000 gm | | | | | | | | | | | |
| | 31 | | | | | | | | | | | | | | |
| | 32 | | | | | | | | | | | | | | |
| | 33 | | | | | | | | | | | | | | |
| | 34 | | | | | | | | | | | | | | |
| | 35 | | | | | | | | | | | | | | |
| | 36 | | | | | | | | | | | | | | |
| | 37 | | | | | | | | | | | | | | |
| | 38 | | | | | | | | | | | | | | |
| | 39 | | | | | | | | | | | | | | |
| | 40 | | | | | | | | | | | | | | |
| | | | | zero | | | | | | | | | | | |
| | | | | 0.3000 gm | | | | | | | | | | | |

Filters are placed in a dessicator for 24 hours minimum prior to beginning weighing cycle.
Filters are not to be exposed to lab atmosphere for > 2 minutes at a relative humidity of≥50 %.
Verification Weight 5mg S/N 1000144533
Verification Weight 100mg S/N 29785
Verification Weight 300mg S/N 1000112492

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

## Audit Sample Data
## (not required for this scope of work)

# APPENDIX E

# FUEL ANALYSIS RECORDS

**Client:** Cricket Valley Energy Center LLC
**Location:** Cricket Valley Energy Center
**Date:** March 9, 2020
**Project #:** bec-19-cricketvalley.ny-start#2

**Natural Gas - Fuel Analysis**

Standardized to 68 deg F and 14.696 psia - EPA Standards

| Gas Component | | Mole (%) | Molecular[1] Weight (lb/lb-mole) | Lbs Component per Lb-Mole of Gas | Wt. % of Component | Ideal Gross[1,3] Heating Value (Btu/ft$^3$) | Fuel Heat Value [HHV] (Btu/SCF) | Ideal Net[1,3] Heating Value (Btu/ft$^3$) | Fuel Heat Value [LHV] (Btu/SCF) |
|---|---|---|---|---|---|---|---|---|---|
| Methane | $CH_4$ | 93.5021 | 16.0430 | 15.00 | 88.12 | 994.85 | 930.20 | 895.75 | 837.55 |
| Ethane | $C_2H_6$ | 4.2045 | 30.0700 | 1.26 | 7.43 | 1,743.15 | 73.29 | 1,594.41 | 67.04 |
| Propane | $C_3H_8$ | 0.1470 | 44.0970 | 0.06 | 0.38 | 2,478.35 | 3.64 | 2,280.17 | 3.35 |
| iso-Butane | $iC_4H_{10}$ | 0.0094 | 58.1230 | 0.01 | 0.03 | 3,203.11 | 0.30 | 2,955.38 | 0.28 |
| n-Butane | $nC_4H_{10}$ | 0.0102 | 58.1230 | 0.01 | 0.03 | 3,213.35 | 0.33 | 2,965.62 | 0.30 |
| Iso-Pentane | $iC_5H_{12}$ | 0.0021 | 72.1500 | 0.00 | 0.01 | 3,940.87 | 0.08 | 3,643.50 | 0.08 |
| n-Pentane | $nC_5H_{12}$ | 0.0012 | 72.1500 | 0.00 | 0.01 | 3,948.75 | 0.05 | 3,648.32 | 0.04 |
| Hexanes | $C_6H_{14}$ | 0.0010 | 86.1770 | 0.00 | 0.01 | 4,684.54 | 0.05 | 4,337.82 | 0.04 |
| Heptanes | $C_7H_{16}$ | 0.0000 | 100.2040 | 0.00 | 0.00 | 5,419.94 | 0.00 | 5,023.77 | 0.00 |
| Octanes | $C_8H_{18}$ | 0.0000 | 114.2310 | 0.00 | 0.00 | 6,155.14 | 0.00 | 5,709.23 | 0.00 |
| Carbon Dioxide | $CO_2$ | 0.4353 | 44.0100 | 0.19 | 1.13 | 0.00 | 0.00 | 0.00 | 0.00 |
| Nitrogen | $N_2$ | 1.3202 | 28.0134 | 0.37 | 2.17 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hydrogen Sulfide | $H_2S$ | 0.0000 | 34.0800 | 0.00 | 0.00 | 627.54 | 0.00 | 578.00 | 0.00 |
| Oxygen | $O_2$ | 0.3670 | 31.9988 | 0.12 | 0.69 | 0.00 | 0.00 | 0.00 | 0.00 |
| Helium | He | 0.0000 | 4.0026 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hydrogen | $H_2$ | 0.0000 | 2.0159 | 0.00 | 0.00 | 319.34 | 0.00 | 269.82 | 0.00 |
| **Totals** | | **100.000** | | **17.02** | **100.00** | **dry** | **1,007.94** | **dry** | **908.68** |
| | | | | | | **wet[2,5]** | **984.70** | **wet[2,5]** | **887.73** |

| Characteristics of Fuel Gas | | |
|---|---|---|
| Molecular Weight of gas = | 17.023 | lb/lb-mole |
| Btu per lb. of gas[4] = | 22,809.483 | gross (HHV) |
| Btu per lb. of gas[4] = | 20,563.285 | net (LHV) |
| Density of fuel gas[2] = | 0.0442 | lb/cu. ft |
| Wt % VOC in fuel gas = | 0.47 | % |
| Specific Gravity[1] = | 0.5878 | |

| Component | Wt% |
|---|---|
| carbon | 72.59 |
| oxygen | 1.51 |
| hydrogen | 23.72 |
| nitrogen | 2.17 |
| helium | 0.00 |
| sulfur | 0.00 |
| **Total** | **100.00** |

| **F-Factor (SCF dry exhaust per MMBtu [HHV]) =** | **8,638.42** |
|---|---|
| (Based on EPA RM-19) at 68 deg F and 14.696 psia | |

**F-Factor Calculation:**

F-Factor = 1,000,000*((3.64*%H)+(1.53*%C)+(0.57*%S)+(0.14*%N)-(0.46*%O))/GCV

GCV = Gross Btu per lb. of gas (HHV)

%H, %C, %S, %N, & %O are percent weight values calculated from fuel analysis and have units of (scf/lb)/%

Density of natural gas based on specific gravity multiplied by density of air at 68 deg F and 14.696 psia.

**References:**


[1] ASTM D 3588

[2] Civil Engineering Reference Manual, 7th ed. - Michael R. Lindeburg

[3] Mark's Standard Handbook for Mechanical Engineers, 10th ed. - Eugene A. Avallone, Theodore Baumeister III

[4] Introduction to Fluid Mechanics, 3rd ed. - William S. Janna

[5] GPA Reference Bulletin 181-86, revised 1986, reprinted 1995

**Client:** Cricket Valley Energy Center LLC
**Location:** Cricket Valley Energy Center
**Date:** March 10, 2020
**Project #:** bec-19-cricketvalley.ny-start#2

**Natural Gas - Fuel Analysis**

Standardized to 68 deg F and 14.696 psia - EPA Standards

| Gas Component | | Mole (%) | Molecular[1] Weight (lb/lb-mole) | Lbs Component per Lb-Mole of Gas | Wt. % of Component | Ideal Gross[1,3] Heating Value (Btu/ft$^3$) | Fuel Heat Value [HHV] (Btu/SCF) | Ideal Net[1,3] Heating Value (Btu/ft$^3$) | Fuel Heat Value [LHV] (Btu/SCF) |
|---|---|---|---|---|---|---|---|---|---|
| Methane | $CH_4$ | 94.0739 | 16.0430 | 15.09 | 89.06 | 994.85 | 935.89 | 895.75 | 842.67 |
| Ethane | $C_2H_6$ | 4.0762 | 30.0700 | 1.23 | 7.23 | 1,743.15 | 71.05 | 1,594.41 | 64.99 |
| Propane | $C_3H_8$ | 0.1404 | 44.0970 | 0.06 | 0.37 | 2,478.35 | 3.48 | 2,280.17 | 3.20 |
| iso-Butane | $iC_4H_{10}$ | 0.0090 | 58.1230 | 0.01 | 0.03 | 3,203.11 | 0.29 | 2,955.38 | 0.27 |
| n-Butane | $nC_4H_{10}$ | 0.0099 | 58.1230 | 0.01 | 0.03 | 3,213.35 | 0.32 | 2,965.62 | 0.29 |
| Iso-Pentane | $iC_5H_{12}$ | 0.0021 | 72.1500 | 0.00 | 0.01 | 3,940.87 | 0.08 | 3,643.50 | 0.08 |
| n-Pentane | $nC_5H_{12}$ | 0.0012 | 72.1500 | 0.00 | 0.01 | 3,948.75 | 0.05 | 3,648.32 | 0.04 |
| Hexanes | $C_6H_{14}$ | 0.0012 | 86.1770 | 0.00 | 0.01 | 4,684.54 | 0.06 | 4,337.82 | 0.05 |
| Heptanes | $C_7H_{16}$ | 0.0000 | 100.2040 | 0.00 | 0.00 | 5,419.94 | 0.00 | 5,023.77 | 0.00 |
| Octanes | $C_8H_{18}$ | 0.0000 | 114.2310 | 0.00 | 0.00 | 6,155.14 | 0.00 | 5,709.23 | 0.00 |
| Carbon Dioxide | $CO_2$ | 0.4343 | 44.0100 | 0.19 | 1.13 | 0.00 | 0.00 | 0.00 | 0.00 |
| Nitrogen | $N_2$ | 0.9895 | 28.0134 | 0.28 | 1.64 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hydrogen Sulfide | $H_2S$ | 0.0000 | 34.0800 | 0.00 | 0.00 | 627.54 | 0.00 | 578.00 | 0.00 |
| Oxygen | $O_2$ | 0.2623 | 31.9988 | 0.08 | 0.50 | 0.00 | 0.00 | 0.00 | 0.00 |
| Helium | He | 0.0000 | 4.0026 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hydrogen | $H_2$ | 0.0000 | 2.0159 | 0.00 | 0.00 | 319.34 | 0.00 | 269.82 | 0.00 |
| **Totals** | | **100.000** | | **16.95** | **100.00** | **dry** | **1,011.22** | **dry** | **911.60** |
| | | | | | | **wet[2,5]** | **987.90** | **wet[2,5]** | **890.58** |

| Characteristics of Fuel Gas | | |
|---|---|---|
| Molecular Weight of gas = | 16.947 | lb/lb-mole |
| Btu per lb. of gas[4] = | 22,987.006 | gross (HHV) |
| Btu per lb. of gas[4] = | 20,722.438 | net (LHV) |
| Density of fuel gas[2] = | 0.0440 | lb/cu. ft |
| Wt % VOC in fuel gas = | 0.45 | % |
| Specific Gravity[1] = | 0.5851 | |

| Component | Wt% |
|---|---|
| carbon | 73.13 |
| oxygen | 1.32 |
| hydrogen | 23.92 |
| nitrogen | 1.64 |
| helium | 0.00 |
| sulfur | 0.00 |
| **Total** | **100.00** |

**F-Factor (SCF dry exhaust per MMBtu [HHV]) = 8,638.67**
(Based on EPA RM-19) at 68 deg F and 14.696 psia

**F-Factor Calculation:**

F-Factor = 1,000,000*((3.64*%H)+(1.53*%C)+(0.57*%S)+(0.14*%N)-(0.46*%O))/GCV

GCV = Gross Btu per lb. of gas (HHV)

%H, %C, %S, %N, & %O are percent weight values calculated from fuel analysis and have units of (scf/lb)/%

Density of natural gas based on specific gravity multiplied by density of air at 68 deg F and 14.696 psia.

**References:**


[1] ASTM D 3588

[2] Civil Engineering Reference Manual, 7th ed. - Michael R. Lindeburg

[3] Mark's Standard Handbook for Mechanical Engineers, 10th ed. - Eugene A. Avallone, Theodore Baumeister III

[4] Introduction to Fluid Mechanics, 3rd ed. - William S. Janna

[5] GPA Reference Bulletin 181-86, revised 1986, reprinted 1995

**Client:** Cricket Valley Energy Center LLC
**Location:** Cricket Valley Energy Center
**Date:** March 11, 2020
**Project #:** bec-19-cricketvalley.ny-start#2

**Natural Gas - Fuel Analysis**

Standardized to 68 deg F and 14.696 psia - EPA Standards

| Gas Component | | Mole (%) | Molecular[1] Weight (lb/lb-mole) | Lbs Component per Lb-Mole of Gas | Wt. % of Component | Ideal Gross[1,3] Heating Value (Btu/ft$^3$) | Fuel Heat Value [HHV] (Btu/SCF) | Ideal Net[1,3] Heating Value (Btu/ft$^3$) | Fuel Heat Value [LHV] (Btu/SCF) |
|---|---|---|---|---|---|---|---|---|---|
| Methane | $CH_4$ | 94.8355 | 16.0430 | 15.21 | 90.43 | 994.85 | 943.47 | 895.75 | 849.49 |
| Ethane | $C_2H_6$ | 3.5130 | 30.0700 | 1.06 | 6.28 | 1,743.15 | 61.24 | 1,594.41 | 56.01 |
| Propane | $C_3H_8$ | 0.1242 | 44.0970 | 0.05 | 0.33 | 2,478.35 | 3.08 | 2,280.17 | 2.83 |
| iso-Butane | $iC_4H_{10}$ | 0.0074 | 58.1230 | 0.00 | 0.03 | 3,203.11 | 0.24 | 2,955.38 | 0.22 |
| n-Butane | $nC_4H_{10}$ | 0.0084 | 58.1230 | 0.00 | 0.03 | 3,213.35 | 0.27 | 2,965.62 | 0.25 |
| Iso-Pentane | $iC_5H_{12}$ | 0.0017 | 72.1500 | 0.00 | 0.01 | 3,940.87 | 0.07 | 3,643.50 | 0.06 |
| n-Pentane | $nC_5H_{12}$ | 0.0010 | 72.1500 | 0.00 | 0.00 | 3,948.75 | 0.04 | 3,648.32 | 0.04 |
| Hexanes | $C_6H_{14}$ | 0.0010 | 86.1770 | 0.00 | 0.01 | 4,684.54 | 0.05 | 4,337.82 | 0.04 |
| Heptanes | $C_7H_{16}$ | 0.0000 | 100.2040 | 0.00 | 0.00 | 5,419.94 | 0.00 | 5,023.77 | 0.00 |
| Octanes | $C_8H_{18}$ | 0.0000 | 114.2310 | 0.00 | 0.00 | 6,155.14 | 0.00 | 5,709.23 | 0.00 |
| Carbon Dioxide | $CO_2$ | 0.3476 | 44.0100 | 0.15 | 0.91 | 0.00 | 0.00 | 0.00 | 0.00 |
| Nitrogen | $N_2$ | 0.9125 | 28.0134 | 0.26 | 1.52 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hydrogen Sulfide | $H_2S$ | 0.0000 | 34.0800 | 0.00 | 0.00 | 627.54 | 0.00 | 578.00 | 0.00 |
| Oxygen | $O_2$ | 0.2477 | 31.9988 | 0.08 | 0.47 | 0.00 | 0.00 | 0.00 | 0.00 |
| Helium | He | 0.0000 | 4.0026 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hydrogen | $H_2$ | 0.0000 | 2.0159 | 0.00 | 0.00 | 319.34 | 0.00 | 269.82 | 0.00 |
| **Totals** | | **100.000** | | **16.83** | **100.00** | **dry** | **1,008.44** | **dry** | **908.95** |
| | | | | | | **wet[2,5]** | **985.19** | **wet[2,5]** | **887.99** |

| Characteristics of Fuel Gas | | |
|---|---|---|
| Molecular Weight of gas = | 16.825 | lb/lb-mole |
| Btu per lb. of gas[4] = | 23,088.954 | gross (HHV) |
| Btu per lb. of gas[4] = | 20,810.952 | net (LHV) |
| Density of fuel gas[2] = | 0.0437 | lb/cu. ft |
| Wt % VOC in fuel gas = | 0.40 | % |
| Specific Gravity[1] = | 0.5809 | |

| Component | Wt% |
|---|---|
| carbon | 73.29 |
| oxygen | 1.13 |
| hydrogen | 24.06 |
| nitrogen | 1.52 |
| helium | 0.00 |
| sulfur | 0.00 |
| **Total** | **100.00** |

**F-Factor (SCF dry exhaust per MMBtu [HHV]) = 8,636.30**
(Based on EPA RM-19) at 68 deg F and 14.696 psia

**F-Factor Calculation:**

F-Factor = 1,000,000*((3.64*%H)+(1.53*%C)+(0.57*%S)+(0.14*%N)-(0.46*%O))/GCV

GCV = Gross Btu per lb. of gas (HHV)

%H, %C, %S, %N, & %O are percent weight values calculated from fuel analysis and have units of (scf/lb)/%

Density of natural gas based on specific gravity multiplied by density of air at 68 deg F and 14.696 psia.

**References:**


[1] ASTM D 3588

[2] Civil Engineering Reference Manual, 7th ed. - Michael R. Lindeburg

[3] Mark's Standard Handbook for Mechanical Engineers, 10th ed. - Eugene A. Avallone, Theodore Baumeister III

[4] Introduction to Fluid Mechanics, 3rd ed. - William S. Janna

[5] GPA Reference Bulletin 181-86, revised 1986, reprinted 1995

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P.O. BOX 741905, HOUSTON, TEXAS 77274

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FAX: (281) 495-2410

| | | | |
|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | bec-19-cricketvalley.ny-start#1 | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92168-001 Page 1 of 3 | **REPORT DATE:** | March 27, 2020 |
| **SAMPLE:** | Unit2_3920_FuelGas A Cricket Valley-R1-NoDuct Natural Gas Sample 2020-03-09 | | |

**TEST** **RESULT**

***Composition of Natural Gas by Gas Chromatography, ASTM D 1945.a***

| | ***Results, Mol %*** |
|---|---|
| Hydrogen | 0.0000 |
| Oxygen | 0.3670 |
| Nitrogen | 1.3202 |
| Carbon Dioxide | 0.4353 |
| Methane | 93.5021 |
| Ethane | 4.2045 |
| Propane | 0.1470 |
| iso-Butane | 0.0094 |
| n-Butane | 0.0102 |
| iso-Pentane | 0.0021 |
| n-Pentane | 0.0012 |
| Hexanes Plus | 0.0010 |
| **TOTAL** | **100.0000** |

***Calorific Value and Specific Gravity, Calculated at 14.696 psia and 60°F, ASTM D 3588.e***

| | ***Results*** |
|---|---|
| NET (Dry basis), BTU/scf | 922.5 |
| Gross (Dry basis), BTU/scf | 1,023 |
| NET (Dry basis), BTU/lb | 20,568 |
| Gross (Dry basis), BTU/lb | 22,813 |

***Calorific Value and Specific Gravity, Calculated at 14.696 psia and 68°F, ASTM D 3588.e***

| | ***Results*** |
|---|---|
| NET (Dry basis), BTU/scf | 908.5 |
| Gross (Dry basis), BTU/scf | 1,007 |
| NET (Dry basis), BTU/lb | 20,568 |
| Gross (Dry basis), BTU/lb | 22,813 |

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| | | | |
|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | bec-19-cricketvalley.ny-start#1 | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92168-001 Page 2 of 3 | **REPORT DATE:** | March 27, 2020 |
| **SAMPLE:** | Unit2_3920_FuelGas A Cricket Valley-R1-NoDuct Natural Gas Sample 2020-03-09 | | |

**TEST** **RESULT**

***Sulfur Compounds in Natural Gas and Gaseous Fuels by GC, ASTM D 5504***

| | ***Results, ppm/Wt*** |
|---|---|
| Hydrogen Sulfide | 0.3 |
| Carbonyl Sulfide | 0.2 |
| 2-Methyl Thiophene | <0.1 |
| 2-Pentyl Mercaptan | <0.1 |
| 3-Methyl Thiophene | <0.1 |
| Benzothiophene | <0.1 |
| Carbon Disulfide | <0.1 |
| Diethylsulfide | <0.1 |
| Dimethylsulfide | <0.1 |
| Ethyl Mercaptan | 0.1 |
| Ethylmethylsulfide | <0.1 |
| Isobutyl Mercaptan | <0.1 |
| Isopropyl Mercaptan | 0.4 |
| Methyl Mercaptan | 0.1 |
| Methyl-t-butyl Sulfide | <0.1 |
| n-Butyl Mercaptan | <0.1 |
| Propyl Mercaptan | 0.2 |
| Tert-butyl disulfide | <0.1 |
| Tert-Butyl mercaptan | 1.5 |
| Tetra-Hydro Thiophene | <0.1 |
| Thiophene | <0.1 |
| Thiophenol | <0.1 |
| Dibenzothiophene | <0.1 |
| 1,2-Ethanedithiol | <0.1 |
| Propyl Sulfide | <0.1 |
| 1-Hexanethiol | <0.1 |
| 1,5-Pentanedithiol | <0.1 |
| Bromothiophene | <0.1 |
| Propyl Disulfide | <0.1 |
| 1-Heptanethiol | <0.1 |
| 2-Methyl Benzothiophene | <0.1 |
| Phenyl Sulfide | <0.1 |
| 1-Nonanethiol | <0.1 |
| 2-Butyl Thiophene | <0.1 |
| 3-Butyl Thiophene | <0.1 |

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| | | | |
|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | bec-19-cricketvalley.ny-start#1 | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92168-001 Page 3 of 3 | **REPORT DATE:** | March 27, 2020 |
| **SAMPLE:** | Unit2_3920_FuelGas A Cricket Valley-R1-NoDuct Natural Gas Sample 2020-03-09 | | |

**TEST** **RESULT**

| ***Parameter*** | ***Results*** |
|---|---|
| | |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 60ºF, wt% | $4.5 \times 10^{-4}$ |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 68ºF, wt% | $4.4 \times 10^{-4}$ |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 60ºF, ppmw | 4.5 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 68ºF, ppmw | 4.4 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, grains/100 scf @ 60ºF | 0.14 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, grains/100 scf @ 68ºF | 0.13 |

Respectfully submitted
For Texas OilTech Laboratories, L.P.

Roland Gore
Associate Laboratory Director



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| | | | |
|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | bec-19-cricketvalley.ny-start#1 | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92168-002 Page 1 of 3 | **REPORT DATE:** | March 27, 2020 |
| **SAMPLE:** | Unit2_31020_FuelGas A Cricket Valley-R1-Duct Natural Gas Sample 2020-03-10 | | |

**TEST** **RESULT**

***Composition of Natural Gas by Gas Chromatography. ASTM D 1945.a***

| | ***Results, Mol %*** |
|---|---|
| Hydrogen | 0.0000 |
| Oxygen | 0.2623 |
| Nitrogen | 0.9895 |
| Carbon Dioxide | 0.4343 |
| Methane | 94.0739 |
| Ethane | 4.0762 |
| Propane | 0.1404 |
| iso-Butane | 0.0090 |
| n-Butane | 0.0099 |
| iso-Pentane | 0.0021 |
| n-Pentane | 0.0012 |
| Hexanes Plus | 0.0012 |
| **TOTAL** | **100.0000** |

***Calorific Value and Specific Gravity. Calculated at 14.696 psia and 60°F. ASTM D 3588.e***

| | ***Results*** |
|---|---|
| NET (Dry basis), BTU/scf | 925.5 |
| Gross (Dry basis), BTU/scf | 1,027 |
| NET (Dry basis), BTU/lb | 20,727 |
| Gross (Dry basis), BTU/lb | 22,990 |

***Calorific Value and Specific Gravity. Calculated at 14.696 psia and 68°F. ASTM D 3588.e***

| | ***Results*** |
|---|---|
| NET (Dry basis), BTU/scf | 911.5 |
| Gross (Dry basis), BTU/scf | 1,011 |
| NET (Dry basis), BTU/lb | 20,727 |
| Gross (Dry basis), BTU/lb | 22,990 |

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| | | | |
|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | bec-19-cricketvalley.ny-start#1 | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92168-002 Page 2 of 3 | **REPORT DATE:** | March 27, 2020 |
| **SAMPLE:** | Unit2_31020_FuelGas A Cricket Valley-R1-Duct Natural Gas Sample 2020-03-10 | | |

**TEST** **RESULT**

***Sulfur Compounds in Natural Gas and Gaseous Fuels by GC, ASTM D 5504***

| | ***Results, ppm/Wt*** |
|---|---|
| Hydrogen Sulfide | 0.4 |
| Carbonyl Sulfide | 0.2 |
| 2-Methyl Thiophene | <0.1 |
| 2-Pentyl Mercaptan | <0.1 |
| 3-Methyl Thiophene | <0.1 |
| Benzothiophene | <0.1 |
| Carbon Disulfide | <0.1 |
| Diethylsulfide | <0.1 |
| Dimethylsulfide | <0.1 |
| Ethyl Mercaptan | 0.1 |
| Ethylmethylsulfide | <0.1 |
| Isobutyl Mercaptan | <0.1 |
| Isopropyl Mercaptan | 0.4 |
| Methyl Mercaptan | 0.1 |
| Methyl-t-butyl Sulfide | <0.1 |
| n-Butyl Mercaptan | <0.1 |
| Propyl Mercaptan | 0.2 |
| Tert-butyl disulfide | <0.1 |
| Tert-Butyl mercaptan | 1.5 |
| Tetra-Hydro Thiophene | <0.1 |
| Thiophene | <0.1 |
| Thiophenol | <0.1 |
| Dibenzothiophene | <0.1 |
| 1,2-Ethanedithiol | <0.1 |
| Propyl Sulfide | <0.1 |
| 1-Hexanethiol | <0.1 |
| 1,5-Pentanedithiol | <0.1 |
| Bromothiophene | <0.1 |
| Propyl Disulfide | <0.1 |
| 1-Heptanethiol | <0.1 |
| 2-Methyl Benzothiophene | <0.1 |
| Phenyl Sulfide | <0.1 |
| 1-Nonanethiol | <0.1 |
| 2-Butyl Thiophene | <0.1 |
| 3-Butyl Thiophene | <0.1 |

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| | | | |
|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | bec-19-cricketvalley.ny-start#1 | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92168-002 Page 3 of 3 | **REPORT DATE:** | March 27, 2020 |
| **SAMPLE:** | Unit2_31020_FuelGas A Cricket Valley-R1-Duct Natural Gas Sample 2020-03-10 | | |

**TEST** **RESULT**

| ***Parameter*** | ***Results*** |
|---|---|
| | |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 60ºF, wt% | $4.2 \times 10^{-4}$ |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 68ºF, wt% | $4.1 \times 10^{-4}$ |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 60ºF, ppmw | 4.2 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 68ºF, ppmw | 4.1 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, grains/100 scf @ 60ºF | 0.13 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, grains/100 scf @ 68ºF | 0.12 |

Respectfully submitted
For Texas OilTech Laboratories, L.P.

Roland Gore
Associate Laboratory Director



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# Certificate of Analysis

SINCE 1985

*Quality Controlled Through Analysis*

10630 FALLSTONE RD. HOUSTON, TEXAS 77099
P.O. BOX 741905, HOUSTON, TEXAS 77274

TEL: (281) 495-2400
FAX: (281) 495-2410

| | | | |
|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | bec-19-cricketvalley.ny-start#1 | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92168-003 Page 1 of 3 | **REPORT DATE:** | March 27, 2020 |
| **SAMPLE:** | Unit2_31120_FuelGas A Cricket Valley-R2&3-Duct_R3 noduct Natural Gas Sample 2020-03-11 | | |

**TEST** **RESULT**

***Composition of Natural Gas by Gas Chromatography. ASTM D 1945.a***

| | ***Results, Mol %*** |
|---|---|
| Hydrogen | 0.0000 |
| Oxygen | 0.2477 |
| Nitrogen | 0.9125 |
| Carbon Dioxide | 0.3476 |
| Methane | 94.8355 |
| Ethane | 3.5130 |
| Propane | 0.1242 |
| iso-Butane | 0.0074 |
| n-Butane | 0.0084 |
| iso-Pentane | 0.0017 |
| n-Pentane | 0.0010 |
| Hexanes Plus | 0.0010 |
| **TOTAL** | **100.0000** |

***Calorific Value and Specific Gravity. Calculated at 14.696 psia and 60°F. ASTM D 3588.e***

| | ***Results*** |
|---|---|
| NET (Dry basis), BTU/scf | 922.8 |
| Gross (Dry basis), BTU/scf | 1,024 |
| NET (Dry basis), BTU/lb | 20,816 |
| Gross (Dry basis), BTU/lb | 23,092 |

***Calorific Value and Specific Gravity. Calculated at 14.696 psia and 68°F. ASTM D 3588.e***

| | ***Results*** |
|---|---|
| NET (Dry basis), BTU/scf | 908.8 |
| Gross (Dry basis), BTU/scf | 1,008 |
| NET (Dry basis), BTU/lb | 20,816 |
| Gross (Dry basis), BTU/lb | 23,092 |

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| | | | |
|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | bec-19-cricketvalley.ny-start#1 | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92168-003 Page 2 of 3 | **REPORT DATE:** | March 27, 2020 |
| **SAMPLE:** | Unit2_31120_FuelGas A Cricket Valley-R2&3-Duct_R3 noduct Natural Gas Sample 2020-03-11 | | |

**TEST** **RESULT**

***Sulfur Compounds in Natural Gas and Gaseous Fuels by GC, ASTM D 5504***

| | ***Results, ppm/Wt*** |
|---|---|
| Hydrogen Sulfide | 1.0 |
| Carbonyl Sulfide | 0.2 |
| 2-Methyl Thiophene | <0.1 |
| 2-Pentyl Mercaptan | <0.1 |
| 3-Methyl Thiophene | <0.1 |
| Benzothiophene | <0.1 |
| Carbon Disulfide | <0.1 |
| Diethylsulfide | <0.1 |
| Dimethylsulfide | <0.1 |
| Ethyl Mercaptan | <0.1 |
| Ethylmethylsulfide | <0.1 |
| Isobutyl Mercaptan | <0.1 |
| Isopropyl Mercaptan | 0.5 |
| Methyl Mercaptan | 0.1 |
| Methyl-t-butyl Sulfide | <0.1 |
| n-Butyl Mercaptan | <0.1 |
| Propyl Mercaptan | 0.2 |
| Tert-butyl disulfide | <0.1 |
| Tert-Butyl mercaptan | 1.8 |
| Tetra-Hydro Thiophene | <0.1 |
| Thiophene | <0.1 |
| Thiophenol | <0.1 |
| Dibenzothiophene | <0.1 |
| 1,2-Ethanedithiol | <0.1 |
| Propyl Sulfide | <0.1 |
| 1-Hexanethiol | <0.1 |
| 1,5-Pentanedithiol | <0.1 |
| Bromothiophene | <0.1 |
| Propyl Disulfide | <0.1 |
| 1-Heptanethiol | <0.1 |
| 2-Methyl Benzothiophene | <0.1 |
| Phenyl Sulfide | <0.1 |
| 1-Nonanethiol | <0.1 |
| 2-Butyl Thiophene | <0.1 |
| 3-Butyl Thiophene | <0.1 |

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|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | bec-19-cricketvalley.ny-start#1 | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92168-003 Page 3 of 3 | **REPORT DATE:** | March 27, 2020 |
| **SAMPLE:** | Unit2_31120_FuelGas A Cricket Valley-R2&3-Duct_R3 noduct Natural Gas Sample 2020-03-11 | | |

**TEST** **RESULT**

| ***Parameter*** | ***Results*** |
|---|---|
| | |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 60ºF, wt% | $4.2 \times 10^{-4}$ |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 68ºF, wt% | $4.1 \times 10^{-4}$ |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 60ºF, ppmw | 4.2 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 68ºF, ppmw | 4.1 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, grains/100 scf @ 60ºF | 0.12 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, grains/100 scf @ 68ºF | 0.12 |

Respectfully submitted
For Texas OilTech Laboratories, L.P.

Roland Gore
Associate Laboratory Director



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P.O. BOX 741905, HOUSTON, TEXAS 77274

**TEL: (281) 495-2400**
**FAX: (281) 495-2410**

## Conversion Factors (Gas Analysis) to adjust BTU/ft$^3$ and Sulfur content @60ºF and 68ºF

NET (Dry Basis) BTU/scf @60ºF, factor= 1

NET (Dry Basis) BTU/scf @68ºF, factor= 0.984839

Gross (Dry Basis) BTU/scf @60ºF, factor = 1

Gross (Dry Basis) BTU/scf @68ºF, factor = 0.984839

NET (Dry Basis) BTU/lb @60ºF, factor = 1

NET (Dry Basis) BTU/lb @68ºF, factor = 1

GROSS (Dry Basis) BTU/lb @60ºF, factor= 1

GROSS (Dry Basis) BTU/lb @68ºF, factor= 1

Sulfur Total Volatile, ASTM D 6667 @60ºF, wt% or ppmwt, factor= 1

Sulfur Total Volatile, ASTM D 6667 @68ºF, wt% or ppmwt, factor= 0.984839

Sulfur Total Volatile, ASTM D 6667 @60ºF, grains/100scf = ppmwt @60ºF x 0.0300

Sulfur Total Volatile, ASTM D 6667 @68ºF, grains/100scf = ppmwt @60ºF x 0.0295

## Conversion Factors (Liquid Fuel Analysis)

Liquid Fuel BTU/lb @60ºF= Liquid fuel BTU/lb @68ºF

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Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com

# SAMPLE DESCRIPTION AND CHAIN OF CUSTODY RECORD

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com

| Project Number: | bec-19-cricketvalley.ny-start#1 | Laboratory Analysis Requested: | |
|---|---|---|---|
| Person Taking Samples: | Swanson B., R. White | Fuel Component and Sulfur Analysis | |

| Sample Number | Location | Date | Volume | Analysis Method(s) [and target(s)] | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | GPA2261/ASTM 1945 [component analysis] | GPA 2172 Calculation @ 60 F & 68 F [HHV] | ASTM 5504 [speciated sulfur content] | | | | |
| UNIT2_3920_FUELGAS A | Cricket Valley-R1-NoDuct Natural Gas Sample [primary] | 03/09/20 | 10L | X | X | X | | | | |
| UNIT2_3920_FUELGAS B | Cricket Valley-R1-NoDuct Natural Gas Sample [backup] | 03/09/20 | 10L | as necessary | as necessary | as necessary | | | | |
| UNIT2_31020_FUELGAS A | Cricket Valley-R1-Duct Natural Gas Sample [primary] | 03/10/20 | 10L | X | X | X | | | | |
| UNIT2_31020_FUELGAS B | Cricket Valley-R1-Duct Natural Gas Sample [backup] | 03/10/20 | 10L | as necessary | as necessary | as necessary | | | | |
| UNIT2_31120_FUELGAS A | Cricket Valley-R2&3-Duct_R3 noduct Natural Gas Sample [primary] | 03/11/20 | 10L | X | X | X | | | | |
| UNIT2_31120_FUELGAS B | Cricket Valley-R2&3-Duct_R3 noduct Natural Gas Sample [backup] | 03/11/20 | 10L | as necessary | as necessary | as necessary | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Relinquished by: (Signature) — Date: 3/16/20 — Time: 1400

Relinquished by: (Signature) — Date: — Time:

Received by: (Signature) — Date: — Time:

Received by: G. Morrow (Signature) — Date: 3/17/20 — Time: 11:30

# APPENDIX F

# STRATIFICATION TEST DATA

# STRATIFICATION TEST DATA

## Stratification Test Data Base Load

| Source Information | |
|---|---|
| **Company** | Cricket Valley Energy Center LLC |
| **Plant Name** | Cricket Valley Energy Center |
| **Equipment** | General Electric 7F.05 |
| **Location** | Dover Plains, New York |

| Test Information | |
|---|---|
| **Date** | 02/25/20 |
| **Project #** | cis-19-cricketvalley.ny-start#1 |
| **Unit Number** | U-00002 |
| **Load** | Base |
| **Number of Ports Available** | 4 |
| **Number of Ports Used** | 4 |

| Stack and Test Type | | | | |
|---|---|---|---|---|
| ○ | Isokinetic Traverse (Wet Chemistry Testing) | | | **Circular Stack** |
| ○ | Velocity Traverse (Flow and Flow RATA Test) | | | |
| ○ | Stratification Traverse (Compliance Test) | | ☐ RM 20 | |
| ◉ | **Stratification Traverse (RATA)** | ☐ Part 60 | ☑ Part 75 | |

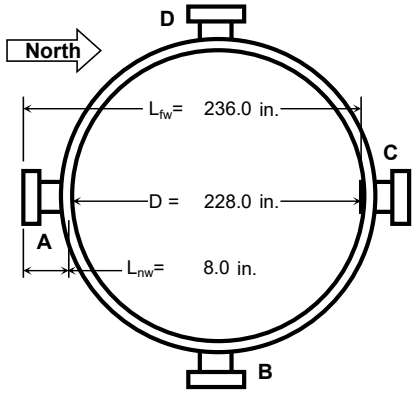
Created with Traverse-AHI v20190211

## METHOD 1 - STRATIFICATION TEST FOR A CIRCULAR SOURCE

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 02/25/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | cis-19-cricketvalley.ny-start#1 |
| **Equipment** | General Electric 7F.05 | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Circular Stack or Duct Diameter** | | | |
|---|---|---|---|
| **Distance to Far Wall of Stack** | ($L_{fw}$) | 236.00 | in. |
| **Distance to Near Wall of Stack** | ($L_{nw}$) | 8.00 | in. |
| **Diameter of Stack** | (D) | 228.00 | in. |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ |

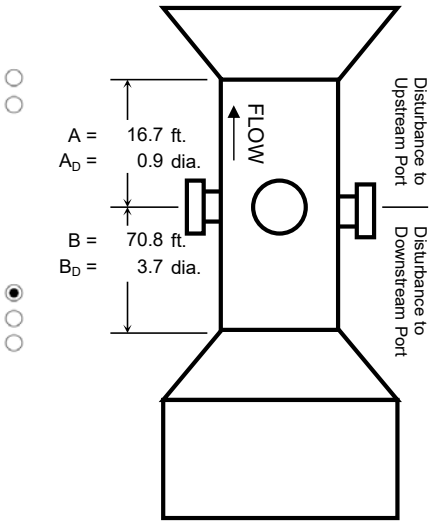
| **Distance from Disturbances to Port** | | | |
|---|---|---|---|
| **Distance Upstream** | (A) | 200.40 | in. |
| **Diameters Upstream** | ($A_D$) | 0.88 | diameters |
| **Distance Downstream** | (B) | 850.00 | in. |
| **Diameters Downstream** | ($B_D$) | 3.73 | diameters |




| **Number of Traverse Points Required** | | | | | |
|---|---|---|---|---|---|
| Diameters to Flow Disturbance | | Minimum Number of[1] Traverse Points | | Minimum Number of Traverse Points | |
| Down ($B_D$) Stream | Up ($A_D$) Stream | Particulate Points | Velocity Points | Comp Stratification Criteria | Points |
| 2.00-4.99 | 0.50-1.24 | 24 | 16 | RM 7E 8.1.2 | 12 RM1 pts |
| 5.00-5.99 | 1.25-1.49 | 20 | 16 | Alt 7E 8.1.2 | 3 points |
| 6.00-6.99 | 1.50-1.74 | 16 | 12 | | |
| 7.00-7.99 | 1.75-1.99 | 12 | 12 | | |
| >= 8.00 | >=2.00 | 8 or 12[2] | 8 or 12[2] | **Minimum Number of** | |
| Upstream Spec | | 24 | 16 | **Traverse Points** | |
| Downstream Spec | | 24 | 16 | **RATA Stratification** | |
| Traverse Pts Required | | 24 | 16 | **Criteria** | **Points** |
| | | | | Part75/60 | 12 RM1 pts |
| | | | | 75 abrv (a) | 3 points |
| | | | | 75 abrv (b) | 6 points |
| | | | | | points |

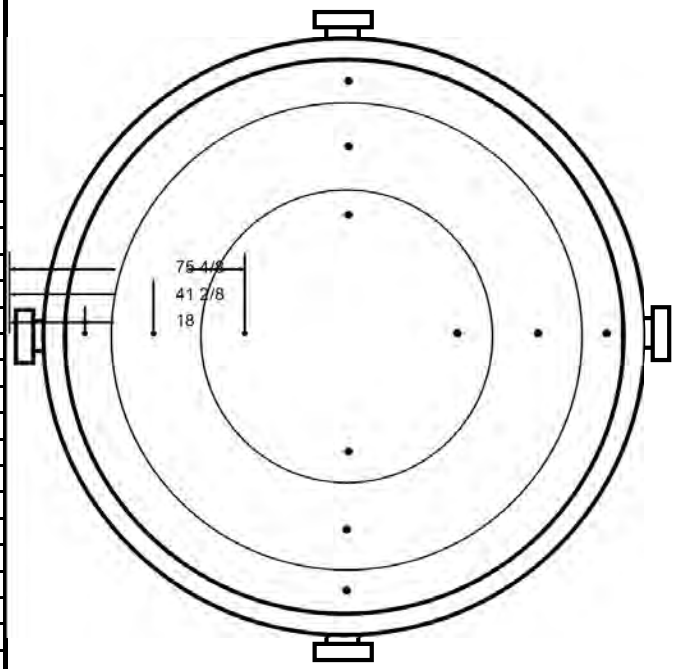
[1] Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.

[2] 8 for Circular Stacks 12 to 24 inches
12 for Circular Stacks over 24 inches




| **Number of Traverse Points Used** | | | | |
|---|---|---|---|---|
| 4 | **Ports by** | 3 | **Pts / port** | **Stratification Traverse (RATA)** |
| 12 | **Pts Used** | 12 | **Required** | |

| **Traverse Point Number** | **Percent of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
|---|---|---|---|
| | % | in. | in. |
| **1** | 4.4% | 10 | 18 |
| **2** | 14.6% | 33 2/8 | 41 2/8 |
| **3** | 29.6% | 67 4/8 | 75 4/8 |
| **4** | | | |
| **5** | | | |
| **6** | | | |
| **7** | | | |
| **8** | | | |
| **9** | | | |
| **10** | | | |
| **11** | | | |
| **12** | | | |
| **13** | | | |
| **14** | | | |
| **15** | | | |
| **16** | | | |
| **17** | | | |
| **18** | | | |
| **19** | | | |
| **20** | | | |
| **21** | | | |
| **22** | | | |
| **23** | | | |
| **24** | | | |



## STRATIFICATION TRAVERSE (RATA) RESULTS

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 02/25/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | cis-19-cricketvalley.ny-start#1 |
| **Equipment** | General Electric 7F.05 | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Stack Dimensions** | | | | **Traverse Data** | | | |
|---|---|---|---|---|---|---|---|
| **Diameter or Length of Stack** | (D) | 228.00 | in. | 4 | **Ports by** | 3 | **Pts / port** |
| **Width of Stack** | (W) | | in. | 12 | **Pts Used** | 12 | **Required** |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ | **Run Start** | 6:14:22 | **Run End** | 7:12:22 |

| **Traverse Point** | **Time Per Point** | **Point Start Time** | **Point Stop Time (Reading)** | **$O_2$** | **Percent Difference** | **NOx** | **Percent Difference** |
|---|---|---|---|---|---|---|---|
| | min. | hh:mm:ss | hh:mm:ss | % | % | ppm | % |
| D-3 | 4.00 | 6:14:22 | 6:18:22 | 13.43 | 0.75% | 1.52 | 4.45% |
| D-2 | 4.00 | 6:18:22 | 6:22:22 | 13.40 | 0.52% | 1.50 | 5.70% |
| D-1 | 4.00 | 6:22:22 | 6:26:22 | 13.39 | 0.45% | 1.48 | 6.96% |
| C-3 | 8.00 | 6:26:22 | 6:34:22 | 13.32 | 0.07% | 1.49 | 6.33% |
| C-2 | 4.00 | 6:30:22 | 6:34:22 | 13.31 | 0.15% | 1.49 | 6.33% |
| C-1 | 4.00 | 6:34:22 | 6:38:22 | 13.31 | 0.15% | 1.58 | 0.68% |
| B-3 | 10.00 | 6:38:22 | 6:48:22 | 13.47 | 1.05% | 1.47 | 7.59% |
| B-2 | 4.00 | 6:48:22 | 6:52:22 | 13.45 | 0.90% | 1.45 | 8.85% |
| B-1 | 4.00 | 6:52:22 | 6:56:22 | 13.43 | 0.75% | 1.49 | 6.33% |
| A-3 | 8.00 | 6:56:22 | 7:04:22 | 13.03 | **2.25%** | 1.91 | **20.07%** |
| A-2 | 4.00 | 7:04:22 | 7:08:22 | 13.21 | 0.90% | 1.91 | **20.07%** |
| A-1 | 4.00 | 7:08:22 | 7:12:22 | 13.21 | 0.90% | 1.80 | 13.09% |
| **Average** | | | | 13.33 | | 1.59 | |

| | | | $O_2$ | | NOx | | |
|---|---|---|---|---|---|---|---|
| | | | **Criteria** | **Results** | **Criteria** | **Results** | **AND criteria** |
| **RATA Part 75** | Non-Stratified % | ≤ | 5% | Non (%) | 5% | Non (Δ) | Under Part 75 criteria all measured pollutants and diluents demonstrate a non-stratified stack with subsequent testing from a single point located at least one meter away from the stack wall. |
| | Non-Stratified Δ | ≤ | 0.3 | | 3 | | |
| | Minimally-Stratified % | ≤ | 10% | | 10% | | |
| | Minimally-Stratified Δ | ≤ | 0.5 | | 5 | | |
| | Stratified | > | 10% | | 10% | | |
| | **Outcome** | | 1 point | | 1 point | | |
| | **Location** | | any point | | any point | | |
| | **Maximum Concentration** | | 13.47 | | 1.91 | | |
| | **Upscale Δ = Max Concentration - Average** | | 0.14 | Non | 0.32 | Non | |
| | **Upscale % Difference** | | 1.05% | Non | 20.07% | Strat | |
| | **Minimum Concentration** | | 13.03 | | 1.45 | | |
| | **Downscale Δ = Average - Min Concentration** | | 0.30 | Non | 0.14 | Non | |
| | **Downscale % Difference** | | 2.25% | Non | 8.85% | Mini | |
| | **First Point on List Closest to Average** | | C-2 | | B-3 | | |
| **Port Averages with Maximum Concentration Indicator** | **Port A Average** | | 13.15 | | 1.87 | <max | |
| | **Port B Average** | | 13.45 | <max | 1.47 | | |
| | **Port C Average** | | 13.31 | | 1.52 | | |
| | **Port D Average** | | 13.41 | | 1.50 | | |
| | **Port E Average** | | | | | | |
| | **Port F Average** | | | | | | |
| | **Port G Average** | | | | | | |

## RATA SAMPLE POINTS FOR CIRCULAR STACK

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 02/25/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | cis-19-cricketvalley.ny-start#1 |
| **Equipment** | General Electric 7F.05 | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Stack Dimensions** | | | | **Traverse Data** | | | |
|---|---|---|---|---|---|---|---|
| **Diameter or Length of Stack** | (D) | 228.00 | in. | 4 | **Ports by** | 3 | **Pts / port** |
| **Width of Stack** | (W) | | in. | 12 | **Pts Used** | 12 | **Required** |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ | **Run Start** | 6:14:22 | **Run End** | 7:12:22 |

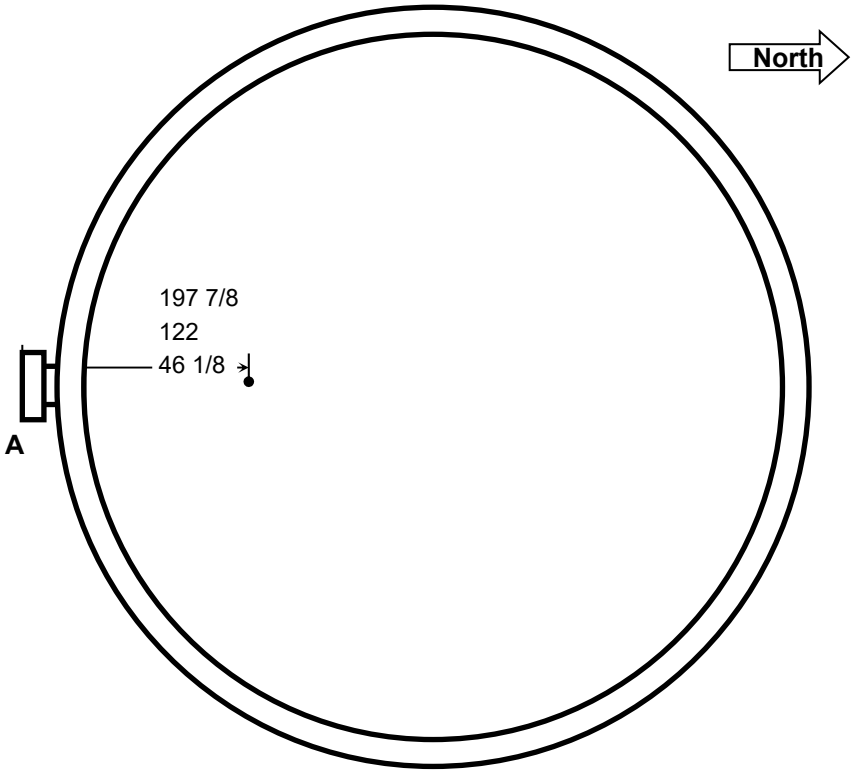
**40 CFR 75 Criteria**

| **Stratification Results** | |
|---|---|
| **Maximum Percent Difference** | 20.07 % for NOx |
| **Maximum Pollutant Conc. Diff.** | 0.32 ppm for NOx |
| **Maximum Diluent Conc. Diff.** | 0.30 % for $O_2$ |
| **Stratification Conclusions** | |
| **Comparison** | all diluents/pollutants |
| **Stack Diameter** | D > 93.6 in. |

Under Part 75 criteria all measured pollutants and diluents demonstrate a non-stratified stack with subsequent testing from a single point located at least one meter away from the stack wall.

| **Traverse Point Number** | **Percent of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
|---|---|---|---|
| | % | in. | in. |
| **1** | 16.7% | 38 1/8 | 46 1/8 |
| **2** | 50.0% | 114 | 122 |
| **3** | 83.3% | 189 7/8 | 197 7/8 |

Test Type
- ☐ Moisture, for MW
- ☐ Moisture, for wet-to-dry
- ☑ Gas
- ☐ 6.5.6(b)(2) alt. points do not apply



# STRATIFICATION TEST DATA

## Stratification Test Data Base+DB Load

| Source Information | |
|---|---|
| **Company** | Cricket Valley Energy Center LLC |
| **Plant Name** | Cricket Valley Energy Center |
| **Equipment** | General Electric 7F.05 |
| **Location** | Dover Plains, New York |

| Test Information | |
|---|---|
| **Date** | 03/10/20 |
| **Project #** | bec-19-cricketvalley.ny-start#2 |
| **Unit Number** | U-00002 |
| **Load** | Base+DB |
| **Number of Ports Available** | 4 |
| **Number of Ports Used** | 4 |

| Stack and Test Type | | | |
|---|---|---|---|
| ○ | Isokinetic Traverse (Wet Chemistry Testing) | | **Circular Stack** |
| ○ | Velocity Traverse (Flow and Flow RATA Test) | | |
| ○ | Stratification Traverse (Compliance Test) | ☐ RM 20 | |
| ◉ | **Stratification Traverse (RATA)** ☐ Part 60 | ☑ Part 75 | |

Created with Traverse-AHI v20200108

## METHOD 1 - STRATIFICATION TEST FOR A CIRCULAR SOURCE

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 03/10/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | bec-19-cricketvalley.ny-start#2 |
| **Equipment** | General Electric 7F.05 | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

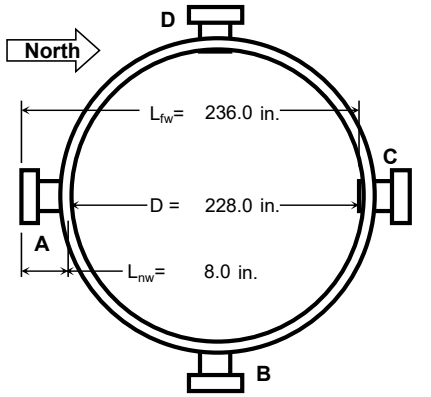
| **Circular Stack or Duct Diameter** | | | |
|---|---|---|---|
| **Distance to Far Wall of Stack** | ($L_{fw}$) | 236.00 | in. |
| **Distance to Near Wall of Stack** | ($L_{nw}$) | 8.00 | in. |
| **Diameter of Stack** | (D) | 228.00 | in. |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ |

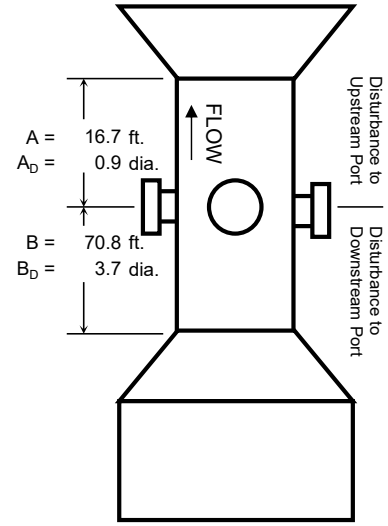
| **Distance from Disturbances to Port** | | | |
|---|---|---|---|
| **Distance Upstream** | (A) | 200.40 | in. |
| **Diameters Upstream** | ($A_D$) | 0.88 | diameters |
| **Distance Downstream** | (B) | 850.00 | in. |
| **Diameters Downstream** | ($B_D$) | 3.73 | diameters |

| **Number of Traverse Points Required** | | | | | |
|---|---|---|---|---|---|
| Diameters to Flow Disturbance | | Minimum Number of[1] Traverse Points | | Minimum Number of Traverse Points | |
| Down ($B_D$) Stream | Up ($A_D$) Stream | Particulate Points | Velocity Points | Comp Stratification Criteria | Points |
| 2.00-4.99 | 0.50-1.24 | 24 | 16 | RM 7E 8.1.2 | 12 RM1 pts |
| 5.00-5.99 | 1.25-1.49 | 20 | 16 | Alt 7E 8.1.2 | 3 points |
| 6.00-6.99 | 1.50-1.74 | 16 | 12 | | |
| 7.00-7.99 | 1.75-1.99 | 12 | 12 | | |
| >= 8.00 | >=2.00 | 8 or 12[2] | 8 or 12[2] | **Minimum Number of** | |
| Upstream Spec | | 24 | 16 | **Traverse Points** | |
| Downstream Spec | | 24 | 16 | **RATA Stratification** | |
| Traverse Pts Required | | 24 | 16 | **Criteria** | **Points** |
| | | | | Part75/60 | 12 RM1 pts |
| | | | | 75 abrv (a) | 3 points |
| | | | | 75 abrv (b) | 6 points |
| | | | | 12 points | |

[1] Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.

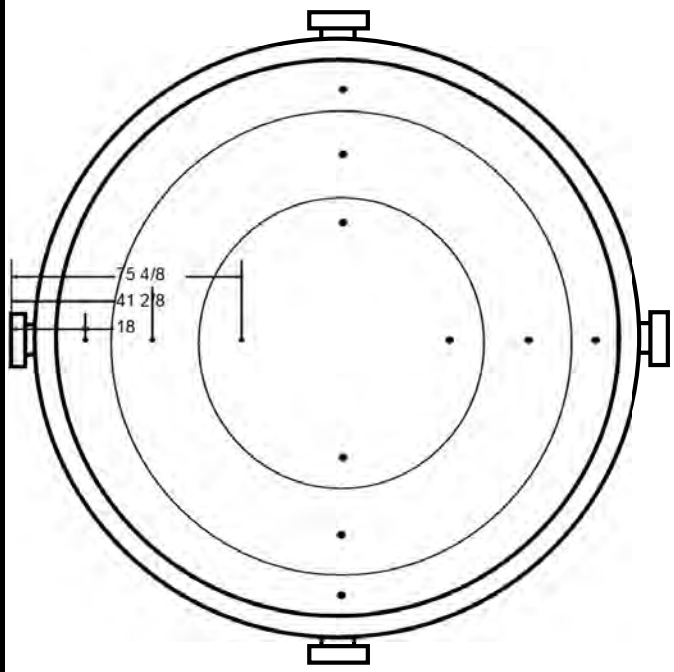
[2] 8 for Circular Stacks 12 to 24 inches
12 for Circular Stacks over 24 inches




| **Number of Traverse Points Used** | | | | |
|---|---|---|---|---|
| 4 | **Ports by** | 3 | **Pts / port** | **Stratification Traverse (RATA)** |
| 12 | **Pts Used** | 12 | **Required** | |

| **Traverse Point Locations** | | | |
|---|---|---|---|
| **Traverse Point Number** | **Percent of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
| | % | in. | in. |
| **1** | 4.4% | 10 | 18 |
| **2** | 14.6% | 33 2/8 | 41 2/8 |
| **3** | 29.6% | 67 4/8 | 75 4/8 |
| **4** | | | |
| **5** | | | |
| **6** | | | |
| **7** | | | |
| **8** | | | |
| **9** | | | |
| **10** | | | |
| **11** | | | |
| **12** | | | |
| **13** | | | |
| **14** | | | |
| **15** | | | |
| **16** | | | |
| **17** | | | |
| **18** | | | |
| **19** | | | |
| **20** | | | |
| **21** | | | |
| **22** | | | |
| **23** | | | |
| **24** | | | |



## STRATIFICATION TRAVERSE (RATA) RESULTS

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 03/10/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | bec-19-cricketvalley.ny-start#2 |
| **Equipment** | General Electric 7F.05 | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Stack Dimensions** | | | | **Traverse Data** | | | |
|---|---|---|---|---|---|---|---|
| **Diameter or Length of Stack** | (D) | 228.00 | in. | 4 | **Ports by** | 3 | **Pts / port** |
| **Width of Stack** | (W) | | in. | 12 | **Pts Used** | 12 | **Required** |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ | **Run Start** | 12:32:13 | **Run End** | 14:11:13 |

| **Traverse Point** | **Time Per Point** | **Point Start Time** | **Point Stop Time (Reading)** | **$O_2$** | **Percent Difference** | **NOx** | **Percent Difference** |
|---|---|---|---|---|---|---|---|
| | min. | hh:mm:ss | hh:mm:ss | % | % | ppm | % |
| D-3 | 8.00 | 12:32:13 | 12:40:13 | 11.92 | 1.18% | 2.39 | 1.56% |
| D-2 | 8.00 | 12:40:13 | 12:48:13 | 11.92 | 1.18% | 2.34 | 0.57% |
| D-1 | 8.00 | 12:48:13 | 12:56:13 | 12.12 | 0.48% | 2.37 | 0.71% |
| C-3 | 8.00 | 12:56:13 | 13:04:13 | 11.97 | 0.77% | 2.40 | 1.98% |
| C-2 | 8.00 | 13:04:13 | 13:12:13 | 11.93 | 1.10% | 2.34 | 0.57% |
| C-1 | 8.00 | 13:12:13 | 13:20:13 | 11.90 | 1.35% | 2.46 | **4.53%** |
| B-3 | 11.00 | 13:20:13 | 13:31:13 | 12.16 | 0.81% | 2.36 | 0.28% |
| B-2 | 8.00 | 13:31:13 | 13:39:13 | 12.15 | 0.73% | 2.31 | 1.84% |
| B-1 | 8.00 | 13:39:13 | 13:47:13 | 12.03 | 0.27% | 2.34 | 0.57% |
| A-3 | 8.00 | 13:47:13 | 13:55:13 | 12.09 | 0.23% | 2.33 | 0.99% |
| A-2 | 8.00 | 13:55:13 | 14:03:13 | 12.20 | 1.14% | 2.27 | 3.54% |
| A-1 | 8.00 | 14:03:13 | 14:11:13 | 12.36 | **2.47%** | 2.33 | 0.99% |
| **Average** | | | | 12.06 | | 2.35 | |

| | | | $O_2$ | | NOx | | |
|---|---|---|---|---|---|---|---|
| | | | **Criteria** | **Results** | **Criteria** | **Results** | **AND criteria** |
| **RATA Part 75** | Non-Stratified % | ≤ | 5% | Non (%) | 5% | Non (%) | Under Part 75 criteria all measured pollutants and diluents demonstrate a non-stratified stack with subsequent testing from a single point located at least one meter away from the stack wall. |
| | Non-Stratified Δ | ≤ | 0.3 | | 3 | | |
| | Minimally-Stratified % | ≤ | 10% | | 10% | | |
| | Minimally-Stratified Δ | ≤ | 0.5 | | 5 | | |
| | Stratified | > | 10% | | 10% | | |
| | **Outcome** | | 1 point | | 1 point | | |
| | **Location** | | any point | | any point | | |
| | **Maximum Concentration** | | 12.36 | | 2.46 | | |
| | **Upscale Δ = Max Concentration - Average** | | 0.30 | Non | 0.11 | Non | |
| | **Upscale % Difference** | | 2.47% | Non | 4.53% | Non | |
| | **Minimum Concentration** | | 11.90 | | 2.27 | | |
| | **Downscale Δ = Average - Min Concentration** | | 0.16 | Non | 0.08 | Non | |
| | **Downscale % Difference** | | 1.35% | Non | 3.54% | Non | |
| | **First Point on List Closest to Average** | | A-2 | | B-2 | | |
| **Port Averages with Maximum Concentration Indicator** | **Port A Average** | | 12.22 | <max | 2.31 | | |
| | **Port B Average** | | 12.11 | | 2.34 | | |
| | **Port C Average** | | 11.93 | | 2.40 | <max | |
| | **Port D Average** | | 11.99 | | 2.37 | | |
| | **Port E Average** | | | | | | |
| | **Port F Average** | | | | | | |
| | **Port G Average** | | | | | | |

## RATA SAMPLE POINTS FOR CIRCULAR STACK

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 03/10/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | bec-19-cricketvalley.ny-start#2 |
| **Equipment** | General Electric 7F.05 | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Stack Dimensions** | | | | **Traverse Data** | | | |
|---|---|---|---|---|---|---|---|
| **Diameter or Length of Stack** | (D) | 228.00 | in. | 4 | **Ports by** | 3 | **Pts / port** |
| **Width of Stack** | (W) | | in. | 12 | **Pts Used** | 12 | **Required** |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ | **Run Start** | 12:32:13 | **Run End** | 14:11:13 |

**40 CFR 75 Criteria**

| **Stratification Results** | |
|---|---|
| **Maximum Percent Difference** | 4.53 % for NOx |
| **Maximum Pollutant Conc. Diff.** | 0.11 ppm for NOx |
| **Maximum Diluent Conc. Diff.** | 0.30 % for $O_2$ |

| **Stratification Conclusions** | |
|---|---|
| **Comparison** | all diluents/pollutants |
| **Stack Diameter** | D > 93.6 in. |

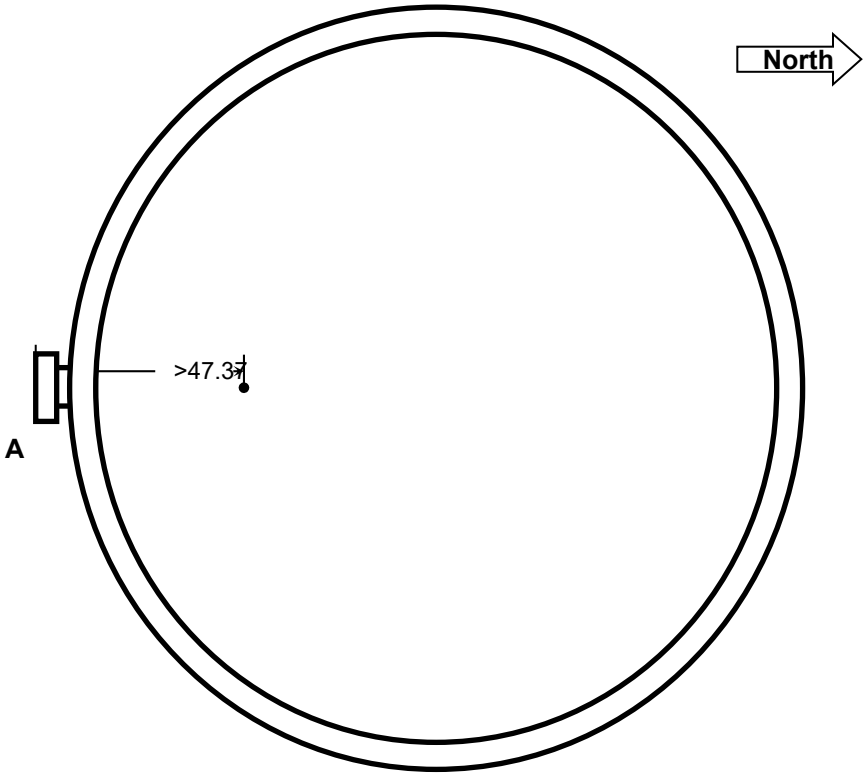
Under Part 75 criteria all measured pollutants and diluents demonstrate a non-stratified stack with subsequent testing from a single point located at least one meter away from the stack wall.

| **Traverse Point Number** | **Percent of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
|---|---|---|---|
| | % | in. | in. |
| **1** | >17.27% | >39.37 | >47.37 |
| **2** | | | |
| **3** | | | |

Test Type
- ☐ Moisture, for MW
- ☐ Moisture, for wet-to-dry
- ☑ Gas

☐ Use 6.5.6.3(a) points?

☐ 6.5.6(b)(2) alt. points could apply



# APPENDIX G

# EQUIPMENT CALIBRATION RECORDS

APEX SOURCE TESTING EQUIPMENT INSTRUMENTS

Apex Instruments, Inc.
204 Technology Park Lane
Fuquay-Varina, NC 27526

# S-TYPE PITOT TUBE CALIBRATION SHEET

***Reference USEPA Reference Method 2 (40CFR60, App. A, Meth. 2)***

| | | | |
|---|---|---|---|
| PITOT SERIAL# | 4187 | CALIBRATION DATE: | 10-Jan-13 |
| PITOT TYPE: | S-Type | BAROMETRIC PRESSURE: | 29.74 in Hg |
| STD. PITOT TYPE: | Ellipsoidal | STATIC PRESSURE | 1.4 in $H_20$ |
| Cp(std): | 0.990 | BLOCKAGE %: | N/A |
| PROBE SERIAL# | NICK | CORRECTION FACTOR: | 1.00 |

| | SIDE "A" CALIBRATION | | | |
|---|---|---|---|---|
| RUN NO. | Δ Pstd in $H_2O$ | Δ Ps in $H_2O$ | Cp(s) | DEVIATION Cp(s) - avg.Cp(s) |
| 1 | 0.560 | 0.820 | 0.818 | -0.001 |
| 2 | 0.560 | 0.815 | 0.821 | 0.002 |
| 3 | 0.560 | 0.820 | 0.818 | -0.001 |
| | | *"A" AVERAGE* | 0.819 | 0.0014 (must be ≤ 0.01) |

| | SIDE "B" CALIBRATION | | | |
|---|---|---|---|---|
| RUN NO. | Δ Pstd in $H_2O$ | Δ Ps in $H_2O$ | Cp(s) | DEVIATION Cp(s) - avg.Cp(s) |
| 1 | 0.560 | 0.815 | 0.821 | 0.000 |
| 2 | 0.560 | 0.815 | 0.821 | 0.000 |
| 3 | 0.560 | 0.815 | 0.821 | 0.000 |
| | | *"B" AVERAGE* | 0.821 | 0.0000 (must be ≤ 0.01) |

**ACCEPTANCE CRITERIA**

**AVERAGE** -0.0017 AVG. Cp (A) - AVG. Cp (B) must be ≤ 0.01

**If the Average and both Deviation Averages "A" & "B" are ≤ 0.01, then the OVERALL AVERAGE below may be used.**
*** If NOT, use the "A" Average OR "B" Average.**

**OVERALL AVERAGE** 0.8198




I certify that the above pitot tube was tested in accordance with the US EPA Method 2 standards.
See the Code of Federal Regulations, Title 40, Part 60, Appendix A, Method 2, Item 4.

Print Name: Nick Allen

Signature:

Date 1.11.13

# Wind Tunnel Pitot Calibration

| | | | |
|---|---|---|---|
| S-type Pitot ID: | **A4187** | Date: | **2-Mar-15** |
| Standard Pitot ID: | **001** | Personnel: | **KMR MF** |
| Cp(std): | **0.99** | Cp(actual): | **0.724** |
| Part Number: | | $P_{bar}$(in Hg): | **29.71** |
| Test Velocity (fps): | **50** | T(°F): | **55** |
| Wind Tunnel Location: | **Calera, AL** | Tunnel Size: | **20" x 40"** |
| Customer: | **Air Hygiene** | | |

A-SIDE

| $\Delta P_{std}$ (in. $H_2O$) | $\Delta P_s$ (in. $H_2O$) | Cp(s) | Deviation* |
|---|---|---|---|
| **0.563** | **1.053** | **0.723** | 0.002 |
| **0.561** | **1.048** | **0.724** | -0.001 |
| **0.561** | **1.050** | **0.724** | 0.000 |
| | ***AVERAGE*** | **0.724** | 0.001 |
| | | Std deviation | 0.002 |

**NOTES:**

1. **Pitot calibrated with an Environmental Supply Co. PM10 cyclone.**
2. **$C_p$ is only valid when used with PM10 cyclone.**
3. **$C_p$ is only valid with 1" spacing from PM10 cyclone.**

$$Cp(s) = Cp(std)\sqrt{\frac{\Delta P(std)}{\Delta P(s)}}$$

*Deviation = {Cp(s) - *AVG* Cp(s)} {must be <0.010}

Standard deviation of the deviations must be less than 0.02 for both sides.

**Pitot tube S/N A4187 was calibrated in accordance with the CFR 40, Part 60 Appendix A, Method 2, Section 10.**

Signature

3/2/15
Date

**METERING SYSTEM DRY GAS METER CALIBRATION SHEET**
**EPA Reference Method**
**Metering System Pre-Test Calibration**
**Air Hygiene Assett ID: samp-cp-0007**

Filename: \\AHI-FILESVR\public\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0007 Calibration 2-20-19.xls]Original (5 point)

Make: Thermo Environmental
Model #: MST-C1
Serial #: 90704

Date: 02/20/19
Barometric Pressure: 29.03 (in. Hg)
Theoretical Critical Vacuum: 13.69 (in. Hg)

**DRY GAS METER READINGS**

| ΔH | Time | Volume | | | Initial Temperature | |
|---|---|---|---|---|---|---|
| | | Initial | Final | Total | Inlet | Outlet |
| (in. H2O) | (min) | (ft³) | (ft³) | (ft³) | (°F) | (°F) |
| 0.26 | 17.00 | 280.930 | 286.280 | 5.350 | 80.0 | 71.0 |
| 0.55 | 12.00 | 286.280 | 291.690 | 5.410 | 80.0 | 73.0 |
| 1.10 | 10.00 | 291.690 | 297.800 | 6.110 | 86.0 | 74.0 |
| 1.80 | 10.00 | 297.800 | 305.720 | 7.920 | 89.0 | 75.0 |
| 3.50 | 10.00 | 305.720 | 316.650 | 10.930 | 94.0 | 76.0 |

| Final Temperature | | Orifice | K' Orifice | Actual | Ambient Temperature | | |
|---|---|---|---|---|---|---|---|
| Inlet | Outlet | Serial# | Coefficient | Vacuum | Initial | Final | Average |
| (°F) | (°F) | (number) | (see above) | (in. Hg) | (°F) | (°F) | (°F) |
| 81.0 | 73.0 | 40 | 0.2341 | 16.0 | 68.7 | 69.4 | 69.1 |
| 86.0 | 74.0 | 48 | 0.3350 | 16.0 | 69.4 | 69.5 | 69.5 |
| 89.0 | 75.0 | 55 | 0.4531 | 16.0 | 69.5 | 69.5 | 69.5 |
| 94.0 | 76.0 | 63 | 0.5888 | 16.0 | 69.6 | 69.5 | 69.6 |
| 93.0 | 77.0 | 73 | 0.8077 | 16.0 | 69.5 | 69.5 | 69.5 |

**RESULTS**

| DRY GAS METER | | ORIFICE | | |
|---|---|---|---|---|
| VOLUME CORRECTED Vm(std) (ft³) | VOLUME CORRECTED Vm(std) (liters) | VOLUME CORRECTED Vcr(std) (ft³) | VOLUME CORRECTED Vcr(std) (liters) | VOLUME NOMINAL Vcr (ft³) |
| 5.112 | 144.78 | 5.023 | 142.2 | 5.189 |
| 5.154 | 145.97 | 5.072 | 143.6 | 5.244 |
| 5.800 | 164.24 | 5.716 | 161.9 | 5.911 |
| 7.496 | 212.30 | 7.428 | 210.4 | 7.681 |
| 10.361 | 293.42 | 10.190 | 288.6 | 10.536 |

| DRY GAS METER CALIBRATION FACTOR Y | | ORIFICE CALIBRATION FACTOR ΔH@ | | |
|---|---|---|---|---|
| Variation (number) | Value (number) | Value (in. H2O) | Value (mm H2O) | Variation (in. H2O) |
| -0.003 | 0.982 | 1.613 | 40.98 | -0.118 |
| -0.001 | 0.984 | 1.663 | 42.24 | -0.068 |
| 0.000 | 0.986 | 1.815 | 46.10 | 0.083 |
| 0.006 | 0.991 | 1.756 | 44.59 | 0.024 |
| -0.002 | 0.983 | 1.811 | 45.99 | 0.079 |
| **AVERAGE:** | **0.985** | **1.731** | 43.98 | **PASSED** |

Notes:

For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter,acceptable tolerance of individual values from the average is +/- 0.02. For Orifice Calibration Factor dH@, the orifice differential pressure in inches of $H_20$ that equates to 0.75 cfm of air at 68 °F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is +/- 0.2. For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above. The Critical Orifice Coefficient, K', must be entered in English units, (ft)^3*(deg R)^0.5/((in.Hg)*(min)).

SIGNATURE: Craig McCarty _____ DATE: 02/20/19 02/20/19

**METERING SYSTEM THERMOCOUPLE CALIBRATION SHEET**
**EPA Reference Method**
**Metering System Pre-Test Calibration**
**Air Hygiene Assett ID: samp-cp-0007**

Filename: \\AHI-FILESVR\public\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0007 Calibration 2-20-19.xls]Original (5 point)

Make: Thermo Environmental
Model #: MST-C1
Serial #: 90704

Date: 02/20/19
Barometric Pressure: 29.03 (in. Hg)
Temperature (ASTM cal): 68.70 (°F)

| Thermocouple | 100 (°F) | | 600 (°F) | | 1200 (°F) | |
|---|---|---|---|---|---|---|
| | Reading | % Error | Reading | % Error | Reading | % Error |
| **Stack** | 101.00 | 0.50 | 602.00 | 0.33 | 1205.00 | 0.42 |
| **Probe** | 101.00 | 0.50 | 602.00 | 0.33 | 1205.00 | 0.42 |
| **Filter** | 101.00 | 0.50 | 602.00 | 0.33 | 1205.00 | 0.42 |
| **Dryer** | 101.00 | 0.50 | 602.00 | 0.33 | 1205.00 | 0.42 |
| **Aux.** | 101.00 | 0.50 | 602.00 | 0.33 | 1205.00 | 0.42 |

Note: Calibrated against an ALTEK Thermocouple Source Series 22, ID: samp-tc-0003
Direct temperature output calibrated to ASTM and IPTS standards as outlined in ALTEK Data Sheet 22.

| Thermocouple | 68.70 (°F) | | Responded to heating/cooling with the anticipated outcome? |
|---|---|---|---|
| | Reading | (±°F) | |
| **DGM In** | 68.0 | 0.70 | yes |
| **DGM Out** | 67.0 | 1.70 | yes |

Note: Calibrated against Reference Thermometer ID: a070717

SIGNATURE: Craig McCarty DATE: 02/20/19 02/20/19

Standard for Calibration of Console Thermocouple Systems

40 CFR, Part 60
Appendix A, Method 5
10.3.2 The temperature data recorded in the field shall be considered valid. If, during calibration, the absolute temperature measured with the sensor being calibrated and the reference sensor **agree within 1.5 percent**, the temperature data taken in the field shall be considered valid.

Standard for Calibration of Individual Thermocouples

EMC, ALT-011: After each test run series, check the accuracy (and, hence, the calibration) of each thermocouple system at ambient temperature, or any other temperature, within the range specified by the manufacturer, using a reference thermometer (either ASTM reference thermometer or a thermometer that has been calibrated against an ASTM reference thermometer). The temperatures of the thermocouple and reference thermometers shall **agree to within ±2°F**.

Check the continuity of the thermocouple by subjecting it to a change in the temperature (e.g.., removing it from the stack or touching an ice cube). This step will also check for loose connections and reversed connections (noted by a wrong change in the temperature).

**PROBE (STACK), HOTBOX (FILTER), AND GOOSENECK (EXIT) THERMOCOUPLE CALIBRATION SHEET**
**EPA Reference Method**
**Metering System Pre-Test Calibration**

**Air Hygiene Assett ID(s):** **Probe:** samp-hp-0086 **Hotbox:** samp-bh-0012 **Gooseneck:** samp-ad-0028

Filename: \\AHI-FILESVR\public\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0007 Calibration 2-20-19.xls]Original (5 point)

Barometric Pressure: 29.03

| Thermo-couples | | Temps (°F) | Signature | | Date | |
|---|---|---|---|---|---|---|
| Stack | Ref | 68.90 | Craig McCarty | | 02/20/19 | 02/20/19 |
| | Read | 70.00 | | | | |
| | ±°F | 1.10 | | | | |
| Probe | Ref | 68.90 | Craig McCarty | | 02/20/19 | 02/20/19 |
| | Read | 70.00 | | | | |
| | ±°F | 1.10 | | | | |
| Filter | Ref | 68.90 | Craig McCarty | | 02/20/19 | 02/20/19 |
| | Read | 69.00 | | | | |
| | ±°F | 0.10 | | | | |
| Cond. | Ref | 68.90 | Craig McCarty | | 02/20/19 | 02/20/19 |
| | Read | 69.00 | | | | |
| | ±°F | 0.10 | | | | |
| CPM | Ref | 68.90 | Craig McCarty | | 02/20/19 | 02/20/19 |
| | Read | 69.00 | | | | |
| | ±°F | 0.10 | | | | |
| Exit | Ref | 68.90 | Craig McCarty | | 02/20/19 | 02/20/19 |
| | Read | 70.00 | | | | |
| | ±°F | 1.10 | | | | |

Note: Calibrated against Reference Thermometer ID: a070717

| Thermocouple | Responded to heating/cooling with the anticipated outcome? |
|---|---|
| **Stack** | yes |
| **Probe** | yes |
| **Filter** | yes |
| **Cond.** | yes |
| **CPM** | yes |
| **Exit** | yes |

Standard for Calibration of Individual Thermocouples

EMC, ALT-011: After each test run series, check the accuracy (and, hence, the calibration) of each thermocouple system at ambient temperature, or any other temperature, within the range specified by the manufacturer, using a reference thermometer (either ASTM reference thermometer or a thermometer that has been calibrated against an ASTM reference thermometer). The temperatures of the thermocouple and reference thermometers shall **agree to within ±2°F**.

Check the continuity of the thermocouple by subjecting it to a change in the temperature (e.g.., removing it from the stack or touching an ice cube). This step will also check for loose connections and reversed connections (noted by a wrong change in the temperature).

**Alternative Post-Test Metering System Calibration**

**RM 5, Section 16.3.1.3**

$$\gamma_{qa} = \frac{\theta}{V_m}\sqrt{\frac{0.0319T_m}{\Delta H@\left(P_{bar} + \frac{\Delta H_{avg}}{13.6}\right)}}\frac{29}{M_d}\left(\sqrt{\Delta H}\right)_{avg}$$

| Parameters | Variable | Run 1 | Run 2 | Run 3 | Units |
|---|---|---|---|---|---|
| Run Time | Θ | 120.00 | 120.00 | 120.00 | minutes |
| Actual Meter Volume | $V_m$ | 42.56 | 42.41 | 42.58 | dcf |
| Meter Temperature | $T_m$ | 547.13 | 547.92 | 550.71 | °R |
| Meter Pressure at 0.75 cfm | ΔH@ | 1.731 | 1.731 | 1.731 | in. $H_2O$ |
| Barometric Pressure | $P_{bar}$ | 30.30 | 29.88 | 30.12 | in. Hg |
| Average Meter Pressure | $\Delta H_{avg}$ | 0.34 | 0.34 | 0.34 | in. $H_2O$ |
| Dry Molecular Weight | $M_d$ | 29.28 | 29.28 | 29.28 | lb/lb-mol |
| Average √Meter Pressure | $(\Delta H)^{1/2}_{avg}$ | 0.58 | 0.58 | 0.58 | $(\text{in. } H_2O)^{1/2}$ |
| Run Specific Gamma | $Y_{aq}$ | 0.9435 | 0.9541 | 0.9489 | |

Constants:

0.0319 = (29.92/528) $(0.75)^2$(in. Hg/°R) $cfm^2$

29 = Dry molecular weight of air, lb/lb-mole

13.6 = conversion from inches of water to inches of mercury

| | |
|---|---|
| $Y_{aq\ (avg)}$ | 0.9488 |
| $Y_i$ | 0.9850 |
| %Diff | 3.67% |
| Criteria | %Diff <5% |
| **Result** | **PASS** |

Example Calculation (Run 1)

$$Y_{aq} = \frac{120.00}{42.56} \times \sqrt{\frac{0.0319 \times 547.13}{1.731 \times \left(30.30 + \frac{0.34}{13.6}\right)}} \times \frac{29}{29.28} \times 0.5831 = 0.9435$$

**Alternative Post-Test Metering System Calibration**

**RM 5, Section 16.3.1.3**

$$\gamma_{qa} = \frac{\theta}{V_m}\sqrt{\frac{0.0319T_m}{\Delta H@\left(P_{bar} + \frac{\Delta H_{avg}}{13.6}\right)}}\frac{29}{M_d}\left(\sqrt{\Delta H}\right)_{avg}$$

| Parameters | Variable | Run 1 | Run 2 | Run 3 | Units |
|---|---|---|---|---|---|
| Run Time | Θ | 120.00 | 120.00 | 120.00 | minutes |
| Actual Meter Volume | $V_m$ | 40.96 | 41.81 | 41.3 | dcf |
| Meter Temperature | $T_m$ | 543.10 | 546.21 | 548.71 | °R |
| Meter Pressure at 0.75 cfm | ΔH@ | 1.731 | 1.731 | 1.731 | in. $H_2O$ |
| Barometric Pressure | $P_{bar}$ | 30.09 | 30.15 | 30.14 | in. Hg |
| Average Meter Pressure | $\Delta H_{avg}$ | 0.34 | 0.34 | 0.34 | in. $H_2O$ |
| Dry Molecular Weight | $M_d$ | 29.24 | 29.24 | 29.24 | lb/lb-mol |
| Average √Meter Pressure | $(\Delta H)^{1/2}_{avg}$ | 0.58 | 0.58 | 0.58 | $(\text{in. } H_2O)^{1/2}$ |
| Run Specific Gamma | $Y_{aq}$ | 0.9808 | 0.9626 | 0.9769 | |

Constants:

0.0319 = (29.92/528) $(0.75)^2$(in. Hg/°R) $cfm^2$

29 = Dry molecular weight of air, lb/lb-mole

13.6 = conversion from inches of water to inches of mercury

| | |
|---|---|
| $Y_{aq\ (avg)}$ | 0.9734 |
| $Y_i$ | 0.9850 |
| %Diff | 1.17% |
| Criteria | %Diff <5% |
| **Result** | **PASS** |

Example Calculation (Run 1)

$$Y_{aq} = \frac{120.00}{40.96} \times \sqrt{\frac{0.0319 \times 543.10}{1.731 \times \left(30.09 + \frac{0.34}{13.6}\right)}} \times \frac{29}{29.24} \times 0.5831 = 0.9808$$

**METERING SYSTEM DRY GAS METER CALIBRATION SHEET**
**EPA Reference Method**
**Metering System Pre-Test Calibration**
**Air Hygiene Assett ID: samp-cp-0030**

Filename: \\AHI-FILESVR\public\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0030 Calibration 7-3-19 (.xls]Original (5 point)

Make: apex
Model #: 522
Serial #: 1706009

Date: 07/03/19
Barometric Pressure: 29.10 (in. Hg)
Theoretical Critical Vacuum: 13.73 (in. Hg)

**DRY GAS METER READINGS**

| ΔH (in. H2O) | Time (min) | Volume Initial (ft³) | Volume Final (ft³) | Volume Total (ft³) | Initial Temperature Inlet (°F) | Initial Temperature Outlet (°F) |
|---|---|---|---|---|---|---|
| 0.32 | 17.00 | 443.350 | 448.680 | 5.330 | 71.0 | 71.0 |
| 0.63 | 12.00 | 448.680 | 454.070 | 5.390 | 73.0 | 73.0 |
| 1.10 | 10.00 | 454.070 | 460.140 | 6.070 | 74.0 | 74.0 |
| 1.90 | 10.00 | 460.140 | 468.070 | 7.930 | 76.0 | 76.0 |
| 3.50 | 10.00 | 468.070 | 479.010 | 10.940 | 77.0 | 77.0 |

| Final Temperature Inlet (°F) | Final Temperature Outlet (°F) | Orifice Serial# (number) | K' Orifice Coefficient (see above) | Actual Vacuum (in. Hg) | Ambient Temperature Initial (°F) | Ambient Temperature Final (°F) | Ambient Temperature Average (°F) |
|---|---|---|---|---|---|---|---|
| 73.0 | 73.0 | 40 | 0.2341 | 16.0 | 71.3 | 72.0 | 71.7 |
| 74.0 | 74.0 | 48 | 0.3350 | 16.0 | 72.0 | 72.5 | 72.3 |
| 76.0 | 76.0 | 55 | 0.4531 | 16.0 | 72.5 | 72.7 | 72.6 |
| 77.0 | 77.0 | 63 | 0.5888 | 16.0 | 72.7 | 72.8 | 72.8 |
| 80.0 | 80.0 | 73 | 0.8077 | 16.0 | 72.8 | 73.0 | 72.9 |

**RESULTS**

| DRY GAS METER VOLUME CORRECTED Vm(std) (ft³) | DRY GAS METER VOLUME CORRECTED Vm(std) (liters) | ORIFICE VOLUME CORRECTED Vcr(std) (ft³) | ORIFICE VOLUME CORRECTED Vcr(std) (liters) | ORIFICE VOLUME NOMINAL Vcr (ft³) |
|---|---|---|---|---|
| 5.147 | 145.76 | 5.023 | 142.2 | 5.202 |
| 5.194 | 147.11 | 5.071 | 143.6 | 5.258 |
| 5.840 | 165.40 | 5.713 | 161.8 | 5.928 |
| 7.624 | 215.91 | 7.423 | 210.2 | 7.704 |
| 10.521 | 297.95 | 10.182 | 288.3 | 10.570 |

| DRY GAS METER CALIBRATION FACTOR Y Variation (number) | DRY GAS METER CALIBRATION FACTOR Y Value (number) | ORIFICE CALIBRATION FACTOR ΔH@ Value (in. H2O) | ORIFICE CALIBRATION FACTOR ΔH@ Value (mm H2O) | ORIFICE CALIBRATION FACTOR ΔH@ Variation (in. H2O) |
|---|---|---|---|---|
| 0.001 | 0.976 | 1.990 | 50.56 | 0.113 |
| 0.002 | 0.976 | 1.910 | 48.52 | 0.033 |
| 0.004 | 0.978 | 1.819 | 46.21 | -0.058 |
| -0.001 | 0.974 | 1.856 | 47.15 | -0.021 |
| -0.007 | 0.968 | 1.811 | 46.00 | -0.067 |
| **AVERAGE:** | **0.974** | **1.878** | 47.69 | **PASSED** |

Notes:

For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter,acceptable tolerance of individual values from the average is +/- 0.02. For Orifice Calibration Factor dH@, the orifice differential pressure in inches of $H_20$ that equates to 0.75 cfm of air at 68 °F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is +/- 0.2. For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above. The Critical Orifice Coefficient, K', must be entered in English units, (ft)^3*(deg R)^0.5/((in.Hg)*(min)).

SIGNATURE: Craig McCarty DATE: 07/03/19 07/03/19

**METERING SYSTEM THERMOCOUPLE CALIBRATION SHEET**
**EPA Reference Method**
**Metering System Pre-Test Calibration**
**Air Hygiene Assett ID: samp-cp-0030**

Filename: \\AHI-FILESVR\public\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0030 Calibration 7-3-19 (.xls]Original (5 point)

Make: apex
Model #: 522
Serial #: 1706009

Date: 07/03/19
Barometric Pressure: 29.28 (in. Hg)
Temperature (ASTM cal): 75.40 (°F)

| Thermocouple | 100 (°F) | | 600 (°F) | | 1200 (°F) | |
|---|---|---|---|---|---|---|
| | Reading | % Error | Reading | % Error | Reading | % Error |
| **Stack** | 101.00 | 0.50 | 603.00 | 0.50 | 1206.00 | 0.50 |
| **Probe** | 101.00 | 0.50 | 603.00 | 0.50 | 1206.00 | 0.50 |
| **Filter** | 101.00 | 0.50 | 603.00 | 0.50 | 1206.00 | 0.50 |
| **Dryer** | 101.00 | 0.50 | 603.00 | 0.50 | 1206.00 | 0.50 |
| **Aux.** | 101.00 | 0.50 | 603.00 | 0.50 | 1206.00 | 0.50 |

Note: Calibrated against an ALTEK Thermocouple Source Series 22, ID: samp-tc-0003
Direct temperature output calibrated to ASTM and IPTS standards as outlined in ALTEK Data Sheet 22.

| Thermocouple | 75.40 (°F) | | Responded to heating/cooling with the anticipated outcome? |
|---|---|---|---|
| | Reading | (±°F) | |
| **DGM In** | 74.0 | 1.40 | yes |
| **DGM Out** | 74.0 | 1.40 | yes |

Note: Calibrated against Reference Thermometer ID: a070717

SIGNATURE: Craig McCarty DATE: 07/03/19 07/03/19

Standard for Calibration of Console Thermocouple Systems

40 CFR, Part 60
Appendix A, Method 5
10.3.2 The temperature data recorded in the field shall be considered valid. If, during calibration, the absolute temperature measured with the sensor being calibrated and the reference sensor **agree within 1.5 percent**, the temperature data taken in the field shall be considered valid.

Standard for Calibration of Individual Thermocouples

EMC, ALT-011: After each test run series, check the accuracy (and, hence, the calibration) of each thermocouple system at ambient temperature, or any other temperature, within the range specified by the manufacturer, using a reference thermometer (either ASTM reference thermometer or a thermometer that has been calibrated against an ASTM reference thermometer). The temperatures of the thermocouple and reference thermometers shall **agree to within ±2°F**.

Check the continuity of the thermocouple by subjecting it to a change in the temperature (e.g.., removing it from the stack or touching an ice cube). This step will also check for loose connections and reversed connections (noted by a wrong change in the temperature).

**PROBE (STACK), HOTBOX (FILTER), AND GOOSENECK (EXIT) THERMOCOUPLE CALIBRATION SHEET**
**EPA Reference Method**
**Metering System Pre-Test Calibration**

**Air Hygiene Assett ID(s):** **Probe:** samp-hp-0086 **Hotbox:** samp-bh-0012 **Gooseneck:** samp-ad-0028

Filename: \\AHI-FILESVR\public\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0030 Calibration 7-3-19 (.xls]Original (5 point)

Barometric Pressure: 29.10

| Thermo-couples | | Temps (°F) | Signature | | Date | |
|---|---|---|---|---|---|---|
| Stack | Ref | 73.10 | Craig McCarty | | 07/03/19 | 07/03/19 |
| | Read | 73.00 | | | | |
| | ±°F | 0.10 | | | | |
| Probe | Ref | 73.10 | Craig McCarty | | 07/03/19 | 07/03/19 |
| | Read | 73.00 | | | | |
| | ±°F | 0.10 | | | | |
| Filter | Ref | 73.10 | Craig McCarty | | 07/03/19 | 07/03/19 |
| | Read | 73.00 | | | | |
| | ±°F | 0.10 | | | | |
| Cond. | Ref | 73.10 | Craig McCarty | | 07/03/19 | 07/03/19 |
| | Read | 73.00 | | | | |
| | ±°F | 0.10 | | | | |
| CPM | Ref | 73.10 | Craig McCarty | | 07/03/19 | 07/03/19 |
| | Read | 73.00 | | | | |
| | ±°F | 0.10 | | | | |
| Exit | Ref | 73.10 | Craig McCarty | | 07/03/19 | 07/03/19 |
| | Read | 73.00 | | | | |
| | ±°F | 0.10 | | | | |

Note: Calibrated against Reference Thermometer ID: a070717

| Thermocouple | Responded to heating/cooling with the anticipated outcome? |
|---|---|
| **Stack** | yes |
| **Probe** | yes |
| **Filter** | yes |
| **Cond.** | yes |
| **CPM** | yes |
| **Exit** | yes |

Standard for Calibration of Individual Thermocouples

EMC, ALT-011: After each test run series, check the accuracy (and, hence, the calibration) of each thermocouple system at ambient temperature, or any other temperature, within the range specified by the manufacturer, using a reference thermometer (either ASTM reference thermometer or a thermometer that has been calibrated against an ASTM reference thermometer). The temperatures of the thermocouple and reference thermometers shall **agree to within ±2°F**.

Check the continuity of the thermocouple by subjecting it to a change in the temperature (e.g.., removing it from the stack or touching an ice cube). This step will also check for loose connections and reversed connections (noted by a wrong change in the temperature).

**Alternative Post-Test Metering System Calibration**

**RM 5, Section 16.3.1.3**

$$\gamma_{qa} = \frac{\theta}{V_m}\sqrt{\frac{0.0319 T_m}{\Delta H@\left(P_{bar} + \frac{\Delta H_{avg}}{13.6}\right)}}\frac{29}{M_d}\left(\sqrt{\Delta H}\right)_{avg}$$

| Parameters | Variable | Run 1 | Run 2 | Run 3 | Units |
|---|---|---|---|---|---|
| Run Time | Θ | 270.25 | 262.25 | 266.75 | minutes |
| Actual Meter Volume | $V_m$ | 103.9 | 101.88 | 102.82 | dcf |
| Meter Temperature | $T_m$ | 537.33 | 547.58 | 538.50 | °R |
| Meter Pressure at 0.75 cfm | ΔH@ | 1.878 | 1.878 | 1.878 | in. $H_2O$ |
| Barometric Pressure | $P_{bar}$ | 30.30 | 30.25 | 30.14 | in. Hg |
| Average Meter Pressure | $\Delta H_{avg}$ | 0.46 | 0.46 | 0.46 | in. $H_2O$ |
| Dry Molecular Weight | $M_d$ | 29.29 | 29.28 | 29.28 | lb/lb-mol |
| Average √Meter Pressure | $(\Delta H)^{1/2}_{avg}$ | 0.68 | 0.68 | 0.68 | $(\text{in. } H_2O)^{1/2}$ |
| Run Specific Gamma | $Y_{aq}$ | 0.9629 | 0.9629 | 0.9641 | |

Constants:

0.0319 = (29.92/528) $(0.75)^2$(in. Hg/°R) $cfm^2$

29 = Dry molecular weight of air, lb/lb-mole

13.6 = conversion from inches of water to inches of mercury

| | |
|---|---|
| $Y_{aq\ (avg)}$ | 0.9633 |
| $Y_i$ | 0.9740 |
| %Diff | 1.10% |
| Criteria | %Diff <5% |
| **Result** | **PASS** |

Example Calculation (Run 1)

$$Y_{aq} = \frac{270.25}{103.9} \times \sqrt{\frac{0.0319 \times 537.33}{1.878 \times \left(30.30 + \frac{0.46}{13.6}\right)}} \times \frac{29}{29.29} \times 0.6782 = 0.9629$$

**Alternative Post-Test Metering System Calibration**

**RM 5, Section 16.3.1.3**

$$\gamma_{qa} = \frac{\theta}{V_m}\sqrt{\frac{0.0319 T_m}{\Delta H@\left(P_{bar} + \frac{\Delta H_{avg}}{13.6}\right)}\frac{29}{M_d}}\left(\sqrt{\Delta H}\right)_{avg}$$

| Parameters | Variable | Run 1 | Run 2 | Run 3 | Units |
|---|---|---|---|---|---|
| Run Time | Θ | 272.25 | 277.75 | 275.00 | minutes |
| Actual Meter Volume | $V_m$ | 101.59 | 105.54 | 102.6 | dcf |
| Meter Temperature | $T_m$ | 547.17 | 540.67 | 543.29 | °R |
| Meter Pressure at 0.75 cfm | ΔH@ | 1.878 | 1.878 | 1.878 | in. $H_2O$ |
| Barometric Pressure | $P_{bar}$ | 30.14 | 30.12 | 30.11 | in. Hg |
| Average Meter Pressure | $\Delta H_{avg}$ | 0.44 | 0.44 | 0.44 | in. $H_2O$ |
| Dry Molecular Weight | $M_d$ | 29.32 | 29.31 | 29.31 | lb/lb-mol |
| Average √Meter Pressure | $(\Delta H)^{1/2}_{avg}$ | 0.66 | 0.66 | 0.66 | $(\text{in. } H_2O)^{1/2}$ |
| Run Specific Gamma | $Y_{aq}$ | 0.9813 | 0.9582 | 0.9785 | |

Constants:

0.0319 = (29.92/528) $(0.75)^2$(in. Hg/°R) $cfm^2$

29 = Dry molecular weight of air, lb/lb-mole

13.6 = conversion from inches of water to inches of mercury

| | |
|---|---|
| $Y_{aq\ (avg)}$ | 0.9727 |
| $Y_i$ | 0.9740 |
| %Diff | 0.14% |
| Criteria | %Diff <5% |
| **Result** | **PASS** |

Example Calculation (Run 1)

$$Y_{aq} = \frac{272.25}{101.59} \times \sqrt{\frac{0.0319 \times 547.17}{1.878 \times \left(30.14 + \frac{0.44}{13.6}\right)} \times \frac{29}{29.32}} \times 0.6633 = 0.9813$$

**Field Balance Weight Verfication**
**Annual 500g Field Balance Stock Weight vs. 500g ISO 17025 Traceable Weight**
**Air Hygiene Asset ID: samp-sc-0028**

Filename: \\AHI-FILESVR\public\Shared\QAQC\Calibrations\Field Balance Weights\2020\[samp-sc-0028-Extra.xlsm]Balance
Make: Ohaus
Model #: Scout Pro SP2001-US
Serial #: B228113219
Field Weight #: sc-0028
Trailer #: Extra

ISO 17025 Weight ID LABS-WT-0005
ISO S/N 1000128090
ISO Cal Due 7/29/2020

| ISO 17025 Certfified Weight (g) | Field Balance Weight (g) | ± g |
|---|---|---|
| 500.00 | 499.90 | 0.10 |

must be <0.5

Sean Barnes _____ 01/09/20

*(signature)* *(date)*

| ISO 17025 Certfified Weight (g) | Field Balance Weight (g) | ± g |
|---|---|---|
| 500.00 | 499.50 | 0.50 |

must be <0.5

Sean Barnes _____ 01/09/20

*(signature)* *(date)*

| ISO 17025 Certfified Weight (g) | Field Balance Weight (g) | ± g |
|---|---|---|
| 500.00 | 499.80 | 0.20 |

must be <0.5

Sean Barnes _____ 01/09/20

*(signature)* *(date)*

Note: Calibrated against ISO 17025 Certified weight LABS-WT-0005

EPA Method 4 - Section 10.3, EPA Method 5 - Section 10.7, EPA Method 202 - Section 10.3: Field Balance Calibration Check. Check the calibration of the balance used to weigh impingers with a weight that is at least 500g or within 50g of a loaded impinger. The weight must be ASTM E617-13 "Standard Specification for Laboratory Weights and Precision Mass Standards" Class 6 (or better). Daily before used, the field balance must meausure within ±0.5g of the certified mass. If the daily balance calibration check fails, perform corrective measures and repeat the check before using balance.

ISO 17025 Certified 500g Weight is certified annually. Certified weight is used to verify Class 6 or better weight that accompanies each field balance on the balance it will be used. Acceptance critieria is certified weight must be within ±0.5g of Class 6 or better weight.

**WEATHER STATION CALIBRATION SHEET**
**Temperature, Barometric Pressure, and Relative Humidity Periodic Calibration**
**Air Hygiene Asset ID: samp-we-0014**

Filename: \\AHI-FILESVR\public\Shared\QAQC\Calibrations\Weather Stations\2020\[SAMP-WE-0014_224.xlsm]112013
Make: Kestrel — ISO 17025 Weather Station ID: SAMP-WE-0033
Model #: 4000 — ISO 17025 S/N: A026334
Serial #: 671144 — ISO 17025 Cal Due: 7/23/2020

| ASTM Temp (deg F) (±1.5°) | Thermo. (deg F) | ± deg F | ASTM Barometer (in. Hg) (±0.1 in Hg) | Barometric (in. Hg) | ± in. Hg | Time |
|---|---|---|---|---|---|---|
| 70.10 | 69.70 | 0.40 | 29.11 | 29.13 | 0.02 | 15:08 |

Sean Barnes — Sean Barnes — 01/27/20
*(signature)* *(date)*

| ASTM Temp (deg F) (±1.5°) | Thermo. (deg F) | ± deg F | ASTM Barometer (in. Hg) (±0.1 in Hg) | Barometric (in. Hg) | ± in. Hg | Time |
|---|---|---|---|---|---|---|
| 70.50 | 70.40 | 0.10 | 29.11 | 29.12 | 0.01 | 15:26 |

Sean Barnes — Sean Barnes — 01/27/20
*(signature)* *(date)*

| ASTM Temp (deg F) (±1.5°) | Thermo. (deg F) | ± deg F | ASTM Barometer (in. Hg) (±0.1 in Hg) | Barometric (in. Hg) | ± in. Hg | Time |
|---|---|---|---|---|---|---|
| 70.80 | 70.40 | 0.40 | 29.11 | 29.12 | 0.01 | 15:41 |

Sean Barnes — Sean Barnes — 01/27/20
*(signature)* *(date)*

| ASTM Temp (deg F) (±1.5°) | Thermo. (deg F) | ± deg F | ASTM Barometer (in. Hg) (±0.1 in Hg) | Barometric (in. Hg) | ± in. Hg | Time |
|---|---|---|---|---|---|---|
| 70.60 | 69.00 | 1.60 | 29.10 | 29.12 | 0.02 | 16:00 |

Sean Barnes — Sean Barnes — 01/27/20
*(signature)* *(date)*

Note: Verified against ISO 17025 Traceable Barometer and Thermometer (SAMP-WE-0033).

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**end of report**

BECHTEL
Document Number
26068-000-VEN-JQ11-00013
Revision 002
1 - Work May Proceed
Peter Carr - Bechtel Global
May 18, 2020, 9:54 AM GMT-4:00
Permission to proceed does not constitute acceptance or approval of design detail, calculations, analyses, test methods or materials developed or selected by the Supplier and does not relieve the Supplier from full compliance with contractual obligations.

# EMISSION COMPLIANCE TEST
# FOR THE
# GENERAL ELECTRIC, 7F.05, UNIT #U-00003
# PREPARED FOR
# CRICKET VALLEY ENERGY CENTER LLC
# AT THE
# CRICKET VALLEY ENERGY CENTER
# DOVER PLAINS, NEW YORK
# APRIL 15-17, 2020

## Permit No: 3-1326-00275/00009
## Facility DEC ID: 3132600275
## Report Date: May 12, 2020



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Miami, FL 33101
Pittsburgh, PA 15205

# EMISSION COMPLIANCE TEST
# FOR THE
# GENERAL ELECTRIC, 7F.05, UNIT #U-00003
# PREPARED FOR
# CRICKET VALLEY ENERGY CENTER LLC
# AT THE
# CRICKET VALLEY ENERGY CENTER
# DOVER PLAINS, NEW YORK
# APRIL 15-17, 2020

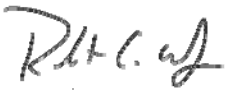
Prepared and Reviewed by:



Darin Grimes
Sr. Testing Solutions Specialist



Thomas K. Graham, PE, QSTI
Director of AHU

I, 

Rob White, QSTI
Test Manager
certify that this testing was conducted and this report was created in conformance with the requirements of ASTM D7036

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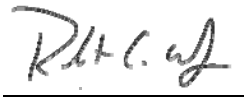
## CERTIFICATION OF INFORMATION

I certify under penalty of law that I believe the information provided in this document is true, accurate and complete. I am aware that there are significant civil and criminal penalties, including the possibility of fine or imprisonment or both, for submitting false, inaccurate or incomplete information.



Rob White, QSTI
Test Manager
Air Hygiene International, Inc.

April 20, 2020
Date

## FACILITY CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attached documents and, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil and criminal penalties, including the possibility of fine or imprisonment or both, for submitting false, inaccurate or incomplete information.

I am the responsible official with direct knowledge and overall responsibility for the information contained in this report.

Name

Title

Signature

Date

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**Emissions Compliance Test**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center LLC**
**Cricket Valley Energy Center**
**Dover Plains, New York**
**April 15-17, 2020**

## 1.0 INTRODUCTION

Air Hygiene International, Inc. (Air Hygiene) has completed the Emissions Compliance Test for nitrogen oxides (NOx), carbon monoxide (CO), total hydrocarbons/volatile organic compounds (THC/VOC), sulfur dioxide ($SO_2$) [by fuel analysis], ammonia ($NH_3$), particulate matter ($PM_{10}$), sulfuric acid mist (SAM), opacity / visual emissions (VE), flow, moisture ($H_2O$), carbon dioxide ($CO_2$), and oxygen ($O_2$) from the exhaust of the General Electric, 7F.05, Unit #U-00003 for Cricket Valley Energy Center LLC at the Cricket Valley Energy Center in Dover Plains, New York. This report details the background, results, process description, and the sampling/analysis methodology of the stack sampling survey conducted on April 15-17, 2020.

## 1.1 TEST PURPOSE AND OBJECTIVES

The purpose of the test was to conduct an initial compliance emission test to document levels of selected pollutants at two test loads, base loaded with duct burners on and base loaded with duct burners off (Base+DB and Base). The information will be used to confirm compliance with the operating permit issued by the New York State Department of Environmental Conservation (NYSDEC). The specific objective was to determine the emission concentrations and rates of NOx, CO, THC/VOC, $SO_2$ [fuel analysis], $NH_3$, $PM_{10}$, SAM, VE, flow, $H_2O$, $CO_2$, and $O_2$ from the exhaust of Cricket Valley Energy Center LLC's General Electric, 7F.05, Unit #U-00003 at Base+DB and Base.

## 1.2 SUMMARY OF TEST PROGRAM

The following list details pertinent information related to this specific project:

1.2.1 Participating Organizations
- New York State Department of Environmental Conservation (NYSDEC)
- Cricket Valley Energy Center LLC
- Bechtel Corporation
- Air Hygiene

1.2.2 Industry
- Electric Utility / Electric Services

1.2.3 Air Permit Requirements
- Permit Number: 3-1326-00275/00009

1.2.4 Plant Location
- Cricket Valley Energy Center in Dover Plains, New York
  - GPS Coordinates [Latitude 41.67721, Longitude -73.57992]
  - Physical Address: 2241 ST RTE 22, Dover Plains, New York 12522
  - Federal Registry System / Facility Registry Service (FRS) No. – 110043340364
  - Source Classification Code (SCC) – 10200602

1.2.5 Equipment Tested
- General Electric, 7F.05, Unit #U-00003

1.2.6 Emission Points

- Exhaust from the General Electric, 7F.05, Unit #U-00003
- For all gases, one sample point in the exhaust duct from the General Electric, 7F.05, Unit #U-00003, determined after conducting a 12-point stratification test
- For all $PM_{10}$ testing, 12 sampling points in the exhaust duct from the General Electric, 7F.05, Unit #U-00003
- For all SAM testing, one sample point in the exhaust duct from the General Electric, 7F.05, Unit #U-00003
- For opacity, one sample visual observation point from the exit of the exhaust duct to the atmosphere from the General Electric, 7F.05, Unit #U-00003

1.2.7 Emission Parameters Measured

- NOx
- CO
- THC/VOC
- $SO_2$ [fuel analysis]
- $NH_3$
- $PM_{10}$
- SAM
- Opacity
- Flow
- $H_2O$
- $CO_2$
- $O_2$

1.2.8 Dates of Emission Test

- April 15-17, 2020

1.2.9 Federal Certifications

- Stack Testing Accreditation Council AETB Certificate No. 3796.02
- International Standard ISO/IEC 17025:2005 Certificate No. 3796.01

## 1.3 KEY PERSONNEL

| | | |
|---|---|---|
| Cricket Valley Energy Center LLC: | Marc Duquette (mduquette@cricketvalley.com) | 617-320-5219 |
| Bechtel Corporation: | John Curran | 772-678-1878 |
| Bechtel Corporation: | Peter Carr (pcarr@bechtel.com) | 571-392-6737 |
| Air Hygiene: | Rob White (rwhite@airhygiene.com) | 918-307-8865 |
| Air Hygiene: | Swanson Bierman (swanson@airhygiene.com) | 918-307-8865 |
| Air Hygiene: | Andrew McMahan | 918-307-8865 |
| Air Hygiene: | Sean Fields | 918-307-8865 |
| Air Hygiene: | Jeremy Johnson | 918-307-8865 |
| Air Hygiene: | Matt Jones | 918-307-8865 |
| Air Hygiene: | Gharabet Torossian | 918-307-8865 |

## 2.0 SUMMARY OF TEST RESULTS

Results from the sampling conducted on Cricket Valley Energy Center LLC's General Electric, 7F.05, Unit #U-00003 located at the Cricket Valley Energy Center on April 15-17, 2020 are summarized in the following table and relate only to the items tested.

**TABLE 2.1**
**SUMMARY OF GENERAL ELECTRIC, 7F.05, UNIT #U-00003 RESULTS**

| Parameter | Base Load | Base+DB Load | Permit Limits Base | Permit Limits Base+DB |
|---|---|---|---|---|
| **Heat Input (MMBtu/hr)** | 2,320.7 | 2,602.2 | -- | -- |
| **CT Power Output (megawatts)** | 237.4 | 240.1 | -- | -- |
| **Load Condition** | Nominal base load, w/o DB[1] | Nominal base load, w/ DB[2] | -- | -- |
| **NOx (ppmvd)** | 1.76 | 2.26 | -- | -- |
| **NOx (ppm@15%$O_2$)** | 1.30 | 1.49 | 2.0 | 2.0 |
| **CO (ppmvd)** | 0.00 | 0.06 | -- | -- |
| **CO (ppm@15%$O_2$)** | 0.00 | 0.04 | 2.0 | 2.0 |
| **VOC (as C1) (ppmvd)** | 0.00 | 0.00 | -- | -- |
| **VOC (as C1) (ppm@15%$O_2$)** | 0.00 | 0.00 | 0.7 | 1.8 |
| **Total $PM_{10}$ (mg)** | 5.37 | 5.50 | -- | -- |
| **Total $PM_{10}$ (lb/MMBtu)** | 0.0028 | 0.0027 | 0.005 | 0.006 |
| **Fuel Sulfur (grains / 100 scf)** | 0.04 | 0.11 | 0.4 | 0.4 |
| **SAM (as $H_2SO_4$) (mg)** | 0.05 | 0.03 | -- | -- |
| **SAM (as $H_2SO_4$) (lb/MMBtu)** | 0.00006 | 0.00004 | 0.00065 | 0.00065 |
| **$NH_3$ (ppmvd)** | 0.34 | 1.54 | -- | -- |
| **$NH_3$ (ppm@15%$O_2$)** | 0.25 | 1.02 | 5.0 | 5.0 |
| **Opacity (%)** | 0 | 0 | 20 | 20 |

Notes: [1]Air permit specifically indicates design capacity heat input of 2395.7 MMBtu/hr [ISO Conditions, 1 atm (29.923 in Hg), temperature 15 C or 59 F, and RH 60%] for the gas turbine. [2]Air permit specifically indicates design capacity heat input of 247 mmBtu/hr [ISO Conditions, 1 atm (29.923 in Hg), temperature 15 C or 59 F, and RH 60%] for the duct burner.

The results of all measured pollutant emissions were below the required limits. All testing was conducted according to the approved testing protocol. All testing was performed without any real or apparent errors with the following exceptions:

The $PM_{10}$ filter weights were reported by the laboratory at the reportable detection limit (RDL). Supplemental laboratory data was provided and additional data analysis indicated minor filter losses, which were accounted for in either the sample train section cleanup just prior to the filter or the sample train cleanup in the section just after the filter. As a result, the PM results are considered valid with accounting for all minor filter weight losses in other fractions of the sample train results.

The SAM analysis was conducted by titration, per the requirements of CTM-013 with all results reported below the reportable detection limits (RDLs). However, when reporting emission rates using the titration based RDL values, the SAM results exceeded permitted limits. To remedy, the SAM analysis was also conducted by ion chromatography (IC). The supplemental IC analysis (Appendix D) yielded lower RDLs and also all results that were below the permitted limits. Emission rates were calculated based on the supplemental IC data.

The fuel sample collected by Air Hygiene on April 15, 2020 demonstrated a substantial level of nitrogen indicative of contamination from the atmosphere or a leak in the sampling system. A subsequent sample is presented, along with the original, in Appendix E and used for calculations.

## 3.0 SOURCE OPERATION

## 3.1 PROCESS DESCRIPTION

Cricket Valley Energy Center LLC owns and operates the Cricket Valley Energy Center located at 2241 ST RTE 22 in Dover Plains, New York. Located on the Cricket Valley Energy Center are three General Electric 7F.05 Combustion Turbine Generators (CTGs), designated as Emission Units U-00001, U-00002, and U-00003. The CTGs and associated heat recovery steam generators (HRSGs) which are equipped with dry low NOx burners in combination with selective catalytic reduction systems (SCRs). The CTG-HRSGs are also equipped with oxidation catalysts which reduce CO and VOC emissions.

## 3.2 SAMPLING LOCATION

The sample ports were located approximately vertical, circular and measures 19 feet (ft) (228 inches) in diameter at the test ports which are approximately 265.8 ft above grade level with an exit elevation of approximately 282.5 ft above grade level. The test ports are located approximately 70.8 ft (850 inches) downstream and approximately 16.7 ft (200.4 inches) upstream from the nearest disturbances. Air Hygiene has field verified the measurable dimensions. Non-field verified dimensions are provided by Cricket Valley Energy Center LLC. All exhaust samples for gaseous emissions were continuously drawn from the exhaust system at the sample ports from a single point determined after conducting a stratification test. During the stratification test three points were traversed from each of the four ports. The probe was allowed to remain at a point for two times the system response time. For $PM_{10}$ testing, an initial velocity traverse was performed across the stack from 12 total points at each test load. All $PM_{10}$ sampling occurred from the same 12 points. All SAM testing occurred from a simple sample point. All opacity observations were made by viewing the point where the exhaust system exited to the atmosphere at the top of the exhaust stack.

## 4.0 SAMPLING AND ANALYTICAL PROCEDURES

## 4.1 TEST METHODS

The emission test on the General Electric, 7F.05, Unit #U-00003 at the Cricket Valley Energy Center was performed following United States Environmental Protection Agency (EPA) methods described by the Code of Federal Regulations (CFR). Table 4.1 outlines the specific methods performed on April 15-17, 2020.

**TABLE 4.1**
**SUMMARY OF SAMPLING METHODS**

| Pollutant or Parameter | Sampling Method | Analysis Method |
|---|---|---|
| Sample Point Location | EPA Method 1 | Equal Area Method |
| Stack Flow Rate | EPA Method 2 | S-Type Pitot Tube |
| Oxygen | EPA Method 3A | Paramagnetic Cell |
| Carbon Dioxide | EPA Method 3A | Nondispersive Infrared Analyzer |
| Stack Moisture Content | EPA Method 4 | Gravimetric Analysis |

| Pollutant or Parameter | Sampling Method | Analysis Method |
|---|---|---|
| Sulfur Dioxide | GPA 2261 | Fuel Sulfur Content |
| Nitrogen Oxides | EPA Method 7E | Chemiluminescent Analyzer |
| Sulfuric Acid Mist | CTM-013 (EPA Method 8A) | Wet Chemistry Solubility |
| Opacity | EPA Method 9 | Visual Observation |
| Carbon Monoxide | EPA Method 10 | Nondispersive Infrared Analyzer |
| Volatile Organic Compounds | EPA Method 18/25A | Gas Chromatograph and Flame Ionization Detector |
| Stack Flow Rate | EPA Method 19 | ASTM 5504 and Dry Oxygen F Factor |
| Particulate Matter | EPA Method 201A | Front Half Filterables |
| Particulate Matter | EPA Method 202 | Back Half Condensables |
| Ammonia Slip | EPA Method 320 | Fourier Transform Infrared |

## 4.2 INSTRUMENT CONFIGURATION AND OPERATIONS FOR GAS ANALYSIS

The sampling and analysis procedures used during these tests conform with the methods outlined in the Code of Federal Regulations (CFR), Title 40, Part 60, Appendix A, Methods 1, 2, 3A, 4, 7E, 9, 10, 18, 19, 25A; 40 CFR 51, Appendix M, Methods 201A and 202; 40 CFR 63, Appendix A, Method 320; Conditional Test Method (CTM)-013 [Method 8A]; ASTM 5504; and GPA 2261.

Figure 4.1 depicts the sample system used for the real-time gas analyzer tests. The gas sample was continuously pulled through the probe and transported, via heat-traced Teflon® tubing, to a heated head pump and into the FTIR then to a stainless-steel minimum-contact condenser designed to dry the sample. Transportation of the sample, through Teflon® tubing, continued into the sample manifold within the mobile laboratory via a stainless steel/Teflon® diaphragm pump. From the manifold, the sample was partitioned to the real-time analyzers through rotameters that controlled the flow rate of the sample. Exhaust samples were routed to the wet based analyzer prior to gas conditioning.

Figure 4.1 shows that the sample system was also equipped with a separate path through which a calibration gas could be delivered to the probe and back through the entire sampling system. This allowed for convenient performance of system bias checks as required by the testing methods.

All instruments were housed in a climate controlled, trailer-mounted mobile laboratory. Gaseous calibration standards were provided in aluminum cylinders with the concentrations certified by the vendor. EPA Protocol No. 1 was used to determine the cylinder concentrations where applicable (i.e. NOx calibration gases).

Table 4.2 provides a description of the analyzers used for the instrument portion of the tests. All data from the continuous monitoring instruments were recorded on a Logic Beach Portable Data Logging System which retrieves calibrated electronic data from each instrument every one second and reports an average of the collected data every 30 seconds. For target compounds measured with the Fourier transform infrared (FTIR) spectrometer,

interferograms consisting of 27 co-added scans were recorded continuously during the test periods, and provided approximately 30-second average concentrations. Spectral data was analyzed by the MKS MG2000 software.

Figure 4.2 represents the sample system used for the $PM_{10}$ tests. A heated stainless-steel probe with a glass liner and stainless-steel nozzle was inserted into the sample ports of the stack to extract gas measurements from the emission stream through a filter and glass impinger train. Flow rates are monitored with oil filled manometers and total sample volumes are measured with a dry gas meter. Glassware that is used to collect and analyze Method 202 condensable particulate samples is cleaned prior to the test with soap and water, and rinsed using tap water, deionized water, acetone, and finally, hexane. After cleaning, Air Hygiene incorporates a glassware bake at 300ºC for six hours rather than the alternative of collecting a field train proof blank.

Figure 4.3 represents the sample system used for the SAM tests. A heated stainless-steel probe with a glass liner was inserted into a sample port of the stack to extract gas measurements from the emission stream through a filter and glass impinger train. Flow rates are monitored with oil filled manometers and total sample volumes are measured with a dry gas meter.

The stack gas analysis for $O_2$ and $CO_2$ concentrations was performed in accordance with procedures set forth in EPA Method 3A. The $O_2$ analyzer uses a paramagnetic cell detector and the $CO_2$ analyzer uses a continuous nondispersive infrared analyzer.

EPA Method 7E was used to determine concentrations of NOx. A chemiluminescent analyzer was used to determine the nitrogen oxides concentration in the gas stream. A $NO_2$ in nitrogen certified gas cylinder was used to verify at least a 90 percent $NO_2$ conversion on the day of the test.

CO emission concentrations were quantified in accordance with procedures set forth in EPA Method 10. A continuous nondispersive infrared (NDIR) analyzer was used for this purpose.

THC emission concentrations were quantified in accordance with procedures set forth in EPA Method 25A. A continuous flame ionization (FID) analyzer was used for this purpose. THC emissions concentrations were below VOC limits and all assumed as VOCs. EPA Method 18 for Tedlar bag sampling and analysis of methane and ethane content was not analyzed or subtracted from the THC concentrations to determine VOC concentrations.

An MKS Instruments - MultiGas™ Fourier Transform Infrared (FTIR) spectrometer, or equivalent, was used for $NH_3$ analysis per EPA Method 320. The FTIR spectrometer spectral resolution was 0.5 $cm^{-1}$. The system employed a silicon carbide infrared source at 1200ºC, a helium neon reference laser, beam splitters, potassium bromide (KBr) cell window, front-surface optical transfer mirrors, and multi-pass absorption cells. MCT detectors were used and cooled with liquid nitrogen in order to maintain a constant temperature of 77 Kelvin. The approximately 5.11-meter multi-pass path cells incorporated aspheric, aberration-correcting mirrors to increase the optical throughput and the detection sensitivity. Transducers and thermocouples were connected directly to the insulated sample cells that provide the pressure and temperatures of the sample streams. During testing, the temperature of the absorption cells was set at 191ºC. Elevated temperature prevented gas condensation within the cell and minimized compound adhesion to the cell walls and mirrors. The volume of the absorption cell was 0.5 liters, so at a sample gas flow rate of 10.0 liters per minute, the sample gas in the cell is refreshed at least five times each minute. Interferograms consisting of 27 co-added scans were recorded continuously during the test periods, and provided approximately 30-second average concentrations.

**TABLE 4.2**
**ANALYTICAL INSTRUMENTATION**

| Parameter | Manufacturer and Model | Range | Sensitivity | Detection Principle |
|---|---|---|---|---|
| NOx | THERMO 42 series | User may select up to 5,000 ppm | 0.1 ppm | Thermal reduction of $NO_2$ to NO. Chemiluminescence of reaction of NO with $O_3$. Detection by PMT. Inherently linear for listed ranges. |
| CO | THERMO 48 series | User may select up to 10,000 ppm | 0.1 ppm | Infrared absorption, gas filter correlation detector, microprocessor-based linearization. |
| $CO_2$ | SERVOMEX 1440 | 0-20% | 0.1% | Nondispersive infrared |
| $NH_3$ | MKS 2030 | User may select from multiple ranges | 0.1 ppm | Fourier Transform Infrared – FTIR |
| VOC | THERMO 51 series | User may select up to 10,000 ppm | 0.1 ppm | Flame Ionization Detector |
| $O_2$ | SERVOMEX 1440 | 0-25% | 0.1% | Paramagnetic cell, inherently linear. |

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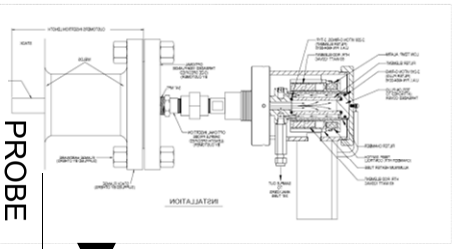
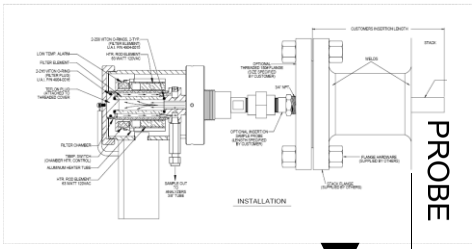


PROBE

HEATED PROBE FILTER

LEGEND

- Heated Teflon Tubing (pre-conditioned sample)
- Unheated Teflon Tubing (conditioned sample)
- Diluted Calibration Gas
- Calibration Gas
- Electronic Input/Output



HEATED PROBE FILTER

PROBE

STACK EXHAUST

PROCESS INLET OR 2ND STACK

dual line heated sample umbilical

TEST TRAILER EXTERIOR

TEST TRAILER INTERIOR

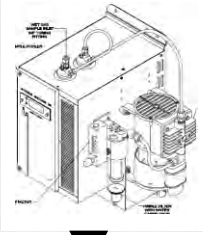
DATA RECORDER



COMPUTER



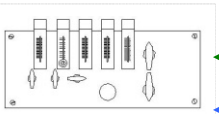
GAS CONDITIONER



dual line heated sample umbilical

MOBILE SECONDARY ANALYZERS

MANIFOLD





GAS DILUTER

THC, VOC



HOT/WET ANALYZERS

COLD/DRY ANALYZERS

$O_2$, $CO_2$, NOx, CO, $SO_2$

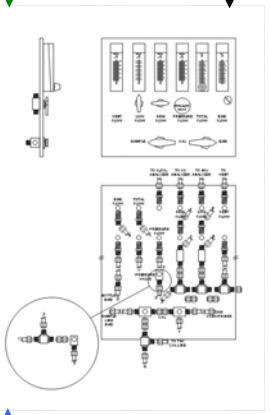


COLD/DRY ANALYZERS HOT/WET





$O_2$, $CO_2$, NOx, CO, $SO_2$



FLOW CONTROL MANIFOLD



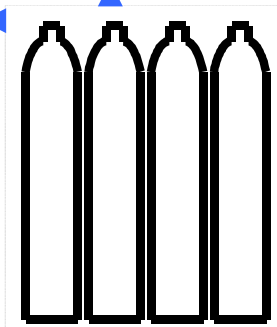
FTIR

THC, VOC



CONDITIONER

VENT



CALIBRATION/ BIAS GAS BOTTLES

VENT

FIXED PRIMARY ANALYZERS

Shown fully equipped. Some labs may not contain these features and others may contain additional features specific to certain scopes.

AIR HYGIENE

Figure 4.1
EMISSIONS TESTING LAB

1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
www.airhygiene.com
(888) 461-8778

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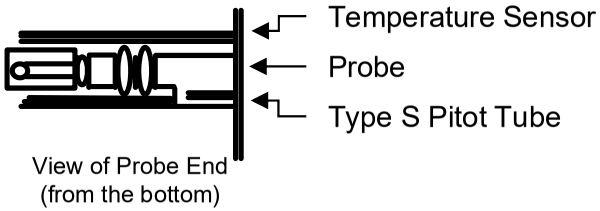



Wet Chemistry Assembly
(photo)

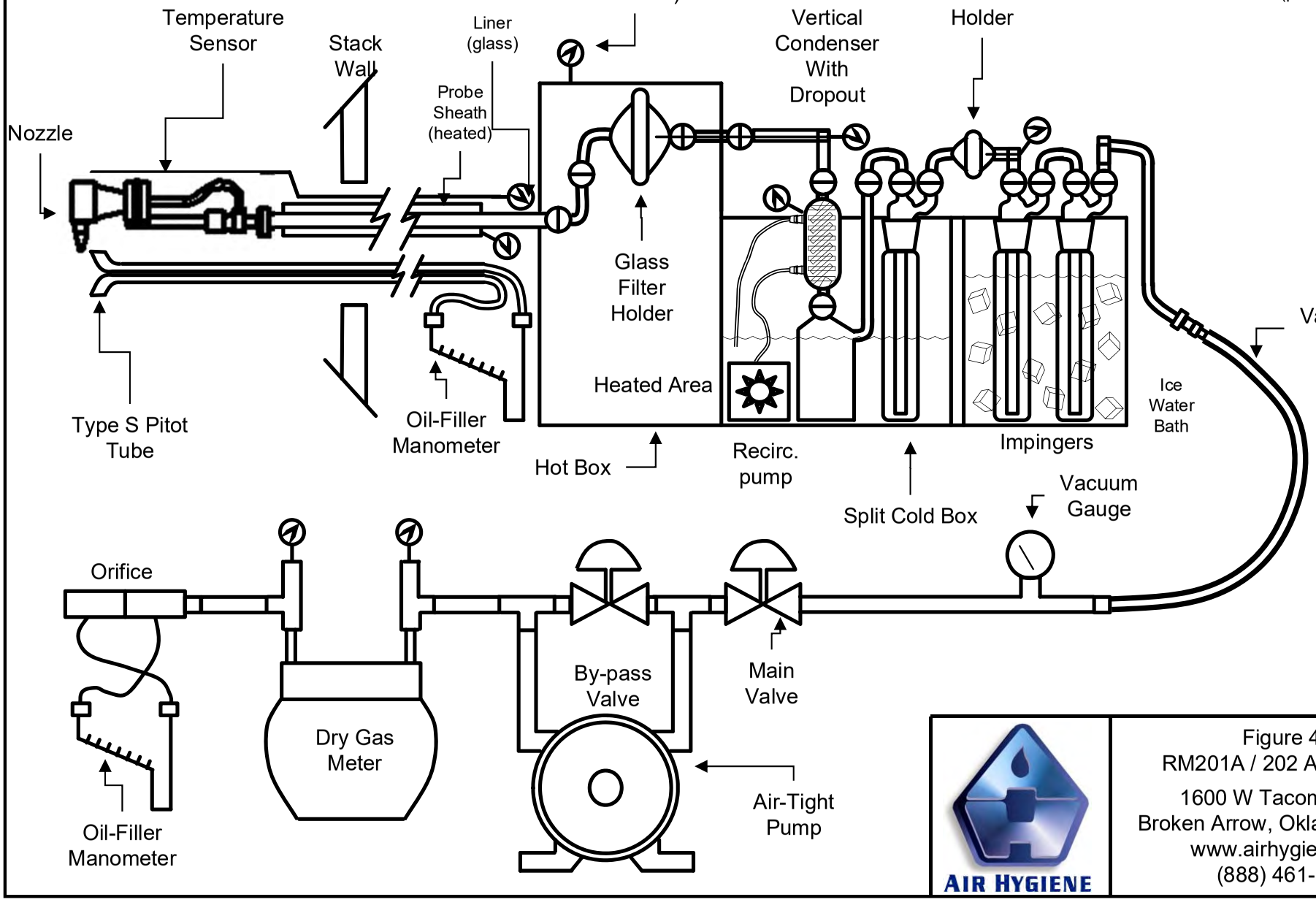


Figure 4.2
RM201A / 202 ASSEMBLY

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Broken Arrow, Oklahoma 74012
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(888) 461-8778

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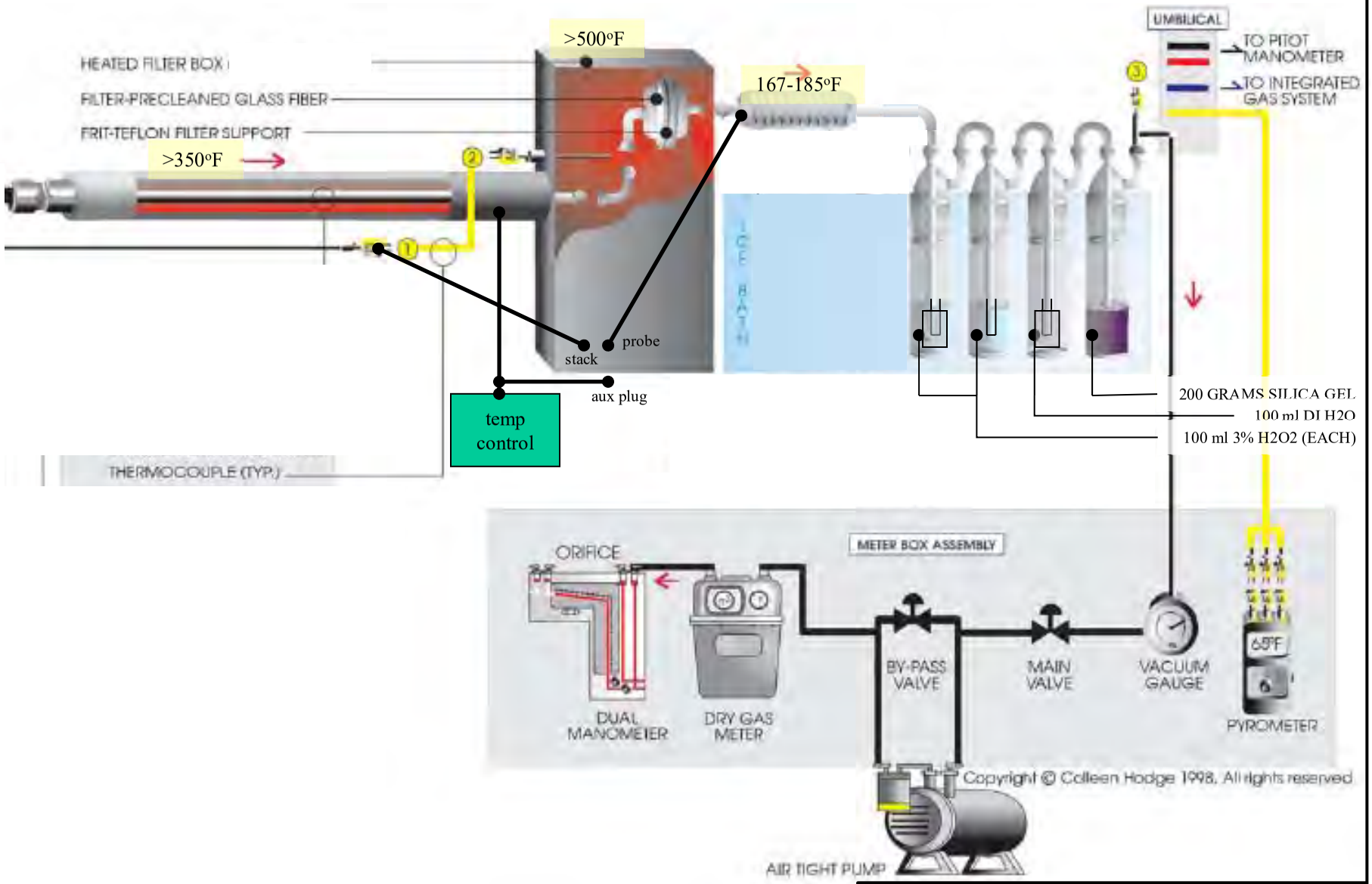


TEST NOTES:
10 LPM SAMPLE FLOW
Delta H @ 0.35 IS ABOUT 10 LPM ON STANDARD CONSOLE
15 MIN AMBIENT AIR PURGE

AIR HYGIENE

Figure 4.3
METHOD 8A ASSEMBLY

1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
www.airhygiene.com
(888) 461-8778

# APPENDIX A

# TEST RESULTS AND CALCULATIONS

**TABLE A.1: EMISSIONS TESTING SCHEDULE**

| Unit | Load | Component | Run | Date | Start | Stop | Time Sync | Duration |
|---|---|---|---|---|---|---|---|---|
| U-00003 | Base | Stratification Test | Base-1 | 04/15/20 | 10:33 | 11:39 | DAHS | 01:06 |
| U-00003 | Base | Cyclonic Flow Check | PM U-00003 Base-V1 | 04/15/20 | 06:45 | 07:10 | DAHS | 00:25 |
| U-00003 | Base | NOx, CO, VOC, $NH_3$ | 1-1 | 04/15/20 | 12:10 | 13:09 | DAHS | 01:00 |
| U-00003 | Base | NOx, CO, VOC, $NH_3$ | 1-2 | 04/15/20 | 13:23 | 14:22 | DAHS | 01:00 |
| U-00003 | Base | NOx, CO, VOC, $NH_3$ | 1-3 | 04/15/20 | 14:35 | 15:34 | DAHS | 01:00 |
| U-00003 | Base | Opacity | Op-1-1 | 04/15/20 | 06:00 | 07:00 | DAHS | 01:00 |
| U-00003 | Base | Opacity | Op-1-2 | 04/15/20 | 07:00 | 08:00 | DAHS | 01:00 |
| U-00003 | Base | Opacity | Op-1-3 | 04/15/20 | 08:00 | 09:00 | DAHS | 01:00 |
| U-00003 | Base | $PM_{10}$ | PM U-00003 Base-1 | 04/15/20 | 08:23 | 12:46 | DAHS | 04:23 |
| U-00003 | Base | $PM_{10}$ | PM U-00003 Base-2 | 04/15/20 | 13:45 | 18:02 | DAHS | 04:17 |
| U-00003 | Base | $PM_{10}$ | PM U-00003 Base-3 | 04/16/20 | 06:46 | 11:15 | DAHS | 04:29 |
| U-00003 | Base | SAM | SAM U-00003 Base-1 | 04/15/20 | 13:56 | 15:56 | DAHS | 02:00 |
| U-00003 | Base | SAM | SAM U-00003 Base-2 | 04/16/20 | 06:24 | 08:24 | DAHS | 02:00 |
| U-00003 | Base | SAM | SAM U-00003 Base-3 | 04/16/20 | 08:57 | 10:57 | DAHS | 02:00 |
| U-00003 | Base+DB | Stratification Test | BaseDB-1 | 04/16/20 | 12:29 | 13:35 | DAHS | 01:06 |
| U-00003 | Base+DB | Cyclonic Flow Check | PM U-00003 Base+DB-V1 | 04/16/20 | 12:09 | 12:21 | DAHS | 00:12 |
| U-00003 | Base+DB | NOx, CO, VOC, $NH_3$ | 2-1 | 04/16/20 | 14:04 | 15:03 | DAHS | 01:00 |
| U-00003 | Base+DB | NOx, CO, VOC, $NH_3$ | 2-2 | 04/16/20 | 15:23 | 16:22 | DAHS | 01:00 |
| U-00003 | Base+DB | NOx, CO, VOC, $NH_3$ | 2-3 | 04/16/20 | 17:41 | 18:40 | DAHS | 01:00 |
| U-00003 | Base+DB | Opacity | Op-2-1 | 04/17/20 | 10:00 | 11:00 | DAHS | 01:00 |
| U-00003 | Base+DB | Opacity | Op-2-2 | 04/17/20 | 11:00 | 12:00 | DAHS | 01:00 |
| U-00003 | Base+DB | Opacity | Op-2-3 | 04/17/20 | 12:00 | 13:00 | DAHS | 01:00 |
| U-00003 | Base+DB | $PM_{10}$ | PM U-00003 Base+DB-1 | 04/16/20 | 12:23 | 16:49 | DAHS | 04:26 |
| U-00003 | Base+DB | $PM_{10}$ | PM U-00003 Base+DB-2 | 04/17/20 | 04:15 | 08:34 | DAHS | 04:19 |
| U-00003 | Base+DB | $PM_{10}$ | PM U-00003 Base+DB-3 | 04/17/20 | 09:35 | 14:03 | DAHS | 04:28 |
| U-00003 | Base+DB | SAM | SAM U-00003 Base+DB-1 | 04/16/20 | 13:10 | 15:10 | DAHS | 02:00 |
| U-00003 | Base+DB | SAM | SAM U-00003 Base+DB-2 | 04/17/20 | 03:58 | 05:58 | DAHS | 02:00 |
| U-00003 | Base+DB | SAM | SAM U-00003 Base+DB-3 | 04/17/20 | 07:00 | 09:00 | DAHS | 02:00 |

# TEST RESULTS AND CALCULATIONS

## Emissions Results
## Base Load
## NOx, CO, VOC, and $NH_3$

## GENERAL ELECTRIC, 7F.05, UNIT #U-00003 BASE LOAD DATA SUMMARY

| Parameter | Base Load, Run - 1-1 | Base Load, Run - 1-2 | Base Load, Run - 1-3 | Average |
|---|---|---|---|---|
| **Date (mm/dd/yy)** | 04/15/20 | 04/15/20 | 04/15/20 | 04/15/20 |
| **Start Time (hh:mm:ss)** | 12:10:05 | 13:23:05 | 14:35:05 | 12:10:05 |
| **End Time (hh:mm:ss)** | 13:09:35 | 14:22:35 | 15:34:35 | 15:34:35 |
| **Run Duration (min / run)** | 60 | 60 | 60 | 60 |
| **Bar. Pressure (in. Hg)** | 29.99 | 30.11 | 30.09 | 30.06 |
| **Amb. Temp. (°F)** | 53 | 54 | 50 | 52 |
| **Rel. Humidity (%)** | 23 | 25 | 29 | 26 |
| **Spec. Humidity (lb water / lb air)** | 0.001939 | 0.002178 | 0.002181 | 0.002099 |
| **$NH_3$ Flow Rate (lb/hr)** | 141.6 | 135.3 | 137.4 | 138.1 |
| **Turbine Fuel Flow (lb/min)** | 1,651 | 1,646 | 1,643 | 1,646 |
| **Duct Burner Fuel Flow (lb/min)** | 0 | 0 | 0 | 0 |
| **Total Fuel Flow (SCFH)** | 2,293,723 | 2,287,005 | 2,282,441 | 2,287,723 |
| **Stack Flow (RM19) (SCFH)** | 52,372,088 | 52,469,624 | 52,110,077 | 52,317,263 |
| **Stack Moisture (% Method 4)** | 8.8 | 8.8 | 8.6 | 8.8 |
| **Heat Input (MMBtu/hr)** | 2,326.8 | 2,320.0 | 2,315.3 | 2,320.7 |
| **CT Power Output (megawatts)** | 237.6 | 237.1 | 237.5 | 237.4 |
| **NOx (ppmvd)** | 1.73 | 1.81 | 1.76 | 1.76 |
| **NOx (ppm@15%$O_2$)** | 1.27 | 1.34 | 1.29 | 1.30 |
| **CO (ppmvd)** | 0.00 | 0.00 | 0.00 | 0.00 |
| **CO (ppm@15%$O_2$)** | 0.00 | 0.00 | 0.00 | 0.00 |
| **VOC (as C1) (ppmvd)** | 0.00 | 0.00 | 0.01 | 0.00 |
| **VOC (as C1) (ppm@15%$O_2$)** | 0.00 | 0.00 | 0.01 | 0.00 |
| **Fuel Sulfur (grains / 100 scf)** | 0.04 | 0.04 | 0.04 | 0.04 |
| **$CO_2$ (%)** | 4.62 | 4.89 | 4.78 | 4.76 |
| **$O_2$ (%)** | 12.88 | 12.92 | 12.88 | 12.89 |

# Calculations, Formulas, and Constants

The following information supports the spreadsheets for this testing project.

**Given Data:**

Ideal Gas Conversion Factor = 385.23 SCF/lb-mol at 68 deg F & 14.696 psia

Fuel Heating Value is based upon Air Hygiene's fuel gas calculation sheet. All calculations are based upon a correction to 68 deg F & 14.696 psia

High Heating Values (HHV) are used for the Fuel Heating Value, F-Factor, and Fuel Flow Data per EPA requirements.

**ASTM D 3588**

| | |
|---|---|
| Molecular Weight of NOx (lb/lb-mole) = | 46.01 |
| Molecular Weight of CO (lb/lb-mole) = | 28.00 |
| Molecular Weight of $SO_2$ (lb/lb-mole) = | 64.00 |
| Molecular Weight of THC (propane) (lb/lb-mole) = | 44.00 |
| Molecular Weight of VOC (methane) (lb/lb-mole) = | 16.00 |
| Molecular Weight of $NH_3$ (lb/lb-mole) = | 17.03 |
| Molecular Weight of HCHO (lb/lb-mole) = | 30.03 |
| Molecular Weight of $CO_2$ (lb/lb-mole) = | 44.01 |

**40CFR60, App. A., RM 19, Table 19-1**

| | |
|---|---|
| Conversion Constant for NOx = | 0.0000001194351 |
| Conversion Constant for CO = | 0.0000000726839 |
| Conversion Constant for $SO_2$ = | 0.0000001661345 |
| Conversion Constant for THC = | 0.0000001142175 |
| Conversion Constant for VOC (methane) = | 0.0000000415336 |
| Conversion Constant for $NH_3$ = | 0.0000000442074 |
| Conversion Constant for HCHO = | 0.0000000779534 |
| Conversion Constant for $CO_2$ = | 0.0000001142434 |

NOTE: units are lb/ppm*ft$^3$

**Formulas:**

1. Corrected Raw Average ($C_{Gas}$), 40CFR60, App. A, RM 7E, Eq. 7E-5 (08/15/06)

$$C_{Gas} = \left(C_{Avg} - C_O\right) \times \left(\frac{C_{MA}}{C_M - C_O}\right)$$

2. Correction to % $O_2$, 40CFR60, App. A, RM 20, Eq. 20-5 (11/26/02)

$$C_{adj} = C_{Gas(Target)} \times \left(\frac{20.9\% - AdjFactor}{20.9\% - C_{Gas(O2)}}\right)$$

3. Correction to % $O_2$ and ISO Conditions

$$C_{ISO} = C_{Adj} \times \sqrt{\frac{P_r}{P_o}} \times e^{(19 \times (H_O - 0.00633))} \times \left(\frac{288}{T_a}\right)^{1.53}$$

4. Method 19 stack exhaust flow (scfh) [ref. EPA EMC FAQ Method 19]

$$Q_S = \left(\frac{FFactor \times Q_f \times HHV}{1{,}000{,}000}\right) \times \left(\frac{20.9\%}{20.9\% - C_{Gas(O2)}}\right)$$

5. Emission Rate in lb/hr

$$E_{lb/hr} = \frac{C_{Gas}}{10^6} \times \frac{Q_S \times MW}{G}$$

6. Emission Rate in tons per year

$$E_{ton/yr} = \frac{E_{lb/hr} \times hr_{year}}{2000}$$

7. Emission Concentration in lb/MMBtu ($O_2$ based)

$$E_{lb/MMBtu} = \frac{C_{Gas} \times F_d Factor \times Conv_C \times 20.9\%}{20.9\% - C_{Gas(O2)}}$$

8. Emission Concentration in g/hp*hr

$$E_{g/hp \cdot hr} = \frac{E_{lb/hr} \times 453.6}{mw \times 1341.022} \; or \; \frac{E_{lb/hr} \times 453.6}{hp}$$

**RM 7E, (08-15-06), 12.1 Nomenclature. The terms used in the equations are defined as follows:**

ACE = Analyzer calibration error, percent of calibration span.
$B_{WS}$ = Moisture content of sample gas as measured by Method 4 or other approved method, percent/100.
$C_{Avg}$ = Average unadjusted gas concentration indicated by data recorder for the test run.
$C_D$ = Pollutant concentration adjusted to dry conditions.
$C_{Dir}$ = Measured concentration of a calibration gas (low, mid, or high) when introduced in direct calibration mode.
$C_{Gas}$ = Average effluent gas concentration adjusted for bias.
$C_M$ = Average of initial and final system calibration bias (or 2-point system calibration error) check responses for the upscale calibration gas.
$C_{MA}$ = Actual concentration of the upscale calibration gas, ppmv.
$C_O$ = Average of the initial and final system calibration bias (or 2-point system calibration error) check responses from the low-level (or zero) calibration gas.
$C_S$ = Measured concentration of a calibration gas (low, mid, or high) when introduced in system calibration mode.
$C_{SS}$ = Concentration of NOx measured in the spiked sample.
$C_{Spike}$ = Concentration of NOx in the undiluted spike gas.
$C_{Calc}$ = Calculated concentration of NOx in the spike gas diluted in the sample.
$C_V$ = Manufacturer certified concentration of a calibration gas (low, mid, or high).
$C_W$ = Pollutant concentration measured under moist sample conditions, wet basis.
CS = Calibration span.
D = Drift assessment, percent of calibration span.
$E_p$ = The predicted response for the low-level and mid-level gases based on a linear response line between the zero and high-level response.
$Eff_{NO2}$ = $NO_2$ to NO converter efficiency, percent.
H = High calibration gas, designator.
L = Low calibration gas, designator.
M = Mid calibration gas, designator.
NOFinal = The average NO concentration observed with the analyzer in the NO mode during the converter efficiency test in Section 16.2.2.
NOxCorr = The NOx concentration corrected for the converter efficiency.
NOxFinal = The final NOx concentration observed during the converter efficiency test in Section 16.2.2.
NOxPeak = The highest NOx concentration observed during the converter efficiency test in Section 16.2.2.
$Q_{Spike}$ = Flow rate of spike gas introduced in system calibration mode, L/min.
$Q_{Total}$ = Total sample flow rate during the spike test, L/min.
R = Spike recovery, percent.
SB = System bias, percent of calibration span.
$SB_i$ = Pre-run system bias, percent of calibration span.
$SB_f$ = Post-run system bias, percent of calibration span.
SB / $D_{Alt}$ = Alternative absolute difference criteria to pass bias and/or drift checks.
SCE = System calibration error, percent of calibration span.
$SCE_i$ = Pre-run system calibration error, percent of calibration span.
$SCE_{final}$ = Post-run system calibration error, percent of calibration span.
Z = Zero calibration gas, designator.

**40CFR60.355(b)(1), (09-20-06), Nomenclature. The terms used in the equations are defined as follows:**

$P_r$ = reference combustor inlet absolute pressure at 101.3 kilopascals ambient pressure, mm Hg
$P_o$ = observed combustor inlet absolute pressure at test, mm Hg
$H_o$ = observed humidity of ambient air, g $H_2O$/g air
e = transcendental constant, 2.718
$T_a$ = ambient temperature, K

**Small Engine and FTIR Nomenclature. The terms used in the equations are defined as follows:**

bhp = brake horsepower
hp = horsepower
$Q_{sys}$ = system flow (lpm)
$Q_m$ = matrix spike flow (lpm)

**RM 19, (07-29-06), 12.1 Nomenclature. The terms used in the equations are defined as follows:**

AdjFactor = Percent oxygen or carbon dioxide adjustment applied to a target pollutant
$B_{wa}$ = Moisture fraction of ambient air, percent.
Btu = British thermal unit
$\%_C$ = Concentration of carbon from an ultimate analysis of fuel, weight percent.
$\%_{CO2d}$,$\%_{CO2w}$ = Concentration of carbon dioxide on a dry and wet basis, respectively, percent.
CIP / CDP = Combustor inlet pressure / compressor discharge pressure (mm Hg); note, some manufactures reference as PCD.
E = Pollutant emission rate, ng/J (lb/million Btu).
$E_a$ = Average pollutant rate for the specified performance test period, ng/J (lb/million Btu).
$E_{ao}$, $E_{ai}$ = Average pollutant rate of the control device, outlet and inlet, respectively, for the performance test period, ng/J (lb/million Btu).
$E_{bi}$ = Pollutant rate from the steam generating unit, ng/J (lb/million Btu).
$E_{bo}$ = Pollutant emission rate from the steam generating unit, ng/J (lb/million Btu).
$E_{ci}$ = Pollutant rate in combined effluent, ng/J (lb/million Btu).
$E_{co}$ = Pollutant emission rate in combined effluent, ng/J (lb/million Btu).
$E_d$ = Average pollutant rate for each sampling period (e.g.,24-hr Method 6B sample or 24-hr fuel sample) or for each fuel lot (e.g., amount of fuel bunkered), ng/J (lb/million Btu).
$E_{di}$ = Average inlet $SO_2$ rate for each sampling period d, ng/J (lb/million Btu).
$E_g$ = Pollutant rate from gas turbine, ng/J (lb/million Btu).
$E_{ga}$ = Daily geometric average pollutant rate, ng/J (lbs/million Btu) or ppm corrected to 7 percent $O_2$.
$E_{jo}$,$E_{ji}$ = Matched pair hourly arithmetic average pollutant rate, outlet and inlet, respectively, ng/J (lb/million Btu) or ppm corrected to 7 percent $O_2$.
$E_h$ = Hourly average pollutant, ng/J (lb/million Btu).
$E_{hj}$ = Hourly arithmetic average pollutant rate for hour "j," ng/J (lb/million Btu) or ppm corrected to 7 percent $O_2$.
EXP = Natural logarithmic base (2.718) raised to the value enclosed by brackets.
Fc = Ratio of the volume of carbon dioxide produced to the gross calorific value of the fuel from Method 19
$F_d$, $F_w$, $F_c$ = Volumes of combustion components per unit of heat content, scm/J (scf/million Btu).
$ft^3$ = cubic feet
G = ideal gas conversion factor
(385.23 SCF/lb-mol at 68 deg F & 14.696 psia)
GCM = gross Btu per SCF (constant, compound based)
GCV = Gross calorific value of the fuel consistent with the ultimate analysis, kJ/kg (Btu/lb).
$GCV_p$, $GCV_r$ = Gross calorific value for the product and raw fuel lots, respectively, dry basis, kJ/kg (Btu/lb).
$\%_H$ = Concentration of hydrogen from an ultimate analysis of fuel, weight percent.
$H_b$ = Heat input rate to the steam generating unit from fuels fired in the steam generating unit, J/hr (million Btu/hr).
$H_g$ = Heat input rate to gas turbine from all fuels fired in the gas turbine, J/hr (million Btu/hr).
$\%_{H2O}$ = Concentration of water from an ultimate analysis of fuel, weight percent.
$H_r$ = Total numbers of hours in the performance test period (e.g., 720 hours for 30-day performance test period).
K = volume of combustion component per pound of component (constant)
K = Conversion factor, $10^{-5}$ (kJ/J)/(%) [$10^6$ Btu/million Btu].
$K_c$ = (9.57 scm/kg)/% [(1.53 scf/lb)/%].
$K_{cc}$ = (2.0 scm/kg)/% [(0.321 scf/lb)/%].
$K_{hd}$ = (22.7 scm/kg)/% [(3.64 scf/lb)/%].
$K_{hw}$ = (34.74 scm/kg)/% [(5.57 scf/lb)/%].
$K_n$ = (0.86 scm/kg)/% [(0.14 scf/lb)/%].
$K_o$ = (2.85 scm/kg)/% [(0.46 scf/lb)/%].
$K_s$ = (3.54 scm/kg)/% [(0.57 scf/lb)/%].
$K_{sulfur}$ = $2x10^4$ Btu/wt%-MMBtu
$K_w$ = (1.30 scm/kg)/% [(0.21 scf/lb)/%].
lb = pound
ln = Natural log of indicated value.
$L_p$,$L_r$ = Weight of the product and raw fuel lots, respectively, metric ton (ton).
$\%_N$ = Concentration of nitrogen from an ultimate analysis of fuel, weight percent.
$M_{\%}$ = mole percent
mol = mole
MW = molecular weight (lb/lb-mol)
$MW_{AIR}$ = molecular weight of air ( 28.9625 lb/lb-mole)[1]
NCM = net Btu per SCF (constant based on compound)
$\%_O$ = Concentration of oxygen from an ultimate analysis of fuel, weight percent.
$\%_{O2d}$, $\%_{O2w}$ = Concentration of oxygen on a dry and wet basis, respectively, percent.
$P_B$ = barometric pressure, in Hg
$P_s$ = Potential SO2 emissions, percent.
$\%_S$ = Sulfur content of as-fired fuel lot, dry basis, weight percent.
$S_e$ = Standard deviation of the hourly average pollutant rates for each performance test period, ng/J (lb/million Btu).
$\%_{Sf}$ = Concentration of sulfur from an ultimate analysis of fuel, weight percent.
S(wt%) = weight percent of sulfur, per lab analysis by appropriate ASTM standard
$S_i$ = Standard deviation of the hourly average inlet pollutant rates for each performance test period, ng/J (lb/million Btu).
$S_o$ = Standard deviation of the hourly average emission rates for each performance test period, ng/J (lb/million Btu).
$\%S_p$, $\%S_r$ = Sulfur content of the product and raw fuel lots respectively, dry basis, weight percent.
SCF = standard cubic feet
SH = specific humidity, pounds of water per pound of air
$t_{0.95}$ = Values shown in Table 19-3 for the indicated number of data points n.
$T_{amb}$ = ambient temperature, °F
W/D Factor = 1.0236 = conv. at 14.696 psia and
68 deg F (ref. Civil Eng. Ref. Manual, 7th Ed.)
$X_{CO2}$=$CO_2$ Correction factor, percent.
$X_k$ = Fraction of total heat input from each type of fuel k.

**EXAMPLE CALCULATIONS (FFACTOR)**

RM 19, (02-27-14),
2.0 Summary of Method,
2.1 Emission Rates. Oxygen ($O_2$) or carbon dioxide ($CO_2$) concentrations and appropriate F factors (ratios of combustion gas volumes to heat inputs) are used to calculate pollutant emission rates from pollutant concentrations.

RM 19, (02-27-14),
12.2 Emission Rates of PM, $SO_2$, and NOx. Select from the following sections the applicable procedure to compute the PM, $SO_2$, or NOx emission rate (E) in lb/MMBtu. The pollutant concentration must be in lb/scf and the F factor must be in scf/MMBtu. If the pollutant concentration (C) is not in the appropriate units, use Table 19–1 in Section 17.0 to make the proper conversion. An F factor is the ratio of the gas volume of the products of combustion to the heat content of the fuel. The dry F factor ($F_d$) includes all components of combustion less water, the wet F factor ($F_w$) includes all components of combustion, and the carbon F factor ($F_c$) includes only carbon dioxide.

Mark's Std Hdbk, 10th ed.,pg 4-26
**High Heat Value Dry** ($HHV_{dry}$), calc for Methane (single component for the fuel gas)

$$HHV_{dry}\left(Btu / SCF\right) = \left[\left(\frac{M_{\%}}{100}\right) \times GCM\right]$$

$HHV_{dry}$ = 96.10 % / 100.00 x 994.85 Btu / SCF = 956.09 Btu / SCF

Mark's Std Hdbk, 10th ed., pg 4-26
**Low Heat Value Dry** ($LHV_{dry}$), calc for Methane (single component for the fuel gas)

$$LHV_{dry}\left(Btu / SCF\right) = \left[\left(\frac{M_{\%}}{100}\right) \times NCM\right]$$

$LHV_{dry}$ = 96.10 % / 100.00 x 895.75 Btu / SCF = 860.86 Btu / SCF

Civil Eng. Ref. Man.,7th Ed.,pg 14-9/GPA Ref. Bulletin 181-86, App. C
**High Heat Value Wet** ($HHV_{wet}$), calc for entire sample (all components of the fuel gas)

$$HHV_{wet}\left(Btu / SCF\right) = \frac{HHV_{dry}}{W / D.factor}$$

$HHV_{wet}$ = 1,014.41 Btu/SCF / 1.0236 = 991.02 Btu/SCF

Civil Eng. Ref. Man.,7th Ed.,pg 14-9/GPA Ref. Bulletin 181-86, App. C
**Low Heat Value Wet** ($LHV_{wet}$), calc for entire sample (all components of the fuel gas)

$$LHV_{wet}\left(Btu / SCF\right) = \frac{LHV_{dry}}{W / D.factor}$$

$LHV_{wet}$ = 914.22 Btu/SCF / 1.0236 = 893.14 Btu/SCF

**Lbs Component per Lb-Mol of Gas** (CM), calc for Methane (single component for the fuel gas)

$$CM\left(lb / lb - mol\right) = \left[\left(\frac{M_{\%}}{100}\right) \times MW\right]$$

CM = 96.10 % / 100.00 x 16.04 lb / lb-mol = 15.42 lb/lb-mol

ASTM D 3588
**Fuel Molecular Weight** ($MW_{Fuel}$)

$$MW_{Fuel}\left(lb / lb \cdot mol\right) = \left[\sum\left(CM\right)\right]$$

$MW_{Fuel}$ = 15.42 lb/lb-mol
\+ 0.94 lb/lb-mol
+ etc. = 16.634 lb/lb-mol

Btu per Lb of Gas Gross (**GCV**)

$$GCV\left(Btu / lb\right) = \left[\frac{HHV_{dry} \times G}{MW_{Fuel}}\right]$$

GCV = 1,014.41 Btu/SCF x 385.23 $ft^3$/lbmol / 16.634 lb/lb-mol = 23,492.65 Btu/lb

ASTM D 3588 (SG)
**Specific Gravity**

$$SG = \left[\frac{MW_{Fuel}}{MW_{AIR}}\right]$$

SG = 16.63 lb/lb-mol / 28.96 lb/lb-mol = 0.5743

Btu per Lb of Gas Net (**NCV**)

$$NCV\left(Btu / lb\right) = \left[\frac{LHV_{dry} \times G}{MW_{Fuel}}\right]$$

NCV = 914.22 Btu/SCF x 385.23 $ft^3$/lbmol / 16.634 lb/lb-mol = 21,172.38 Btu/lb

**Weight Percent** of Component ($C_{\%}$), methane

$$C_{\%}\left(\%\right) = \left[\left(\frac{CM}{MW_{Fuel}}\right) \times 100\right]$$

$C_{\%}$ = 15.42 lb/lb-mol / 16.63 lb/lb-mol x 100 = 92.69 %

**Weight Percent of Volatile Organic Compounds** ($VOC_{\%}$)

$$VOC_{\%}(\%) = \left[\sum_{C_3H_8}^{C_8H_{18}} Wt_{\%}\right]$$

$VOC_{\%}$ = 0.37 % + 0.01 % + 0.02 % + etc. = 0.41 %

RM 19, (02-27-14), 12.3.2 Determined **F Factors**. If the fuel burned is not listed in Table 19–2 or if the owner or operator chooses to determine an F factor rather than use the values in Table 19–2, use the procedure below: 12.3.2.1 Equations. Use the eq

RM 19, (02-27-14),
12.1 Nomenclature

| **K (scf/lb)/%** | |
|---|---|
| H | 3.64 |
| C | 1.53 |
| S | 0.57 |
| $N_2$ | 0.14 |
| $O_2$ | 0.46 |

$$F_d = \frac{K\left(K_{hd}\%H + K_c\%C + K_s\%S + K_n\%N - K_o\%O\right)}{GCV} \qquad \text{Eq. 19-13}$$

$F_d$ = $10^6$Btu / MMBtu x [ 3.64 SCF / lb · % x 24.51 % + 1.53 SCF / lb · % x 74.42 % + 0.57 SCF / lb · % x 0.00 % + 0.14 SCF / lb · % x 0.60 % - 0.46 SCF / lb · % x 0.48 % ] x lb / 23,492.65 Btu = 8,638.02 SCF / MMBtu

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (INFORMATION)**

**Specific Humidity ($RH_{sp}$)**

Note: RHsp (gr/lb) calculated using temperature, relative humidity, and barometric pressure with psychrometric chart, psychrometric calculator, or built in psychrometric algorithm.

$$RH_{sp}(lb/lb) = \left[\left(\frac{gr}{lb}\right) \times \frac{lb}{7000\,gr}\right]$$

$RH_{sp}$= 13.57 gr / lb x 1 lb / 7000 gr = 0.001939 lb $H_2O$ / lb Air

**Fuel Flow Conversion ($Q_f$)**

Note: Qf(lb/min) is a value obtained from the source operator.

$$Q_f = \left[Q_f \times G \times \left(\frac{1}{MW_{Fuel}}\right)\right]$$

$Q_f$ = 1,650.71 lb / min x 60 min / hr x 385.23 $ft^3$ / lb-mol x lb-mol / 16.63 lb = 2,293,723 SCFH

**Heat Rate (MMBtu/hr)**

$$HR = \frac{HHV_{DRY} \times Q_f}{1{,}000{,}000}$$

Heat Rate = 1,014.41 Btu / SCF x 2,293,723.12 SCF / hr x MMBtu / $10^6$ Btu = 2,326.77 MMBtu / hr

**EXAMPLE CALCULATIONS (CALIBRATION)**

**Analyzer Calibration Error**

RM 7E, (02-27-14), 12.2 Analyzer Calibration Error. For non-dilution systems, use Equation 7E-1 to calculate the analyzer calibration error for the low-, mid-, and high-level calibration gases. (calc for NOx analyzer mid gas, if applicable)

$$ACE = \left(\frac{C_{Dir} - C_V}{CS}\right) \times 100$$ Eq. 7E-1

ACE = (4.85 ppm - 4.55 ppm) / 8.90 ppm x 100 = 3.37 %

**Calibration Error and Estimated Point, RM 25A, THC/VOC Analyzer**

RM 25A, (02-27-14), 8.4 Calibration Error Test. Immediately prior to the test series (within 2 hours of the start of the test), introduce zero gas and high-level calibration gas at the calibration valve assembly. Adjust the analyzer output to the appropriate levels, if necessary. Calculate the predicted response for the low-level and mid-level gases based on a linear response line between the zero and high-level response. Then introduce low-level and mid-level calibration gases successively to the measurement system. ... These differences must be less than 5 percent of the respective calibration gas value. (calc for THC/VOC analyzer mid gas, if applicable)

$$E_P = \frac{C_{Dir(H)} - C_{Dir(Z)}}{C_{V(H)} - C_{V(Z)}} \times C_{Dir(M)} + C_{Dir(Z)}$$

Eq. of a line y=mx+b

$E_p$ = (8.70 ppm - 0.00 ppm) / (8.78 ppm - 0.00 ppm) x 5.19 ppm + 0.00 = 5.14 ppm

$$ACE = \left(\frac{C_{Dir} - C_V}{CS}\right) \times 100$$ Eq. 7E-1

$ACE_{VOC}$ = (4.97 ppm - 5.14 ppm) / 5.19 ppm x 100 = -3.33 %

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (BIAS, DRIFT, AND CORRECTED RAW AVERAGE)**

**System Bias**

RM 7E, (02-27-14), 12.3 System Bias. For non-dilution systems, use Equation 7E-2 to calculate the system bias separately for the low-level and upscale calibration gases. (calc for NOx analyzer upscale gas, Run 1 initial bias, if applicable)

$$SB = \left(\frac{C_S - C_{Dir}}{CS}\right) \times 100$$ Eq. 7E-2

SB = $\frac{4.60 \text{ ppm} - 4.85 \text{ ppm}}{8.90 \text{ ppm}}$ x 100 = -2.81 %

**Drift Assessment**

RM 7E, (02-27-14), 12.5 Drift Assessment. Use Equation 7E-4 to separately calculate the low-level and upscale drift over each test run. (calc for NOx analyzer upscale drift, Run 1, if applicable)

$$D = \left|SB_{final} - SB_i\right|$$ Eq. 7E-4

D = | -2.58 % - -2.81 % | = 0.22 %

**Alternative Drift and Bias**

RM 7E, (02-27-14), 13.2 / 13.3 System Bias and Drift. Alternatively, the results are acceptable if |Cs – Cdir| is ≤ 0.5 ppmv or if |Cs – Cv| is ≤ 0.5 ppmv (as applicable). (calc for NOx analyzer initial upscale, Run 1, if applicable)

$$SB / D_{Alt} = \left|C_S - C_{Dir}\right|$$ Eq. Section 13.2 and 13.3

$SB / D_{Alt}$ = | 4.60 ppm - 4.85 ppm | = 0.25 ppm

**Bias Adjusted Average**

RM 7E, (02-27-14), 12.6 Effluent Gas Concentration. For each test run, calculate Cavg, the arithmetic average of all valid NOx concentration values (e.g., 1-minute averages). Then adjust the value of Cavg for bias, using Equation 7E-5b. (calc for NOx analyzer, Run 1, if applicable)

$$C_{Gas} = \left(C_{Avg} - C_O\right) \times \left(\frac{C_{MA}}{C_M - C_O}\right)$$ Eq. 7E-5b

$C_{Gas}$ = (1.78 ppm - 0.06 ppm) $\left(\frac{4.55 \text{ ppm}}{4.61 \text{ ppm} - 0.06 \text{ ppm}}\right)$ = 1.73 ppm

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (RUNS)**

**Moisture Correction**

RM 7E, (02-27-14), 12.10 Moisture Correction. Use Equation 7E-10 if your measurements need to be corrected to a dry basis. (calc for NOx analyzer, Run 1, if applicable) Note: Calculations may not match as Run 1 results are typically also bias adjusted

$$C_D = \frac{C_W}{1 - B_{WS}}$$ Eq. 7E-10

$C_D$ = $\frac{1.57 \text{ ppmvw}}{1 - 0.09}$ = 1.73 ppmvd or inversely, $C_W = C_D \times \left(1 - B_{WS}\right)$

$C_W$ = 1.73 ppmvd x (1 - 0.09) = 1.57 ppmvw

**Diluent-Corrected Pollutant Concentration, $O_2$ Based**

RM 20, (11-26-02), 7.3.1 Correction of Pollutant Concentration Using $O_2$ Concentration. Calculate the $O_2$ corrected pollutant concentration, as follows: (calc for NOx gas, Run 1, if applicable) [now contained in applicable Subpart]

$$C_{adj} = C_{Gas(Target)} \times \left(\frac{20.9\% - AdjFactor}{20.9\% - C_{Gas(O2)}}\right)$$ Eq. 20-4

$C_{adj}$ = 1.73 ppm x $\left(\frac{20.9\% - 15.00\ \%}{20.9\% - 12.88\ \%}\right)$ = 1.27 ppm@15%$O_2$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

# TEST RESULTS AND CALCULATIONS

## Emissions Results
## Base Load
## $PM_{10}$

## METHOD 201A (FRONT) AND 202 (BACK) - RESULTS

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| **Historical Data** | PM U-00003 Base-1 | PM U-00003 Base-2 | PM U-00003 Base-3 | **Average** | **Units** | **Limits** |
|---|---|---|---|---|---|---|
| Run Start Time | 08:23 | 13:45 | 06:46 | | hh:mm | |
| Run Stop Time | 12:46 | 18:02 | 11:15 | | hh:mm | |
| Test Date | 04/15/20 | 04/15/20 | 04/16/20 | | mm/dd/yy | |
| Load | Base | Base | Base | | % or w/DB | -- |
| Meter Calibration Factor | 0.978 | 0.978 | 0.978 | | | |
| Pitot Tube Coefficient | 0.7720 | 0.7720 | 0.7720 | | | |
| Average Nozzle Diameter | 0.157 | 0.157 | 0.157 | | in | |
| **Stack Test Data** | PM U-00003 Base-1 | PM U-00003 Base-2 | PM U-00003 Base-3 | **Average** | **Units** | **Limits** |
| Initial Meter Volume | 258.170 | 358.270 | 461.100 | | $ft^3$ | |
| Final Meter Volume | 355.010 | 454.000 | 555.000 | | $ft^3$ | |
| Total Meter Volume | 96.840 | 95.730 | 93.900 | 95.490 | $ft^3$ | |
| Total Sampling Time | 245.25 | 243.00 | 240.75 | 243.00 | min | |
| Average Meter Temperature | 80.08 | 82.33 | 69.50 | 77.31 | °F | |
| Average Stack Temperature | 209.08 | 191.92 | 184.58 | 195.19 | °F | |
| Barometric Pressure | 29.94 | 30.11 | 29.95 | 30.00 | in Hg | |
| Stack Static Pressure | -0.92 | -0.92 | -0.92 | -0.92 | in $H_2O$ | |
| Absolute Stack Pressure | 29.87 | 30.04 | 29.88 | 29.93 | in Hg | |
| Average Orifice Pressure Drop | 0.46 | 0.47 | 0.46 | 0.46 | in $H_2O$ | |
| Absolute Meter Pressure | 30.08 | 30.25 | 30.09 | 30.14 | in Hg | |
| Avg Square Root Pitot Pressure | 1.19 | 1.18 | 1.17 | 1.18 | $\sqrt{(in\ H_2O)}$ | |
| **Moisture Content Data** | PM U-00003 Base-1 | PM U-00003 Base-2 | PM U-00003 Base-3 | **Average** | **Units** | **Limits** |
| Impinger Water Weight Gain | 167.20 | 157.20 | 44.60 | 123.00 | g | |
| Silica Gel Weight Gain | 23.80 | 27.20 | 107.70 | 52.90 | g | |
| Total Water Volume Collected | 191.34 | 184.73 | 152.57 | 176.22 | ml | |
| Standard Water Vapor Volume | 9.01 | 8.69 | 7.18 | 8.29 | scf | |
| Standard Meter Volume | 92.8 | 91.8 | 91.8 | 92.1 | dscf | |
| Standard Metric Meter Volume | 2.6 | 2.6 | 2.6 | 2.6 | dscm | |
| Calculated Stack Moisture | 8.85 | 8.65 | 7.26 | 8.25 | % | |
| Saturated Stack Moisture | 94.46 | 65.83 | 56.49 | 72.26 | % | |
| Reported Stack Moisture Content | 8.85 | 8.65 | 7.26 | 8.25 | % | |
| **Gas Analysis Data** | PM U-00003 Base-1 | PM U-00003 Base-2 | PM U-00003 Base-3 | **Average** | **Units** | **Limits** |
| Carbon Dioxide Content | 4.9 | 4.8 | 4.8 | 4.8 | % | |
| Oxygen Content | 12.7 | 12.8 | 12.8 | 12.8 | % | |
| Carbon Monoxide Content | 0.0 | 0.0 | 0.0 | 0.0 | ppm | |
| Nitrogen Content | 82.4 | 82.4 | 82.4 | 82.4 | % | |
| Stack Dry Molecular Weight | 29.29 | 29.28 | 29.28 | 29.28 | lb/lb-mole | |
| Stack Wet Molecular Weight | 28.29 | 28.30 | 28.46 | 28.35 | lb/lb-mole | |
| Calculated Fuel Factor | 1.673 | 1.688 | 1.688 | 1.683 | | |
| Fuel F-Factor | 8638.02 | 8638.02 | 8641.42 | 8639.15 | dscf/MMBtu | |
| Percent Excess Air | 140.3 | 143.0 | 143.0 | 142.1 | % | |

## METHOD 201A (FRONT) AND 202 (BACK) - RESULTS

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| **Volumetric Flow Rate Data** | PM U-00003 Base-1 | PM U-00003 Base-2 | PM U-00003 Base-3 | **Average** | **Units** | **Limits** |
|---|---|---|---|---|---|---|
| Average Stack Gas Velocity | 70.08 | 68.35 | 67.34 | 68.59 | ft/sec | |
| Stack Cross-Sectional Area | 283.53 | 283.53 | 283.53 | 283.53 | ft² | |
| Actual Stack Flow Rate | 1,192,120 | 1,162,684 | 1,145,607 | 1,166,804 | acfm | |
| Wet Standard Stack Flow Rate | 56,355 | 56,732 | 56,233 | 56,440 | wkscfh | |
| Dry Standard Stack Flow Rate | 51,367,821 | 51,825,243 | 52,152,549 | 51,781,871 | dscfh | |
| Percent of Isokinetic Rate | 93.4 | 92.6 | 92.7 | 92.9 | % | |
| **Gravimetric Analysis** | PM U-00003 Base-1 | PM U-00003 Base-2 | PM U-00003 Base-3 | **Average** | **Units** | **Limits** |
| $NH_4OH$ Correction | 0.0000 | 0.0000 | 0.0000 | 0.0000 | ml | |
| $NH_4OH$ Correction | 0.0000 | 0.0000 | 0.0000 | 0.0000 | mg | |
| **Emission Rate Data** | PM U-00003 Base-1 | PM U-00003 Base-2 | PM U-00003 Base-3 | **Average** | **Units** | **Limits** |
| Total $PM_{10}$ Mass | 6.60 | 5.30 | 4.20 | 5.37 | mg | -- |
| Total $PM_{10}$ Concentration | 7.12E-05 | 5.77E-05 | 4.58E-05 | 5.82E-05 | g/dscf | -- |
| | 1.10E-03 | 8.91E-04 | 7.06E-04 | 8.98E-04 | gr/dscf | -- |
| Total $PM_{10}$ Emission Rate | 3.66 | 2.99 | 2.39 | 3.01 | kg/hr | -- |
| | 8.06 | 6.59 | 5.26 | 6.64 | lb/hr | -- |
| | 35.29 | 28.88 | 23.05 | 29.07 | tpy | -- |
| | 0.0035 | 0.0028 | 0.0022 | 0.0028 | lb/MMBtu | 0.005 |
| Filterable $PM_{10}$ Mass | 2.90 | 3.20 | 2.50 | 2.87 | mg | -- |
| Filterable $PM_{10}$ Concentration | 3.13E-05 | 3.48E-05 | 2.72E-05 | 3.11E-05 | g/dscf | -- |
| | 4.82E-04 | 5.38E-04 | 4.20E-04 | 4.80E-04 | gr/dscf | -- |
| Filterable $PM_{10}$ Emission Rate | 1.61 | 1.81 | 1.42 | 1.61 | kg/hr | -- |
| | 3.54 | 3.98 | 3.13 | 3.55 | lb/hr | -- |
| | 15.51 | 17.44 | 13.72 | 15.56 | tpy | -- |
| | 0.0015 | 0.0017 | 0.0013 | 0.0015 | lb/MMBtu | -- |
| Condensable $PM_{10}$ Mass | 3.70 | 2.10 | 1.70 | 2.50 | mg | -- |
| Condensable $PM_{10}$ Concentration | 3.99E-05 | 2.29E-05 | 1.85E-05 | 2.71E-05 | g/dscf | -- |
| | 6.16E-04 | 3.53E-04 | 2.86E-04 | 4.18E-04 | gr/dscf | -- |
| Condensable $PM_{10}$ Emission Rate | 2.05 | 1.19 | 0.97 | 1.40 | kg/hr | -- |
| | 4.52 | 2.61 | 2.13 | 3.09 | lb/hr | -- |
| | 19.79 | 11.44 | 9.33 | 13.52 | tpy | -- |
| | 0.0019 | 0.0011 | 0.0009 | 0.0013 | lb/MMBtu | -- |
| **RM 201A Quality Control** | PM U-00003 Base-1 | PM U-00003 Base-2 | PM U-00003 Base-3 | **Average** | **Units** | **Limits** |
| Stack Viscosity | 205.84 | 202.01 | 201.57 | 203.14 | µP | |
| Cyclone Flow Rate | 0.527 | 0.509 | 0.502 | 0.513 | ft³/min | |
| Dry Gas Sampling Rate | 0.378 | 0.378 | 0.381 | 0.379 | dscfm | |
| Reynolds Number | 2792.37 | 2837.93 | 2841.40 | 2,823.90 | | |
| Recalculated Cunninham | 1.084 | 1.081 | 1.080 | 1.082 | | |
| Dia. of 50% Prob. (D50) CI | 10.25 | 10.29 | 10.34 | 10.29 | | |
| Recalculated D50-1 for CIV | 2.27 | 2.26 | 2.27 | 2.27 | | |
| Z | 1.00 | 1.00 | 1.00 | 1.00 | | |
| No. Sampling Pts. Outside Δp | 0 | 0 | 0 | 0 | points | |

## Nomenclature

- %CO = carbon monoxide concentration (%)
- $\%CO_2$ = carbon dioxide concentration (%)
- $\%N_2$ = nitrogen concentration (%)
- $\%O_2$ = oxygen concentration (%)
- $\%O_{2,wet}$ = Oxygen content of gas stream, % by volume of wet gas. (Note: The oxygen percentage used in Method 201A, Equation 3 is on a wet gas basis. That means that since oxygen is typically measured on a dry gas basis, the measured percent O2 must be multiplied by the quantity (1 - $B_{ws}$) to convert to the actual volume fraction. Therefore, $\%O_{2,wet} = (1 - B_{ws}) * \%O_{2, dry}$)
- $(\%EA)_{avg}$ = average excess air (%)
- $(F_o)_{avg}$ = average calculated fuel factor
- $[(\Delta p)^{0.5}]_{avg}$ = Average of square roots of the velocity pressures measured during the preliminary traverse, inches W.C.
- μ = Gas viscosity, micropoise
- 12.0 = Constant calculated as 60 percent of 20.5 square inch cross-sectional area of combined cyclone head, square inches
- 17.03 = mg/milliequivalents for ammonium ion
- 22.4 = liters of ideal gas per lb-mol of substance at 0°C and 1 atm (ref. Civil Engineering Reference Manual, 7th ed. - Michael R. Lindeburg)
- 24.04 = liters of ideal gas per lb-mol of substance at 20°C and 1 atm (ref. Civil Engineering Reference Manual, 7th ed. - Michael R. Lindeburg)
- $5.02 \times 10^4$ = constant derived from the molecular weight and correcting standard temperature and pressure (ref. Bay Area Air Quality Management District, Source Test Procedure ST-1B, Ammonia Integrated Sampling, Adopted January 20, 1982, Regulation 7-303)
- A = distance upstream (in.)
- $A_D$ = stack diameters upstream (dia.)
- An = Area of nozzle, square feet
- $A_s$ = area of stack ($ft^2$)
- B = distance downstream (in.)
- $B_D$ = stack diameters downstream (dia.)
- $b_f$ = Average blockage factor calculated in Equation 26, dimensionless
- $B_{wm}$ = meter moisture content (%)
- $B_{ws}$ = stack moisture content (%)
- C = Cunningham correction factor for particle diameter, Dp, and calculated using the actual stack gas temperature, dimensionless
- $C_1$ = -150.3162 (micropoise)
- $C_2$ = 18.0614 (micropoise/$K^{0.5}$) = 13.4622 (micropoise/$R^{0.5}$)
- $C_3$ = $1.19183 \times 10^6$ (micropoise/$K^2$) = $3.86153 \times 10^6$ (micropoise/$R^2$)
- $C_4$ = 0.591123 (micropoise)
- $C_5$ = 91.9723 (micropoise)
- $C_6$ = $4.91705 \times 10^{-5}$ (micropoise/$K^2$) = $1.51761 \times 10^{-5}$ (micropoise/$R^2$)
- $C_a$ = Acetone blank concentration, mg/mg
- $C_b$ = Concentration of NH3 ion in the back half of train (breakthrough)
- $C_f$ = Concentration of NH3 ion in the front half of train (main catch)
- $C_{fPM10}$ = Conc. of filterable $PM_{10}$, gr/dscf
- $C_{fPM2.5}$ = Conc. of filterable $PM_{2.5}$, gr/dscf
- $C_k$ = K Factor Constant, 849.8

## Nomenclature

- $C_n$ = nozzle diameter constant, 0.03575
- $C_p'$ = Coefficient for the pitot used in the preliminary traverse, dimensionless
- $C_p$ = Pitot coefficient for the combined cyclone pitot, dimensionless
- $C_{cpm}$ = Concentration of the condensable PM in the stack gas, dry basis, corrected to standard conditions, milligrams/dry standard cubic foot.
- $C_r$ = Re-estimated Cunningham correction factor for particle diameter equivalent to the actual cut size diameter and calculated using the actual stack gas temperature, dimensionless
- $D_{50}$ = Particle cut diameter, micrometers
- $D_{50(N+1)}$ = $D_{50}$ value for cyclone IV calculated during the N+1 iterative step, micrometers
- $D_{50-1}$ = Re-calculated particle cut diameters based on re-estimated $C_r$, micrometers
- $D_{50LL}$ = Cut diameter for cyclone I corresponding to the 2.25 micrometer cut diameter for cyclone IV, micrometer
- $D_{50N}$ = $D_{50}$ value for cyclone IV calculated during the Nth iterative step, micrometers
- $D_{50T}$ = Cyclone I cut diameter corresponding to the middle of the overlap zone shown in Method 201A, Figure 10 of Section 17, micrometers
- $D_e$ = equivalent stack diameter (in.)
- ΔH@ = ΔH @ 0.75 scfm (in. H2O)
- $\Delta H_{avg}$ = average orifice pressure (in. $H_2O$)
- $D_n$ = Inner diameter of sampling nozzle mounted on Cyclone I, inches
- $D_{na}$ = actual nozzle diameter (in.)
- $D_p$ = Physical particle size, micrometers
- $\Delta p$ = velocity head (in. $H_2O$)
- $\Delta p_1$ = velocity head at first current traverse point (in. $H_2O$)
- $\Delta p'_1$ = velocity head at first preliminary traverse point (in. $H_2O$)
- $\Delta p_{avg}$ = average pitot tube differential pressure (in. $H_2O$)
- $\Delta p_n$ = velocity head at subsequent current traverse point (in. $H_2O$)
- $\Delta p_{RM2}$ = method 2 velocity head (in. $H_2O$)
- $D_s$ = diameter of stack (in.)
- $F_d$ = fuel f-factor (dscf/MMBtu)
- $f_{O2}$ = stack gas fraction of $O_2$, by volume, dry basis
- I = Percent isokinetic sampling, dimensionless
- $K_1$ = standard volume correction, 17.65$^{o}$R/in. Hg
- $K_4$ = isokinetic conversion constant, 0.0945min•in.Hg/sec•$^{o}$R
- $K_5$ = water mass to std water vapor, 0.04715 $ft^3$/g
- $K_p$ = 85.49, ((ft/sec)/(pounds/mole -$^{o}$R))
- L = length of stack (in.)
- $L_{fw}$ = distance to far wall of stack (in.)
- $L_{nw}$ = distance to near wall of stack (in.) [reference]
- $m_{\#x}$ = weight measurements (g)
- $M_1$ = Milligrams of PM collected on the filter, less than or equal to 2.5 micrometers
- $M_2$ = Milligrams of PM recovered from Container #2 (acetone blank corrected), greater than 10 micrometers
- $M_3$ = Milligrams of PM recovered from Container #3 (acetone blank corrected), less than or equal to 10 and greater than 2.5 micrometers
- $M_4$ = Milligrams of PM recovered from Container #4 (acetone blank corrected), less than or equal to 2.5 micrometers

## Nomenclature

- $m_a$ = Mass of residue of acetone after evaporation, mg
- $m_c$ = Mass of the NH4+ added to sample to form ammonium sulfate, mg
- $m_{cpm}$ = Mass of the total condensable PM, mg
- $M_d$ = Molecular weight of dry gas, pounds/pound mole
- $m_{fb}$ = Mass of total CPM in field train recovery blank, mg
- $m_{fx}$ = final weight, avg of last two measurements (g)
- mg = Milligram
- mg/L = Milligram per liter
- $m_i$ = Mass of inorganic CPM, mg
- $m_{ib}$ = Mass of inorganic CPM in field train recovery blank, mg
- $M_n$ = total particulates (mg)
- $m_o$ = Mass of organic CPM, mg
- $m_{ob}$ = Mass of organic CPM in field train blank, mg
- $m_r$ = Mass of dried sample from inorganic fraction, mg
- $m_{tx}$ = tare weight (g)
- MW = molecular weight (lb/lb-mole)
- $M_w$ = Molecular weight of wet gas, pounds/pound mole
- N = Normality of ammonium hydroxide titrant
- $N_a$ = null angle (deg.)
- $N_{re}$ = Reynolds number, dimensionless
- $N_{tp}$ = Number of iterative steps or total traverse points
- $P_b$ = $P_{bar}$ = barometric pressure (in. Hg)
- $P_{bar}$ = barometric pressure (in. Hg)
- ppmCO = carbon monoxide concentration (ppm)
- ppmv = Parts per million by volume
- ppmw = Parts per million by weight
- $P_s$ = absolute stack pressure (in. Hg)
- $P_{static}$ = static pressure (in. $H_2O$)
- $P_{std}$ = standard pressure, 29.92 in. Hg
- $\Theta$ = total sampling time (min)
- $Q_{aw}$ = average stack wet flow rate (ascf/min)
- $Q_I$ = Sampling rate for cyclone I to achieve specified $D_{50}$
- $Q_m$ = estimated orifice flow rate, 0.750 acfm, else Vm/Q from previous run
- $Q_s$ = Sampling rate for cyclone I to achieve specified $D_{50}$
- $Q_{s(std)}$ = total cyclone flow rate at standard conditions (dscf/min)
- $Q_{sd}$ = dry standard stack flow rate (dscfm)
- $Q_{sST}$ = Dry gas sampling rate through the sampling assembly, dscfm
- $Q_{sw}$ = wet standard stack flow rate (ascfm)
- $R_{max}$ = Nozzle/stack velocity ratio parameter, dimensionless
- $R_{min}$ = Nozzle/stack velocity ratio parameter, dimensionless
- $t_1$ = Sampling time at point 1, min
- $t_m$ = average gas meter temperature ($^oF$)
- $t_m$ = average meter temperature ($^oF$)
- $T_m$ = Meter box and orifice gas temperature, $^oR$
- $t_n$ = Sampling time at point n, min

## Nomenclature

- $t_r$ = Total projected run time, min
- $T_s$ = Absolute stack gas temperature, $^oR$
- $T_{std}$ = standard temperature, $68^oF$, $528^oR$
- $T_u$ = absolute temperature offset, $460^oR$
- $V_a$ = Volume of acetone blank, ml
- $V_{aw}$ = Volume of acetone used in sample recovery wash, ml
- $V_b$ = Volume of aliquot taken for IC analysis, ml
- $V_c$ = Quantity of water captured in impingers and silica gel, ml
- $V_f$ = final impinger volume (ml)
- $V_i$ = initial impinger volume (ml)
- $V_{ic}$ = Volume of impinger contents sample, ml
- $V_m$ = Dry gas meter volume sampled, acf
- $V_{m(std)}$ = standard meter volume (dscf)
- $v_{max}$ = Maximum gas velocity calculated from Equations 18 or 19, ft/sec
- $v_{max}$ = maximum nozzle velocity (ft/sec)
- $V_{mf}$ = final dry gas meter reading (dcf)
- $V_{mi}$ = initial dry gas meter reading (dcf)
- $v_{min}$ = Minimum gas velocity calculated from Method 201A, Equations 16 or 17, ft/sec
- $V_{ms}$ = Dry gas meter volume sampled, corrected to standard conditions, dscf
- $v_n$ = Sample gas velocity in the nozzle, ft/sec
- $v_{org}$ = organics wash volume (ml)
- $V_p$ = Volume of water added during train purge
- $v_s$ = average stack gas velocity (ft/sec)
- $v_{sl}$ = local velocity (ft/sec)
- $V_t$ = total impinger volume (ml) = ;$(V_f-V_i)$
- $V_t$ = Volume of NH4OH titrant, ml
- $V_{w(std)}$ = volume of water vapor in gas sample at standard conditions (scf)
- $v_x$ = blank volume (ml)
- W = width of stack (in.)
- $W_{2,3,4}$ = Weight of PM recovered from Containers #2, #3, and #4, mg
- $W_a$ = Weight of blank residue in acetone used to recover samples, mg
- $W_f$ = final impinger weight (g)
- $W_i$ = initial impinger weight (g)
- $W_t$ = total impinger weight (g) = ;$(W_f-W_i)$
- $w_x$ = blank weight of solids (g)
- Y = meter calibration factor (a.k.a gamma)
- Z = Ratio between estimated cyclone IV $D_{50}$ values, dimensionless
- γ = Dry gas meter gamma value, dimensionless
- ΔH = Meter box orifice pressure drop, inches W.C.
- ΔH@ = Pressure drop across orifice at flow rate of 0.75 scfm at standard conditions, inches W.C. (Note: Specific to each orifice and meter box.)
- $\Delta p_1$ = Velocity pressure measured at point 1, inches W.C.
- $\Delta p_{avg}$ = Average velocity pressure, inches W.C.
- $\Delta p_m$ = Observed velocity pressure using S-type pitot tube in preliminary traverse, inches W.C.
- $\Delta p_{max}$ = Maximum velocity pressure, inches W.C.

## Nomenclature

- $\Delta p_{min}$ = Minimum velocity pressure, inches W.C.
- $\Delta p_n$ = Velocity pressure measured at point n during the test run, inches W.C.
- $\Delta p_s$ = Velocity pressure calculated in Method 201a, Equation 25, inches W.C.
- $\Delta p_{s1}$ = Velocity pressure adjusted for combined cyclone pitot tube, inches W.C.
- $\Delta p_{s2}$ = Velocity pressure corrected for blockage, inches W.C.
- $\theta$ = Total run time, min
- $\rho_a$ = Density of acetone, mg/ml (see label on bottle)
- $\Sigma_n$ = total number of sampling points

**EXAMPLE CALCULATIONS (Reference Method 1 - Circular Stack)**

**Diameter of Stack (in.)**

$$D(in.) = L_{fw} - L_{mw}$$

D (in.) = 236.00 in. - 8.00 in. = 228.00 in.

**Stack Diameters Downstream**

$$B_D(dia.) = \frac{B}{D}$$

$B_D$ (dia.) = $\frac{850.00 \text{ in.}}{228.00 \text{ in.}}$ = 3.73 diameters

**Area of Stack ($ft^2$)**

$$A_s(ft^2) = \pi \times \left(\frac{D}{2 \times 12}\right)^2$$

$A_s$ ($ft^2$) = 3.14 x ( $\frac{228.00 \text{ in.}}{2 \text{ x } 12\text{in./ft}}$ )$^2$ = 283.53 $ft^2$

**Stack Diameters Upstream**

$$A_D(dia.) = \frac{A}{D}$$

$A_D$ (dia.) = $\frac{200.40 \text{ in.}}{228.00 \text{ in.}}$ = 0.88 diameters

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Reference Method 3a) [Values from Run 1 test]**

**Carbon Monoxide Concentration (%)**

$$\%CO = \frac{ppmCO}{10{,}000}$$

$$\%CO\ (\%) = \frac{0.00 \quad ppm}{10{,}000\ ppm/\%} = 0.0000\ \%$$

**Nitrogen Concentration (%)**

$$\%N_2 = 100 - \%CO_2 - \%O_2 - \%CO$$

$\%N_2$ (%) = 100 - 4.90 % - 12.70 % - 0.00 / 10,000 % = 82.4 %

**Stack Dry Molecular Weight (lb/lb-mole)**

$$M_d\,(lb/lb-mol) = \sum\left(\frac{MW_{comp}}{100} \times \%component\right)$$

$$M_d\ (lb/lb\text{-}mol) = \left(\frac{44\ lb/lb\text{-}mol}{100} \times 4.90\ \%\right) +$$

$$\left(\frac{32\ lb/lb\text{-}mol}{100} \times 12.70\ \%\right) + \left(\frac{28\ lb/lb\text{-}mol}{100} \times \left[\frac{0.00}{10{,}000} + 82.40\ \right]\right) = \frac{29.29\ lb}{lb\text{-}mol}$$

**Stack Wet Molecular Weight (lb/lb-mole)**

$$M_S\,(lb/lb-mol) = \left[M_d \times \left(1 - \frac{B_{WS}}{100}\right)\right] + \left[MW_{H_2O} \times \frac{B_{WS}}{100}\right]$$

$$M_S\ (lb/lb\text{-}mol) = \left\{\frac{29.29\ lb}{lb\text{-}mol} \times \left(1 - \frac{8.85\ \%}{100}\right)\right\} + \left\{\frac{18\ lb}{lb\text{-}mol} \times \frac{8.85\ \%}{100}\right\} = \frac{28.29\ lb}{lb\text{-}mol}$$

**Average Calculated Fuel Factor ($F_o$)**

$$F_{o(avg)} = \frac{\left[20.9 - (\%O_2)_{avg} - (0.5 \times (\%CO)_{avg})\right]}{(\%CO_2)_{avg} + (\%CO)_{avg}}$$

$$F_{o(avg)} = \frac{20.9\% - 12.70\ \% - (0.5 \times 0.000\ \%)}{4.90\ \% + 0.000\ \%} = 1.673$$

**Average Excess Air (%)**

$$\%EA_{avg}\,(\%) = \frac{100 \times \left[(\%O_2)_{avg} - (0.5 \times (\%CO)_{avg})\right]}{(0.264 \times (N_2)_{avg}) - \left[(\%O_2)_{avg} - (0.5 \times (\%CO)_{avg})\right]}$$

$$(\%EA)_{AVG} = \frac{100 \times \{\ 12.70\ \% - (0.5 \times 0.000\ \%)\ \}}{(\ 0.264 \times 82.40\ \%) - \{\ 12.70\ \% - (0.5 \times 0.000\ \%)\}} = 140.28\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Reference Method 2) [Values from Run 1 test]**

**Absolute Stack Pressure (in. Hg)**

$$P_S(in.Hg) = P_b + \frac{P_{static}}{13.6}$$

$P_s$ (in. Hg) = 29.94 in. Hg + $\frac{\text{-0.92 in. } H_2O}{\text{13.6 in. } H_2O/\text{in. Hg}}$ = 29.87 in. Hg

**Average Stack Gas Velocity (ft/sec)**

$$v_s(ft/\sec) = K_p \times C_p \times \left(\sqrt{\Delta p}\right)_{avg} \times \sqrt{\frac{(t_s)_{avg} + T_u}{P_s \times M_s}}$$

$v_{sl}$ (ft/sec) =

$\left(\frac{85.49 \text{ ft (lb/lb-mol)(in. Hg)}}{\text{sec } (^oR)(\text{in. } H_2O)}\right)^{1/2}$ x 0.77 x 1.19 in.$H_2O^{1/2}$ x $\sqrt{\frac{209.08 + 460\ ^oR}{29.87 \text{ in. Hg x } 28.29 \text{ lb/lb-mol}}}$ = $\frac{70.0 \text{ ft}}{\text{sec}}$

**Average Stack Dry Standard Flow Rate (dscfh)**

$$Q_{sd}(dscfh) = \frac{60 \times 60 \times \left(1 - \frac{B_{ws}}{100}\right) \times v_s \times A_s \times T_{std} \times P_s}{(t_s + T_u) \times P_{std}}$$

$Q_{sd}$ (dscf/hr) = $\frac{3600 \text{ sec}}{\text{hr}}$ x (1 - $\frac{8.85\ \%}{100}$) x $\frac{70.08 \text{ ft}}{\text{sec}}$ x 283.53 $ft^2$ x $\frac{68.00 + 460\ ^oR}{209.08 + 460\ ^oR}$ x $\frac{29.87 \text{ in. Hg}}{29.92 \text{ in. Hg}}$ = $\frac{51{,}367{,}821.40 \text{ dscf}}{\text{hr}}$

**Average Stack Wet Flow Rate (acfm)**

$$Q_{aw}(acfm) = 60 \times v_s \times A_s$$

$Q_{aw}$ (acf/min) = $\frac{60 \text{ sec}}{\text{min}}$ x $\frac{70.08 \text{ ft}}{\text{sec}}$ x 283.53 $ft^2$ = $\frac{1{,}192{,}120.07 \text{ acf}}{\text{min}}$

**Average Stack Wet Standard Flow Rate (ascfh)**

$$Q_{sw}(ascfh) = \frac{60 \times Q_{aw} \times T_{std} \times P_s}{(t_s + T_u) \times P_{std}}$$

$Q_{sw}$ (ascf/hr) = $\frac{60 \text{ min}}{\text{hr}}$ x $\frac{1{,}192{,}120.07 \text{ acf}}{\text{min}}$ x $\frac{68.00 + 460\ ^oR}{209.08 + 460\ ^oR}$ x $\frac{29.87 \text{ in. Hg}}{29.92 \text{ in. Hg}}$ = $\frac{56{,}355{,}045.37 \text{ ascf}}{\text{hr}}$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Reference Method 4) [Values from Run 1 test]**

**Water Volume Weighed (scf)**

$$V_{wsg\ (std)}(scf) = W_t \times K_5$$

$V_{wsg(std)}$ = 191.00 g x 0.04715 $ft^3/g$ = 9.006 scf

**Standard Meter Volume (dscf)**

$$V_{m(std)}(dscf) = \frac{K_1 \times Y \times V_m \times \left(P_b + \frac{\Delta H_{avg}}{13.6}\right)}{(t_m)_{avg} + T_u}$$

$$V_{m(std)} = \frac{17.65\ ^\circ R}{\text{in. Hg}} \times 0.98 \times 96.84\ \text{dcf} \times \frac{(29.94\ \text{in. Hg} + \frac{0.46\ \text{in. } H_2O}{13.6\ \text{in. } H_2O / \text{in. Hg}})}{80.08\ ^\circ F + 460\ ^\circ R} = 92.76\ \text{dscf}$$

**Calculated Moisture Content (%)**

$$B_{ws(calc)}(\%) = 100 \times \frac{V_{wsg(std)}}{V_{wsg(std)} + V_{m(std)}}$$

$$B_{ws(calc)} = 100 \times \frac{9.01\ \text{dscf}}{9.01\ \text{dscf} + 92.76\ \text{dscf}} = 8.85\ \%$$

**Saturated Moisture Content (%)**

$$B_{ws(svp)}(\%) = 100 \times \frac{10^{6.691 - \frac{3144}{t_{s(avg)} + 390.86}}}{P_b + \frac{P_{static}}{13.6}} \leq 100$$

$$B_{ws(svp)} = 100 \times \frac{10^{(6.691 - \frac{3144}{209.08\ ^\circ F + 390.86})}}{29.94\ \text{in. Hg} + \frac{-0.92\ \text{in. } H_2O}{13.6\ \text{in. } H_2O / \text{in. Hg}}} \leq 100 = 94.46\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Isokinetic Sampling) [Values from Run 1 test]**

**Desired Orifice (in. $H_2O$)** (first point)

$$\Delta H_d\,(in.H_2O) = K \times \Delta p$$

$\Delta H_d$ (in. $H_2O$) = x

in. $H_2O$ = in. $H_2O$

**Absolute Meter Pressure (in. Hg)**

$$P_m\,(in.Hg) = P_b + \frac{\Delta H\,@}{13.6}$$

$P_m$ (in. Hg) = 29.94 in. Hg + $\frac{1.85 \text{ in. } H_2O}{13.6 \text{ in. } H_2O/\text{in. Hg}}$ = 30.08 in. Hg

**Recommended Nozzle Diameter (in.)**

$$D_{ni}\,(in.) = \sqrt{\frac{C_n \times Q_m \times P_m}{(t_m + T_u) \times C_p} \times \left(\frac{1 - \frac{B_{wm}}{100}}{1 - \frac{B_{ws}}{100}}\right) \times \sqrt{(t_s + T_u) \times \left[\frac{M_d \times \left(1 - \frac{B_{ws}}{100}\right) + \left(18 \times \frac{B_{ws}}{100}\right)}{P_s \times \Delta p_{avg}}\right]}}$$

$$D_{ni}\,(in.) = \sqrt{\frac{\frac{0.03575\ (\text{lb-mole}\bullet{}^{o}\text{R}\bullet\text{in. } H_2O)^{1/2}\bullet\text{min}\bullet\text{in.}^2}{\text{acf}\bullet\text{in. Hg}^{3/4}\bullet\text{lb}^{1/2}} \times 0.75 \text{ acf} \times 30.08 \text{ in. Hg}}{\left(80.08\ {}^{o}\text{F} + 460^{o}\text{R}\right) \times 0.77} \times \left(\frac{1 - \frac{0.00\ \%}{100}}{1 - \frac{8.85\ \%}{100}}\right) \times \sqrt{(209.08\ {}^{o}\text{F} + 460^{o}\text{R}) \times \frac{\frac{29.29 \text{ lb}}{\text{lb-mole}} \times \left(1 - \frac{8.85\ \%}{100}\right) + \left(\frac{18 \text{ lb}}{\text{lb-mol}} \times \frac{8.85\ \%}{100}\right)}{29.87 \text{ in. Hg} \times 1.19 \text{ in. } H_2O}}} = 0.211 \text{ in.}$$

**ΔP to ΔH Isokinetic Factor**

$$K = C_k \times C_p^2 \times \Delta H\,@ \times D_{na}^4 \times \left[\frac{M_d \times \left(1 - \frac{B_{wm}}{100}\right) + \left(18 \times \frac{B_{wm}}{100}\right)}{M_d \times \left(1 - \frac{B_{ws}}{100}\right) + \left(18 \times \frac{B_{ws}}{100}\right)}\right] \times \left(\frac{1 - \frac{B_{ws}}{100}}{1 - \frac{B_{wm}}{100}}\right)^2 \times \left(\frac{t_m + T_u}{ts + T_u}\right) \times \frac{P_s}{P_m}$$

$$K = \frac{849.8}{\text{in. } H_2O\bullet\text{in.}^4} \times 0.77^2 \times 1.85 \text{ in. } H_2O \times 0.16^4 \times \left(\frac{1 - \frac{8.85\ \%}{100}}{1 - \frac{0.00\ \%}{100}}\right)^2 \times \frac{80.08\ {}^{o}\text{F} + 460^{o}\text{R}}{209.08\ {}^{o}\text{F} + 460^{o}\text{R}}) \times$$

$$\left(\frac{\frac{29.29 \text{ lb}}{\text{lb/mole}} \times \left(1 - \frac{0.00\ \%}{100}\right) + \left(\frac{18 \text{ lb}}{\text{lb-mol}} \times \frac{0.00\ \%}{100}\right)}{\frac{29.29 \text{ lb}}{\text{lb/mole}} \times \left(1 - \frac{8.85\ \%}{100}\right) + \left(\frac{18 \text{ lb}}{\text{lb-mol}} \times \frac{8.85\ \%}{100}\right)}\right) \times \frac{29.87 \text{ in. Hg}}{30.08 \text{ in. Hg}} = 0.39$$

**Percent Isokinetic (%)** (first point)

$$I\,(\%) = \frac{K_4 \times \left((t_s)_{avg} + T_u\right) \times V_{m\,(std)}}{\left(\Theta \times \left(v_{s(l)}\right)_{avg} \times P_s \times \pi \times \left(\frac{D_{na}}{2} \times \frac{1}{12}\right)^2\right) \times \left(1 - \frac{B_{ws}}{100}\right)}$$

$$I\,(\%) = \frac{\frac{0.0945 \text{ min}\bullet\text{in. Hg}}{\text{sec}\bullet{}^{o}\text{R}} \times (212.00\ {}^{o}\text{F} + 460\ {}^{o}\text{R}) \times 8.07 \text{ dscf}}{21.00 \text{ min} \times \frac{72.08 \text{ ft}}{\text{sec}} \times 29.87 \text{ in. Hg} \times 3.14 \times \left(\frac{0.16 \text{ in.}}{2} \times \frac{\text{ft.}}{12 \text{ in.}}\right)^2 \times \left(1 - \frac{8.85\ \%}{100}\right)} = 92.53\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Isokinetic Sampling) [Values from Run 1 test]**

**Cumulative Percent Isokinetic (%)** (weighted average of all points)

$$I(\%) = \sum_{1-n} \frac{\left[I(\%) \times V_{m(std)}\right]_{1-n}}{V_{m(std)_{1-n}}}$$

Using Method 5, Eq 5-8 to determine intermediate isokinetics at each point, weighted averaging of the cumulative isokinetics is necessary since all points are not equal, and determined by using the dry standard meter volume collected at each point to weight the cumulative average. Intermediate isokinetics and dry standard meter volumes are found at each point. At each point the cumulative sum is found of each value and the quotient of the two used to determine the cumulative isokinetics for each residual point (n).

| Pt | In (%) | x | Vm(std)n | = | I (%)n | ∑(I (%)n) | / | ∑(Vm(std)n) | = | I (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| A-1 | 92.53 | x | 8.073 | = | 747.02 | 747.02 | / | 8.07 | = | 92.5 |
| A-2 | 93.28 | x | 7.570 | = | 706.15 | 1453.17 | / | 15.64 | = | 92.9 |
| A-3 | 104.65 | x | 8.481 | = | 887.52 | 2340.69 | / | 24.12 | = | 97.0 |
| B-1 | 93.73 | x | 8.172 | = | 765.91 | 3106.60 | / | 32.30 | = | 96.2 |
| B-2 | 91.43 | x | 7.965 | = | 728.26 | 3834.86 | / | 40.26 | = | 95.2 |
| B-3 | 92.51 | x | 6.977 | = | 645.41 | 4480.27 | / | 47.24 | = | 94.8 |
| C-1 | 95.77 | x | 7.779 | = | 745.00 | 5225.27 | / | 55.02 | = | 95.0 |
| C-2 | 91.58 | x | 8.003 | = | 732.92 | 5958.19 | / | 63.02 | = | 94.5 |
| C-3 | 98.62 | x | 8.064 | = | 795.27 | 6753.46 | / | 71.08 | = | 95.0 |
| D-1 | 88.81 | x | 7.284 | = | 646.94 | 7400.40 | / | 78.37 | = | 94.4 |
| D-2 | 87.98 | x | 7.745 | = | 681.42 | 8081.81 | / | 86.11 | = | 93.9 |
| D-3 | 87.57 | x | 6.659 | = | 583.14 | 8664.95 | / | 92.77 | => | 93.4 |

Last Pt

**Percent Isokinetic (%)** (intermediate equation, all points)
[equivalent to taking an average of point-by-point isokinetics without weighting the average (e.g. all points equal)]

$$I(\%) = \frac{K_4 \times \left((t_s)_{avg} + T_u\right) \times V_{m(std)}}{\left(\Theta \times (v_{s(l)})_{avg} \times P_s \times \pi \times \left(\frac{D_{na}}{2} \times \frac{1}{12}\right)^2\right) \times \left(1 - \frac{B_{ws}}{100}\right)}$$

$$I(\%) = \frac{\frac{0.0945 \text{ min•in. Hg}}{\text{sec•}^{\circ}\text{R}} \times (209.08\ ^{\circ}\text{F} + 460\ ^{\circ}\text{R}) \times 92.76 \text{ dscf}}{245.25 \text{ min} \times \frac{70.08 \text{ ft}}{\text{sec}} \times 29.87 \text{ in. Hg} \times 3.14 \times \left(\frac{0.16 \text{ in.}}{2} \times \frac{\text{ft.}}{12 \text{ in.}}\right)^2 \times \left(1 - \frac{8.85\ \%}{100}\right)} = 93.22\ \%$$

**Raw Data Percent Isokinetic (%)**
[utilizes the raw data equation for isokinetics from Method 5]

$$I(\%) = \frac{100\left((t_s)_{avg} + T_u\right)\left[K_4 V_{1c} + \frac{V_m Y}{(t_m)_{avg} + T_u}\left(P_{bar} + \frac{\Delta H}{13.6}\right)\right]}{60\left(\Theta \times (v_{s(l)})_{avg} \times P_s \times \pi \times \left(\frac{D_{na}}{2} \times \frac{1}{12}\right)^2\right)}$$

$$I(\%) = \frac{100 \times (209.08\ ^{\circ}\text{F} + 460\ ^{\circ}\text{R}) \times \left[\frac{0.002669 \text{ ft}^3\text{•in. Hg}}{\text{ml•}^{\circ}\text{R}} \times 191.3 \text{ ml} + \frac{96.84 \text{ dcf} \times 0.978}{80.08\ ^{\circ}\text{F} + 460\ ^{\circ}\text{R}} \times \left(29.94 \text{ in Hg} + \frac{1.193}{13.6}\right)\right]}{60 \times 245.25 \text{ min} \times \frac{70.08 \text{ ft}}{\text{sec}} \times 29.87 \text{ in. Hg} \times 3.14 \times \left(\frac{0.16 \text{ in.}}{2} \times \frac{\text{ft.}}{12 \text{ in.}}\right)^2} = 93.33\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Gravimetric Analysis) [Values from Run 1 test]**

**Blank Concentration [Acetone Blank Weight of Solids] (mg/ml)**

$$C_x\,(mg/ml) = \frac{1000 \times w_x}{v_x}$$

$C_x$ (mg/ml) = $\frac{1000\ mg}{g}$ x $\frac{0.0000\ g}{200.60\ ml}$ = $\frac{0.0000\ mg}{ml}$ = $\frac{\quad mg}{ml}$

**Blank Adjustment [Acetone Blank Weight of Solids and Nozzle Wash PM>10] (mg)**

$$W_x\,(mg) = v_x \times C_x$$

$W_x$ (mg) = 78.00 ml x 0.0000 mg/ml = 0.00 mg < Sample Gain

**Sample Gain [Nozzle Wash PM>10] (mg)**

$$m_x\,(mg) = \left(m_{fx} - m_{tx}\right) \times 1000$$

$m_x$ (mg) = $\frac{1000\ mg}{g}$ x ( 0.0175 g - 0.00 g ) = 17.50 mg

**Adjusted Sample Gain [Nozzle Wash PM>10] (mg)**

$$m_{xadj}\,(mg) = m_x - W_x$$

$m_{xadj}$ (mg) = 17.50 mg - 0.00 mg = 17.50 mg

**0.1N $NH_4OH$ Correction (mg)**

$$m_c\,(mg) = 17.03 \times V_t \times N$$

$m_c$ (mg) = 17.03 x 0.00 ml x 0.1 N = 0.00 mg

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Analysis) [Values from Run 1 test - Total $PM_{10}$ Mass]**

**Stack Total Concentration (g/dscf)**

$$c_s(g/dscf) = 0.001 \times \frac{M_n}{V_{m(std)}}$$

$$c_s \text{ (g/dscf)} = \frac{\text{g}}{\text{1000 mg}} \times \frac{\text{6.60 mg}}{\text{92.76 dscf}} = \frac{\text{7.12E-05 g}}{\text{dscf}}$$

**Stack Total Concentration (gr/dscf)**

$$c_s'(gr/dscf) = 0.001 \times \frac{M_n}{V_{m(std)}} \times \frac{7000}{453.592}$$

$$c'_s \text{ (gr/dscf)} = \frac{\text{g}}{\text{1000 mg}} \times \frac{\text{6.60 mg}}{\text{92.76 dscf}} \times \frac{\text{7000 gr}}{\text{lb}} \times \frac{\text{lb}}{\text{453.592 g}} = \frac{\text{1.10E-03 gr}}{\text{dscf}}$$

**Total Emissions Rate (kg/hr)**

$$E(kg/hr) = c_s \times Q_{sd} \times \frac{kg}{1000\ g}$$

$$E \text{ (kg/hr)} = \frac{\text{kg}}{\text{1000 g}} \times \frac{\text{7.12E-05 g}}{\text{dscf}} \times \frac{\text{51,367,821 dscf}}{\text{hr}} = \frac{\text{3.66 kg}}{\text{hr}}$$

**Total Emissions Rate (lb/hr)**

$$E'(lb/hr) = \frac{M_n \times Q_{sd}}{V_{m(std)}} \times \frac{lb \times g}{453.592 g \times 1000 mg}$$

$$E' \text{ (lb/hr)} = \frac{\text{g}}{\text{1000 mg}} \times \frac{\text{lb}}{\text{453.592 g}} \times \frac{\text{6.60 mg}}{\text{92.76 dscf}} \times \frac{\text{51,367,821 dscf}}{\text{hr}} = \frac{\text{8.06 lb}}{\text{hr}}$$

**Total Emissions Rate (tpy)**

$$E''(ton/yr) = E' \times \frac{8760}{2000}$$

$$E'' \text{ (tpy)} = \frac{\text{ton}}{\text{2000 lb}} \times \frac{\text{8,760 hr}}{\text{yr}} \times \frac{\text{8.06 lb}}{\text{hr}} = \frac{\text{35.29 ton}}{\text{yr}}$$

**Total Emissions Rate (lb/MMBtu)**

Oxygen Based:

$$E'''(lb/MMBtu) = \frac{M_n \times F_d}{V_{m(std)} \times 1000 \times 453.592} \times \left(\frac{20.9}{20.9 - \%O_2}\right)$$

$$E''' \text{ (lb/MMBtu)} = \frac{\text{g}}{\text{1000 mg}} \times \frac{\text{lb}}{\text{453.592 g}} \times \frac{\text{6.60 mg}}{\text{92.76 dscf}} \times \frac{\text{8,638.02 dscf}}{\text{MMBtu}} \times \left(\frac{\text{20.9}}{\text{20.9 - 12.7 \%}}\right) = \frac{\text{0.0035 lb}}{\text{MMBtu}}$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Stack Gas Viscosity (μP) [based on preliminary data] [RM 201A, Eq. 3]**

$$\mu(\mu P) = C_1 + C_2\sqrt{T_s} + C_3 T_s^{-2} + C4(\%O_{2,wet}) - C_5 B_{ws} + C_6 B_{ws} T_s^2$$

μ (μP) = -150.3162 μP + 13.4622 $\sqrt{\quad 213 \quad + 460}$ + 3.86153x10$^{6}$ ( 213 + 460 )$^{-2}$ + 0.591123 ( 13.0 x (1 - 8.00 /100)
- 91.9723 ( 8.00 /100) + 1.51761x10$^{-5}$ ( 8.00 /100)( 213 + 460)$^2$ = 207.77 μP

**Cunningham Correction Factor [RM 201A, Eq. 4]**
**[based on preliminary data for a 2.25 micrometer diameter particle]**

$$C = 1 + 0.0057193\left[\frac{\mu}{P_s D_{50}}\right]\left[\frac{T_s}{M_w}\right]^{0.5}$$

$$C = 1 + 0.0057193 \times \left(\frac{207.77\ \mu P}{29.87\ \text{in Hg} \times 2.25\ \mu m}\right)\left(\frac{213 + 460\ ^{o}R}{28.40\ \text{lb / lb-mole}}\right)^{0.5} = 1.09$$

**First calculation set using Cyclone I or Cyclone I and IV, assuming $N_{re}$<3,162**

**Lower Limit Cut Diameter for Cyclone I (μm) [RM 201A, Eq. 5]**
**[assumes $N_{re}$<3,162]**

$$D_{50LL}(\mu m) = 9.507 C^{0.3007}\left[\frac{M_w P_s}{T_s}\right]^{0.1993}$$

$$D_{50LL}\ (\mu m) = 9.507 \times 1.09^{\,0.3007} \times \left(\frac{29.87\ \text{in Hg} \times 28.40\ \text{lb / lb-mole}}{213 + 460\ ^{o}R}\right)^{0.1993} = 10.21\ \mu m$$

**Cut Diameter for Cyclone I for the Middle of the Overlap Zone (μm) [RM 201A, Eq. 6]**
**[assumes $N_{re}$<3,162]**

$$D_{50T}(\mu m) = \left(\frac{11 + D_{50LL}}{2}\right)$$

$$D_{50T}\ (\mu m) = \frac{11 + 10.21\ \mu m}{2} = 10.60\ \mu m$$

**Sampling Rate Using Both $PM_{10}$ and $PM_{2.5}$ Cyclones (acfm) [RM 201A, Eq. 7]**
**[assumes $N_{re}$<3,162]**

$$Q_s(acfm) = Q_I(acfm) = 0.07296(\mu)\left[\frac{T_S}{M_w P_S}\right]^{0.2949}\left[\frac{1}{D_{50T}}\right]^{1.4102}$$

Qs (acfm) =

$$0.07296 \times 207.77\ \mu P \times \left(\frac{213 + 460\ ^{o}R}{29.87\ \text{in Hg} \times 28.40\ \text{lb / lb-mole}}\right)^{0.2949} \times \left(\frac{1}{10.60\ \mu m}\right)^{1.4102} = 0.51\ \text{acfm}$$

**Reynolds Number (dimensionless) [RM 201A, Eq. 10]**
**[verification of $N_{re}$<3,162, using Cyclone I and IV]**

$$N_{re} = 8.64 \times 10^5\left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

Correct

$$N_{re} = 8.64 \times 10^5 \times \frac{29.87\ \text{in Hg} \times 28.40\ \text{lb / lb-mole}}{213 + 460\ ^{o}R} \times \frac{0.51\ \text{acfm}}{207.77\ \mu P} = 2656.73 < 3,162$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Second calculation set using Cyclone IV, assuming $N_{re}$<3,162**

**Particle Cut Diameter for $N_{re}$ Less than 3,162 for Cyclone IV (µm) [RM 201A, Eq. 34]**
**[assumes $N_{re}$<3,162]**

$$D_{50}(\mu m) = 0.0024302 \left[\frac{\mu}{Q_s}\right]^{1.1791} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.6790}$$

$D_{50}$ (µm) =

0.0024302 x ( 207.77 µP / 0.51 acfm )$^{1.1791}$ x ( 1 / 1.09 )$^{0.5}$ x ( 213 + 460 °R / 29.87 in Hg x 28.40 lb / lb-mole )$^{0.6790}$ = 2.40 µm

**Sampling Rate Using Only $PM_{2.5}$ Cyclone for $N_{re}$ Less than 3,162 (acfm) [RM 201A, Eq. 8]**

$$Q_{IV}(acfm) = 0.0060639 \left(\frac{\mu}{C^{0.4242}}\right) \left[\frac{P_s M_w}{T_s}\right]^{-.05759} \left[\frac{1}{D_{50}}\right]^{0.8481}$$

$Q_{IV}$ (acfm) =

0.0060639 x ( 207.77 µP / 1.09 $^{0.4242}$ ) x ( 29.87 in Hg x 28.40 lb / lb-mole / 213 + 460 °R )$^{-0.5759}$ x ( 1 / 2.40 µm )$^{0.8481}$ = 0.51 acfm

**Reynolds Number (dimensionless) [RM 201A, Eq. 10]**
**[verification of $N_{re}$<3,162, using Cyclone IV only]**

$$N_{re} = 8.64 \times 10^5 \left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

Correct

$N_{re}$ = 8.64 x $10^5$ x 29.87 in Hg x 28.40 lb / lb-mole / 213 + 460 °R x 0.51 acfm / 207.77 µP = 2656.69 < 3,162

**Third calculation set using Cyclone I or Cyclone I and IV, assuming $N_{re}$≥3,162**

**Lower Limit Cut Diameter for Cyclone I (µm) [RM 201A, Eq. 12]**
**[assumes $N_{re}$≥3,162]**

$$D_{50LL}(\mu m) = 10.0959 C^{0.4400} \left[\frac{M_w P_s}{T_s}\right]^{0.0600}$$

$D_{50LL}$ (µm) = 10.0959 x 1.09 $^{0.4400}$ x ( 29.87 in Hg x 28.40 lb / lb-mole / 213 + 460 °R )$^{0.0600}$ = 10.62 µm

**Cut Diameter for Cyclone I for the Middle of the Overlap Zone (µm) [RM 201A, Eq. 6]**
**[assumes $N_{re}$≥3,162]**

$$D_{50T}(\mu m) = \left(\frac{11 + D_{50LL}}{2}\right)$$

$D_{50T}$ (µm) = ( 11 + 10.62 µm ) / 2 = 10.81 µm

**Sampling Rate Using Both $PM_{10}$ and $PM_{2.5}$ Cyclones (acfm) [RM 201A, Eq. 7]**
**[assumes $N_{re}$≥3,162]**

$$Q_s(acfm) = Q_I(acfm) = 0.07296(\mu) \left[\frac{T_s}{M_w P_s}\right]^{0.2949} \left[\frac{1}{D_{50T}}\right]^{1.4102}$$

Qs (acfm) =

0.07296 x 207.77 µP x ( 213 + 460 °R / 29.87 in Hg x 28.40 lb / lb-mole )$^{0.2949}$ x ( 1 / 10.81 µm )$^{1.4102}$ = 0.49 acfm

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Reynolds Number (dimensionless) [RM 201A, Eq. 10]**
**[verification of $N_{re}$≥3,162, using Cyclone I and IV]**

$$N_{re} = 8.64 \times 10^5 \left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

Wrong Assumption

$N_{re}$ = 8.64 x $10^5$ x ( 29.87 in Hg x 28.40 lb / lb-mole ) / ( 213 + 460 °R ) x ( 0.49 acfm ) / ( 207.77 µP ) = 2585.93 < 3,162

**Fourth calculation set using Cyclone IV, assuming $N_{re}$≥3,162**

**Particle Cut Diameter for $N_{re}$ Greater than or Equal to 3,162 for Cyclone IV (µm) [RM 201A, Eq. 35]**
**[assumes $N_{re}$≥3,162]**

$$D_{50}(\mu m) = 0.019723 \left[\frac{\mu}{Q_s}\right]^{0.8058} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.3058}$$

$D_{50}$ (µm) =

0.019723 x ( 207.77 µP / 0.49 acfm )$^{0.8058}$ x ( 1 / 1.09 )$^{0.5}$
x ( 213 + 460 °R / 29.87 in Hg x 28.40 lb / lb-mole )$^{0.3058}$ = 2.30 µm

**Sampling Rate Using Only $PM_{2.5}$ Cyclone for $N_{re}$ Greater than or Equal to 3,162 (acfm) [RM 201A, Eq. 9]**

$$Q_{IV}(acfm) = 0.007657 \left(\frac{\mu}{C^{0.6205}}\right)\left[\frac{P_s M_w}{T_s}\right]^{-0.3795}\left[\frac{1}{D_{50}}\right]^{1.241}$$

$Q_{IV}$ (acfm) =

0.007657 x ( 207.77 µP / 1.09 $^{0.6205}$ ) x ( 29.87 in Hg x 28.40 lb / lb-mole / 213 + 460 °R )$^{-0.3795}$
x ( 1 / 2.30 µm )$^{1.241}$ = 0.49 acfm

**Reynolds Number (dimensionless) [RM 201A, Eq. 10]**
**[verification of $N_{re}$≥3,162, using Cyclone IV only]**

$$N_{re} = 8.64 \times 10^5 \left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

Wrong Assumption

$N_{re}$ = 8.64 x $10^5$ x ( 29.87 in Hg x 28.40 lb / lb-mole ) / ( 213 + 460 °R ) x ( 0.51 acfm ) / ( 207.77 µP ) = 2656.73 < 3,162

**Meter Box Orifice Pressure Drop (in $H_2O$) [RM 201A, Eq. 11]**
**As calculated using applicable calculation set 1, 2, 3, or 4**

$$\Delta H(inH_2O) = \left[\frac{Q_s(1-B_{ws})P_s}{T_s}\right]^2\left[\frac{1.083 T_m M_d \Delta H_@}{P_{bar}}\right]$$

ΔH (in $H_2O$) = ( 0.51 acfm x ( 1 - 8.00 /100) x 29.87 in Hg / 213 + 460 °R )$^2$
x ( 1.083 x ( 85.00 + 460 °R) x 29.30 lb / lb-mole x 1.846 in $H_2O$ / 29.94 in Hg ) = 0.457 in $H_2O$

| | | | | |
|---|---|---|---|---|
| 50 °F above stack temperature | $T_{s+50}$ = | 263 | $\Delta H_{+50}$ = | 0.396 in $H_2O$ |
| 50 °F below stack temperature | $T_{s+50}$ = | 163 | $\Delta H_{+50}$ = | 0.533 in $H_2O$ |

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Adjusted Velocity Pressure (in $H_2O$) [point A-1] [RM201A, Eq. 25]**

$$\Delta p_s\,(inH_2O) = \Delta p_m \left[\frac{C_p}{C'_p}\right]^2$$

$\Delta p_s$ (in $H_2O$) = 1.70 in $H_2O$ x ( 0.7720 / 0.8198 )$^2$ = 1.51 in $H_2O$

**Average Probe Blockage Factor [RM201A, Eq. 26]**

$$b_f = \frac{22.0}{A}$$

$b_f$ = 22.0 / 40828.14 $in^2$ = 5.39E-04

**Velocity Pressure Adjusted for Blockage Factor (in $H_2O$) [point A-1] [RM201A, Eq. 27]**

Target PM and/or Stack Size Not Applicable to Blockage Factor Calculation

$$\Delta p_{s2}\,(inH_2O) = \Delta p_{s1}\left[\frac{1}{(1-b_f)}\right]^2$$

$\Delta p_s$ (in $H_2O$) = 1.51 in $H_2O$ x ( 1 / ( 1 - 0.00E+00 ) )$^2$ = 1.51 in $H_2O$

**Velocity of Stack Gas Adjusted for Blockage Factor and/or $C_p$ / $C'_p$ (ft/sec) [RM201A, Eq. 13]**

Target PM and/or Stack Size Not Applicable to Blockage Factor Calculation

$$v_s = K_p C_p \left(\sqrt{(\Delta p)}\right)_{avg}\left[\sqrt{\frac{T_s}{P_s M_w}}\right]$$

$v_s$ (ft/sec) =

85.49 ft/sec / lb/mole - °R x 0.7720 x 1.17 x ( 213 + 460 °R / 29.87 in Hg x 28.40 lb / lb-mole )$^{0.5}$ = 68.88 ft/sec

**Calculated Nozzle Diameter for Acceptable Sampling Rate (in) [RM201A, Eq. 14]**

$$D(in) = \left[\frac{3.056 Q_s}{v_s}\right]^{0.5}$$

D (in) = ( 3.056 x 0.51 acfm / 68.88 ft/sec )$^{0.5}$ = 0.150 in

Represents ideal diameter, which we then compare to capabilities of all nozzles from multiple sets

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Velocity of Gas in Nozzle 4a (diam. = 0.157 in), (ft/sec) [RM201A, Eq. 15]**

$v_n$ (ft/sec) = $\frac{0.51 \text{ acfm}}{60 \text{ min / sec}} \div 1.34\text{E-}04 \text{ ft}^2$ = 62.85 $\frac{\text{ft}}{\text{sec}}$

Example set of calculations for nozzle used with run 1

$$v_n = \frac{\left(\frac{Q_s}{60\frac{\text{min}}{\text{sec}}}\right)}{A_n}$$

**Minimum Nozzle Velocity to Stack Velocity Ratio Parameter (dimensionless) [RM201A, Eq. 16]**

**Nozzle 4a (diam. = 0.157 in)**

$$R_{min} = \left[0.2457 + \left(0.3072 - \frac{0.2603\,(\mu)(Q_s)^{0.5}}{v_n^{1.5}}\right)^{0.5}\right]$$

$R_{min}$ =

$0.2457 + (0.3072 - \frac{0.2603 \times 207.77 \text{ µP} \times (0.51 \text{ acfm})^{0.5}}{62.85 \text{ in}^{1.5}})^{0.5}$ = 0.73

**Maximum Nozzle Velocity to Stack Velocity Ratio Parameter (dimensionless) [RM201A, Eq. 17]**

**Nozzle 4a (diam. = 0.157 in)**

$$R_{max} = \left[0.4457 + \left(0.5690 + \frac{0.2603\,(\mu)(Q_s)^{0.5}}{v_n^{1.5}}\right)^{0.5}\right]$$

$R_{max}$ =

$0.4457 + (0.5690 + \frac{0.2603 \times 207.77 \text{ µP} \times (0.51 \text{ acfm})^{0.5}}{62.85 \text{ in}^{1.5}})^{0.5}$ = 1.25

**Minimum Gas Velocity for $R_{min}$ Less than 0.5 (ft/sec)** **Nozzle 4a (diam. = 0.157 in)**

$v_{min}\,(ft/sec) = v_n(0.5)$ $v_{min}$ (ft/sec) = 0.5 x $\frac{\text{ft}}{\text{sec}}$ = $\frac{\text{ft}}{\text{sec}}$ **[RM201A, Eq. 18]**

Not Applicable

**Minimum Gas Velocity for $R_{min}$ Greater than or Equal to 0.5 (ft/sec)** **Nozzle 4a (diam. = 0.157 in)**

$v_{min}\,(ft/sec) = v_n R_{min}$ $v_{min}$ (ft/sec) = 62.85 $\frac{\text{ft}}{\text{sec}}$ x 0.73 = 45.58 $\frac{\text{ft}}{\text{sec}}$ **[RM201A, Eq. 19]**

**Maximum Gas Velocity for $R_{max}$ Less than 1.5 (ft/sec)** **Nozzle 4a (diam. = 0.157 in)**

$v_{max}\,(ft/sec) = v_n R_{max}$ $v_{max}$ (ft/sec) = 62.85 $\frac{\text{ft}}{\text{sec}}$ x 1.25 = 78.54 $\frac{\text{ft}}{\text{sec}}$ **[RM201A, Eq. 20]**

**Maximum Gas Velocity for $R_{max}$ Greater than or Equal to 1.5 (ft/sec)** **Nozzle 4a (diam. = 0.157 in)**

$v_{max}\,(ft/sec) = v_n(1.5)$ $v_{max}$ (ft/sec) = 1.5 x $\frac{\text{ft}}{\text{sec}}$ = $\frac{\text{ft}}{\text{sec}}$ **[RM201A, Eq. 21]**

Not Applicable

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Minimum Velocity Pressure (in $H_2O$) [RM201A, Eq. 22]** **Nozzle 4a (diam. = 0.157 in)**

Run 1 nozzle is able to achieve $\Delta p_{min}$ below preliminary data minimum

$$\Delta p_{min}\ (inH_2O) = 1.3686 \times 10^{-4}\left[\frac{P_s M_w}{T_s}\right]\left[\frac{v_{min}}{C_p}\right]^2$$

$\Delta p_{min}$ (in $H_2O$) =

$1.3686 \times 10^{-4} \times \left(\frac{29.87 \text{ in Hg} \times 28.40 \text{ lb / lb-mole}}{213 + 460\ ^{o}R}\right) \times \left(\frac{45.58 \text{ ft/sec}}{0.7720}\right)^2 =$ 0.60 in $H_2O$ vs. 1.15

**Maximum Velocity Pressure (in $H_2O$) [RM201A, Eq. 23]** **Nozzle 4a (diam. = 0.157 in)**

Run 1 nozzle is able to achieve $\Delta p_{max}$ above preliminary data maximum

$$\Delta p_{max}\ (inH_2O) = 1.3686 \times 10^{-4}\left[\frac{P_s M_w}{T_s}\right]\left[\frac{v_{max}}{C_p}\right]^2$$

$\Delta p_{max}$ (in $H_2O$) =

$1.3686 \times 10^{-4} \times \left(\frac{29.87 \text{ in Hg} \times 28.40 \text{ lb / lb-mole}}{213 + 460\ ^{o}R}\right) \times \left(\frac{78.54 \text{ ft/sec}}{0.7720}\right)^2 =$ 1.79 in $H_2O$ vs. 1.51

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Run 1 test]**

**Sampling Dwell Time at Each Point (minutes) [point A-1] [RM201A, Eq. 24]**

$$t_n(\text{min}) = \left[\frac{C_p\sqrt{\Delta p_n}}{C_p'\left(\sqrt{\Delta p_n}\right)_{avg}}\right]\left[\frac{t_r}{N_{tp}}\right]$$

$t_n$ (min) = $\left(\frac{0.7720 \times (1.50)^{0.5}}{0.7720 \times 1.17}\right) \times \left(\frac{240.00 \text{ min}}{12.00}\right) =$ 20.91 minutes

**Dry Gas Volume Sampled at Standard Conditions (dscf) [point A-1] [RM201A, Eq. 28]**

$v_{ms}$ (dscf) = $\left(\frac{528}{29.92}\right)\left(0.978 \times 8.24 \text{ dcf}\right) \times \left(\frac{29.94 \text{ in Hg} + 0.46 \text{ in } H_2O / 13.6}{68.00 + 460\ ^{o}R}\right) =$ 8.07 dscf

$$v_{ms}(dscf) = \left[\frac{528}{29.92}\right]\left[\gamma \cdot v_m\right]\left[\frac{\left(P_{bar} + \frac{\Delta H}{13.6}\right)}{T_m}\right]$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Run 1 test]**

**Sample Flow Rate at Standard Conditions (dscfm) [RM201A, Eq. 29]**

$$Q_{sST}\,(dscfm) = \frac{v_{ms}}{\Theta}$$

$Q_{sST}$ (dscfm) = $\frac{92.76 \text{ dscf}}{245.25 \text{ min}}$ = $\frac{0.38 \text{ dscf}}{\text{min}}$

**Sampling Rate (acfm) [e.g. cyclone flow rate] [RM201A, Eq. 32]**

$$Q_s(acfm) = \frac{29.92}{528} Q_{sST} \left[\frac{1}{(1 - B_{ws})}\right]\left[\frac{T_s}{P_s}\right]$$

$Q_s$ (acfm) = $\frac{29.92 \text{ in Hg}}{528\ ^{o}\text{R}}$ x $\frac{0.38 \text{ dscf}}{\text{min}}$ x $\frac{1}{(1- 8.85 /100)}$ x $\frac{209 + 460\ ^{o}\text{R}}{29.87 \text{ in Hg}}$ = 0.53 acfm

**Actual Conditions Reynolds Number (dimensionless) [RM 201A, Eq. 10]**

$$N_{re} = 8.64 \times 10^5 \left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

$N_{re}$ = 8.64 x $10^5$ x $\frac{29.87 \text{ in Hg x } 28.29 \text{ lb / lb-mole}}{209 + 460\ ^{o}\text{R}}$ x $\frac{0.53 \text{ acfm}}{205.84 \text{ µP}}$ = 2792.37

**Actual Conditions Particle Cut Diameter for Cyclone I (µm) [RM201A, Eq. 33]**

$$D_{50}(\mu m) = 0.15625 \left[\frac{T_s}{M_w P_s}\right]^{0.2091}\left[\frac{\mu}{Q_s}\right]^{0.7091}$$

$D_{50}$ (µm) = 0.15625 x ( $\frac{209 + 460\ ^{o}\text{R}}{29.87 \text{ in Hg x } 28.29 \text{ lb / lb-mole}}$ )$^{0.2091}$ x ( $\frac{205.84 \text{ µP}}{0.53 \text{ acfm}}$ )$^{0.7091}$ = 10.25 µm

**Actual Particle Cut Diameter for Cyclone IV is determined by:**

**Actual Conditions Cunningham Correction Factor [RM 201A, Eq. 4]**
**[for a 2.5 micrometer diameter particle (estimated size)]**

$$C = 1 + 0.0057193\left[\frac{\mu}{P_s D_{50}}\right]\left[\frac{T_s}{M_w}\right]^{0.5}$$

C = 1 + 0.0057193 x ( $\frac{205.84 \text{ µP}}{29.87 \text{ in Hg x } 2.5 \text{ µm}}$ )( $\frac{209 + 460\ ^{o}\text{R}}{28.29 \text{ lb / lb-mole}}$ )$^{0.5}$ = 1.08

**Actual Conditions Particle Cut Diameter for $N_{re}$ Less than 3,162 for Cyclone IV (µm) [RM 201A, Eq. 34]**

$$D_{50}(\mu m) = 0.0024302\left[\frac{\mu}{Q_s}\right]^{1.1791}\left[\frac{1}{C}\right]^{0.5}\left[\frac{T_s}{P_s M_w}\right]^{0.6790}$$

$D_{50}$ (µm) =

0.0024302 x ( $\frac{205.84 \text{ µP}}{0.53 \text{ acfm}}$ )$^{1.1791}$ x ( $\frac{1}{1.08}$ )$^{0.5}$

x ( $\frac{209 + 460\ ^{o}\text{R}}{29.87 \text{ in Hg x } 28.29 \text{ lb / lb-mole}}$ )$^{0.6790}$ = 2.27 µm

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Run 1 test]**

**Actual Conditions Particle Cut Diameter for $N_{re}$ Greater than or Equal to 3,162 for Cyclone IV (µm) [RM 201A, Eq. 35]**

$$D_{50}(\mu m) = 0.019723 \left[\frac{\mu}{Q_s}\right]^{0.8058} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.3058}$$

$D_{50}$ (µm) =

0.019723 x ( µP / acfm )$^{0.8058}$ x ( 1 )$^{0.5}$ x ( + 460 °R / in Hg x lb / lb-mole )$^{0.3058}$ = µm

**Re-calculated Cunningham Correction Factor (dimensionless) [RM 201A, Eq. 36]**

$$C_r = 1 + 0.0057193 \left[\frac{\mu}{P_s D_{50}}\right]\left[\frac{T_s}{M_w}\right]^{0.5}$$

C = 1 + 0.0057193 x ( 205.84 µP / 29.87 in Hg x 2.27 µm )( 209 + 460 °R / 28.29 lb / lb-mole )$^{0.5}$ = 1.08

**Re-calculated Particle Cut Diameter for $N_{re}$ Less than 3,162 for Cyclone IV (µm) [RM 201A, Eq. 37]**

$$D_{50-1}(\mu m) = 0.0024302 \left[\frac{\mu}{Q_s}\right]^{1.1791} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.6790}$$

$D_{50-1}$ (µm) =

0.0024302 x ( 205.84 µP / 0.53 acfm )$^{1.1791}$ x ( 1 / 1.08 )$^{0.5}$ x ( 209 + 460 °R / 29.87 in Hg x 28.29 lb / lb-mole )$^{0.6790}$ = 2.27 µm

**Re-Calculated Particle Cut Diameter for $N_{re}$ Greater than or Equal to 3,162 for Cyclone IV (µm) [RM 201A, Eq. 38]**

$$D_{50-1}(\mu m) = 0.019723 \left[\frac{\mu}{Q_s}\right]^{0.8058} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.3058}$$

$D_{50-1}$ (µm) =

0.019723 x ( µP / acfm )$^{0.8058}$ x ( 1 )$^{0.5}$ x ( + 460 °R / in Hg x lb / lb-mole )$^{0.3058}$ = µm

**Ratio (Z) Between $D_{50}$ and $D_{50-1}$ Values (dimensionless) [RM 201A, Eq. 39]**

$$Z = \frac{D_{50-1}}{D_{50}} \qquad 0.99 \le \left[Z = \left(\frac{D_{50}}{D_{50-1}}\right)\right] \le 1.01$$

Z = 2.27 µm / 2.27 µm = 1.00

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

# TEST RESULTS AND CALCULATIONS

## Emissions Results
## Base Load
## SAM

## METHOD 8A (CONTROLLED CONDENSATE) - RESULTS

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| **Historical Data** | SAM U-00003 Base-1 | SAM U-00003 Base-2 | SAM U-00003 Base-3 | **Average** | **Units** | **Limits** |
|---|---|---|---|---|---|---|
| Run Start Time | 13:56 | 06:24 | 08:57 | | hh:mm | |
| Run Stop Time | 15:56 | 08:24 | 10:57 | | hh:mm | |
| Test Date | 04/15/20 | 04/16/20 | 04/16/20 | | mm/dd/yy | |
| Load | Base | Base | Base | | % or w/DB | -- |
| Meter Calibration Factor | 0.974 | 0.974 | 0.974 | | | |
| **Stack Test Data** | SAM U-00003 Base-1 | SAM U-00003 Base-2 | SAM U-00003 Base-3 | **Average** | **Units** | **Limits** |
| Initial Meter Volume | 829.310 | 871.950 | 914.590 | | $ft^3$ | |
| Final Meter Volume | 871.720 | 913.990 | 956.230 | | $ft^3$ | |
| Total Meter Volume | 42.410 | 42.040 | 41.640 | 42.030 | $ft^3$ | |
| Total Sampling Time | 120.00 | 120.00 | 120.00 | 120.00 | min | |
| Average Meter Temperature | 68.54 | 66.54 | 58.38 | 64.49 | °F | |
| Barometric Pressure | 29.91 | 30.04 | 30.06 | 30.00 | in Hg | |
| Stack Static Pressure | -0.92 | -0.92 | -0.92 | -0.92 | in $H_2O$ | |
| Absolute Stack Pressure | 29.84 | 29.97 | 29.99 | 29.94 | in Hg | |
| Average Orifice Pressure Drop | 0.41 | 0.41 | 0.41 | 0.41 | in $H_2O$ | |
| Absolute Meter Pressure | 30.05 | 30.18 | 30.20 | 30.14 | in Hg | |
| **Moisture Content Data** | SAM U-00003 Base-1 | SAM U-00003 Base-2 | SAM U-00003 Base-3 | **Average** | **Units** | **Limits** |
| Impinger Water Weight Gain | 64.60 | 71.70 | 67.20 | 67.83 | g | |
| Silica Gel Weight Gain | 13.40 | 8.90 | 11.10 | 11.13 | g | |
| Total Water Volume Collected | 78.14 | 80.75 | 78.44 | 79.11 | ml | |
| Standard Water Vapor Volume | 3.68 | 3.80 | 3.69 | 3.72 | scf | |
| Standard Meter Volume | 41.3 | 41.3 | 41.5 | 41.4 | dscf | |
| Standard Metric Meter Volume | 1.2 | 1.2 | 1.2 | 1.2 | dscm | |
| Calculated Stack Moisture | 8.18 | 8.43 | 8.16 | 8.26 | % | |
| **Gas Analysis Data** | SAM U-00003 Base-1 | SAM U-00003 Base-2 | SAM U-00003 Base-3 | **Average** | **Units** | **Limits** |
| Carbon Dioxide Content | 4.5 | 4.5 | 4.5 | 4.5 | % | |
| Oxygen Content | 12.9 | 12.9 | 12.9 | 12.9 | % | |
| Carbon Monoxide Content | 0.0 | 0.0 | 0.0 | 0.0 | ppm | |
| Nitrogen Content | 82.6 | 82.6 | 82.6 | 82.6 | % | |
| Stack Dry Molecular Weight | 29.24 | 29.24 | 29.24 | 29.24 | lb/lb-mole | |
| Calculated Fuel Factor | 1.778 | 1.778 | 1.778 | 1.778 | | |
| Fuel F-Factor | 8638.02 | 8641.42 | 8641.42 | 8640.29 | dscf/MMBtu | |
| **Sulfuric Acid Mist IC Analysis** | SAM U-00003 Base-1 | SAM U-00003 Base-2 | SAM U-00003 Base-3 | **Average** | **Units** | **Limits** |
| $H_2SO_4$ (IC) Sample Volume - Front Half Rinse | 125.0 | 132.0 | 183.0 | 146.67 | ml | -- |
| $H_2SO_4$ (IC) Sample - Mass Per Volume | 0.4 | 0.7 | 0.1 | 0.40 | mg/L | -- |
| $H_2SO_4$ (IC) Mass | 0.05 | 0.09 | 0.02 | 0.05 | mg | -- |
| $H_2SO_4$ (IC) Concentration | 1.14E-06 | 2.28E-06 | 4.57E-07 | 1.29E-06 | g/dscf | -- |
| | 1.76E-05 | 3.52E-05 | 7.06E-06 | 1.99E-05 | gr/dscf | -- |
| | 4.02E-08 | 8.04E-08 | 1.62E-08 | 4.56E-08 | g/L | -- |
| | 0.01 | 0.02 | 0.00 | 0.01 | ppmvd | -- |
| $H_2SO_4$ (IC) Emission Rate | 0.00006 | 0.00011 | 0.00002 | 0.00006 | lb/MMBtu | 0.00065 |

Note: Run 3 reported at the RDL (0.019 mg)

**EXAMPLE CALCULATIONS (Reference Method 1 - Circular Stack)**

**Diameter of Stack (in.)**

$$D(in.) = L_{fw} - L_{nw}$$

D (in.) = 236.00 in. - 8.00 in. = 228.00 in.

**Stack Diameters Downstream**

$$B_D\,(dia.) = \frac{B}{D}$$

$B_D$ (dia.) = $\frac{850.00 \text{ in.}}{228.00 \text{ in.}}$ = 3.73 diameters

**Area of Stack ($ft^2$)**

$$A_s\,(ft^2) = \pi \times \left(\frac{D}{2 \times 12}\right)^2$$

$A_s$ ($ft^2$) = 3.14 x ( $\frac{228.00 \text{ in.}}{2 \text{ x } 12 \text{in./ft}}$ )$^2$ = 283.53 $ft^2$

**Stack Diameters Upstream**

$$A_D\,(dia.) = \frac{A}{D}$$

$A_D$ (dia.) = $\frac{200.40 \text{ in.}}{228.00 \text{ in.}}$ = 0.88 diameters

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Reference Method 4) [Values from Run 1 test]**

**Water Volume Weighed (scf)**

$$V_{wsg\ (std)}(scf) = W_t \times K_5$$

$V_{wsg(std)}$ = 78.00 g x 0.04715 $ft^3/g$ = 3.678 scf

**Standard Meter Volume (dscf)**

$$V_{m(std)}(dscf) = \frac{K_1 \times Y \times V_m \times \left(P_b + \frac{\Delta H_{avg}}{13.6}\right)}{(t_m)_{avg} + T_u}$$

$$V_{m(std)} = \frac{\frac{17.65\ ^\circ R}{in.\ Hg} \times 0.97 \times 42.41\ dcf \times \left(29.91\ in.\ Hg + \frac{0.41\ in.\ H_2O}{13.6\ in.\ H_2O / in.\ Hg}\right)}{68.54\ ^\circ F + 460\ ^\circ R} = 41.29\ dscf$$

**Calculated Moisture Content (%)**

$$B_{ws(calc)}(\%) = 100 \times \frac{V_{wsg(std)}}{V_{wsg(std)} + V_{m(std)}}$$

$$B_{ws(calc)} = 100 \times \frac{3.68\ dscf}{3.68\ dscf + 41.29\ dscf} = 8.18\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Analysis) [Values from Run 1 test - $H_2SO_4$ (IC)]**

**Stack $H_2SO_4$ Mass (mg)**

$$M_n(mg) = \frac{M_{n(lab)}}{V_{s(lab)}} \times V_{sample} \times \frac{L}{1000ml}$$

$M_n$ (mg) = $\frac{\text{L}}{\text{1000 ml}}$ x 0.38 $\frac{\text{mg}}{\text{L}}$ x 125.00 ml = 0.05 mg

**Stack $H_2SO_4$ Concentration (g/dscf)**

$$c_s(g/dscf) = 0.001 \times \frac{M_n}{V_{m(std)}}$$

$c_s$ (g/dscf) = $\frac{\text{g}}{\text{1000 mg}}$ x $\frac{\text{0.05 mg}}{\text{41.29 dscf}}$ = $\frac{\text{1.14E-06 g}}{\text{dscf}}$

**Stack $H_2SO_4$ Concentration (gr/dscf)**

$$c'_s(gr/dscf) = 0.001 \times \frac{M_n}{V_{m(std)}} \times \frac{7000}{453.592}$$

c'$_s$ (gr/dscf) = $\frac{\text{g}}{\text{1000 mg}}$ x $\frac{\text{0.05 mg}}{\text{41.29 dscf}}$ x $\frac{\text{7000 gr}}{\text{lb}}$ x $\frac{\text{lb}}{\text{453.592 g}}$ = $\frac{\text{1.76E-05 gr}}{\text{dscf}}$

**Stack $H_2SO_4$ Concentration (g/L)**

$$c''_s(g/L) = c'_s \times \frac{dscf}{28.31685 dsL}$$

c'$_s$ (gr/dscf) = 1.14E-06 $\frac{\text{g}}{\text{dscf}}$ x $\frac{\text{dscf}}{\text{28.31685 dsL}}$ = $\frac{\text{4.00E-08 g}}{\text{L}}$

**Stack $H_2SO_4$ Concentration (ppmvd)**

$$c'''_s(ppmvd) = \frac{M_n}{V_{m(std)}} \times Ideal\ Gas\ Constant \times \frac{10^6 parts}{million\ parts} \times \frac{1}{Mol\ Wt}$$

c'''$_s$ (ppmvd) = 4.02E-08 $\frac{\text{g}}{\text{L}}$ x $\frac{\text{24.04 L gas}}{\text{lb-mol}}$ x $\frac{10^6 \text{ parts}}{\text{MM parts}}$ x $\frac{\text{lb-mol}}{\text{98.0790 lb}}$ = 0.010 ppmvd

**$H_2SO_4$ Emissions Rate (lb/MMBtu)**

Oxygen Based:

$$E'''(lb/MMBtu) = \frac{M_n \times F_d}{V_{m(std)} \times 1000 \times 453.592} \times \left(\frac{20.9}{20.9 - \%O_2}\right)$$

E''' (lb/MMBtu) = $\frac{\text{g}}{\text{1000 mg}}$ x $\frac{\text{lb}}{\text{453.592 g}}$ x $\frac{\text{0.05 mg}}{\text{41.29 dscf}}$ x $\frac{\text{8,638.02 dscf}}{\text{MMBtu}}$ x ( $\frac{\text{20.9}}{\text{20.9 - 12.9 \%}}$ ) = $\frac{\text{0.00006 lb}}{\text{MMBtu}}$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

# TEST RESULTS AND CALCULATIONS

## Emissions Results
## Base+DB Load
## NOx, CO, VOC, and $NH_3$

## GENERAL ELECTRIC, 7F.05, UNIT #U-00003 BASE+DB LOAD DATA SUMMARY

| Parameter | Base+DB Load, Run - 2-1 | Base+DB Load, Run - 2-2 | Base+DB Load, Run - 2-3 | Average |
|---|---|---|---|---|
| **Date (mm/dd/yy)** | 04/16/20 | 04/16/20 | 04/16/20 | 04/16/20 |
| **Start Time (hh:mm:ss)** | 14:04:12 | 15:23:12 | 17:41:12 | 14:04:12 |
| **End Time (hh:mm:ss)** | 15:03:42 | 16:22:42 | 18:40:42 | 18:40:42 |
| **Run Duration (min / run)** | 60 | 60 | 60 | 60 |
| **Bar. Pressure (in. Hg)** | 29.99 | 30.04 | 30.10 | 30.04 |
| **Amb. Temp. (°F)** | 43 | 44 | 46 | 44 |
| **Rel. Humidity (%)** | 54 | 55 | 53 | 54 |
| **Spec. Humidity (lb water / lb air)** | 0.003133 | 0.003311 | 0.003436 | 0.003293 |
| **$NH_3$ Flow Rate (lb/hr)** | 163.9 | 159.1 | 163.9 | 162.3 |
| **Turbine Fuel Flow (lb/min)** | 1,681 | 1,678 | 1,681 | 1,680 |
| **Duct Burner Fuel Flow (lb/min)** | 174 | 175 | 175 | 175 |
| **Total Fuel Flow (SCFH)** | 2,578,392 | 2,573,884 | 2,579,455 | 2,577,244 |
| **Stack Flow (RM19) (SCFH)** | 52,449,328 | 52,688,699 | 52,766,594 | 52,634,874 |
| **Stack Moisture (% Method 4)** | 9.5 | 9.5 | 9.5 | 9.5 |
| **Heat Input (MMBtu/hr)** | 2,603.4 | 2,598.8 | 2,604.5 | 2,602.2 |
| **CT Power Output (megawatts)** | 240.3 | 239.6 | 240.5 | 240.1 |
| **NOx (ppmvd)** | 2.35 | 2.26 | 2.17 | 2.26 |
| **NOx (ppm@15%$O_2$)** | 1.54 | 1.50 | 1.44 | 1.49 |
| **CO (ppmvd)** | 0.13 | 0.03 | 0.00 | 0.06 |
| **CO (ppm@15%$O_2$)** | 0.08 | 0.02 | 0.00 | 0.04 |
| **VOC (as C1) (ppmvd)** | 0.00 | 0.00 | 0.00 | 0.00 |
| **VOC (as C1) (ppm@15%$O_2$)** | 0.00 | 0.00 | 0.00 | 0.00 |
| **Fuel Sulfur (grains / 100 scf)** | 0.11 | 0.11 | 0.11 | 0.11 |
| **$CO_2$ (%)** | 5.12 | 5.11 | 5.13 | 5.12 |
| **$O_2$ (%)** | 11.94 | 11.99 | 11.99 | 11.97 |

# TEST RESULTS AND CALCULATIONS

## Emissions Results
## Base+DB Load
## $PM_{10}$

## METHOD 201A (FRONT) AND 202 (BACK) - RESULTS

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| **Historical Data** | PM U-00003 Base+DB-1 | PM U-00003 Base+DB-2 | PM U-00003 Base+DB-3 | **Average** | **Units** | **Limits** |
|---|---|---|---|---|---|---|
| Run Start Time | 12:23 | 04:15 | 09:35 | | hh:mm | |
| Run Stop Time | 16:49 | 08:34 | 14:03 | | hh:mm | |
| Test Date | 04/16/20 | 04/17/20 | 04/17/20 | | mm/dd/yy | |
| Load | Base+DB | Base+DB | Base+DB | | % or w/DB | -- |
| Meter Calibration Factor | 0.978 | 0.978 | 0.978 | | | |
| Pitot Tube Coefficient | 0.7720 | 0.7720 | 0.7720 | | | |
| Average Nozzle Diameter | 0.157 | 0.157 | 0.157 | | in | |
| **Stack Test Data** | PM U-00003 Base+DB-1 | PM U-00003 Base+DB-2 | PM U-00003 Base+DB-3 | **Average** | **Units** | **Limits** |
| Initial Meter Volume | 558.350 | 657.110 | 756.100 | | $ft^3$ | |
| Final Meter Volume | 652.000 | 749.000 | 849.500 | | $ft^3$ | |
| Total Meter Volume | 93.650 | 91.890 | 93.400 | 92.980 | $ft^3$ | |
| Total Sampling Time | 244.50 | 246.00 | 246.75 | 245.75 | min | |
| Average Meter Temperature | 80.33 | 69.75 | 74.50 | 74.86 | °F | |
| Average Stack Temperature | 182.33 | 177.17 | 177.75 | 179.08 | °F | |
| Barometric Pressure | 30.05 | 30.21 | 30.22 | 30.16 | in Hg | |
| Stack Static Pressure | -0.96 | -0.96 | -0.96 | -0.96 | in $H_2O$ | |
| Absolute Stack Pressure | 29.98 | 30.14 | 30.15 | 30.09 | in Hg | |
| Average Orifice Pressure Drop | 0.45 | 0.45 | 0.45 | 0.45 | in $H_2O$ | |
| Absolute Meter Pressure | 30.19 | 30.35 | 30.36 | 30.30 | in Hg | |
| Avg Square Root Pitot Pressure | 1.18 | 1.18 | 1.19 | 1.18 | $\sqrt{(in\ H_2O)}$ | |
| **Moisture Content Data** | PM U-00003 Base+DB-1 | PM U-00003 Base+DB-2 | PM U-00003 Base+DB-3 | **Average** | **Units** | **Limits** |
| Impinger Water Weight Gain | 171.60 | 186.00 | 189.00 | 182.20 | g | |
| Silica Gel Weight Gain | 28.60 | 24.60 | 25.90 | 26.37 | g | |
| Total Water Volume Collected | 200.56 | 210.98 | 215.29 | 208.94 | ml | |
| Standard Water Vapor Volume | 9.44 | 9.93 | 10.13 | 9.83 | scf | |
| Standard Meter Volume | 90.0 | 90.5 | 91.2 | 90.6 | dscf | |
| Standard Metric Meter Volume | 2.5 | 2.6 | 2.6 | 2.6 | dscm | |
| Calculated Stack Moisture | 9.49 | 9.88 | 10.00 | 9.79 | % | |
| Saturated Stack Moisture | 53.59 | 47.52 | 48.13 | 49.75 | % | |
| Reported Stack Moisture Content | 9.49 | 9.88 | 10.00 | 9.79 | % | |
| **Gas Analysis Data** | PM U-00003 Base+DB-1 | PM U-00003 Base+DB-2 | PM U-00003 Base+DB-3 | **Average** | **Units** | **Limits** |
| Carbon Dioxide Content | 5.1 | 5.1 | 5.1 | 5.1 | % | |
| Oxygen Content | 11.8 | 11.8 | 11.8 | 11.8 | % | |
| Carbon Monoxide Content | 0.0 | 0.0 | 0.0 | 0.0 | ppm | |
| Nitrogen Content | 83.1 | 83.1 | 83.1 | 83.1 | % | |
| Stack Dry Molecular Weight | 29.29 | 29.29 | 29.29 | 29.29 | lb/lb-mole | |
| Stack Wet Molecular Weight | 28.22 | 28.18 | 28.16 | 28.19 | lb/lb-mole | |
| Calculated Fuel Factor | 1.772 | 1.768 | 1.773 | 1.771 | | |
| Fuel F-Factor | 8641.42 | 8663.09 | 8663.09 | 8655.87 | dscf/MMBtu | |
| Percent Excess Air | 116.7 | 116.8 | 116.9 | 116.8 | % | |

## METHOD 201A (FRONT) AND 202 (BACK) - RESULTS

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| **Volumetric Flow Rate Data** | PM U-00003 Base+DB-1 | PM U-00003 Base+DB-2 | PM U-00003 Base+DB-3 | **Average** | **Units** | **Limits** |
|---|---|---|---|---|---|---|
| Average Stack Gas Velocity | 67.61 | 67.61 | 67.85 | 67.69 | ft/sec | |
| Stack Cross-Sectional Area | 283.53 | 283.53 | 283.53 | 283.53 | ft² | |
| Actual Stack Flow Rate | 1,150,138 | 1,150,152 | 1,154,186 | 1,151,492 | acfm | |
| Wet Standard Stack Flow Rate | 56,838 | 57,605 | 57,773 | 57,405 | wkscfh | |
| Dry Standard Stack Flow Rate | 51,441,564 | 51,911,646 | 51,998,672 | 51,783,961 | dscfh | |
| Percent of Isokinetic Rate | 91.1 | 90.3 | 90.5 | 90.6 | % | |
| **Gravimetric Analysis** | PM U-00003 Base+DB-1 | PM U-00003 Base+DB-2 | PM U-00003 Base+DB-3 | **Average** | **Units** | **Limits** |
| $NH_4OH$ Correction | 0.0000 | 0.0000 | 0.0000 | 0.0000 | ml | |
| $NH_4OH$ Correction | 0.0000 | 0.0000 | 0.0000 | 0.0000 | mg | |
| **Emission Rate Data** | PM U-00003 Base+DB-1 | PM U-00003 Base+DB-2 | PM U-00003 Base+DB-3 | **Average** | **Units** | **Limits** |
| Total $PM_{10}$ Mass | 4.20 | 5.80 | 6.50 | 5.50 | mg | -- |
| Total $PM_{10}$ Concentration | 4.67E-05 | 6.41E-05 | 7.12E-05 | 6.07E-05 | g/dscf | -- |
| | 7.20E-04 | 9.89E-04 | 1.10E-03 | 9.36E-04 | gr/dscf | -- |
| Total $PM_{10}$ Emission Rate | 2.40 | 3.33 | 3.70 | 3.14 | kg/hr | -- |
| | 5.29 | 7.33 | 8.17 | 6.93 | lb/hr | -- |
| | 23.18 | 32.11 | 35.77 | 30.36 | tpy | -- |
| | 0.0020 | 0.0028 | 0.0031 | 0.0027 | lb/MMBtu | 0.006 |
| Filterable $PM_{10}$ Mass | 3.10 | 3.00 | 5.00 | 3.70 | mg | -- |
| Filterable $PM_{10}$ Concentration | 3.44E-05 | 3.31E-05 | 5.48E-05 | 4.08E-05 | g/dscf | -- |
| | 5.32E-04 | 5.11E-04 | 8.46E-04 | 6.30E-04 | gr/dscf | -- |
| Filterable $PM_{10}$ Emission Rate | 1.77 | 1.72 | 2.85 | 2.11 | kg/hr | -- |
| | 3.91 | 3.79 | 6.28 | 4.66 | lb/hr | -- |
| | 17.11 | 16.61 | 27.52 | 20.41 | tpy | -- |
| | 0.0015 | 0.0015 | 0.0024 | 0.0018 | lb/MMBtu | -- |
| Condensable $PM_{10}$ Mass | 1.10 | 2.80 | 1.50 | 1.80 | mg | -- |
| Condensable $PM_{10}$ Concentration | 1.22E-05 | 3.09E-05 | 1.64E-05 | 1.99E-05 | g/dscf | -- |
| | 1.89E-04 | 4.77E-04 | 2.54E-04 | 3.07E-04 | gr/dscf | -- |
| Condensable $PM_{10}$ Emission Rate | 0.63 | 1.61 | 0.85 | 1.03 | kg/hr | -- |
| | 1.39 | 3.54 | 1.88 | 2.27 | lb/hr | -- |
| | 6.07 | 15.50 | 8.25 | 9.94 | tpy | -- |
| | 0.0005 | 0.0014 | 0.0007 | 0.0009 | lb/MMBtu | -- |
| **RM 201A Quality Control** | PM U-00003 Base+DB-1 | PM U-00003 Base+DB-2 | PM U-00003 Base+DB-3 | **Average** | **Units** | **Limits** |
| Stack Viscosity | 198.41 | 196.82 | 196.86 | 197.37 | µP | |
| Cyclone Flow Rate | 0.494 | 0.489 | 0.492 | 0.492 | ft³/min | |
| Dry Gas Sampling Rate | 0.368 | 0.368 | 0.370 | 0.369 | dscfm | |
| Reynolds Number | 2831.81 | 2862.75 | 2877.55 | 2,857.37 | | |
| Recalculated Cunninham | 1.079 | 1.078 | 1.079 | 1.079 | | |
| Dia. of 50% Prob. (D50) CI | 10.36 | 10.34 | 10.30 | 10.33 | | |
| Recalculated D50-1 for CIV | 2.28 | 2.27 | 2.25 | 2.27 | | |
| Z | 1.00 | 1.00 | 1.00 | 1.00 | | |
| No. Sampling Pts. Outside Δp | 0 | 0 | 0 | 0 | points | |

**EXAMPLE CALCULATIONS (Reference Method 1 - Circular Stack)**

**Diameter of Stack (in.)**

$$D(in.) = L_{fw} - L_{mw}$$

D (in.) = 236.00 in. - 8.00 in. = 228.00 in.

**Stack Diameters Downstream**

$$B_D(dia.) = \frac{B}{D}$$

$B_D$ (dia.) = $\frac{850.00 \text{ in.}}{228.00 \text{ in.}}$ = 3.73 diameters

**Area of Stack ($ft^2$)**

$$A_s(ft^2) = \pi \times \left(\frac{D}{2 \times 12}\right)^2$$

$A_s$ ($ft^2$) = 3.14 x ( $\frac{228.00 \text{ in.}}{2 \text{ x } 12\text{in./ft}}$ )$^2$ = 283.53 $ft^2$

**Stack Diameters Upstream**

$$A_D(dia.) = \frac{A}{D}$$

$A_D$ (dia.) = $\frac{200.40 \text{ in.}}{228.00 \text{ in.}}$ = 0.88 diameters

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Reference Method 3a) [Values from Run 1 test]**

**Carbon Monoxide Concentration (%)**

$$\%CO = \frac{ppmCO}{10{,}000}$$

$$\%CO\ (\%) = \frac{0.00 \quad ppm}{10{,}000\ ppm/\%} = 0.0000\ \%$$

**Nitrogen Concentration (%)**

$$\%N_2 = 100 - \%CO_2 - \%O_2 - \%CO$$

$\%N_2$ (%) = 100 - 5.13 % - 11.81 % - 0.00 / 10,000 % = 83.06 %

**Stack Dry Molecular Weight (lb/lb-mole)**

$$M_d\,(lb/lb-mol) = \sum\left(\frac{MW_{comp}}{100} \times \%component\right)$$

$$M_d\ (lb/lb\text{-}mol) = \left(\frac{44\ lb/lb\text{-}mol}{100} \times 5.13\ \%\right) +$$

$$\left(\frac{32\ lb/lb\text{-}mol}{100} \times 11.81\ \%\right) + \left(\frac{28\ lb/lb\text{-}mol}{100} \times \left[\frac{0.00}{10{,}000} + 83.06\ \right]\right) = \frac{29.29\ lb}{lb\text{-}mol}$$

**Stack Wet Molecular Weight (lb/lb-mole)**

$$M_S\,(lb/lb-mol) = \left[M_d \times \left(1 - \frac{B_{WS}}{100}\right)\right] + \left[MW_{H_2O} \times \frac{B_{WS}}{100}\right]$$

$$M_S\ (lb/lb\text{-}mol) = \left\{\frac{29.29\ lb}{lb\text{-}mol} \times \left(1 - \frac{9.49\ \%}{100}\right)\right\} + \left\{\frac{18\ lb}{lb\text{-}mol} \times \frac{9.49\ \%}{100}\right\} = \frac{28.22\ lb}{lb\text{-}mol}$$

**Average Calculated Fuel Factor ($F_o$)**

$$F_{o(avg)} = \frac{\left[20.9 - (\%O_2)_{avg} - (0.5 \times (\%CO)_{avg})\right]}{(\%CO_2)_{avg} + (\%CO)_{avg}}$$

$$F_{o(avg)} = \frac{20.9\% - 11.81\ \% - (0.5 \times 0.000\ \%)}{5.13\ \% + 0.000\ \%} = 1.772$$

**Average Excess Air (%)**

$$\%EA_{avg}\,(\%) = \frac{100 \times \left[(\%O_2)_{avg} - (0.5 \times (\%CO)_{avg})\right]}{(0.264 \times (N_2)_{avg}) - \left[(\%O_2)_{avg} - (0.5 \times (\%CO)_{avg})\right]}$$

$$(\%EA)_{AVG} = \frac{100 \times \{\ 11.81\ \% - (0.5 \times 0.000\ \%)\}}{(0.264 \times 83.06\ \%) - \{\ 11.81\ \% - (0.5 \times 0.000\ \%)\}} = 116.72\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Reference Method 2) [Values from Run 1 test]**

**Absolute Stack Pressure (in. Hg)**

$$P_S(in.Hg) = P_b + \frac{P_{static}}{13.6}$$

$P_s$ (in. Hg) = 30.05 in. Hg + $\frac{\text{-0.96 in. } H_2O}{\text{13.6 in. } H_2O/\text{in. Hg}}$ = 29.98 in. Hg

**Average Stack Gas Velocity (ft/sec)**

$$v_s(ft/\sec) = K_p \times C_p \times \left(\sqrt{\Delta p}\right)_{avg} \times \sqrt{\frac{(t_s)_{avg} + T_u}{P_s \times M_s}}$$

$v_{sl}$ (ft/sec) =

$\left(\frac{85.49 \text{ ft (lb/lb-mol)(in. Hg)}}{\text{sec } (^oR)(\text{in. } H_2O)}\right)^{1/2}$ x 0.77 x 1.18 in.$H_2O^{1/2}$ x $\sqrt{\frac{182.33 + 460\ ^oR}{29.98 \text{ in. Hg x } 28.22 \text{ lb/lb-mol}}}$ = $\frac{67.6 \text{ ft}}{\text{sec}}$

**Average Stack Dry Standard Flow Rate (dscfh)**

$$Q_{sd}(dscfh) = \frac{60 \times 60 \times \left(1 - \frac{B_{ws}}{100}\right) \times v_s \times A_s \times T_{std} \times P_s}{(t_s + T_u) \times P_{std}}$$

$Q_{sd}$ (dscf/hr) = $\frac{3600 \text{ sec}}{\text{hr}}$ x (1 - $\frac{9.49\ \%}{100}$) x $\frac{67.61 \text{ ft}}{\text{sec}}$ x 283.53 $ft^2$ x $\frac{68.00 + 460\ ^oR}{182.33 + 460\ ^oR}$ x $\frac{29.98 \text{ in. Hg}}{29.92 \text{ in. Hg}}$ = $\frac{51{,}441{,}564.41 \text{ dscf}}{\text{hr}}$

**Average Stack Wet Flow Rate (acfm)**

$$Q_{aw}(acfm) = 60 \times v_s \times A_s$$

$Q_{aw}$ (acf/min) = $\frac{60 \text{ sec}}{\text{min}}$ x $\frac{67.61 \text{ ft}}{\text{sec}}$ x 283.53 $ft^2$ = $\frac{1{,}150{,}138.19 \text{ acf}}{\text{min}}$

**Average Stack Wet Standard Flow Rate (ascfh)**

$$Q_{sw}(ascfh) = \frac{60 \times Q_{aw} \times T_{std} \times P_s}{(t_s + T_u) \times P_{std}}$$

$Q_{sw}$ (ascf/hr) = $\frac{60 \text{ min}}{\text{hr}}$ x $\frac{1{,}150{,}138.19 \text{ acf}}{\text{min}}$ x $\frac{68.00 + 460\ ^oR}{182.33 + 460\ ^oR}$ x $\frac{29.98 \text{ in. Hg}}{29.92 \text{ in. Hg}}$ = $\frac{56{,}837{,}668.40 \text{ ascf}}{\text{hr}}$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Reference Method 4) [Values from Run 1 test]**

**Water Volume Weighed (scf)**

$$V_{wsg\ (std)}(scf) = W_t \times K_5$$

$V_{wsg(std)}$ = 200.20 g x 0.04715 $ft^3/g$ = 9.439 scf

**Standard Meter Volume (dscf)**

$$V_{m(std)}(dscf) = \frac{K_1 \times Y \times V_m \times \left(P_b + \frac{\Delta H_{avg}}{13.6}\right)}{(t_m)_{avg} + T_u}$$

$$V_{m(std)} = \frac{17.65\ ^\circ R}{in.\ Hg} \times 0.98 \times 93.65\ dcf \times \frac{\left(30.05\ in.\ Hg + \frac{0.45\ in.\ H_2O}{13.6\ in.\ H_2O / in.\ Hg}\right)}{80.33\ ^\circ F + 460\ ^\circ R} = 89.99\ dscf$$

**Calculated Moisture Content (%)**

$$B_{ws(calc)}(\%) = 100 \times \frac{V_{wsg(std)}}{V_{wsg(std)} + V_{m(std)}}$$

$$B_{ws(calc)} = 100 \times \frac{9.44\ dscf}{9.44\ dscf + 89.99\ dscf} = 9.49\ \%$$

**Saturated Moisture Content (%)**

$$B_{ws(svp)}(\%) = 100 \times \frac{10^{\left(6.691 - \frac{3144}{t_{s(avg)} + 390.86}\right)}}{P_b + \frac{P_{static}}{13.6}} \leq 100$$

$$B_{ws(svp)} = 100 \times \frac{10^{\left(6.691 - \frac{3144}{182.33\ ^\circ F + 390.86}\right)}}{30.05\ in.\ Hg + \frac{-0.96\ in.\ H_2O}{13.6\ in.\ H_2O / in.\ Hg}} \leq 100 = 53.59\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Isokinetic Sampling) [Values from Run 1 test]**

**Desired Orifice (in. $H_2O$)** (first point)

$$\Delta H_d\,(in.H_2O) = K \times \Delta p$$

$\Delta H_d$ (in. $H_2O$) = x

in. $H_2O$ = in. $H_2O$

**Absolute Meter Pressure (in. Hg)**

$$P_m\,(in.Hg) = P_b + \frac{\Delta H\,@}{13.6}$$

$P_m$ (in. Hg) = 30.05 in. Hg + $\frac{1.85 \text{ in. } H_2O}{13.6 \text{ in. } H_2O/\text{in. Hg}}$ = 30.19 in. Hg

**Recommended Nozzle Diameter (in.)**

$$D_{nt}\,(in.) = \sqrt{\frac{C_{ti} \times Q_{mi} \times P_{mi}}{(t_{mi} + T_{ti}) \times C_p} \times \left(\frac{1 - \frac{B_{wm}}{100}}{1 - \frac{B_{ws}}{100}}\right)} \times \sqrt{(t_s + T_{ti}) \times \left[\frac{M_d \times \left(1 - \frac{B_{ws}}{100}\right) + \left(18 \times \frac{B_{ws}}{100}\right)}{P_s \times \Delta p_{avg}}\right]}$$

$D_{ni}$ (in.) = $\sqrt{\frac{0.03575 \text{ (lb-mole•°R•in. } H_2O)^{1/2}\text{•min•in.}^2}{\text{acf•in. Hg}^{3/4}\text{•lb}^{1/2}} \text{ x } 0.75 \text{ acf x } 30.19 \text{ in. Hg } \left(1 - \frac{0.00\ \%}{100}\right) \text{ x } \left(\frac{1 - \frac{0.00\ \%}{100}}{1 - \frac{9.49\ \%}{100}}\right) \text{ x } \sqrt{\left(80.33\ ^\circ\text{F} + 460^\circ\text{R}\right) \text{x } 0.77 \text{ x } \left(182.33\ ^\circ\text{F} + 460^\circ\text{R}\right) \text{ x } \frac{\frac{29.29 \text{ lb}}{\text{lb-mole}} \text{ x } \left(1 - \frac{9.49\ \%}{100}\right) + \left(\frac{18 \text{ lb}}{\text{lb-mol}} \text{ x } \frac{9.49\ \%}{100}\right)}{29.98 \text{ in. Hg x } 1.18 \text{ in. } H_2O}}}$ = 0.210 in.

**ΔP to ΔH Isokinetic Factor**

$$K = C_k \times C_p^2 \times \Delta H\,@ \times D_{na}^4 \times \left[\frac{M_d \times \left(1 - \frac{B_{wm}}{100}\right) + \left(18 \times \frac{B_{wm}}{100}\right)}{M_d \times \left(1 - \frac{B_{ws}}{100}\right) + \left(18 \times \frac{B_{ws}}{100}\right)}\right] \times \left(\frac{1 - \frac{B_{ws}}{100}}{1 - \frac{B_{wm}}{100}}\right)^2 \times \left(\frac{t_m + T_u}{ts + T_u}\right) \times \frac{P_s}{P_m}$$

K = $\frac{849.8}{\text{in. } H_2O\text{•in.}^4}$ x 0.77 $^2$ x 1.85 in. $H_2O$ x 0.16 $^4$ x $\left(\frac{1 - \frac{9.49\ \%}{100}}{1 - \frac{0.00\ \%}{100}}\right)^2$ x $\frac{80.33\ ^\circ\text{F} + 460^\circ\text{R}}{182.33\ ^\circ\text{F} + 460^\circ\text{R}}$ ) x

$\left(\frac{\frac{29.29 \text{ lb}}{\text{lb/mole}} \text{ x } \left(1 - \frac{0.00\ \%}{100}\right) + \left(\frac{18 \text{ lb}}{\text{lb-mol}} \text{ x } \frac{0.00\ \%}{100}\right)}{\frac{29.29 \text{ lb}}{\text{lb/mole}} \text{ x } \left(1 - \frac{9.49\ \%}{100}\right) + \left(\frac{18 \text{ lb}}{\text{lb-mol}} \text{ x } \frac{9.49\ \%}{100}\right)}\right)$ x $\frac{29.98 \text{ in. Hg}}{30.19 \text{ in. Hg}}$ = 0.40

**Percent Isokinetic (%)** (first point)

$$I\,(\%) = \frac{K_4 \times \left((t_s)_{avg} + T_u\right) \times V_{m(std)}}{\left(\Theta \times (v_{s(l)})_{avg} \times P_s \times \pi \times \left(\frac{D_{na}}{2} \times \frac{1}{12}\right)^2\right) \times \left(1 - \frac{B_{ws}}{100}\right)}$$

I (%) = $\frac{0.0945 \text{ min•in. Hg}}{\text{sec•}^\circ\text{R}}$ x ( 181.00 °F + 460 °R) x 7.75 dscf

19.75 min x $\frac{65.50 \text{ ft}}{\text{sec}}$ x 29.98 in. Hg x 3.14 x $\left(\frac{0.16 \text{ in.}}{2} \text{ x } \frac{\text{ft.}}{12 \text{ in.}}\right)^2$ x $\left(1 - \frac{9.49\ \%}{100}\right)$ = 99.54 %

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Isokinetic Sampling) [Values from Run 1 test]**

**Cumulative Percent Isokinetic (%)** (weighted average of all points)

$$I(\%) = \sum_{1-n} \frac{\left[I(\%) \times V_{m(std)}\right]_{1-n}}{V_{m(std)_{1-n}}}$$

Using Method 5, Eq 5-8 to determine intermediate isokinetics at each point, weighted averaging of the cumulative isokinetics is necessary since all points are not equal, and determined by using the dry standard meter volume collected at each point to weight the cumulative average. Intermediate isokinetics and dry standard meter volumes are found at each point. At each point the cumulative sum is found of each value and the quotient of the two used to determine the cumulative isokinetics for each residual point (n).

| Pt | In (%) | x | Vm(std)n | = | I (%)n | ∑(I (%)n) | / | ∑(Vm(std)n) | = | I (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| A-1 | 99.54 | x | 7.754 | = | 771.81 | 771.81 | / | 7.75 | = | 99.5 |
| A-2 | 93.16 | x | 7.817 | = | 728.20 | 1500.02 | / | 15.57 | = | 96.3 |
| A-3 | 102.91 | x | 8.004 | = | 823.65 | 2323.67 | / | 23.57 | = | 98.6 |
| B-1 | 91.04 | x | 8.190 | = | 745.65 | 3069.31 | / | 31.77 | = | 96.6 |
| B-2 | 97.47 | x | 8.185 | = | 797.73 | 3867.04 | / | 39.95 | = | 96.8 |
| B-3 | 96.37 | x | 7.507 | = | 723.41 | 4590.46 | / | 47.46 | = | 96.7 |
| C-1 | 93.22 | x | 8.380 | = | 781.14 | 5371.60 | / | 55.84 | = | 96.2 |
| C-2 | 82.91 | x | 6.951 | = | 576.34 | 5947.93 | / | 62.79 | = | 94.7 |
| C-3 | 80.82 | x | 6.286 | = | 508.03 | 6455.97 | / | 69.07 | = | 93.5 |
| D-1 | 84.78 | x | 7.610 | = | 645.19 | 7101.16 | / | 76.68 | = | 92.6 |
| D-2 | 80.28 | x | 6.244 | = | 501.24 | 7602.40 | / | 82.93 | = | 91.7 |
| D-3 | 84.15 | x | 7.045 | = | 592.85 | 8195.25 | / | 89.97 | => | 91.1 |

Last Pt

**Percent Isokinetic (%)** (intermediate equation, all points)
[equivalent to taking an average of point-by-point isokinetics without weighting the average (e.g. all points equal)]

$$I(\%) = \frac{K_4 \times \left((t_s)_{avg} + T_u\right) \times V_{m(std)}}{\left(\Theta \times (v_{s(l)})_{avg} \times P_s \times \pi \times \left(\frac{D_{na}}{2} \times \frac{1}{12}\right)^2\right) \times \left(1 - \frac{B_{ws}}{100}\right)}$$

$$I(\%) = \frac{0.0945 \text{ min•in. Hg}}{\text{sec•}^{\circ}\text{R}} \times (182.33\ ^{\circ}\text{F} + 460\ ^{\circ}\text{R}) \times 89.99 \text{ dscf}$$

$$\frac{}{244.50 \text{ min} \times \frac{67.61 \text{ ft}}{\text{sec}} \times 29.98 \text{ in. Hg} \times 3.14 \times \left(\frac{0.16 \text{ in.}}{2} \times \frac{\text{ft.}}{12 \text{ in.}}\right)^2 \times \left(1 - \frac{9.49\ \%}{100}\right)} = 90.59\ \%$$

**Raw Data Percent Isokinetic (%)**
[utilizes the raw data equation for isokinetics from Method 5]

$$I(\%) = \frac{100\left((t_s)_{avg} + T_u\right)\left[K_4 V_{1c} + \frac{V_m Y}{(t_m)_{avg} + T_u}\left(P_{bar} + \frac{\Delta H}{13.6}\right)\right]}{60\left(\Theta \times (v_{s(l)})_{avg} \times P_s \times \pi \times \left(\frac{D_{na}}{2} \times \frac{1}{12}\right)^2\right)}$$

$$I(\%) = \frac{100 \times (182.33\ ^{\circ}\text{F} + 460\ ^{\circ}\text{R}) \times \left[\frac{0.002669 \text{ ft}^3\text{•in. Hg}}{\text{ml•}^{\circ}\text{R}} \times 200.6 \text{ ml} + \frac{93.65 \text{ dcf} \times 0.978}{80.33\ ^{\circ}\text{F} + 460\ ^{\circ}\text{R}} \times \left(30.05 \text{ in Hg} + \frac{1.176}{13.6}\right)\right]}{}$$

$$\frac{}{60 \times 244.50 \text{ min} \times \frac{67.61 \text{ ft}}{\text{sec}} \times 29.98 \text{ in. Hg} \times 3.14 \times \left(\frac{0.16 \text{ in.}}{2} \times \frac{\text{ft.}}{12 \text{ in.}}\right)^2} = 90.68\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Gravimetric Analysis) [Values from Run 1 test]**

**Blank Concentration [Acetone Blank Weight of Solids] (mg/ml)**

$$C_x\,(mg/ml) = \frac{1000 \times w_x}{v_x}$$

$C_x$ (mg/ml) = $\frac{1000\ mg}{g}$ x $\frac{0.0000\ g}{200.60\ ml}$ = $\frac{0.0000\ mg}{ml}$ = $\frac{\quad mg}{ml}$

**Blank Adjustment [Acetone Blank Weight of Solids and Nozzle Wash PM>10] (mg)**

$$W_x\,(mg) = v_x \times C_x$$

$W_x$ (mg) = 70.00 ml x 0.0000 mg/ml = 0.00 mg < Sample Gain

**Sample Gain [Nozzle Wash PM>10] (mg)**

$$m_x\,(mg) = \left(m_{fx} - m_{tx}\right) \times 1000$$

$m_x$ (mg) = $\frac{1000\ mg}{g}$ x ( 0.0083 g - 0.00 g ) = 8.30 mg

**Adjusted Sample Gain [Nozzle Wash PM>10] (mg)**

$$m_{xadj}\,(mg) = m_x - W_x$$

$m_{xadj}$ (mg) = 8.30 mg - 0.00 mg = 8.30 mg

**0.1N $NH_4OH$ Correction (mg)**

$$m_c\,(mg) = 17.03 \times V_t \times N$$

$m_c$ (mg) = 17.03 x 0.00 ml x 0.1 N = 0.00 mg

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Analysis) [Values from Run 1 test - Total $PM_{10}$ Mass]**

**Stack Total Concentration (g/dscf)**

$$c_s(g/dscf) = 0.001 \times \frac{M_n}{V_{m(std)}}$$

$$c_s \text{ (g/dscf)} = \frac{\text{g}}{\text{1000 mg}} \text{ x } \frac{\text{4.20 mg}}{\text{89.99 dscf}} = \frac{\text{4.67E-05 g}}{\text{dscf}}$$

**Stack Total Concentration (gr/dscf)**

$$c_s'(gr/dscf) = 0.001 \times \frac{M_n}{V_{m(std)}} \times \frac{7000}{453.592}$$

$$c'_s \text{ (gr/dscf)} = \frac{\text{g}}{\text{1000 mg}} \text{ x } \frac{\text{4.20 mg}}{\text{89.99 dscf}} \text{ x } \frac{\text{7000 gr}}{\text{lb}} \text{ x } \frac{\text{lb}}{\text{453.592 g}} = \frac{\text{7.20E-04 gr}}{\text{dscf}}$$

**Total Emissions Rate (kg/hr)**

$$E(kg/hr) = c_s \times Q_{sd} \times \frac{kg}{1000\ g}$$

$$E \text{ (kg/hr)} = \frac{\text{kg}}{\text{1000 g}} \text{ x } \frac{\text{4.67E-05 g}}{\text{dscf}} \text{ x } \frac{\text{51,441,564 dscf}}{\text{hr}} = \frac{\text{2.40 kg}}{\text{hr}}$$

**Total Emissions Rate (lb/hr)**

$$E'(lb/hr) = \frac{M_n \times Q_{sd}}{V_{m(std)}} \times \frac{lb \times g}{453.592 g \times 1000 mg}$$

$$E' \text{ (lb/hr)} = \frac{\text{g}}{\text{1000 mg}} \text{ x } \frac{\text{lb}}{\text{453.592 g}} \text{ x } \frac{\text{4.20 mg}}{\text{89.99 dscf}} \text{ x } \frac{\text{51,441,564 dscf}}{\text{hr}} = \frac{\text{5.29 lb}}{\text{hr}}$$

**Total Emissions Rate (tpy)**

$$E''(ton/yr) = E' \times \frac{8760}{2000}$$

$$E'' \text{ (tpy)} = \frac{\text{ton}}{\text{2000 lb}} \text{ x } \frac{\text{8,760 hr}}{\text{yr}} \text{ x } \frac{\text{5.29 lb}}{\text{hr}} = \frac{\text{23.18 ton}}{\text{yr}}$$

**Total Emissions Rate (lb/MMBtu)**

Oxygen Based:

$$E'''(lb/MMBtu) = \frac{M_n \times F_d}{V_{m(std)} \times 1000 \times 453.592} \times \left(\frac{20.9}{20.9 - \%O_2}\right)$$

$$E''' \text{ (lb/MMBtu)} = \frac{\text{g}}{\text{1000 mg}} \text{ x } \frac{\text{lb}}{\text{453.592 g}} \text{ x } \frac{\text{4.20 mg}}{\text{89.99 dscf}} \text{ x } \frac{\text{8,641.42 dscf}}{\text{MMBtu}} \text{ x } \left(\frac{\text{20.9}}{\text{20.9 - 11.8 \%}}\right) = \frac{\text{0.0020 lb}}{\text{MMBtu}}$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Stack Gas Viscosity (μP) [based on preliminary data] [RM 201A, Eq. 3]**

$$\mu(\mu P) = C_1 + C_2\sqrt{T_s} + C_3 T_s^{-2} + C4(\%O_{2,wet}) - C_5 B_{ws} + C_6 B_{ws} T_s^2$$

μ (μP) = -150.3162 μP + 13.4622 $\sqrt{\quad 180 \quad + 460}$ + 3.86153x10$^{6}$ ( 180 + 460 )$^{-2}$ + 0.591123 ( 12.8 x (1 - 8.00 /100)
- 91.9723 ( 8.00 /100) + 1.51761x10$^{-5}$ ( 8.00 /100)( 180 + 460)$^2$ = 199.79 μP

**Cunningham Correction Factor [RM 201A, Eq. 4]**
**[based on preliminary data for a 2.25 micrometer diameter particle]**

$$C = 1 + 0.0057193\left[\frac{\mu}{P_s D_{50}}\right]\left[\frac{T_s}{M_w}\right]^{0.5}$$

$$C = 1 + 0.0057193 \times \left(\frac{199.79\ \mu P}{29.92\ \text{in Hg} \times 2.25\ \mu m}\right)\left(\frac{180 + 460\ ^{o}R}{28.52\ \text{lb / lb-mole}}\right)^{0.5} = 1.08$$

**First calculation set using Cyclone I or Cyclone I and IV, assuming $N_{re}$<3,162**

**Lower Limit Cut Diameter for Cyclone I (μm) [RM 201A, Eq. 5]**
**[assumes $N_{re}$<3,162]**

$$D_{50LL}(\mu m) = 9.507 C^{0.3007}\left[\frac{M_w P_s}{T_s}\right]^{0.1993}$$

$$D_{50LL}\ (\mu m) = 9.507 \times 1.08^{\,0.3007} \times \left(\frac{29.92\ \text{in Hg} \times 28.52\ \text{lb / lb-mole}}{180 + 460\ ^{o}R}\right)^{0.1993} = 10.30\ \mu m$$

**Cut Diameter for Cyclone I for the Middle of the Overlap Zone (μm) [RM 201A, Eq. 6]**
**[assumes $N_{re}$<3,162]**

$$D_{50T}(\mu m) = \left(\frac{11 + D_{50LL}}{2}\right)$$

$$D_{50T}\ (\mu m) = \frac{11 + 10.30\ \mu m}{2} = 10.65\ \mu m$$

**Sampling Rate Using Both $PM_{10}$ and $PM_{2.5}$ Cyclones (acfm) [RM 201A, Eq. 7]**
**[assumes $N_{re}$<3,162]**

Qs (acfm) =

$$Q_s(acfm) = Q_I(acfm) = 0.07296(\mu)\left[\frac{T_s}{M_w P_s}\right]^{0.2949}\left[\frac{1}{D_{50T}}\right]^{1.4102}$$

$$0.07296 \times 199.79\ \mu P \times \left(\frac{180 + 460\ ^{o}R}{29.92\ \text{in Hg} \times 28.52\ \text{lb / lb-mole}}\right)^{0.2949} \times \left(\frac{1}{10.65\ \mu m}\right)^{1.4102} = 0.48\ \text{acfm}$$

**Reynolds Number (dimensionless) [RM 201A, Eq. 10]**
**[verification of $N_{re}$<3,162, using Cyclone I and IV]**

$$N_{re} = 8.64 \times 10^5\left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

Correct

$$N_{re} = 8.64 \times 10^5 \times \frac{29.92\ \text{in Hg} \times 28.52\ \text{lb / lb-mole}}{180 + 460\ ^{o}R} \times \frac{0.48\ \text{acfm}}{199.79\ \mu P} = 2746.16 < 3{,}162$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Second calculation set using Cyclone IV, assuming $N_{re}$<3,162**

**Particle Cut Diameter for $N_{re}$ Less than 3,162 for Cyclone IV (µm) [RM 201A, Eq. 34]**
**[assumes $N_{re}$<3,162]**

$$D_{50}(\mu m) = 0.0024302 \left[\frac{\mu}{Q_s}\right]^{1.1791} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.6790}$$

$D_{50}$ (µm) =

0.0024302 x ( 199.79 µP / 0.48 acfm )$^{1.1791}$ x ( 1 / 1.08 )$^{0.5}$ x ( 180 + 460 °R / 29.92 in Hg x 28.52 lb / lb-mole )$^{0.6790}$ = 2.38 µm

**Sampling Rate Using Only $PM_{2.5}$ Cyclone for $N_{re}$ Less than 3,162 (acfm) [RM 201A, Eq. 8]**

$$Q_{IV}(acfm) = 0.0060639 \left(\frac{\mu}{C^{0.4242}}\right) \left[\frac{P_s M_w}{T_s}\right]^{-.05759} \left[\frac{1}{D_{50}}\right]^{0.8481}$$

$Q_{IV}$ (acfm) =

0.0060639 x ( 199.79 µP / 1.08 $^{0.4242}$ ) x ( 29.92 in Hg x 28.52 lb / lb-mole / 180 + 460 °R )$^{-0.5759}$ x ( 1 / 2.38 µm )$^{0.8481}$ = 0.48 acfm

**Reynolds Number (dimensionless) [RM 201A, Eq. 10]**
**[verification of $N_{re}$<3,162, using Cyclone IV only]**

$$N_{re} = 8.64 \times 10^5 \left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

Correct

$N_{re}$ = 8.64 x $10^5$ x 29.92 in Hg x 28.52 lb / lb-mole / 180 + 460 °R x 0.48 acfm / 199.79 µP = 2746.12 < 3,162

**Third calculation set using Cyclone I or Cyclone I and IV, assuming $N_{re}$≥3,162**

**Lower Limit Cut Diameter for Cyclone I (µm) [RM 201A, Eq. 12]**
**[assumes $N_{re}$≥3,162]**

$$D_{50LL}(\mu m) = 10.0959 C^{0.4400} \left[\frac{M_w P_s}{T_s}\right]^{0.0600}$$

$D_{50LL}$ (µm) = 10.0959 x 1.08 $^{0.4400}$ x ( 29.92 in Hg x 28.52 lb / lb-mole / 180 + 460 °R )$^{0.0600}$ = 10.63 µm

**Cut Diameter for Cyclone I for the Middle of the Overlap Zone (µm) [RM 201A, Eq. 6]**
**[assumes $N_{re}$≥3,162]**

$$D_{50T}(\mu m) = \left(\frac{11 + D_{50LL}}{2}\right)$$

$D_{50T}$ (µm) = ( 11 + 10.63 µm ) / 2 = 10.81 µm

**Sampling Rate Using Both $PM_{10}$ and $PM_{2.5}$ Cyclones (acfm) [RM 201A, Eq. 7]**
**[assumes $N_{re}$≥3,162]**

$$Q_s(acfm) = Q_I(acfm) = 0.07296(\mu) \left[\frac{T_s}{M_w P_s}\right]^{0.2949} \left[\frac{1}{D_{50T}}\right]^{1.4102}$$

Qs (acfm) =

0.07296 x 199.79 µP x ( 180 + 460 °R / 29.92 in Hg x 28.52 lb / lb-mole )$^{0.2949}$ x ( 1 / 10.81 µm )$^{1.4102}$ = 0.47 acfm

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Reynolds Number (dimensionless) [RM 201A, Eq. 10]**
**[verification of $N_{re}$≥3,162, using Cyclone I and IV]**

$$N_{re} = 8.64 \times 10^5 \left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

Wrong Assumption

$N_{re}$ = 8.64 x $10^5$ x ( 29.92 in Hg x 28.52 lb / lb-mole ) / ( 180 + 460 °R ) x ( 0.47 acfm ) / ( 199.79 µP ) = 2688.56 < 3,162

**Fourth calculation set using Cyclone IV, assuming $N_{re}$≥3,162**

**Particle Cut Diameter for $N_{re}$ Greater than or Equal to 3,162 for Cyclone IV (µm) [RM 201A, Eq. 35]**
**[assumes $N_{re}$≥3,162]**

$$D_{50}(\mu m) = 0.019723 \left[\frac{\mu}{Q_s}\right]^{0.8058}\left[\frac{1}{C}\right]^{0.5}\left[\frac{T_s}{P_s M_w}\right]^{0.3058}$$

$D_{50}$ (µm) =

0.019723 x ( ( 199.79 µP ) / ( 0.47 acfm ) )$^{0.8058}$ x ( ( 1 ) / ( 1.08 ) )$^{0.5}$
x ( ( 180 + 460 °R ) / ( 29.92 in Hg x 28.52 lb / lb-mole ) )$^{0.3058}$ = 2.29 µm

**Sampling Rate Using Only $PM_{2.5}$ Cyclone for $N_{re}$ Greater than or Equal to 3,162 (acfm) [RM 201A, Eq. 9]**

$$Q_{IV}(acfm) = 0.007657\left(\frac{\mu}{C^{0.6205}}\right)\left[\frac{P_s M_w}{T_s}\right]^{-0.3795}\left[\frac{1}{D_{50}}\right]^{1.241}$$

$Q_{IV}$ (acfm) =

0.007657 x ( ( 199.79 µP ) / ( 1.08 $^{0.6205}$ ) ) x ( ( 29.92 in Hg x 28.52 lb / lb-mole ) / ( 180 + 460 °R ) )$^{-0.3795}$
x ( ( 1 ) / ( 2.29 µm ) )$^{1.241}$ = 0.47 acfm

**Reynolds Number (dimensionless) [RM 201A, Eq. 10]**
**[verification of $N_{re}$≥3,162, using Cyclone IV only]**

$$N_{re} = 8.64 \times 10^5 \left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

Wrong Assumption

$N_{re}$ = 8.64 x $10^5$ x ( 29.92 in Hg x 28.52 lb / lb-mole ) / ( 180 + 460 °R ) x ( 0.48 acfm ) / ( 199.79 µP ) = 2746.16 < 3,162

**Meter Box Orifice Pressure Drop (in $H_2O$) [RM 201A, Eq. 11]**
**As calculated using applicable calculation set 1, 2, 3, or 4**

$$\Delta H(inH_2O) = \left[\frac{Q_s(1-B_{ws})P_s}{T_s}\right]^2\left[\frac{1.083 T_m M_d \Delta H_@}{P_{bar}}\right]$$

ΔH (in $H_2O$) = ( 0.48 acfm x ( 1 - 8.00 /100) x 29.92 in Hg ) / ( 180 + 460 °R ) )$^2$
x ( 1.083 x ( 85.00 + 460 °R) x 29.43 lb / lb-mole x 1.846 in $H_2O$ ) / ( 29.99 in Hg ) ) = 0.449 in $H_2O$

| | | | | |
|---|---|---|---|---|
| 50 °F above stack temperature | $T_{s+50}$ = | 230 | $\Delta H_{+50}$ = | 0.386 in $H_2O$ |
| 50 °F below stack temperature | $T_{s+50}$ = | 130 | $\Delta H_{+50}$ = | 0.528 in $H_2O$ |

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Adjusted Velocity Pressure (in $H_2O$) [point A-1] [RM201A, Eq. 25]**

$$\Delta p_s\,(inH_2O) = \Delta p_m \left[\frac{C_p}{C'_p}\right]^2$$

$\Delta p_s$ (in $H_2O$) = 1.70 in $H_2O$ x ( 0.7720 / 0.8198 )$^2$ = 1.51 in $H_2O$

**Average Probe Blockage Factor [RM201A, Eq. 26]**

$$b_f = \frac{22.0}{A}$$

$b_f$ = 22.0 / 40828.14 $in^2$ = 5.39E-04

**Velocity Pressure Adjusted for Blockage Factor (in $H_2O$) [point A-1] [RM201A, Eq. 27]**

Target PM and/or Stack Size Not Applicable to Blockage Factor Calculation

$$\Delta p_{s2}\,(inH_2O) = \Delta p_{s1}\left[\frac{1}{(1-b_f)}\right]^2$$

$\Delta p_s$ (in $H_2O$) = 1.51 in $H_2O$ x ( 1 / ( 1 - 0.00E+00 ) )$^2$ = 1.51 in $H_2O$

**Velocity of Stack Gas Adjusted for Blockage Factor and/or $C_p$ / $C'_p$ (ft/sec) [RM201A, Eq. 13]**

Target PM and/or Stack Size Not Applicable to Blockage Factor Calculation

$$v_s = K_p C_p \left(\sqrt{(\Delta p)}\right)_{avg}\left[\sqrt{\frac{T_s}{P_s M_w}}\right]$$

$v_s$ (ft/sec) =

85.49 ft/sec / lb/mole - °R x 0.7720 x 1.16 x ( 180 + 460 °R / 29.92 in Hg x 28.52 lb / lb-mole )$^{0.5}$ = 66.24 ft/sec

**Calculated Nozzle Diameter for Acceptable Sampling Rate (in) [RM201A, Eq. 14]**

$$D(in) = \left[\frac{3.056 Q_s}{v_s}\right]^{0.5}$$

D (in) = ( 3.056 x 0.48 acfm / 66.24 ft/sec )$^{0.5}$ = 0.148 in

Represents ideal diameter, which we then compare to capabilities of all nozzles from multiple sets

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Velocity of Gas in Nozzle 4a (diam. = 0.157 in), (ft/sec) [RM201A, Eq. 15]**

$$v_n = \frac{\left(\frac{Q_s}{60\ \frac{\text{min}}{\text{sec}}}\right)}{A_n}$$

$v_n$ (ft/sec) = $\frac{0.48 \quad \text{acfm}}{60 \text{ min / sec}}$ / 1.34E-04 $\text{ft}^2$ = 59.06 $\frac{\text{ft}}{\text{sec}}$

Example set of calculations for nozzle used with run 1

**Minimum Nozzle Velocity to Stack Velocity Ratio Parameter (dimensionless) [RM201A, Eq. 16]**

**Nozzle 4a (diam. = 0.157 in)**

$$R_{\text{min}} = \left[0.2457 + \left(0.3072 - \frac{0.2603\ (\mu)(Q_s)^{0.5}}{v_n^{1.5}}\right)^{0.5}\right]$$

$R_{min}$ =

$0.2457 + (0.3072 - \frac{0.2603 \text{ x } 199.79 \text{ µP x } (0.48 \text{ acfm})^{0.5}}{59.06 \text{ in}^{1.5}})^{0.5}$ = 0.72

**Maximum Nozzle Velocity to Stack Velocity Ratio Parameter (dimensionless) [RM201A, Eq. 17]**

**Nozzle 4a (diam. = 0.157 in)**

$$R_{\text{max}} = \left[0.4457 + \left(0.5690 + \frac{0.2603\ (\mu)(Q_s)^{0.5}}{v_n^{1.5}}\right)^{0.5}\right]$$

$R_{max}$ =

$0.4457 + (0.5690 + \frac{0.2603 \text{ x } 199.79 \text{ µP x } (0.48 \text{ acfm})^{0.5}}{59.06 \text{ in}^{1.5}})^{0.5}$ = 1.25

**Minimum Gas Velocity for $R_{min}$ Less than 0.5 (ft/sec)** **Nozzle 4a (diam. = 0.157 in)**

$$v_{\text{min}}\ (ft / \text{sec}) = v_n (0.5)$$

$v_{min}$ (ft/sec) = 0.5 x $\frac{\text{ft}}{\text{sec}}$ = $\frac{\text{ft}}{\text{sec}}$ **[RM201A, Eq. 18]**

Not Applicable

**Minimum Gas Velocity for $R_{min}$ Greater than or Equal to 0.5 (ft/sec)** **Nozzle 4a (diam. = 0.157 in)**

$$v_{\text{min}}\ (ft / \text{sec}) = v_n R_{\text{min}}$$

$v_{min}$ (ft/sec) = 59.06 $\frac{\text{ft}}{\text{sec}}$ x 0.72 = 42.72 $\frac{\text{ft}}{\text{sec}}$ **[RM201A, Eq. 19]**

**Maximum Gas Velocity for $R_{max}$ Less than 1.5 (ft/sec)** **Nozzle 4a (diam. = 0.157 in)**

$$v_{\text{max}}\ (ft / \text{sec}) = v_n R_{\text{max}}$$

$v_{max}$ (ft/sec) = 59.06 $\frac{\text{ft}}{\text{sec}}$ x 1.25 = 73.86 $\frac{\text{ft}}{\text{sec}}$ **[RM201A, Eq. 20]**

**Maximum Gas Velocity for $R_{max}$ Greater than or Equal to 1.5 (ft/sec)** **Nozzle 4a (diam. = 0.157 in)**

$$v_{\text{max}}\ (ft / \text{sec}) = v_n (1.5)$$

$v_{max}$ (ft/sec) = 1.5 x $\frac{\text{ft}}{\text{sec}}$ = $\frac{\text{ft}}{\text{sec}}$ **[RM201A, Eq. 21]**

Not Applicable

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Preliminary test]**

**Minimum Velocity Pressure (in $H_2O$) [RM201A, Eq. 22]** **Nozzle 4a (diam. = 0.157 in)**

Run 1 nozzle is able to achieve $\Delta p_{min}$ below preliminary data minimum

$$\Delta p_{min}\ (inH_2O) = 1.3686 \times 10^{-4}\left[\frac{P_s M_w}{T_s}\right]\left[\frac{v_{min}}{C_p}\right]^2$$

$\Delta p_{min}$ (in $H_2O$) =

$1.3686 \times 10^{-4} \times \left(\frac{29.92 \text{ in Hg} \times 28.52 \text{ lb / lb-mole}}{180 + 460\ ^{o}R}\right) \times \left(\frac{42.72 \text{ ft/sec}}{0.7720}\right)^2 =$ 0.56 in $H_2O$ vs. 1.15

**Maximum Velocity Pressure (in $H_2O$) [RM201A, Eq. 23]** **Nozzle 4a (diam. = 0.157 in)**

Run 1 nozzle is able to achieve $\Delta p_{max}$ above preliminary data maximum

$$\Delta p_{max}\ (inH_2O) = 1.3686 \times 10^{-4}\left[\frac{P_s M_w}{T_s}\right]\left[\frac{v_{max}}{C_p}\right]^2$$

$\Delta p_{max}$ (in $H_2O$) =

$1.3686 \times 10^{-4} \times \left(\frac{29.92 \text{ in Hg} \times 28.52 \text{ lb / lb-mole}}{180 + 460\ ^{o}R}\right) \times \left(\frac{73.86 \text{ ft/sec}}{0.7720}\right)^2 =$ 1.67 in $H_2O$ vs. 1.51

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Run 1 test]**

**Sampling Dwell Time at Each Point (minutes) [point A-1] [RM201A, Eq. 24]**

$$t_n(\text{min}) = \left[\frac{C_p\sqrt{\Delta p_n}}{C_p'\left(\sqrt{\Delta p_n}\right)_{avg}}\right]\left[\frac{t_r}{N_{tp}}\right]$$

$t_n$ (min) = $\left(\frac{0.7720 \times \left(\frac{1.30}{1.16}\right)^{0.5}}{0.7720}\right) \times \left(\frac{240.00 \text{ min}}{12.00}\right) =$ 19.68 minutes

**Dry Gas Volume Sampled at Standard Conditions (dscf) [point A-1] [RM201A, Eq. 28]**

$$v_{ms}(dscf) = \left[\frac{528}{29.92}\right][\gamma \cdot v_m]\left[\frac{\left(P_{bar} + \frac{\Delta H}{13.6}\right)}{T_m}\right]$$

$v_{ms}$ (dscf) = $\left(\frac{528}{29.92}\right)$ ( 0.978 x 7.99 dcf ) x

$\left(\frac{30.05 \text{ in Hg} + 0.45 \text{ in } H_2O / 13.6}{75.00 + 460\ ^{o}R}\right) =$ 7.75 dscf

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Run 1 test]**

**Sample Flow Rate at Standard Conditions (dscfm) [RM201A, Eq. 29]**

$$Q_{sST}\,(dscfm) = \frac{v_{ms}}{\Theta}$$

$Q_{sST}$ (dscfm) = $\frac{89.99 \text{ dscf}}{244.50 \text{ min}}$ = $\frac{0.37 \text{ dscf}}{\text{min}}$

**Sampling Rate (acfm) [e.g. cyclone flow rate] [RM201A, Eq. 32]**

$$Q_s(acfm) = \frac{29.92}{528} Q_{sST} \left[\frac{1}{(1 - B_{ws})}\right]\left[\frac{T_s}{P_s}\right]$$

$Q_s$ (acfm) = $\frac{29.92 \text{ in Hg}}{528\ ^{o}\text{R}}$ x $\frac{0.37 \text{ dscf}}{\text{min}}$ x $\frac{1}{(1- 9.49 /100)}$ x $\frac{182 + 460\ ^{o}\text{R}}{29.98 \text{ in Hg}}$ = 0.49 acfm

**Actual Conditions Reynolds Number (dimensionless) [RM 201A, Eq. 10]**

$$N_{re} = 8.64 \times 10^5 \left[\frac{P_s M_w}{T_s}\right]\left[\frac{Q_s}{\mu}\right]$$

$N_{re}$ = 8.64 x $10^5$ x $\frac{29.98 \text{ in Hg x } 28.22 \text{ lb / lb-mole}}{182 + 460\ ^{o}\text{R}}$ x $\frac{0.49 \text{ acfm}}{198.41 \text{ µP}}$ = 2831.81

**Actual Conditions Particle Cut Diameter for Cyclone I (µm) [RM201A, Eq. 33]**

$$D_{50}(\mu m) = 0.15625 \left[\frac{T_s}{M_w P_s}\right]^{0.2091}\left[\frac{\mu}{Q_s}\right]^{0.7091}$$

$D_{50}$ (µm) = 0.15625 x ( $\frac{182 + 460\ ^{o}\text{R}}{29.98 \text{ in Hg x } 28.22 \text{ lb / lb-mole}}$ )$^{0.2091}$ x ( $\frac{198.41 \text{ µP}}{0.49 \text{ acfm}}$ )$^{0.7091}$ = 10.36 µm

**Actual Particle Cut Diameter for Cyclone IV is determined by:**

**Actual Conditions Cunningham Correction Factor [RM 201A, Eq. 4]**
**[for a 2.5 micrometer diameter particle (estimated size)]**

$$C = 1 + 0.0057193\left[\frac{\mu}{P_s D_{50}}\right]\left[\frac{T_s}{M_w}\right]^{0.5}$$

C = 1 + 0.0057193 x ( $\frac{198.41 \text{ µP}}{29.98 \text{ in Hg x } 2.5 \text{ µm}}$ )( $\frac{182 + 460\ ^{o}\text{R}}{28.22 \text{ lb / lb-mole}}$ )$^{0.5}$ = 1.07

**Actual Conditions Particle Cut Diameter for $N_{re}$ Less than 3,162 for Cyclone IV (µm) [RM 201A, Eq. 34]**

$$D_{50}(\mu m) = 0.0024302\left[\frac{\mu}{Q_s}\right]^{1.1791}\left[\frac{1}{C}\right]^{0.5}\left[\frac{T_s}{P_s M_w}\right]^{0.6790}$$

$D_{50}$ (µm) =

0.0024302 x ( $\frac{198.41 \text{ µP}}{0.49 \text{ acfm}}$ )$^{1.1791}$ x ( $\frac{1}{1.07}$ )$^{0.5}$

x ( $\frac{182 + 460\ ^{o}\text{R}}{29.98 \text{ in Hg x } 28.22 \text{ lb / lb-mole}}$ )$^{0.6790}$ = 2.29 µm

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Constant Flow, Variable Time Isokinetic QA/QC) [Values from Run 1 test]**

**Actual Conditions Particle Cut Diameter for $N_{re}$ Greater than or Equal to 3,162 for Cyclone IV (µm) [RM 201A, Eq. 35]**

$$D_{50}(\mu m) = 0.019723 \left[\frac{\mu}{Q_s}\right]^{0.8058} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.3058}$$

$D_{50}$ (µm) =

0.019723 x ( µP / acfm )$^{0.8058}$ x ( 1 )$^{0.5}$ x ( + 460 °R / in Hg x lb / lb-mole )$^{0.3058}$ = µm

**Re-calculated Cunningham Correction Factor (dimensionless) [RM 201A, Eq. 36]**

$$C_r = 1 + 0.0057193 \left[\frac{\mu}{P_s D_{50}}\right]\left[\frac{T_s}{M_w}\right]^{0.5}$$

C = 1 + 0.0057193 x ( 198.41 µP / 29.98 in Hg x 2.29 µm )( 182 + 460 °R / 28.22 lb / lb-mole )$^{0.5}$ = 1.08

**Re-calculated Particle Cut Diameter for $N_{re}$ Less than 3,162 for Cyclone IV (µm) [RM 201A, Eq. 37]**

$$D_{50-1}(\mu m) = 0.0024302 \left[\frac{\mu}{Q_s}\right]^{1.1791} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.6790}$$

$D_{50-1}$ (µm) =

0.0024302 x ( 198.41 µP / 0.49 acfm )$^{1.1791}$ x ( 1 / 1.08 )$^{0.5}$ x ( 182 + 460 °R / 29.98 in Hg x 28.22 lb / lb-mole )$^{0.6790}$ = 2.28 µm

**Re-Calculated Particle Cut Diameter for $N_{re}$ Greater than or Equal to 3,162 for Cyclone IV (µm) [RM 201A, Eq. 38]**

$$D_{50-1}(\mu m) = 0.019723 \left[\frac{\mu}{Q_s}\right]^{0.8058} \left[\frac{1}{C}\right]^{0.5} \left[\frac{T_s}{P_s M_w}\right]^{0.3058}$$

$D_{50-1}$ (µm) =

0.019723 x ( µP / acfm )$^{0.8058}$ x ( 1 )$^{0.5}$ x ( + 460 °R / in Hg x lb / lb-mole )$^{0.3058}$ = µm

**Ratio (Z) Between $D_{50}$ and $D_{50-1}$ Values (dimensionless) [RM 201A, Eq. 39]**

$$Z = \frac{D_{50-1}}{D_{50}} \qquad 0.99 \le \left[Z = \left(\frac{D_{50}}{D_{50-1}}\right)\right] \le 1.01$$

Z = 2.28 µm / 2.28 µm = 1.00

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

# TEST RESULTS AND CALCULATIONS

## Emissions Results
## Base+DB Load
## SAM

## METHOD 8A (CONTROLLED CONDENSATE) - RESULTS

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| **Historical Data** | SAM U-00003 Base+DB-1 | SAM U-00003 Base+DB-2 | SAM U-00003 Base+DB-3 | **Average** | **Units** | **Limits** |
|---|---|---|---|---|---|---|
| Run Start Time | 13:10 | 03:58 | 07:00 | | hh:mm | |
| Run Stop Time | 15:10 | 05:58 | 09:00 | | hh:mm | |
| Test Date | 04/16/20 | 04/17/20 | 04/17/20 | | mm/dd/yy | |
| Load | Base | Base | Base | | % or w/DB | -- |
| Meter Calibration Factor | 0.974 | 0.974 | 0.974 | | | |
| **Stack Test Data** | SAM U-00003 Base+DB-1 | SAM U-00003 Base+DB-2 | SAM U-00003 Base+DB-3 | **Average** | **Units** | **Limits** |
| Initial Meter Volume | 961.540 | 11.320 | 61.770 | | $ft^3$ | |
| Final Meter Volume | 1003.270 | 53.100 | 103.560 | | $ft^3$ | |
| Total Meter Volume | 41.730 | 41.780 | 41.790 | 41.767 | $ft^3$ | |
| Total Sampling Time | 120.00 | 120.00 | 120.00 | 120.00 | min | |
| Average Meter Temperature | 62.79 | 82.54 | 82.17 | 75.83 | °F | |
| Barometric Pressure | 30.07 | 30.22 | 30.27 | 30.19 | in Hg | |
| Stack Static Pressure | -0.92 | -0.92 | -0.92 | -0.92 | in $H_2O$ | |
| Absolute Stack Pressure | 30.00 | 30.15 | 30.20 | 30.12 | in Hg | |
| Average Orifice Pressure Drop | 0.41 | 0.41 | 0.41 | 0.41 | in $H_2O$ | |
| Absolute Meter Pressure | 30.21 | 30.36 | 30.41 | 30.32 | in Hg | |
| **Moisture Content Data** | SAM U-00003 Base+DB-1 | SAM U-00003 Base+DB-2 | SAM U-00003 Base+DB-3 | **Average** | **Units** | **Limits** |
| Impinger Water Weight Gain | 76.50 | 80.20 | 79.80 | 78.83 | g | |
| Silica Gel Weight Gain | 14.60 | 10.10 | 7.80 | 10.83 | g | |
| Total Water Volume Collected | 91.26 | 90.46 | 87.76 | 89.83 | ml | |
| Standard Water Vapor Volume | 4.30 | 4.26 | 4.13 | 4.23 | scf | |
| Standard Meter Volume | 41.3 | 40.0 | 40.1 | 40.5 | dscf | |
| Standard Metric Meter Volume | 1.2 | 1.1 | 1.1 | 1.1 | dscm | |
| Calculated Stack Moisture | 9.42 | 9.61 | 9.33 | 9.45 | % | |
| **Gas Analysis Data** | SAM U-00003 Base+DB-1 | SAM U-00003 Base+DB-2 | SAM U-00003 Base+DB-3 | **Average** | **Units** | **Limits** |
| Carbon Dioxide Content | 4.5 | 4.5 | 4.5 | 4.5 | % | |
| Oxygen Content | 12.9 | 12.9 | 12.9 | 12.9 | % | |
| Carbon Monoxide Content | 0.0 | 0.0 | 0.0 | 0.0 | ppm | |
| Nitrogen Content | 82.6 | 82.6 | 82.6 | 82.6 | % | |
| Stack Dry Molecular Weight | 29.24 | 29.24 | 29.24 | 29.24 | lb/lb-mole | |
| Calculated Fuel Factor | 1.778 | 1.778 | 1.778 | 1.778 | | |
| Fuel F-Factor | 8641.42 | 8663.09 | 8663.09 | 8655.87 | dscf/MMBtu | |
| **Sulfuric Acid Mist IC Analysis** | SAM U-00003 Base+DB-1 | SAM U-00003 Base+DB-2 | SAM U-00003 Base+DB-3 | **Average** | **Units** | **Limits** |
| $H_2SO_4$ (IC) Sample Volume - Front Half Rinse | 166.0 | 103.0 | 108.0 | 125.67 | ml | -- |
| $H_2SO_4$ (IC) Sample - Mass Per Volume | 0.1 | 0.6 | 0.2 | 0.28 | mg/L | -- |
| $H_2SO_4$ (IC) Mass | 0.02 | 0.06 | 0.02 | 0.03 | mg | -- |
| $H_2SO_4$ (IC) Concentration | 4.12E-07 | 1.50E-06 | 4.23E-07 | 7.78E-07 | g/dscf | -- |
| | 6.35E-06 | 2.31E-05 | 6.54E-06 | 1.20E-05 | gr/dscf | -- |
| | 1.45E-08 | 5.29E-08 | 1.50E-08 | 2.75E-08 | g/L | -- |
| | 0.00 | 0.01 | 0.00 | 0.01 | ppmvd | -- |
| $H_2SO_4$ (IC) Emission Rate | 0.00002 | 0.00007 | 0.00002 | 0.00004 | lb/MMBtu | 0.00065 |

Note: Run 1 reported at the RDL (0.017 mg)

**EXAMPLE CALCULATIONS (Reference Method 1 - Circular Stack)**

**Diameter of Stack (in.)**

$$D(in.) = L_{fw} - L_{nw}$$

D (in.) = 236.00 in. - 8.00 in. = 228.00 in.

**Stack Diameters Downstream**

$$B_D\,(dia.) = \frac{B}{D}$$

$B_D$ (dia.) = $\frac{850.00 \text{ in.}}{228.00 \text{ in.}}$ = 3.73 diameters

**Area of Stack ($ft^2$)**

$$A_s\,(ft^2) = \pi \times \left(\frac{D}{2 \times 12}\right)^2$$

$A_s$ ($ft^2$) = 3.14 x ( $\frac{228.00 \text{ in.}}{2 \text{ x } 12 \text{in./ft}}$ )$^2$ = 283.53 $ft^2$

**Stack Diameters Upstream**

$$A_D\,(dia.) = \frac{A}{D}$$

$A_D$ (dia.) = $\frac{200.40 \text{ in.}}{228.00 \text{ in.}}$ = 0.88 diameters

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Reference Method 4) [Values from Run 1 test]**

**Water Volume Weighed (scf)**

$$V_{wsg\ (std)}(scf) = W_t \times K_5$$

$V_{wsg(std)}$ = 91.10 g x 0.04715 $ft^3/g$ = 4.295 scf

**Standard Meter Volume (dscf)**

$$V_{m(std)}(dscf) = \frac{K_1 \times Y \times V_m \times \left(P_b + \frac{\Delta H_{avg}}{13.6}\right)}{(t_m)_{avg} + T_u}$$

$$V_{m(std)} = \frac{\frac{17.65\ ^\circ R}{in.\ Hg} \times 0.97 \times 41.73\ dcf \times \left(30.07\ in.\ Hg + \frac{0.41\ in.\ H_2O}{13.6\ in.\ H_2O / in.\ Hg}\right)}{62.79\ ^\circ F + 460\ ^\circ R} = 41.30\ dscf$$

**Calculated Moisture Content (%)**

$$B_{ws(calc)}(\%) = 100 \times \frac{V_{wsg(std)}}{V_{wsg(std)} + V_{m(std)}}$$

$$B_{ws(calc)} = 100 \times \frac{4.30\ dscf}{4.30\ dscf + 41.30\ dscf} = 9.42\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (Analysis) [Values from Run 1 test - $H_2SO_4$ (IC)]**

**Stack $H_2SO_4$ Mass (mg)**

$$M_n(mg) = \frac{M_{n(lab)}}{V_{s(lab)}} \times V_{sample} \times \frac{L}{1000ml}$$

$M_n$ (mg) = $\frac{\text{L}}{\text{1000 ml}}$ x 0.10 $\frac{\text{mg}}{\text{L}}$ x 166.00 ml = 0.02 mg

**Stack $H_2SO_4$ Concentration (g/dscf)**

$$c_s(g/dscf) = 0.001 \times \frac{M_n}{V_{m(std)}}$$

$c_s$ (g/dscf) = $\frac{\text{g}}{\text{1000 mg}}$ x $\frac{\text{0.02 mg}}{\text{41.30 dscf}}$ = $\frac{\text{4.10E-07 g}}{\text{dscf}}$

**Stack $H_2SO_4$ Concentration (gr/dscf)**

$$c'_s(gr/dscf) = 0.001 \times \frac{M_n}{V_{m(std)}} \times \frac{7000}{453.592}$$

c'$_s$ (gr/dscf) = $\frac{\text{g}}{\text{1000 mg}}$ x $\frac{\text{0.02 mg}}{\text{41.30 dscf}}$ x $\frac{\text{7000 gr}}{\text{lb}}$ x $\frac{\text{lb}}{\text{453.592 g}}$ = $\frac{\text{6.35E-06 gr}}{\text{dscf}}$

**Stack $H_2SO_4$ Concentration (g/L)**

$$c''_s(g/L) = c'_s \times \frac{dscf}{28.31685 dsL}$$

c'$_s$ (gr/dscf) = 4.12E-07 $\frac{\text{g}}{\text{dscf}}$ x $\frac{\text{dscf}}{\text{28.31685 dsL}}$ = $\frac{\text{1.00E-08 g}}{\text{L}}$

**Stack $H_2SO_4$ Concentration (ppmvd)**

$$c'''_s(ppmvd) = \frac{M_n}{V_{m(std)}} \times Ideal\ Gas\ Constant \times \frac{10^6 parts}{million\ parts} \times \frac{1}{Mol\ Wt}$$

c'''$_s$ (ppmvd) = 1.45E-08 $\frac{\text{g}}{\text{L}}$ x $\frac{\text{24.04 L gas}}{\text{lb-mol}}$ x $\frac{10^6 \text{ parts}}{\text{MM parts}}$ x $\frac{\text{lb-mol}}{\text{98.0790 lb}}$ = 0.004 ppmvd

**$H_2SO_4$ Emissions Rate (lb/MMBtu)**

Oxygen Based:

$$E'''(lb/MMBtu) = \frac{M_n \times F_d}{V_{m(std)} \times 1000 \times 453.592} \times \left(\frac{20.9}{20.9 - \%O_2}\right)$$

E''' (lb/MMBtu) = $\frac{\text{g}}{\text{1000 mg}}$ x $\frac{\text{lb}}{\text{453.592 g}}$ x $\frac{\text{0.02 mg}}{\text{41.30 dscf}}$ x $\frac{\text{8,641.42 dscf}}{\text{MMBtu}}$ x ( $\frac{\text{20.9}}{\text{20.9 - 12.9 \%}}$ ) = $\frac{\text{0.00002 lb}}{\text{MMBtu}}$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

# APPENDIX B

# EMISSION DATA RECORDS

# Cricket Valley Energy Center LLC

| | |
|---|---|
| **Air Permit Number:** | 3-1326-00275/00009 |
| **Plant Name or Location:** | Cricket Valley Energy Center |
| **Date:** | April 15, 2020 |
| **Project Number:** | bec-19-cricketvalley.ny-start#3 |
| **Manufacturer & Equipment:** | General Electric |
| **Model:** | 7F.05 |
| **Unit Number:** | U-00003 |
| **Test Load:** | Multiple |
| **Tester(s) / Test Unit(s):** | RW/AB/220/213 |

| | | RUN | | | | | |
|---|---|---|---|---|---|---|---|
| | **UNITS** | **1-1** | **1-2** | **1-3** | **2-1** | **2-2** | **2-3** |
| **Start Time** | hh:mm:ss | 12:10:05 | 13:23:05 | 14:35:05 | 14:04:12 | 15:23:12 | 17:41:12 |
| **End Time** | hh:mm:ss | 13:09:35 | 14:22:35 | 15:34:35 | 15:03:42 | 16:22:42 | 18:40:42 |
| **Bar. Pressure** | in. Hg | 29.99 | 30.11 | 30.09 | 29.99 | 30.04 | 30.10 |
| **Amb. Temp.** | °F | 53 | 54 | 50 | 43 | 44 | 46 |
| **Rel. Humidity** | % | 23 | 25 | 29 | 54 | 55 | 53 |
| **Spec. Humidity** | lb water / lb air | 0.001939 | 0.002178 | 0.002181 | 0.003133 | 0.003311 | 0.003436 |
| **Date** | mm/dd/yy | 04/15/20 | 04/15/20 | 04/15/20 | 04/16/20 | 04/16/20 | 04/16/20 |
| **Load Designator** | | Base | Base | Base | Base+DB | Base+DB | Base+DB |
| **$NH_3$ Flow Rate** | lb/hr | 141.6 | 135.3 | 137.4 | 163.9 | 159.1 | 163.9 |
| **Turbine Fuel Flow** | lb/min | 1,651 | 1,646 | 1,643 | 1,681 | 1,678 | 1,681 |
| **Duct Burner Fuel Flow** | lb/min | 0 | 0 | 0 | 174 | 175 | 175 |
| **Total Fuel Flow** | SCFH | 2,293,723 | 2,287,005 | 2,282,441 | 2,578,392 | 2,573,884 | 2,579,455 |
| **Stack Moisture** | % Method 4 | 8.85 | 8.85 | 8.65 | 9.49 | 9.49 | 9.49 |
| **Heat Input** | MMBtu/hr | 2326.8 | 2320.0 | 2315.3 | 2603.4 | 2598.8 | 2604.5 |
| **CT Power Output** | megawatts | 237.6 | 237.1 | 237.5 | 240.3 | 239.6 | 240.5 |

Note: Base load DB fuel flows originally reported in operating data assumed as noise. Zero values presented in Appendix B and used for calcs.

Created with Comp&RATA&Eng-AHI v20190529

# EMISSION DATA RECORDS

## Operating Data Base Load
## (provided by Cricket Valley Energy Center LLC)
## NOx, CO, VOC, and $NH_3$

| Description | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/15 12:10 - 4/15 13:09) | 237.63 | 27.51 | 0.00 | 13.77 | 141.59 | 1167.96 | 3.84 |
| COUNT = 60 | | | | | | | |
| Signal Tagname | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| 4/15/20 12:10 | 238.28 | 27.53 | 0.00 | 13.65 | 147.34 | 1169.02 | 3.86 |
| 4/15/20 12:11 | 237.92 | 27.53 | 0.00 | 13.79 | 137.78 | 1168.84 | 3.86 |
| 4/15/20 12:12 | 237.72 | 27.59 | 0.00 | 13.74 | 146.47 | 1168.16 | 3.86 |
| 4/15/20 12:13 | 237.75 | 27.60 | 0.00 | 13.85 | 144.03 | 1167.90 | 3.86 |
| 4/15/20 12:14 | 237.53 | 27.49 | 0.00 | 13.85 | 139.50 | 1167.69 | 3.86 |
| 4/15/20 12:15 | 238.02 | 27.53 | 0.00 | 13.98 | 135.25 | 1169.18 | 3.86 |
| 4/15/20 12:16 | 237.97 | 27.59 | 0.00 | 13.77 | 134.14 | 1167.41 | 3.86 |
| 4/15/20 12:17 | 238.49 | 27.61 | 0.00 | 13.64 | 145.00 | 1168.17 | 3.86 |
| 4/15/20 12:18 | 237.68 | 27.55 | 0.00 | 13.71 | 146.47 | 1167.96 | 3.86 |
| 4/15/20 12:19 | 237.30 | 27.46 | 0.00 | 13.94 | 140.78 | 1168.22 | 3.86 |
| 4/15/20 12:20 | 237.76 | 27.51 | 0.00 | 13.69 | 138.87 | 1167.46 | 3.85 |
| 4/15/20 12:21 | 237.80 | 27.53 | 0.00 | 13.78 | 137.94 | 1168.10 | 3.85 |
| 4/15/20 12:22 | 237.64 | 27.55 | 0.00 | 13.66 | 139.87 | 1167.36 | 3.85 |
| 4/15/20 12:23 | 237.57 | 27.52 | 0.00 | 13.73 | 135.73 | 1168.75 | 3.85 |
| 4/15/20 12:24 | 237.96 | 27.46 | 0.00 | 13.81 | 144.83 | 1168.20 | 3.85 |
| 4/15/20 12:25 | 237.36 | 27.58 | 0.00 | 13.70 | 138.81 | 1168.10 | 3.85 |
| 4/15/20 12:26 | 237.73 | 27.54 | 0.00 | 13.76 | 135.25 | 1168.93 | 3.85 |
| 4/15/20 12:27 | 237.76 | 27.51 | 0.00 | 13.86 | 140.64 | 1167.50 | 3.85 |
| 4/15/20 12:28 | 238.33 | 27.54 | 0.00 | 13.93 | 132.74 | 1168.55 | 3.85 |
| 4/15/20 12:29 | 237.73 | 27.56 | 0.00 | 13.55 | 142.74 | 1167.25 | 3.85 |
| 4/15/20 12:30 | 238.39 | 27.56 | 0.00 | 14.16 | 140.60 | 1169.17 | 3.85 |
| 4/15/20 12:31 | 237.89 | 27.53 | 0.00 | 13.31 | 135.05 | 1168.25 | 3.85 |
| 4/15/20 12:32 | 237.60 | 27.51 | 0.00 | 13.67 | 138.15 | 1166.77 | 3.85 |
| 4/15/20 12:33 | 237.83 | 27.47 | 0.00 | 13.48 | 143.39 | 1167.44 | 3.84 |
| 4/15/20 12:34 | 237.44 | 27.47 | 0.00 | 14.00 | 145.63 | 1169.13 | 3.84 |
| 4/15/20 12:35 | 237.79 | 27.62 | 0.00 | 13.79 | 169.84 | 1167.54 | 3.84 |
| 4/15/20 12:36 | 237.66 | 27.53 | 0.00 | 13.83 | 165.86 | 1168.38 | 3.84 |
| 4/15/20 12:37 | 237.77 | 27.48 | 0.00 | 13.71 | 176.08 | 1167.46 | 3.84 |
| 4/15/20 12:38 | 237.67 | 27.51 | 0.00 | 13.60 | 177.90 | 1168.55 | 3.84 |
| 4/15/20 12:39 | 238.34 | 27.52 | 0.00 | 13.71 | 161.73 | 1168.17 | 3.84 |
| 4/15/20 12:40 | 238.32 | 27.54 | 0.00 | 14.02 | 169.70 | 1169.11 | 3.84 |
| 4/15/20 12:41 | 238.01 | 27.55 | 0.00 | 13.91 | 162.48 | 1168.16 | 3.84 |
| 4/15/20 12:42 | 237.77 | 27.50 | 0.00 | 13.92 | 157.56 | 1167.91 | 3.84 |
| 4/15/20 12:43 | 237.96 | 27.57 | 0.00 | 13.71 | 150.12 | 1168.56 | 3.84 |
| 4/15/20 12:44 | 238.00 | 27.55 | 0.00 | 13.96 | 139.80 | 1168.36 | 3.84 |
| 4/15/20 12:45 | 238.29 | 27.50 | 0.00 | 13.84 | 147.69 | 1168.20 | 3.84 |
| 4/15/20 12:46 | 237.73 | 27.49 | 0.00 | 13.76 | 136.52 | 1168.68 | 3.83 |
| 4/15/20 12:47 | 237.74 | 27.48 | 0.00 | 13.75 | 139.64 | 1167.65 | 3.83 |
| 4/15/20 12:48 | 237.46 | 27.52 | 0.00 | 13.55 | 134.99 | 1167.83 | 3.83 |
| 4/15/20 12:49 | 237.06 | 27.56 | 0.00 | 13.72 | 136.43 | 1167.96 | 3.83 |
| 4/15/20 12:50 | 237.47 | 27.51 | 0.00 | 13.69 | 130.41 | 1167.17 | 3.83 |
| 4/15/20 12:51 | 237.55 | 27.40 | 0.00 | 13.75 | 126.18 | 1167.23 | 3.83 |
| 4/15/20 12:52 | 237.19 | 27.53 | 0.00 | 14.05 | 134.95 | 1167.83 | 3.83 |
| 4/15/20 12:53 | 236.93 | 27.47 | 0.00 | 13.67 | 128.06 | 1167.01 | 3.83 |
| 4/15/20 12:54 | 237.23 | 27.53 | 0.00 | 13.93 | 137.84 | 1168.04 | 3.83 |
| 4/15/20 12:55 | 237.25 | 27.47 | 0.00 | 13.59 | 126.40 | 1167.51 | 3.83 |
| 4/15/20 12:56 | 237.97 | 27.56 | 0.00 | 13.57 | 137.81 | 1167.87 | 3.83 |
| 4/15/20 12:57 | 237.58 | 27.52 | 0.00 | 13.84 | 130.25 | 1168.26 | 3.83 |
| 4/15/20 12:58 | 237.53 | 27.53 | 0.00 | 13.72 | 135.28 | 1165.94 | 3.82 |
| 4/15/20 12:59 | 237.64 | 27.45 | 0.00 | 13.58 | 141.29 | 1168.97 | 3.82 |
| 4/15/20 13:00 | 237.86 | 27.46 | 0.00 | 13.82 | 143.68 | 1167.89 | 3.82 |
| 4/15/20 13:01 | 237.36 | 27.44 | 0.00 | 13.78 | 139.29 | 1168.19 | 3.82 |
| 4/15/20 13:02 | 236.78 | 27.47 | 0.00 | 13.87 | 133.21 | 1167.75 | 3.82 |
| 4/15/20 13:03 | 237.13 | 27.45 | 0.00 | 13.70 | 131.71 | 1167.17 | 3.82 |
| 4/15/20 13:04 | 236.89 | 27.43 | 0.00 | 13.77 | 138.78 | 1166.86 | 3.82 |
| 4/15/20 13:05 | 236.77 | 27.44 | 0.00 | 13.69 | 129.47 | 1167.77 | 3.82 |
| 4/15/20 13:06 | 236.64 | 27.44 | 0.00 | 13.88 | 123.85 | 1167.52 | 3.82 |
| 4/15/20 13:07 | 237.07 | 27.44 | 0.00 | 13.78 | 131.45 | 1167.92 | 3.82 |
| 4/15/20 13:08 | 237.11 | 27.46 | 0.00 | 13.71 | 130.76 | 1167.24 | 3.82 |
| 4/15/20 13:09 | 237.07 | 27.48 | 0.00 | 13.77 | 131.50 | 1167.44 | 3.82 |

| Description | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/15 13:23 - 4/15 14:22) | 237.10 | 27.43 | 0.02 | 13.77 | 135.28 | 1167.37 | 3.78 |
| COUNT = 60 | | | | | | | |
| Signal Tagname | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| 4/15/20 13:23 | 236.80 | 27.38 | 0.00 | 13.50 | 133.16 | 1167.21 | 3.81 |
| 4/15/20 13:24 | 236.54 | 27.45 | 0.00 | 13.83 | 138.99 | 1167.76 | 3.80 |
| 4/15/20 13:25 | 236.69 | 27.40 | 0.00 | 13.90 | 127.81 | 1167.84 | 3.80 |
| 4/15/20 13:26 | 236.26 | 27.43 | 0.00 | 13.77 | 126.33 | 1167.04 | 3.80 |
| 4/15/20 13:27 | 236.84 | 27.40 | 0.00 | 13.74 | 123.09 | 1167.55 | 3.80 |
| 4/15/20 13:28 | 237.00 | 27.36 | 0.00 | 13.59 | 130.93 | 1166.64 | 3.80 |
| 4/15/20 13:29 | 237.16 | 27.41 | 0.00 | 13.74 | 124.53 | 1167.63 | 3.80 |
| 4/15/20 13:30 | 237.04 | 27.43 | 0.00 | 13.61 | 126.19 | 1168.07 | 3.80 |
| 4/15/20 13:31 | 237.35 | 27.46 | 0.00 | 13.72 | 129.03 | 1167.30 | 3.80 |
| 4/15/20 13:32 | 237.08 | 27.45 | 0.00 | 14.07 | 130.14 | 1167.65 | 3.80 |
| 4/15/20 13:33 | 237.20 | 27.46 | 0.00 | 13.60 | 129.23 | 1167.05 | 3.80 |
| 4/15/20 13:34 | 237.47 | 27.44 | 0.00 | 13.39 | 132.71 | 1167.50 | 3.80 |
| 4/15/20 13:35 | 237.52 | 27.45 | 0.00 | 13.87 | 138.80 | 1167.98 | 3.80 |
| 4/15/20 13:36 | 237.62 | 27.43 | 0.00 | 13.95 | 141.57 | 1167.73 | 3.79 |
| 4/15/20 13:37 | 237.12 | 27.44 | 0.00 | 13.60 | 142.30 | 1167.12 | 3.79 |
| 4/15/20 13:38 | 236.96 | 27.41 | 0.00 | 13.68 | 143.63 | 1166.83 | 3.79 |
| 4/15/20 13:39 | 237.19 | 27.58 | 0.00 | 13.84 | 132.50 | 1167.70 | 3.79 |
| 4/15/20 13:40 | 237.25 | 27.45 | 0.00 | 13.73 | 140.11 | 1167.21 | 3.79 |
| 4/15/20 13:41 | 237.53 | 27.44 | 0.00 | 13.90 | 137.12 | 1167.31 | 3.79 |
| 4/15/20 13:42 | 237.62 | 27.37 | 0.00 | 13.68 | 131.12 | 1166.55 | 3.79 |
| 4/15/20 13:43 | 236.89 | 27.41 | 0.00 | 13.70 | 140.85 | 1166.86 | 3.79 |
| 4/15/20 13:44 | 236.80 | 27.45 | 0.00 | 13.72 | 146.98 | 1166.51 | 3.79 |
| 4/15/20 13:45 | 236.98 | 27.39 | 0.01 | 13.76 | 158.14 | 1167.62 | 3.79 |
| 4/15/20 13:46 | 237.15 | 27.39 | 0.01 | 13.79 | 152.70 | 1167.86 | 3.79 |
| 4/15/20 13:47 | 237.20 | 27.46 | 0.02 | 13.63 | 149.90 | 1166.74 | 3.79 |
| 4/15/20 13:48 | 237.43 | 27.48 | 0.02 | 13.99 | 151.46 | 1168.14 | 3.79 |
| 4/15/20 13:49 | 237.46 | 27.51 | 0.03 | 13.86 | 143.28 | 1167.55 | 3.78 |
| 4/15/20 13:50 | 237.70 | 27.47 | 0.04 | 13.77 | 137.71 | 1168.55 | 3.78 |
| 4/15/20 13:51 | 236.85 | 27.42 | 0.04 | 13.91 | 134.99 | 1167.89 | 3.78 |
| 4/15/20 13:52 | 237.83 | 27.42 | 0.04 | 13.67 | 140.11 | 1168.58 | 3.78 |
| 4/15/20 13:53 | 237.05 | 27.52 | 0.04 | 13.55 | 131.46 | 1167.25 | 3.78 |
| 4/15/20 13:54 | 237.25 | 27.40 | 0.04 | 13.83 | 127.86 | 1166.82 | 3.78 |
| 4/15/20 13:55 | 237.37 | 27.41 | 0.04 | 13.83 | 127.70 | 1167.66 | 3.78 |
| 4/15/20 13:56 | 236.95 | 27.42 | 0.04 | 13.74 | 132.48 | 1167.66 | 3.78 |
| 4/15/20 13:57 | 237.32 | 27.45 | 0.04 | 13.72 | 135.90 | 1168.10 | 3.78 |
| 4/15/20 13:58 | 237.39 | 27.40 | 0.04 | 13.94 | 149.02 | 1167.12 | 3.78 |
| 4/15/20 13:59 | 236.68 | 27.39 | 0.04 | 13.62 | 139.59 | 1167.18 | 3.78 |
| 4/15/20 14:00 | 236.97 | 27.43 | 0.04 | 13.91 | 142.03 | 1166.78 | 3.78 |
| 4/15/20 14:01 | 237.25 | 27.48 | 0.04 | 13.80 | 146.52 | 1167.63 | 3.78 |
| 4/15/20 14:02 | 237.21 | 27.43 | 0.04 | 13.84 | 135.82 | 1166.80 | 3.77 |
| 4/15/20 14:03 | 237.69 | 27.48 | 0.04 | 13.78 | 140.45 | 1167.74 | 3.77 |
| 4/15/20 14:04 | 237.23 | 27.39 | 0.04 | 13.76 | 140.88 | 1167.47 | 3.77 |
| 4/15/20 14:05 | 237.26 | 27.40 | 0.04 | 13.62 | 132.97 | 1167.80 | 3.77 |
| 4/15/20 14:06 | 237.51 | 27.55 | 0.04 | 13.91 | 139.69 | 1168.06 | 3.77 |
| 4/15/20 14:07 | 237.45 | 27.46 | 0.04 | 13.72 | 133.09 | 1167.44 | 3.77 |
| 4/15/20 14:08 | 237.27 | 27.42 | 0.04 | 13.78 | 130.99 | 1167.23 | 3.77 |
| 4/15/20 14:09 | 236.91 | 27.44 | 0.04 | 13.69 | 130.46 | 1166.80 | 3.77 |
| 4/15/20 14:10 | 237.18 | 27.39 | 0.04 | 13.83 | 130.35 | 1167.55 | 3.77 |
| 4/15/20 14:11 | 237.11 | 27.43 | 0.04 | 13.93 | 133.85 | 1166.85 | 3.77 |
| 4/15/20 14:12 | 237.27 | 27.42 | 0.04 | 13.81 | 135.13 | 1166.93 | 3.77 |
| 4/15/20 14:13 | 236.55 | 27.44 | 0.04 | 14.22 | 134.52 | 1167.35 | 3.77 |
| 4/15/20 14:14 | 236.87 | 27.39 | 0.04 | 13.49 | 131.80 | 1167.02 | 3.76 |
| 4/15/20 14:15 | 236.82 | 27.43 | 0.04 | 13.61 | 126.88 | 1167.51 | 3.76 |
| 4/15/20 14:16 | 236.82 | 27.41 | 0.04 | 14.10 | 131.74 | 1166.90 | 3.76 |
| 4/15/20 14:17 | 236.40 | 27.41 | 0.04 | 13.84 | 129.33 | 1166.46 | 3.76 |
| 4/15/20 14:18 | 236.62 | 27.39 | 0.04 | 13.84 | 125.65 | 1167.04 | 3.76 |
| 4/15/20 14:19 | 236.59 | 27.37 | 0.04 | 13.49 | 125.14 | 1167.67 | 3.76 |
| 4/15/20 14:20 | 236.51 | 27.46 | 0.04 | 13.83 | 128.16 | 1166.99 | 3.76 |
| 4/15/20 14:21 | 236.84 | 27.41 | 0.04 | 14.04 | 124.10 | 1167.50 | 3.76 |
| 4/15/20 14:22 | 237.02 | 27.40 | 0.04 | 13.73 | 127.90 | 1166.81 | 3.76 |

| Description | | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/15 14:35 - 4/15 15:34) | | 237.53 | 27.38 | 0.04 | 13.85 | 137.41 | 1168.08 | 854.53 |
| COUNT = 60 | | | | | | | | |
| Signal Tagname | | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| | 4/15/20 14:35 | 236.39 | 27.36 | 0.04 | 13.99 | 133.97 | 1167.20 | 3.75 |
| | 4/15/20 14:36 | 236.31 | 27.32 | 0.04 | 13.69 | 130.99 | 1167.04 | 3.75 |
| | 4/15/20 14:37 | 237.02 | 27.40 | 0.04 | 14.03 | 128.59 | 1167.60 | 3.75 |
| | 4/15/20 14:38 | 237.06 | 27.39 | 0.04 | 14.17 | 129.87 | 1168.01 | 3.75 |
| | 4/15/20 14:39 | 236.85 | 27.31 | 0.04 | 13.84 | 130.07 | 1168.24 | 3.75 |
| | 4/15/20 14:40 | 236.76 | 27.31 | 0.04 | 13.81 | 130.88 | 1167.30 | 3.74 |
| | 4/15/20 14:41 | 237.37 | 27.40 | 0.04 | 13.72 | 131.84 | 1167.88 | 3.74 |
| | 4/15/20 14:42 | 237.54 | 27.31 | 0.04 | 14.17 | 134.17 | 1169.57 | 3.74 |
| | 4/15/20 14:43 | 237.40 | 27.38 | 0.04 | 13.69 | 136.85 | 1166.84 | 3.74 |
| | 4/15/20 14:44 | 237.34 | 27.38 | 0.04 | 13.92 | 136.85 | 1167.62 | 3.74 |
| | 4/15/20 14:45 | 237.15 | 27.37 | 0.04 | 13.55 | 137.90 | 1167.67 | 3.74 |
| | 4/15/20 14:46 | 236.93 | 27.33 | 0.04 | 13.74 | 131.37 | 1167.89 | 3.74 |
| | 4/15/20 14:47 | 237.70 | 27.37 | 0.04 | 13.87 | 129.58 | 1168.39 | 3.74 |
| | 4/15/20 14:48 | 236.78 | 27.45 | 0.04 | 13.90 | 129.19 | 1167.24 | 3.74 |
| | 4/15/20 14:49 | 236.99 | 27.24 | 0.04 | 13.70 | 138.72 | 1167.33 | 540.40 |
| | 4/15/20 14:50 | 237.13 | 27.35 | 0.04 | 13.86 | 128.88 | 1167.98 | 609.73 |
| | 4/15/20 14:51 | 237.47 | 27.44 | 0.04 | 13.98 | 126.78 | 1167.68 | 648.18 |
| | 4/15/20 14:52 | 237.34 | 27.37 | 0.04 | 13.67 | 134.85 | 1167.64 | 691.31 |
| | 4/15/20 14:53 | 237.56 | 27.32 | 0.04 | 13.65 | 128.82 | 1167.97 | 748.24 |
| | 4/15/20 14:54 | 237.08 | 27.33 | 0.04 | 13.72 | 130.39 | 1167.81 | 797.79 |
| | 4/15/20 14:55 | 237.51 | 27.42 | 0.04 | 13.90 | 128.29 | 1167.94 | 853.61 |
| | 4/15/20 14:56 | 236.86 | 27.39 | 0.04 | 13.87 | 137.29 | 1168.04 | 902.71 |
| | 4/15/20 14:57 | 237.29 | 27.37 | 0.04 | 13.93 | 135.08 | 1168.39 | 947.99 |
| | 4/15/20 14:58 | 236.92 | 27.45 | 0.04 | 13.75 | 134.03 | 1167.67 | 1011.59 |
| | 4/15/20 14:59 | 237.59 | 27.25 | 0.04 | 13.93 | 131.57 | 1168.33 | 1070.11 |
| | 4/15/20 15:00 | 237.75 | 27.42 | 0.04 | 14.25 | 127.11 | 1168.73 | 1129.20 |
| | 4/15/20 15:01 | 237.62 | 27.43 | 0.04 | 14.14 | 131.54 | 1169.23 | 1187.93 |
| | 4/15/20 15:02 | 237.97 | 27.38 | 0.04 | 13.80 | 135.04 | 1168.70 | 1261.64 |
| | 4/15/20 15:03 | 237.52 | 27.35 | 0.04 | 14.04 | 136.57 | 1168.62 | 1210.41 |
| | 4/15/20 15:04 | 237.30 | 27.41 | 0.04 | 13.66 | 136.15 | 1167.51 | 1081.46 |
| | 4/15/20 15:05 | 237.70 | 27.41 | 0.04 | 14.10 | 140.71 | 1167.58 | 1013.81 |
| | 4/15/20 15:06 | 237.62 | 27.35 | 0.04 | 13.88 | 139.73 | 1168.12 | 952.65 |
| | 4/15/20 15:07 | 237.70 | 27.35 | 0.04 | 13.54 | 133.27 | 1167.80 | 908.23 |
| | 4/15/20 15:08 | 237.99 | 27.38 | 0.04 | 13.81 | 132.47 | 1168.44 | 834.77 |
| | 4/15/20 15:09 | 237.54 | 27.46 | 0.04 | 13.99 | 130.15 | 1168.49 | 794.18 |
| | 4/15/20 15:10 | 237.35 | 27.42 | 0.04 | 13.75 | 131.10 | 1168.00 | 730.29 |
| | 4/15/20 15:11 | 237.81 | 27.39 | 0.04 | 13.48 | 133.34 | 1168.44 | 690.96 |
| | 4/15/20 15:12 | 237.87 | 27.36 | 0.04 | 13.94 | 140.79 | 1168.43 | 651.64 |
| | 4/15/20 15:13 | 238.03 | 27.35 | 0.04 | 13.87 | 139.19 | 1169.40 | 680.23 |
| | 4/15/20 15:14 | 237.92 | 27.45 | 0.04 | 13.85 | 133.82 | 1168.71 | 783.51 |
| | 4/15/20 15:15 | 237.69 | 27.38 | 0.04 | 13.87 | 137.28 | 1168.33 | 850.10 |
| | 4/15/20 15:16 | 237.83 | 27.40 | 0.04 | 13.81 | 133.06 | 1168.22 | 900.11 |
| | 4/15/20 15:17 | 237.29 | 27.31 | 0.04 | 13.96 | 135.12 | 1167.89 | 959.22 |
| | 4/15/20 15:18 | 237.85 | 27.42 | 0.04 | 13.93 | 129.19 | 1168.53 | 1039.73 |
| | 4/15/20 15:19 | 237.77 | 27.44 | 0.04 | 13.88 | 135.94 | 1168.30 | 1095.10 |
| | 4/15/20 15:20 | 237.74 | 27.39 | 0.04 | 13.89 | 127.68 | 1168.00 | 1158.64 |
| | 4/15/20 15:21 | 237.76 | 27.34 | 0.04 | 13.82 | 135.01 | 1167.49 | 1216.38 |
| | 4/15/20 15:22 | 237.87 | 27.37 | 0.04 | 13.51 | 130.35 | 1167.34 | 1296.81 |
| | 4/15/20 15:23 | 238.24 | 27.44 | 0.04 | 14.10 | 132.96 | 1169.60 | 1347.24 |
| | 4/15/20 15:24 | 237.97 | 27.38 | 0.04 | 13.61 | 134.75 | 1167.28 | 1403.85 |
| | 4/15/20 15:25 | 237.57 | 27.37 | 0.04 | 13.67 | 136.42 | 1167.85 | 1475.28 |
| | 4/15/20 15:26 | 238.13 | 27.37 | 0.04 | 13.83 | 133.67 | 1167.89 | 1527.54 |
| | 4/15/20 15:27 | 238.71 | 27.38 | 0.04 | 13.88 | 141.59 | 1168.52 | 1564.75 |
| | 4/15/20 15:28 | 238.04 | 27.46 | 0.04 | 13.73 | 133.92 | 1168.70 | 1618.81 |
| | 4/15/20 15:29 | 237.60 | 27.37 | 0.04 | 13.82 | 173.71 | 1168.30 | 1713.15 |
| | 4/15/20 15:30 | 238.00 | 27.35 | 0.04 | 13.62 | 187.33 | 1168.23 | 1727.20 |
| | 4/15/20 15:31 | 237.96 | 27.38 | 0.04 | 14.04 | 180.61 | 1168.19 | 1850.32 |
| | 4/15/20 15:32 | 237.79 | 27.42 | 0.04 | 13.81 | 170.98 | 1167.96 | 1886.19 |
| | 4/15/20 15:33 | 238.07 | 27.37 | 0.04 | 14.13 | 164.48 | 1167.89 | 1902.55 |
| | 4/15/20 15:34 | 237.68 | 27.34 | 0.04 | 13.84 | 163.04 | 1168.57 | 1953.86 |

# EMISSION DATA RECORDS

## Operating Data Base Load
## (provided by Cricket Valley Energy Center LLC)
## $PM_{10}$

| Description | | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/15 8:23 - 4/15 12:46) | | 239.07 | 27.51 | 0.00 | 13.78 | 148.84 | 1169.13 | 3.95 |
| COUNT = 264 | | | | | | | | |
| Signal Tagname | | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| | 4/15/20 8:23 | 240.44 | 27.49 | 0.00 | 13.76 | 156.61 | 1170.68 | 4.19 |
| | 4/15/20 8:24 | 240.57 | 27.68 | 0.00 | 13.98 | 155.87 | 1170.76 | 4.18 |
| | 4/15/20 8:25 | 240.62 | 27.56 | 0.00 | 13.60 | 150.57 | 1170.60 | 4.18 |
| | 4/15/20 8:26 | 240.81 | 27.40 | 0.00 | 13.89 | 155.81 | 1170.96 | 4.17 |
| | 4/15/20 8:27 | 240.55 | 27.70 | 0.00 | 13.78 | 151.44 | 1169.98 | 4.17 |
| | 4/15/20 8:28 | 240.90 | 27.62 | 0.00 | 14.00 | 147.54 | 1169.50 | 4.16 |
| | 4/15/20 8:29 | 240.60 | 27.66 | 0.00 | 13.69 | 146.95 | 1169.87 | 4.16 |
| | 4/15/20 8:30 | 240.23 | 27.51 | 0.00 | 13.68 | 150.29 | 1169.80 | 4.16 |
| | 4/15/20 8:31 | 240.22 | 27.54 | 0.00 | 13.72 | 149.58 | 1169.82 | 4.15 |
| | 4/15/20 8:32 | 240.90 | 27.61 | 0.00 | 13.87 | 147.67 | 1170.00 | 4.15 |
| | 4/15/20 8:33 | 240.49 | 27.62 | 0.00 | 13.80 | 158.12 | 1170.97 | 4.14 |
| | 4/15/20 8:34 | 240.72 | 27.45 | 0.00 | 13.77 | 148.97 | 1170.34 | 4.14 |
| | 4/15/20 8:35 | 240.39 | 27.48 | 0.00 | 13.85 | 153.12 | 1169.90 | 4.13 |
| | 4/15/20 8:36 | 240.46 | 27.58 | 0.00 | 13.81 | 159.83 | 1170.29 | 4.13 |
| | 4/15/20 8:37 | 240.40 | 27.66 | 0.00 | 13.85 | 150.10 | 1170.14 | 4.12 |
| | 4/15/20 8:38 | 240.86 | 27.58 | 0.00 | 14.21 | 152.79 | 1170.60 | 4.12 |
| | 4/15/20 8:39 | 240.64 | 27.47 | 0.00 | 14.21 | 155.49 | 1170.56 | 4.12 |
| | 4/15/20 8:40 | 240.58 | 27.47 | 0.00 | 14.04 | 152.05 | 1170.00 | 4.11 |
| | 4/15/20 8:41 | 240.97 | 27.57 | 0.00 | 13.67 | 150.99 | 1170.48 | 4.11 |
| | 4/15/20 8:42 | 240.74 | 27.57 | 0.00 | 13.71 | 157.06 | 1169.72 | 4.10 |
| | 4/15/20 8:43 | 240.46 | 27.35 | 0.00 | 13.71 | 151.48 | 1169.66 | 4.10 |
| | 4/15/20 8:44 | 240.26 | 27.55 | 0.00 | 13.69 | 146.45 | 1169.82 | 4.09 |
| | 4/15/20 8:45 | 240.43 | 27.55 | 0.00 | 13.88 | 155.65 | 1169.54 | 4.09 |
| | 4/15/20 8:46 | 240.03 | 27.70 | 0.00 | 13.64 | 160.39 | 1169.68 | 4.08 |
| | 4/15/20 8:47 | 240.78 | 27.47 | 0.00 | 14.18 | 162.75 | 1170.65 | 4.08 |
| | 4/15/20 8:48 | 240.72 | 27.48 | 0.00 | 14.00 | 154.00 | 1170.95 | 4.07 |
| | 4/15/20 8:49 | 240.44 | 27.53 | 0.00 | 13.98 | 150.03 | 1170.49 | 4.07 |
| | 4/15/20 8:50 | 240.52 | 27.65 | 0.00 | 13.94 | 159.71 | 1170.06 | 4.07 |
| | 4/15/20 8:51 | 240.36 | 27.48 | 0.00 | 13.77 | 155.45 | 1170.68 | 4.06 |
| | 4/15/20 8:52 | 240.24 | 27.46 | 0.00 | 13.62 | 146.27 | 1169.95 | 4.06 |
| | 4/15/20 8:53 | 240.04 | 27.47 | 0.00 | 13.96 | 146.86 | 1169.52 | 4.05 |
| | 4/15/20 8:54 | 240.32 | 27.62 | 0.00 | 13.73 | 145.95 | 1169.04 | 4.05 |
| | 4/15/20 8:55 | 240.25 | 27.65 | 0.00 | 14.20 | 143.89 | 1170.00 | 4.04 |
| | 4/15/20 8:56 | 240.46 | 27.52 | 0.00 | 13.76 | 145.98 | 1169.37 | 4.04 |
| | 4/15/20 8:57 | 240.06 | 27.48 | 0.00 | 13.82 | 150.13 | 1168.93 | 4.03 |
| | 4/15/20 8:58 | 239.81 | 27.45 | 0.00 | 13.99 | 151.65 | 1169.72 | 4.03 |
| | 4/15/20 8:59 | 239.92 | 27.61 | 0.00 | 13.88 | 149.20 | 1169.76 | 4.03 |
| | 4/15/20 9:00 | 239.67 | 27.48 | 0.00 | 13.73 | 146.61 | 1169.60 | 4.02 |
| | 4/15/20 9:01 | 240.09 | 27.45 | 0.00 | 13.80 | 145.84 | 1169.32 | 4.02 |
| | 4/15/20 9:02 | 240.16 | 27.46 | 0.00 | 13.72 | 151.00 | 1169.58 | 4.01 |
| | 4/15/20 9:03 | 240.14 | 27.55 | 0.00 | 13.86 | 155.16 | 1169.23 | 4.01 |
| | 4/15/20 9:04 | 239.98 | 27.52 | 0.00 | 13.65 | 156.81 | 1169.78 | 4.01 |
| | 4/15/20 9:05 | 240.14 | 27.39 | 0.00 | 14.03 | 148.64 | 1170.51 | 4.01 |
| | 4/15/20 9:06 | 240.02 | 27.43 | 0.00 | 13.76 | 144.15 | 1169.68 | 4.01 |
| | 4/15/20 9:07 | 239.65 | 27.48 | 0.00 | 13.60 | 155.58 | 1169.02 | 4.01 |
| | 4/15/20 9:08 | 239.82 | 27.57 | 0.00 | 13.81 | 153.24 | 1169.73 | 4.01 |
| | 4/15/20 9:09 | 239.73 | 27.43 | 0.00 | 13.64 | 144.15 | 1169.32 | 4.01 |
| | 4/15/20 9:10 | 240.00 | 27.45 | 0.00 | 13.91 | 150.42 | 1170.27 | 4.00 |
| | 4/15/20 9:11 | 239.97 | 27.49 | 0.00 | 13.84 | 156.95 | 1170.39 | 4.00 |
| | 4/15/20 9:12 | 239.94 | 27.53 | 0.00 | 13.69 | 155.52 | 1170.09 | 4.00 |
| | 4/15/20 9:13 | 239.60 | 27.54 | 0.00 | 13.65 | 157.07 | 1169.94 | 4.00 |
| | 4/15/20 9:14 | 239.48 | 27.41 | 0.00 | 13.56 | 144.28 | 1169.48 | 4.00 |
| | 4/15/20 9:15 | 239.42 | 27.40 | 0.00 | 13.93 | 145.23 | 1170.20 | 4.00 |
| | 4/15/20 9:16 | 239.93 | 27.45 | 0.00 | 13.50 | 147.12 | 1169.82 | 4.00 |
| | 4/15/20 9:17 | 239.93 | 27.52 | 0.00 | 13.85 | 143.97 | 1170.12 | 4.00 |
| | 4/15/20 9:18 | 239.72 | 27.49 | 0.00 | 13.87 | 155.41 | 1169.85 | 4.00 |
| | 4/15/20 9:19 | 239.70 | 27.37 | 0.00 | 13.65 | 158.47 | 1169.87 | 4.00 |
| | 4/15/20 9:20 | 239.74 | 27.48 | 0.00 | 13.75 | 144.77 | 1169.67 | 4.00 |
| | 4/15/20 9:21 | 239.99 | 27.48 | 0.00 | 13.66 | 149.93 | 1169.54 | 4.00 |
| | 4/15/20 9:22 | 239.88 | 27.57 | 0.00 | 13.64 | 156.85 | 1169.68 | 4.00 |
| | 4/15/20 9:23 | 239.46 | 27.49 | 0.00 | 13.65 | 148.13 | 1169.33 | 3.99 |
| | 4/15/20 9:24 | 239.68 | 27.41 | 0.00 | 13.63 | 146.58 | 1169.12 | 3.99 |
| | 4/15/20 9:25 | 239.62 | 27.46 | 0.00 | 13.49 | 155.94 | 1168.99 | 3.99 |
| | 4/15/20 9:26 | 239.75 | 27.55 | 0.00 | 13.90 | 160.40 | 1169.28 | 3.99 |
| | 4/15/20 9:27 | 239.37 | 27.51 | 0.00 | 13.75 | 156.23 | 1169.71 | 3.99 |
| | 4/15/20 9:28 | 239.44 | 27.51 | 0.00 | 13.64 | 153.63 | 1169.43 | 3.99 |
| | 4/15/20 9:29 | 239.59 | 27.54 | 0.00 | 13.61 | 159.71 | 1169.09 | 3.99 |

| Description | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/15 8:23 - 4/15 12:46) | 239.07 | 27.51 | 0.00 | 13.78 | 148.84 | 1169.13 | 3.95 |
| COUNT = 264 | | | | | | | |

| Signal Tagname | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
|---|---|---|---|---|---|---|---|
| 4/15/20 9:30 | 239.62 | 27.46 | 0.00 | 14.01 | 144.45 | 1169.97 | 3.99 |
| 4/15/20 9:31 | 239.37 | 27.48 | 0.00 | 13.90 | 153.87 | 1168.59 | 3.99 |
| 4/15/20 9:32 | 239.69 | 27.49 | 0.00 | 13.78 | 151.72 | 1170.21 | 3.99 |
| 4/15/20 9:33 | 239.82 | 27.47 | 0.00 | 13.90 | 142.42 | 1170.02 | 3.99 |
| 4/15/20 9:34 | 239.94 | 27.44 | 0.00 | 13.88 | 151.67 | 1170.22 | 3.99 |
| 4/15/20 9:35 | 239.34 | 27.47 | 0.00 | 14.07 | 153.57 | 1170.17 | 3.99 |
| 4/15/20 9:36 | 239.65 | 27.59 | 0.00 | 13.80 | 149.70 | 1170.02 | 3.98 |
| 4/15/20 9:37 | 239.73 | 27.42 | 0.00 | 13.81 | 147.81 | 1169.33 | 3.98 |
| 4/15/20 9:38 | 239.81 | 27.45 | 0.00 | 14.00 | 149.35 | 1170.56 | 3.98 |
| 4/15/20 9:39 | 240.00 | 27.51 | 0.00 | 13.76 | 160.14 | 1170.18 | 3.98 |
| 4/15/20 9:40 | 239.31 | 27.49 | 0.00 | 13.45 | 157.24 | 1168.37 | 3.98 |
| 4/15/20 9:41 | 239.25 | 27.44 | 0.00 | 13.70 | 151.89 | 1169.13 | 3.98 |
| 4/15/20 9:42 | 239.04 | 27.47 | 0.00 | 13.76 | 145.20 | 1168.94 | 3.98 |
| 4/15/20 9:43 | 238.90 | 27.41 | 0.00 | 13.68 | 157.51 | 1168.77 | 3.98 |
| 4/15/20 9:44 | 239.22 | 27.40 | 0.00 | 13.96 | 143.28 | 1169.04 | 3.98 |
| 4/15/20 9:45 | 239.14 | 27.45 | 0.00 | 13.78 | 153.15 | 1169.88 | 3.98 |
| 4/15/20 9:46 | 239.55 | 27.49 | 0.00 | 13.53 | 141.01 | 1168.91 | 3.98 |
| 4/15/20 9:47 | 239.13 | 27.40 | 0.00 | 13.70 | 142.31 | 1168.84 | 3.98 |
| 4/15/20 9:48 | 239.60 | 27.48 | 0.00 | 13.73 | 151.35 | 1170.57 | 3.97 |
| 4/15/20 9:49 | 239.68 | 27.45 | 0.00 | 13.88 | 153.23 | 1169.86 | 3.97 |
| 4/15/20 9:50 | 239.18 | 27.43 | 0.00 | 14.12 | 145.83 | 1169.44 | 3.97 |
| 4/15/20 9:51 | 239.40 | 27.42 | 0.00 | 13.68 | 144.45 | 1169.95 | 3.97 |
| 4/15/20 9:52 | 239.26 | 27.45 | 0.00 | 13.82 | 151.49 | 1168.29 | 3.97 |
| 4/15/20 9:53 | 238.93 | 27.42 | 0.00 | 13.78 | 157.05 | 1169.68 | 3.97 |
| 4/15/20 9:54 | 238.91 | 27.40 | 0.00 | 13.90 | 151.77 | 1168.08 | 3.97 |
| 4/15/20 9:55 | 239.20 | 27.43 | 0.00 | 14.00 | 146.95 | 1169.42 | 3.97 |
| 4/15/20 9:56 | 238.97 | 27.43 | 0.00 | 13.91 | 145.89 | 1169.54 | 3.97 |
| 4/15/20 9:57 | 239.17 | 27.41 | 0.00 | 13.65 | 154.21 | 1169.61 | 3.97 |
| 4/15/20 9:58 | 238.89 | 27.36 | 0.00 | 13.78 | 156.39 | 1169.45 | 3.97 |
| 4/15/20 9:59 | 239.15 | 27.39 | 0.00 | 13.94 | 153.24 | 1169.59 | 3.97 |
| 4/15/20 10:00 | 239.31 | 27.47 | 0.00 | 14.02 | 152.80 | 1169.61 | 3.97 |
| 4/15/20 10:01 | 239.28 | 27.41 | 0.00 | 13.72 | 151.65 | 1169.45 | 3.96 |
| 4/15/20 10:02 | 239.15 | 27.42 | 0.00 | 13.68 | 155.72 | 1169.68 | 3.96 |
| 4/15/20 10:03 | 239.14 | 27.42 | 0.00 | 13.72 | 148.90 | 1169.29 | 3.96 |
| 4/15/20 10:04 | 239.21 | 27.35 | 0.00 | 13.93 | 151.01 | 1169.39 | 3.96 |
| 4/15/20 10:05 | 239.09 | 27.38 | 0.00 | 13.88 | 155.68 | 1169.89 | 3.96 |
| 4/15/20 10:06 | 238.79 | 27.43 | 0.00 | 13.69 | 144.73 | 1169.72 | 3.96 |
| 4/15/20 10:07 | 239.14 | 27.43 | 0.00 | 13.70 | 153.33 | 1169.02 | 3.96 |
| 4/15/20 10:08 | 239.45 | 27.40 | 0.00 | 13.72 | 146.01 | 1169.16 | 3.96 |
| 4/15/20 10:09 | 239.17 | 27.37 | 0.00 | 13.57 | 142.75 | 1169.15 | 3.96 |
| 4/15/20 10:10 | 239.52 | 27.50 | 0.00 | 13.66 | 151.23 | 1169.07 | 3.96 |
| 4/15/20 10:11 | 239.16 | 27.38 | 0.00 | 13.88 | 151.76 | 1168.11 | 3.96 |
| 4/15/20 10:12 | 239.38 | 27.43 | 0.00 | 13.87 | 145.45 | 1169.60 | 3.96 |
| 4/15/20 10:13 | 239.18 | 27.41 | 0.00 | 13.39 | 146.98 | 1168.56 | 3.96 |
| 4/15/20 10:14 | 239.13 | 27.44 | 0.00 | 13.48 | 152.46 | 1169.14 | 3.95 |
| 4/15/20 10:15 | 239.03 | 27.40 | 0.00 | 13.86 | 154.17 | 1169.17 | 3.95 |
| 4/15/20 10:16 | 239.53 | 27.43 | 0.00 | 13.75 | 147.66 | 1168.83 | 3.95 |
| 4/15/20 10:17 | 238.92 | 27.39 | 0.00 | 13.58 | 145.86 | 1168.37 | 3.95 |
| 4/15/20 10:18 | 239.64 | 27.42 | 0.00 | 14.07 | 157.53 | 1169.20 | 3.95 |
| 4/15/20 10:19 | 238.92 | 27.44 | 0.00 | 13.58 | 159.55 | 1168.81 | 3.95 |
| 4/15/20 10:20 | 238.88 | 27.52 | 0.00 | 13.70 | 158.66 | 1168.50 | 3.95 |
| 4/15/20 10:21 | 238.48 | 27.39 | 0.00 | 13.70 | 149.06 | 1168.31 | 3.95 |
| 4/15/20 10:22 | 238.70 | 27.39 | 0.00 | 14.20 | 156.09 | 1169.04 | 3.95 |
| 4/15/20 10:23 | 239.44 | 27.52 | 0.00 | 13.70 | 154.00 | 1169.21 | 3.95 |
| 4/15/20 10:24 | 239.28 | 27.41 | 0.00 | 13.67 | 150.39 | 1168.99 | 3.95 |
| 4/15/20 10:25 | 238.64 | 27.46 | 0.00 | 13.44 | 149.06 | 1168.77 | 3.95 |
| 4/15/20 10:26 | 238.88 | 27.41 | 0.00 | 13.95 | 143.22 | 1169.45 | 3.94 |
| 4/15/20 10:27 | 239.35 | 27.43 | 0.00 | 13.79 | 153.70 | 1169.26 | 3.94 |
| 4/15/20 10:28 | 239.09 | 27.48 | 0.00 | 13.69 | 156.16 | 1169.06 | 3.94 |
| 4/15/20 10:29 | 239.25 | 27.48 | 0.00 | 13.59 | 152.30 | 1169.61 | 3.94 |
| 4/15/20 10:30 | 239.37 | 27.48 | 0.00 | 13.94 | 146.39 | 1169.70 | 3.94 |
| 4/15/20 10:31 | 238.97 | 27.46 | 0.00 | 13.88 | 153.54 | 1169.67 | 3.94 |
| 4/15/20 10:32 | 239.22 | 27.44 | 0.00 | 14.24 | 158.41 | 1170.03 | 3.94 |
| 4/15/20 10:33 | 238.92 | 27.42 | 0.00 | 13.58 | 156.30 | 1167.88 | 3.94 |
| 4/15/20 10:34 | 239.00 | 27.45 | 0.00 | 13.81 | 152.05 | 1169.21 | 3.94 |
| 4/15/20 10:35 | 238.99 | 27.41 | 0.00 | 13.79 | 148.73 | 1169.26 | 3.94 |
| 4/15/20 10:36 | 239.24 | 27.40 | 0.00 | 13.63 | 148.86 | 1169.30 | 3.94 |

| Description | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/15 8:23 - 4/15 12:46) | 239.07 | 27.51 | 0.00 | 13.78 | 148.84 | 1169.13 | 3.95 |
| COUNT = 264 | | | | | | | |

| Signal Tagname | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
|---|---|---|---|---|---|---|---|
| 4/15/20 10:37 | 238.79 | 27.47 | 0.00 | 13.51 | 149.24 | 1168.59 | 3.94 |
| 4/15/20 10:38 | 239.09 | 27.36 | 0.00 | 13.85 | 153.37 | 1169.33 | 3.94 |
| 4/15/20 10:39 | 238.63 | 27.49 | 0.00 | 13.81 | 151.43 | 1168.89 | 3.93 |
| 4/15/20 10:40 | 239.18 | 27.45 | 0.00 | 13.76 | 145.42 | 1169.16 | 3.93 |
| 4/15/20 10:41 | 238.51 | 27.45 | 0.00 | 13.78 | 147.93 | 1168.62 | 3.93 |
| 4/15/20 10:42 | 238.76 | 27.48 | 0.00 | 13.84 | 145.27 | 1169.16 | 3.93 |
| 4/15/20 10:43 | 238.82 | 27.48 | 0.00 | 13.67 | 141.74 | 1169.11 | 3.93 |
| 4/15/20 10:44 | 239.43 | 27.44 | 0.00 | 13.63 | 171.93 | 1169.42 | 3.93 |
| 4/15/20 10:45 | 239.39 | 27.51 | 0.00 | 14.21 | 157.84 | 1169.59 | 3.93 |
| 4/15/20 10:46 | 239.19 | 27.51 | 0.00 | 13.75 | 168.24 | 1168.89 | 3.93 |
| 4/15/20 10:47 | 239.03 | 27.50 | 0.00 | 13.93 | 151.19 | 1169.11 | 3.93 |
| 4/15/20 10:48 | 239.31 | 27.44 | 0.00 | 14.06 | 160.53 | 1168.67 | 3.93 |
| 4/15/20 10:49 | 239.12 | 27.43 | 0.00 | 13.58 | 159.91 | 1168.20 | 3.93 |
| 4/15/20 10:50 | 239.30 | 27.46 | 0.00 | 13.61 | 156.42 | 1168.91 | 3.93 |
| 4/15/20 10:51 | 238.95 | 27.50 | 0.00 | 13.81 | 141.74 | 1169.06 | 3.93 |
| 4/15/20 10:52 | 238.85 | 27.44 | 0.00 | 13.66 | 142.01 | 1168.98 | 3.92 |
| 4/15/20 10:53 | 238.81 | 27.47 | 0.00 | 13.63 | 143.10 | 1168.26 | 3.92 |
| 4/15/20 10:54 | 239.11 | 27.46 | 0.00 | 13.61 | 140.37 | 1167.93 | 3.92 |
| 4/15/20 10:55 | 238.53 | 27.60 | 0.00 | 13.57 | 140.37 | 1167.84 | 3.92 |
| 4/15/20 10:56 | 239.23 | 27.49 | 0.00 | 13.70 | 149.14 | 1169.10 | 3.92 |
| 4/15/20 10:57 | 239.02 | 27.52 | 0.00 | 13.78 | 143.47 | 1168.82 | 3.92 |
| 4/15/20 10:58 | 239.30 | 27.56 | 0.00 | 13.83 | 140.30 | 1169.82 | 3.92 |
| 4/15/20 10:59 | 238.72 | 27.40 | 0.00 | 13.53 | 141.91 | 1169.19 | 3.92 |
| 4/15/20 11:00 | 238.61 | 27.47 | 0.00 | 13.69 | 141.15 | 1167.91 | 3.92 |
| 4/15/20 11:01 | 239.33 | 27.52 | 0.00 | 13.98 | 141.54 | 1169.24 | 3.92 |
| 4/15/20 11:02 | 238.63 | 27.53 | 0.00 | 13.62 | 147.45 | 1168.78 | 3.92 |
| 4/15/20 11:03 | 239.12 | 27.56 | 0.00 | 13.58 | 146.97 | 1170.09 | 3.92 |
| 4/15/20 11:04 | 238.66 | 27.51 | 0.00 | 13.62 | 153.91 | 1168.65 | 3.91 |
| 4/15/20 11:05 | 238.88 | 27.52 | 0.00 | 13.82 | 153.36 | 1170.23 | 3.91 |
| 4/15/20 11:06 | 239.76 | 27.57 | 0.00 | 13.76 | 155.01 | 1170.70 | 3.91 |
| 4/15/20 11:07 | 238.95 | 27.53 | 0.00 | 13.70 | 150.02 | 1169.67 | 3.91 |
| 4/15/20 11:08 | 239.25 | 27.54 | 0.00 | 13.46 | 154.54 | 1168.71 | 3.91 |
| 4/15/20 11:09 | 238.75 | 27.53 | 0.00 | 13.59 | 153.82 | 1168.71 | 3.91 |
| 4/15/20 11:10 | 238.74 | 27.56 | 0.00 | 13.82 | 148.66 | 1168.81 | 3.91 |
| 4/15/20 11:11 | 238.64 | 27.56 | 0.00 | 13.89 | 143.15 | 1168.40 | 3.91 |
| 4/15/20 11:12 | 239.03 | 27.59 | 0.00 | 13.63 | 151.75 | 1169.17 | 3.91 |
| 4/15/20 11:13 | 238.62 | 27.58 | 0.00 | 13.65 | 141.35 | 1168.45 | 3.91 |
| 4/15/20 11:14 | 238.71 | 27.60 | 0.00 | 13.87 | 150.60 | 1169.58 | 3.91 |
| 4/15/20 11:15 | 238.63 | 27.52 | 0.00 | 13.63 | 142.28 | 1168.57 | 3.91 |
| 4/15/20 11:16 | 238.42 | 27.57 | 0.00 | 13.62 | 138.61 | 1168.46 | 3.91 |
| 4/15/20 11:17 | 238.17 | 27.51 | 0.00 | 13.59 | 148.48 | 1168.06 | 3.90 |
| 4/15/20 11:18 | 237.91 | 27.54 | 0.00 | 13.90 | 142.98 | 1168.58 | 3.90 |
| 4/15/20 11:19 | 238.19 | 27.54 | 0.00 | 13.67 | 137.71 | 1168.63 | 3.90 |
| 4/15/20 11:20 | 238.19 | 27.59 | 0.00 | 13.85 | 137.72 | 1168.27 | 3.90 |
| 4/15/20 11:21 | 238.92 | 27.61 | 0.00 | 13.57 | 140.47 | 1169.79 | 3.90 |
| 4/15/20 11:22 | 238.41 | 27.53 | 0.00 | 13.72 | 138.01 | 1169.43 | 3.90 |
| 4/15/20 11:23 | 238.17 | 27.61 | 0.00 | 13.85 | 144.00 | 1169.12 | 3.90 |
| 4/15/20 11:24 | 238.48 | 27.56 | 0.00 | 13.77 | 136.72 | 1168.73 | 3.90 |
| 4/15/20 11:25 | 238.90 | 27.60 | 0.00 | 13.67 | 140.81 | 1168.24 | 3.90 |
| 4/15/20 11:26 | 238.77 | 27.62 | 0.00 | 13.69 | 147.14 | 1168.97 | 3.90 |
| 4/15/20 11:27 | 239.33 | 27.63 | 0.00 | 13.93 | 149.53 | 1169.26 | 3.90 |
| 4/15/20 11:28 | 238.84 | 27.61 | 0.00 | 13.72 | 152.80 | 1168.85 | 3.90 |
| 4/15/20 11:29 | 238.90 | 27.59 | 0.00 | 13.68 | 149.94 | 1168.47 | 3.90 |
| 4/15/20 11:30 | 238.81 | 27.67 | 0.00 | 13.70 | 152.79 | 1169.14 | 3.89 |
| 4/15/20 11:31 | 238.80 | 27.59 | 0.00 | 13.97 | 149.91 | 1168.81 | 3.89 |
| 4/15/20 11:32 | 238.64 | 27.59 | 0.00 | 13.70 | 153.00 | 1169.21 | 3.89 |
| 4/15/20 11:33 | 238.97 | 27.57 | 0.00 | 13.61 | 146.72 | 1168.62 | 3.89 |
| 4/15/20 11:34 | 238.90 | 27.65 | 0.00 | 13.69 | 150.48 | 1169.37 | 3.89 |
| 4/15/20 11:35 | 238.87 | 27.56 | 0.00 | 13.65 | 154.37 | 1169.18 | 3.89 |
| 4/15/20 11:36 | 238.65 | 27.58 | 0.00 | 13.89 | 145.08 | 1168.64 | 3.89 |
| 4/15/20 11:37 | 238.58 | 27.63 | 0.00 | 13.53 | 149.23 | 1168.66 | 3.89 |
| 4/15/20 11:38 | 238.70 | 27.63 | 0.00 | 13.81 | 155.78 | 1168.55 | 3.89 |
| 4/15/20 11:39 | 238.81 | 27.59 | 0.00 | 13.60 | 146.09 | 1169.13 | 3.89 |
| 4/15/20 11:40 | 238.38 | 27.66 | 0.00 | 13.91 | 142.69 | 1169.29 | 3.89 |
| 4/15/20 11:41 | 238.94 | 27.54 | 0.00 | 14.04 | 145.72 | 1169.44 | 3.89 |
| 4/15/20 11:42 | 238.60 | 27.61 | 0.00 | 13.81 | 148.48 | 1169.20 | 3.88 |
| 4/15/20 11:43 | 237.94 | 27.56 | 0.00 | 13.61 | 148.13 | 1168.34 | 3.88 |

| Description | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/15 8:23 - 4/15 12:46) | 239.07 | 27.51 | 0.00 | 13.78 | 148.84 | 1169.13 | 3.95 |
| COUNT = 264 | | | | | | | |

| Signal Tagname | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
|---|---|---|---|---|---|---|---|
| 4/15/20 11:44 | 238.95 | 27.58 | 0.00 | 13.70 | 138.04 | 1168.36 | 3.88 |
| 4/15/20 11:45 | 238.42 | 27.59 | 0.00 | 14.10 | 135.42 | 1169.07 | 3.88 |
| 4/15/20 11:46 | 238.44 | 27.60 | 0.00 | 13.72 | 144.90 | 1169.11 | 3.88 |
| 4/15/20 11:47 | 238.45 | 27.55 | 0.00 | 13.97 | 145.44 | 1169.03 | 3.88 |
| 4/15/20 11:48 | 238.31 | 27.54 | 0.00 | 13.63 | 146.33 | 1168.01 | 3.88 |
| 4/15/20 11:49 | 238.46 | 27.56 | 0.00 | 14.12 | 147.24 | 1168.66 | 3.88 |
| 4/15/20 11:50 | 238.87 | 27.59 | 0.00 | 13.77 | 146.90 | 1169.22 | 3.88 |
| 4/15/20 11:51 | 237.86 | 27.57 | 0.00 | 13.66 | 140.19 | 1167.94 | 3.88 |
| 4/15/20 11:52 | 238.34 | 27.53 | 0.00 | 13.57 | 141.63 | 1168.26 | 3.88 |
| 4/15/20 11:53 | 238.42 | 27.57 | 0.00 | 13.60 | 148.14 | 1168.15 | 3.88 |
| 4/15/20 11:54 | 237.70 | 27.53 | 0.00 | 13.88 | 148.21 | 1168.61 | 3.88 |
| 4/15/20 11:55 | 237.41 | 27.54 | 0.00 | 13.84 | 138.67 | 1167.94 | 3.87 |
| 4/15/20 11:56 | 237.85 | 27.49 | 0.00 | 13.89 | 141.10 | 1168.96 | 3.87 |
| 4/15/20 11:57 | 238.20 | 27.60 | 0.00 | 13.81 | 143.13 | 1168.06 | 3.87 |
| 4/15/20 11:58 | 238.04 | 27.55 | 0.00 | 14.02 | 134.73 | 1168.60 | 3.87 |
| 4/15/20 11:59 | 238.54 | 27.58 | 0.00 | 13.58 | 134.47 | 1169.01 | 3.87 |
| 4/15/20 12:00 | 238.48 | 27.51 | 0.00 | 13.83 | 137.14 | 1168.11 | 3.87 |
| 4/15/20 12:01 | 238.38 | 27.58 | 0.00 | 13.73 | 138.85 | 1168.68 | 3.87 |
| 4/15/20 12:02 | 238.23 | 27.55 | 0.00 | 13.82 | 138.74 | 1168.58 | 3.87 |
| 4/15/20 12:03 | 237.94 | 27.60 | 0.00 | 13.92 | 145.52 | 1168.53 | 3.87 |
| 4/15/20 12:04 | 238.02 | 27.55 | 0.00 | 13.70 | 148.70 | 1168.51 | 3.87 |
| 4/15/20 12:05 | 238.08 | 27.59 | 0.00 | 13.63 | 139.07 | 1169.18 | 3.87 |
| 4/15/20 12:06 | 238.03 | 27.53 | 0.00 | 13.82 | 146.02 | 1168.05 | 3.87 |
| 4/15/20 12:07 | 237.97 | 27.56 | 0.00 | 13.62 | 135.97 | 1168.62 | 3.87 |
| 4/15/20 12:08 | 238.36 | 27.61 | 0.00 | 14.04 | 135.02 | 1169.28 | 3.86 |
| 4/15/20 12:09 | 238.05 | 27.54 | 0.00 | 13.77 | 135.54 | 1169.19 | 3.86 |
| 4/15/20 12:10 | 238.28 | 27.53 | 0.00 | 13.65 | 147.34 | 1169.02 | 3.86 |
| 4/15/20 12:11 | 237.92 | 27.53 | 0.00 | 13.79 | 137.78 | 1168.84 | 3.86 |
| 4/15/20 12:12 | 237.72 | 27.59 | 0.00 | 13.74 | 146.47 | 1168.16 | 3.86 |
| 4/15/20 12:13 | 237.75 | 27.60 | 0.00 | 13.85 | 144.03 | 1167.90 | 3.86 |
| 4/15/20 12:14 | 237.53 | 27.49 | 0.00 | 13.85 | 139.50 | 1167.69 | 3.86 |
| 4/15/20 12:15 | 238.02 | 27.53 | 0.00 | 13.98 | 135.25 | 1169.18 | 3.86 |
| 4/15/20 12:16 | 237.97 | 27.59 | 0.00 | 13.77 | 134.14 | 1167.41 | 3.86 |
| 4/15/20 12:17 | 238.49 | 27.61 | 0.00 | 13.64 | 145.00 | 1168.17 | 3.86 |
| 4/15/20 12:18 | 237.68 | 27.55 | 0.00 | 13.71 | 146.47 | 1167.96 | 3.86 |
| 4/15/20 12:19 | 237.30 | 27.46 | 0.00 | 13.94 | 140.78 | 1168.22 | 3.86 |
| 4/15/20 12:20 | 237.76 | 27.51 | 0.00 | 13.69 | 138.87 | 1167.46 | 3.85 |
| 4/15/20 12:21 | 237.80 | 27.53 | 0.00 | 13.78 | 137.94 | 1168.10 | 3.85 |
| 4/15/20 12:22 | 237.64 | 27.55 | 0.00 | 13.66 | 139.87 | 1167.36 | 3.85 |
| 4/15/20 12:23 | 237.57 | 27.52 | 0.00 | 13.73 | 135.73 | 1168.75 | 3.85 |
| 4/15/20 12:24 | 237.96 | 27.46 | 0.00 | 13.81 | 144.83 | 1168.20 | 3.85 |
| 4/15/20 12:25 | 237.36 | 27.58 | 0.00 | 13.70 | 138.81 | 1168.10 | 3.85 |
| 4/15/20 12:26 | 237.73 | 27.54 | 0.00 | 13.76 | 135.25 | 1168.93 | 3.85 |
| 4/15/20 12:27 | 237.76 | 27.51 | 0.00 | 13.86 | 140.64 | 1167.50 | 3.85 |
| 4/15/20 12:28 | 238.33 | 27.54 | 0.00 | 13.93 | 132.74 | 1168.55 | 3.85 |
| 4/15/20 12:29 | 237.73 | 27.56 | 0.00 | 13.55 | 142.74 | 1167.25 | 3.85 |
| 4/15/20 12:30 | 238.39 | 27.56 | 0.00 | 14.16 | 140.60 | 1169.17 | 3.85 |
| 4/15/20 12:31 | 237.89 | 27.53 | 0.00 | 13.31 | 135.05 | 1168.25 | 3.85 |
| 4/15/20 12:32 | 237.60 | 27.51 | 0.00 | 13.67 | 138.15 | 1166.77 | 3.85 |
| 4/15/20 12:33 | 237.83 | 27.47 | 0.00 | 13.48 | 143.39 | 1167.44 | 3.84 |
| 4/15/20 12:34 | 237.44 | 27.47 | 0.00 | 14.00 | 145.63 | 1169.13 | 3.84 |
| 4/15/20 12:35 | 237.79 | 27.62 | 0.00 | 13.79 | 169.84 | 1167.54 | 3.84 |
| 4/15/20 12:36 | 237.66 | 27.53 | 0.00 | 13.83 | 165.86 | 1168.38 | 3.84 |
| 4/15/20 12:37 | 237.77 | 27.48 | 0.00 | 13.71 | 176.08 | 1167.46 | 3.84 |
| 4/15/20 12:38 | 237.67 | 27.51 | 0.00 | 13.60 | 177.90 | 1168.55 | 3.84 |
| 4/15/20 12:39 | 238.34 | 27.52 | 0.00 | 13.71 | 161.73 | 1168.17 | 3.84 |
| 4/15/20 12:40 | 238.32 | 27.54 | 0.00 | 14.02 | 169.70 | 1169.11 | 3.84 |
| 4/15/20 12:41 | 238.01 | 27.55 | 0.00 | 13.91 | 162.48 | 1168.16 | 3.84 |
| 4/15/20 12:42 | 237.77 | 27.50 | 0.00 | 13.92 | 157.56 | 1167.91 | 3.84 |
| 4/15/20 12:43 | 237.96 | 27.57 | 0.00 | 13.71 | 150.12 | 1168.56 | 3.84 |
| 4/15/20 12:44 | 238.00 | 27.55 | 0.00 | 13.96 | 139.80 | 1168.36 | 3.84 |
| 4/15/20 12:45 | 238.29 | 27.50 | 0.00 | 13.84 | 147.69 | 1168.20 | 3.84 |
| 4/15/20 12:46 | 237.73 | 27.49 | 0.00 | 13.76 | 136.52 | 1168.68 | 3.83 |

| Description | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/15 13:45 - 4/15 18:02) | 237.40 | 27.35 | 0.04 | 13.80 | 135.92 | 1167.54 | 448.36 |
| COUNT = 258 | | | | | | | |
| Signal Tagname | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| 4/15/20 13:45 | 236.98 | 27.39 | 0.01 | 13.76 | 158.14 | 1167.62 | 3.79 |
| 4/15/20 13:46 | 237.15 | 27.39 | 0.01 | 13.79 | 152.70 | 1167.86 | 3.79 |
| 4/15/20 13:47 | 237.20 | 27.46 | 0.02 | 13.63 | 149.90 | 1166.74 | 3.79 |
| 4/15/20 13:48 | 237.43 | 27.48 | 0.02 | 13.99 | 151.46 | 1168.14 | 3.79 |
| 4/15/20 13:49 | 237.46 | 27.51 | 0.03 | 13.86 | 143.28 | 1167.55 | 3.78 |
| 4/15/20 13:50 | 237.70 | 27.47 | 0.04 | 13.77 | 137.71 | 1168.55 | 3.78 |
| 4/15/20 13:51 | 236.85 | 27.42 | 0.04 | 13.91 | 134.99 | 1167.89 | 3.78 |
| 4/15/20 13:52 | 237.83 | 27.42 | 0.04 | 13.67 | 140.11 | 1168.58 | 3.78 |
| 4/15/20 13:53 | 237.05 | 27.52 | 0.04 | 13.55 | 131.46 | 1167.25 | 3.78 |
| 4/15/20 13:54 | 237.25 | 27.40 | 0.04 | 13.83 | 127.86 | 1166.82 | 3.78 |
| 4/15/20 13:55 | 237.37 | 27.41 | 0.04 | 13.83 | 127.70 | 1167.66 | 3.78 |
| 4/15/20 13:56 | 236.95 | 27.42 | 0.04 | 13.74 | 132.48 | 1167.66 | 3.78 |
| 4/15/20 13:57 | 237.32 | 27.45 | 0.04 | 13.72 | 135.90 | 1168.10 | 3.78 |
| 4/15/20 13:58 | 237.39 | 27.40 | 0.04 | 13.94 | 149.02 | 1167.12 | 3.78 |
| 4/15/20 13:59 | 236.68 | 27.39 | 0.04 | 13.62 | 139.59 | 1167.18 | 3.78 |
| 4/15/20 14:00 | 236.97 | 27.43 | 0.04 | 13.91 | 142.03 | 1166.78 | 3.78 |
| 4/15/20 14:01 | 237.25 | 27.48 | 0.04 | 13.80 | 146.52 | 1167.63 | 3.78 |
| 4/15/20 14:02 | 237.21 | 27.43 | 0.04 | 13.84 | 135.82 | 1166.80 | 3.77 |
| 4/15/20 14:03 | 237.69 | 27.48 | 0.04 | 13.78 | 140.45 | 1167.74 | 3.77 |
| 4/15/20 14:04 | 237.23 | 27.39 | 0.04 | 13.76 | 140.88 | 1167.47 | 3.77 |
| 4/15/20 14:05 | 237.26 | 27.40 | 0.04 | 13.62 | 132.97 | 1167.80 | 3.77 |
| 4/15/20 14:06 | 237.51 | 27.55 | 0.04 | 13.91 | 139.69 | 1168.06 | 3.77 |
| 4/15/20 14:07 | 237.45 | 27.46 | 0.04 | 13.72 | 133.09 | 1167.44 | 3.77 |
| 4/15/20 14:08 | 237.27 | 27.42 | 0.04 | 13.78 | 130.99 | 1167.23 | 3.77 |
| 4/15/20 14:09 | 236.91 | 27.44 | 0.04 | 13.69 | 130.46 | 1166.80 | 3.77 |
| 4/15/20 14:10 | 237.18 | 27.39 | 0.04 | 13.83 | 130.35 | 1167.55 | 3.77 |
| 4/15/20 14:11 | 237.11 | 27.43 | 0.04 | 13.93 | 133.85 | 1166.85 | 3.77 |
| 4/15/20 14:12 | 237.27 | 27.42 | 0.04 | 13.81 | 135.13 | 1166.93 | 3.77 |
| 4/15/20 14:13 | 236.55 | 27.44 | 0.04 | 14.22 | 134.52 | 1167.35 | 3.77 |
| 4/15/20 14:14 | 236.87 | 27.39 | 0.04 | 13.49 | 131.80 | 1167.02 | 3.76 |
| 4/15/20 14:15 | 236.82 | 27.43 | 0.04 | 13.61 | 126.88 | 1167.51 | 3.76 |
| 4/15/20 14:16 | 236.82 | 27.41 | 0.04 | 14.10 | 131.74 | 1166.90 | 3.76 |
| 4/15/20 14:17 | 236.40 | 27.41 | 0.04 | 13.84 | 129.33 | 1166.46 | 3.76 |
| 4/15/20 14:18 | 236.62 | 27.39 | 0.04 | 13.84 | 125.65 | 1167.04 | 3.76 |
| 4/15/20 14:19 | 236.59 | 27.37 | 0.04 | 13.49 | 125.14 | 1167.67 | 3.76 |
| 4/15/20 14:20 | 236.51 | 27.46 | 0.04 | 13.83 | 128.16 | 1166.99 | 3.76 |
| 4/15/20 14:21 | 236.84 | 27.41 | 0.04 | 14.04 | 124.10 | 1167.50 | 3.76 |
| 4/15/20 14:22 | 237.02 | 27.40 | 0.04 | 13.73 | 127.90 | 1166.81 | 3.76 |
| 4/15/20 14:23 | 237.24 | 27.35 | 0.04 | 13.58 | 128.12 | 1167.25 | 3.76 |
| 4/15/20 14:24 | 237.12 | 27.49 | 0.04 | 13.87 | 134.41 | 1167.78 | 3.76 |
| 4/15/20 14:25 | 236.20 | 27.36 | 0.04 | 13.74 | 131.64 | 1166.39 | 3.76 |
| 4/15/20 14:26 | 236.62 | 27.32 | 0.04 | 13.73 | 137.11 | 1166.24 | 3.76 |
| 4/15/20 14:27 | 236.28 | 27.37 | 0.04 | 14.15 | 139.22 | 1168.14 | 3.75 |
| 4/15/20 14:28 | 236.61 | 27.40 | 0.04 | 13.84 | 131.92 | 1167.90 | 3.75 |
| 4/15/20 14:29 | 236.56 | 27.40 | 0.04 | 13.63 | 139.37 | 1166.31 | 3.75 |
| 4/15/20 14:30 | 236.42 | 27.36 | 0.04 | 13.66 | 128.99 | 1166.79 | 3.75 |
| 4/15/20 14:31 | 236.27 | 27.33 | 0.04 | 13.78 | 133.56 | 1167.06 | 3.75 |
| 4/15/20 14:32 | 236.72 | 27.36 | 0.04 | 14.05 | 136.44 | 1167.33 | 3.75 |
| 4/15/20 14:33 | 236.26 | 27.42 | 0.04 | 13.53 | 127.98 | 1167.03 | 3.75 |
| 4/15/20 14:34 | 236.76 | 27.38 | 0.04 | 13.67 | 125.99 | 1167.82 | 3.75 |
| 4/15/20 14:35 | 236.39 | 27.36 | 0.04 | 13.99 | 133.97 | 1167.20 | 3.75 |
| 4/15/20 14:36 | 236.31 | 27.32 | 0.04 | 13.69 | 130.99 | 1167.04 | 3.75 |
| 4/15/20 14:37 | 237.02 | 27.40 | 0.04 | 14.03 | 128.59 | 1167.60 | 3.75 |
| 4/15/20 14:38 | 237.06 | 27.39 | 0.04 | 14.17 | 129.87 | 1168.01 | 3.75 |
| 4/15/20 14:39 | 236.85 | 27.31 | 0.04 | 13.84 | 130.07 | 1168.24 | 3.75 |
| 4/15/20 14:40 | 236.76 | 27.31 | 0.04 | 13.81 | 130.88 | 1167.30 | 3.74 |
| 4/15/20 14:41 | 237.37 | 27.40 | 0.04 | 13.72 | 131.84 | 1167.88 | 3.74 |
| 4/15/20 14:42 | 237.54 | 27.31 | 0.04 | 14.17 | 134.17 | 1169.57 | 3.74 |
| 4/15/20 14:43 | 237.40 | 27.38 | 0.04 | 13.69 | 136.85 | 1166.84 | 3.74 |
| 4/15/20 14:44 | 237.34 | 27.38 | 0.04 | 13.92 | 136.85 | 1167.62 | 3.74 |
| 4/15/20 14:45 | 237.15 | 27.37 | 0.04 | 13.55 | 137.90 | 1167.67 | 3.74 |
| 4/15/20 14:46 | 236.93 | 27.33 | 0.04 | 13.74 | 131.37 | 1167.89 | 3.74 |
| 4/15/20 14:47 | 237.70 | 27.37 | 0.04 | 13.87 | 129.58 | 1168.39 | 3.74 |
| 4/15/20 14:48 | 236.78 | 27.45 | 0.04 | 13.90 | 129.19 | 1167.24 | 3.74 |
| 4/15/20 14:49 | 236.99 | 27.24 | 0.04 | 13.70 | 138.72 | 1167.33 | 540.40 |
| 4/15/20 14:50 | 237.13 | 27.35 | 0.04 | 13.86 | 128.88 | 1167.98 | 609.73 |
| 4/15/20 14:51 | 237.47 | 27.44 | 0.04 | 13.98 | 126.78 | 1167.68 | 648.18 |

| Description | | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/15 13:45 - 4/15 18:02) | | 237.40 | 27.35 | 0.04 | 13.80 | 135.92 | 1167.54 | 448.36 |
| COUNT = 258 | | | | | | | | |
| Signal Tagname | | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| | 4/15/20 14:52 | 237.34 | 27.37 | 0.04 | 13.67 | 134.85 | 1167.64 | 691.31 |
| | 4/15/20 14:53 | 237.56 | 27.32 | 0.04 | 13.65 | 128.82 | 1167.97 | 748.24 |
| | 4/15/20 14:54 | 237.08 | 27.33 | 0.04 | 13.72 | 130.39 | 1167.81 | 797.79 |
| | 4/15/20 14:55 | 237.51 | 27.42 | 0.04 | 13.90 | 128.29 | 1167.94 | 853.61 |
| | 4/15/20 14:56 | 236.86 | 27.39 | 0.04 | 13.87 | 137.29 | 1168.04 | 902.71 |
| | 4/15/20 14:57 | 237.29 | 27.37 | 0.04 | 13.93 | 135.08 | 1168.39 | 947.99 |
| | 4/15/20 14:58 | 236.92 | 27.45 | 0.04 | 13.75 | 134.03 | 1167.67 | 1011.59 |
| | 4/15/20 14:59 | 237.59 | 27.25 | 0.04 | 13.93 | 131.57 | 1168.33 | 1070.11 |
| | 4/15/20 15:00 | 237.75 | 27.42 | 0.04 | 14.25 | 127.11 | 1168.73 | 1129.20 |
| | 4/15/20 15:01 | 237.62 | 27.43 | 0.04 | 14.14 | 131.54 | 1169.23 | 1187.93 |
| | 4/15/20 15:02 | 237.97 | 27.38 | 0.04 | 13.80 | 135.04 | 1168.70 | 1261.64 |
| | 4/15/20 15:03 | 237.52 | 27.35 | 0.04 | 14.04 | 136.57 | 1168.62 | 1210.41 |
| | 4/15/20 15:04 | 237.30 | 27.41 | 0.04 | 13.66 | 136.15 | 1167.51 | 1081.46 |
| | 4/15/20 15:05 | 237.70 | 27.41 | 0.04 | 14.10 | 140.71 | 1167.58 | 1013.81 |
| | 4/15/20 15:06 | 237.62 | 27.35 | 0.04 | 13.88 | 139.73 | 1168.12 | 952.65 |
| | 4/15/20 15:07 | 237.70 | 27.35 | 0.04 | 13.54 | 133.27 | 1167.80 | 908.23 |
| | 4/15/20 15:08 | 237.99 | 27.38 | 0.04 | 13.81 | 132.47 | 1168.44 | 834.77 |
| | 4/15/20 15:09 | 237.54 | 27.46 | 0.04 | 13.99 | 130.15 | 1168.49 | 794.18 |
| | 4/15/20 15:10 | 237.35 | 27.42 | 0.04 | 13.75 | 131.10 | 1168.00 | 730.29 |
| | 4/15/20 15:11 | 237.81 | 27.39 | 0.04 | 13.48 | 133.34 | 1168.44 | 690.96 |
| | 4/15/20 15:12 | 237.87 | 27.36 | 0.04 | 13.94 | 140.79 | 1168.43 | 651.64 |
| | 4/15/20 15:13 | 238.03 | 27.35 | 0.04 | 13.87 | 139.19 | 1169.40 | 680.23 |
| | 4/15/20 15:14 | 237.92 | 27.45 | 0.04 | 13.85 | 133.82 | 1168.71 | 783.51 |
| | 4/15/20 15:15 | 237.69 | 27.38 | 0.04 | 13.87 | 137.28 | 1168.33 | 850.10 |
| | 4/15/20 15:16 | 237.83 | 27.40 | 0.04 | 13.81 | 133.06 | 1168.22 | 900.11 |
| | 4/15/20 15:17 | 237.29 | 27.31 | 0.04 | 13.96 | 135.12 | 1167.89 | 959.22 |
| | 4/15/20 15:18 | 237.85 | 27.42 | 0.04 | 13.93 | 129.19 | 1168.53 | 1039.73 |
| | 4/15/20 15:19 | 237.77 | 27.44 | 0.04 | 13.88 | 135.94 | 1168.30 | 1095.10 |
| | 4/15/20 15:20 | 237.74 | 27.39 | 0.04 | 13.89 | 127.68 | 1168.00 | 1158.64 |
| | 4/15/20 15:21 | 237.76 | 27.34 | 0.04 | 13.82 | 135.01 | 1167.49 | 1216.38 |
| | 4/15/20 15:22 | 237.87 | 27.37 | 0.04 | 13.51 | 130.35 | 1167.34 | 1296.81 |
| | 4/15/20 15:23 | 238.24 | 27.44 | 0.04 | 14.10 | 132.96 | 1169.60 | 1347.24 |
| | 4/15/20 15:24 | 237.97 | 27.38 | 0.04 | 13.61 | 134.75 | 1167.28 | 1403.85 |
| | 4/15/20 15:25 | 237.57 | 27.37 | 0.04 | 13.67 | 136.42 | 1167.85 | 1475.28 |
| | 4/15/20 15:26 | 238.13 | 27.37 | 0.04 | 13.83 | 133.67 | 1167.89 | 1527.54 |
| | 4/15/20 15:27 | 238.71 | 27.38 | 0.04 | 13.88 | 141.59 | 1168.52 | 1564.75 |
| | 4/15/20 15:28 | 238.04 | 27.46 | 0.04 | 13.73 | 133.92 | 1168.70 | 1618.81 |
| | 4/15/20 15:29 | 237.60 | 27.37 | 0.04 | 13.82 | 173.71 | 1168.30 | 1713.15 |
| | 4/15/20 15:30 | 238.00 | 27.35 | 0.04 | 13.62 | 187.33 | 1168.23 | 1727.20 |
| | 4/15/20 15:31 | 237.96 | 27.38 | 0.04 | 14.04 | 180.61 | 1168.19 | 1850.32 |
| | 4/15/20 15:32 | 237.79 | 27.42 | 0.04 | 13.81 | 170.98 | 1167.96 | 1886.19 |
| | 4/15/20 15:33 | 238.07 | 27.37 | 0.04 | 14.13 | 164.48 | 1167.89 | 1902.55 |
| | 4/15/20 15:34 | 237.68 | 27.34 | 0.04 | 13.84 | 163.04 | 1168.57 | 1953.86 |
| | 4/15/20 15:35 | 237.70 | 27.29 | 0.04 | 13.91 | 151.97 | 1168.38 | 1840.89 |
| | 4/15/20 15:36 | 238.18 | 27.34 | 0.04 | 13.76 | 148.63 | 1167.64 | 1814.19 |
| | 4/15/20 15:37 | 238.56 | 27.49 | 0.04 | 13.82 | 139.05 | 1169.00 | 1874.69 |
| | 4/15/20 15:38 | 237.64 | 27.32 | 0.04 | 13.69 | 135.41 | 1167.67 | 1938.40 |
| | 4/15/20 15:39 | 238.11 | 27.30 | 0.04 | 13.91 | 130.86 | 1168.34 | 2002.92 |
| | 4/15/20 15:40 | 238.14 | 27.37 | 0.04 | 13.93 | 131.47 | 1168.56 | 2039.57 |
| | 4/15/20 15:41 | 237.75 | 27.48 | 0.04 | 13.66 | 126.57 | 1167.23 | 2105.81 |
| | 4/15/20 15:42 | 237.19 | 27.32 | 0.04 | 13.82 | 125.57 | 1167.31 | 2154.46 |
| | 4/15/20 15:43 | 237.75 | 27.32 | 0.04 | 13.62 | 125.58 | 1167.26 | 2216.29 |
| | 4/15/20 15:44 | 237.76 | 27.34 | 0.04 | 13.81 | 127.78 | 1168.35 | 2247.23 |
| | 4/15/20 15:45 | 237.86 | 27.44 | 0.04 | 13.81 | 125.88 | 1167.94 | 2275.57 |
| | 4/15/20 15:46 | 237.11 | 27.43 | 0.04 | 13.80 | 126.39 | 1166.96 | 2182.75 |
| | 4/15/20 15:47 | 237.27 | 27.30 | 0.04 | 13.55 | 127.08 | 1166.88 | 2101.45 |
| | 4/15/20 15:48 | 237.17 | 27.35 | 0.04 | 13.78 | 131.83 | 1167.33 | 2066.55 |
| | 4/15/20 15:49 | 237.48 | 27.32 | 0.04 | 13.98 | 134.16 | 1167.58 | 2054.37 |
| | 4/15/20 15:50 | 237.36 | 27.42 | 0.04 | 13.71 | 139.01 | 1167.39 | 1996.12 |
| | 4/15/20 15:51 | 237.52 | 27.38 | 0.04 | 13.99 | 139.74 | 1167.18 | 1940.55 |
| | 4/15/20 15:52 | 237.29 | 27.26 | 0.04 | 13.80 | 141.18 | 1167.17 | 1900.39 |
| | 4/15/20 15:53 | 237.49 | 27.31 | 0.04 | 13.93 | 132.90 | 1167.65 | 1912.97 |
| | 4/15/20 15:54 | 237.43 | 27.39 | 0.04 | 13.88 | 139.05 | 1167.37 | 1863.70 |
| | 4/15/20 15:55 | 237.54 | 27.39 | 0.04 | 13.91 | 129.39 | 1167.86 | 1884.71 |
| | 4/15/20 15:56 | 237.79 | 27.38 | 0.04 | 13.53 | 136.19 | 1167.25 | 1848.92 |
| | 4/15/20 15:57 | 238.22 | 27.30 | 0.04 | 13.67 | 132.88 | 1167.78 | 1851.34 |
| | 4/15/20 15:58 | 237.68 | 27.43 | 0.04 | 13.91 | 136.88 | 1167.92 | 1862.21 |

| Description | | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/15 13:45 - 4/15 18:02) | | 237.40 | 27.35 | 0.04 | 13.80 | 135.92 | 1167.54 | 448.36 |
| COUNT = 258 | | | | | | | | |
| Signal Tagname | | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| | 4/15/20 15:59 | 237.17 | 27.34 | 0.04 | 13.70 | 129.93 | 1166.57 | 1858.37 |
| | 4/15/20 16:00 | 237.55 | 27.39 | 0.04 | 13.52 | 136.81 | 1167.92 | 1831.24 |
| | 4/15/20 16:01 | 237.89 | 27.27 | 0.04 | 13.65 | 130.09 | 1167.15 | 1849.09 |
| | 4/15/20 16:02 | 237.37 | 27.25 | 0.04 | 14.01 | 130.49 | 1167.36 | 1870.67 |
| | 4/15/20 16:03 | 237.80 | 27.41 | 0.04 | 13.74 | 133.25 | 1167.50 | 1905.93 |
| | 4/15/20 16:04 | 237.88 | 27.31 | 0.04 | 13.92 | 131.61 | 1167.54 | 1905.91 |
| | 4/15/20 16:05 | 237.57 | 27.32 | 0.04 | 13.84 | 141.31 | 1167.00 | 1891.81 |
| | 4/15/20 16:06 | 237.72 | 27.33 | 0.04 | 13.75 | 136.03 | 1167.15 | 1882.29 |
| | 4/15/20 16:07 | 237.89 | 27.39 | 0.04 | 13.77 | 135.51 | 1167.15 | 547.49 |
| | 4/15/20 16:08 | 237.67 | 27.47 | 0.04 | 13.91 | 141.64 | 1167.32 | 6.36 |
| | 4/15/20 16:09 | 237.90 | 27.32 | 0.04 | 13.47 | 137.26 | 1167.26 | 6.36 |
| | 4/15/20 16:10 | 237.45 | 27.32 | 0.04 | 13.85 | 134.92 | 1167.68 | 6.35 |
| | 4/15/20 16:11 | 237.95 | 27.36 | 0.04 | 13.67 | 141.60 | 1167.08 | 6.35 |
| | 4/15/20 16:12 | 237.50 | 27.39 | 0.04 | 13.55 | 141.60 | 1166.42 | 6.34 |
| | 4/15/20 16:13 | 237.35 | 27.43 | 0.04 | 14.13 | 140.48 | 1167.48 | 6.34 |
| | 4/15/20 16:14 | 237.78 | 27.34 | 0.04 | 14.10 | 142.79 | 1168.03 | 6.33 |
| | 4/15/20 16:15 | 237.18 | 27.31 | 0.04 | 13.61 | 139.85 | 1167.19 | 6.33 |
| | 4/15/20 16:16 | 237.20 | 27.39 | 0.04 | 13.58 | 140.67 | 1167.25 | 6.32 |
| | 4/15/20 16:17 | 237.51 | 27.39 | 0.04 | 14.15 | 137.50 | 1168.23 | 6.32 |
| | 4/15/20 16:18 | 236.94 | 27.35 | 0.04 | 13.73 | 135.17 | 1166.54 | 6.31 |
| | 4/15/20 16:19 | 237.34 | 27.35 | 0.04 | 13.81 | 129.50 | 1167.48 | 6.31 |
| | 4/15/20 16:20 | 237.21 | 27.35 | 0.04 | 13.76 | 127.76 | 1166.79 | 6.30 |
| | 4/15/20 16:21 | 237.38 | 27.36 | 0.04 | 13.92 | 125.22 | 1167.49 | 6.30 |
| | 4/15/20 16:22 | 237.08 | 27.37 | 0.04 | 13.73 | 124.27 | 1166.32 | 6.29 |
| | 4/15/20 16:23 | 237.45 | 27.38 | 0.04 | 13.72 | 130.50 | 1167.33 | 6.28 |
| | 4/15/20 16:24 | 237.42 | 27.35 | 0.04 | 13.60 | 128.92 | 1167.18 | 6.28 |
| | 4/15/20 16:25 | 237.54 | 27.31 | 0.04 | 13.69 | 123.39 | 1166.90 | 6.27 |
| | 4/15/20 16:26 | 237.61 | 27.35 | 0.04 | 13.61 | 125.00 | 1166.81 | 6.27 |
| | 4/15/20 16:27 | 237.23 | 27.38 | 0.04 | 13.74 | 129.18 | 1167.36 | 6.26 |
| | 4/15/20 16:28 | 237.32 | 27.36 | 0.04 | 13.77 | 136.73 | 1166.58 | 6.26 |
| | 4/15/20 16:29 | 237.17 | 27.32 | 0.04 | 13.74 | 129.84 | 1167.29 | 6.25 |
| | 4/15/20 16:30 | 237.20 | 27.30 | 0.04 | 13.78 | 129.16 | 1166.94 | 6.25 |
| | 4/15/20 16:31 | 237.36 | 27.32 | 0.04 | 13.98 | 132.21 | 1167.77 | 6.24 |
| | 4/15/20 16:32 | 237.20 | 27.39 | 0.04 | 13.64 | 134.48 | 1167.67 | 6.24 |
| | 4/15/20 16:33 | 237.14 | 27.30 | 0.04 | 13.84 | 131.06 | 1167.16 | 6.23 |
| | 4/15/20 16:34 | 237.12 | 27.32 | 0.04 | 14.00 | 134.20 | 1167.57 | 6.23 |
| | 4/15/20 16:35 | 237.41 | 27.31 | 0.04 | 13.63 | 133.51 | 1168.13 | 6.22 |
| | 4/15/20 16:36 | 237.63 | 27.38 | 0.04 | 14.25 | 132.48 | 1168.31 | 6.22 |
| | 4/15/20 16:37 | 237.69 | 27.38 | 0.04 | 13.88 | 136.35 | 1167.84 | 6.21 |
| | 4/15/20 16:38 | 237.47 | 27.36 | 0.04 | 13.76 | 128.66 | 1167.17 | 6.21 |
| | 4/15/20 16:39 | 237.95 | 27.32 | 0.04 | 13.89 | 135.11 | 1168.10 | 6.20 |
| | 4/15/20 16:40 | 237.55 | 27.38 | 0.04 | 13.76 | 129.14 | 1167.68 | 6.20 |
| | 4/15/20 16:41 | 236.86 | 27.38 | 0.04 | 13.59 | 133.94 | 1167.55 | 6.19 |
| | 4/15/20 16:42 | 237.51 | 27.36 | 0.04 | 13.86 | 130.51 | 1167.34 | 6.19 |
| | 4/15/20 16:43 | 237.27 | 27.34 | 0.04 | 13.74 | 134.51 | 1167.29 | 6.18 |
| | 4/15/20 16:44 | 237.55 | 27.34 | 0.04 | 14.12 | 131.23 | 1168.28 | 6.18 |
| | 4/15/20 16:45 | 237.60 | 27.37 | 0.04 | 13.80 | 127.61 | 1166.40 | 6.17 |
| | 4/15/20 16:46 | 237.93 | 27.32 | 0.04 | 13.82 | 137.32 | 1168.63 | 6.16 |
| | 4/15/20 16:47 | 237.77 | 27.33 | 0.04 | 13.83 | 131.70 | 1168.32 | 6.16 |
| | 4/15/20 16:48 | 237.65 | 27.27 | 0.04 | 13.55 | 131.41 | 1167.64 | 6.15 |
| | 4/15/20 16:49 | 237.74 | 27.33 | 0.04 | 13.80 | 140.20 | 1167.11 | 6.15 |
| | 4/15/20 16:50 | 237.54 | 27.34 | 0.04 | 13.82 | 139.51 | 1168.04 | 6.14 |
| | 4/15/20 16:51 | 237.58 | 27.31 | 0.04 | 13.85 | 128.65 | 1166.90 | 6.14 |
| | 4/15/20 16:52 | 237.65 | 27.28 | 0.04 | 13.77 | 131.50 | 1168.15 | 6.13 |
| | 4/15/20 16:53 | 237.63 | 27.33 | 0.04 | 13.94 | 132.23 | 1167.73 | 6.13 |
| | 4/15/20 16:54 | 237.65 | 27.33 | 0.04 | 14.09 | 135.63 | 1167.69 | 6.12 |
| | 4/15/20 16:55 | 237.35 | 27.38 | 0.04 | 13.61 | 140.51 | 1166.90 | 6.12 |
| | 4/15/20 16:56 | 237.19 | 27.25 | 0.04 | 13.70 | 138.18 | 1167.20 | 6.11 |
| | 4/15/20 16:57 | 237.51 | 27.25 | 0.04 | 13.81 | 150.76 | 1167.20 | 6.11 |
| | 4/15/20 16:58 | 237.69 | 27.29 | 0.04 | 13.83 | 155.34 | 1167.01 | 6.10 |
| | 4/15/20 16:59 | 237.14 | 27.33 | 0.04 | 13.68 | 146.95 | 1167.61 | 6.10 |
| | 4/15/20 17:00 | 237.73 | 27.20 | 0.04 | 13.77 | 150.38 | 1166.89 | 6.09 |
| | 4/15/20 17:01 | 237.76 | 27.26 | 0.04 | 13.70 | 136.45 | 1166.67 | 6.09 |
| | 4/15/20 17:02 | 237.48 | 27.35 | 0.04 | 13.65 | 142.58 | 1167.26 | 6.08 |
| | 4/15/20 17:03 | 237.28 | 27.40 | 0.04 | 13.53 | 135.15 | 1166.90 | 6.08 |
| | 4/15/20 17:04 | 237.51 | 27.19 | 0.04 | 13.59 | 136.10 | 1167.22 | 6.07 |
| | 4/15/20 17:05 | 237.55 | 27.29 | 0.04 | 13.68 | 133.68 | 1167.45 | 6.07 |

| Description | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/15 13:45 - 4/15 18:02) | 237.40 | 27.35 | 0.04 | 13.80 | 135.92 | 1167.54 | 448.36 |
| COUNT = 258 | | | | | | | |
| Signal Tagname | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| 4/15/20 17:06 | 237.35 | 27.29 | 0.04 | 13.51 | 134.78 | 1166.77 | 6.06 |
| 4/15/20 17:07 | 237.73 | 27.29 | 0.04 | 13.60 | 129.89 | 1166.83 | 6.06 |
| 4/15/20 17:08 | 237.57 | 27.29 | 0.04 | 13.51 | 127.63 | 1167.38 | 6.05 |
| 4/15/20 17:09 | 237.65 | 27.30 | 0.04 | 13.99 | 124.67 | 1167.63 | 6.04 |
| 4/15/20 17:10 | 237.65 | 27.24 | 0.04 | 13.77 | 124.36 | 1167.32 | 6.04 |
| 4/15/20 17:11 | 237.35 | 27.24 | 0.04 | 13.97 | 138.33 | 1166.23 | 6.03 |
| 4/15/20 17:12 | 237.35 | 27.26 | 0.04 | 13.90 | 136.02 | 1167.44 | 6.03 |
| 4/15/20 17:13 | 237.64 | 27.33 | 0.04 | 13.81 | 142.91 | 1167.72 | 6.02 |
| 4/15/20 17:14 | 237.47 | 27.23 | 0.04 | 13.61 | 134.14 | 1167.40 | 6.02 |
| 4/15/20 17:15 | 237.23 | 27.27 | 0.04 | 13.79 | 142.41 | 1167.36 | 6.01 |
| 4/15/20 17:16 | 237.65 | 27.30 | 0.04 | 13.58 | 133.16 | 1166.98 | 6.01 |
| 4/15/20 17:17 | 237.39 | 27.29 | 0.04 | 13.71 | 143.40 | 1167.38 | 6.00 |
| 4/15/20 17:18 | 237.63 | 27.36 | 0.04 | 13.99 | 138.31 | 1167.52 | 6.00 |
| 4/15/20 17:19 | 237.75 | 27.32 | 0.04 | 13.96 | 133.53 | 1168.14 | 5.99 |
| 4/15/20 17:20 | 237.33 | 27.27 | 0.04 | 13.78 | 135.85 | 1167.15 | 5.99 |
| 4/15/20 17:21 | 238.20 | 27.32 | 0.04 | 13.77 | 131.74 | 1167.59 | 5.98 |
| 4/15/20 17:22 | 237.76 | 27.30 | 0.04 | 13.88 | 130.47 | 1167.85 | 5.98 |
| 4/15/20 17:23 | 237.66 | 27.35 | 0.04 | 13.88 | 130.16 | 1167.23 | 5.97 |
| 4/15/20 17:24 | 237.19 | 27.18 | 0.04 | 13.73 | 131.04 | 1166.87 | 5.97 |
| 4/15/20 17:25 | 237.77 | 27.21 | 0.04 | 13.72 | 140.59 | 1168.01 | 5.96 |
| 4/15/20 17:26 | 237.83 | 27.32 | 0.04 | 13.73 | 139.02 | 1166.64 | 5.96 |
| 4/15/20 17:27 | 237.48 | 27.25 | 0.04 | 13.75 | 136.28 | 1166.70 | 5.95 |
| 4/15/20 17:28 | 237.73 | 27.33 | 0.04 | 13.77 | 136.04 | 1167.40 | 5.95 |
| 4/15/20 17:29 | 237.38 | 27.22 | 0.04 | 13.97 | 140.20 | 1167.33 | 5.94 |
| 4/15/20 17:30 | 237.35 | 27.26 | 0.04 | 13.42 | 135.54 | 1167.19 | 5.94 |
| 4/15/20 17:31 | 237.49 | 27.35 | 0.04 | 13.99 | 144.22 | 1167.31 | 5.93 |
| 4/15/20 17:32 | 237.48 | 27.35 | 0.04 | 13.68 | 134.78 | 1166.79 | 5.92 |
| 4/15/20 17:33 | 238.14 | 27.31 | 0.04 | 13.95 | 139.11 | 1167.89 | 5.92 |
| 4/15/20 17:34 | 237.36 | 27.20 | 0.04 | 13.61 | 144.82 | 1166.85 | 5.91 |
| 4/15/20 17:35 | 237.48 | 27.29 | 0.04 | 13.77 | 146.73 | 1167.07 | 5.91 |
| 4/15/20 17:36 | 237.53 | 27.29 | 0.04 | 13.96 | 136.10 | 1167.20 | 5.90 |
| 4/15/20 17:37 | 237.29 | 27.23 | 0.04 | 13.73 | 144.16 | 1167.43 | 5.90 |
| 4/15/20 17:38 | 237.23 | 27.21 | 0.04 | 13.66 | 138.29 | 1166.75 | 5.89 |
| 4/15/20 17:39 | 237.37 | 27.20 | 0.04 | 13.68 | 139.60 | 1166.72 | 5.89 |
| 4/15/20 17:40 | 237.61 | 27.33 | 0.04 | 13.86 | 131.92 | 1167.18 | 5.88 |
| 4/15/20 17:41 | 236.92 | 27.25 | 0.04 | 13.98 | 135.94 | 1166.67 | 5.88 |
| 4/15/20 17:42 | 237.33 | 27.23 | 0.04 | 13.75 | 137.68 | 1167.50 | 5.87 |
| 4/15/20 17:43 | 237.63 | 27.23 | 0.04 | 13.71 | 126.94 | 1167.95 | 5.87 |
| 4/15/20 17:44 | 237.19 | 27.19 | 0.04 | 13.97 | 133.95 | 1167.22 | 5.86 |
| 4/15/20 17:45 | 237.38 | 27.21 | 0.04 | 14.11 | 159.13 | 1167.36 | 5.86 |
| 4/15/20 17:46 | 237.40 | 27.26 | 0.04 | 13.67 | 143.43 | 1167.30 | 5.85 |
| 4/15/20 17:47 | 237.32 | 27.17 | 0.04 | 13.79 | 153.28 | 1166.78 | 5.85 |
| 4/15/20 17:48 | 237.44 | 27.22 | 0.04 | 13.83 | 141.85 | 1167.82 | 5.84 |
| 4/15/20 17:49 | 236.73 | 27.24 | 0.04 | 13.73 | 151.07 | 1166.89 | 5.84 |
| 4/15/20 17:50 | 237.31 | 27.23 | 0.04 | 13.93 | 143.30 | 1167.27 | 5.83 |
| 4/15/20 17:51 | 237.22 | 27.24 | 0.04 | 14.00 | 137.72 | 1167.73 | 5.83 |
| 4/15/20 17:52 | 237.52 | 27.25 | 0.04 | 13.86 | 141.56 | 1167.66 | 5.82 |
| 4/15/20 17:53 | 237.69 | 27.23 | 0.04 | 13.89 | 128.37 | 1167.83 | 5.82 |
| 4/15/20 17:54 | 237.44 | 27.26 | 0.04 | 13.81 | 134.69 | 1167.54 | 5.81 |
| 4/15/20 17:55 | 236.96 | 27.23 | 0.04 | 13.99 | 135.00 | 1167.36 | 5.80 |
| 4/15/20 17:56 | 236.71 | 27.26 | 0.04 | 13.91 | 127.00 | 1167.11 | 5.80 |
| 4/15/20 17:57 | 237.30 | 27.23 | 0.04 | 13.73 | 136.62 | 1167.43 | 5.79 |
| 4/15/20 17:58 | 236.87 | 27.21 | 0.04 | 13.75 | 130.81 | 1167.87 | 5.79 |
| 4/15/20 17:59 | 236.80 | 27.19 | 0.04 | 14.02 | 133.55 | 1166.68 | 5.78 |
| 4/15/20 18:00 | 237.36 | 27.30 | 0.04 | 13.78 | 138.16 | 1167.88 | 5.78 |
| 4/15/20 18:01 | 237.38 | 27.24 | 0.04 | 13.78 | 132.84 | 1167.73 | 5.77 |
| 4/15/20 18:02 | 237.35 | 27.16 | 0.04 | 13.79 | 131.89 | 1167.09 | 5.77 |

| Description | | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/16 6:46 - 4/16 11:15) | | 242.37 | 28.02 | 0.00 | 13.80 | 153.49 | 1174.44 | 3.72 |
| COUNT = 270 | | | | | | | | |
| Signal Tagname | | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| | 4/16/20 6:46 | 242.59 | 27.80 | 0.00 | 13.71 | 160.84 | 1172.17 | 3.78 |
| | 4/16/20 6:47 | 242.78 | 27.89 | 0.00 | 13.77 | 160.90 | 1172.43 | 3.78 |
| | 4/16/20 6:48 | 242.49 | 27.93 | 0.00 | 13.88 | 161.01 | 1172.44 | 3.78 |
| | 4/16/20 6:49 | 242.75 | 27.94 | 0.00 | 13.94 | 166.77 | 1172.44 | 3.78 |
| | 4/16/20 6:50 | 242.75 | 27.96 | 0.00 | 13.79 | 164.72 | 1172.16 | 3.78 |
| | 4/16/20 6:51 | 242.50 | 27.91 | 0.00 | 13.55 | 157.99 | 1171.62 | 3.78 |
| | 4/16/20 6:52 | 242.38 | 27.80 | 0.00 | 13.86 | 167.80 | 1173.10 | 3.78 |
| | 4/16/20 6:53 | 242.55 | 28.02 | 0.00 | 13.93 | 192.86 | 1172.61 | 3.78 |
| | 4/16/20 6:54 | 242.78 | 28.01 | 0.00 | 13.82 | 179.35 | 1172.69 | 3.78 |
| | 4/16/20 6:55 | 242.88 | 27.90 | 0.00 | 13.98 | 169.24 | 1173.05 | 3.78 |
| | 4/16/20 6:56 | 242.72 | 27.85 | 0.00 | 13.72 | 170.42 | 1171.94 | 3.78 |
| | 4/16/20 6:57 | 242.61 | 27.93 | 0.00 | 13.56 | 172.84 | 1173.00 | 3.78 |
| | 4/16/20 6:58 | 242.57 | 27.94 | 0.00 | 13.75 | 166.65 | 1173.06 | 3.78 |
| | 4/16/20 6:59 | 242.56 | 27.88 | 0.00 | 13.27 | 168.75 | 1172.32 | 3.78 |
| | 4/16/20 7:00 | 242.36 | 27.90 | 0.00 | 13.80 | 151.33 | 1171.90 | 3.78 |
| | 4/16/20 7:01 | 242.72 | 27.94 | 0.00 | 13.55 | 155.05 | 1172.63 | 3.78 |
| | 4/16/20 7:02 | 242.72 | 27.98 | 0.00 | 13.81 | 160.87 | 1173.12 | 3.78 |
| | 4/16/20 7:03 | 242.51 | 28.00 | 0.00 | 13.74 | 143.95 | 1172.62 | 3.78 |
| | 4/16/20 7:04 | 243.13 | 27.88 | 0.00 | 13.76 | 159.21 | 1173.58 | 3.78 |
| | 4/16/20 7:05 | 242.74 | 27.89 | 0.00 | 13.66 | 144.48 | 1172.46 | 3.77 |
| | 4/16/20 7:06 | 242.73 | 27.94 | 0.00 | 13.92 | 157.17 | 1173.16 | 3.77 |
| | 4/16/20 7:07 | 243.06 | 27.99 | 0.00 | 14.25 | 152.90 | 1174.48 | 3.77 |
| | 4/16/20 7:08 | 242.72 | 27.92 | 0.00 | 13.85 | 156.65 | 1173.96 | 3.77 |
| | 4/16/20 7:09 | 242.73 | 27.86 | 0.00 | 13.94 | 150.56 | 1173.82 | 3.77 |
| | 4/16/20 7:10 | 243.10 | 27.94 | 0.00 | 13.72 | 158.55 | 1173.86 | 3.77 |
| | 4/16/20 7:11 | 242.50 | 27.98 | 0.00 | 13.66 | 145.37 | 1173.59 | 3.77 |
| | 4/16/20 7:12 | 242.91 | 27.96 | 0.00 | 14.05 | 155.82 | 1174.27 | 3.77 |
| | 4/16/20 7:13 | 242.75 | 27.88 | 0.00 | 13.69 | 162.52 | 1173.74 | 3.77 |
| | 4/16/20 7:14 | 242.81 | 27.84 | 0.00 | 13.69 | 151.14 | 1173.70 | 3.77 |
| | 4/16/20 7:15 | 242.66 | 28.00 | 0.00 | 13.80 | 153.51 | 1173.42 | 3.77 |
| | 4/16/20 7:16 | 242.71 | 28.00 | 0.00 | 14.02 | 156.27 | 1174.35 | 3.77 |
| | 4/16/20 7:17 | 243.08 | 27.94 | 0.00 | 13.89 | 148.01 | 1173.73 | 3.77 |
| | 4/16/20 7:18 | 242.76 | 27.94 | 0.00 | 13.69 | 158.51 | 1173.22 | 3.77 |
| | 4/16/20 7:19 | 242.82 | 27.97 | 0.00 | 13.69 | 161.15 | 1173.81 | 3.77 |
| | 4/16/20 7:20 | 242.87 | 27.91 | 0.00 | 13.84 | 161.43 | 1172.73 | 3.77 |
| | 4/16/20 7:21 | 242.72 | 27.90 | 0.00 | 13.60 | 150.22 | 1172.56 | 3.77 |
| | 4/16/20 7:22 | 242.76 | 27.93 | 0.00 | 13.80 | 154.96 | 1173.63 | 3.77 |
| | 4/16/20 7:23 | 242.82 | 27.99 | 0.00 | 13.74 | 161.38 | 1173.03 | 3.77 |
| | 4/16/20 7:24 | 242.60 | 27.97 | 0.00 | 13.81 | 149.84 | 1174.09 | 3.77 |
| | 4/16/20 7:25 | 243.02 | 28.00 | 0.00 | 13.75 | 158.33 | 1174.16 | 3.77 |
| | 4/16/20 7:26 | 242.10 | 28.00 | 0.00 | 13.68 | 175.21 | 1172.63 | 3.77 |
| | 4/16/20 7:27 | 242.94 | 27.91 | 0.00 | 13.89 | 178.53 | 1173.87 | 3.77 |
| | 4/16/20 7:28 | 242.57 | 27.93 | 0.00 | 13.57 | 160.99 | 1172.86 | 3.77 |
| | 4/16/20 7:29 | 243.17 | 28.02 | 0.00 | 14.09 | 173.62 | 1174.62 | 3.77 |
| | 4/16/20 7:30 | 242.73 | 28.02 | 0.00 | 13.87 | 160.83 | 1173.85 | 3.77 |
| | 4/16/20 7:31 | 243.02 | 27.90 | 0.00 | 13.53 | 159.21 | 1174.58 | 3.77 |
| | 4/16/20 7:32 | 242.64 | 27.93 | 0.00 | 13.76 | 163.11 | 1173.87 | 3.77 |
| | 4/16/20 7:33 | 242.77 | 28.02 | 0.00 | 14.01 | 163.90 | 1174.33 | 3.77 |
| | 4/16/20 7:34 | 242.90 | 28.05 | 0.00 | 14.07 | 150.76 | 1174.60 | 3.77 |
| | 4/16/20 7:35 | 242.76 | 27.93 | 0.00 | 13.49 | 159.71 | 1174.02 | 3.76 |
| | 4/16/20 7:36 | 242.96 | 27.86 | 0.00 | 13.69 | 158.21 | 1173.28 | 3.76 |
| | 4/16/20 7:37 | 242.67 | 27.88 | 0.00 | 13.45 | 154.59 | 1173.71 | 3.76 |
| | 4/16/20 7:38 | 242.72 | 28.00 | 0.00 | 13.75 | 156.93 | 1173.59 | 3.76 |
| | 4/16/20 7:39 | 243.18 | 27.92 | 0.00 | 14.00 | 144.95 | 1174.20 | 3.76 |
| | 4/16/20 7:40 | 242.80 | 27.91 | 0.00 | 13.80 | 157.27 | 1173.62 | 3.76 |
| | 4/16/20 7:41 | 242.68 | 27.94 | 0.00 | 13.75 | 159.58 | 1173.77 | 3.76 |
| | 4/16/20 7:42 | 243.09 | 27.96 | 0.00 | 13.88 | 161.07 | 1174.23 | 3.76 |
| | 4/16/20 7:43 | 242.82 | 27.97 | 0.00 | 14.02 | 157.70 | 1174.36 | 3.76 |
| | 4/16/20 7:44 | 242.81 | 27.85 | 0.00 | 13.73 | 148.90 | 1174.63 | 3.76 |
| | 4/16/20 7:45 | 243.00 | 27.95 | 0.00 | 13.95 | 149.36 | 1174.50 | 3.76 |
| | 4/16/20 7:46 | 242.42 | 27.96 | 0.00 | 13.65 | 152.51 | 1173.55 | 3.76 |
| | 4/16/20 7:47 | 242.66 | 27.97 | 0.00 | 13.66 | 158.80 | 1173.76 | 3.76 |
| | 4/16/20 7:48 | 242.60 | 27.94 | 0.00 | 13.80 | 160.75 | 1173.44 | 3.76 |
| | 4/16/20 7:49 | 242.97 | 27.84 | 0.00 | 13.72 | 151.10 | 1174.33 | 3.76 |
| | 4/16/20 7:50 | 242.94 | 27.90 | 0.00 | 13.69 | 153.22 | 1173.47 | 3.76 |
| | 4/16/20 7:51 | 242.43 | 27.93 | 0.00 | 13.88 | 163.48 | 1173.82 | 3.76 |
| | 4/16/20 7:52 | 242.89 | 27.99 | 0.00 | 13.84 | 147.90 | 1174.33 | 3.76 |

| Description | | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/16 6:46 - 4/16 11:15) | | 242.37 | 28.02 | 0.00 | 13.80 | 153.49 | 1174.44 | 3.72 |
| COUNT = 270 | | | | | | | | |
| Signal Tagname | | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| | 4/16/20 7:53 | 242.59 | 27.95 | 0.00 | 13.89 | 160.55 | 1173.48 | 3.76 |
| | 4/16/20 7:54 | 242.94 | 27.94 | 0.00 | 13.86 | 163.97 | 1174.92 | 3.76 |
| | 4/16/20 7:55 | 242.56 | 27.96 | 0.00 | 13.78 | 158.44 | 1172.52 | 3.76 |
| | 4/16/20 7:56 | 242.59 | 27.98 | 0.00 | 13.88 | 149.10 | 1173.95 | 3.76 |
| | 4/16/20 7:57 | 242.83 | 28.01 | 0.00 | 13.67 | 161.52 | 1175.12 | 3.76 |
| | 4/16/20 7:58 | 242.68 | 27.91 | 0.00 | 13.85 | 156.34 | 1174.25 | 3.76 |
| | 4/16/20 7:59 | 242.76 | 27.92 | 0.00 | 13.65 | 148.28 | 1174.01 | 3.75 |
| | 4/16/20 8:00 | 242.84 | 27.97 | 0.00 | 14.04 | 147.06 | 1174.62 | 3.75 |
| | 4/16/20 8:01 | 243.05 | 27.97 | 0.00 | 13.74 | 159.99 | 1174.04 | 3.75 |
| | 4/16/20 8:02 | 242.49 | 27.85 | 0.00 | 13.87 | 157.30 | 1174.41 | 3.75 |
| | 4/16/20 8:03 | 242.75 | 27.86 | 0.00 | 13.52 | 161.73 | 1174.21 | 3.75 |
| | 4/16/20 8:04 | 243.02 | 27.95 | 0.00 | 13.63 | 159.72 | 1174.89 | 3.75 |
| | 4/16/20 8:05 | 243.00 | 28.01 | 0.00 | 13.82 | 147.60 | 1174.74 | 3.75 |
| | 4/16/20 8:06 | 242.81 | 27.88 | 0.00 | 13.72 | 150.85 | 1174.75 | 3.75 |
| | 4/16/20 8:07 | 242.65 | 27.87 | 0.00 | 13.99 | 159.68 | 1173.72 | 3.75 |
| | 4/16/20 8:08 | 242.60 | 27.89 | 0.00 | 13.59 | 148.93 | 1175.14 | 3.75 |
| | 4/16/20 8:09 | 242.78 | 27.96 | 0.00 | 13.64 | 149.88 | 1174.24 | 3.75 |
| | 4/16/20 8:10 | 242.86 | 27.95 | 0.00 | 14.07 | 159.29 | 1174.36 | 3.75 |
| | 4/16/20 8:11 | 242.90 | 27.80 | 0.00 | 13.99 | 162.79 | 1174.64 | 3.75 |
| | 4/16/20 8:12 | 242.78 | 27.84 | 0.00 | 13.77 | 162.01 | 1174.19 | 3.75 |
| | 4/16/20 8:13 | 242.58 | 27.79 | 0.00 | 13.70 | 157.28 | 1173.83 | 3.75 |
| | 4/16/20 8:14 | 242.45 | 27.89 | 0.00 | 13.81 | 149.12 | 1174.15 | 3.75 |
| | 4/16/20 8:15 | 242.48 | 27.86 | 0.00 | 13.85 | 162.16 | 1173.58 | 3.75 |
| | 4/16/20 8:16 | 242.75 | 27.83 | 0.00 | 13.91 | 162.25 | 1174.83 | 3.75 |
| | 4/16/20 8:17 | 242.99 | 27.84 | 0.00 | 13.66 | 183.51 | 1175.12 | 3.75 |
| | 4/16/20 8:18 | 243.01 | 27.91 | 0.00 | 13.69 | 172.89 | 1174.59 | 3.75 |
| | 4/16/20 8:19 | 243.08 | 27.92 | 0.00 | 13.60 | 168.78 | 1174.41 | 3.74 |
| | 4/16/20 8:20 | 242.75 | 27.81 | 0.00 | 13.96 | 175.03 | 1174.61 | 3.74 |
| | 4/16/20 8:21 | 242.44 | 27.85 | 0.00 | 13.68 | 168.28 | 1174.51 | 3.74 |
| | 4/16/20 8:22 | 242.88 | 27.82 | 0.00 | 13.89 | 169.55 | 1174.60 | 3.74 |
| | 4/16/20 8:23 | 242.36 | 27.91 | 0.00 | 13.78 | 157.34 | 1174.26 | 3.74 |
| | 4/16/20 8:24 | 242.62 | 27.90 | 0.00 | 13.70 | 164.91 | 1174.90 | 3.74 |
| | 4/16/20 8:25 | 242.71 | 27.86 | 0.00 | 13.63 | 145.58 | 1174.17 | 3.74 |
| | 4/16/20 8:26 | 242.63 | 27.86 | 0.00 | 13.87 | 154.05 | 1174.90 | 3.74 |
| | 4/16/20 8:27 | 242.63 | 27.97 | 0.00 | 13.89 | 157.14 | 1174.81 | 3.74 |
| | 4/16/20 8:28 | 242.60 | 27.94 | 0.00 | 13.61 | 143.09 | 1174.40 | 3.74 |
| | 4/16/20 8:29 | 242.42 | 27.88 | 0.00 | 13.89 | 152.86 | 1174.53 | 3.74 |
| | 4/16/20 8:30 | 242.20 | 27.85 | 0.00 | 13.66 | 148.22 | 1174.26 | 3.74 |
| | 4/16/20 8:31 | 242.52 | 27.89 | 0.00 | 13.95 | 150.47 | 1174.66 | 3.74 |
| | 4/16/20 8:32 | 242.35 | 28.00 | 0.00 | 14.05 | 146.21 | 1174.29 | 3.74 |
| | 4/16/20 8:33 | 242.75 | 27.99 | 0.00 | 13.83 | 142.91 | 1174.24 | 3.74 |
| | 4/16/20 8:34 | 242.45 | 27.87 | 0.00 | 13.50 | 148.39 | 1174.06 | 3.74 |
| | 4/16/20 8:35 | 242.63 | 27.90 | 0.00 | 13.78 | 147.53 | 1174.28 | 3.74 |
| | 4/16/20 8:36 | 242.58 | 28.01 | 0.00 | 13.73 | 141.35 | 1174.80 | 3.74 |
| | 4/16/20 8:37 | 242.20 | 28.11 | 0.00 | 14.05 | 154.99 | 1174.23 | 3.74 |
| | 4/16/20 8:38 | 242.18 | 27.99 | 0.00 | 13.60 | 148.08 | 1174.26 | 3.74 |
| | 4/16/20 8:39 | 242.56 | 27.99 | 0.00 | 13.85 | 148.32 | 1174.65 | 3.73 |
| | 4/16/20 8:40 | 242.51 | 28.08 | 0.00 | 14.06 | 156.09 | 1174.74 | 3.73 |
| | 4/16/20 8:41 | 242.40 | 28.03 | 0.00 | 13.99 | 147.67 | 1174.73 | 3.73 |
| | 4/16/20 8:42 | 242.91 | 28.04 | 0.00 | 13.94 | 144.12 | 1175.62 | 3.73 |
| | 4/16/20 8:43 | 242.69 | 27.95 | 0.00 | 13.88 | 149.10 | 1175.12 | 3.73 |
| | 4/16/20 8:44 | 242.51 | 28.05 | 0.00 | 13.86 | 156.77 | 1173.88 | 3.73 |
| | 4/16/20 8:45 | 242.66 | 28.08 | 0.00 | 14.07 | 158.38 | 1174.65 | 3.73 |
| | 4/16/20 8:46 | 242.47 | 28.13 | 0.00 | 13.76 | 151.76 | 1173.72 | 3.73 |
| | 4/16/20 8:47 | 242.40 | 28.00 | 0.00 | 14.10 | 150.95 | 1175.10 | 3.73 |
| | 4/16/20 8:48 | 242.60 | 28.05 | 0.00 | 13.79 | 148.09 | 1174.57 | 3.73 |
| | 4/16/20 8:49 | 242.55 | 28.14 | 0.00 | 13.80 | 151.88 | 1174.94 | 3.73 |
| | 4/16/20 8:50 | 242.46 | 28.13 | 0.00 | 13.57 | 156.41 | 1173.96 | 3.73 |
| | 4/16/20 8:51 | 242.42 | 28.03 | 0.00 | 13.66 | 155.07 | 1175.25 | 3.73 |
| | 4/16/20 8:52 | 242.12 | 28.08 | 0.00 | 13.71 | 145.00 | 1175.13 | 3.73 |
| | 4/16/20 8:53 | 242.15 | 28.09 | 0.00 | 13.68 | 139.13 | 1174.33 | 3.73 |
| | 4/16/20 8:54 | 242.40 | 28.10 | 0.00 | 14.04 | 150.24 | 1175.01 | 3.73 |
| | 4/16/20 8:55 | 241.98 | 28.02 | 0.00 | 13.83 | 137.82 | 1173.90 | 3.73 |
| | 4/16/20 8:56 | 242.60 | 27.96 | 0.00 | 13.83 | 141.35 | 1174.46 | 3.73 |
| | 4/16/20 8:57 | 242.41 | 28.07 | 0.00 | 13.70 | 152.49 | 1174.69 | 3.73 |
| | 4/16/20 8:58 | 242.48 | 28.19 | 0.00 | 13.85 | 146.42 | 1174.38 | 3.73 |
| | 4/16/20 8:59 | 242.28 | 28.04 | 0.00 | 13.53 | 140.57 | 1173.93 | 3.72 |

| Description | | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/16 6:46 - 4/16 11:15) | | 242.37 | 28.02 | 0.00 | 13.80 | 153.49 | 1174.44 | 3.72 |
| COUNT = 270 | | | | | | | | |
| Signal Tagname | | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| | 4/16/20 9:00 | 242.91 | 28.02 | 0.00 | 13.86 | 148.89 | 1174.92 | 3.72 |
| | 4/16/20 9:01 | 242.39 | 28.09 | 0.00 | 13.66 | 152.63 | 1174.44 | 3.72 |
| | 4/16/20 9:02 | 242.29 | 28.13 | 0.00 | 13.69 | 156.81 | 1174.38 | 3.72 |
| | 4/16/20 9:03 | 242.47 | 28.17 | 0.00 | 13.85 | 153.59 | 1174.36 | 3.72 |
| | 4/16/20 9:04 | 242.29 | 28.07 | 0.00 | 13.53 | 147.32 | 1174.12 | 3.72 |
| | 4/16/20 9:05 | 242.55 | 28.08 | 0.00 | 13.79 | 150.17 | 1174.14 | 3.72 |
| | 4/16/20 9:06 | 242.34 | 28.05 | 0.00 | 13.87 | 158.59 | 1174.98 | 3.72 |
| | 4/16/20 9:07 | 242.45 | 28.14 | 0.00 | 13.94 | 153.17 | 1176.03 | 3.72 |
| | 4/16/20 9:08 | 242.27 | 28.12 | 0.00 | 14.43 | 143.48 | 1175.70 | 3.72 |
| | 4/16/20 9:09 | 242.26 | 28.03 | 0.00 | 14.10 | 154.71 | 1174.71 | 3.72 |
| | 4/16/20 9:10 | 242.27 | 28.05 | 0.00 | 13.63 | 154.30 | 1174.50 | 3.72 |
| | 4/16/20 9:11 | 242.29 | 28.09 | 0.00 | 13.78 | 146.94 | 1174.98 | 3.72 |
| | 4/16/20 9:12 | 242.29 | 28.11 | 0.00 | 14.32 | 144.03 | 1175.34 | 3.72 |
| | 4/16/20 9:13 | 242.12 | 28.09 | 0.00 | 13.84 | 141.96 | 1174.34 | 3.72 |
| | 4/16/20 9:14 | 242.07 | 28.04 | 0.00 | 13.76 | 143.65 | 1174.08 | 3.72 |
| | 4/16/20 9:15 | 242.88 | 28.13 | 0.00 | 13.98 | 171.54 | 1175.47 | 3.72 |
| | 4/16/20 9:16 | 242.64 | 28.20 | 0.00 | 14.12 | 158.67 | 1175.23 | 3.72 |
| | 4/16/20 9:17 | 242.25 | 28.14 | 0.00 | 13.81 | 160.13 | 1174.65 | 3.72 |
| | 4/16/20 9:18 | 242.28 | 28.10 | 0.00 | 13.71 | 160.02 | 1174.63 | 3.71 |
| | 4/16/20 9:19 | 242.18 | 28.11 | 0.00 | 13.79 | 163.11 | 1174.88 | 3.71 |
| | 4/16/20 9:20 | 242.33 | 28.18 | 0.00 | 13.62 | 146.94 | 1174.90 | 3.71 |
| | 4/16/20 9:21 | 242.05 | 28.15 | 0.00 | 14.14 | 150.49 | 1175.78 | 3.71 |
| | 4/16/20 9:22 | 242.46 | 28.14 | 0.00 | 14.01 | 156.70 | 1174.92 | 3.71 |
| | 4/16/20 9:23 | 242.09 | 28.08 | 0.00 | 13.84 | 151.81 | 1174.93 | 3.71 |
| | 4/16/20 9:24 | 242.21 | 28.12 | 0.00 | 13.86 | 148.18 | 1174.05 | 3.71 |
| | 4/16/20 9:25 | 242.37 | 28.14 | 0.00 | 14.15 | 146.53 | 1175.08 | 3.71 |
| | 4/16/20 9:26 | 242.60 | 28.11 | 0.00 | 13.86 | 146.97 | 1174.80 | 3.71 |
| | 4/16/20 9:27 | 242.27 | 28.12 | 0.00 | 13.62 | 140.54 | 1174.38 | 3.71 |
| | 4/16/20 9:28 | 242.39 | 28.12 | 0.00 | 13.66 | 145.36 | 1175.27 | 3.71 |
| | 4/16/20 9:29 | 241.94 | 28.15 | 0.00 | 13.58 | 140.84 | 1174.16 | 3.71 |
| | 4/16/20 9:30 | 242.06 | 28.11 | 0.00 | 13.77 | 144.98 | 1174.43 | 3.71 |
| | 4/16/20 9:31 | 242.43 | 28.04 | 0.00 | 14.10 | 152.74 | 1174.90 | 3.71 |
| | 4/16/20 9:32 | 242.60 | 28.03 | 0.00 | 13.80 | 152.09 | 1174.84 | 3.71 |
| | 4/16/20 9:33 | 242.56 | 28.21 | 0.00 | 13.95 | 149.37 | 1174.79 | 3.71 |
| | 4/16/20 9:34 | 242.62 | 28.17 | 0.00 | 13.79 | 148.69 | 1175.52 | 3.71 |
| | 4/16/20 9:35 | 242.29 | 28.02 | 0.00 | 13.89 | 148.89 | 1174.95 | 3.71 |
| | 4/16/20 9:36 | 242.44 | 28.04 | 0.00 | 13.68 | 155.92 | 1174.50 | 3.71 |
| | 4/16/20 9:37 | 242.25 | 28.09 | 0.00 | 13.95 | 152.00 | 1174.49 | 3.71 |
| | 4/16/20 9:38 | 242.49 | 28.11 | 0.00 | 13.84 | 145.21 | 1175.42 | 3.70 |
| | 4/16/20 9:39 | 242.02 | 28.08 | 0.00 | 13.68 | 146.30 | 1174.32 | 3.70 |
| | 4/16/20 9:40 | 242.14 | 28.08 | 0.00 | 14.04 | 144.45 | 1175.45 | 3.70 |
| | 4/16/20 9:41 | 242.32 | 28.15 | 0.00 | 13.73 | 145.29 | 1175.12 | 3.70 |
| | 4/16/20 9:42 | 242.23 | 28.17 | 0.00 | 13.48 | 145.79 | 1174.64 | 3.70 |
| | 4/16/20 9:43 | 242.90 | 28.17 | 0.00 | 13.90 | 150.15 | 1175.57 | 3.70 |
| | 4/16/20 9:44 | 242.55 | 28.00 | 0.00 | 13.76 | 153.58 | 1175.46 | 3.70 |
| | 4/16/20 9:45 | 242.36 | 28.07 | 0.00 | 13.91 | 155.16 | 1174.68 | 3.70 |
| | 4/16/20 9:46 | 242.07 | 28.18 | 0.00 | 13.73 | 156.89 | 1174.29 | 3.70 |
| | 4/16/20 9:47 | 242.28 | 28.16 | 0.00 | 13.80 | 147.56 | 1174.93 | 3.70 |
| | 4/16/20 9:48 | 241.96 | 28.03 | 0.00 | 13.71 | 148.70 | 1174.44 | 3.70 |
| | 4/16/20 9:49 | 242.33 | 28.11 | 0.00 | 14.05 | 152.81 | 1175.40 | 3.70 |
| | 4/16/20 9:50 | 242.43 | 28.07 | 0.00 | 14.01 | 152.27 | 1174.75 | 3.70 |
| | 4/16/20 9:51 | 242.62 | 28.19 | 0.00 | 14.18 | 148.49 | 1175.11 | 3.70 |
| | 4/16/20 9:52 | 241.96 | 28.16 | 0.00 | 13.97 | 149.39 | 1174.11 | 3.70 |
| | 4/16/20 9:53 | 242.35 | 28.06 | 0.00 | 13.70 | 155.69 | 1175.10 | 3.70 |
| | 4/16/20 9:54 | 242.11 | 28.13 | 0.00 | 13.61 | 148.93 | 1174.34 | 3.70 |
| | 4/16/20 9:55 | 242.26 | 28.16 | 0.00 | 13.92 | 142.85 | 1174.89 | 3.70 |
| | 4/16/20 9:56 | 242.36 | 28.15 | 0.00 | 13.75 | 142.17 | 1175.21 | 3.70 |
| | 4/16/20 9:57 | 242.37 | 28.06 | 0.00 | 13.78 | 143.73 | 1175.21 | 3.70 |
| | 4/16/20 9:58 | 242.29 | 28.12 | 0.00 | 14.07 | 151.29 | 1174.82 | 3.69 |
| | 4/16/20 9:59 | 242.20 | 28.21 | 0.00 | 13.77 | 154.39 | 1174.68 | 3.69 |
| | 4/16/20 10:00 | 242.53 | 28.18 | 0.00 | 14.18 | 155.14 | 1175.50 | 3.69 |
| | 4/16/20 10:01 | 242.61 | 28.01 | 0.00 | 13.55 | 149.86 | 1174.89 | 3.69 |
| | 4/16/20 10:02 | 242.27 | 28.06 | 0.00 | 13.60 | 148.60 | 1174.69 | 3.69 |
| | 4/16/20 10:03 | 242.51 | 28.13 | 0.00 | 13.95 | 155.86 | 1175.88 | 3.69 |
| | 4/16/20 10:04 | 242.23 | 28.08 | 0.00 | 13.70 | 154.27 | 1174.95 | 3.69 |
| | 4/16/20 10:05 | 242.54 | 28.11 | 0.00 | 13.72 | 153.03 | 1174.17 | 3.69 |
| | 4/16/20 10:06 | 242.34 | 28.06 | 0.00 | 13.57 | 146.30 | 1174.69 | 3.69 |

| Description | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/16 6:46 - 4/16 11:15) | 242.37 | 28.02 | 0.00 | 13.80 | 153.49 | 1174.44 | 3.72 |
| COUNT = 270 | | | | | | | |

| Signal Tagname | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
|---|---|---|---|---|---|---|---|
| 4/16/20 10:07 | 242.08 | 28.05 | 0.00 | 13.71 | 150.97 | 1173.62 | 3.69 |
| 4/16/20 10:08 | 242.53 | 28.19 | 0.00 | 13.56 | 159.28 | 1173.93 | 3.69 |
| 4/16/20 10:09 | 242.54 | 28.14 | 0.00 | 13.79 | 161.56 | 1175.55 | 3.69 |
| 4/16/20 10:10 | 242.27 | 28.12 | 0.00 | 13.79 | 156.07 | 1175.38 | 3.69 |
| 4/16/20 10:11 | 242.20 | 28.08 | 0.00 | 13.91 | 157.32 | 1174.81 | 3.69 |
| 4/16/20 10:12 | 242.13 | 28.15 | 0.00 | 13.72 | 147.69 | 1174.76 | 3.69 |
| 4/16/20 10:13 | 242.48 | 28.18 | 0.00 | 13.57 | 147.90 | 1174.67 | 3.69 |
| 4/16/20 10:14 | 242.21 | 28.16 | 0.00 | 13.86 | 147.19 | 1174.20 | 3.69 |
| 4/16/20 10:15 | 242.23 | 28.08 | 0.00 | 13.62 | 149.26 | 1174.10 | 3.69 |
| 4/16/20 10:16 | 242.26 | 28.07 | 0.00 | 13.59 | 149.00 | 1174.61 | 3.69 |
| 4/16/20 10:17 | 242.38 | 28.18 | 0.00 | 13.97 | 146.26 | 1174.91 | 3.68 |
| 4/16/20 10:18 | 242.15 | 28.15 | 0.00 | 13.70 | 144.01 | 1174.27 | 3.68 |
| 4/16/20 10:19 | 242.13 | 28.07 | 0.00 | 13.74 | 153.52 | 1174.50 | 3.68 |
| 4/16/20 10:20 | 242.03 | 28.08 | 0.00 | 13.73 | 156.19 | 1174.81 | 3.68 |
| 4/16/20 10:21 | 242.36 | 28.16 | 0.00 | 13.76 | 156.35 | 1174.89 | 3.68 |
| 4/16/20 10:22 | 242.36 | 28.19 | 0.00 | 13.61 | 149.85 | 1175.13 | 3.68 |
| 4/16/20 10:23 | 242.22 | 28.10 | 0.00 | 13.94 | 142.62 | 1175.23 | 3.68 |
| 4/16/20 10:24 | 242.35 | 28.13 | 0.00 | 13.94 | 143.61 | 1175.01 | 3.68 |
| 4/16/20 10:25 | 242.59 | 28.10 | 0.00 | 13.90 | 145.17 | 1175.28 | 3.68 |
| 4/16/20 10:26 | 242.14 | 28.17 | 0.00 | 13.75 | 152.75 | 1175.03 | 3.68 |
| 4/16/20 10:27 | 242.35 | 28.11 | 0.00 | 13.87 | 154.70 | 1175.75 | 3.68 |
| 4/16/20 10:28 | 242.42 | 28.13 | 0.00 | 13.85 | 161.21 | 1175.66 | 3.68 |
| 4/16/20 10:29 | 242.38 | 28.11 | 0.00 | 14.12 | 175.48 | 1175.95 | 3.68 |
| 4/16/20 10:30 | 241.76 | 28.10 | 0.00 | 13.94 | 160.82 | 1175.46 | 3.68 |
| 4/16/20 10:31 | 241.94 | 28.12 | 0.00 | 13.49 | 159.06 | 1174.40 | 3.68 |
| 4/16/20 10:32 | 241.75 | 28.06 | 0.00 | 13.79 | 163.41 | 1175.37 | 3.68 |
| 4/16/20 10:33 | 241.82 | 28.00 | 0.00 | 13.74 | 155.01 | 1174.71 | 3.68 |
| 4/16/20 10:34 | 241.91 | 28.15 | 0.00 | 13.89 | 151.64 | 1175.18 | 3.68 |
| 4/16/20 10:35 | 241.79 | 28.13 | 0.00 | 13.69 | 146.14 | 1174.65 | 3.68 |
| 4/16/20 10:36 | 241.96 | 28.06 | 0.00 | 13.80 | 153.30 | 1175.05 | 3.68 |
| 4/16/20 10:37 | 242.06 | 28.04 | 0.00 | 13.71 | 147.98 | 1175.39 | 3.67 |
| 4/16/20 10:38 | 241.76 | 28.06 | 0.00 | 13.47 | 139.12 | 1175.15 | 3.67 |
| 4/16/20 10:39 | 241.86 | 28.13 | 0.00 | 13.90 | 146.59 | 1175.73 | 3.67 |
| 4/16/20 10:40 | 241.73 | 28.20 | 0.00 | 13.65 | 138.29 | 1174.42 | 3.67 |
| 4/16/20 10:41 | 241.51 | 28.06 | 0.00 | 14.16 | 133.80 | 1175.79 | 3.67 |
| 4/16/20 10:42 | 241.99 | 28.06 | 0.00 | 13.73 | 138.57 | 1174.56 | 3.67 |
| 4/16/20 10:43 | 241.82 | 28.03 | 0.00 | 13.70 | 147.34 | 1175.04 | 3.67 |
| 4/16/20 10:44 | 241.76 | 28.11 | 0.00 | 13.47 | 148.05 | 1175.04 | 3.67 |
| 4/16/20 10:45 | 241.52 | 28.07 | 0.00 | 13.68 | 150.13 | 1174.27 | 3.67 |
| 4/16/20 10:46 | 241.57 | 28.08 | 0.00 | 13.49 | 143.67 | 1174.74 | 3.67 |
| 4/16/20 10:47 | 241.99 | 28.09 | 0.00 | 13.73 | 146.67 | 1175.12 | 3.67 |
| 4/16/20 10:48 | 241.91 | 28.11 | 0.00 | 13.89 | 141.24 | 1175.18 | 3.67 |
| 4/16/20 10:49 | 241.30 | 28.07 | 0.00 | 13.78 | 153.10 | 1174.79 | 3.67 |
| 4/16/20 10:50 | 241.41 | 28.01 | 0.00 | 13.81 | 150.10 | 1174.45 | 3.67 |
| 4/16/20 10:51 | 241.35 | 28.10 | 0.00 | 13.89 | 144.13 | 1175.42 | 3.67 |
| 4/16/20 10:52 | 241.75 | 28.14 | 0.00 | 13.85 | 142.14 | 1174.84 | 3.67 |
| 4/16/20 10:53 | 241.37 | 28.03 | 0.00 | 13.83 | 142.69 | 1174.68 | 3.67 |
| 4/16/20 10:54 | 241.33 | 28.03 | 0.00 | 13.70 | 141.97 | 1175.00 | 3.67 |
| 4/16/20 10:55 | 241.43 | 28.07 | 0.00 | 13.97 | 146.87 | 1175.81 | 3.67 |
| 4/16/20 10:56 | 241.68 | 28.13 | 0.00 | 13.80 | 147.34 | 1174.61 | 3.67 |
| 4/16/20 10:57 | 241.36 | 28.10 | 0.00 | 13.90 | 148.09 | 1174.95 | 3.66 |
| 4/16/20 10:58 | 241.15 | 28.04 | 0.00 | 13.97 | 149.10 | 1174.66 | 3.66 |
| 4/16/20 10:59 | 241.72 | 28.03 | 0.00 | 13.95 | 147.19 | 1175.36 | 3.66 |
| 4/16/20 11:00 | 242.06 | 28.08 | 0.00 | 13.79 | 150.79 | 1175.36 | 3.66 |
| 4/16/20 11:01 | 241.14 | 28.10 | 0.00 | 13.57 | 149.75 | 1174.98 | 3.66 |
| 4/16/20 11:02 | 241.57 | 28.10 | 0.00 | 14.02 | 148.92 | 1175.68 | 3.66 |
| 4/16/20 11:03 | 241.52 | 28.06 | 0.00 | 13.76 | 147.52 | 1175.07 | 3.66 |
| 4/16/20 11:04 | 241.58 | 28.04 | 0.00 | 13.84 | 154.84 | 1175.15 | 3.66 |
| 4/16/20 11:05 | 241.12 | 28.10 | 0.00 | 13.76 | 155.19 | 1175.44 | 3.66 |
| 4/16/20 11:06 | 241.81 | 28.18 | 0.00 | 13.93 | 161.72 | 1175.41 | 3.66 |
| 4/16/20 11:07 | 241.45 | 28.05 | 0.00 | 13.83 | 163.25 | 1175.33 | 3.66 |
| 4/16/20 11:08 | 241.33 | 28.01 | 0.00 | 13.82 | 167.82 | 1175.69 | 3.66 |
| 4/16/20 11:09 | 240.98 | 28.06 | 0.00 | 13.95 | 162.44 | 1175.68 | 3.66 |
| 4/16/20 11:10 | 240.67 | 28.11 | 0.00 | 13.76 | 157.60 | 1174.98 | 3.66 |
| 4/16/20 11:11 | 241.32 | 28.04 | 0.00 | 13.59 | 151.04 | 1174.78 | 3.66 |
| 4/16/20 11:12 | 241.13 | 27.99 | 0.00 | 13.73 | 151.78 | 1175.45 | 3.66 |
| 4/16/20 11:13 | 241.40 | 28.11 | 0.00 | 13.77 | 141.99 | 1174.71 | 3.66 |

| Description | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/16 6:46 - 4/16 11:15) | 242.37 | 28.02 | 0.00 | 13.80 | 153.49 | 1174.44 | 3.72 |
| COUNT = 270 | | | | | | | |
| Signal Tagname | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| 4/16/20 11:14 | 241.46 | 28.13 | 0.00 | 13.98 | 134.98 | 1175.18 | 3.66 |
| 4/16/20 11:15 | 241.34 | 28.01 | 0.00 | 13.81 | 137.81 | 1175.17 | 3.66 |

# EMISSION DATA RECORDS

## Operating Data Base Load
## (provided by Cricket Valley Energy Center LLC)
## SAM

| Description | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/15 13:56 - 4/15 15:56) | 237.34 | 27.38 | 0.04 | 13.82 | 135.54 | 1167.73 | 790.75 |
| COUNT = 121 | | | | | | | |

| Signal Tagname | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
|---|---|---|---|---|---|---|---|
| 4/15/20 13:56 | 236.95 | 27.42 | 0.04 | 13.74 | 132.48 | 1167.66 | 3.78 |
| 4/15/20 13:57 | 237.32 | 27.45 | 0.04 | 13.72 | 135.90 | 1168.10 | 3.78 |
| 4/15/20 13:58 | 237.39 | 27.40 | 0.04 | 13.94 | 149.02 | 1167.12 | 3.78 |
| 4/15/20 13:59 | 236.68 | 27.39 | 0.04 | 13.62 | 139.59 | 1167.18 | 3.78 |
| 4/15/20 14:00 | 236.97 | 27.43 | 0.04 | 13.91 | 142.03 | 1166.78 | 3.78 |
| 4/15/20 14:01 | 237.25 | 27.48 | 0.04 | 13.80 | 146.52 | 1167.63 | 3.78 |
| 4/15/20 14:02 | 237.21 | 27.43 | 0.04 | 13.84 | 135.82 | 1166.80 | 3.77 |
| 4/15/20 14:03 | 237.69 | 27.48 | 0.04 | 13.78 | 140.45 | 1167.74 | 3.77 |
| 4/15/20 14:04 | 237.23 | 27.39 | 0.04 | 13.76 | 140.88 | 1167.47 | 3.77 |
| 4/15/20 14:05 | 237.26 | 27.40 | 0.04 | 13.62 | 132.97 | 1167.80 | 3.77 |
| 4/15/20 14:06 | 237.51 | 27.55 | 0.04 | 13.91 | 139.69 | 1168.06 | 3.77 |
| 4/15/20 14:07 | 237.45 | 27.46 | 0.04 | 13.72 | 133.09 | 1167.44 | 3.77 |
| 4/15/20 14:08 | 237.27 | 27.42 | 0.04 | 13.78 | 130.99 | 1167.23 | 3.77 |
| 4/15/20 14:09 | 236.91 | 27.44 | 0.04 | 13.69 | 130.46 | 1166.80 | 3.77 |
| 4/15/20 14:10 | 237.18 | 27.39 | 0.04 | 13.83 | 130.35 | 1167.55 | 3.77 |
| 4/15/20 14:11 | 237.11 | 27.43 | 0.04 | 13.93 | 133.85 | 1166.85 | 3.77 |
| 4/15/20 14:12 | 237.27 | 27.42 | 0.04 | 13.81 | 135.13 | 1166.93 | 3.77 |
| 4/15/20 14:13 | 236.55 | 27.44 | 0.04 | 14.22 | 134.52 | 1167.35 | 3.77 |
| 4/15/20 14:14 | 236.87 | 27.39 | 0.04 | 13.49 | 131.80 | 1167.02 | 3.76 |
| 4/15/20 14:15 | 236.82 | 27.43 | 0.04 | 13.61 | 126.88 | 1167.51 | 3.76 |
| 4/15/20 14:16 | 236.82 | 27.41 | 0.04 | 14.10 | 131.74 | 1166.90 | 3.76 |
| 4/15/20 14:17 | 236.40 | 27.41 | 0.04 | 13.84 | 129.33 | 1166.46 | 3.76 |
| 4/15/20 14:18 | 236.62 | 27.39 | 0.04 | 13.84 | 125.65 | 1167.04 | 3.76 |
| 4/15/20 14:19 | 236.59 | 27.37 | 0.04 | 13.49 | 125.14 | 1167.67 | 3.76 |
| 4/15/20 14:20 | 236.51 | 27.46 | 0.04 | 13.83 | 128.16 | 1166.99 | 3.76 |
| 4/15/20 14:21 | 236.84 | 27.41 | 0.04 | 14.04 | 124.10 | 1167.50 | 3.76 |
| 4/15/20 14:22 | 237.02 | 27.40 | 0.04 | 13.73 | 127.90 | 1166.81 | 3.76 |
| 4/15/20 14:23 | 237.24 | 27.35 | 0.04 | 13.58 | 128.12 | 1167.25 | 3.76 |
| 4/15/20 14:24 | 237.12 | 27.49 | 0.04 | 13.87 | 134.41 | 1167.78 | 3.76 |
| 4/15/20 14:25 | 236.20 | 27.36 | 0.04 | 13.74 | 131.64 | 1166.39 | 3.76 |
| 4/15/20 14:26 | 236.62 | 27.32 | 0.04 | 13.73 | 137.11 | 1166.24 | 3.76 |
| 4/15/20 14:27 | 236.28 | 27.37 | 0.04 | 14.15 | 139.22 | 1168.14 | 3.75 |
| 4/15/20 14:28 | 236.61 | 27.40 | 0.04 | 13.84 | 131.92 | 1167.90 | 3.75 |
| 4/15/20 14:29 | 236.56 | 27.40 | 0.04 | 13.63 | 139.37 | 1166.31 | 3.75 |
| 4/15/20 14:30 | 236.42 | 27.36 | 0.04 | 13.66 | 128.99 | 1166.79 | 3.75 |
| 4/15/20 14:31 | 236.27 | 27.33 | 0.04 | 13.78 | 133.56 | 1167.06 | 3.75 |
| 4/15/20 14:32 | 236.72 | 27.36 | 0.04 | 14.05 | 136.44 | 1167.33 | 3.75 |
| 4/15/20 14:33 | 236.26 | 27.42 | 0.04 | 13.53 | 127.98 | 1167.03 | 3.75 |
| 4/15/20 14:34 | 236.76 | 27.38 | 0.04 | 13.67 | 125.99 | 1167.82 | 3.75 |
| 4/15/20 14:35 | 236.39 | 27.36 | 0.04 | 13.99 | 133.97 | 1167.20 | 3.75 |
| 4/15/20 14:36 | 236.31 | 27.32 | 0.04 | 13.69 | 130.99 | 1167.04 | 3.75 |
| 4/15/20 14:37 | 237.02 | 27.40 | 0.04 | 14.03 | 128.59 | 1167.60 | 3.75 |
| 4/15/20 14:38 | 237.06 | 27.39 | 0.04 | 14.17 | 129.87 | 1168.01 | 3.75 |
| 4/15/20 14:39 | 236.85 | 27.31 | 0.04 | 13.84 | 130.07 | 1168.24 | 3.75 |
| 4/15/20 14:40 | 236.76 | 27.31 | 0.04 | 13.81 | 130.88 | 1167.30 | 3.74 |
| 4/15/20 14:41 | 237.37 | 27.40 | 0.04 | 13.72 | 131.84 | 1167.88 | 3.74 |
| 4/15/20 14:42 | 237.54 | 27.31 | 0.04 | 14.17 | 134.17 | 1169.57 | 3.74 |
| 4/15/20 14:43 | 237.40 | 27.38 | 0.04 | 13.69 | 136.85 | 1166.84 | 3.74 |
| 4/15/20 14:44 | 237.34 | 27.38 | 0.04 | 13.92 | 136.85 | 1167.62 | 3.74 |
| 4/15/20 14:45 | 237.15 | 27.37 | 0.04 | 13.55 | 137.90 | 1167.67 | 3.74 |
| 4/15/20 14:46 | 236.93 | 27.33 | 0.04 | 13.74 | 131.37 | 1167.89 | 3.74 |
| 4/15/20 14:47 | 237.70 | 27.37 | 0.04 | 13.87 | 129.58 | 1168.39 | 3.74 |
| 4/15/20 14:48 | 236.78 | 27.45 | 0.04 | 13.90 | 129.19 | 1167.24 | 3.74 |
| 4/15/20 14:49 | 236.99 | 27.24 | 0.04 | 13.70 | 138.72 | 1167.33 | 540.40 |
| 4/15/20 14:50 | 237.13 | 27.35 | 0.04 | 13.86 | 128.88 | 1167.98 | 609.73 |
| 4/15/20 14:51 | 237.47 | 27.44 | 0.04 | 13.98 | 126.78 | 1167.68 | 648.18 |
| 4/15/20 14:52 | 237.34 | 27.37 | 0.04 | 13.67 | 134.85 | 1167.64 | 691.31 |
| 4/15/20 14:53 | 237.56 | 27.32 | 0.04 | 13.65 | 128.82 | 1167.97 | 748.24 |
| 4/15/20 14:54 | 237.08 | 27.33 | 0.04 | 13.72 | 130.39 | 1167.81 | 797.79 |
| 4/15/20 14:55 | 237.51 | 27.42 | 0.04 | 13.90 | 128.29 | 1167.94 | 853.61 |
| 4/15/20 14:56 | 236.86 | 27.39 | 0.04 | 13.87 | 137.29 | 1168.04 | 902.71 |
| 4/15/20 14:57 | 237.29 | 27.37 | 0.04 | 13.93 | 135.08 | 1168.39 | 947.99 |
| 4/15/20 14:58 | 236.92 | 27.45 | 0.04 | 13.75 | 134.03 | 1167.67 | 1011.59 |
| 4/15/20 14:59 | 237.59 | 27.25 | 0.04 | 13.93 | 131.57 | 1168.33 | 1070.11 |
| 4/15/20 15:00 | 237.75 | 27.42 | 0.04 | 14.25 | 127.11 | 1168.73 | 1129.20 |
| 4/15/20 15:01 | 237.62 | 27.43 | 0.04 | 14.14 | 131.54 | 1169.23 | 1187.93 |
| 4/15/20 15:02 | 237.97 | 27.38 | 0.04 | 13.80 | 135.04 | 1168.70 | 1261.64 |

| Description | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/15 13:56 - 4/15 15:56) | 237.34 | 27.38 | 0.04 | 13.82 | 135.54 | 1167.73 | 790.75 |
| COUNT = 121 | | | | | | | |
| Signal Tagname | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| 4/15/20 15:03 | 237.52 | 27.35 | 0.04 | 14.04 | 136.57 | 1168.62 | 1210.41 |
| 4/15/20 15:04 | 237.30 | 27.41 | 0.04 | 13.66 | 136.15 | 1167.51 | 1081.46 |
| 4/15/20 15:05 | 237.70 | 27.41 | 0.04 | 14.10 | 140.71 | 1167.58 | 1013.81 |
| 4/15/20 15:06 | 237.62 | 27.35 | 0.04 | 13.88 | 139.73 | 1168.12 | 952.65 |
| 4/15/20 15:07 | 237.70 | 27.35 | 0.04 | 13.54 | 133.27 | 1167.80 | 908.23 |
| 4/15/20 15:08 | 237.99 | 27.38 | 0.04 | 13.81 | 132.47 | 1168.44 | 834.77 |
| 4/15/20 15:09 | 237.54 | 27.46 | 0.04 | 13.99 | 130.15 | 1168.49 | 794.18 |
| 4/15/20 15:10 | 237.35 | 27.42 | 0.04 | 13.75 | 131.10 | 1168.00 | 730.29 |
| 4/15/20 15:11 | 237.81 | 27.39 | 0.04 | 13.48 | 133.34 | 1168.44 | 690.96 |
| 4/15/20 15:12 | 237.87 | 27.36 | 0.04 | 13.94 | 140.79 | 1168.43 | 651.64 |
| 4/15/20 15:13 | 238.03 | 27.35 | 0.04 | 13.87 | 139.19 | 1169.40 | 680.23 |
| 4/15/20 15:14 | 237.92 | 27.45 | 0.04 | 13.85 | 133.82 | 1168.71 | 783.51 |
| 4/15/20 15:15 | 237.69 | 27.38 | 0.04 | 13.87 | 137.28 | 1168.33 | 850.10 |
| 4/15/20 15:16 | 237.83 | 27.40 | 0.04 | 13.81 | 133.06 | 1168.22 | 900.11 |
| 4/15/20 15:17 | 237.29 | 27.31 | 0.04 | 13.96 | 135.12 | 1167.89 | 959.22 |
| 4/15/20 15:18 | 237.85 | 27.42 | 0.04 | 13.93 | 129.19 | 1168.53 | 1039.73 |
| 4/15/20 15:19 | 237.77 | 27.44 | 0.04 | 13.88 | 135.94 | 1168.30 | 1095.10 |
| 4/15/20 15:20 | 237.74 | 27.39 | 0.04 | 13.89 | 127.68 | 1168.00 | 1158.64 |
| 4/15/20 15:21 | 237.76 | 27.34 | 0.04 | 13.82 | 135.01 | 1167.49 | 1216.38 |
| 4/15/20 15:22 | 237.87 | 27.37 | 0.04 | 13.51 | 130.35 | 1167.34 | 1296.81 |
| 4/15/20 15:23 | 238.24 | 27.44 | 0.04 | 14.10 | 132.96 | 1169.60 | 1347.24 |
| 4/15/20 15:24 | 237.97 | 27.38 | 0.04 | 13.61 | 134.75 | 1167.28 | 1403.85 |
| 4/15/20 15:25 | 237.57 | 27.37 | 0.04 | 13.67 | 136.42 | 1167.85 | 1475.28 |
| 4/15/20 15:26 | 238.13 | 27.37 | 0.04 | 13.83 | 133.67 | 1167.89 | 1527.54 |
| 4/15/20 15:27 | 238.71 | 27.38 | 0.04 | 13.88 | 141.59 | 1168.52 | 1564.75 |
| 4/15/20 15:28 | 238.04 | 27.46 | 0.04 | 13.73 | 133.92 | 1168.70 | 1618.81 |
| 4/15/20 15:29 | 237.60 | 27.37 | 0.04 | 13.82 | 173.71 | 1168.30 | 1713.15 |
| 4/15/20 15:30 | 238.00 | 27.35 | 0.04 | 13.62 | 187.33 | 1168.23 | 1727.20 |
| 4/15/20 15:31 | 237.96 | 27.38 | 0.04 | 14.04 | 180.61 | 1168.19 | 1850.32 |
| 4/15/20 15:32 | 237.79 | 27.42 | 0.04 | 13.81 | 170.98 | 1167.96 | 1886.19 |
| 4/15/20 15:33 | 238.07 | 27.37 | 0.04 | 14.13 | 164.48 | 1167.89 | 1902.55 |
| 4/15/20 15:34 | 237.68 | 27.34 | 0.04 | 13.84 | 163.04 | 1168.57 | 1953.86 |
| 4/15/20 15:35 | 237.70 | 27.29 | 0.04 | 13.91 | 151.97 | 1168.38 | 1840.89 |
| 4/15/20 15:36 | 238.18 | 27.34 | 0.04 | 13.76 | 148.63 | 1167.64 | 1814.19 |
| 4/15/20 15:37 | 238.56 | 27.49 | 0.04 | 13.82 | 139.05 | 1169.00 | 1874.69 |
| 4/15/20 15:38 | 237.64 | 27.32 | 0.04 | 13.69 | 135.41 | 1167.67 | 1938.40 |
| 4/15/20 15:39 | 238.11 | 27.30 | 0.04 | 13.91 | 130.86 | 1168.34 | 2002.92 |
| 4/15/20 15:40 | 238.14 | 27.37 | 0.04 | 13.93 | 131.47 | 1168.56 | 2039.57 |
| 4/15/20 15:41 | 237.75 | 27.48 | 0.04 | 13.66 | 126.57 | 1167.23 | 2105.81 |
| 4/15/20 15:42 | 237.19 | 27.32 | 0.04 | 13.82 | 125.57 | 1167.31 | 2154.46 |
| 4/15/20 15:43 | 237.75 | 27.32 | 0.04 | 13.62 | 125.58 | 1167.26 | 2216.29 |
| 4/15/20 15:44 | 237.76 | 27.34 | 0.04 | 13.81 | 127.78 | 1168.35 | 2247.23 |
| 4/15/20 15:45 | 237.86 | 27.44 | 0.04 | 13.81 | 125.88 | 1167.94 | 2275.57 |
| 4/15/20 15:46 | 237.11 | 27.43 | 0.04 | 13.80 | 126.39 | 1166.96 | 2182.75 |
| 4/15/20 15:47 | 237.27 | 27.30 | 0.04 | 13.55 | 127.08 | 1166.88 | 2101.45 |
| 4/15/20 15:48 | 237.17 | 27.35 | 0.04 | 13.78 | 131.83 | 1167.33 | 2066.55 |
| 4/15/20 15:49 | 237.48 | 27.32 | 0.04 | 13.98 | 134.16 | 1167.58 | 2054.37 |
| 4/15/20 15:50 | 237.36 | 27.42 | 0.04 | 13.71 | 139.01 | 1167.39 | 1996.12 |
| 4/15/20 15:51 | 237.52 | 27.38 | 0.04 | 13.99 | 139.74 | 1167.18 | 1940.55 |
| 4/15/20 15:52 | 237.29 | 27.26 | 0.04 | 13.80 | 141.18 | 1167.17 | 1900.39 |
| 4/15/20 15:53 | 237.49 | 27.31 | 0.04 | 13.93 | 132.90 | 1167.65 | 1912.97 |
| 4/15/20 15:54 | 237.43 | 27.39 | 0.04 | 13.88 | 139.05 | 1167.37 | 1863.70 |
| 4/15/20 15:55 | 237.54 | 27.39 | 0.04 | 13.91 | 129.39 | 1167.86 | 1884.71 |
| 4/15/20 15:56 | 237.79 | 27.38 | 0.04 | 13.53 | 136.19 | 1167.25 | 1848.92 |

| Description | | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/16 6:24 - 4/16 8:24) | | 242.73 | 27.92 | 0.00 | 13.78 | 159.13 | 1173.46 | 3.77 |
| COUNT = 121 | | | | | | | | |
| Signal Tagname | | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| | 4/16/20 6:24 | 242.59 | 27.85 | 0.00 | 13.53 | 156.73 | 1172.18 | 3.79 |
| | 4/16/20 6:25 | 242.35 | 27.82 | 0.00 | 13.43 | 170.06 | 1170.87 | 3.79 |
| | 4/16/20 6:26 | 242.77 | 27.92 | 0.00 | 13.56 | 156.13 | 1172.13 | 3.79 |
| | 4/16/20 6:27 | 242.54 | 27.90 | 0.00 | 13.81 | 170.23 | 1171.48 | 3.79 |
| | 4/16/20 6:28 | 242.51 | 27.90 | 0.00 | 13.77 | 153.97 | 1172.26 | 3.79 |
| | 4/16/20 6:29 | 242.46 | 27.91 | 0.00 | 13.75 | 164.40 | 1171.70 | 3.79 |
| | 4/16/20 6:30 | 242.57 | 27.86 | 0.00 | 13.96 | 150.44 | 1171.65 | 3.79 |
| | 4/16/20 6:31 | 242.80 | 27.97 | 0.00 | 13.88 | 160.57 | 1171.65 | 3.79 |
| | 4/16/20 6:32 | 242.60 | 27.87 | 0.00 | 13.51 | 146.38 | 1172.01 | 3.79 |
| | 4/16/20 6:33 | 242.51 | 27.89 | 0.00 | 13.76 | 162.24 | 1172.05 | 3.79 |
| | 4/16/20 6:34 | 242.41 | 27.88 | 0.00 | 13.68 | 147.16 | 1172.63 | 3.78 |
| | 4/16/20 6:35 | 242.71 | 27.89 | 0.00 | 13.84 | 157.89 | 1172.44 | 3.78 |
| | 4/16/20 6:36 | 242.40 | 27.94 | 0.00 | 13.75 | 160.56 | 1171.59 | 3.78 |
| | 4/16/20 6:37 | 242.77 | 27.95 | 0.00 | 13.58 | 146.76 | 1171.97 | 3.78 |
| | 4/16/20 6:38 | 242.73 | 27.94 | 0.00 | 13.91 | 152.84 | 1172.96 | 3.78 |
| | 4/16/20 6:39 | 242.63 | 27.89 | 0.00 | 13.58 | 160.62 | 1172.82 | 3.78 |
| | 4/16/20 6:40 | 242.57 | 28.00 | 0.00 | 13.85 | 163.24 | 1172.81 | 3.78 |
| | 4/16/20 6:41 | 242.59 | 27.92 | 0.00 | 13.55 | 149.76 | 1172.45 | 3.78 |
| | 4/16/20 6:42 | 242.92 | 27.91 | 0.00 | 13.49 | 161.17 | 1171.89 | 3.78 |
| | 4/16/20 6:43 | 242.83 | 27.91 | 0.00 | 14.15 | 159.35 | 1172.98 | 3.78 |
| | 4/16/20 6:44 | 242.78 | 27.99 | 0.00 | 14.08 | 157.39 | 1173.24 | 3.78 |
| | 4/16/20 6:45 | 242.68 | 27.97 | 0.00 | 14.30 | 168.67 | 1173.08 | 3.78 |
| | 4/16/20 6:46 | 242.59 | 27.80 | 0.00 | 13.71 | 160.84 | 1172.17 | 3.78 |
| | 4/16/20 6:47 | 242.78 | 27.89 | 0.00 | 13.77 | 160.90 | 1172.43 | 3.78 |
| | 4/16/20 6:48 | 242.49 | 27.93 | 0.00 | 13.88 | 161.01 | 1172.44 | 3.78 |
| | 4/16/20 6:49 | 242.75 | 27.94 | 0.00 | 13.94 | 166.77 | 1172.44 | 3.78 |
| | 4/16/20 6:50 | 242.75 | 27.96 | 0.00 | 13.79 | 164.72 | 1172.16 | 3.78 |
| | 4/16/20 6:51 | 242.50 | 27.91 | 0.00 | 13.55 | 157.99 | 1171.62 | 3.78 |
| | 4/16/20 6:52 | 242.38 | 27.80 | 0.00 | 13.86 | 167.80 | 1173.10 | 3.78 |
| | 4/16/20 6:53 | 242.55 | 28.02 | 0.00 | 13.93 | 192.86 | 1172.61 | 3.78 |
| | 4/16/20 6:54 | 242.78 | 28.01 | 0.00 | 13.82 | 179.35 | 1172.69 | 3.78 |
| | 4/16/20 6:55 | 242.88 | 27.90 | 0.00 | 13.98 | 169.24 | 1173.05 | 3.78 |
| | 4/16/20 6:56 | 242.72 | 27.85 | 0.00 | 13.72 | 170.42 | 1171.94 | 3.78 |
| | 4/16/20 6:57 | 242.61 | 27.93 | 0.00 | 13.56 | 172.84 | 1173.00 | 3.78 |
| | 4/16/20 6:58 | 242.57 | 27.94 | 0.00 | 13.75 | 166.65 | 1173.06 | 3.78 |
| | 4/16/20 6:59 | 242.56 | 27.88 | 0.00 | 13.27 | 168.75 | 1172.32 | 3.78 |
| | 4/16/20 7:00 | 242.36 | 27.90 | 0.00 | 13.80 | 151.33 | 1171.90 | 3.78 |
| | 4/16/20 7:01 | 242.72 | 27.94 | 0.00 | 13.55 | 155.05 | 1172.63 | 3.78 |
| | 4/16/20 7:02 | 242.72 | 27.98 | 0.00 | 13.81 | 160.87 | 1173.12 | 3.78 |
| | 4/16/20 7:03 | 242.51 | 28.00 | 0.00 | 13.74 | 143.95 | 1172.62 | 3.78 |
| | 4/16/20 7:04 | 243.13 | 27.88 | 0.00 | 13.76 | 159.21 | 1173.58 | 3.78 |
| | 4/16/20 7:05 | 242.74 | 27.89 | 0.00 | 13.66 | 144.48 | 1172.46 | 3.77 |
| | 4/16/20 7:06 | 242.73 | 27.94 | 0.00 | 13.92 | 157.17 | 1173.16 | 3.77 |
| | 4/16/20 7:07 | 243.06 | 27.99 | 0.00 | 14.25 | 152.90 | 1174.48 | 3.77 |
| | 4/16/20 7:08 | 242.72 | 27.92 | 0.00 | 13.85 | 156.65 | 1173.96 | 3.77 |
| | 4/16/20 7:09 | 242.73 | 27.86 | 0.00 | 13.94 | 150.56 | 1173.82 | 3.77 |
| | 4/16/20 7:10 | 243.10 | 27.94 | 0.00 | 13.72 | 158.55 | 1173.86 | 3.77 |
| | 4/16/20 7:11 | 242.50 | 27.98 | 0.00 | 13.66 | 145.37 | 1173.59 | 3.77 |
| | 4/16/20 7:12 | 242.91 | 27.96 | 0.00 | 14.05 | 155.82 | 1174.27 | 3.77 |
| | 4/16/20 7:13 | 242.75 | 27.88 | 0.00 | 13.69 | 162.52 | 1173.74 | 3.77 |
| | 4/16/20 7:14 | 242.81 | 27.84 | 0.00 | 13.69 | 151.14 | 1173.70 | 3.77 |
| | 4/16/20 7:15 | 242.66 | 28.00 | 0.00 | 13.80 | 153.51 | 1173.42 | 3.77 |
| | 4/16/20 7:16 | 242.71 | 28.00 | 0.00 | 14.02 | 156.27 | 1174.35 | 3.77 |
| | 4/16/20 7:17 | 243.08 | 27.94 | 0.00 | 13.89 | 148.01 | 1173.73 | 3.77 |
| | 4/16/20 7:18 | 242.76 | 27.94 | 0.00 | 13.69 | 158.51 | 1173.22 | 3.77 |
| | 4/16/20 7:19 | 242.82 | 27.97 | 0.00 | 13.69 | 161.15 | 1173.81 | 3.77 |
| | 4/16/20 7:20 | 242.87 | 27.91 | 0.00 | 13.84 | 161.43 | 1172.73 | 3.77 |
| | 4/16/20 7:21 | 242.72 | 27.90 | 0.00 | 13.60 | 150.22 | 1172.56 | 3.77 |
| | 4/16/20 7:22 | 242.76 | 27.93 | 0.00 | 13.80 | 154.96 | 1173.63 | 3.77 |
| | 4/16/20 7:23 | 242.82 | 27.99 | 0.00 | 13.74 | 161.38 | 1173.03 | 3.77 |
| | 4/16/20 7:24 | 242.60 | 27.97 | 0.00 | 13.81 | 149.84 | 1174.09 | 3.77 |
| | 4/16/20 7:25 | 243.02 | 28.00 | 0.00 | 13.75 | 158.33 | 1174.16 | 3.77 |
| | 4/16/20 7:26 | 242.10 | 28.00 | 0.00 | 13.68 | 175.21 | 1172.63 | 3.77 |
| | 4/16/20 7:27 | 242.94 | 27.91 | 0.00 | 13.89 | 178.53 | 1173.87 | 3.77 |
| | 4/16/20 7:28 | 242.57 | 27.93 | 0.00 | 13.57 | 160.99 | 1172.86 | 3.77 |
| | 4/16/20 7:29 | 243.17 | 28.02 | 0.00 | 14.09 | 173.62 | 1174.62 | 3.77 |
| | 4/16/20 7:30 | 242.73 | 28.02 | 0.00 | 13.87 | 160.83 | 1173.85 | 3.77 |

| Description | | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/16 6:24 - 4/16 8:24) | | 242.73 | 27.92 | 0.00 | 13.78 | 159.13 | 1173.46 | 3.77 |
| COUNT = 121 | | | | | | | | |
| Signal Tagname | | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| | 4/16/20 7:31 | 243.02 | 27.90 | 0.00 | 13.53 | 159.21 | 1174.58 | 3.77 |
| | 4/16/20 7:32 | 242.64 | 27.93 | 0.00 | 13.76 | 163.11 | 1173.87 | 3.77 |
| | 4/16/20 7:33 | 242.77 | 28.02 | 0.00 | 14.01 | 163.90 | 1174.33 | 3.77 |
| | 4/16/20 7:34 | 242.90 | 28.05 | 0.00 | 14.07 | 150.76 | 1174.60 | 3.77 |
| | 4/16/20 7:35 | 242.76 | 27.93 | 0.00 | 13.49 | 159.71 | 1174.02 | 3.76 |
| | 4/16/20 7:36 | 242.96 | 27.86 | 0.00 | 13.69 | 158.21 | 1173.28 | 3.76 |
| | 4/16/20 7:37 | 242.67 | 27.88 | 0.00 | 13.45 | 154.59 | 1173.71 | 3.76 |
| | 4/16/20 7:38 | 242.72 | 28.00 | 0.00 | 13.75 | 156.93 | 1173.59 | 3.76 |
| | 4/16/20 7:39 | 243.18 | 27.92 | 0.00 | 14.00 | 144.95 | 1174.20 | 3.76 |
| | 4/16/20 7:40 | 242.80 | 27.91 | 0.00 | 13.80 | 157.27 | 1173.62 | 3.76 |
| | 4/16/20 7:41 | 242.68 | 27.94 | 0.00 | 13.75 | 159.58 | 1173.77 | 3.76 |
| | 4/16/20 7:42 | 243.09 | 27.96 | 0.00 | 13.88 | 161.07 | 1174.23 | 3.76 |
| | 4/16/20 7:43 | 242.82 | 27.97 | 0.00 | 14.02 | 157.70 | 1174.36 | 3.76 |
| | 4/16/20 7:44 | 242.81 | 27.85 | 0.00 | 13.73 | 148.90 | 1174.63 | 3.76 |
| | 4/16/20 7:45 | 243.00 | 27.95 | 0.00 | 13.95 | 149.36 | 1174.50 | 3.76 |
| | 4/16/20 7:46 | 242.42 | 27.96 | 0.00 | 13.65 | 152.51 | 1173.55 | 3.76 |
| | 4/16/20 7:47 | 242.66 | 27.97 | 0.00 | 13.66 | 158.80 | 1173.76 | 3.76 |
| | 4/16/20 7:48 | 242.60 | 27.94 | 0.00 | 13.80 | 160.75 | 1173.44 | 3.76 |
| | 4/16/20 7:49 | 242.97 | 27.84 | 0.00 | 13.72 | 151.10 | 1174.33 | 3.76 |
| | 4/16/20 7:50 | 242.94 | 27.90 | 0.00 | 13.69 | 153.22 | 1173.47 | 3.76 |
| | 4/16/20 7:51 | 242.43 | 27.93 | 0.00 | 13.88 | 163.48 | 1173.82 | 3.76 |
| | 4/16/20 7:52 | 242.89 | 27.99 | 0.00 | 13.84 | 147.90 | 1174.33 | 3.76 |
| | 4/16/20 7:53 | 242.59 | 27.95 | 0.00 | 13.89 | 160.55 | 1173.48 | 3.76 |
| | 4/16/20 7:54 | 242.94 | 27.94 | 0.00 | 13.86 | 163.97 | 1174.92 | 3.76 |
| | 4/16/20 7:55 | 242.56 | 27.96 | 0.00 | 13.78 | 158.44 | 1172.52 | 3.76 |
| | 4/16/20 7:56 | 242.59 | 27.98 | 0.00 | 13.88 | 149.10 | 1173.95 | 3.76 |
| | 4/16/20 7:57 | 242.83 | 28.01 | 0.00 | 13.67 | 161.52 | 1175.12 | 3.76 |
| | 4/16/20 7:58 | 242.68 | 27.91 | 0.00 | 13.85 | 156.34 | 1174.25 | 3.76 |
| | 4/16/20 7:59 | 242.76 | 27.92 | 0.00 | 13.65 | 148.28 | 1174.01 | 3.75 |
| | 4/16/20 8:00 | 242.84 | 27.97 | 0.00 | 14.04 | 147.06 | 1174.62 | 3.75 |
| | 4/16/20 8:01 | 243.05 | 27.97 | 0.00 | 13.74 | 159.99 | 1174.04 | 3.75 |
| | 4/16/20 8:02 | 242.49 | 27.85 | 0.00 | 13.87 | 157.30 | 1174.41 | 3.75 |
| | 4/16/20 8:03 | 242.75 | 27.86 | 0.00 | 13.52 | 161.73 | 1174.21 | 3.75 |
| | 4/16/20 8:04 | 243.02 | 27.95 | 0.00 | 13.63 | 159.72 | 1174.89 | 3.75 |
| | 4/16/20 8:05 | 243.00 | 28.01 | 0.00 | 13.82 | 147.60 | 1174.74 | 3.75 |
| | 4/16/20 8:06 | 242.81 | 27.88 | 0.00 | 13.72 | 150.85 | 1174.75 | 3.75 |
| | 4/16/20 8:07 | 242.65 | 27.87 | 0.00 | 13.99 | 159.68 | 1173.72 | 3.75 |
| | 4/16/20 8:08 | 242.60 | 27.89 | 0.00 | 13.59 | 148.93 | 1175.14 | 3.75 |
| | 4/16/20 8:09 | 242.78 | 27.96 | 0.00 | 13.64 | 149.88 | 1174.24 | 3.75 |
| | 4/16/20 8:10 | 242.86 | 27.95 | 0.00 | 14.07 | 159.29 | 1174.36 | 3.75 |
| | 4/16/20 8:11 | 242.90 | 27.80 | 0.00 | 13.99 | 162.79 | 1174.64 | 3.75 |
| | 4/16/20 8:12 | 242.78 | 27.84 | 0.00 | 13.77 | 162.01 | 1174.19 | 3.75 |
| | 4/16/20 8:13 | 242.58 | 27.79 | 0.00 | 13.70 | 157.28 | 1173.83 | 3.75 |
| | 4/16/20 8:14 | 242.45 | 27.89 | 0.00 | 13.81 | 149.12 | 1174.15 | 3.75 |
| | 4/16/20 8:15 | 242.48 | 27.86 | 0.00 | 13.85 | 162.16 | 1173.58 | 3.75 |
| | 4/16/20 8:16 | 242.75 | 27.83 | 0.00 | 13.91 | 162.25 | 1174.83 | 3.75 |
| | 4/16/20 8:17 | 242.99 | 27.84 | 0.00 | 13.66 | 183.51 | 1175.12 | 3.75 |
| | 4/16/20 8:18 | 243.01 | 27.91 | 0.00 | 13.69 | 172.89 | 1174.59 | 3.75 |
| | 4/16/20 8:19 | 243.08 | 27.92 | 0.00 | 13.60 | 168.78 | 1174.41 | 3.74 |
| | 4/16/20 8:20 | 242.75 | 27.81 | 0.00 | 13.96 | 175.03 | 1174.61 | 3.74 |
| | 4/16/20 8:21 | 242.44 | 27.85 | 0.00 | 13.68 | 168.28 | 1174.51 | 3.74 |
| | 4/16/20 8:22 | 242.88 | 27.82 | 0.00 | 13.89 | 169.55 | 1174.60 | 3.74 |
| | 4/16/20 8:23 | 242.36 | 27.91 | 0.00 | 13.78 | 157.34 | 1174.26 | 3.74 |
| | 4/16/20 8:24 | 242.62 | 27.90 | 0.00 | 13.70 | 164.91 | 1174.90 | 3.74 |

| Description | | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/16 8:57 - 4/16 10:57) | | 242.19 | 28.11 | 0.00 | 13.81 | 150.10 | 1174.88 | 3.70 |
| COUNT = 121 | | | | | | | | |
| Signal Tagname | | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| | 4/16/20 8:57 | 242.41 | 28.07 | 0.00 | 13.70 | 152.49 | 1174.69 | 3.73 |
| | 4/16/20 8:58 | 242.48 | 28.19 | 0.00 | 13.85 | 146.42 | 1174.38 | 3.73 |
| | 4/16/20 8:59 | 242.28 | 28.04 | 0.00 | 13.53 | 140.57 | 1173.93 | 3.72 |
| | 4/16/20 9:00 | 242.91 | 28.02 | 0.00 | 13.86 | 148.89 | 1174.92 | 3.72 |
| | 4/16/20 9:01 | 242.39 | 28.09 | 0.00 | 13.66 | 152.63 | 1174.44 | 3.72 |
| | 4/16/20 9:02 | 242.29 | 28.13 | 0.00 | 13.69 | 156.81 | 1174.38 | 3.72 |
| | 4/16/20 9:03 | 242.47 | 28.17 | 0.00 | 13.85 | 153.59 | 1174.36 | 3.72 |
| | 4/16/20 9:04 | 242.29 | 28.07 | 0.00 | 13.53 | 147.32 | 1174.12 | 3.72 |
| | 4/16/20 9:05 | 242.55 | 28.08 | 0.00 | 13.79 | 150.17 | 1174.14 | 3.72 |
| | 4/16/20 9:06 | 242.34 | 28.05 | 0.00 | 13.87 | 158.59 | 1174.98 | 3.72 |
| | 4/16/20 9:07 | 242.45 | 28.14 | 0.00 | 13.94 | 153.17 | 1176.03 | 3.72 |
| | 4/16/20 9:08 | 242.27 | 28.12 | 0.00 | 14.43 | 143.48 | 1175.70 | 3.72 |
| | 4/16/20 9:09 | 242.26 | 28.03 | 0.00 | 14.10 | 154.71 | 1174.71 | 3.72 |
| | 4/16/20 9:10 | 242.27 | 28.05 | 0.00 | 13.63 | 154.30 | 1174.50 | 3.72 |
| | 4/16/20 9:11 | 242.29 | 28.09 | 0.00 | 13.78 | 146.94 | 1174.98 | 3.72 |
| | 4/16/20 9:12 | 242.29 | 28.11 | 0.00 | 14.32 | 144.03 | 1175.34 | 3.72 |
| | 4/16/20 9:13 | 242.12 | 28.09 | 0.00 | 13.84 | 141.96 | 1174.34 | 3.72 |
| | 4/16/20 9:14 | 242.07 | 28.04 | 0.00 | 13.76 | 143.65 | 1174.08 | 3.72 |
| | 4/16/20 9:15 | 242.88 | 28.13 | 0.00 | 13.98 | 171.54 | 1175.47 | 3.72 |
| | 4/16/20 9:16 | 242.64 | 28.20 | 0.00 | 14.12 | 158.67 | 1175.23 | 3.72 |
| | 4/16/20 9:17 | 242.25 | 28.14 | 0.00 | 13.81 | 160.13 | 1174.65 | 3.72 |
| | 4/16/20 9:18 | 242.28 | 28.10 | 0.00 | 13.71 | 160.02 | 1174.63 | 3.71 |
| | 4/16/20 9:19 | 242.18 | 28.11 | 0.00 | 13.79 | 163.11 | 1174.88 | 3.71 |
| | 4/16/20 9:20 | 242.33 | 28.18 | 0.00 | 13.62 | 146.94 | 1174.90 | 3.71 |
| | 4/16/20 9:21 | 242.05 | 28.15 | 0.00 | 14.14 | 150.49 | 1175.78 | 3.71 |
| | 4/16/20 9:22 | 242.46 | 28.14 | 0.00 | 14.01 | 156.70 | 1174.92 | 3.71 |
| | 4/16/20 9:23 | 242.09 | 28.08 | 0.00 | 13.84 | 151.81 | 1174.93 | 3.71 |
| | 4/16/20 9:24 | 242.21 | 28.12 | 0.00 | 13.86 | 148.18 | 1174.05 | 3.71 |
| | 4/16/20 9:25 | 242.37 | 28.14 | 0.00 | 14.15 | 146.53 | 1175.08 | 3.71 |
| | 4/16/20 9:26 | 242.60 | 28.11 | 0.00 | 13.86 | 146.97 | 1174.80 | 3.71 |
| | 4/16/20 9:27 | 242.27 | 28.12 | 0.00 | 13.62 | 140.54 | 1174.38 | 3.71 |
| | 4/16/20 9:28 | 242.39 | 28.12 | 0.00 | 13.66 | 145.36 | 1175.27 | 3.71 |
| | 4/16/20 9:29 | 241.94 | 28.15 | 0.00 | 13.58 | 140.84 | 1174.16 | 3.71 |
| | 4/16/20 9:30 | 242.06 | 28.11 | 0.00 | 13.77 | 144.98 | 1174.43 | 3.71 |
| | 4/16/20 9:31 | 242.43 | 28.04 | 0.00 | 14.10 | 152.74 | 1174.90 | 3.71 |
| | 4/16/20 9:32 | 242.60 | 28.03 | 0.00 | 13.80 | 152.09 | 1174.84 | 3.71 |
| | 4/16/20 9:33 | 242.56 | 28.21 | 0.00 | 13.95 | 149.37 | 1174.79 | 3.71 |
| | 4/16/20 9:34 | 242.62 | 28.17 | 0.00 | 13.79 | 148.69 | 1175.52 | 3.71 |
| | 4/16/20 9:35 | 242.29 | 28.02 | 0.00 | 13.89 | 148.89 | 1174.95 | 3.71 |
| | 4/16/20 9:36 | 242.44 | 28.04 | 0.00 | 13.68 | 155.92 | 1174.50 | 3.71 |
| | 4/16/20 9:37 | 242.25 | 28.09 | 0.00 | 13.95 | 152.00 | 1174.49 | 3.71 |
| | 4/16/20 9:38 | 242.49 | 28.11 | 0.00 | 13.84 | 145.21 | 1175.42 | 3.70 |
| | 4/16/20 9:39 | 242.02 | 28.08 | 0.00 | 13.68 | 146.30 | 1174.32 | 3.70 |
| | 4/16/20 9:40 | 242.14 | 28.08 | 0.00 | 14.04 | 144.45 | 1175.45 | 3.70 |
| | 4/16/20 9:41 | 242.32 | 28.15 | 0.00 | 13.73 | 145.29 | 1175.12 | 3.70 |
| | 4/16/20 9:42 | 242.23 | 28.17 | 0.00 | 13.48 | 145.79 | 1174.64 | 3.70 |
| | 4/16/20 9:43 | 242.90 | 28.17 | 0.00 | 13.90 | 150.15 | 1175.57 | 3.70 |
| | 4/16/20 9:44 | 242.55 | 28.00 | 0.00 | 13.76 | 153.58 | 1175.46 | 3.70 |
| | 4/16/20 9:45 | 242.36 | 28.07 | 0.00 | 13.91 | 155.16 | 1174.68 | 3.70 |
| | 4/16/20 9:46 | 242.07 | 28.18 | 0.00 | 13.73 | 156.89 | 1174.29 | 3.70 |
| | 4/16/20 9:47 | 242.28 | 28.16 | 0.00 | 13.80 | 147.56 | 1174.93 | 3.70 |
| | 4/16/20 9:48 | 241.96 | 28.03 | 0.00 | 13.71 | 148.70 | 1174.44 | 3.70 |
| | 4/16/20 9:49 | 242.33 | 28.11 | 0.00 | 14.05 | 152.81 | 1175.40 | 3.70 |
| | 4/16/20 9:50 | 242.43 | 28.07 | 0.00 | 14.01 | 152.27 | 1174.75 | 3.70 |
| | 4/16/20 9:51 | 242.62 | 28.19 | 0.00 | 14.18 | 148.49 | 1175.11 | 3.70 |
| | 4/16/20 9:52 | 241.96 | 28.16 | 0.00 | 13.97 | 149.39 | 1174.11 | 3.70 |
| | 4/16/20 9:53 | 242.35 | 28.06 | 0.00 | 13.70 | 155.69 | 1175.10 | 3.70 |
| | 4/16/20 9:54 | 242.11 | 28.13 | 0.00 | 13.61 | 148.93 | 1174.34 | 3.70 |
| | 4/16/20 9:55 | 242.26 | 28.16 | 0.00 | 13.92 | 142.85 | 1174.89 | 3.70 |
| | 4/16/20 9:56 | 242.36 | 28.15 | 0.00 | 13.75 | 142.17 | 1175.21 | 3.70 |
| | 4/16/20 9:57 | 242.37 | 28.06 | 0.00 | 13.78 | 143.73 | 1175.21 | 3.70 |
| | 4/16/20 9:58 | 242.29 | 28.12 | 0.00 | 14.07 | 151.29 | 1174.82 | 3.69 |
| | 4/16/20 9:59 | 242.20 | 28.21 | 0.00 | 13.77 | 154.39 | 1174.68 | 3.69 |
| | 4/16/20 10:00 | 242.53 | 28.18 | 0.00 | 14.18 | 155.14 | 1175.50 | 3.69 |
| | 4/16/20 10:01 | 242.61 | 28.01 | 0.00 | 13.55 | 149.86 | 1174.89 | 3.69 |
| | 4/16/20 10:02 | 242.27 | 28.06 | 0.00 | 13.60 | 148.60 | 1174.69 | 3.69 |
| | 4/16/20 10:03 | 242.51 | 28.13 | 0.00 | 13.95 | 155.86 | 1175.88 | 3.69 |

| Description | | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/16 8:57 - 4/16 10:57) | | 242.19 | 28.11 | 0.00 | 13.81 | 150.10 | 1174.88 | 3.70 |
| COUNT = 121 | | | | | | | | |
| Signal Tagname | | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| | 4/16/20 10:04 | 242.23 | 28.08 | 0.00 | 13.70 | 154.27 | 1174.95 | 3.69 |
| | 4/16/20 10:05 | 242.54 | 28.11 | 0.00 | 13.72 | 153.03 | 1174.17 | 3.69 |
| | 4/16/20 10:06 | 242.34 | 28.06 | 0.00 | 13.57 | 146.30 | 1174.69 | 3.69 |
| | 4/16/20 10:07 | 242.08 | 28.05 | 0.00 | 13.71 | 150.97 | 1173.62 | 3.69 |
| | 4/16/20 10:08 | 242.53 | 28.19 | 0.00 | 13.56 | 159.28 | 1173.93 | 3.69 |
| | 4/16/20 10:09 | 242.54 | 28.14 | 0.00 | 13.79 | 161.56 | 1175.55 | 3.69 |
| | 4/16/20 10:10 | 242.27 | 28.12 | 0.00 | 13.79 | 156.07 | 1175.38 | 3.69 |
| | 4/16/20 10:11 | 242.20 | 28.08 | 0.00 | 13.91 | 157.32 | 1174.81 | 3.69 |
| | 4/16/20 10:12 | 242.13 | 28.15 | 0.00 | 13.72 | 147.69 | 1174.76 | 3.69 |
| | 4/16/20 10:13 | 242.48 | 28.18 | 0.00 | 13.57 | 147.90 | 1174.67 | 3.69 |
| | 4/16/20 10:14 | 242.21 | 28.16 | 0.00 | 13.86 | 147.19 | 1174.20 | 3.69 |
| | 4/16/20 10:15 | 242.23 | 28.08 | 0.00 | 13.62 | 149.26 | 1174.10 | 3.69 |
| | 4/16/20 10:16 | 242.26 | 28.07 | 0.00 | 13.59 | 149.00 | 1174.61 | 3.69 |
| | 4/16/20 10:17 | 242.38 | 28.18 | 0.00 | 13.97 | 146.26 | 1174.91 | 3.68 |
| | 4/16/20 10:18 | 242.15 | 28.15 | 0.00 | 13.70 | 144.01 | 1174.27 | 3.68 |
| | 4/16/20 10:19 | 242.13 | 28.07 | 0.00 | 13.74 | 153.52 | 1174.50 | 3.68 |
| | 4/16/20 10:20 | 242.03 | 28.08 | 0.00 | 13.73 | 156.19 | 1174.81 | 3.68 |
| | 4/16/20 10:21 | 242.36 | 28.16 | 0.00 | 13.76 | 156.35 | 1174.89 | 3.68 |
| | 4/16/20 10:22 | 242.36 | 28.19 | 0.00 | 13.61 | 149.85 | 1175.13 | 3.68 |
| | 4/16/20 10:23 | 242.22 | 28.10 | 0.00 | 13.94 | 142.62 | 1175.23 | 3.68 |
| | 4/16/20 10:24 | 242.35 | 28.13 | 0.00 | 13.94 | 143.61 | 1175.01 | 3.68 |
| | 4/16/20 10:25 | 242.59 | 28.10 | 0.00 | 13.90 | 145.17 | 1175.28 | 3.68 |
| | 4/16/20 10:26 | 242.14 | 28.17 | 0.00 | 13.75 | 152.75 | 1175.03 | 3.68 |
| | 4/16/20 10:27 | 242.35 | 28.11 | 0.00 | 13.87 | 154.70 | 1175.75 | 3.68 |
| | 4/16/20 10:28 | 242.42 | 28.13 | 0.00 | 13.85 | 161.21 | 1175.66 | 3.68 |
| | 4/16/20 10:29 | 242.38 | 28.11 | 0.00 | 14.12 | 175.48 | 1175.95 | 3.68 |
| | 4/16/20 10:30 | 241.76 | 28.10 | 0.00 | 13.94 | 160.82 | 1175.46 | 3.68 |
| | 4/16/20 10:31 | 241.94 | 28.12 | 0.00 | 13.49 | 159.06 | 1174.40 | 3.68 |
| | 4/16/20 10:32 | 241.75 | 28.06 | 0.00 | 13.79 | 163.41 | 1175.37 | 3.68 |
| | 4/16/20 10:33 | 241.82 | 28.00 | 0.00 | 13.74 | 155.01 | 1174.71 | 3.68 |
| | 4/16/20 10:34 | 241.91 | 28.15 | 0.00 | 13.89 | 151.64 | 1175.18 | 3.68 |
| | 4/16/20 10:35 | 241.79 | 28.13 | 0.00 | 13.69 | 146.14 | 1174.65 | 3.68 |
| | 4/16/20 10:36 | 241.96 | 28.06 | 0.00 | 13.80 | 153.30 | 1175.05 | 3.68 |
| | 4/16/20 10:37 | 242.06 | 28.04 | 0.00 | 13.71 | 147.98 | 1175.39 | 3.67 |
| | 4/16/20 10:38 | 241.76 | 28.06 | 0.00 | 13.47 | 139.12 | 1175.15 | 3.67 |
| | 4/16/20 10:39 | 241.86 | 28.13 | 0.00 | 13.90 | 146.59 | 1175.73 | 3.67 |
| | 4/16/20 10:40 | 241.73 | 28.20 | 0.00 | 13.65 | 138.29 | 1174.42 | 3.67 |
| | 4/16/20 10:41 | 241.51 | 28.06 | 0.00 | 14.16 | 133.80 | 1175.79 | 3.67 |
| | 4/16/20 10:42 | 241.99 | 28.06 | 0.00 | 13.73 | 138.57 | 1174.56 | 3.67 |
| | 4/16/20 10:43 | 241.82 | 28.03 | 0.00 | 13.70 | 147.34 | 1175.04 | 3.67 |
| | 4/16/20 10:44 | 241.76 | 28.11 | 0.00 | 13.47 | 148.05 | 1175.04 | 3.67 |
| | 4/16/20 10:45 | 241.52 | 28.07 | 0.00 | 13.68 | 150.13 | 1174.27 | 3.67 |
| | 4/16/20 10:46 | 241.57 | 28.08 | 0.00 | 13.49 | 143.67 | 1174.74 | 3.67 |
| | 4/16/20 10:47 | 241.99 | 28.09 | 0.00 | 13.73 | 146.67 | 1175.12 | 3.67 |
| | 4/16/20 10:48 | 241.91 | 28.11 | 0.00 | 13.89 | 141.24 | 1175.18 | 3.67 |
| | 4/16/20 10:49 | 241.30 | 28.07 | 0.00 | 13.78 | 153.10 | 1174.79 | 3.67 |
| | 4/16/20 10:50 | 241.41 | 28.01 | 0.00 | 13.81 | 150.10 | 1174.45 | 3.67 |
| | 4/16/20 10:51 | 241.35 | 28.10 | 0.00 | 13.89 | 144.13 | 1175.42 | 3.67 |
| | 4/16/20 10:52 | 241.75 | 28.14 | 0.00 | 13.85 | 142.14 | 1174.84 | 3.67 |
| | 4/16/20 10:53 | 241.37 | 28.03 | 0.00 | 13.83 | 142.69 | 1174.68 | 3.67 |
| | 4/16/20 10:54 | 241.33 | 28.03 | 0.00 | 13.70 | 141.97 | 1175.00 | 3.67 |
| | 4/16/20 10:55 | 241.43 | 28.07 | 0.00 | 13.97 | 146.87 | 1175.81 | 3.67 |
| | 4/16/20 10:56 | 241.68 | 28.13 | 0.00 | 13.80 | 147.34 | 1174.61 | 3.67 |
| | 4/16/20 10:57 | 241.36 | 28.10 | 0.00 | 13.90 | 148.09 | 1174.95 | 3.66 |

# EMISSION DATA RECORDS

## Operating Data Base Load
## (provided by Cricket Valley Energy Center LLC)
## Opacity

| Description | | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/15 6:00 - 4/15 7:00) | | 240.09 | 27.50 | 0.00 | 13.91 | 144.52 | 1170.59 | 4.69 |
| COUNT = 61 | | | | | | | | |
| Signal Tagname | | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| | 4/15/20 6:00 | 237.90 | 27.27 | 0.00 | 13.91 | 113.84 | 1175.40 | 4.82 |
| | 4/15/20 6:01 | 240.37 | 27.47 | 0.00 | 13.74 | 107.58 | 1171.09 | 4.82 |
| | 4/15/20 6:02 | 239.53 | 27.52 | 0.00 | 14.15 | 122.43 | 1170.13 | 4.82 |
| | 4/15/20 6:03 | 239.65 | 27.44 | 0.00 | 13.93 | 149.39 | 1170.33 | 4.81 |
| | 4/15/20 6:04 | 238.81 | 27.28 | 0.00 | 13.84 | 155.44 | 1172.72 | 4.81 |
| | 4/15/20 6:05 | 239.40 | 27.40 | 0.00 | 13.67 | 132.25 | 1170.58 | 4.80 |
| | 4/15/20 6:06 | 240.35 | 27.62 | 0.00 | 14.06 | 155.46 | 1169.84 | 4.80 |
| | 4/15/20 6:07 | 240.17 | 27.62 | 0.00 | 13.79 | 156.93 | 1169.74 | 4.79 |
| | 4/15/20 6:08 | 240.08 | 27.41 | 0.00 | 14.11 | 160.37 | 1169.45 | 4.79 |
| | 4/15/20 6:09 | 239.46 | 27.40 | 0.00 | 14.02 | 157.17 | 1169.91 | 4.78 |
| | 4/15/20 6:10 | 239.69 | 27.42 | 0.00 | 14.09 | 149.71 | 1171.86 | 4.78 |
| | 4/15/20 6:11 | 239.84 | 27.58 | 0.00 | 13.83 | 140.56 | 1170.74 | 4.78 |
| | 4/15/20 6:12 | 239.90 | 27.39 | 0.00 | 13.72 | 138.68 | 1169.84 | 4.77 |
| | 4/15/20 6:13 | 240.64 | 27.47 | 0.00 | 13.99 | 136.04 | 1173.75 | 4.77 |
| | 4/15/20 6:14 | 239.74 | 27.46 | 0.00 | 13.86 | 133.41 | 1170.55 | 4.76 |
| | 4/15/20 6:15 | 239.92 | 27.71 | 0.00 | 13.97 | 125.99 | 1170.15 | 4.76 |
| | 4/15/20 6:16 | 240.19 | 27.49 | 0.00 | 13.97 | 128.53 | 1172.16 | 4.75 |
| | 4/15/20 6:17 | 240.22 | 27.41 | 0.00 | 13.84 | 130.61 | 1171.03 | 4.75 |
| | 4/15/20 6:18 | 239.34 | 27.30 | 0.00 | 14.11 | 133.86 | 1171.31 | 4.74 |
| | 4/15/20 6:19 | 240.53 | 27.56 | 0.00 | 13.67 | 133.02 | 1170.72 | 4.74 |
| | 4/15/20 6:20 | 239.92 | 27.52 | 0.00 | 13.96 | 132.81 | 1171.71 | 4.73 |
| | 4/15/20 6:21 | 239.49 | 27.39 | 0.00 | 13.89 | 132.69 | 1170.42 | 4.73 |
| | 4/15/20 6:22 | 239.53 | 27.41 | 0.00 | 14.03 | 134.63 | 1171.65 | 4.73 |
| | 4/15/20 6:23 | 239.12 | 27.37 | 0.00 | 13.96 | 132.38 | 1174.53 | 4.72 |
| | 4/15/20 6:24 | 239.52 | 27.60 | 0.00 | 13.68 | 122.56 | 1170.00 | 4.72 |
| | 4/15/20 6:25 | 239.68 | 27.48 | 0.00 | 13.81 | 128.38 | 1171.48 | 4.71 |
| | 4/15/20 6:26 | 238.84 | 27.30 | 0.00 | 14.04 | 126.31 | 1172.26 | 4.71 |
| | 4/15/20 6:27 | 240.25 | 27.55 | 0.00 | 13.87 | 115.55 | 1169.56 | 4.70 |
| | 4/15/20 6:28 | 240.00 | 27.68 | 0.00 | 13.81 | 130.32 | 1169.99 | 4.70 |
| | 4/15/20 6:29 | 239.64 | 27.44 | 0.00 | 13.76 | 133.15 | 1172.05 | 4.69 |
| | 4/15/20 6:30 | 240.80 | 27.42 | 0.00 | 14.03 | 133.63 | 1169.91 | 4.69 |
| | 4/15/20 6:31 | 239.95 | 27.56 | 0.00 | 14.16 | 140.75 | 1170.55 | 4.69 |
| | 4/15/20 6:32 | 240.48 | 27.70 | 0.00 | 14.01 | 142.57 | 1170.16 | 4.68 |
| | 4/15/20 6:33 | 239.05 | 27.48 | 0.00 | 14.09 | 145.97 | 1172.12 | 4.68 |
| | 4/15/20 6:34 | 240.28 | 27.44 | 0.00 | 13.82 | 133.59 | 1170.07 | 4.67 |
| | 4/15/20 6:35 | 240.17 | 27.50 | 0.00 | 14.09 | 146.71 | 1170.33 | 4.67 |
| | 4/15/20 6:36 | 240.96 | 27.60 | 0.00 | 14.08 | 147.09 | 1170.83 | 4.66 |
| | 4/15/20 6:37 | 240.33 | 27.60 | 0.00 | 14.10 | 151.39 | 1169.78 | 4.66 |
| | 4/15/20 6:38 | 240.54 | 27.45 | 0.00 | 14.12 | 155.99 | 1170.03 | 4.65 |
| | 4/15/20 6:39 | 240.72 | 27.45 | 0.00 | 14.12 | 158.10 | 1170.09 | 4.65 |
| | 4/15/20 6:40 | 240.43 | 27.53 | 0.00 | 13.94 | 158.64 | 1171.21 | 4.65 |
| | 4/15/20 6:41 | 240.51 | 27.65 | 0.00 | 14.18 | 156.92 | 1169.48 | 4.64 |
| | 4/15/20 6:42 | 240.16 | 27.47 | 0.00 | 14.19 | 154.62 | 1170.47 | 4.64 |
| | 4/15/20 6:43 | 240.51 | 27.45 | 0.00 | 13.73 | 155.40 | 1170.00 | 4.63 |
| | 4/15/20 6:44 | 240.88 | 27.54 | 0.00 | 13.78 | 150.94 | 1170.77 | 4.63 |
| | 4/15/20 6:45 | 240.39 | 27.62 | 0.00 | 13.85 | 172.86 | 1169.99 | 4.62 |
| | 4/15/20 6:46 | 240.80 | 27.63 | 0.00 | 13.88 | 174.40 | 1170.01 | 4.62 |
| | 4/15/20 6:47 | 240.67 | 27.35 | 0.00 | 13.86 | 172.73 | 1170.38 | 4.61 |
| | 4/15/20 6:48 | 240.71 | 27.50 | 0.00 | 13.82 | 170.67 | 1169.89 | 4.61 |
| | 4/15/20 6:49 | 240.74 | 27.63 | 0.00 | 13.80 | 167.30 | 1170.11 | 4.61 |
| | 4/15/20 6:50 | 240.06 | 27.64 | 0.00 | 13.85 | 162.57 | 1169.61 | 4.60 |
| | 4/15/20 6:51 | 240.32 | 27.44 | 0.00 | 13.87 | 155.19 | 1169.42 | 4.60 |
| | 4/15/20 6:52 | 240.63 | 27.47 | 0.00 | 14.02 | 154.85 | 1170.16 | 4.59 |
| | 4/15/20 6:53 | 240.37 | 27.52 | 0.00 | 13.67 | 150.09 | 1169.22 | 4.59 |
| | 4/15/20 6:54 | 240.15 | 27.62 | 0.00 | 13.89 | 150.03 | 1169.30 | 4.58 |
| | 4/15/20 6:55 | 240.18 | 27.50 | 0.00 | 13.68 | 150.47 | 1168.80 | 4.58 |
| | 4/15/20 6:56 | 241.00 | 27.47 | 0.00 | 14.03 | 150.05 | 1170.24 | 4.57 |
| | 4/15/20 6:57 | 240.75 | 27.55 | 0.00 | 13.73 | 148.67 | 1169.24 | 4.57 |
| | 4/15/20 6:58 | 240.31 | 27.67 | 0.00 | 13.76 | 148.81 | 1169.75 | 4.57 |
| | 4/15/20 6:59 | 240.49 | 27.60 | 0.00 | 13.74 | 150.55 | 1169.45 | 4.56 |
| | 4/15/20 7:00 | 240.64 | 27.45 | 0.00 | 13.59 | 154.20 | 1169.68 | 4.56 |

| Description | | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/15 7:00 - 4/15 8:00) | | 240.66 | 27.55 | 0.00 | 13.83 | 157.80 | 1170.41 | 4.42 |
| COUNT = 61 | | | | | | | | |
| Signal Tagname | | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| | 4/15/20 7:00 | 240.64 | 27.45 | 0.00 | 13.59 | 154.20 | 1169.68 | 4.56 |
| | 4/15/20 7:01 | 240.58 | 27.51 | 0.00 | 14.06 | 151.56 | 1170.78 | 4.55 |
| | 4/15/20 7:02 | 240.27 | 27.62 | 0.00 | 13.96 | 150.61 | 1169.89 | 4.55 |
| | 4/15/20 7:03 | 240.35 | 27.66 | 0.00 | 13.65 | 152.04 | 1169.69 | 4.54 |
| | 4/15/20 7:04 | 240.80 | 27.48 | 0.00 | 14.42 | 156.06 | 1171.26 | 4.54 |
| | 4/15/20 7:05 | 240.36 | 27.52 | 0.00 | 13.76 | 156.86 | 1169.96 | 4.53 |
| | 4/15/20 7:06 | 240.73 | 27.70 | 0.00 | 13.74 | 157.78 | 1170.83 | 4.53 |
| | 4/15/20 7:07 | 240.65 | 27.60 | 0.00 | 13.87 | 156.42 | 1170.41 | 4.53 |
| | 4/15/20 7:08 | 240.45 | 27.54 | 0.00 | 13.79 | 154.43 | 1169.82 | 4.52 |
| | 4/15/20 7:09 | 240.90 | 27.47 | 0.00 | 14.01 | 151.96 | 1170.24 | 4.52 |
| | 4/15/20 7:10 | 240.64 | 27.50 | 0.00 | 13.60 | 150.49 | 1169.55 | 4.51 |
| | 4/15/20 7:11 | 240.76 | 27.65 | 0.00 | 13.76 | 147.12 | 1169.83 | 4.51 |
| | 4/15/20 7:12 | 240.39 | 27.55 | 0.00 | 13.54 | 148.10 | 1169.29 | 4.50 |
| | 4/15/20 7:13 | 240.76 | 27.53 | 0.00 | 13.88 | 151.31 | 1170.06 | 4.50 |
| | 4/15/20 7:14 | 240.91 | 27.52 | 0.00 | 13.61 | 152.62 | 1170.36 | 4.49 |
| | 4/15/20 7:15 | 240.27 | 27.66 | 0.00 | 14.01 | 155.60 | 1169.95 | 4.49 |
| | 4/15/20 7:16 | 240.69 | 27.67 | 0.00 | 13.69 | 155.29 | 1170.62 | 4.49 |
| | 4/15/20 7:17 | 240.10 | 27.45 | 0.00 | 13.86 | 155.86 | 1169.91 | 4.48 |
| | 4/15/20 7:18 | 240.68 | 27.51 | 0.00 | 13.92 | 157.79 | 1170.58 | 4.48 |
| | 4/15/20 7:19 | 240.43 | 27.60 | 0.00 | 13.96 | 156.03 | 1170.23 | 4.47 |
| | 4/15/20 7:20 | 240.98 | 27.65 | 0.00 | 13.87 | 154.22 | 1170.54 | 4.47 |
| | 4/15/20 7:21 | 240.64 | 27.51 | 0.00 | 13.89 | 156.38 | 1170.26 | 4.46 |
| | 4/15/20 7:22 | 240.54 | 27.43 | 0.00 | 14.19 | 155.75 | 1170.92 | 4.46 |
| | 4/15/20 7:23 | 240.93 | 27.52 | 0.00 | 13.85 | 156.20 | 1170.29 | 4.45 |
| | 4/15/20 7:24 | 240.29 | 27.68 | 0.00 | 13.82 | 155.30 | 1170.06 | 4.45 |
| | 4/15/20 7:25 | 240.53 | 27.57 | 0.00 | 13.63 | 155.94 | 1170.80 | 4.45 |
| | 4/15/20 7:26 | 240.36 | 27.42 | 0.00 | 13.78 | 155.39 | 1171.19 | 4.44 |
| | 4/15/20 7:27 | 240.61 | 27.49 | 0.00 | 14.12 | 151.19 | 1170.06 | 4.44 |
| | 4/15/20 7:28 | 240.89 | 27.67 | 0.00 | 13.64 | 151.34 | 1170.44 | 4.43 |
| | 4/15/20 7:29 | 240.26 | 27.64 | 0.00 | 14.16 | 150.34 | 1171.13 | 4.43 |
| | 4/15/20 7:30 | 240.92 | 27.40 | 0.00 | 13.84 | 150.22 | 1170.70 | 4.42 |
| | 4/15/20 7:31 | 240.83 | 27.47 | 0.00 | 13.81 | 151.33 | 1170.07 | 4.42 |
| | 4/15/20 7:32 | 240.75 | 27.54 | 0.00 | 13.71 | 150.20 | 1170.32 | 4.41 |
| | 4/15/20 7:33 | 240.79 | 27.66 | 0.00 | 13.64 | 152.01 | 1170.50 | 4.41 |
| | 4/15/20 7:34 | 240.49 | 27.47 | 0.00 | 13.83 | 170.55 | 1170.60 | 4.40 |
| | 4/15/20 7:35 | 241.18 | 27.51 | 0.00 | 13.74 | 168.08 | 1171.40 | 4.40 |
| | 4/15/20 7:36 | 240.80 | 27.59 | 0.00 | 13.83 | 170.89 | 1170.80 | 4.40 |
| | 4/15/20 7:37 | 240.68 | 27.66 | 0.00 | 13.81 | 168.72 | 1170.50 | 4.39 |
| | 4/15/20 7:38 | 240.63 | 27.50 | 0.00 | 13.90 | 165.11 | 1170.90 | 4.39 |
| | 4/15/20 7:39 | 240.76 | 27.35 | 0.00 | 13.82 | 164.84 | 1170.66 | 4.38 |
| | 4/15/20 7:40 | 240.88 | 27.52 | 0.00 | 14.13 | 160.40 | 1171.66 | 4.38 |
| | 4/15/20 7:41 | 240.78 | 27.62 | 0.00 | 14.09 | 161.72 | 1170.52 | 4.37 |
| | 4/15/20 7:42 | 240.24 | 27.64 | 0.00 | 13.98 | 157.64 | 1170.85 | 4.37 |
| | 4/15/20 7:43 | 240.75 | 27.46 | 0.00 | 13.74 | 157.29 | 1170.93 | 4.36 |
| | 4/15/20 7:44 | 240.68 | 27.47 | 0.00 | 13.84 | 155.78 | 1170.82 | 4.36 |
| | 4/15/20 7:45 | 240.58 | 27.57 | 0.00 | 13.49 | 181.32 | 1170.38 | 4.36 |
| | 4/15/20 7:46 | 241.12 | 27.69 | 0.00 | 13.86 | 176.21 | 1170.85 | 4.35 |
| | 4/15/20 7:47 | 240.94 | 27.53 | 0.00 | 13.78 | 175.16 | 1170.23 | 4.35 |
| | 4/15/20 7:48 | 241.00 | 27.46 | 0.00 | 13.83 | 172.72 | 1170.54 | 4.34 |
| | 4/15/20 7:49 | 240.30 | 27.61 | 0.00 | 13.81 | 173.28 | 1169.44 | 4.34 |
| | 4/15/20 7:50 | 240.88 | 27.68 | 0.00 | 14.15 | 168.50 | 1171.12 | 4.33 |
| | 4/15/20 7:51 | 240.97 | 27.55 | 0.00 | 13.78 | 164.85 | 1170.47 | 4.33 |
| | 4/15/20 7:52 | 240.68 | 27.48 | 0.00 | 13.65 | 162.93 | 1170.69 | 4.32 |
| | 4/15/20 7:53 | 241.02 | 27.49 | 0.00 | 13.87 | 159.75 | 1169.76 | 4.32 |
| | 4/15/20 7:54 | 240.69 | 27.69 | 0.00 | 13.65 | 153.33 | 1170.77 | 4.32 |
| | 4/15/20 7:55 | 240.45 | 27.60 | 0.00 | 13.82 | 151.72 | 1169.88 | 4.31 |
| | 4/15/20 7:56 | 240.45 | 27.49 | 0.00 | 13.91 | 152.11 | 1170.05 | 4.31 |
| | 4/15/20 7:57 | 240.65 | 27.48 | 0.00 | 13.66 | 152.36 | 1170.36 | 4.30 |
| | 4/15/20 7:58 | 240.79 | 27.60 | 0.00 | 13.68 | 152.17 | 1170.11 | 4.30 |
| | 4/15/20 7:59 | 240.50 | 27.66 | 0.00 | 13.77 | 155.98 | 1170.09 | 4.29 |
| | 4/15/20 8:00 | 240.78 | 27.41 | 0.00 | 13.80 | 154.32 | 1170.16 | 4.29 |

| Description | | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/15 8:00 - 4/15 9:00) | | 240.50 | 27.55 | 0.00 | 13.85 | 153.36 | 1170.01 | 4.16 |
| COUNT = 61 | | | | | | | | |
| Signal Tagname | | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| | 4/15/20 8:00 | 240.78 | 27.41 | 0.00 | 13.80 | 154.32 | 1170.16 | 4.29 |
| | 4/15/20 8:01 | 240.64 | 27.62 | 0.00 | 13.76 | 157.07 | 1170.02 | 4.28 |
| | 4/15/20 8:02 | 240.44 | 27.59 | 0.00 | 13.96 | 156.16 | 1169.35 | 4.28 |
| | 4/15/20 8:03 | 240.75 | 27.70 | 0.00 | 13.85 | 155.52 | 1170.40 | 4.28 |
| | 4/15/20 8:04 | 240.39 | 27.42 | 0.00 | 13.72 | 155.70 | 1169.48 | 4.27 |
| | 4/15/20 8:05 | 240.84 | 27.46 | 0.00 | 13.64 | 157.95 | 1170.36 | 4.27 |
| | 4/15/20 8:06 | 240.47 | 27.57 | 0.00 | 13.88 | 155.14 | 1170.16 | 4.26 |
| | 4/15/20 8:07 | 240.90 | 27.65 | 0.00 | 13.81 | 156.83 | 1170.51 | 4.26 |
| | 4/15/20 8:08 | 240.52 | 27.50 | 0.00 | 13.76 | 157.16 | 1169.87 | 4.25 |
| | 4/15/20 8:09 | 240.80 | 27.53 | 0.00 | 13.96 | 155.77 | 1170.08 | 4.25 |
| | 4/15/20 8:10 | 240.72 | 27.51 | 0.00 | 13.86 | 158.27 | 1170.37 | 4.24 |
| | 4/15/20 8:11 | 240.16 | 27.64 | 0.00 | 13.59 | 156.13 | 1168.73 | 4.24 |
| | 4/15/20 8:12 | 240.51 | 27.56 | 0.00 | 13.62 | 155.31 | 1169.71 | 4.24 |
| | 4/15/20 8:13 | 240.72 | 27.44 | 0.00 | 14.00 | 155.07 | 1170.28 | 4.23 |
| | 4/15/20 8:14 | 240.74 | 27.52 | 0.00 | 13.90 | 155.66 | 1169.35 | 4.23 |
| | 4/15/20 8:15 | 240.48 | 27.64 | 0.00 | 14.10 | 151.68 | 1169.83 | 4.22 |
| | 4/15/20 8:16 | 240.43 | 27.64 | 0.00 | 13.96 | 151.19 | 1169.75 | 4.22 |
| | 4/15/20 8:17 | 240.55 | 27.44 | 0.00 | 13.67 | 156.89 | 1169.27 | 4.21 |
| | 4/15/20 8:18 | 240.99 | 27.44 | 0.00 | 13.80 | 156.59 | 1170.24 | 4.21 |
| | 4/15/20 8:19 | 240.43 | 27.73 | 0.00 | 13.73 | 155.71 | 1169.60 | 4.20 |
| | 4/15/20 8:20 | 240.44 | 27.68 | 0.00 | 13.79 | 154.38 | 1170.16 | 4.20 |
| | 4/15/20 8:21 | 240.58 | 27.48 | 0.00 | 13.82 | 155.99 | 1170.19 | 4.20 |
| | 4/15/20 8:22 | 240.62 | 27.51 | 0.00 | 14.30 | 157.48 | 1170.51 | 4.19 |
| | 4/15/20 8:23 | 240.44 | 27.49 | 0.00 | 13.76 | 156.61 | 1170.68 | 4.19 |
| | 4/15/20 8:24 | 240.57 | 27.68 | 0.00 | 13.98 | 155.87 | 1170.76 | 4.18 |
| | 4/15/20 8:25 | 240.62 | 27.56 | 0.00 | 13.60 | 150.57 | 1170.60 | 4.18 |
| | 4/15/20 8:26 | 240.81 | 27.40 | 0.00 | 13.89 | 155.81 | 1170.96 | 4.17 |
| | 4/15/20 8:27 | 240.55 | 27.70 | 0.00 | 13.78 | 151.44 | 1169.98 | 4.17 |
| | 4/15/20 8:28 | 240.90 | 27.62 | 0.00 | 14.00 | 147.54 | 1169.50 | 4.16 |
| | 4/15/20 8:29 | 240.60 | 27.66 | 0.00 | 13.69 | 146.95 | 1169.87 | 4.16 |
| | 4/15/20 8:30 | 240.23 | 27.51 | 0.00 | 13.68 | 150.29 | 1169.80 | 4.16 |
| | 4/15/20 8:31 | 240.22 | 27.54 | 0.00 | 13.72 | 149.58 | 1169.82 | 4.15 |
| | 4/15/20 8:32 | 240.90 | 27.61 | 0.00 | 13.87 | 147.67 | 1170.00 | 4.15 |
| | 4/15/20 8:33 | 240.49 | 27.62 | 0.00 | 13.80 | 158.12 | 1170.97 | 4.14 |
| | 4/15/20 8:34 | 240.72 | 27.45 | 0.00 | 13.77 | 148.97 | 1170.34 | 4.14 |
| | 4/15/20 8:35 | 240.39 | 27.48 | 0.00 | 13.85 | 153.12 | 1169.90 | 4.13 |
| | 4/15/20 8:36 | 240.46 | 27.58 | 0.00 | 13.81 | 159.83 | 1170.29 | 4.13 |
| | 4/15/20 8:37 | 240.40 | 27.66 | 0.00 | 13.85 | 150.10 | 1170.14 | 4.12 |
| | 4/15/20 8:38 | 240.86 | 27.58 | 0.00 | 14.21 | 152.79 | 1170.60 | 4.12 |
| | 4/15/20 8:39 | 240.64 | 27.47 | 0.00 | 14.21 | 155.49 | 1170.56 | 4.12 |
| | 4/15/20 8:40 | 240.58 | 27.47 | 0.00 | 14.04 | 152.05 | 1170.00 | 4.11 |
| | 4/15/20 8:41 | 240.97 | 27.57 | 0.00 | 13.67 | 150.99 | 1170.48 | 4.11 |
| | 4/15/20 8:42 | 240.74 | 27.57 | 0.00 | 13.71 | 157.06 | 1169.72 | 4.10 |
| | 4/15/20 8:43 | 240.46 | 27.35 | 0.00 | 13.71 | 151.48 | 1169.66 | 4.10 |
| | 4/15/20 8:44 | 240.26 | 27.55 | 0.00 | 13.69 | 146.45 | 1169.82 | 4.09 |
| | 4/15/20 8:45 | 240.43 | 27.55 | 0.00 | 13.88 | 155.65 | 1169.54 | 4.09 |
| | 4/15/20 8:46 | 240.03 | 27.70 | 0.00 | 13.64 | 160.39 | 1169.68 | 4.08 |
| | 4/15/20 8:47 | 240.78 | 27.47 | 0.00 | 14.18 | 162.75 | 1170.65 | 4.08 |
| | 4/15/20 8:48 | 240.72 | 27.48 | 0.00 | 14.00 | 154.00 | 1170.95 | 4.07 |
| | 4/15/20 8:49 | 240.44 | 27.53 | 0.00 | 13.98 | 150.03 | 1170.49 | 4.07 |
| | 4/15/20 8:50 | 240.52 | 27.65 | 0.00 | 13.94 | 159.71 | 1170.06 | 4.07 |
| | 4/15/20 8:51 | 240.36 | 27.48 | 0.00 | 13.77 | 155.45 | 1170.68 | 4.06 |
| | 4/15/20 8:52 | 240.24 | 27.46 | 0.00 | 13.62 | 146.27 | 1169.95 | 4.06 |
| | 4/15/20 8:53 | 240.04 | 27.47 | 0.00 | 13.96 | 146.86 | 1169.52 | 4.05 |
| | 4/15/20 8:54 | 240.32 | 27.62 | 0.00 | 13.73 | 145.95 | 1169.04 | 4.05 |
| | 4/15/20 8:55 | 240.25 | 27.65 | 0.00 | 14.20 | 143.89 | 1170.00 | 4.04 |
| | 4/15/20 8:56 | 240.46 | 27.52 | 0.00 | 13.76 | 145.98 | 1169.37 | 4.04 |
| | 4/15/20 8:57 | 240.06 | 27.48 | 0.00 | 13.82 | 150.13 | 1168.93 | 4.03 |
| | 4/15/20 8:58 | 239.81 | 27.45 | 0.00 | 13.99 | 151.65 | 1169.72 | 4.03 |
| | 4/15/20 8:59 | 239.92 | 27.61 | 0.00 | 13.88 | 149.20 | 1169.76 | 4.03 |
| | 4/15/20 9:00 | 239.67 | 27.48 | 0.00 | 13.73 | 146.61 | 1169.60 | 4.02 |

# EMISSION DATA RECORDS

## Operating Data Base+DB Load
## (provided by Cricket Valley Energy Center LLC)
## NOx, CO, VOC, and $NH_3$

| Description | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/16 14:04 - 4/16 15:03) | 240.30 | 28.02 | 10.46 | 14.23 | 163.94 | 1175.98 | 3.56 |
| COUNT = 60 | | | | | | | |
| Signal Tagname | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| 4/16/20 14:04 | 240.56 | 28.01 | 10.46 | 14.17 | 165.79 | 1175.82 | 3.57 |
| 4/16/20 14:05 | 240.71 | 27.98 | 10.46 | 14.31 | 159.26 | 1175.91 | 3.57 |
| 4/16/20 14:06 | 240.89 | 28.12 | 10.46 | 14.27 | 160.78 | 1176.24 | 3.57 |
| 4/16/20 14:07 | 240.68 | 28.07 | 10.46 | 14.19 | 159.41 | 1175.94 | 3.57 |
| 4/16/20 14:08 | 240.56 | 27.96 | 10.46 | 14.46 | 159.41 | 1175.86 | 3.57 |
| 4/16/20 14:09 | 240.90 | 28.08 | 10.46 | 14.22 | 159.50 | 1176.64 | 3.57 |
| 4/16/20 14:10 | 240.37 | 28.08 | 10.46 | 14.34 | 162.17 | 1175.62 | 3.57 |
| 4/16/20 14:11 | 240.45 | 28.09 | 10.46 | 14.41 | 169.83 | 1175.71 | 3.57 |
| 4/16/20 14:12 | 240.58 | 27.99 | 10.46 | 14.21 | 169.79 | 1176.15 | 3.57 |
| 4/16/20 14:13 | 240.86 | 27.98 | 10.46 | 14.52 | 173.42 | 1176.26 | 3.57 |
| 4/16/20 14:14 | 240.73 | 28.10 | 10.46 | 13.95 | 169.17 | 1175.33 | 3.56 |
| 4/16/20 14:15 | 240.92 | 28.14 | 10.46 | 14.29 | 167.74 | 1176.75 | 3.56 |
| 4/16/20 14:16 | 240.84 | 28.04 | 10.46 | 14.15 | 168.81 | 1175.77 | 3.56 |
| 4/16/20 14:17 | 240.83 | 27.96 | 10.46 | 13.93 | 170.03 | 1175.80 | 3.56 |
| 4/16/20 14:18 | 240.91 | 27.96 | 10.46 | 14.27 | 169.49 | 1175.38 | 3.56 |
| 4/16/20 14:19 | 240.69 | 28.09 | 10.46 | 14.37 | 163.69 | 1176.03 | 3.56 |
| 4/16/20 14:20 | 240.37 | 28.09 | 10.46 | 14.01 | 166.58 | 1175.79 | 3.56 |
| 4/16/20 14:21 | 240.85 | 27.99 | 10.46 | 13.92 | 174.10 | 1176.40 | 3.56 |
| 4/16/20 14:22 | 240.59 | 28.05 | 10.46 | 14.18 | 167.11 | 1175.63 | 3.56 |
| 4/16/20 14:23 | 241.09 | 28.11 | 10.46 | 14.10 | 165.62 | 1176.20 | 3.56 |
| 4/16/20 14:24 | 240.35 | 28.12 | 10.46 | 14.12 | 172.23 | 1176.49 | 3.56 |
| 4/16/20 14:25 | 240.68 | 27.99 | 10.46 | 14.39 | 173.17 | 1176.52 | 3.56 |
| 4/16/20 14:26 | 240.09 | 28.04 | 10.46 | 13.98 | 174.46 | 1175.22 | 3.56 |
| 4/16/20 14:27 | 240.59 | 28.01 | 10.46 | 14.60 | 164.68 | 1176.22 | 3.56 |
| 4/16/20 14:28 | 239.93 | 28.10 | 10.46 | 14.53 | 162.81 | 1175.91 | 3.56 |
| 4/16/20 14:29 | 240.08 | 28.07 | 10.46 | 14.76 | 158.81 | 1176.28 | 3.56 |
| 4/16/20 14:30 | 240.43 | 27.98 | 10.46 | 14.26 | 160.86 | 1176.21 | 3.56 |
| 4/16/20 14:31 | 240.12 | 27.95 | 10.46 | 14.46 | 170.28 | 1176.04 | 3.56 |
| 4/16/20 14:32 | 240.08 | 28.16 | 10.46 | 14.10 | 160.56 | 1176.00 | 3.56 |
| 4/16/20 14:33 | 240.62 | 28.04 | 10.46 | 14.61 | 163.69 | 1176.25 | 3.56 |
| 4/16/20 14:34 | 239.79 | 27.95 | 10.46 | 14.01 | 169.69 | 1174.93 | 3.55 |
| 4/16/20 14:35 | 240.42 | 27.99 | 10.46 | 14.24 | 162.96 | 1176.03 | 3.55 |
| 4/16/20 14:36 | 240.28 | 28.02 | 10.46 | 14.52 | 163.25 | 1175.70 | 3.55 |
| 4/16/20 14:37 | 240.18 | 28.06 | 10.46 | 14.53 | 166.15 | 1175.59 | 3.55 |
| 4/16/20 14:38 | 240.67 | 28.00 | 10.46 | 14.12 | 157.24 | 1176.52 | 3.55 |
| 4/16/20 14:39 | 239.96 | 28.02 | 10.46 | 14.16 | 156.65 | 1175.42 | 3.55 |
| 4/16/20 14:40 | 240.37 | 27.99 | 10.46 | 14.25 | 157.29 | 1175.90 | 3.55 |
| 4/16/20 14:41 | 240.09 | 28.05 | 10.47 | 14.04 | 159.17 | 1176.19 | 3.55 |
| 4/16/20 14:42 | 239.94 | 28.07 | 10.47 | 14.17 | 164.58 | 1174.75 | 3.55 |
| 4/16/20 14:43 | 240.29 | 27.91 | 10.47 | 13.88 | 168.24 | 1175.82 | 3.55 |
| 4/16/20 14:44 | 240.23 | 27.99 | 10.47 | 14.55 | 167.11 | 1176.45 | 3.55 |
| 4/16/20 14:45 | 240.50 | 28.01 | 10.47 | 14.66 | 168.25 | 1176.53 | 3.55 |
| 4/16/20 14:46 | 240.43 | 28.08 | 10.47 | 14.07 | 170.64 | 1176.15 | 3.55 |
| 4/16/20 14:47 | 240.16 | 28.04 | 10.47 | 14.14 | 164.07 | 1175.73 | 3.55 |
| 4/16/20 14:48 | 240.11 | 27.95 | 10.47 | 14.23 | 174.75 | 1176.42 | 3.55 |
| 4/16/20 14:49 | 240.45 | 27.99 | 10.47 | 14.31 | 174.71 | 1176.40 | 3.55 |
| 4/16/20 14:50 | 240.27 | 28.13 | 10.47 | 14.29 | 172.37 | 1176.55 | 3.55 |
| 4/16/20 14:51 | 239.36 | 27.97 | 10.47 | 14.05 | 161.32 | 1174.94 | 3.55 |
| 4/16/20 14:52 | 239.25 | 27.88 | 10.47 | 14.09 | 155.33 | 1174.93 | 3.55 |
| 4/16/20 14:53 | 239.82 | 27.89 | 10.47 | 14.66 | 158.90 | 1176.81 | 3.55 |
| 4/16/20 14:54 | 239.66 | 28.03 | 10.47 | 14.28 | 164.82 | 1177.13 | 3.54 |
| 4/16/20 14:55 | 239.28 | 28.00 | 10.47 | 13.91 | 151.05 | 1176.21 | 3.54 |
| 4/16/20 14:56 | 239.61 | 27.93 | 10.47 | 14.21 | 156.80 | 1176.32 | 3.54 |
| 4/16/20 14:57 | 240.11 | 27.95 | 10.47 | 13.99 | 152.70 | 1175.28 | 3.54 |
| 4/16/20 14:58 | 240.06 | 28.00 | 10.47 | 14.05 | 150.30 | 1176.10 | 3.54 |
| 4/16/20 14:59 | 239.80 | 28.09 | 10.47 | 14.30 | 149.78 | 1176.14 | 3.54 |
| 4/16/20 15:00 | 240.02 | 27.97 | 10.47 | 14.02 | 150.95 | 1176.66 | 3.54 |
| 4/16/20 15:01 | 239.61 | 27.89 | 10.47 | 14.00 | 158.69 | 1175.32 | 3.54 |
| 4/16/20 15:02 | 239.70 | 27.94 | 10.47 | 14.15 | 165.09 | 1174.82 | 3.54 |
| 4/16/20 15:03 | 240.40 | 28.04 | 10.47 | 14.02 | 160.26 | 1176.49 | 3.54 |

| Description | | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/16 15:23 - 4/16 16:22) | | 239.61 | 27.96 | 10.48 | 14.21 | 159.08 | 1175.94 | 3.53 |
| COUNT = 60 | | | | | | | | |
| Signal Tagname | | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| | 4/16/20 15:23 | 239.53 | 27.92 | 10.48 | 14.24 | 151.42 | 1176.02 | 3.53 |
| | 4/16/20 15:24 | 239.57 | 27.88 | 10.48 | 14.53 | 161.55 | 1176.27 | 3.53 |
| | 4/16/20 15:25 | 240.04 | 28.08 | 10.48 | 14.47 | 158.97 | 1175.61 | 3.53 |
| | 4/16/20 15:26 | 239.63 | 28.00 | 10.48 | 14.30 | 164.71 | 1176.60 | 3.53 |
| | 4/16/20 15:27 | 239.95 | 27.86 | 10.48 | 14.29 | 159.76 | 1176.61 | 3.53 |
| | 4/16/20 15:28 | 239.58 | 27.92 | 10.48 | 14.29 | 156.58 | 1176.35 | 3.53 |
| | 4/16/20 15:29 | 239.19 | 28.09 | 10.48 | 14.01 | 155.83 | 1174.60 | 3.53 |
| | 4/16/20 15:30 | 239.26 | 28.00 | 10.48 | 13.84 | 161.27 | 1175.28 | 3.53 |
| | 4/16/20 15:31 | 238.80 | 27.88 | 10.48 | 14.00 | 163.13 | 1174.99 | 3.53 |
| | 4/16/20 15:32 | 239.23 | 27.84 | 10.48 | 14.00 | 163.12 | 1175.80 | 3.53 |
| | 4/16/20 15:33 | 239.07 | 27.90 | 10.48 | 14.03 | 156.31 | 1175.43 | 3.52 |
| | 4/16/20 15:34 | 239.02 | 28.03 | 10.48 | 14.11 | 150.54 | 1175.25 | 3.52 |
| | 4/16/20 15:35 | 238.83 | 27.99 | 10.48 | 14.49 | 149.54 | 1175.82 | 3.52 |
| | 4/16/20 15:36 | 239.46 | 27.87 | 10.48 | 14.15 | 148.83 | 1176.24 | 3.52 |
| | 4/16/20 15:37 | 239.76 | 27.92 | 10.48 | 14.18 | 149.39 | 1176.35 | 3.52 |
| | 4/16/20 15:38 | 239.18 | 27.96 | 10.48 | 14.06 | 150.36 | 1175.28 | 3.52 |
| | 4/16/20 15:39 | 239.47 | 28.05 | 10.48 | 14.42 | 151.20 | 1176.22 | 3.52 |
| | 4/16/20 15:40 | 239.61 | 27.87 | 10.48 | 14.18 | 149.24 | 1175.85 | 3.52 |
| | 4/16/20 15:41 | 239.41 | 27.96 | 10.48 | 13.98 | 154.81 | 1176.09 | 3.52 |
| | 4/16/20 15:42 | 239.55 | 27.90 | 10.48 | 14.55 | 165.26 | 1176.13 | 3.53 |
| | 4/16/20 15:43 | 239.48 | 28.05 | 10.48 | 14.12 | 165.41 | 1176.15 | 3.53 |
| | 4/16/20 15:44 | 239.16 | 27.94 | 10.48 | 14.13 | 155.06 | 1175.82 | 3.53 |
| | 4/16/20 15:45 | 240.12 | 27.89 | 10.48 | 14.44 | 154.37 | 1176.87 | 3.53 |
| | 4/16/20 15:46 | 239.70 | 27.92 | 10.48 | 13.97 | 163.93 | 1176.04 | 3.53 |
| | 4/16/20 15:47 | 239.69 | 28.08 | 10.48 | 14.03 | 160.16 | 1175.61 | 3.53 |
| | 4/16/20 15:48 | 239.81 | 27.96 | 10.48 | 14.13 | 154.06 | 1176.84 | 3.53 |
| | 4/16/20 15:49 | 239.74 | 27.89 | 10.48 | 14.22 | 162.42 | 1176.18 | 3.53 |
| | 4/16/20 15:50 | 239.57 | 27.97 | 10.48 | 14.26 | 163.11 | 1175.15 | 3.53 |
| | 4/16/20 15:51 | 239.93 | 28.03 | 10.48 | 14.45 | 164.79 | 1175.44 | 3.53 |
| | 4/16/20 15:52 | 239.63 | 27.94 | 10.48 | 13.97 | 164.61 | 1175.45 | 3.53 |
| | 4/16/20 15:53 | 240.02 | 27.96 | 10.48 | 14.21 | 159.99 | 1176.39 | 3.53 |
| | 4/16/20 15:54 | 239.52 | 27.91 | 10.48 | 14.15 | 154.80 | 1176.03 | 3.53 |
| | 4/16/20 15:55 | 239.64 | 27.99 | 10.48 | 14.11 | 166.86 | 1175.84 | 3.53 |
| | 4/16/20 15:56 | 239.82 | 28.06 | 10.48 | 14.10 | 158.08 | 1176.74 | 3.53 |
| | 4/16/20 15:57 | 239.39 | 27.91 | 10.48 | 13.99 | 154.19 | 1175.28 | 3.53 |
| | 4/16/20 15:58 | 239.72 | 27.89 | 10.48 | 14.43 | 154.32 | 1176.88 | 3.53 |
| | 4/16/20 15:59 | 239.38 | 27.92 | 10.49 | 14.35 | 161.79 | 1176.43 | 3.53 |
| | 4/16/20 16:00 | 239.10 | 28.02 | 10.49 | 14.01 | 151.91 | 1176.14 | 3.53 |
| | 4/16/20 16:01 | 239.61 | 27.92 | 10.49 | 14.26 | 151.27 | 1175.51 | 3.54 |
| | 4/16/20 16:02 | 239.64 | 27.87 | 10.49 | 13.98 | 159.59 | 1176.15 | 3.54 |
| | 4/16/20 16:03 | 240.03 | 27.92 | 10.49 | 14.32 | 161.95 | 1175.66 | 3.54 |
| | 4/16/20 16:04 | 239.90 | 28.01 | 10.49 | 14.31 | 161.09 | 1176.47 | 3.54 |
| | 4/16/20 16:05 | 239.90 | 28.00 | 10.49 | 14.26 | 152.33 | 1175.82 | 3.54 |
| | 4/16/20 16:06 | 240.22 | 27.96 | 10.49 | 14.34 | 163.69 | 1176.00 | 3.54 |
| | 4/16/20 16:07 | 239.80 | 27.92 | 10.49 | 14.25 | 164.35 | 1176.56 | 3.54 |
| | 4/16/20 16:08 | 239.15 | 28.02 | 10.49 | 13.99 | 165.06 | 1174.23 | 3.54 |
| | 4/16/20 16:09 | 239.50 | 28.06 | 10.49 | 14.09 | 165.48 | 1175.49 | 3.54 |
| | 4/16/20 16:10 | 239.74 | 27.95 | 10.49 | 14.03 | 161.66 | 1175.96 | 3.54 |
| | 4/16/20 16:11 | 239.74 | 27.86 | 10.49 | 14.30 | 153.28 | 1176.58 | 3.54 |
| | 4/16/20 16:12 | 239.24 | 27.96 | 10.49 | 14.22 | 153.46 | 1175.27 | 3.54 |
| | 4/16/20 16:13 | 240.31 | 28.01 | 10.49 | 14.41 | 154.91 | 1176.67 | 3.54 |
| | 4/16/20 16:14 | 240.02 | 27.94 | 10.49 | 14.62 | 166.52 | 1176.41 | 3.54 |
| | 4/16/20 16:15 | 239.76 | 27.95 | 10.49 | 14.21 | 161.55 | 1174.94 | 3.54 |
| | 4/16/20 16:16 | 239.88 | 27.88 | 10.49 | 14.10 | 167.36 | 1177.20 | 3.54 |
| | 4/16/20 16:17 | 239.84 | 28.05 | 10.49 | 14.27 | 160.70 | 1175.39 | 3.54 |
| | 4/16/20 16:18 | 239.86 | 28.15 | 10.49 | 14.15 | 167.20 | 1175.83 | 3.54 |
| | 4/16/20 16:19 | 239.74 | 27.96 | 10.49 | 14.02 | 166.52 | 1175.59 | 3.54 |
| | 4/16/20 16:20 | 239.51 | 27.92 | 10.49 | 14.18 | 162.23 | 1176.62 | 3.54 |
| | 4/16/20 16:21 | 239.78 | 27.96 | 10.49 | 14.49 | 167.67 | 1176.12 | 3.55 |
| | 4/16/20 16:22 | 239.62 | 28.07 | 10.49 | 14.43 | 165.14 | 1175.80 | 3.55 |

| Description | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/16 17:41 - 4/16 18:40) | 240.46 | 28.02 | 10.52 | 14.20 | 163.89 | 1176.68 | 3.60 |
| COUNT = 60 | | | | | | | |
| Signal Tagname | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| 4/16/20 17:41 | 240.62 | 28.05 | 10.51 | 14.07 | 162.16 | 1177.16 | 3.59 |
| 4/16/20 17:42 | 240.78 | 28.05 | 10.51 | 14.27 | 158.05 | 1177.03 | 3.59 |
| 4/16/20 17:43 | 240.16 | 27.93 | 10.51 | 14.38 | 166.80 | 1176.78 | 3.59 |
| 4/16/20 17:44 | 240.28 | 27.95 | 10.51 | 14.25 | 170.32 | 1176.18 | 3.59 |
| 4/16/20 17:45 | 240.65 | 27.99 | 10.51 | 14.20 | 167.04 | 1177.04 | 3.59 |
| 4/16/20 17:46 | 240.29 | 28.08 | 10.51 | 14.02 | 161.25 | 1176.67 | 3.59 |
| 4/16/20 17:47 | 240.48 | 27.99 | 10.51 | 14.19 | 156.85 | 1177.00 | 3.59 |
| 4/16/20 17:48 | 240.51 | 27.92 | 10.51 | 13.96 | 157.73 | 1177.09 | 3.59 |
| 4/16/20 17:49 | 240.44 | 28.02 | 10.51 | 14.14 | 166.23 | 1177.25 | 3.59 |
| 4/16/20 17:50 | 240.01 | 28.06 | 10.51 | 14.65 | 159.45 | 1176.46 | 3.59 |
| 4/16/20 17:51 | 240.18 | 28.03 | 10.51 | 13.86 | 157.40 | 1175.91 | 3.59 |
| 4/16/20 17:52 | 240.67 | 27.92 | 10.51 | 14.24 | 159.20 | 1177.10 | 3.59 |
| 4/16/20 17:53 | 240.26 | 27.94 | 10.51 | 14.06 | 161.01 | 1176.79 | 3.59 |
| 4/16/20 17:54 | 239.91 | 28.02 | 10.51 | 14.32 | 164.22 | 1176.15 | 3.59 |
| 4/16/20 17:55 | 240.12 | 28.07 | 10.52 | 14.62 | 161.86 | 1177.28 | 3.59 |
| 4/16/20 17:56 | 240.45 | 27.99 | 10.52 | 14.20 | 158.02 | 1176.55 | 3.59 |
| 4/16/20 17:57 | 240.67 | 27.92 | 10.52 | 14.03 | 154.36 | 1177.06 | 3.60 |
| 4/16/20 17:58 | 240.49 | 28.01 | 10.52 | 14.13 | 161.04 | 1176.88 | 3.60 |
| 4/16/20 17:59 | 240.40 | 28.14 | 10.52 | 14.31 | 168.06 | 1175.77 | 3.60 |
| 4/16/20 18:00 | 240.41 | 27.99 | 10.52 | 14.25 | 169.86 | 1176.73 | 3.60 |
| 4/16/20 18:01 | 240.13 | 27.96 | 10.52 | 14.33 | 167.73 | 1176.05 | 3.60 |
| 4/16/20 18:02 | 240.34 | 28.02 | 10.52 | 14.22 | 162.60 | 1175.98 | 3.60 |
| 4/16/20 18:03 | 240.34 | 28.08 | 10.52 | 14.29 | 160.04 | 1176.66 | 3.60 |
| 4/16/20 18:04 | 240.31 | 27.97 | 10.52 | 14.59 | 164.60 | 1176.99 | 3.60 |
| 4/16/20 18:05 | 240.45 | 27.97 | 10.52 | 14.29 | 164.37 | 1176.96 | 3.60 |
| 4/16/20 18:06 | 240.36 | 28.01 | 10.52 | 14.24 | 165.84 | 1177.52 | 3.60 |
| 4/16/20 18:07 | 240.78 | 27.98 | 10.52 | 14.14 | 160.05 | 1177.00 | 3.60 |
| 4/16/20 18:08 | 240.58 | 28.13 | 10.52 | 14.40 | 161.93 | 1176.81 | 3.60 |
| 4/16/20 18:09 | 240.87 | 27.98 | 10.52 | 14.03 | 162.57 | 1177.15 | 3.60 |
| 4/16/20 18:10 | 240.58 | 27.97 | 10.52 | 14.19 | 160.86 | 1176.58 | 3.60 |
| 4/16/20 18:11 | 240.56 | 28.03 | 10.52 | 13.92 | 158.58 | 1177.06 | 3.60 |
| 4/16/20 18:12 | 240.22 | 28.06 | 10.52 | 14.17 | 164.27 | 1176.18 | 3.60 |
| 4/16/20 18:13 | 240.07 | 28.00 | 10.52 | 14.32 | 168.56 | 1176.47 | 3.60 |
| 4/16/20 18:14 | 240.70 | 27.96 | 10.52 | 14.15 | 163.91 | 1177.07 | 3.60 |
| 4/16/20 18:15 | 240.23 | 27.96 | 10.52 | 14.25 | 167.92 | 1176.05 | 3.60 |
| 4/16/20 18:16 | 240.59 | 28.02 | 10.52 | 14.17 | 168.59 | 1176.54 | 3.61 |
| 4/16/20 18:17 | 240.43 | 28.05 | 10.52 | 14.20 | 163.71 | 1176.66 | 3.61 |
| 4/16/20 18:18 | 240.52 | 28.04 | 10.52 | 14.27 | 166.95 | 1176.79 | 3.61 |
| 4/16/20 18:19 | 240.69 | 28.03 | 10.52 | 14.17 | 169.77 | 1176.92 | 3.61 |
| 4/16/20 18:20 | 240.43 | 28.03 | 10.52 | 14.13 | 166.86 | 1176.40 | 3.61 |
| 4/16/20 18:21 | 240.77 | 28.14 | 10.52 | 14.09 | 163.51 | 1176.57 | 3.61 |
| 4/16/20 18:22 | 240.62 | 27.97 | 10.52 | 14.00 | 169.72 | 1176.68 | 3.61 |
| 4/16/20 18:23 | 240.39 | 28.02 | 10.52 | 14.22 | 167.33 | 1177.10 | 3.61 |
| 4/16/20 18:24 | 240.78 | 28.06 | 10.52 | 14.03 | 160.41 | 1176.91 | 3.61 |
| 4/16/20 18:25 | 240.08 | 28.04 | 10.52 | 14.23 | 161.43 | 1176.20 | 3.61 |
| 4/16/20 18:26 | 240.30 | 28.00 | 10.52 | 14.20 | 163.65 | 1176.18 | 3.61 |
| 4/16/20 18:27 | 240.42 | 27.96 | 10.52 | 14.41 | 164.38 | 1176.38 | 3.61 |
| 4/16/20 18:28 | 240.49 | 28.03 | 10.52 | 14.09 | 167.26 | 1176.55 | 3.61 |
| 4/16/20 18:29 | 240.34 | 28.02 | 10.52 | 14.22 | 166.85 | 1176.93 | 3.61 |
| 4/16/20 18:30 | 240.63 | 28.16 | 10.52 | 14.32 | 160.82 | 1176.68 | 3.61 |
| 4/16/20 18:31 | 240.16 | 28.00 | 10.52 | 14.31 | 160.98 | 1175.87 | 3.61 |
| 4/16/20 18:32 | 240.54 | 28.03 | 10.52 | 14.11 | 159.35 | 1176.14 | 3.61 |
| 4/16/20 18:33 | 240.45 | 28.00 | 10.52 | 14.19 | 163.03 | 1176.55 | 3.61 |
| 4/16/20 18:34 | 240.34 | 28.10 | 10.53 | 14.18 | 164.55 | 1176.77 | 3.61 |
| 4/16/20 18:35 | 240.65 | 28.04 | 10.53 | 14.23 | 168.35 | 1177.08 | 3.62 |
| 4/16/20 18:36 | 240.37 | 28.01 | 10.53 | 14.16 | 167.04 | 1176.59 | 3.62 |
| 4/16/20 18:37 | 241.02 | 28.01 | 10.53 | 14.25 | 170.35 | 1176.36 | 3.62 |
| 4/16/20 18:38 | 240.57 | 28.07 | 10.53 | 13.93 | 166.95 | 1176.61 | 3.62 |
| 4/16/20 18:39 | 240.72 | 28.08 | 10.53 | 14.28 | 168.19 | 1177.13 | 3.62 |
| 4/16/20 18:40 | 240.89 | 27.98 | 10.53 | 14.17 | 168.65 | 1176.95 | 3.62 |

# EMISSION DATA RECORDS

## Operating Data Base+DB Load
## (provided by Cricket Valley Energy Center LLC)
## $PM_{10}$

| Description | | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/16 12:23 - 4/16 16:49) | | 240.19 | 28.00 | 10.46 | 14.20 | 163.87 | 1175.97 | 3.56 |
| COUNT = 267 | | | | | | | | |
| Signal Tagname | | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| | 4/16/20 12:23 | 241.27 | 28.04 | 9.89 | 13.87 | 179.13 | 1175.62 | 3.62 |
| | 4/16/20 12:24 | 241.11 | 28.09 | 10.01 | 14.14 | 169.41 | 1176.91 | 3.62 |
| | 4/16/20 12:25 | 241.52 | 28.02 | 10.12 | 14.61 | 173.63 | 1177.78 | 3.62 |
| | 4/16/20 12:26 | 241.23 | 28.03 | 10.24 | 14.13 | 167.38 | 1175.87 | 3.62 |
| | 4/16/20 12:27 | 241.56 | 27.99 | 10.36 | 13.96 | 165.06 | 1175.82 | 3.62 |
| | 4/16/20 12:28 | 240.90 | 28.11 | 10.43 | 14.70 | 178.53 | 1176.20 | 3.62 |
| | 4/16/20 12:29 | 241.49 | 28.11 | 10.43 | 14.63 | 179.36 | 1176.93 | 3.62 |
| | 4/16/20 12:30 | 241.45 | 28.05 | 10.43 | 14.17 | 169.47 | 1175.67 | 3.62 |
| | 4/16/20 12:31 | 241.47 | 28.04 | 10.43 | 14.17 | 169.47 | 1176.15 | 3.62 |
| | 4/16/20 12:32 | 241.18 | 28.08 | 10.43 | 14.21 | 180.35 | 1176.10 | 3.62 |
| | 4/16/20 12:33 | 240.67 | 28.09 | 10.43 | 13.98 | 179.45 | 1175.77 | 3.62 |
| | 4/16/20 12:34 | 241.11 | 28.11 | 10.43 | 14.27 | 176.90 | 1175.82 | 3.62 |
| | 4/16/20 12:35 | 240.92 | 28.01 | 10.43 | 14.47 | 165.20 | 1176.40 | 3.62 |
| | 4/16/20 12:36 | 240.78 | 27.97 | 10.43 | 14.00 | 159.79 | 1176.43 | 3.61 |
| | 4/16/20 12:37 | 241.03 | 28.05 | 10.43 | 14.09 | 173.31 | 1176.21 | 3.61 |
| | 4/16/20 12:38 | 241.17 | 28.04 | 10.43 | 14.34 | 161.36 | 1176.24 | 3.61 |
| | 4/16/20 12:39 | 240.77 | 28.02 | 10.43 | 14.26 | 185.54 | 1176.31 | 3.61 |
| | 4/16/20 12:40 | 240.78 | 27.92 | 10.43 | 14.02 | 177.42 | 1175.92 | 3.61 |
| | 4/16/20 12:41 | 240.91 | 28.00 | 10.43 | 14.16 | 172.46 | 1175.79 | 3.61 |
| | 4/16/20 12:42 | 241.09 | 28.12 | 10.43 | 13.94 | 183.82 | 1175.79 | 3.61 |
| | 4/16/20 12:43 | 240.82 | 28.01 | 10.43 | 14.18 | 167.24 | 1175.28 | 3.61 |
| | 4/16/20 12:44 | 240.57 | 27.90 | 10.44 | 14.08 | 180.71 | 1175.23 | 3.61 |
| | 4/16/20 12:45 | 240.37 | 28.01 | 10.44 | 14.15 | 168.50 | 1175.94 | 3.61 |
| | 4/16/20 12:46 | 240.24 | 28.10 | 10.44 | 13.98 | 171.72 | 1176.42 | 3.61 |
| | 4/16/20 12:47 | 240.90 | 28.07 | 10.44 | 14.72 | 171.08 | 1176.51 | 3.61 |
| | 4/16/20 12:48 | 240.92 | 27.90 | 10.44 | 14.24 | 159.83 | 1176.49 | 3.61 |
| | 4/16/20 12:49 | 240.44 | 28.03 | 10.44 | 14.02 | 164.62 | 1175.22 | 3.61 |
| | 4/16/20 12:50 | 240.09 | 28.05 | 10.44 | 14.07 | 168.99 | 1175.20 | 3.61 |
| | 4/16/20 12:51 | 240.48 | 28.05 | 10.44 | 14.15 | 157.77 | 1176.44 | 3.61 |
| | 4/16/20 12:52 | 240.53 | 28.00 | 10.44 | 14.05 | 161.59 | 1175.69 | 3.61 |
| | 4/16/20 12:53 | 240.94 | 28.00 | 10.44 | 14.27 | 168.64 | 1175.95 | 3.61 |
| | 4/16/20 12:54 | 241.00 | 28.07 | 10.44 | 14.09 | 170.88 | 1175.79 | 3.61 |
| | 4/16/20 12:55 | 241.13 | 28.07 | 10.44 | 14.31 | 171.26 | 1176.77 | 3.60 |
| | 4/16/20 12:56 | 240.93 | 28.07 | 10.44 | 14.57 | 163.82 | 1177.40 | 3.60 |
| | 4/16/20 12:57 | 240.46 | 28.03 | 10.44 | 14.21 | 160.78 | 1175.56 | 3.60 |
| | 4/16/20 12:58 | 240.90 | 28.02 | 10.44 | 14.06 | 160.07 | 1176.78 | 3.60 |
| | 4/16/20 12:59 | 240.99 | 28.08 | 10.44 | 14.24 | 157.28 | 1175.64 | 3.60 |
| | 4/16/20 13:00 | 240.33 | 28.10 | 10.44 | 14.08 | 159.22 | 1175.85 | 3.60 |
| | 4/16/20 13:01 | 240.71 | 27.95 | 10.44 | 14.33 | 158.75 | 1176.06 | 3.60 |
| | 4/16/20 13:02 | 240.70 | 28.01 | 10.44 | 14.40 | 201.07 | 1176.63 | 3.60 |
| | 4/16/20 13:03 | 240.94 | 28.01 | 10.44 | 14.58 | 180.17 | 1176.12 | 3.60 |
| | 4/16/20 13:04 | 240.76 | 28.09 | 10.44 | 14.28 | 207.06 | 1175.51 | 3.60 |
| | 4/16/20 13:05 | 240.31 | 28.02 | 10.44 | 14.24 | 176.56 | 1175.51 | 3.60 |
| | 4/16/20 13:06 | 240.95 | 27.98 | 10.44 | 14.00 | 170.50 | 1175.93 | 3.60 |
| | 4/16/20 13:07 | 240.75 | 28.05 | 10.44 | 14.11 | 174.21 | 1175.18 | 3.60 |
| | 4/16/20 13:08 | 240.81 | 28.07 | 10.44 | 14.24 | 173.08 | 1175.72 | 3.60 |
| | 4/16/20 13:09 | 240.95 | 28.12 | 10.44 | 14.08 | 172.95 | 1175.65 | 3.60 |
| | 4/16/20 13:10 | 240.39 | 27.96 | 10.44 | 14.20 | 172.70 | 1175.16 | 3.60 |
| | 4/16/20 13:11 | 240.41 | 27.95 | 10.44 | 14.17 | 175.11 | 1175.28 | 3.60 |
| | 4/16/20 13:12 | 240.71 | 28.07 | 10.44 | 14.42 | 172.64 | 1176.26 | 3.60 |
| | 4/16/20 13:13 | 240.63 | 28.05 | 10.44 | 14.09 | 172.30 | 1175.95 | 3.60 |
| | 4/16/20 13:14 | 240.27 | 28.01 | 10.44 | 14.20 | 165.51 | 1175.18 | 3.60 |
| | 4/16/20 13:15 | 240.50 | 27.96 | 10.44 | 14.17 | 158.85 | 1175.33 | 3.59 |
| | 4/16/20 13:16 | 240.52 | 27.99 | 10.44 | 14.10 | 157.07 | 1176.35 | 3.59 |
| | 4/16/20 13:17 | 240.36 | 28.09 | 10.44 | 14.02 | 159.40 | 1176.62 | 3.59 |
| | 4/16/20 13:18 | 240.55 | 28.10 | 10.44 | 14.14 | 160.64 | 1175.92 | 3.59 |
| | 4/16/20 13:19 | 240.51 | 27.93 | 10.44 | 14.33 | 164.97 | 1176.02 | 3.59 |
| | 4/16/20 13:20 | 240.71 | 27.95 | 10.44 | 14.36 | 169.47 | 1176.66 | 3.59 |
| | 4/16/20 13:21 | 240.62 | 28.12 | 10.44 | 14.21 | 168.91 | 1174.62 | 3.59 |
| | 4/16/20 13:22 | 240.95 | 28.20 | 10.44 | 14.12 | 159.94 | 1176.07 | 3.59 |
| | 4/16/20 13:23 | 240.93 | 27.96 | 10.45 | 14.11 | 172.20 | 1175.86 | 3.59 |
| | 4/16/20 13:24 | 240.59 | 27.99 | 10.45 | 14.32 | 171.78 | 1175.73 | 3.59 |
| | 4/16/20 13:25 | 240.76 | 27.99 | 10.45 | 13.99 | 163.29 | 1175.08 | 3.59 |
| | 4/16/20 13:26 | 241.00 | 28.07 | 10.45 | 13.92 | 163.00 | 1176.40 | 3.59 |
| | 4/16/20 13:27 | 240.82 | 28.05 | 10.45 | 13.79 | 173.81 | 1175.94 | 3.59 |
| | 4/16/20 13:28 | 241.12 | 27.92 | 10.45 | 14.51 | 175.12 | 1177.21 | 3.59 |
| | 4/16/20 13:29 | 240.99 | 28.05 | 10.45 | 14.27 | 174.02 | 1176.04 | 3.59 |

| Description | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/16 12:23 - 4/16 16:49) | 240.19 | 28.00 | 10.46 | 14.20 | 163.87 | 1175.97 | 3.56 |
| COUNT = 267 | | | | | | | |

| Signal Tagname | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
|---|---|---|---|---|---|---|---|
| 4/16/20 13:30 | 240.88 | 28.05 | 10.45 | 14.39 | 173.52 | 1176.06 | 3.59 |
| 4/16/20 13:31 | 240.96 | 28.10 | 10.45 | 14.35 | 170.95 | 1176.56 | 3.59 |
| 4/16/20 13:32 | 241.22 | 27.98 | 10.45 | 14.12 | 164.97 | 1175.75 | 3.59 |
| 4/16/20 13:33 | 240.16 | 27.96 | 10.45 | 14.07 | 161.33 | 1175.81 | 3.59 |
| 4/16/20 13:34 | 240.94 | 27.97 | 10.45 | 13.86 | 163.13 | 1176.11 | 3.59 |
| 4/16/20 13:35 | 240.77 | 28.13 | 10.45 | 14.44 | 167.89 | 1177.22 | 3.58 |
| 4/16/20 13:36 | 240.72 | 28.12 | 10.45 | 14.31 | 177.23 | 1176.93 | 3.58 |
| 4/16/20 13:37 | 240.38 | 27.94 | 10.45 | 14.07 | 187.97 | 1175.15 | 3.58 |
| 4/16/20 13:38 | 240.55 | 27.83 | 10.45 | 13.95 | 172.14 | 1175.83 | 3.58 |
| 4/16/20 13:39 | 241.05 | 28.08 | 10.45 | 14.10 | 179.03 | 1175.49 | 3.58 |
| 4/16/20 13:40 | 241.15 | 28.19 | 10.45 | 14.20 | 164.52 | 1176.71 | 3.58 |
| 4/16/20 13:41 | 240.81 | 28.08 | 10.45 | 13.86 | 172.53 | 1175.84 | 3.58 |
| 4/16/20 13:42 | 240.56 | 28.04 | 10.45 | 13.98 | 177.37 | 1175.10 | 3.58 |
| 4/16/20 13:43 | 240.88 | 28.02 | 10.45 | 14.18 | 165.29 | 1176.29 | 3.58 |
| 4/16/20 13:44 | 240.69 | 28.13 | 10.45 | 14.13 | 160.23 | 1175.48 | 3.58 |
| 4/16/20 13:45 | 240.43 | 28.04 | 10.45 | 14.16 | 164.11 | 1175.91 | 3.58 |
| 4/16/20 13:46 | 240.62 | 28.02 | 10.45 | 14.15 | 174.27 | 1177.12 | 3.58 |
| 4/16/20 13:47 | 240.35 | 27.99 | 10.45 | 13.98 | 161.23 | 1175.38 | 3.58 |
| 4/16/20 13:48 | 240.36 | 28.08 | 10.45 | 14.10 | 161.16 | 1175.82 | 3.58 |
| 4/16/20 13:49 | 240.00 | 28.00 | 10.45 | 14.06 | 164.92 | 1175.27 | 3.58 |
| 4/16/20 13:50 | 240.65 | 27.97 | 10.45 | 14.07 | 171.59 | 1175.92 | 3.58 |
| 4/16/20 13:51 | 239.98 | 27.98 | 10.45 | 13.99 | 159.19 | 1175.41 | 3.58 |
| 4/16/20 13:52 | 240.75 | 27.98 | 10.45 | 13.95 | 154.82 | 1176.08 | 3.58 |
| 4/16/20 13:53 | 240.37 | 28.06 | 10.45 | 13.88 | 156.52 | 1176.26 | 3.58 |
| 4/16/20 13:54 | 239.81 | 28.01 | 10.45 | 14.05 | 154.35 | 1176.19 | 3.58 |
| 4/16/20 13:55 | 240.23 | 27.90 | 10.45 | 14.21 | 159.91 | 1175.95 | 3.57 |
| 4/16/20 13:56 | 240.62 | 28.03 | 10.45 | 14.10 | 162.23 | 1175.93 | 3.57 |
| 4/16/20 13:57 | 240.52 | 28.07 | 10.45 | 13.74 | 161.78 | 1175.58 | 3.57 |
| 4/16/20 13:58 | 240.93 | 28.12 | 10.45 | 14.03 | 168.36 | 1175.94 | 3.57 |
| 4/16/20 13:59 | 240.75 | 28.00 | 10.45 | 14.26 | 171.16 | 1176.20 | 3.57 |
| 4/16/20 14:00 | 240.79 | 27.96 | 10.45 | 14.33 | 163.56 | 1176.01 | 3.57 |
| 4/16/20 14:01 | 241.05 | 28.08 | 10.45 | 14.16 | 162.27 | 1176.22 | 3.57 |
| 4/16/20 14:02 | 240.67 | 28.17 | 10.46 | 14.25 | 169.06 | 1175.80 | 3.57 |
| 4/16/20 14:03 | 240.50 | 27.95 | 10.46 | 14.16 | 173.41 | 1175.88 | 3.57 |
| 4/16/20 14:04 | 240.56 | 28.01 | 10.46 | 14.17 | 165.79 | 1175.82 | 3.57 |
| 4/16/20 14:05 | 240.71 | 27.98 | 10.46 | 14.31 | 159.26 | 1175.91 | 3.57 |
| 4/16/20 14:06 | 240.89 | 28.12 | 10.46 | 14.27 | 160.78 | 1176.24 | 3.57 |
| 4/16/20 14:07 | 240.68 | 28.07 | 10.46 | 14.19 | 159.41 | 1175.94 | 3.57 |
| 4/16/20 14:08 | 240.56 | 27.96 | 10.46 | 14.46 | 159.41 | 1175.86 | 3.57 |
| 4/16/20 14:09 | 240.90 | 28.08 | 10.46 | 14.22 | 159.50 | 1176.64 | 3.57 |
| 4/16/20 14:10 | 240.37 | 28.08 | 10.46 | 14.34 | 162.17 | 1175.62 | 3.57 |
| 4/16/20 14:11 | 240.45 | 28.09 | 10.46 | 14.41 | 169.83 | 1175.71 | 3.57 |
| 4/16/20 14:12 | 240.58 | 27.99 | 10.46 | 14.21 | 169.79 | 1176.15 | 3.57 |
| 4/16/20 14:13 | 240.86 | 27.98 | 10.46 | 14.52 | 173.42 | 1176.26 | 3.57 |
| 4/16/20 14:14 | 240.73 | 28.10 | 10.46 | 13.95 | 169.17 | 1175.33 | 3.56 |
| 4/16/20 14:15 | 240.92 | 28.14 | 10.46 | 14.29 | 167.74 | 1176.75 | 3.56 |
| 4/16/20 14:16 | 240.84 | 28.04 | 10.46 | 14.15 | 168.81 | 1175.77 | 3.56 |
| 4/16/20 14:17 | 240.83 | 27.96 | 10.46 | 13.93 | 170.03 | 1175.80 | 3.56 |
| 4/16/20 14:18 | 240.91 | 27.96 | 10.46 | 14.27 | 169.49 | 1175.38 | 3.56 |
| 4/16/20 14:19 | 240.69 | 28.09 | 10.46 | 14.37 | 163.69 | 1176.03 | 3.56 |
| 4/16/20 14:20 | 240.37 | 28.09 | 10.46 | 14.01 | 166.58 | 1175.79 | 3.56 |
| 4/16/20 14:21 | 240.85 | 27.99 | 10.46 | 13.92 | 174.10 | 1176.40 | 3.56 |
| 4/16/20 14:22 | 240.59 | 28.05 | 10.46 | 14.18 | 167.11 | 1175.63 | 3.56 |
| 4/16/20 14:23 | 241.09 | 28.11 | 10.46 | 14.10 | 165.62 | 1176.20 | 3.56 |
| 4/16/20 14:24 | 240.35 | 28.12 | 10.46 | 14.12 | 172.23 | 1176.49 | 3.56 |
| 4/16/20 14:25 | 240.68 | 27.99 | 10.46 | 14.39 | 173.17 | 1176.52 | 3.56 |
| 4/16/20 14:26 | 240.09 | 28.04 | 10.46 | 13.98 | 174.46 | 1175.22 | 3.56 |
| 4/16/20 14:27 | 240.59 | 28.01 | 10.46 | 14.60 | 164.68 | 1176.22 | 3.56 |
| 4/16/20 14:28 | 239.93 | 28.10 | 10.46 | 14.53 | 162.81 | 1175.91 | 3.56 |
| 4/16/20 14:29 | 240.08 | 28.07 | 10.46 | 14.76 | 158.81 | 1176.28 | 3.56 |
| 4/16/20 14:30 | 240.43 | 27.98 | 10.46 | 14.26 | 160.86 | 1176.21 | 3.56 |
| 4/16/20 14:31 | 240.12 | 27.95 | 10.46 | 14.46 | 170.28 | 1176.04 | 3.56 |
| 4/16/20 14:32 | 240.08 | 28.16 | 10.46 | 14.10 | 160.56 | 1176.00 | 3.56 |
| 4/16/20 14:33 | 240.62 | 28.04 | 10.46 | 14.61 | 163.69 | 1176.25 | 3.56 |
| 4/16/20 14:34 | 239.79 | 27.95 | 10.46 | 14.01 | 169.69 | 1174.93 | 3.55 |
| 4/16/20 14:35 | 240.42 | 27.99 | 10.46 | 14.24 | 162.96 | 1176.03 | 3.55 |
| 4/16/20 14:36 | 240.28 | 28.02 | 10.46 | 14.52 | 163.25 | 1175.70 | 3.55 |

| Description | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/16 12:23 - 4/16 16:49) | 240.19 | 28.00 | 10.46 | 14.20 | 163.87 | 1175.97 | 3.56 |
| COUNT = 267 | | | | | | | |

| Signal Tagname | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
|---|---|---|---|---|---|---|---|
| 4/16/20 14:37 | 240.18 | 28.06 | 10.46 | 14.53 | 166.15 | 1175.59 | 3.55 |
| 4/16/20 14:38 | 240.67 | 28.00 | 10.46 | 14.12 | 157.24 | 1176.52 | 3.55 |
| 4/16/20 14:39 | 239.96 | 28.02 | 10.46 | 14.16 | 156.65 | 1175.42 | 3.55 |
| 4/16/20 14:40 | 240.37 | 27.99 | 10.46 | 14.25 | 157.29 | 1175.90 | 3.55 |
| 4/16/20 14:41 | 240.09 | 28.05 | 10.47 | 14.04 | 159.17 | 1176.19 | 3.55 |
| 4/16/20 14:42 | 239.94 | 28.07 | 10.47 | 14.17 | 164.58 | 1174.75 | 3.55 |
| 4/16/20 14:43 | 240.29 | 27.91 | 10.47 | 13.88 | 168.24 | 1175.82 | 3.55 |
| 4/16/20 14:44 | 240.23 | 27.99 | 10.47 | 14.55 | 167.11 | 1176.45 | 3.55 |
| 4/16/20 14:45 | 240.50 | 28.01 | 10.47 | 14.66 | 168.25 | 1176.53 | 3.55 |
| 4/16/20 14:46 | 240.43 | 28.08 | 10.47 | 14.07 | 170.64 | 1176.15 | 3.55 |
| 4/16/20 14:47 | 240.16 | 28.04 | 10.47 | 14.14 | 164.07 | 1175.73 | 3.55 |
| 4/16/20 14:48 | 240.11 | 27.95 | 10.47 | 14.23 | 174.75 | 1176.42 | 3.55 |
| 4/16/20 14:49 | 240.45 | 27.99 | 10.47 | 14.31 | 174.71 | 1176.40 | 3.55 |
| 4/16/20 14:50 | 240.27 | 28.13 | 10.47 | 14.29 | 172.37 | 1176.55 | 3.55 |
| 4/16/20 14:51 | 239.36 | 27.97 | 10.47 | 14.05 | 161.32 | 1174.94 | 3.55 |
| 4/16/20 14:52 | 239.25 | 27.88 | 10.47 | 14.09 | 155.33 | 1174.93 | 3.55 |
| 4/16/20 14:53 | 239.82 | 27.89 | 10.47 | 14.66 | 158.90 | 1176.81 | 3.55 |
| 4/16/20 14:54 | 239.66 | 28.03 | 10.47 | 14.28 | 164.82 | 1177.13 | 3.54 |
| 4/16/20 14:55 | 239.28 | 28.00 | 10.47 | 13.91 | 151.05 | 1176.21 | 3.54 |
| 4/16/20 14:56 | 239.61 | 27.93 | 10.47 | 14.21 | 156.80 | 1176.32 | 3.54 |
| 4/16/20 14:57 | 240.11 | 27.95 | 10.47 | 13.99 | 152.70 | 1175.28 | 3.54 |
| 4/16/20 14:58 | 240.06 | 28.00 | 10.47 | 14.05 | 150.30 | 1176.10 | 3.54 |
| 4/16/20 14:59 | 239.80 | 28.09 | 10.47 | 14.30 | 149.78 | 1176.14 | 3.54 |
| 4/16/20 15:00 | 240.02 | 27.97 | 10.47 | 14.02 | 150.95 | 1176.66 | 3.54 |
| 4/16/20 15:01 | 239.61 | 27.89 | 10.47 | 14.00 | 158.69 | 1175.32 | 3.54 |
| 4/16/20 15:02 | 239.70 | 27.94 | 10.47 | 14.15 | 165.09 | 1174.82 | 3.54 |
| 4/16/20 15:03 | 240.40 | 28.04 | 10.47 | 14.02 | 160.26 | 1176.49 | 3.54 |
| 4/16/20 15:04 | 240.09 | 28.07 | 10.47 | 14.21 | 163.84 | 1176.22 | 3.54 |
| 4/16/20 15:05 | 239.97 | 27.96 | 10.47 | 14.36 | 172.96 | 1175.86 | 3.54 |
| 4/16/20 15:06 | 239.61 | 27.93 | 10.47 | 14.26 | 172.67 | 1175.10 | 3.54 |
| 4/16/20 15:07 | 239.29 | 28.03 | 10.47 | 14.29 | 161.79 | 1175.49 | 3.54 |
| 4/16/20 15:08 | 239.11 | 28.03 | 10.47 | 14.23 | 167.23 | 1175.83 | 3.54 |
| 4/16/20 15:09 | 239.57 | 27.92 | 10.47 | 14.49 | 156.43 | 1176.90 | 3.54 |
| 4/16/20 15:10 | 239.11 | 27.88 | 10.47 | 14.12 | 164.06 | 1175.62 | 3.54 |
| 4/16/20 15:11 | 238.99 | 27.98 | 10.47 | 14.04 | 158.08 | 1175.19 | 3.54 |
| 4/16/20 15:12 | 239.31 | 28.02 | 10.47 | 14.13 | 154.89 | 1175.25 | 3.54 |
| 4/16/20 15:13 | 239.31 | 28.04 | 10.47 | 14.20 | 157.71 | 1175.49 | 3.53 |
| 4/16/20 15:14 | 239.27 | 27.90 | 10.47 | 14.21 | 148.47 | 1175.04 | 3.53 |
| 4/16/20 15:15 | 239.84 | 27.83 | 10.47 | 14.16 | 151.49 | 1176.26 | 3.53 |
| 4/16/20 15:16 | 239.82 | 28.03 | 10.47 | 14.03 | 160.97 | 1175.48 | 3.53 |
| 4/16/20 15:17 | 239.78 | 27.99 | 10.47 | 14.27 | 162.34 | 1175.99 | 3.53 |
| 4/16/20 15:18 | 239.14 | 27.92 | 10.47 | 14.22 | 156.26 | 1175.02 | 3.53 |
| 4/16/20 15:19 | 239.12 | 27.86 | 10.47 | 14.37 | 155.11 | 1175.71 | 3.53 |
| 4/16/20 15:20 | 239.32 | 27.95 | 10.48 | 14.29 | 153.61 | 1176.05 | 3.53 |
| 4/16/20 15:21 | 239.33 | 27.97 | 10.48 | 14.14 | 154.77 | 1175.49 | 3.53 |
| 4/16/20 15:22 | 239.52 | 27.93 | 10.48 | 14.74 | 149.37 | 1176.40 | 3.53 |
| 4/16/20 15:23 | 239.53 | 27.92 | 10.48 | 14.24 | 151.42 | 1176.02 | 3.53 |
| 4/16/20 15:24 | 239.57 | 27.88 | 10.48 | 14.53 | 161.55 | 1176.27 | 3.53 |
| 4/16/20 15:25 | 240.04 | 28.08 | 10.48 | 14.47 | 158.97 | 1175.61 | 3.53 |
| 4/16/20 15:26 | 239.63 | 28.00 | 10.48 | 14.30 | 164.71 | 1176.60 | 3.53 |
| 4/16/20 15:27 | 239.95 | 27.86 | 10.48 | 14.29 | 159.76 | 1176.61 | 3.53 |
| 4/16/20 15:28 | 239.58 | 27.92 | 10.48 | 14.29 | 156.58 | 1176.35 | 3.53 |
| 4/16/20 15:29 | 239.19 | 28.09 | 10.48 | 14.01 | 155.83 | 1174.60 | 3.53 |
| 4/16/20 15:30 | 239.26 | 28.00 | 10.48 | 13.84 | 161.27 | 1175.28 | 3.53 |
| 4/16/20 15:31 | 238.80 | 27.88 | 10.48 | 14.00 | 163.13 | 1174.99 | 3.53 |
| 4/16/20 15:32 | 239.23 | 27.84 | 10.48 | 14.00 | 163.12 | 1175.80 | 3.53 |
| 4/16/20 15:33 | 239.07 | 27.90 | 10.48 | 14.03 | 156.31 | 1175.43 | 3.52 |
| 4/16/20 15:34 | 239.02 | 28.03 | 10.48 | 14.11 | 150.54 | 1175.25 | 3.52 |
| 4/16/20 15:35 | 238.83 | 27.99 | 10.48 | 14.49 | 149.54 | 1175.82 | 3.52 |
| 4/16/20 15:36 | 239.46 | 27.87 | 10.48 | 14.15 | 148.83 | 1176.24 | 3.52 |
| 4/16/20 15:37 | 239.76 | 27.92 | 10.48 | 14.18 | 149.39 | 1176.35 | 3.52 |
| 4/16/20 15:38 | 239.18 | 27.96 | 10.48 | 14.06 | 150.36 | 1175.28 | 3.52 |
| 4/16/20 15:39 | 239.47 | 28.05 | 10.48 | 14.42 | 151.20 | 1176.22 | 3.52 |
| 4/16/20 15:40 | 239.61 | 27.87 | 10.48 | 14.18 | 149.24 | 1175.85 | 3.52 |
| 4/16/20 15:41 | 239.41 | 27.96 | 10.48 | 13.98 | 154.81 | 1176.09 | 3.52 |
| 4/16/20 15:42 | 239.55 | 27.90 | 10.48 | 14.55 | 165.26 | 1176.13 | 3.53 |
| 4/16/20 15:43 | 239.48 | 28.05 | 10.48 | 14.12 | 165.41 | 1176.15 | 3.53 |

| Description | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/16 12:23 - 4/16 16:49) | 240.19 | 28.00 | 10.46 | 14.20 | 163.87 | 1175.97 | 3.56 |
| COUNT = 267 | | | | | | | |

| Signal Tagname | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
|---|---|---|---|---|---|---|---|
| 4/16/20 15:44 | 239.16 | 27.94 | 10.48 | 14.13 | 155.06 | 1175.82 | 3.53 |
| 4/16/20 15:45 | 240.12 | 27.89 | 10.48 | 14.44 | 154.37 | 1176.87 | 3.53 |
| 4/16/20 15:46 | 239.70 | 27.92 | 10.48 | 13.97 | 163.93 | 1176.04 | 3.53 |
| 4/16/20 15:47 | 239.69 | 28.08 | 10.48 | 14.03 | 160.16 | 1175.61 | 3.53 |
| 4/16/20 15:48 | 239.81 | 27.96 | 10.48 | 14.13 | 154.06 | 1176.84 | 3.53 |
| 4/16/20 15:49 | 239.74 | 27.89 | 10.48 | 14.22 | 162.42 | 1176.18 | 3.53 |
| 4/16/20 15:50 | 239.57 | 27.97 | 10.48 | 14.26 | 163.11 | 1175.15 | 3.53 |
| 4/16/20 15:51 | 239.93 | 28.03 | 10.48 | 14.45 | 164.79 | 1175.44 | 3.53 |
| 4/16/20 15:52 | 239.63 | 27.94 | 10.48 | 13.97 | 164.61 | 1175.45 | 3.53 |
| 4/16/20 15:53 | 240.02 | 27.96 | 10.48 | 14.21 | 159.99 | 1176.39 | 3.53 |
| 4/16/20 15:54 | 239.52 | 27.91 | 10.48 | 14.15 | 154.80 | 1176.03 | 3.53 |
| 4/16/20 15:55 | 239.64 | 27.99 | 10.48 | 14.11 | 166.86 | 1175.84 | 3.53 |
| 4/16/20 15:56 | 239.82 | 28.06 | 10.48 | 14.10 | 158.08 | 1176.74 | 3.53 |
| 4/16/20 15:57 | 239.39 | 27.91 | 10.48 | 13.99 | 154.19 | 1175.28 | 3.53 |
| 4/16/20 15:58 | 239.72 | 27.89 | 10.48 | 14.43 | 154.32 | 1176.88 | 3.53 |
| 4/16/20 15:59 | 239.38 | 27.92 | 10.49 | 14.35 | 161.79 | 1176.43 | 3.53 |
| 4/16/20 16:00 | 239.10 | 28.02 | 10.49 | 14.01 | 151.91 | 1176.14 | 3.53 |
| 4/16/20 16:01 | 239.61 | 27.92 | 10.49 | 14.26 | 151.27 | 1175.51 | 3.54 |
| 4/16/20 16:02 | 239.64 | 27.87 | 10.49 | 13.98 | 159.59 | 1176.15 | 3.54 |
| 4/16/20 16:03 | 240.03 | 27.92 | 10.49 | 14.32 | 161.95 | 1175.66 | 3.54 |
| 4/16/20 16:04 | 239.90 | 28.01 | 10.49 | 14.31 | 161.09 | 1176.47 | 3.54 |
| 4/16/20 16:05 | 239.90 | 28.00 | 10.49 | 14.26 | 152.33 | 1175.82 | 3.54 |
| 4/16/20 16:06 | 240.22 | 27.96 | 10.49 | 14.34 | 163.69 | 1176.00 | 3.54 |
| 4/16/20 16:07 | 239.80 | 27.92 | 10.49 | 14.25 | 164.35 | 1176.56 | 3.54 |
| 4/16/20 16:08 | 239.15 | 28.02 | 10.49 | 13.99 | 165.06 | 1174.23 | 3.54 |
| 4/16/20 16:09 | 239.50 | 28.06 | 10.49 | 14.09 | 165.48 | 1175.49 | 3.54 |
| 4/16/20 16:10 | 239.74 | 27.95 | 10.49 | 14.03 | 161.66 | 1175.96 | 3.54 |
| 4/16/20 16:11 | 239.74 | 27.86 | 10.49 | 14.30 | 153.28 | 1176.58 | 3.54 |
| 4/16/20 16:12 | 239.24 | 27.96 | 10.49 | 14.22 | 153.46 | 1175.27 | 3.54 |
| 4/16/20 16:13 | 240.31 | 28.01 | 10.49 | 14.41 | 154.91 | 1176.67 | 3.54 |
| 4/16/20 16:14 | 240.02 | 27.94 | 10.49 | 14.62 | 166.52 | 1176.41 | 3.54 |
| 4/16/20 16:15 | 239.76 | 27.95 | 10.49 | 14.21 | 161.55 | 1174.94 | 3.54 |
| 4/16/20 16:16 | 239.88 | 27.88 | 10.49 | 14.10 | 167.36 | 1177.20 | 3.54 |
| 4/16/20 16:17 | 239.84 | 28.05 | 10.49 | 14.27 | 160.70 | 1175.39 | 3.54 |
| 4/16/20 16:18 | 239.86 | 28.15 | 10.49 | 14.15 | 167.20 | 1175.83 | 3.54 |
| 4/16/20 16:19 | 239.74 | 27.96 | 10.49 | 14.02 | 166.52 | 1175.59 | 3.54 |
| 4/16/20 16:20 | 239.51 | 27.92 | 10.49 | 14.18 | 162.23 | 1176.62 | 3.54 |
| 4/16/20 16:21 | 239.78 | 27.96 | 10.49 | 14.49 | 167.67 | 1176.12 | 3.55 |
| 4/16/20 16:22 | 239.62 | 28.07 | 10.49 | 14.43 | 165.14 | 1175.80 | 3.55 |
| 4/16/20 16:23 | 239.83 | 28.06 | 10.49 | 14.13 | 162.82 | 1175.18 | 3.55 |
| 4/16/20 16:24 | 239.74 | 27.89 | 10.49 | 13.98 | 160.68 | 1175.60 | 3.55 |
| 4/16/20 16:25 | 239.51 | 27.95 | 10.49 | 14.12 | 154.99 | 1175.52 | 3.55 |
| 4/16/20 16:26 | 240.01 | 28.02 | 10.49 | 14.38 | 154.84 | 1176.78 | 3.55 |
| 4/16/20 16:27 | 239.62 | 28.03 | 10.49 | 14.20 | 154.29 | 1175.71 | 3.55 |
| 4/16/20 16:28 | 240.22 | 27.94 | 10.49 | 14.34 | 160.14 | 1176.75 | 3.55 |
| 4/16/20 16:29 | 239.96 | 27.93 | 10.49 | 14.30 | 166.92 | 1176.09 | 3.55 |
| 4/16/20 16:30 | 240.21 | 28.04 | 10.49 | 14.49 | 159.07 | 1176.46 | 3.55 |
| 4/16/20 16:31 | 240.33 | 28.07 | 10.49 | 14.26 | 158.88 | 1176.02 | 3.55 |
| 4/16/20 16:32 | 239.90 | 28.00 | 10.49 | 14.41 | 170.56 | 1176.27 | 3.55 |
| 4/16/20 16:33 | 240.07 | 27.93 | 10.49 | 14.62 | 163.82 | 1176.57 | 3.55 |
| 4/16/20 16:34 | 240.02 | 27.97 | 10.49 | 14.45 | 165.09 | 1177.25 | 3.55 |
| 4/16/20 16:35 | 239.50 | 28.10 | 10.49 | 14.22 | 163.17 | 1176.01 | 3.55 |
| 4/16/20 16:36 | 239.63 | 28.00 | 10.49 | 14.20 | 158.13 | 1175.99 | 3.55 |
| 4/16/20 16:37 | 239.59 | 27.93 | 10.49 | 13.84 | 157.15 | 1175.29 | 3.55 |
| 4/16/20 16:38 | 239.41 | 27.92 | 10.50 | 14.41 | 156.91 | 1176.04 | 3.55 |
| 4/16/20 16:39 | 239.67 | 28.06 | 10.50 | 14.07 | 160.21 | 1175.57 | 3.55 |
| 4/16/20 16:40 | 239.81 | 28.03 | 10.50 | 13.99 | 157.46 | 1176.50 | 3.56 |
| 4/16/20 16:41 | 239.37 | 27.88 | 10.50 | 14.32 | 152.93 | 1175.69 | 3.56 |
| 4/16/20 16:42 | 239.14 | 27.90 | 10.50 | 13.95 | 150.76 | 1175.62 | 3.56 |
| 4/16/20 16:43 | 239.28 | 27.94 | 10.50 | 14.20 | 151.75 | 1176.47 | 3.56 |
| 4/16/20 16:44 | 239.56 | 28.03 | 10.50 | 14.32 | 159.30 | 1176.39 | 3.56 |
| 4/16/20 16:45 | 239.85 | 28.01 | 10.50 | 14.23 | 158.65 | 1176.45 | 3.56 |
| 4/16/20 16:46 | 239.27 | 27.85 | 10.50 | 14.21 | 152.69 | 1175.69 | 3.56 |
| 4/16/20 16:47 | 239.13 | 27.84 | 10.50 | 14.31 | 149.95 | 1175.77 | 3.56 |
| 4/16/20 16:48 | 239.59 | 28.08 | 10.50 | 14.12 | 149.49 | 1176.46 | 3.56 |
| 4/16/20 16:49 | 239.44 | 27.98 | 10.50 | 13.94 | 152.51 | 1176.24 | 3.56 |

| Description | | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/17 4:15 - 4/17 8:34) | | 244.92 | 28.45 | 10.63 | 14.25 | 193.21 | 1182.61 | 3.71 |
| COUNT = 260 | | | | | | | | |
| Signal Tagname | | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| | 4/17/20 4:15 | 244.34 | 28.29 | 10.66 | 14.29 | 197.56 | 1180.91 | 3.73 |
| | 4/17/20 4:16 | 244.86 | 28.33 | 10.66 | 14.08 | 190.04 | 1181.15 | 3.73 |
| | 4/17/20 4:17 | 244.93 | 28.39 | 10.66 | 14.25 | 186.02 | 1181.03 | 3.73 |
| | 4/17/20 4:18 | 244.83 | 28.46 | 10.66 | 14.20 | 192.89 | 1181.24 | 3.73 |
| | 4/17/20 4:19 | 244.57 | 28.39 | 10.66 | 14.19 | 188.79 | 1181.19 | 3.73 |
| | 4/17/20 4:20 | 244.81 | 28.33 | 10.66 | 14.24 | 199.49 | 1181.94 | 3.73 |
| | 4/17/20 4:21 | 244.76 | 28.41 | 10.66 | 14.25 | 183.77 | 1181.44 | 3.73 |
| | 4/17/20 4:22 | 244.75 | 28.43 | 10.66 | 14.17 | 190.98 | 1181.67 | 3.73 |
| | 4/17/20 4:23 | 244.82 | 28.40 | 10.66 | 14.34 | 198.85 | 1181.39 | 3.73 |
| | 4/17/20 4:24 | 244.77 | 28.32 | 10.66 | 14.41 | 185.37 | 1181.84 | 3.73 |
| | 4/17/20 4:25 | 245.03 | 28.39 | 10.66 | 14.14 | 189.57 | 1181.29 | 3.73 |
| | 4/17/20 4:26 | 244.58 | 28.51 | 10.66 | 14.16 | 195.36 | 1181.51 | 3.73 |
| | 4/17/20 4:27 | 244.25 | 28.45 | 10.66 | 14.08 | 187.27 | 1180.82 | 3.73 |
| | 4/17/20 4:28 | 245.08 | 28.44 | 10.66 | 14.04 | 202.59 | 1181.85 | 3.73 |
| | 4/17/20 4:29 | 244.76 | 28.37 | 10.66 | 14.10 | 190.58 | 1181.22 | 3.73 |
| | 4/17/20 4:30 | 244.31 | 28.37 | 10.66 | 14.01 | 195.82 | 1181.41 | 3.73 |
| | 4/17/20 4:31 | 244.65 | 28.48 | 10.66 | 14.33 | 199.61 | 1181.96 | 3.72 |
| | 4/17/20 4:32 | 244.85 | 28.40 | 10.66 | 14.07 | 197.82 | 1182.00 | 3.72 |
| | 4/17/20 4:33 | 245.02 | 28.37 | 10.66 | 14.03 | 198.55 | 1181.54 | 3.72 |
| | 4/17/20 4:34 | 244.99 | 28.42 | 10.66 | 14.29 | 204.00 | 1182.48 | 3.72 |
| | 4/17/20 4:35 | 244.79 | 28.45 | 10.66 | 14.20 | 204.91 | 1182.40 | 3.72 |
| | 4/17/20 4:36 | 244.67 | 28.44 | 10.66 | 14.08 | 202.18 | 1181.55 | 3.72 |
| | 4/17/20 4:37 | 245.09 | 28.35 | 10.66 | 14.30 | 201.73 | 1181.53 | 3.72 |
| | 4/17/20 4:38 | 244.69 | 28.35 | 10.66 | 14.11 | 200.67 | 1181.45 | 3.72 |
| | 4/17/20 4:39 | 244.57 | 28.42 | 10.66 | 14.12 | 198.94 | 1181.32 | 3.72 |
| | 4/17/20 4:40 | 244.74 | 28.40 | 10.66 | 14.21 | 197.01 | 1180.97 | 3.72 |
| | 4/17/20 4:41 | 244.65 | 28.39 | 10.66 | 14.00 | 191.63 | 1181.78 | 3.72 |
| | 4/17/20 4:42 | 244.56 | 28.36 | 10.66 | 14.03 | 189.44 | 1181.68 | 3.72 |
| | 4/17/20 4:43 | 245.01 | 28.35 | 10.66 | 13.99 | 178.65 | 1181.99 | 3.72 |
| | 4/17/20 4:44 | 245.18 | 28.42 | 10.66 | 14.17 | 178.55 | 1181.91 | 3.72 |
| | 4/17/20 4:45 | 244.77 | 28.39 | 10.66 | 14.19 | 186.12 | 1181.94 | 3.72 |
| | 4/17/20 4:46 | 244.63 | 28.38 | 10.66 | 14.43 | 191.60 | 1182.05 | 3.72 |
| | 4/17/20 4:47 | 244.99 | 28.35 | 10.66 | 14.21 | 193.05 | 1181.19 | 3.72 |
| | 4/17/20 4:48 | 244.97 | 28.42 | 10.66 | 14.15 | 199.66 | 1181.93 | 3.72 |
| | 4/17/20 4:49 | 244.53 | 28.41 | 10.66 | 14.15 | 200.15 | 1181.31 | 3.72 |
| | 4/17/20 4:50 | 244.72 | 28.34 | 10.66 | 14.22 | 200.23 | 1182.10 | 3.72 |
| | 4/17/20 4:51 | 245.21 | 28.30 | 10.66 | 14.45 | 200.81 | 1182.73 | 3.72 |
| | 4/17/20 4:52 | 245.01 | 28.45 | 10.66 | 14.29 | 201.28 | 1181.65 | 3.72 |
| | 4/17/20 4:53 | 244.58 | 28.57 | 10.66 | 14.23 | 200.95 | 1181.20 | 3.72 |
| | 4/17/20 4:54 | 245.09 | 28.41 | 10.65 | 14.51 | 197.96 | 1182.36 | 3.72 |
| | 4/17/20 4:55 | 244.78 | 28.32 | 10.65 | 14.13 | 184.58 | 1181.73 | 3.72 |
| | 4/17/20 4:56 | 244.76 | 28.44 | 10.65 | 14.30 | 185.89 | 1181.72 | 3.72 |
| | 4/17/20 4:57 | 244.89 | 28.45 | 10.65 | 14.21 | 190.65 | 1181.79 | 3.72 |
| | 4/17/20 4:58 | 244.74 | 28.40 | 10.65 | 14.25 | 198.04 | 1181.11 | 3.72 |
| | 4/17/20 4:59 | 244.75 | 28.35 | 10.65 | 14.10 | 198.18 | 1181.10 | 3.72 |
| | 4/17/20 5:00 | 244.82 | 28.32 | 10.65 | 14.04 | 201.23 | 1181.48 | 3.72 |
| | 4/17/20 5:01 | 244.90 | 28.47 | 10.65 | 14.04 | 199.31 | 1181.68 | 3.72 |
| | 4/17/20 5:02 | 244.74 | 28.46 | 10.65 | 14.30 | 197.42 | 1180.89 | 3.72 |
| | 4/17/20 5:03 | 245.03 | 28.34 | 10.65 | 13.86 | 190.71 | 1181.76 | 3.72 |
| | 4/17/20 5:04 | 244.77 | 28.36 | 10.65 | 14.38 | 189.66 | 1181.50 | 3.72 |
| | 4/17/20 5:05 | 245.21 | 28.41 | 10.65 | 14.04 | 180.60 | 1182.04 | 3.72 |
| | 4/17/20 5:06 | 244.77 | 28.50 | 10.65 | 14.44 | 179.66 | 1181.35 | 3.72 |
| | 4/17/20 5:07 | 244.58 | 28.35 | 10.65 | 14.27 | 194.83 | 1181.70 | 3.72 |
| | 4/17/20 5:08 | 245.16 | 28.31 | 10.65 | 14.41 | 198.60 | 1183.01 | 3.72 |
| | 4/17/20 5:09 | 244.20 | 28.37 | 10.65 | 14.39 | 185.98 | 1180.74 | 3.72 |
| | 4/17/20 5:10 | 244.81 | 28.45 | 10.65 | 14.19 | 188.30 | 1180.86 | 3.72 |
| | 4/17/20 5:11 | 244.66 | 28.41 | 10.65 | 14.32 | 200.79 | 1181.36 | 3.72 |
| | 4/17/20 5:12 | 244.64 | 28.35 | 10.65 | 14.20 | 190.61 | 1181.25 | 3.72 |
| | 4/17/20 5:13 | 244.66 | 28.38 | 10.65 | 14.14 | 190.24 | 1180.67 | 3.72 |
| | 4/17/20 5:14 | 244.88 | 28.52 | 10.65 | 14.04 | 201.23 | 1181.50 | 3.72 |
| | 4/17/20 5:15 | 244.99 | 28.44 | 10.65 | 14.35 | 192.53 | 1182.51 | 3.72 |
| | 4/17/20 5:16 | 244.54 | 28.45 | 10.65 | 14.11 | 201.60 | 1180.84 | 3.72 |
| | 4/17/20 5:17 | 244.66 | 28.44 | 10.65 | 14.01 | 200.18 | 1181.47 | 3.72 |
| | 4/17/20 5:18 | 244.66 | 28.46 | 10.65 | 14.42 | 205.76 | 1181.52 | 3.72 |
| | 4/17/20 5:19 | 245.25 | 28.50 | 10.65 | 14.13 | 199.76 | 1182.40 | 3.72 |
| | 4/17/20 5:20 | 244.95 | 28.43 | 10.65 | 14.45 | 188.21 | 1182.07 | 3.72 |
| | 4/17/20 5:21 | 244.70 | 28.33 | 10.65 | 14.17 | 194.36 | 1181.38 | 3.72 |

| Description | | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/17 4:15 - 4/17 8:34) | | 244.92 | 28.45 | 10.63 | 14.25 | 193.21 | 1182.61 | 3.71 |
| COUNT = 260 | | | | | | | | |
| Signal Tagname | | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| | 4/17/20 5:22 | 244.84 | 28.48 | 10.65 | 14.02 | 201.37 | 1180.88 | 3.72 |
| | 4/17/20 5:23 | 244.96 | 28.53 | 10.65 | 14.24 | 205.51 | 1181.20 | 3.72 |
| | 4/17/20 5:24 | 245.00 | 28.41 | 10.65 | 14.07 | 201.40 | 1182.15 | 3.72 |
| | 4/17/20 5:25 | 244.81 | 28.40 | 10.65 | 14.14 | 187.31 | 1182.33 | 3.72 |
| | 4/17/20 5:26 | 244.95 | 28.44 | 10.65 | 14.39 | 192.73 | 1182.57 | 3.72 |
| | 4/17/20 5:27 | 244.26 | 28.48 | 10.65 | 14.29 | 201.40 | 1180.54 | 3.72 |
| | 4/17/20 5:28 | 244.58 | 28.47 | 10.65 | 14.18 | 191.17 | 1181.71 | 3.72 |
| | 4/17/20 5:29 | 245.07 | 28.34 | 10.65 | 14.45 | 190.46 | 1182.32 | 3.72 |
| | 4/17/20 5:30 | 245.11 | 28.44 | 10.65 | 14.20 | 199.09 | 1181.16 | 3.72 |
| | 4/17/20 5:31 | 244.78 | 28.46 | 10.65 | 14.67 | 188.74 | 1182.10 | 3.72 |
| | 4/17/20 5:32 | 245.32 | 28.46 | 10.65 | 14.27 | 185.62 | 1182.30 | 3.72 |
| | 4/17/20 5:33 | 245.16 | 28.48 | 10.65 | 14.33 | 181.81 | 1181.78 | 3.72 |
| | 4/17/20 5:34 | 244.88 | 28.39 | 10.65 | 14.05 | 191.42 | 1181.36 | 3.72 |
| | 4/17/20 5:35 | 245.23 | 28.48 | 10.65 | 14.23 | 201.64 | 1182.57 | 3.72 |
| | 4/17/20 5:36 | 244.94 | 28.57 | 10.65 | 14.27 | 196.92 | 1181.55 | 3.72 |
| | 4/17/20 5:37 | 245.11 | 28.55 | 10.64 | 14.35 | 192.62 | 1182.36 | 3.72 |
| | 4/17/20 5:38 | 245.15 | 28.41 | 10.64 | 14.42 | 186.67 | 1182.05 | 3.72 |
| | 4/17/20 5:39 | 245.27 | 28.42 | 10.64 | 14.14 | 200.26 | 1182.06 | 3.72 |
| | 4/17/20 5:40 | 244.79 | 28.45 | 10.64 | 14.47 | 205.97 | 1181.81 | 3.72 |
| | 4/17/20 5:41 | 244.79 | 28.53 | 10.64 | 14.25 | 204.30 | 1181.92 | 3.72 |
| | 4/17/20 5:42 | 245.07 | 28.50 | 10.64 | 14.21 | 198.56 | 1181.78 | 3.72 |
| | 4/17/20 5:43 | 245.62 | 28.46 | 10.64 | 14.69 | 191.08 | 1182.49 | 3.72 |
| | 4/17/20 5:44 | 245.30 | 28.42 | 10.64 | 14.54 | 191.66 | 1182.23 | 3.71 |
| | 4/17/20 5:45 | 245.24 | 28.53 | 10.64 | 14.07 | 205.12 | 1181.21 | 3.71 |
| | 4/17/20 5:46 | 245.78 | 28.43 | 10.64 | 14.76 | 194.95 | 1183.28 | 3.71 |
| | 4/17/20 5:47 | 245.16 | 28.38 | 10.64 | 14.49 | 195.83 | 1182.20 | 3.71 |
| | 4/17/20 5:48 | 245.20 | 28.49 | 10.64 | 14.40 | 204.89 | 1182.00 | 3.71 |
| | 4/17/20 5:49 | 244.86 | 28.41 | 10.64 | 14.22 | 196.45 | 1180.95 | 3.71 |
| | 4/17/20 5:50 | 245.24 | 28.57 | 10.64 | 13.95 | 188.16 | 1182.04 | 3.71 |
| | 4/17/20 5:51 | 245.14 | 28.43 | 10.64 | 14.39 | 198.89 | 1182.49 | 3.71 |
| | 4/17/20 5:52 | 245.17 | 28.46 | 10.64 | 14.27 | 205.38 | 1182.43 | 3.71 |
| | 4/17/20 5:53 | 245.23 | 28.39 | 10.64 | 14.36 | 203.60 | 1181.72 | 3.71 |
| | 4/17/20 5:54 | 245.57 | 28.59 | 10.64 | 14.11 | 196.36 | 1182.28 | 3.71 |
| | 4/17/20 5:55 | 245.40 | 28.49 | 10.64 | 14.20 | 192.38 | 1181.92 | 3.71 |
| | 4/17/20 5:56 | 245.38 | 28.44 | 10.64 | 14.29 | 195.99 | 1181.76 | 3.71 |
| | 4/17/20 5:57 | 245.15 | 28.50 | 10.64 | 14.32 | 202.26 | 1181.65 | 3.71 |
| | 4/17/20 5:58 | 245.36 | 28.58 | 10.64 | 14.24 | 208.96 | 1181.78 | 3.71 |
| | 4/17/20 5:59 | 245.59 | 28.57 | 10.64 | 14.15 | 206.73 | 1181.87 | 3.71 |
| | 4/17/20 6:00 | 245.58 | 28.46 | 10.64 | 14.31 | 209.02 | 1182.02 | 3.71 |
| | 4/17/20 6:01 | 245.46 | 28.44 | 10.64 | 14.56 | 210.04 | 1182.40 | 3.71 |
| | 4/17/20 6:02 | 245.41 | 28.54 | 10.64 | 14.78 | 208.75 | 1182.67 | 3.71 |
| | 4/17/20 6:03 | 245.41 | 28.54 | 10.64 | 14.07 | 207.21 | 1182.32 | 3.71 |
| | 4/17/20 6:04 | 245.65 | 28.46 | 10.64 | 14.13 | 211.77 | 1182.35 | 3.71 |
| | 4/17/20 6:05 | 245.62 | 28.48 | 10.64 | 14.32 | 215.44 | 1181.98 | 3.71 |
| | 4/17/20 6:06 | 245.62 | 28.52 | 10.64 | 14.39 | 214.31 | 1182.70 | 3.71 |
| | 4/17/20 6:07 | 245.93 | 28.54 | 10.64 | 14.55 | 197.26 | 1182.34 | 3.71 |
| | 4/17/20 6:08 | 245.56 | 28.55 | 10.64 | 14.49 | 196.64 | 1181.85 | 3.71 |
| | 4/17/20 6:09 | 245.60 | 28.41 | 10.64 | 14.20 | 191.06 | 1182.64 | 3.71 |
| | 4/17/20 6:10 | 245.72 | 28.52 | 10.64 | 14.22 | 190.69 | 1182.35 | 3.71 |
| | 4/17/20 6:11 | 245.74 | 28.58 | 10.64 | 14.38 | 189.11 | 1182.50 | 3.71 |
| | 4/17/20 6:12 | 245.61 | 28.58 | 10.64 | 14.35 | 199.05 | 1182.48 | 3.71 |
| | 4/17/20 6:13 | 245.05 | 28.52 | 10.64 | 14.20 | 209.88 | 1182.71 | 3.71 |
| | 4/17/20 6:14 | 246.38 | 28.47 | 10.64 | 14.47 | 203.69 | 1183.67 | 3.71 |
| | 4/17/20 6:15 | 245.60 | 28.56 | 10.64 | 14.11 | 197.44 | 1181.96 | 3.71 |
| | 4/17/20 6:16 | 245.70 | 28.66 | 10.64 | 14.46 | 206.17 | 1183.05 | 3.71 |
| | 4/17/20 6:17 | 246.21 | 28.58 | 10.64 | 14.31 | 203.23 | 1182.07 | 3.71 |
| | 4/17/20 6:18 | 245.80 | 28.47 | 10.64 | 14.38 | 216.69 | 1182.45 | 3.71 |
| | 4/17/20 6:19 | 245.69 | 28.54 | 10.64 | 14.10 | 216.03 | 1182.64 | 3.71 |
| | 4/17/20 6:20 | 245.99 | 28.64 | 10.64 | 14.46 | 197.06 | 1182.75 | 3.71 |
| | 4/17/20 6:21 | 246.33 | 28.58 | 10.63 | 14.25 | 196.62 | 1183.16 | 3.71 |
| | 4/17/20 6:22 | 245.69 | 28.54 | 10.63 | 14.35 | 210.86 | 1182.63 | 3.71 |
| | 4/17/20 6:23 | 245.81 | 28.55 | 10.63 | 14.17 | 223.37 | 1182.13 | 3.71 |
| | 4/17/20 6:24 | 246.17 | 28.60 | 10.63 | 14.24 | 219.61 | 1183.34 | 3.71 |
| | 4/17/20 6:25 | 245.69 | 28.64 | 10.63 | 14.54 | 204.91 | 1183.13 | 3.71 |
| | 4/17/20 6:26 | 246.40 | 28.60 | 10.63 | 14.45 | 198.30 | 1183.00 | 3.71 |
| | 4/17/20 6:27 | 245.96 | 28.51 | 10.63 | 14.18 | 206.28 | 1182.98 | 3.71 |
| | 4/17/20 6:28 | 245.50 | 28.51 | 10.63 | 14.30 | 211.47 | 1182.28 | 3.71 |

| Description | | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/17 4:15 - 4/17 8:34) | | 244.92 | 28.45 | 10.63 | 14.25 | 193.21 | 1182.61 | 3.71 |
| COUNT = 260 | | | | | | | | |
| Signal Tagname | | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| | 4/17/20 6:29 | 246.08 | 28.67 | 10.63 | 14.41 | 214.22 | 1183.37 | 3.71 |
| | 4/17/20 6:30 | 246.06 | 28.59 | 10.63 | 14.20 | 224.57 | 1182.63 | 3.71 |
| | 4/17/20 6:31 | 246.37 | 28.43 | 10.63 | 14.30 | 229.82 | 1182.80 | 3.71 |
| | 4/17/20 6:32 | 245.69 | 28.65 | 10.63 | 14.45 | 225.07 | 1182.85 | 3.71 |
| | 4/17/20 6:33 | 246.35 | 28.60 | 10.63 | 14.35 | 223.84 | 1183.56 | 3.71 |
| | 4/17/20 6:34 | 246.13 | 28.71 | 10.63 | 14.45 | 222.97 | 1183.72 | 3.71 |
| | 4/17/20 6:35 | 246.03 | 28.55 | 10.63 | 14.13 | 226.89 | 1182.27 | 3.71 |
| | 4/17/20 6:36 | 245.80 | 28.51 | 10.63 | 14.14 | 224.27 | 1181.93 | 3.71 |
| | 4/17/20 6:37 | 246.33 | 28.58 | 10.63 | 14.27 | 211.55 | 1182.98 | 3.71 |
| | 4/17/20 6:38 | 246.41 | 28.69 | 10.63 | 14.39 | 193.03 | 1183.15 | 3.71 |
| | 4/17/20 6:39 | 245.84 | 28.63 | 10.63 | 14.44 | 219.34 | 1182.91 | 3.71 |
| | 4/17/20 6:40 | 246.48 | 28.57 | 10.63 | 14.19 | 197.14 | 1183.00 | 3.71 |
| | 4/17/20 6:41 | 245.93 | 28.59 | 10.63 | 14.10 | 203.50 | 1182.71 | 3.71 |
| | 4/17/20 6:42 | 245.78 | 28.66 | 10.63 | 14.61 | 210.49 | 1183.80 | 3.71 |
| | 4/17/20 6:43 | 245.95 | 28.57 | 10.63 | 14.41 | 197.23 | 1184.13 | 3.71 |
| | 4/17/20 6:44 | 246.07 | 28.55 | 10.63 | 14.03 | 210.22 | 1183.15 | 3.71 |
| | 4/17/20 6:45 | 245.44 | 28.52 | 10.63 | 14.28 | 197.52 | 1182.95 | 3.71 |
| | 4/17/20 6:46 | 245.64 | 28.57 | 10.63 | 14.18 | 198.33 | 1182.49 | 3.71 |
| | 4/17/20 6:47 | 245.45 | 28.51 | 10.63 | 14.28 | 209.09 | 1182.70 | 3.71 |
| | 4/17/20 6:48 | 245.42 | 28.47 | 10.63 | 14.27 | 189.61 | 1183.67 | 3.71 |
| | 4/17/20 6:49 | 244.90 | 28.48 | 10.63 | 14.24 | 191.74 | 1181.99 | 3.71 |
| | 4/17/20 6:50 | 245.67 | 28.54 | 10.63 | 14.50 | 197.04 | 1183.80 | 3.71 |
| | 4/17/20 6:51 | 245.17 | 28.57 | 10.63 | 14.09 | 201.42 | 1183.12 | 3.71 |
| | 4/17/20 6:52 | 245.42 | 28.51 | 10.63 | 14.40 | 206.04 | 1183.92 | 3.71 |
| | 4/17/20 6:53 | 245.38 | 28.43 | 10.63 | 14.17 | 196.81 | 1183.57 | 3.71 |
| | 4/17/20 6:54 | 245.00 | 28.56 | 10.63 | 14.40 | 183.87 | 1184.05 | 3.71 |
| | 4/17/20 6:55 | 245.45 | 28.52 | 10.63 | 14.32 | 196.58 | 1183.33 | 3.71 |
| | 4/17/20 6:56 | 244.85 | 28.56 | 10.63 | 14.41 | 205.60 | 1183.32 | 3.70 |
| | 4/17/20 6:57 | 245.03 | 28.44 | 10.63 | 14.18 | 191.78 | 1182.52 | 3.70 |
| | 4/17/20 6:58 | 244.85 | 28.44 | 10.63 | 14.27 | 185.59 | 1182.34 | 3.70 |
| | 4/17/20 6:59 | 244.75 | 28.55 | 10.63 | 14.43 | 189.22 | 1182.99 | 3.70 |
| | 4/17/20 7:00 | 245.23 | 28.57 | 10.63 | 14.29 | 204.76 | 1183.32 | 3.70 |
| | 4/17/20 7:01 | 245.11 | 28.51 | 10.63 | 14.37 | 191.42 | 1182.84 | 3.70 |
| | 4/17/20 7:02 | 245.36 | 28.44 | 10.63 | 14.41 | 178.14 | 1183.06 | 3.70 |
| | 4/17/20 7:03 | 245.24 | 28.55 | 10.63 | 14.22 | 193.66 | 1182.98 | 3.70 |
| | 4/17/20 7:04 | 245.20 | 28.59 | 10.62 | 14.14 | 201.99 | 1183.24 | 3.70 |
| | 4/17/20 7:05 | 245.03 | 28.48 | 10.62 | 14.10 | 202.09 | 1183.89 | 3.70 |
| | 4/17/20 7:06 | 245.00 | 28.44 | 10.62 | 14.12 | 199.31 | 1183.41 | 3.70 |
| | 4/17/20 7:07 | 244.97 | 28.54 | 10.62 | 14.13 | 183.91 | 1182.99 | 3.70 |
| | 4/17/20 7:08 | 244.79 | 28.58 | 10.62 | 14.01 | 179.01 | 1183.38 | 3.70 |
| | 4/17/20 7:09 | 244.86 | 28.46 | 10.62 | 14.09 | 173.81 | 1182.82 | 3.70 |
| | 4/17/20 7:10 | 244.49 | 28.39 | 10.62 | 14.10 | 184.82 | 1183.15 | 3.70 |
| | 4/17/20 7:11 | 244.25 | 28.46 | 10.62 | 14.00 | 185.23 | 1182.86 | 3.70 |
| | 4/17/20 7:12 | 244.64 | 28.53 | 10.62 | 14.21 | 185.73 | 1182.65 | 3.70 |
| | 4/17/20 7:13 | 244.72 | 28.51 | 10.62 | 14.11 | 192.23 | 1182.54 | 3.70 |
| | 4/17/20 7:14 | 244.68 | 28.37 | 10.62 | 13.95 | 192.91 | 1183.67 | 3.70 |
| | 4/17/20 7:15 | 244.38 | 28.42 | 10.62 | 14.02 | 193.79 | 1183.14 | 3.70 |
| | 4/17/20 7:16 | 244.77 | 28.49 | 10.62 | 14.04 | 193.60 | 1183.46 | 3.70 |
| | 4/17/20 7:17 | 245.07 | 28.49 | 10.62 | 14.36 | 191.05 | 1183.28 | 3.70 |
| | 4/17/20 7:18 | 244.72 | 28.37 | 10.62 | 14.04 | 185.52 | 1183.56 | 3.70 |
| | 4/17/20 7:19 | 244.47 | 28.41 | 10.62 | 14.41 | 184.12 | 1183.08 | 3.70 |
| | 4/17/20 7:20 | 244.74 | 28.45 | 10.62 | 14.44 | 175.03 | 1183.40 | 3.70 |
| | 4/17/20 7:21 | 244.76 | 28.49 | 10.62 | 14.42 | 178.04 | 1183.76 | 3.70 |
| | 4/17/20 7:22 | 244.87 | 28.42 | 10.62 | 14.31 | 190.05 | 1182.78 | 3.70 |
| | 4/17/20 7:23 | 244.36 | 28.33 | 10.62 | 14.25 | 179.57 | 1183.36 | 3.70 |
| | 4/17/20 7:24 | 244.60 | 28.43 | 10.62 | 14.07 | 183.04 | 1183.37 | 3.70 |
| | 4/17/20 7:25 | 244.85 | 28.42 | 10.62 | 14.30 | 175.60 | 1183.37 | 3.70 |
| | 4/17/20 7:26 | 244.26 | 28.38 | 10.62 | 13.97 | 174.44 | 1182.38 | 3.70 |
| | 4/17/20 7:27 | 243.98 | 28.39 | 10.62 | 14.40 | 187.69 | 1182.97 | 3.70 |
| | 4/17/20 7:28 | 244.78 | 28.39 | 10.62 | 14.23 | 185.28 | 1182.43 | 3.70 |
| | 4/17/20 7:29 | 244.70 | 28.46 | 10.62 | 14.15 | 173.12 | 1183.19 | 3.70 |
| | 4/17/20 7:30 | 244.58 | 28.48 | 10.62 | 13.92 | 185.85 | 1183.01 | 3.70 |
| | 4/17/20 7:31 | 244.47 | 28.39 | 10.62 | 14.09 | 176.22 | 1182.79 | 3.70 |
| | 4/17/20 7:32 | 244.40 | 28.43 | 10.62 | 14.09 | 185.07 | 1183.19 | 3.70 |
| | 4/17/20 7:33 | 244.42 | 28.43 | 10.62 | 14.08 | 175.55 | 1183.47 | 3.70 |
| | 4/17/20 7:34 | 244.14 | 28.51 | 10.62 | 14.02 | 192.19 | 1183.78 | 3.70 |
| | 4/17/20 7:35 | 244.37 | 28.41 | 10.62 | 14.30 | 180.06 | 1183.36 | 3.70 |

| Description | | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/17 4:15 - 4/17 8:34) | | 244.92 | 28.45 | 10.63 | 14.25 | 193.21 | 1182.61 | 3.71 |
| COUNT = 260 | | | | | | | | |
| Signal Tagname | | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| | 4/17/20 7:36 | 244.59 | 28.40 | 10.62 | 14.02 | 191.79 | 1183.54 | 3.70 |
| | 4/17/20 7:37 | 244.79 | 28.39 | 10.62 | 14.16 | 178.97 | 1182.45 | 3.70 |
| | 4/17/20 7:38 | 244.62 | 28.46 | 10.62 | 14.60 | 195.41 | 1184.00 | 3.70 |
| | 4/17/20 7:39 | 244.84 | 28.51 | 10.62 | 13.95 | 185.94 | 1183.56 | 3.70 |
| | 4/17/20 7:40 | 244.91 | 28.39 | 10.62 | 14.21 | 184.91 | 1183.58 | 3.70 |
| | 4/17/20 7:41 | 244.73 | 28.43 | 10.62 | 14.00 | 192.12 | 1183.77 | 3.70 |
| | 4/17/20 7:42 | 244.70 | 28.45 | 10.62 | 14.32 | 175.79 | 1183.78 | 3.70 |
| | 4/17/20 7:43 | 244.74 | 28.58 | 10.62 | 14.21 | 185.87 | 1184.09 | 3.70 |
| | 4/17/20 7:44 | 244.36 | 28.39 | 10.62 | 14.04 | 192.23 | 1183.22 | 3.70 |
| | 4/17/20 7:45 | 244.32 | 28.31 | 10.62 | 14.18 | 190.47 | 1183.34 | 3.70 |
| | 4/17/20 7:46 | 244.67 | 28.41 | 10.62 | 14.11 | 181.12 | 1183.34 | 3.70 |
| | 4/17/20 7:47 | 244.32 | 28.46 | 10.61 | 14.55 | 171.40 | 1184.40 | 3.70 |
| | 4/17/20 7:48 | 244.61 | 28.38 | 10.61 | 14.00 | 173.06 | 1183.33 | 3.70 |
| | 4/17/20 7:49 | 244.49 | 28.37 | 10.61 | 14.13 | 190.16 | 1183.70 | 3.70 |
| | 4/17/20 7:50 | 244.42 | 28.40 | 10.61 | 14.09 | 184.96 | 1183.26 | 3.70 |
| | 4/17/20 7:51 | 244.54 | 28.55 | 10.61 | 14.18 | 170.99 | 1184.04 | 3.70 |
| | 4/17/20 7:52 | 244.58 | 28.46 | 10.61 | 14.17 | 187.41 | 1184.18 | 3.70 |
| | 4/17/20 7:53 | 244.12 | 28.29 | 10.61 | 14.03 | 186.05 | 1183.45 | 3.70 |
| | 4/17/20 7:54 | 244.56 | 28.38 | 10.61 | 14.64 | 175.78 | 1184.51 | 3.70 |
| | 4/17/20 7:55 | 244.47 | 28.49 | 10.61 | 14.00 | 190.01 | 1184.16 | 3.70 |
| | 4/17/20 7:56 | 244.67 | 28.48 | 10.61 | 14.24 | 176.94 | 1184.74 | 3.70 |
| | 4/17/20 7:57 | 244.62 | 28.33 | 10.61 | 14.34 | 190.80 | 1184.24 | 3.70 |
| | 4/17/20 7:58 | 244.32 | 28.41 | 10.61 | 14.43 | 179.98 | 1183.91 | 3.70 |
| | 4/17/20 7:59 | 244.14 | 28.41 | 10.61 | 14.18 | 174.53 | 1183.79 | 3.70 |
| | 4/17/20 8:00 | 244.31 | 28.51 | 10.61 | 13.93 | 186.27 | 1183.60 | 3.70 |
| | 4/17/20 8:01 | 244.30 | 28.45 | 10.61 | 14.30 | 180.13 | 1183.49 | 3.70 |
| | 4/17/20 8:02 | 244.13 | 28.37 | 10.61 | 14.33 | 174.43 | 1183.91 | 3.70 |
| | 4/17/20 8:03 | 244.05 | 28.35 | 10.61 | 14.15 | 183.53 | 1183.47 | 3.70 |
| | 4/17/20 8:04 | 243.85 | 28.45 | 10.61 | 13.99 | 174.29 | 1183.85 | 3.70 |
| | 4/17/20 8:05 | 244.69 | 28.44 | 10.61 | 14.17 | 184.59 | 1183.02 | 3.70 |
| | 4/17/20 8:06 | 244.14 | 28.36 | 10.61 | 14.13 | 177.40 | 1183.65 | 3.70 |
| | 4/17/20 8:07 | 243.76 | 28.35 | 10.61 | 14.27 | 183.17 | 1183.39 | 3.70 |
| | 4/17/20 8:08 | 244.09 | 28.40 | 10.61 | 14.43 | 174.42 | 1183.86 | 3.70 |
| | 4/17/20 8:09 | 243.93 | 28.44 | 10.61 | 14.32 | 182.94 | 1183.42 | 3.70 |
| | 4/17/20 8:10 | 244.13 | 28.41 | 10.61 | 14.05 | 175.10 | 1183.18 | 3.70 |
| | 4/17/20 8:11 | 243.59 | 28.29 | 10.61 | 14.34 | 183.41 | 1184.06 | 3.70 |
| | 4/17/20 8:12 | 244.50 | 28.33 | 10.61 | 14.58 | 185.76 | 1184.07 | 3.70 |
| | 4/17/20 8:13 | 244.23 | 28.44 | 10.61 | 14.14 | 176.83 | 1183.22 | 3.70 |
| | 4/17/20 8:14 | 244.28 | 28.40 | 10.61 | 14.21 | 175.68 | 1184.04 | 3.70 |
| | 4/17/20 8:15 | 244.58 | 28.30 | 10.61 | 14.43 | 181.07 | 1183.80 | 3.70 |
| | 4/17/20 8:16 | 244.03 | 28.38 | 10.61 | 13.90 | 187.87 | 1182.92 | 3.70 |
| | 4/17/20 8:17 | 244.27 | 28.54 | 10.61 | 14.72 | 183.08 | 1184.34 | 3.70 |
| | 4/17/20 8:18 | 244.19 | 28.49 | 10.61 | 14.37 | 171.10 | 1183.55 | 3.70 |
| | 4/17/20 8:19 | 244.17 | 28.31 | 10.61 | 14.09 | 174.56 | 1182.78 | 3.70 |
| | 4/17/20 8:20 | 243.82 | 28.36 | 10.61 | 14.14 | 179.23 | 1183.29 | 3.70 |
| | 4/17/20 8:21 | 243.64 | 28.44 | 10.61 | 14.57 | 179.96 | 1183.54 | 3.70 |
| | 4/17/20 8:22 | 244.07 | 28.55 | 10.61 | 14.24 | 181.63 | 1183.20 | 3.70 |
| | 4/17/20 8:23 | 243.87 | 28.40 | 10.61 | 14.22 | 177.91 | 1183.22 | 3.70 |
| | 4/17/20 8:24 | 244.02 | 28.31 | 10.61 | 14.46 | 186.45 | 1184.70 | 3.70 |
| | 4/17/20 8:25 | 244.19 | 28.36 | 10.61 | 14.19 | 185.90 | 1183.22 | 3.70 |
| | 4/17/20 8:26 | 244.44 | 28.48 | 10.61 | 14.72 | 187.55 | 1184.87 | 3.70 |
| | 4/17/20 8:27 | 243.86 | 28.36 | 10.61 | 14.40 | 177.86 | 1183.73 | 3.70 |
| | 4/17/20 8:28 | 243.64 | 28.33 | 10.61 | 14.21 | 174.50 | 1182.89 | 3.70 |
| | 4/17/20 8:29 | 244.16 | 28.42 | 10.61 | 14.27 | 186.16 | 1182.70 | 3.70 |
| | 4/17/20 8:30 | 243.71 | 28.35 | 10.61 | 14.07 | 174.32 | 1183.63 | 3.70 |
| | 4/17/20 8:31 | 243.71 | 28.49 | 10.60 | 14.25 | 174.65 | 1183.20 | 3.70 |
| | 4/17/20 8:32 | 243.99 | 28.32 | 10.60 | 14.73 | 170.35 | 1183.55 | 3.70 |
| | 4/17/20 8:33 | 243.85 | 28.35 | 10.60 | 14.35 | 177.55 | 1182.83 | 3.70 |
| | 4/17/20 8:34 | 244.10 | 28.35 | 10.60 | 14.21 | 185.12 | 1184.08 | 3.70 |

| Description | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/17 9:35 - 4/17 14:03) | 241.38 | 28.20 | 10.56 | 14.26 | 162.37 | 1181.05 | 3.70 |
| COUNT = 269 | | | | | | | |
| Signal Tagname | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| 4/17/20 9:35 | 242.90 | 28.38 | 10.59 | 14.27 | 158.50 | 1182.61 | 3.70 |
| 4/17/20 9:36 | 242.91 | 28.42 | 10.59 | 14.10 | 167.35 | 1182.45 | 3.70 |
| 4/17/20 9:37 | 242.76 | 28.19 | 10.59 | 14.54 | 170.35 | 1183.24 | 3.70 |
| 4/17/20 9:38 | 242.75 | 28.31 | 10.59 | 14.36 | 176.29 | 1183.11 | 3.70 |
| 4/17/20 9:39 | 242.88 | 28.33 | 10.59 | 14.39 | 162.84 | 1182.82 | 3.70 |
| 4/17/20 9:40 | 242.55 | 28.42 | 10.59 | 14.14 | 175.74 | 1182.31 | 3.70 |
| 4/17/20 9:41 | 242.54 | 28.26 | 10.59 | 14.45 | 165.93 | 1182.55 | 3.70 |
| 4/17/20 9:42 | 242.68 | 28.28 | 10.59 | 14.25 | 172.97 | 1181.90 | 3.70 |
| 4/17/20 9:43 | 242.38 | 28.31 | 10.59 | 14.51 | 179.04 | 1183.03 | 3.70 |
| 4/17/20 9:44 | 243.11 | 28.41 | 10.59 | 14.55 | 175.98 | 1183.07 | 3.70 |
| 4/17/20 9:45 | 242.98 | 28.29 | 10.59 | 14.20 | 170.19 | 1183.18 | 3.70 |
| 4/17/20 9:46 | 242.75 | 28.24 | 10.59 | 14.47 | 163.29 | 1183.28 | 3.70 |
| 4/17/20 9:47 | 242.90 | 28.25 | 10.59 | 13.93 | 173.15 | 1183.10 | 3.70 |
| 4/17/20 9:48 | 243.12 | 28.41 | 10.59 | 14.30 | 166.15 | 1183.43 | 3.70 |
| 4/17/20 9:49 | 242.99 | 28.34 | 10.59 | 14.25 | 166.48 | 1182.64 | 3.70 |
| 4/17/20 9:50 | 242.62 | 28.19 | 10.59 | 14.57 | 165.97 | 1181.91 | 3.70 |
| 4/17/20 9:51 | 243.24 | 28.21 | 10.59 | 14.25 | 163.90 | 1183.17 | 3.70 |
| 4/17/20 9:52 | 242.73 | 28.40 | 10.59 | 14.40 | 175.97 | 1183.01 | 3.70 |
| 4/17/20 9:53 | 242.49 | 28.35 | 10.59 | 13.91 | 169.83 | 1182.18 | 3.70 |
| 4/17/20 9:54 | 243.08 | 28.23 | 10.59 | 14.15 | 173.35 | 1182.70 | 3.70 |
| 4/17/20 9:55 | 242.94 | 28.26 | 10.59 | 14.05 | 168.70 | 1183.01 | 3.70 |
| 4/17/20 9:56 | 242.46 | 28.32 | 10.59 | 14.10 | 166.34 | 1182.55 | 3.70 |
| 4/17/20 9:57 | 242.52 | 28.39 | 10.58 | 14.16 | 171.63 | 1183.69 | 3.70 |
| 4/17/20 9:58 | 242.96 | 28.30 | 10.58 | 14.23 | 163.18 | 1183.32 | 3.70 |
| 4/17/20 9:59 | 242.91 | 28.23 | 10.58 | 14.19 | 175.60 | 1183.04 | 3.70 |
| 4/17/20 10:00 | 242.41 | 28.26 | 10.58 | 14.26 | 168.31 | 1182.55 | 3.70 |
| 4/17/20 10:01 | 242.49 | 28.33 | 10.58 | 14.42 | 175.44 | 1183.06 | 3.70 |
| 4/17/20 10:02 | 242.66 | 28.32 | 10.58 | 14.34 | 179.06 | 1181.90 | 3.70 |
| 4/17/20 10:03 | 242.72 | 28.18 | 10.58 | 14.26 | 180.69 | 1183.31 | 3.70 |
| 4/17/20 10:04 | 242.40 | 28.29 | 10.58 | 14.30 | 179.85 | 1182.29 | 3.70 |
| 4/17/20 10:05 | 242.35 | 28.37 | 10.58 | 13.91 | 177.35 | 1181.80 | 3.70 |
| 4/17/20 10:06 | 242.56 | 28.36 | 10.58 | 14.23 | 178.98 | 1182.20 | 3.70 |
| 4/17/20 10:07 | 242.47 | 28.29 | 10.58 | 14.21 | 170.85 | 1182.41 | 3.70 |
| 4/17/20 10:08 | 242.77 | 28.24 | 10.58 | 14.58 | 176.20 | 1182.67 | 3.70 |
| 4/17/20 10:09 | 242.54 | 28.33 | 10.58 | 14.44 | 170.12 | 1182.57 | 3.70 |
| 4/17/20 10:10 | 242.24 | 28.30 | 10.58 | 14.14 | 164.62 | 1182.93 | 3.70 |
| 4/17/20 10:11 | 242.42 | 28.24 | 10.58 | 14.06 | 157.48 | 1183.45 | 3.70 |
| 4/17/20 10:12 | 242.39 | 28.15 | 10.58 | 14.08 | 163.17 | 1182.59 | 3.70 |
| 4/17/20 10:13 | 243.18 | 28.28 | 10.58 | 14.39 | 169.46 | 1183.53 | 3.70 |
| 4/17/20 10:14 | 242.53 | 28.36 | 10.58 | 14.13 | 175.97 | 1182.37 | 3.70 |
| 4/17/20 10:15 | 242.33 | 28.41 | 10.58 | 14.38 | 167.43 | 1182.63 | 3.70 |
| 4/17/20 10:16 | 242.78 | 28.28 | 10.58 | 14.51 | 164.23 | 1182.72 | 3.70 |
| 4/17/20 10:17 | 242.66 | 28.25 | 10.58 | 14.08 | 169.12 | 1181.88 | 3.70 |
| 4/17/20 10:18 | 242.30 | 28.38 | 10.58 | 14.34 | 173.21 | 1182.86 | 3.70 |
| 4/17/20 10:19 | 242.74 | 28.36 | 10.58 | 13.98 | 167.31 | 1182.88 | 3.70 |
| 4/17/20 10:20 | 242.44 | 28.24 | 10.58 | 14.40 | 171.25 | 1181.31 | 3.70 |
| 4/17/20 10:21 | 242.68 | 28.23 | 10.58 | 14.08 | 164.29 | 1182.72 | 3.70 |
| 4/17/20 10:22 | 242.53 | 28.35 | 10.58 | 14.10 | 169.12 | 1182.73 | 3.70 |
| 4/17/20 10:23 | 242.55 | 28.42 | 10.58 | 14.10 | 174.86 | 1181.88 | 3.70 |
| 4/17/20 10:24 | 242.80 | 28.25 | 10.58 | 14.20 | 162.33 | 1182.03 | 3.70 |
| 4/17/20 10:25 | 242.86 | 28.22 | 10.58 | 13.95 | 167.14 | 1181.98 | 3.70 |
| 4/17/20 10:26 | 242.49 | 28.29 | 10.58 | 14.09 | 179.04 | 1182.37 | 3.70 |
| 4/17/20 10:27 | 242.78 | 28.35 | 10.58 | 14.36 | 171.22 | 1182.66 | 3.70 |
| 4/17/20 10:28 | 242.86 | 28.36 | 10.58 | 14.45 | 165.19 | 1182.28 | 3.70 |
| 4/17/20 10:29 | 243.39 | 28.24 | 10.58 | 14.28 | 171.50 | 1183.25 | 3.70 |
| 4/17/20 10:30 | 242.92 | 28.27 | 10.58 | 14.28 | 177.70 | 1183.33 | 3.70 |
| 4/17/20 10:31 | 242.95 | 28.32 | 10.58 | 14.14 | 171.53 | 1182.62 | 3.70 |
| 4/17/20 10:32 | 242.60 | 28.36 | 10.58 | 14.16 | 165.15 | 1182.39 | 3.70 |
| 4/17/20 10:33 | 242.63 | 28.21 | 10.58 | 14.08 | 169.12 | 1182.14 | 3.70 |
| 4/17/20 10:34 | 242.29 | 28.23 | 10.58 | 14.45 | 173.51 | 1182.52 | 3.70 |
| 4/17/20 10:35 | 242.12 | 28.31 | 10.58 | 14.19 | 172.40 | 1182.76 | 3.70 |
| 4/17/20 10:36 | 242.46 | 28.34 | 10.58 | 14.32 | 171.12 | 1182.90 | 3.70 |
| 4/17/20 10:37 | 242.33 | 28.23 | 10.58 | 14.35 | 163.08 | 1182.36 | 3.70 |
| 4/17/20 10:38 | 242.51 | 28.17 | 10.58 | 14.37 | 163.37 | 1183.25 | 3.70 |
| 4/17/20 10:39 | 242.05 | 28.32 | 10.58 | 14.15 | 163.95 | 1181.96 | 3.70 |
| 4/17/20 10:40 | 242.81 | 28.38 | 10.57 | 14.18 | 168.61 | 1181.63 | 3.70 |
| 4/17/20 10:41 | 242.78 | 28.36 | 10.57 | 14.24 | 162.23 | 1182.50 | 3.70 |

| Description | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/17 9:35 - 4/17 14:03) | 241.38 | 28.20 | 10.56 | 14.26 | 162.37 | 1181.05 | 3.70 |
| COUNT = 269 | | | | | | | |

| Signal Tagname | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
|---|---|---|---|---|---|---|---|
| 4/17/20 10:42 | 242.70 | 28.22 | 10.57 | 14.47 | 166.83 | 1182.40 | 3.70 |
| 4/17/20 10:43 | 242.67 | 28.13 | 10.57 | 14.41 | 171.73 | 1182.54 | 3.70 |
| 4/17/20 10:44 | 243.43 | 28.36 | 10.57 | 14.45 | 178.40 | 1183.13 | 3.70 |
| 4/17/20 10:45 | 242.76 | 28.37 | 10.57 | 14.14 | 165.99 | 1182.34 | 3.70 |
| 4/17/20 10:46 | 242.51 | 28.19 | 10.57 | 14.10 | 178.01 | 1181.56 | 3.70 |
| 4/17/20 10:47 | 242.29 | 28.24 | 10.57 | 14.15 | 173.78 | 1183.00 | 3.70 |
| 4/17/20 10:48 | 242.15 | 28.32 | 10.57 | 14.45 | 169.27 | 1183.14 | 3.70 |
| 4/17/20 10:49 | 242.40 | 28.38 | 10.57 | 14.09 | 177.20 | 1182.63 | 3.70 |
| 4/17/20 10:50 | 242.10 | 28.22 | 10.57 | 14.03 | 161.03 | 1181.80 | 3.70 |
| 4/17/20 10:51 | 242.03 | 28.15 | 10.57 | 13.99 | 160.48 | 1182.28 | 3.70 |
| 4/17/20 10:52 | 242.25 | 28.23 | 10.57 | 13.89 | 167.25 | 1182.21 | 3.70 |
| 4/17/20 10:53 | 242.32 | 28.38 | 10.57 | 14.36 | 169.02 | 1183.07 | 3.70 |
| 4/17/20 10:54 | 242.46 | 28.25 | 10.57 | 14.13 | 165.10 | 1182.81 | 3.70 |
| 4/17/20 10:55 | 242.56 | 28.14 | 10.57 | 14.03 | 161.00 | 1182.48 | 3.70 |
| 4/17/20 10:56 | 243.01 | 28.28 | 10.57 | 14.10 | 172.76 | 1182.31 | 3.70 |
| 4/17/20 10:57 | 242.47 | 28.35 | 10.57 | 14.46 | 164.35 | 1182.33 | 3.70 |
| 4/17/20 10:58 | 242.65 | 28.34 | 10.57 | 14.09 | 171.87 | 1182.38 | 3.70 |
| 4/17/20 10:59 | 242.71 | 28.25 | 10.57 | 14.16 | 176.19 | 1182.29 | 3.70 |
| 4/17/20 11:00 | 242.61 | 28.23 | 10.57 | 14.20 | 177.13 | 1181.81 | 3.70 |
| 4/17/20 11:01 | 243.07 | 28.32 | 10.57 | 14.17 | 172.33 | 1182.79 | 3.70 |
| 4/17/20 11:02 | 242.64 | 28.41 | 10.57 | 14.20 | 165.11 | 1183.37 | 3.70 |
| 4/17/20 11:03 | 242.27 | 28.26 | 10.57 | 14.15 | 177.69 | 1182.31 | 3.70 |
| 4/17/20 11:04 | 242.31 | 28.19 | 10.57 | 14.17 | 168.64 | 1182.77 | 3.70 |
| 4/17/20 11:05 | 243.23 | 28.29 | 10.57 | 14.66 | 166.34 | 1183.97 | 3.70 |
| 4/17/20 11:06 | 243.35 | 28.53 | 10.57 | 14.46 | 161.07 | 1183.65 | 3.70 |
| 4/17/20 11:07 | 242.49 | 28.29 | 10.57 | 14.38 | 174.44 | 1182.15 | 3.70 |
| 4/17/20 11:08 | 243.23 | 28.25 | 10.57 | 14.13 | 164.82 | 1182.99 | 3.70 |
| 4/17/20 11:09 | 242.54 | 28.30 | 10.57 | 14.31 | 165.21 | 1182.54 | 3.70 |
| 4/17/20 11:10 | 243.19 | 28.31 | 10.57 | 14.28 | 165.52 | 1182.75 | 3.70 |
| 4/17/20 11:11 | 242.53 | 28.42 | 10.57 | 14.47 | 164.84 | 1184.25 | 3.70 |
| 4/17/20 11:12 | 242.47 | 28.27 | 10.57 | 14.49 | 169.16 | 1183.32 | 3.70 |
| 4/17/20 11:13 | 242.84 | 28.25 | 10.57 | 14.17 | 166.36 | 1182.40 | 3.70 |
| 4/17/20 11:14 | 242.52 | 28.26 | 10.57 | 14.44 | 169.86 | 1183.56 | 3.70 |
| 4/17/20 11:15 | 242.46 | 28.41 | 10.57 | 14.23 | 166.21 | 1183.28 | 3.70 |
| 4/17/20 11:16 | 242.59 | 28.30 | 10.57 | 14.42 | 172.12 | 1182.35 | 3.70 |
| 4/17/20 11:17 | 242.34 | 28.25 | 10.57 | 14.19 | 161.41 | 1182.70 | 3.70 |
| 4/17/20 11:18 | 242.63 | 28.21 | 10.57 | 14.31 | 174.71 | 1182.96 | 3.70 |
| 4/17/20 11:19 | 242.13 | 28.25 | 10.57 | 14.23 | 159.83 | 1182.47 | 3.70 |
| 4/17/20 11:20 | 242.03 | 28.32 | 10.57 | 14.39 | 160.37 | 1181.98 | 3.70 |
| 4/17/20 11:21 | 241.78 | 28.26 | 10.57 | 14.31 | 171.24 | 1182.28 | 3.70 |
| 4/17/20 11:22 | 242.07 | 28.22 | 10.57 | 14.42 | 158.33 | 1182.51 | 3.70 |
| 4/17/20 11:23 | 241.96 | 28.27 | 10.57 | 14.00 | 169.58 | 1182.03 | 3.70 |
| 4/17/20 11:24 | 241.59 | 28.36 | 10.56 | 14.38 | 194.63 | 1181.88 | 3.70 |
| 4/17/20 11:25 | 242.05 | 28.30 | 10.56 | 14.37 | 199.57 | 1182.61 | 3.70 |
| 4/17/20 11:26 | 241.67 | 28.23 | 10.56 | 14.34 | 201.23 | 1181.95 | 3.70 |
| 4/17/20 11:27 | 242.01 | 28.26 | 10.56 | 14.10 | 193.18 | 1181.75 | 3.70 |
| 4/17/20 11:28 | 241.73 | 28.28 | 10.56 | 14.24 | 172.25 | 1182.28 | 3.70 |
| 4/17/20 11:29 | 242.13 | 28.27 | 10.56 | 14.01 | 179.83 | 1183.18 | 3.70 |
| 4/17/20 11:30 | 241.86 | 28.26 | 10.56 | 13.97 | 162.87 | 1181.88 | 3.70 |
| 4/17/20 11:31 | 242.20 | 28.17 | 10.56 | 14.48 | 172.40 | 1183.53 | 3.70 |
| 4/17/20 11:32 | 241.66 | 28.21 | 10.56 | 14.21 | 157.89 | 1182.11 | 3.70 |
| 4/17/20 11:33 | 242.15 | 28.31 | 10.56 | 14.38 | 171.82 | 1181.38 | 3.70 |
| 4/17/20 11:34 | 241.90 | 28.25 | 10.56 | 14.13 | 160.94 | 1181.66 | 3.70 |
| 4/17/20 11:35 | 242.30 | 28.21 | 10.56 | 14.26 | 166.35 | 1181.32 | 3.70 |
| 4/17/20 11:36 | 242.45 | 28.20 | 10.56 | 14.32 | 167.06 | 1182.16 | 3.70 |
| 4/17/20 11:37 | 242.02 | 28.26 | 10.56 | 14.34 | 160.88 | 1181.65 | 3.70 |
| 4/17/20 11:38 | 242.18 | 28.30 | 10.56 | 14.17 | 162.68 | 1182.74 | 3.70 |
| 4/17/20 11:39 | 241.78 | 28.23 | 10.56 | 14.29 | 171.06 | 1182.75 | 3.70 |
| 4/17/20 11:40 | 241.63 | 28.16 | 10.56 | 14.50 | 160.81 | 1182.36 | 3.70 |
| 4/17/20 11:41 | 241.56 | 28.16 | 10.56 | 14.19 | 166.38 | 1180.56 | 3.70 |
| 4/17/20 11:42 | 241.68 | 28.33 | 10.56 | 14.10 | 155.42 | 1181.35 | 3.70 |
| 4/17/20 11:43 | 241.93 | 28.21 | 10.56 | 13.99 | 168.70 | 1182.34 | 3.70 |
| 4/17/20 11:44 | 241.62 | 28.11 | 10.56 | 14.19 | 155.41 | 1181.69 | 3.70 |
| 4/17/20 11:45 | 242.02 | 28.24 | 10.56 | 14.56 | 163.88 | 1182.36 | 3.70 |
| 4/17/20 11:46 | 242.07 | 28.21 | 10.56 | 14.50 | 158.50 | 1181.36 | 3.70 |
| 4/17/20 11:47 | 241.23 | 28.29 | 10.56 | 14.02 | 155.97 | 1180.67 | 3.70 |
| 4/17/20 11:48 | 241.74 | 28.16 | 10.56 | 14.23 | 157.41 | 1182.07 | 3.70 |

| Description | | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/17 9:35 - 4/17 14:03) | | 241.38 | 28.20 | 10.56 | 14.26 | 162.37 | 1181.05 | 3.70 |
| COUNT = 269 | | | | | | | | |
| Signal Tagname | | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| | 4/17/20 11:49 | 241.46 | 28.19 | 10.56 | 14.45 | 161.43 | 1181.44 | 3.70 |
| | 4/17/20 11:50 | 241.54 | 28.28 | 10.56 | 13.92 | 169.47 | 1181.17 | 3.70 |
| | 4/17/20 11:51 | 241.35 | 28.24 | 10.56 | 14.30 | 154.69 | 1181.38 | 3.70 |
| | 4/17/20 11:52 | 241.30 | 28.19 | 10.56 | 14.24 | 160.67 | 1181.23 | 3.70 |
| | 4/17/20 11:53 | 241.67 | 28.21 | 10.56 | 14.10 | 162.86 | 1181.36 | 3.70 |
| | 4/17/20 11:54 | 241.59 | 28.19 | 10.56 | 14.50 | 157.91 | 1181.66 | 3.70 |
| | 4/17/20 11:55 | 241.79 | 28.31 | 10.56 | 14.29 | 166.05 | 1182.02 | 3.70 |
| | 4/17/20 11:56 | 241.46 | 28.22 | 10.56 | 13.98 | 153.95 | 1180.91 | 3.70 |
| | 4/17/20 11:57 | 241.52 | 28.16 | 10.56 | 14.44 | 167.57 | 1181.98 | 3.70 |
| | 4/17/20 11:58 | 241.27 | 28.12 | 10.56 | 14.65 | 167.14 | 1182.26 | 3.70 |
| | 4/17/20 11:59 | 241.14 | 28.26 | 10.56 | 14.32 | 156.36 | 1180.38 | 3.70 |
| | 4/17/20 12:00 | 241.59 | 28.28 | 10.56 | 14.23 | 166.83 | 1180.96 | 3.70 |
| | 4/17/20 12:01 | 241.00 | 28.17 | 10.56 | 14.11 | 154.69 | 1180.78 | 3.70 |
| | 4/17/20 12:02 | 241.32 | 28.13 | 10.56 | 14.31 | 166.92 | 1180.93 | 3.70 |
| | 4/17/20 12:03 | 241.27 | 28.21 | 10.56 | 14.54 | 161.16 | 1181.04 | 3.70 |
| | 4/17/20 12:04 | 241.49 | 28.25 | 10.56 | 14.11 | 155.46 | 1181.12 | 3.70 |
| | 4/17/20 12:05 | 241.63 | 28.29 | 10.56 | 14.48 | 157.62 | 1181.83 | 3.70 |
| | 4/17/20 12:06 | 242.13 | 28.18 | 10.56 | 14.22 | 156.55 | 1181.44 | 3.70 |
| | 4/17/20 12:07 | 242.05 | 28.21 | 10.56 | 14.29 | 162.48 | 1181.21 | 3.70 |
| | 4/17/20 12:08 | 241.36 | 28.29 | 10.56 | 14.11 | 164.83 | 1181.77 | 3.70 |
| | 4/17/20 12:09 | 241.33 | 28.27 | 10.56 | 14.36 | 168.74 | 1180.75 | 3.70 |
| | 4/17/20 12:10 | 241.12 | 28.15 | 10.56 | 14.54 | 159.53 | 1181.59 | 3.70 |
| | 4/17/20 12:11 | 241.18 | 28.17 | 10.56 | 14.38 | 164.87 | 1182.25 | 3.70 |
| | 4/17/20 12:12 | 241.52 | 28.20 | 10.56 | 14.13 | 159.32 | 1182.13 | 3.70 |
| | 4/17/20 12:13 | 241.35 | 28.29 | 10.56 | 14.15 | 153.46 | 1180.75 | 3.70 |
| | 4/17/20 12:14 | 241.80 | 28.24 | 10.56 | 14.32 | 155.20 | 1180.56 | 3.70 |
| | 4/17/20 12:15 | 241.30 | 28.17 | 10.56 | 13.92 | 160.77 | 1180.71 | 3.70 |
| | 4/17/20 12:16 | 241.17 | 28.19 | 10.56 | 14.56 | 165.49 | 1182.10 | 3.70 |
| | 4/17/20 12:17 | 241.68 | 28.24 | 10.56 | 14.12 | 165.76 | 1181.53 | 3.70 |
| | 4/17/20 12:18 | 241.70 | 28.24 | 10.56 | 13.91 | 157.41 | 1181.10 | 3.70 |
| | 4/17/20 12:19 | 240.76 | 28.14 | 10.56 | 13.90 | 157.09 | 1180.87 | 3.70 |
| | 4/17/20 12:20 | 240.92 | 28.18 | 10.56 | 14.05 | 156.97 | 1180.66 | 3.70 |
| | 4/17/20 12:21 | 241.01 | 28.20 | 10.56 | 14.17 | 164.55 | 1180.81 | 3.70 |
| | 4/17/20 12:22 | 240.68 | 28.17 | 10.56 | 14.36 | 150.94 | 1180.55 | 3.70 |
| | 4/17/20 12:23 | 240.81 | 28.13 | 10.56 | 14.22 | 160.86 | 1180.50 | 3.70 |
| | 4/17/20 12:24 | 240.46 | 28.11 | 10.56 | 14.42 | 148.74 | 1179.89 | 3.70 |
| | 4/17/20 12:25 | 240.94 | 28.23 | 10.56 | 14.30 | 158.05 | 1180.96 | 3.70 |
| | 4/17/20 12:26 | 240.74 | 28.18 | 10.56 | 14.22 | 154.27 | 1180.24 | 3.70 |
| | 4/17/20 12:27 | 240.69 | 28.18 | 10.55 | 14.10 | 162.85 | 1179.62 | 3.70 |
| | 4/17/20 12:28 | 240.51 | 28.12 | 10.55 | 14.21 | 150.09 | 1180.02 | 3.70 |
| | 4/17/20 12:29 | 240.42 | 28.09 | 10.55 | 14.62 | 152.80 | 1180.89 | 3.70 |
| | 4/17/20 12:30 | 240.77 | 28.19 | 10.55 | 14.09 | 161.74 | 1180.67 | 3.70 |
| | 4/17/20 12:31 | 240.54 | 28.22 | 10.55 | 14.27 | 148.48 | 1180.58 | 3.70 |
| | 4/17/20 12:32 | 240.49 | 28.07 | 10.55 | 14.60 | 159.37 | 1180.76 | 3.70 |
| | 4/17/20 12:33 | 240.80 | 28.12 | 10.55 | 14.31 | 158.19 | 1181.20 | 3.70 |
| | 4/17/20 12:34 | 240.66 | 28.22 | 10.55 | 14.21 | 160.51 | 1179.89 | 3.70 |
| | 4/17/20 12:35 | 240.81 | 28.24 | 10.55 | 14.08 | 148.43 | 1180.02 | 3.70 |
| | 4/17/20 12:36 | 240.48 | 28.14 | 10.55 | 14.12 | 160.27 | 1180.17 | 3.70 |
| | 4/17/20 12:37 | 240.42 | 28.11 | 10.55 | 14.40 | 162.38 | 1180.71 | 3.70 |
| | 4/17/20 12:38 | 240.47 | 28.07 | 10.55 | 14.24 | 158.33 | 1180.17 | 3.70 |
| | 4/17/20 12:39 | 240.61 | 28.16 | 10.55 | 14.02 | 150.71 | 1179.57 | 3.70 |
| | 4/17/20 12:40 | 240.39 | 28.21 | 10.55 | 14.24 | 150.94 | 1179.62 | 3.70 |
| | 4/17/20 12:41 | 240.75 | 28.09 | 10.55 | 14.04 | 156.87 | 1179.41 | 3.70 |
| | 4/17/20 12:42 | 240.89 | 28.10 | 10.55 | 14.03 | 153.78 | 1179.88 | 3.70 |
| | 4/17/20 12:43 | 241.20 | 28.18 | 10.55 | 14.14 | 154.50 | 1181.54 | 3.70 |
| | 4/17/20 12:44 | 240.97 | 28.22 | 10.55 | 14.15 | 151.27 | 1179.95 | 3.70 |
| | 4/17/20 12:45 | 240.60 | 28.06 | 10.55 | 14.88 | 157.20 | 1180.53 | 3.70 |
| | 4/17/20 12:46 | 240.43 | 28.10 | 10.55 | 14.17 | 163.46 | 1179.49 | 3.70 |
| | 4/17/20 12:47 | 241.07 | 28.11 | 10.55 | 14.21 | 162.67 | 1179.93 | 3.70 |
| | 4/17/20 12:48 | 240.70 | 28.14 | 10.55 | 14.28 | 159.54 | 1179.52 | 3.70 |
| | 4/17/20 12:49 | 240.20 | 28.21 | 10.55 | 14.44 | 156.93 | 1179.79 | 3.70 |
| | 4/17/20 12:50 | 240.09 | 28.07 | 10.55 | 14.50 | 152.66 | 1179.36 | 3.70 |
| | 4/17/20 12:51 | 239.83 | 28.02 | 10.55 | 14.00 | 150.37 | 1180.03 | 3.70 |
| | 4/17/20 12:52 | 239.93 | 28.13 | 10.55 | 14.12 | 150.92 | 1179.19 | 3.70 |
| | 4/17/20 12:53 | 240.12 | 28.10 | 10.55 | 14.02 | 146.79 | 1179.66 | 3.70 |
| | 4/17/20 12:54 | 239.48 | 27.99 | 10.55 | 14.49 | 159.18 | 1178.96 | 3.70 |
| | 4/17/20 12:55 | 240.08 | 28.03 | 10.55 | 14.09 | 147.23 | 1179.16 | 3.70 |

| Description | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/17 9:35 - 4/17 14:03) | 241.38 | 28.20 | 10.56 | 14.26 | 162.37 | 1181.05 | 3.70 |
| COUNT = 269 | | | | | | | |
| Signal Tagname | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| 4/17/20 12:56 | 240.20 | 28.09 | 10.55 | 14.16 | 156.36 | 1178.87 | 3.70 |
| 4/17/20 12:57 | 240.29 | 28.15 | 10.55 | 14.56 | 162.13 | 1180.20 | 3.70 |
| 4/17/20 12:58 | 240.41 | 28.07 | 10.55 | 14.39 | 160.80 | 1179.49 | 3.70 |
| 4/17/20 12:59 | 240.88 | 28.09 | 10.55 | 14.44 | 161.91 | 1179.95 | 3.70 |
| 4/17/20 13:00 | 240.49 | 28.12 | 10.55 | 14.31 | 161.66 | 1179.14 | 3.70 |
| 4/17/20 13:01 | 240.02 | 28.12 | 10.55 | 14.36 | 152.45 | 1178.47 | 3.70 |
| 4/17/20 13:02 | 240.07 | 28.15 | 10.55 | 14.66 | 154.29 | 1180.40 | 3.70 |
| 4/17/20 13:03 | 239.77 | 28.08 | 10.55 | 14.22 | 152.60 | 1178.95 | 3.70 |
| 4/17/20 13:04 | 239.70 | 28.07 | 10.55 | 14.17 | 149.48 | 1178.77 | 3.70 |
| 4/17/20 13:05 | 239.67 | 28.13 | 10.55 | 14.36 | 161.21 | 1179.15 | 3.70 |
| 4/17/20 13:06 | 240.14 | 28.13 | 10.55 | 14.30 | 160.85 | 1178.59 | 3.70 |
| 4/17/20 13:07 | 239.60 | 28.06 | 10.55 | 14.36 | 149.52 | 1178.85 | 3.70 |
| 4/17/20 13:08 | 239.99 | 28.03 | 10.55 | 14.09 | 148.55 | 1179.05 | 3.70 |
| 4/17/20 13:09 | 239.56 | 28.05 | 10.55 | 14.26 | 157.84 | 1178.89 | 3.70 |
| 4/17/20 13:10 | 239.61 | 28.08 | 10.55 | 14.32 | 147.76 | 1178.63 | 3.70 |
| 4/17/20 13:11 | 239.40 | 28.05 | 10.55 | 14.40 | 154.32 | 1178.99 | 3.70 |
| 4/17/20 13:12 | 239.14 | 27.99 | 10.55 | 14.28 | 154.28 | 1178.65 | 3.70 |
| 4/17/20 13:13 | 239.32 | 27.98 | 10.55 | 14.49 | 147.78 | 1178.75 | 3.70 |
| 4/17/20 13:14 | 239.48 | 28.07 | 10.55 | 14.05 | 150.73 | 1179.15 | 3.70 |
| 4/17/20 13:15 | 239.57 | 28.07 | 10.55 | 14.55 | 146.79 | 1179.09 | 3.70 |
| 4/17/20 13:16 | 239.44 | 27.97 | 10.55 | 14.12 | 156.94 | 1179.34 | 3.70 |
| 4/17/20 13:17 | 239.44 | 28.01 | 10.55 | 14.15 | 159.52 | 1178.54 | 3.70 |
| 4/17/20 13:18 | 239.58 | 28.08 | 10.55 | 14.05 | 154.62 | 1178.44 | 3.70 |
| 4/17/20 13:19 | 239.73 | 28.10 | 10.55 | 14.51 | 155.40 | 1178.79 | 3.70 |
| 4/17/20 13:20 | 239.09 | 28.07 | 10.55 | 14.33 | 158.05 | 1178.20 | 3.70 |
| 4/17/20 13:21 | 239.96 | 28.01 | 10.55 | 14.24 | 155.05 | 1179.47 | 3.70 |
| 4/17/20 13:22 | 240.20 | 28.09 | 10.55 | 14.47 | 157.64 | 1179.64 | 3.70 |
| 4/17/20 13:23 | 240.04 | 28.09 | 10.55 | 14.26 | 155.21 | 1178.28 | 3.70 |
| 4/17/20 13:24 | 239.34 | 28.17 | 10.55 | 14.52 | 149.72 | 1178.39 | 3.70 |
| 4/17/20 13:25 | 239.67 | 28.06 | 10.55 | 14.62 | 153.99 | 1179.49 | 3.70 |
| 4/17/20 13:26 | 239.48 | 27.99 | 10.55 | 14.33 | 160.22 | 1178.71 | 3.70 |
| 4/17/20 13:27 | 239.53 | 28.06 | 10.55 | 14.26 | 158.11 | 1179.40 | 3.70 |
| 4/17/20 13:28 | 239.56 | 28.09 | 10.55 | 14.59 | 147.96 | 1179.27 | 3.70 |
| 4/17/20 13:29 | 239.40 | 28.04 | 10.55 | 14.47 | 147.14 | 1179.38 | 3.70 |
| 4/17/20 13:30 | 239.32 | 27.97 | 10.55 | 14.08 | 149.42 | 1178.03 | 3.70 |
| 4/17/20 13:31 | 239.79 | 27.95 | 10.55 | 14.16 | 145.22 | 1178.37 | 3.70 |
| 4/17/20 13:32 | 240.22 | 28.15 | 10.55 | 14.36 | 150.47 | 1178.97 | 3.70 |
| 4/17/20 13:33 | 239.94 | 28.12 | 10.55 | 14.34 | 149.92 | 1177.64 | 3.70 |
| 4/17/20 13:34 | 239.78 | 27.99 | 10.55 | 14.18 | 154.37 | 1178.88 | 3.70 |
| 4/17/20 13:35 | 239.04 | 28.02 | 10.55 | 14.26 | 158.43 | 1177.29 | 3.70 |
| 4/17/20 13:36 | 239.13 | 27.98 | 10.55 | 14.04 | 151.17 | 1177.84 | 3.70 |
| 4/17/20 13:37 | 239.61 | 28.14 | 10.55 | 14.13 | 148.41 | 1178.28 | 3.70 |
| 4/17/20 13:38 | 239.58 | 27.97 | 10.55 | 14.24 | 146.92 | 1178.84 | 3.70 |
| 4/17/20 13:39 | 239.42 | 27.95 | 10.55 | 14.32 | 145.60 | 1178.14 | 3.70 |
| 4/17/20 13:40 | 239.23 | 28.01 | 10.55 | 14.38 | 150.58 | 1177.69 | 3.70 |
| 4/17/20 13:41 | 239.26 | 28.08 | 10.55 | 13.99 | 146.16 | 1178.31 | 3.70 |
| 4/17/20 13:42 | 239.87 | 28.02 | 10.55 | 14.18 | 151.81 | 1178.23 | 3.70 |
| 4/17/20 13:43 | 239.53 | 27.95 | 10.55 | 14.10 | 155.65 | 1178.32 | 3.70 |
| 4/17/20 13:44 | 239.36 | 27.99 | 10.55 | 14.18 | 157.02 | 1178.57 | 3.70 |
| 4/17/20 13:45 | 239.24 | 28.01 | 10.55 | 14.50 | 152.61 | 1177.72 | 3.70 |
| 4/17/20 13:46 | 238.90 | 28.04 | 10.55 | 14.12 | 155.78 | 1177.78 | 3.70 |
| 4/17/20 13:47 | 239.38 | 28.00 | 10.55 | 14.34 | 155.25 | 1177.94 | 3.70 |
| 4/17/20 13:48 | 239.42 | 28.01 | 10.55 | 14.07 | 150.37 | 1178.44 | 3.70 |
| 4/17/20 13:49 | 239.67 | 28.04 | 10.55 | 14.31 | 148.74 | 1178.31 | 3.70 |
| 4/17/20 13:50 | 239.39 | 28.13 | 10.55 | 14.02 | 150.24 | 1177.29 | 3.70 |
| 4/17/20 13:51 | 239.28 | 28.05 | 10.55 | 14.48 | 150.77 | 1178.03 | 3.70 |
| 4/17/20 13:52 | 239.39 | 27.96 | 10.55 | 14.15 | 147.29 | 1178.30 | 3.70 |
| 4/17/20 13:53 | 239.33 | 28.07 | 10.55 | 14.11 | 150.91 | 1177.60 | 3.70 |
| 4/17/20 13:54 | 239.05 | 28.08 | 10.55 | 14.11 | 149.93 | 1176.95 | 3.70 |
| 4/17/20 13:55 | 239.41 | 28.11 | 10.55 | 14.38 | 147.12 | 1178.20 | 3.70 |
| 4/17/20 13:56 | 239.57 | 27.99 | 10.55 | 14.17 | 146.31 | 1178.18 | 3.70 |
| 4/17/20 13:57 | 239.64 | 27.96 | 10.55 | 14.19 | 149.99 | 1178.17 | 3.70 |
| 4/17/20 13:58 | 239.65 | 28.05 | 10.55 | 14.31 | 153.93 | 1177.31 | 3.70 |
| 4/17/20 13:59 | 239.09 | 28.15 | 10.55 | 14.24 | 147.41 | 1177.13 | 3.70 |
| 4/17/20 14:00 | 239.57 | 28.04 | 10.55 | 14.40 | 148.84 | 1177.42 | 3.70 |
| 4/17/20 14:01 | 239.53 | 28.01 | 10.55 | 14.54 | 154.08 | 1177.40 | 3.70 |
| 4/17/20 14:02 | 239.99 | 27.99 | 10.55 | 14.36 | 148.46 | 1178.35 | 3.70 |

| Description | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/17 9:35 - 4/17 14:03) | 241.38 | 28.20 | 10.56 | 14.26 | 162.37 | 1181.05 | 3.70 |
| COUNT = 269 | | | | | | | |
| Signal Tagname | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| 4/17/20 14:03 | 239.69 | 28.13 | 10.55 | 14.38 | 158.00 | 1177.54 | 3.70 |

# EMISSION DATA RECORDS

## Operating Data Base+DB Load
## (provided by Cricket Valley Energy Center LLC)
## SAM

| Description | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/16 13:10 - 4/16 15:10) | 240.41 | 28.02 | 10.46 | 14.19 | 165.44 | 1175.95 | 3.57 |
| COUNT = 121 | | | | | | | |

| Signal Tagname | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
|---|---|---|---|---|---|---|---|
| 4/16/20 13:10 | 240.39 | 27.96 | 10.44 | 14.20 | 172.70 | 1175.16 | 3.60 |
| 4/16/20 13:11 | 240.41 | 27.95 | 10.44 | 14.17 | 175.11 | 1175.28 | 3.60 |
| 4/16/20 13:12 | 240.71 | 28.07 | 10.44 | 14.42 | 172.64 | 1176.26 | 3.60 |
| 4/16/20 13:13 | 240.63 | 28.05 | 10.44 | 14.09 | 172.30 | 1175.95 | 3.60 |
| 4/16/20 13:14 | 240.27 | 28.01 | 10.44 | 14.20 | 165.51 | 1175.18 | 3.60 |
| 4/16/20 13:15 | 240.50 | 27.96 | 10.44 | 14.17 | 158.85 | 1175.33 | 3.59 |
| 4/16/20 13:16 | 240.52 | 27.99 | 10.44 | 14.10 | 157.07 | 1176.35 | 3.59 |
| 4/16/20 13:17 | 240.36 | 28.09 | 10.44 | 14.02 | 159.40 | 1176.62 | 3.59 |
| 4/16/20 13:18 | 240.55 | 28.10 | 10.44 | 14.14 | 160.64 | 1175.92 | 3.59 |
| 4/16/20 13:19 | 240.51 | 27.93 | 10.44 | 14.33 | 164.97 | 1176.02 | 3.59 |
| 4/16/20 13:20 | 240.71 | 27.95 | 10.44 | 14.36 | 169.47 | 1176.66 | 3.59 |
| 4/16/20 13:21 | 240.62 | 28.12 | 10.44 | 14.21 | 168.91 | 1174.62 | 3.59 |
| 4/16/20 13:22 | 240.95 | 28.20 | 10.44 | 14.12 | 159.94 | 1176.07 | 3.59 |
| 4/16/20 13:23 | 240.93 | 27.96 | 10.45 | 14.11 | 172.20 | 1175.86 | 3.59 |
| 4/16/20 13:24 | 240.59 | 27.99 | 10.45 | 14.32 | 171.78 | 1175.73 | 3.59 |
| 4/16/20 13:25 | 240.76 | 27.99 | 10.45 | 13.99 | 163.29 | 1175.08 | 3.59 |
| 4/16/20 13:26 | 241.00 | 28.07 | 10.45 | 13.92 | 163.00 | 1176.40 | 3.59 |
| 4/16/20 13:27 | 240.82 | 28.05 | 10.45 | 13.79 | 173.81 | 1175.94 | 3.59 |
| 4/16/20 13:28 | 241.12 | 27.92 | 10.45 | 14.51 | 175.12 | 1177.21 | 3.59 |
| 4/16/20 13:29 | 240.99 | 28.05 | 10.45 | 14.27 | 174.02 | 1176.04 | 3.59 |
| 4/16/20 13:30 | 240.88 | 28.05 | 10.45 | 14.39 | 173.52 | 1176.06 | 3.59 |
| 4/16/20 13:31 | 240.96 | 28.10 | 10.45 | 14.35 | 170.95 | 1176.56 | 3.59 |
| 4/16/20 13:32 | 241.22 | 27.98 | 10.45 | 14.12 | 164.97 | 1175.75 | 3.59 |
| 4/16/20 13:33 | 240.16 | 27.96 | 10.45 | 14.07 | 161.33 | 1175.81 | 3.59 |
| 4/16/20 13:34 | 240.94 | 27.97 | 10.45 | 13.86 | 163.13 | 1176.11 | 3.59 |
| 4/16/20 13:35 | 240.77 | 28.13 | 10.45 | 14.44 | 167.89 | 1177.22 | 3.58 |
| 4/16/20 13:36 | 240.72 | 28.12 | 10.45 | 14.31 | 177.23 | 1176.93 | 3.58 |
| 4/16/20 13:37 | 240.38 | 27.94 | 10.45 | 14.07 | 187.97 | 1175.15 | 3.58 |
| 4/16/20 13:38 | 240.55 | 27.83 | 10.45 | 13.95 | 172.14 | 1175.83 | 3.58 |
| 4/16/20 13:39 | 241.05 | 28.08 | 10.45 | 14.10 | 179.03 | 1175.49 | 3.58 |
| 4/16/20 13:40 | 241.15 | 28.19 | 10.45 | 14.20 | 164.52 | 1176.71 | 3.58 |
| 4/16/20 13:41 | 240.81 | 28.08 | 10.45 | 13.86 | 172.53 | 1175.84 | 3.58 |
| 4/16/20 13:42 | 240.56 | 28.04 | 10.45 | 13.98 | 177.37 | 1175.10 | 3.58 |
| 4/16/20 13:43 | 240.88 | 28.02 | 10.45 | 14.18 | 165.29 | 1176.29 | 3.58 |
| 4/16/20 13:44 | 240.69 | 28.13 | 10.45 | 14.13 | 160.23 | 1175.48 | 3.58 |
| 4/16/20 13:45 | 240.43 | 28.04 | 10.45 | 14.16 | 164.11 | 1175.91 | 3.58 |
| 4/16/20 13:46 | 240.62 | 28.02 | 10.45 | 14.15 | 174.27 | 1177.12 | 3.58 |
| 4/16/20 13:47 | 240.35 | 27.99 | 10.45 | 13.98 | 161.23 | 1175.38 | 3.58 |
| 4/16/20 13:48 | 240.36 | 28.08 | 10.45 | 14.10 | 161.16 | 1175.82 | 3.58 |
| 4/16/20 13:49 | 240.00 | 28.00 | 10.45 | 14.06 | 164.92 | 1175.27 | 3.58 |
| 4/16/20 13:50 | 240.65 | 27.97 | 10.45 | 14.07 | 171.59 | 1175.92 | 3.58 |
| 4/16/20 13:51 | 239.98 | 27.98 | 10.45 | 13.99 | 159.19 | 1175.41 | 3.58 |
| 4/16/20 13:52 | 240.75 | 27.98 | 10.45 | 13.95 | 154.82 | 1176.08 | 3.58 |
| 4/16/20 13:53 | 240.37 | 28.06 | 10.45 | 13.88 | 156.52 | 1176.26 | 3.58 |
| 4/16/20 13:54 | 239.81 | 28.01 | 10.45 | 14.05 | 154.35 | 1176.19 | 3.58 |
| 4/16/20 13:55 | 240.23 | 27.90 | 10.45 | 14.21 | 159.91 | 1175.95 | 3.57 |
| 4/16/20 13:56 | 240.62 | 28.03 | 10.45 | 14.10 | 162.23 | 1175.93 | 3.57 |
| 4/16/20 13:57 | 240.52 | 28.07 | 10.45 | 13.74 | 161.78 | 1175.58 | 3.57 |
| 4/16/20 13:58 | 240.93 | 28.12 | 10.45 | 14.03 | 168.36 | 1175.94 | 3.57 |
| 4/16/20 13:59 | 240.75 | 28.00 | 10.45 | 14.26 | 171.16 | 1176.20 | 3.57 |
| 4/16/20 14:00 | 240.79 | 27.96 | 10.45 | 14.33 | 163.56 | 1176.01 | 3.57 |
| 4/16/20 14:01 | 241.05 | 28.08 | 10.45 | 14.16 | 162.27 | 1176.22 | 3.57 |
| 4/16/20 14:02 | 240.67 | 28.17 | 10.46 | 14.25 | 169.06 | 1175.80 | 3.57 |
| 4/16/20 14:03 | 240.50 | 27.95 | 10.46 | 14.16 | 173.41 | 1175.88 | 3.57 |
| 4/16/20 14:04 | 240.56 | 28.01 | 10.46 | 14.17 | 165.79 | 1175.82 | 3.57 |
| 4/16/20 14:05 | 240.71 | 27.98 | 10.46 | 14.31 | 159.26 | 1175.91 | 3.57 |
| 4/16/20 14:06 | 240.89 | 28.12 | 10.46 | 14.27 | 160.78 | 1176.24 | 3.57 |
| 4/16/20 14:07 | 240.68 | 28.07 | 10.46 | 14.19 | 159.41 | 1175.94 | 3.57 |
| 4/16/20 14:08 | 240.56 | 27.96 | 10.46 | 14.46 | 159.41 | 1175.86 | 3.57 |
| 4/16/20 14:09 | 240.90 | 28.08 | 10.46 | 14.22 | 159.50 | 1176.64 | 3.57 |
| 4/16/20 14:10 | 240.37 | 28.08 | 10.46 | 14.34 | 162.17 | 1175.62 | 3.57 |
| 4/16/20 14:11 | 240.45 | 28.09 | 10.46 | 14.41 | 169.83 | 1175.71 | 3.57 |
| 4/16/20 14:12 | 240.58 | 27.99 | 10.46 | 14.21 | 169.79 | 1176.15 | 3.57 |
| 4/16/20 14:13 | 240.86 | 27.98 | 10.46 | 14.52 | 173.42 | 1176.26 | 3.57 |
| 4/16/20 14:14 | 240.73 | 28.10 | 10.46 | 13.95 | 169.17 | 1175.33 | 3.56 |
| 4/16/20 14:15 | 240.92 | 28.14 | 10.46 | 14.29 | 167.74 | 1176.75 | 3.56 |
| 4/16/20 14:16 | 240.84 | 28.04 | 10.46 | 14.15 | 168.81 | 1175.77 | 3.56 |

| Description | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/16 13:10 - 4/16 15:10) | 240.41 | 28.02 | 10.46 | 14.19 | 165.44 | 1175.95 | 3.57 |
| COUNT = 121 | | | | | | | |
| Signal Tagname | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| 4/16/20 14:17 | 240.83 | 27.96 | 10.46 | 13.93 | 170.03 | 1175.80 | 3.56 |
| 4/16/20 14:18 | 240.91 | 27.96 | 10.46 | 14.27 | 169.49 | 1175.38 | 3.56 |
| 4/16/20 14:19 | 240.69 | 28.09 | 10.46 | 14.37 | 163.69 | 1176.03 | 3.56 |
| 4/16/20 14:20 | 240.37 | 28.09 | 10.46 | 14.01 | 166.58 | 1175.79 | 3.56 |
| 4/16/20 14:21 | 240.85 | 27.99 | 10.46 | 13.92 | 174.10 | 1176.40 | 3.56 |
| 4/16/20 14:22 | 240.59 | 28.05 | 10.46 | 14.18 | 167.11 | 1175.63 | 3.56 |
| 4/16/20 14:23 | 241.09 | 28.11 | 10.46 | 14.10 | 165.62 | 1176.20 | 3.56 |
| 4/16/20 14:24 | 240.35 | 28.12 | 10.46 | 14.12 | 172.23 | 1176.49 | 3.56 |
| 4/16/20 14:25 | 240.68 | 27.99 | 10.46 | 14.39 | 173.17 | 1176.52 | 3.56 |
| 4/16/20 14:26 | 240.09 | 28.04 | 10.46 | 13.98 | 174.46 | 1175.22 | 3.56 |
| 4/16/20 14:27 | 240.59 | 28.01 | 10.46 | 14.60 | 164.68 | 1176.22 | 3.56 |
| 4/16/20 14:28 | 239.93 | 28.10 | 10.46 | 14.53 | 162.81 | 1175.91 | 3.56 |
| 4/16/20 14:29 | 240.08 | 28.07 | 10.46 | 14.76 | 158.81 | 1176.28 | 3.56 |
| 4/16/20 14:30 | 240.43 | 27.98 | 10.46 | 14.26 | 160.86 | 1176.21 | 3.56 |
| 4/16/20 14:31 | 240.12 | 27.95 | 10.46 | 14.46 | 170.28 | 1176.04 | 3.56 |
| 4/16/20 14:32 | 240.08 | 28.16 | 10.46 | 14.10 | 160.56 | 1176.00 | 3.56 |
| 4/16/20 14:33 | 240.62 | 28.04 | 10.46 | 14.61 | 163.69 | 1176.25 | 3.56 |
| 4/16/20 14:34 | 239.79 | 27.95 | 10.46 | 14.01 | 169.69 | 1174.93 | 3.55 |
| 4/16/20 14:35 | 240.42 | 27.99 | 10.46 | 14.24 | 162.96 | 1176.03 | 3.55 |
| 4/16/20 14:36 | 240.28 | 28.02 | 10.46 | 14.52 | 163.25 | 1175.70 | 3.55 |
| 4/16/20 14:37 | 240.18 | 28.06 | 10.46 | 14.53 | 166.15 | 1175.59 | 3.55 |
| 4/16/20 14:38 | 240.67 | 28.00 | 10.46 | 14.12 | 157.24 | 1176.52 | 3.55 |
| 4/16/20 14:39 | 239.96 | 28.02 | 10.46 | 14.16 | 156.65 | 1175.42 | 3.55 |
| 4/16/20 14:40 | 240.37 | 27.99 | 10.46 | 14.25 | 157.29 | 1175.90 | 3.55 |
| 4/16/20 14:41 | 240.09 | 28.05 | 10.47 | 14.04 | 159.17 | 1176.19 | 3.55 |
| 4/16/20 14:42 | 239.94 | 28.07 | 10.47 | 14.17 | 164.58 | 1174.75 | 3.55 |
| 4/16/20 14:43 | 240.29 | 27.91 | 10.47 | 13.88 | 168.24 | 1175.82 | 3.55 |
| 4/16/20 14:44 | 240.23 | 27.99 | 10.47 | 14.55 | 167.11 | 1176.45 | 3.55 |
| 4/16/20 14:45 | 240.50 | 28.01 | 10.47 | 14.66 | 168.25 | 1176.53 | 3.55 |
| 4/16/20 14:46 | 240.43 | 28.08 | 10.47 | 14.07 | 170.64 | 1176.15 | 3.55 |
| 4/16/20 14:47 | 240.16 | 28.04 | 10.47 | 14.14 | 164.07 | 1175.73 | 3.55 |
| 4/16/20 14:48 | 240.11 | 27.95 | 10.47 | 14.23 | 174.75 | 1176.42 | 3.55 |
| 4/16/20 14:49 | 240.45 | 27.99 | 10.47 | 14.31 | 174.71 | 1176.40 | 3.55 |
| 4/16/20 14:50 | 240.27 | 28.13 | 10.47 | 14.29 | 172.37 | 1176.55 | 3.55 |
| 4/16/20 14:51 | 239.36 | 27.97 | 10.47 | 14.05 | 161.32 | 1174.94 | 3.55 |
| 4/16/20 14:52 | 239.25 | 27.88 | 10.47 | 14.09 | 155.33 | 1174.93 | 3.55 |
| 4/16/20 14:53 | 239.82 | 27.89 | 10.47 | 14.66 | 158.90 | 1176.81 | 3.55 |
| 4/16/20 14:54 | 239.66 | 28.03 | 10.47 | 14.28 | 164.82 | 1177.13 | 3.54 |
| 4/16/20 14:55 | 239.28 | 28.00 | 10.47 | 13.91 | 151.05 | 1176.21 | 3.54 |
| 4/16/20 14:56 | 239.61 | 27.93 | 10.47 | 14.21 | 156.80 | 1176.32 | 3.54 |
| 4/16/20 14:57 | 240.11 | 27.95 | 10.47 | 13.99 | 152.70 | 1175.28 | 3.54 |
| 4/16/20 14:58 | 240.06 | 28.00 | 10.47 | 14.05 | 150.30 | 1176.10 | 3.54 |
| 4/16/20 14:59 | 239.80 | 28.09 | 10.47 | 14.30 | 149.78 | 1176.14 | 3.54 |
| 4/16/20 15:00 | 240.02 | 27.97 | 10.47 | 14.02 | 150.95 | 1176.66 | 3.54 |
| 4/16/20 15:01 | 239.61 | 27.89 | 10.47 | 14.00 | 158.69 | 1175.32 | 3.54 |
| 4/16/20 15:02 | 239.70 | 27.94 | 10.47 | 14.15 | 165.09 | 1174.82 | 3.54 |
| 4/16/20 15:03 | 240.40 | 28.04 | 10.47 | 14.02 | 160.26 | 1176.49 | 3.54 |
| 4/16/20 15:04 | 240.09 | 28.07 | 10.47 | 14.21 | 163.84 | 1176.22 | 3.54 |
| 4/16/20 15:05 | 239.97 | 27.96 | 10.47 | 14.36 | 172.96 | 1175.86 | 3.54 |
| 4/16/20 15:06 | 239.61 | 27.93 | 10.47 | 14.26 | 172.67 | 1175.10 | 3.54 |
| 4/16/20 15:07 | 239.29 | 28.03 | 10.47 | 14.29 | 161.79 | 1175.49 | 3.54 |
| 4/16/20 15:08 | 239.11 | 28.03 | 10.47 | 14.23 | 167.23 | 1175.83 | 3.54 |
| 4/16/20 15:09 | 239.57 | 27.92 | 10.47 | 14.49 | 156.43 | 1176.90 | 3.54 |
| 4/16/20 15:10 | 239.11 | 27.88 | 10.47 | 14.12 | 164.06 | 1175.62 | 3.54 |

| Description | | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/17 3:58 - 4/17 5:58) | | 244.84 | 28.41 | 10.65 | 14.23 | 193.59 | 1181.67 | 3.72 |
| COUNT = 121 | | | | | | | | |
| Signal Tagname | | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| | 4/17/20 3:58 | 244.67 | 28.33 | 10.66 | 14.17 | 188.90 | 1180.80 | 3.73 |
| | 4/17/20 3:59 | 244.31 | 28.38 | 10.66 | 14.39 | 180.02 | 1181.12 | 3.73 |
| | 4/17/20 4:00 | 244.42 | 28.44 | 10.66 | 14.58 | 186.64 | 1182.39 | 3.73 |
| | 4/17/20 4:01 | 244.64 | 28.29 | 10.66 | 14.22 | 193.40 | 1181.75 | 3.73 |
| | 4/17/20 4:02 | 244.75 | 28.32 | 10.66 | 14.24 | 178.26 | 1181.24 | 3.73 |
| | 4/17/20 4:03 | 244.28 | 28.29 | 10.66 | 14.23 | 192.77 | 1181.15 | 3.73 |
| | 4/17/20 4:04 | 244.48 | 28.37 | 10.66 | 14.34 | 188.65 | 1181.63 | 3.73 |
| | 4/17/20 4:05 | 244.46 | 28.37 | 10.66 | 14.09 | 176.28 | 1181.41 | 3.73 |
| | 4/17/20 4:06 | 244.31 | 28.34 | 10.67 | 14.18 | 188.95 | 1181.10 | 3.73 |
| | 4/17/20 4:07 | 244.22 | 28.27 | 10.67 | 14.01 | 184.50 | 1180.71 | 3.73 |
| | 4/17/20 4:08 | 244.55 | 28.30 | 10.67 | 14.16 | 174.41 | 1181.64 | 3.73 |
| | 4/17/20 4:09 | 244.24 | 28.42 | 10.67 | 14.06 | 174.72 | 1181.13 | 3.73 |
| | 4/17/20 4:10 | 244.72 | 28.40 | 10.67 | 14.31 | 182.31 | 1182.53 | 3.73 |
| | 4/17/20 4:11 | 244.73 | 28.29 | 10.66 | 14.32 | 188.89 | 1181.01 | 3.73 |
| | 4/17/20 4:12 | 244.41 | 28.42 | 10.66 | 13.96 | 176.18 | 1181.39 | 3.73 |
| | 4/17/20 4:13 | 244.10 | 28.41 | 10.66 | 14.02 | 189.74 | 1181.38 | 3.73 |
| | 4/17/20 4:14 | 244.68 | 28.38 | 10.66 | 14.30 | 183.09 | 1182.23 | 3.73 |
| | 4/17/20 4:15 | 244.34 | 28.29 | 10.66 | 14.29 | 197.56 | 1180.91 | 3.73 |
| | 4/17/20 4:16 | 244.86 | 28.33 | 10.66 | 14.08 | 190.04 | 1181.15 | 3.73 |
| | 4/17/20 4:17 | 244.93 | 28.39 | 10.66 | 14.25 | 186.02 | 1181.03 | 3.73 |
| | 4/17/20 4:18 | 244.83 | 28.46 | 10.66 | 14.20 | 192.89 | 1181.24 | 3.73 |
| | 4/17/20 4:19 | 244.57 | 28.39 | 10.66 | 14.19 | 188.79 | 1181.19 | 3.73 |
| | 4/17/20 4:20 | 244.81 | 28.33 | 10.66 | 14.24 | 199.49 | 1181.94 | 3.73 |
| | 4/17/20 4:21 | 244.76 | 28.41 | 10.66 | 14.25 | 183.77 | 1181.44 | 3.73 |
| | 4/17/20 4:22 | 244.75 | 28.43 | 10.66 | 14.17 | 190.98 | 1181.67 | 3.73 |
| | 4/17/20 4:23 | 244.82 | 28.40 | 10.66 | 14.34 | 198.85 | 1181.39 | 3.73 |
| | 4/17/20 4:24 | 244.77 | 28.32 | 10.66 | 14.41 | 185.37 | 1181.84 | 3.73 |
| | 4/17/20 4:25 | 245.03 | 28.39 | 10.66 | 14.14 | 189.57 | 1181.29 | 3.73 |
| | 4/17/20 4:26 | 244.58 | 28.51 | 10.66 | 14.16 | 195.36 | 1181.51 | 3.73 |
| | 4/17/20 4:27 | 244.25 | 28.45 | 10.66 | 14.08 | 187.27 | 1180.82 | 3.73 |
| | 4/17/20 4:28 | 245.08 | 28.44 | 10.66 | 14.04 | 202.59 | 1181.85 | 3.73 |
| | 4/17/20 4:29 | 244.76 | 28.37 | 10.66 | 14.10 | 190.58 | 1181.22 | 3.73 |
| | 4/17/20 4:30 | 244.31 | 28.37 | 10.66 | 14.01 | 195.82 | 1181.41 | 3.73 |
| | 4/17/20 4:31 | 244.65 | 28.48 | 10.66 | 14.33 | 199.61 | 1181.96 | 3.72 |
| | 4/17/20 4:32 | 244.85 | 28.40 | 10.66 | 14.07 | 197.82 | 1182.00 | 3.72 |
| | 4/17/20 4:33 | 245.02 | 28.37 | 10.66 | 14.03 | 198.55 | 1181.54 | 3.72 |
| | 4/17/20 4:34 | 244.99 | 28.42 | 10.66 | 14.29 | 204.00 | 1182.48 | 3.72 |
| | 4/17/20 4:35 | 244.79 | 28.45 | 10.66 | 14.20 | 204.91 | 1182.40 | 3.72 |
| | 4/17/20 4:36 | 244.67 | 28.44 | 10.66 | 14.08 | 202.18 | 1181.55 | 3.72 |
| | 4/17/20 4:37 | 245.09 | 28.35 | 10.66 | 14.30 | 201.73 | 1181.53 | 3.72 |
| | 4/17/20 4:38 | 244.69 | 28.35 | 10.66 | 14.11 | 200.67 | 1181.45 | 3.72 |
| | 4/17/20 4:39 | 244.57 | 28.42 | 10.66 | 14.12 | 198.94 | 1181.32 | 3.72 |
| | 4/17/20 4:40 | 244.74 | 28.40 | 10.66 | 14.21 | 197.01 | 1180.97 | 3.72 |
| | 4/17/20 4:41 | 244.65 | 28.39 | 10.66 | 14.00 | 191.63 | 1181.78 | 3.72 |
| | 4/17/20 4:42 | 244.56 | 28.36 | 10.66 | 14.03 | 189.44 | 1181.68 | 3.72 |
| | 4/17/20 4:43 | 245.01 | 28.35 | 10.66 | 13.99 | 178.65 | 1181.99 | 3.72 |
| | 4/17/20 4:44 | 245.18 | 28.42 | 10.66 | 14.17 | 178.55 | 1181.91 | 3.72 |
| | 4/17/20 4:45 | 244.77 | 28.39 | 10.66 | 14.19 | 186.12 | 1181.94 | 3.72 |
| | 4/17/20 4:46 | 244.63 | 28.38 | 10.66 | 14.43 | 191.60 | 1182.05 | 3.72 |
| | 4/17/20 4:47 | 244.99 | 28.35 | 10.66 | 14.21 | 193.05 | 1181.19 | 3.72 |
| | 4/17/20 4:48 | 244.97 | 28.42 | 10.66 | 14.15 | 199.66 | 1181.93 | 3.72 |
| | 4/17/20 4:49 | 244.53 | 28.41 | 10.66 | 14.15 | 200.15 | 1181.31 | 3.72 |
| | 4/17/20 4:50 | 244.72 | 28.34 | 10.66 | 14.22 | 200.23 | 1182.10 | 3.72 |
| | 4/17/20 4:51 | 245.21 | 28.30 | 10.66 | 14.45 | 200.81 | 1182.73 | 3.72 |
| | 4/17/20 4:52 | 245.01 | 28.45 | 10.66 | 14.29 | 201.28 | 1181.65 | 3.72 |
| | 4/17/20 4:53 | 244.58 | 28.57 | 10.66 | 14.23 | 200.95 | 1181.20 | 3.72 |
| | 4/17/20 4:54 | 245.09 | 28.41 | 10.65 | 14.51 | 197.96 | 1182.36 | 3.72 |
| | 4/17/20 4:55 | 244.78 | 28.32 | 10.65 | 14.13 | 184.58 | 1181.73 | 3.72 |
| | 4/17/20 4:56 | 244.76 | 28.44 | 10.65 | 14.30 | 185.89 | 1181.72 | 3.72 |
| | 4/17/20 4:57 | 244.89 | 28.45 | 10.65 | 14.21 | 190.65 | 1181.79 | 3.72 |
| | 4/17/20 4:58 | 244.74 | 28.40 | 10.65 | 14.25 | 198.04 | 1181.11 | 3.72 |
| | 4/17/20 4:59 | 244.75 | 28.35 | 10.65 | 14.10 | 198.18 | 1181.10 | 3.72 |
| | 4/17/20 5:00 | 244.82 | 28.32 | 10.65 | 14.04 | 201.23 | 1181.48 | 3.72 |
| | 4/17/20 5:01 | 244.90 | 28.47 | 10.65 | 14.04 | 199.31 | 1181.68 | 3.72 |
| | 4/17/20 5:02 | 244.74 | 28.46 | 10.65 | 14.30 | 197.42 | 1180.89 | 3.72 |
| | 4/17/20 5:03 | 245.03 | 28.34 | 10.65 | 13.86 | 190.71 | 1181.76 | 3.72 |
| | 4/17/20 5:04 | 244.77 | 28.36 | 10.65 | 14.38 | 189.66 | 1181.50 | 3.72 |

| Description | | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/17 3:58 - 4/17 5:58) | | 244.84 | 28.41 | 10.65 | 14.23 | 193.59 | 1181.67 | 3.72 |
| COUNT = 121 | | | | | | | | |
| Signal Tagname | | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| | 4/17/20 5:05 | 245.21 | 28.41 | 10.65 | 14.04 | 180.60 | 1182.04 | 3.72 |
| | 4/17/20 5:06 | 244.77 | 28.50 | 10.65 | 14.44 | 179.66 | 1181.35 | 3.72 |
| | 4/17/20 5:07 | 244.58 | 28.35 | 10.65 | 14.27 | 194.83 | 1181.70 | 3.72 |
| | 4/17/20 5:08 | 245.16 | 28.31 | 10.65 | 14.41 | 198.60 | 1183.01 | 3.72 |
| | 4/17/20 5:09 | 244.20 | 28.37 | 10.65 | 14.39 | 185.98 | 1180.74 | 3.72 |
| | 4/17/20 5:10 | 244.81 | 28.45 | 10.65 | 14.19 | 188.30 | 1180.86 | 3.72 |
| | 4/17/20 5:11 | 244.66 | 28.41 | 10.65 | 14.32 | 200.79 | 1181.36 | 3.72 |
| | 4/17/20 5:12 | 244.64 | 28.35 | 10.65 | 14.20 | 190.61 | 1181.25 | 3.72 |
| | 4/17/20 5:13 | 244.66 | 28.38 | 10.65 | 14.14 | 190.24 | 1180.67 | 3.72 |
| | 4/17/20 5:14 | 244.88 | 28.52 | 10.65 | 14.04 | 201.23 | 1181.50 | 3.72 |
| | 4/17/20 5:15 | 244.99 | 28.44 | 10.65 | 14.35 | 192.53 | 1182.51 | 3.72 |
| | 4/17/20 5:16 | 244.54 | 28.45 | 10.65 | 14.11 | 201.60 | 1180.84 | 3.72 |
| | 4/17/20 5:17 | 244.66 | 28.44 | 10.65 | 14.01 | 200.18 | 1181.47 | 3.72 |
| | 4/17/20 5:18 | 244.66 | 28.46 | 10.65 | 14.42 | 205.76 | 1181.52 | 3.72 |
| | 4/17/20 5:19 | 245.25 | 28.50 | 10.65 | 14.13 | 199.76 | 1182.40 | 3.72 |
| | 4/17/20 5:20 | 244.95 | 28.43 | 10.65 | 14.45 | 188.21 | 1182.07 | 3.72 |
| | 4/17/20 5:21 | 244.70 | 28.33 | 10.65 | 14.17 | 194.36 | 1181.38 | 3.72 |
| | 4/17/20 5:22 | 244.84 | 28.48 | 10.65 | 14.02 | 201.37 | 1180.88 | 3.72 |
| | 4/17/20 5:23 | 244.96 | 28.53 | 10.65 | 14.24 | 205.51 | 1181.20 | 3.72 |
| | 4/17/20 5:24 | 245.00 | 28.41 | 10.65 | 14.07 | 201.40 | 1182.15 | 3.72 |
| | 4/17/20 5:25 | 244.81 | 28.40 | 10.65 | 14.14 | 187.31 | 1182.33 | 3.72 |
| | 4/17/20 5:26 | 244.95 | 28.44 | 10.65 | 14.39 | 192.73 | 1182.57 | 3.72 |
| | 4/17/20 5:27 | 244.26 | 28.48 | 10.65 | 14.29 | 201.40 | 1180.54 | 3.72 |
| | 4/17/20 5:28 | 244.58 | 28.47 | 10.65 | 14.18 | 191.17 | 1181.71 | 3.72 |
| | 4/17/20 5:29 | 245.07 | 28.34 | 10.65 | 14.45 | 190.46 | 1182.32 | 3.72 |
| | 4/17/20 5:30 | 245.11 | 28.44 | 10.65 | 14.20 | 199.09 | 1181.16 | 3.72 |
| | 4/17/20 5:31 | 244.78 | 28.46 | 10.65 | 14.67 | 188.74 | 1182.10 | 3.72 |
| | 4/17/20 5:32 | 245.32 | 28.46 | 10.65 | 14.27 | 185.62 | 1182.30 | 3.72 |
| | 4/17/20 5:33 | 245.16 | 28.48 | 10.65 | 14.33 | 181.81 | 1181.78 | 3.72 |
| | 4/17/20 5:34 | 244.88 | 28.39 | 10.65 | 14.05 | 191.42 | 1181.36 | 3.72 |
| | 4/17/20 5:35 | 245.23 | 28.48 | 10.65 | 14.23 | 201.64 | 1182.57 | 3.72 |
| | 4/17/20 5:36 | 244.94 | 28.57 | 10.65 | 14.27 | 196.92 | 1181.55 | 3.72 |
| | 4/17/20 5:37 | 245.11 | 28.55 | 10.64 | 14.35 | 192.62 | 1182.36 | 3.72 |
| | 4/17/20 5:38 | 245.15 | 28.41 | 10.64 | 14.42 | 186.67 | 1182.05 | 3.72 |
| | 4/17/20 5:39 | 245.27 | 28.42 | 10.64 | 14.14 | 200.26 | 1182.06 | 3.72 |
| | 4/17/20 5:40 | 244.79 | 28.45 | 10.64 | 14.47 | 205.97 | 1181.81 | 3.72 |
| | 4/17/20 5:41 | 244.79 | 28.53 | 10.64 | 14.25 | 204.30 | 1181.92 | 3.72 |
| | 4/17/20 5:42 | 245.07 | 28.50 | 10.64 | 14.21 | 198.56 | 1181.78 | 3.72 |
| | 4/17/20 5:43 | 245.62 | 28.46 | 10.64 | 14.69 | 191.08 | 1182.49 | 3.72 |
| | 4/17/20 5:44 | 245.30 | 28.42 | 10.64 | 14.54 | 191.66 | 1182.23 | 3.71 |
| | 4/17/20 5:45 | 245.24 | 28.53 | 10.64 | 14.07 | 205.12 | 1181.21 | 3.71 |
| | 4/17/20 5:46 | 245.78 | 28.43 | 10.64 | 14.76 | 194.95 | 1183.28 | 3.71 |
| | 4/17/20 5:47 | 245.16 | 28.38 | 10.64 | 14.49 | 195.83 | 1182.20 | 3.71 |
| | 4/17/20 5:48 | 245.20 | 28.49 | 10.64 | 14.40 | 204.89 | 1182.00 | 3.71 |
| | 4/17/20 5:49 | 244.86 | 28.41 | 10.64 | 14.22 | 196.45 | 1180.95 | 3.71 |
| | 4/17/20 5:50 | 245.24 | 28.57 | 10.64 | 13.95 | 188.16 | 1182.04 | 3.71 |
| | 4/17/20 5:51 | 245.14 | 28.43 | 10.64 | 14.39 | 198.89 | 1182.49 | 3.71 |
| | 4/17/20 5:52 | 245.17 | 28.46 | 10.64 | 14.27 | 205.38 | 1182.43 | 3.71 |
| | 4/17/20 5:53 | 245.23 | 28.39 | 10.64 | 14.36 | 203.60 | 1181.72 | 3.71 |
| | 4/17/20 5:54 | 245.57 | 28.59 | 10.64 | 14.11 | 196.36 | 1182.28 | 3.71 |
| | 4/17/20 5:55 | 245.40 | 28.49 | 10.64 | 14.20 | 192.38 | 1181.92 | 3.71 |
| | 4/17/20 5:56 | 245.38 | 28.44 | 10.64 | 14.29 | 195.99 | 1181.76 | 3.71 |
| | 4/17/20 5:57 | 245.15 | 28.50 | 10.64 | 14.32 | 202.26 | 1181.65 | 3.71 |
| | 4/17/20 5:58 | 245.36 | 28.58 | 10.64 | 14.24 | 208.96 | 1181.78 | 3.71 |

| Description | | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/17 7:00 - 4/17 9:00) | | 244.25 | 28.41 | 10.61 | 14.22 | 181.88 | 1183.39 | 3.70 |
| COUNT = 121 | | | | | | | | |
| Signal Tagname | | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| | 4/17/20 7:00 | 245.23 | 28.57 | 10.63 | 14.29 | 204.76 | 1183.32 | 3.70 |
| | 4/17/20 7:01 | 245.11 | 28.51 | 10.63 | 14.37 | 191.42 | 1182.84 | 3.70 |
| | 4/17/20 7:02 | 245.36 | 28.44 | 10.63 | 14.41 | 178.14 | 1183.06 | 3.70 |
| | 4/17/20 7:03 | 245.24 | 28.55 | 10.63 | 14.22 | 193.66 | 1182.98 | 3.70 |
| | 4/17/20 7:04 | 245.20 | 28.59 | 10.62 | 14.14 | 201.99 | 1183.24 | 3.70 |
| | 4/17/20 7:05 | 245.03 | 28.48 | 10.62 | 14.10 | 202.09 | 1183.89 | 3.70 |
| | 4/17/20 7:06 | 245.00 | 28.44 | 10.62 | 14.12 | 199.31 | 1183.41 | 3.70 |
| | 4/17/20 7:07 | 244.97 | 28.54 | 10.62 | 14.13 | 183.91 | 1182.99 | 3.70 |
| | 4/17/20 7:08 | 244.79 | 28.58 | 10.62 | 14.01 | 179.01 | 1183.38 | 3.70 |
| | 4/17/20 7:09 | 244.86 | 28.46 | 10.62 | 14.09 | 173.81 | 1182.82 | 3.70 |
| | 4/17/20 7:10 | 244.49 | 28.39 | 10.62 | 14.10 | 184.82 | 1183.15 | 3.70 |
| | 4/17/20 7:11 | 244.25 | 28.46 | 10.62 | 14.00 | 185.23 | 1182.86 | 3.70 |
| | 4/17/20 7:12 | 244.64 | 28.53 | 10.62 | 14.21 | 185.73 | 1182.65 | 3.70 |
| | 4/17/20 7:13 | 244.72 | 28.51 | 10.62 | 14.11 | 192.23 | 1182.54 | 3.70 |
| | 4/17/20 7:14 | 244.68 | 28.37 | 10.62 | 13.95 | 192.91 | 1183.67 | 3.70 |
| | 4/17/20 7:15 | 244.38 | 28.42 | 10.62 | 14.02 | 193.79 | 1183.14 | 3.70 |
| | 4/17/20 7:16 | 244.77 | 28.49 | 10.62 | 14.04 | 193.60 | 1183.46 | 3.70 |
| | 4/17/20 7:17 | 245.07 | 28.49 | 10.62 | 14.36 | 191.05 | 1183.28 | 3.70 |
| | 4/17/20 7:18 | 244.72 | 28.37 | 10.62 | 14.04 | 185.52 | 1183.56 | 3.70 |
| | 4/17/20 7:19 | 244.47 | 28.41 | 10.62 | 14.41 | 184.12 | 1183.08 | 3.70 |
| | 4/17/20 7:20 | 244.74 | 28.45 | 10.62 | 14.44 | 175.03 | 1183.40 | 3.70 |
| | 4/17/20 7:21 | 244.76 | 28.49 | 10.62 | 14.42 | 178.04 | 1183.76 | 3.70 |
| | 4/17/20 7:22 | 244.87 | 28.42 | 10.62 | 14.31 | 190.05 | 1182.78 | 3.70 |
| | 4/17/20 7:23 | 244.36 | 28.33 | 10.62 | 14.25 | 179.57 | 1183.36 | 3.70 |
| | 4/17/20 7:24 | 244.60 | 28.43 | 10.62 | 14.07 | 183.04 | 1183.37 | 3.70 |
| | 4/17/20 7:25 | 244.85 | 28.42 | 10.62 | 14.30 | 175.60 | 1183.37 | 3.70 |
| | 4/17/20 7:26 | 244.26 | 28.38 | 10.62 | 13.97 | 174.44 | 1182.38 | 3.70 |
| | 4/17/20 7:27 | 243.98 | 28.39 | 10.62 | 14.40 | 187.69 | 1182.97 | 3.70 |
| | 4/17/20 7:28 | 244.78 | 28.39 | 10.62 | 14.23 | 185.28 | 1182.43 | 3.70 |
| | 4/17/20 7:29 | 244.70 | 28.46 | 10.62 | 14.15 | 173.12 | 1183.19 | 3.70 |
| | 4/17/20 7:30 | 244.58 | 28.48 | 10.62 | 13.92 | 185.85 | 1183.01 | 3.70 |
| | 4/17/20 7:31 | 244.47 | 28.39 | 10.62 | 14.09 | 176.22 | 1182.79 | 3.70 |
| | 4/17/20 7:32 | 244.40 | 28.43 | 10.62 | 14.09 | 185.07 | 1183.19 | 3.70 |
| | 4/17/20 7:33 | 244.42 | 28.43 | 10.62 | 14.08 | 175.55 | 1183.47 | 3.70 |
| | 4/17/20 7:34 | 244.14 | 28.51 | 10.62 | 14.02 | 192.19 | 1183.78 | 3.70 |
| | 4/17/20 7:35 | 244.37 | 28.41 | 10.62 | 14.30 | 180.06 | 1183.36 | 3.70 |
| | 4/17/20 7:36 | 244.59 | 28.40 | 10.62 | 14.02 | 191.79 | 1183.54 | 3.70 |
| | 4/17/20 7:37 | 244.79 | 28.39 | 10.62 | 14.16 | 178.97 | 1182.45 | 3.70 |
| | 4/17/20 7:38 | 244.62 | 28.46 | 10.62 | 14.60 | 195.41 | 1184.00 | 3.70 |
| | 4/17/20 7:39 | 244.84 | 28.51 | 10.62 | 13.95 | 185.94 | 1183.56 | 3.70 |
| | 4/17/20 7:40 | 244.91 | 28.39 | 10.62 | 14.21 | 184.91 | 1183.58 | 3.70 |
| | 4/17/20 7:41 | 244.73 | 28.43 | 10.62 | 14.00 | 192.12 | 1183.77 | 3.70 |
| | 4/17/20 7:42 | 244.70 | 28.45 | 10.62 | 14.32 | 175.79 | 1183.78 | 3.70 |
| | 4/17/20 7:43 | 244.74 | 28.58 | 10.62 | 14.21 | 185.87 | 1184.09 | 3.70 |
| | 4/17/20 7:44 | 244.36 | 28.39 | 10.62 | 14.04 | 192.23 | 1183.22 | 3.70 |
| | 4/17/20 7:45 | 244.32 | 28.31 | 10.62 | 14.18 | 190.47 | 1183.34 | 3.70 |
| | 4/17/20 7:46 | 244.67 | 28.41 | 10.62 | 14.11 | 181.12 | 1183.34 | 3.70 |
| | 4/17/20 7:47 | 244.32 | 28.46 | 10.61 | 14.55 | 171.40 | 1184.40 | 3.70 |
| | 4/17/20 7:48 | 244.61 | 28.38 | 10.61 | 14.00 | 173.06 | 1183.33 | 3.70 |
| | 4/17/20 7:49 | 244.49 | 28.37 | 10.61 | 14.13 | 190.16 | 1183.70 | 3.70 |
| | 4/17/20 7:50 | 244.42 | 28.40 | 10.61 | 14.09 | 184.96 | 1183.26 | 3.70 |
| | 4/17/20 7:51 | 244.54 | 28.55 | 10.61 | 14.18 | 170.99 | 1184.04 | 3.70 |
| | 4/17/20 7:52 | 244.58 | 28.46 | 10.61 | 14.17 | 187.41 | 1184.18 | 3.70 |
| | 4/17/20 7:53 | 244.12 | 28.29 | 10.61 | 14.03 | 186.05 | 1183.45 | 3.70 |
| | 4/17/20 7:54 | 244.56 | 28.38 | 10.61 | 14.64 | 175.78 | 1184.51 | 3.70 |
| | 4/17/20 7:55 | 244.47 | 28.49 | 10.61 | 14.00 | 190.01 | 1184.16 | 3.70 |
| | 4/17/20 7:56 | 244.67 | 28.48 | 10.61 | 14.24 | 176.94 | 1184.74 | 3.70 |
| | 4/17/20 7:57 | 244.62 | 28.33 | 10.61 | 14.34 | 190.80 | 1184.24 | 3.70 |
| | 4/17/20 7:58 | 244.32 | 28.41 | 10.61 | 14.43 | 179.98 | 1183.91 | 3.70 |
| | 4/17/20 7:59 | 244.14 | 28.41 | 10.61 | 14.18 | 174.53 | 1183.79 | 3.70 |
| | 4/17/20 8:00 | 244.31 | 28.51 | 10.61 | 13.93 | 186.27 | 1183.60 | 3.70 |
| | 4/17/20 8:01 | 244.30 | 28.45 | 10.61 | 14.30 | 180.13 | 1183.49 | 3.70 |
| | 4/17/20 8:02 | 244.13 | 28.37 | 10.61 | 14.33 | 174.43 | 1183.91 | 3.70 |
| | 4/17/20 8:03 | 244.05 | 28.35 | 10.61 | 14.15 | 183.53 | 1183.47 | 3.70 |
| | 4/17/20 8:04 | 243.85 | 28.45 | 10.61 | 13.99 | 174.29 | 1183.85 | 3.70 |
| | 4/17/20 8:05 | 244.69 | 28.44 | 10.61 | 14.17 | 184.59 | 1183.02 | 3.70 |
| | 4/17/20 8:06 | 244.14 | 28.36 | 10.61 | 14.13 | 177.40 | 1183.65 | 3.70 |

| Description | | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|---|
| UOM | | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/17 7:00 - 4/17 9:00) | | 244.25 | 28.41 | 10.61 | 14.22 | 181.88 | 1183.39 | 3.70 |
| COUNT = 121 | | | | | | | | |
| Signal Tagname | | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| | 4/17/20 8:07 | 243.76 | 28.35 | 10.61 | 14.27 | 183.17 | 1183.39 | 3.70 |
| | 4/17/20 8:08 | 244.09 | 28.40 | 10.61 | 14.43 | 174.42 | 1183.86 | 3.70 |
| | 4/17/20 8:09 | 243.93 | 28.44 | 10.61 | 14.32 | 182.94 | 1183.42 | 3.70 |
| | 4/17/20 8:10 | 244.13 | 28.41 | 10.61 | 14.05 | 175.10 | 1183.18 | 3.70 |
| | 4/17/20 8:11 | 243.59 | 28.29 | 10.61 | 14.34 | 183.41 | 1184.06 | 3.70 |
| | 4/17/20 8:12 | 244.50 | 28.33 | 10.61 | 14.58 | 185.76 | 1184.07 | 3.70 |
| | 4/17/20 8:13 | 244.23 | 28.44 | 10.61 | 14.14 | 176.83 | 1183.22 | 3.70 |
| | 4/17/20 8:14 | 244.28 | 28.40 | 10.61 | 14.21 | 175.68 | 1184.04 | 3.70 |
| | 4/17/20 8:15 | 244.58 | 28.30 | 10.61 | 14.43 | 181.07 | 1183.80 | 3.70 |
| | 4/17/20 8:16 | 244.03 | 28.38 | 10.61 | 13.90 | 187.87 | 1182.92 | 3.70 |
| | 4/17/20 8:17 | 244.27 | 28.54 | 10.61 | 14.72 | 183.08 | 1184.34 | 3.70 |
| | 4/17/20 8:18 | 244.19 | 28.49 | 10.61 | 14.37 | 171.10 | 1183.55 | 3.70 |
| | 4/17/20 8:19 | 244.17 | 28.31 | 10.61 | 14.09 | 174.56 | 1182.78 | 3.70 |
| | 4/17/20 8:20 | 243.82 | 28.36 | 10.61 | 14.14 | 179.23 | 1183.29 | 3.70 |
| | 4/17/20 8:21 | 243.64 | 28.44 | 10.61 | 14.57 | 179.96 | 1183.54 | 3.70 |
| | 4/17/20 8:22 | 244.07 | 28.55 | 10.61 | 14.24 | 181.63 | 1183.20 | 3.70 |
| | 4/17/20 8:23 | 243.87 | 28.40 | 10.61 | 14.22 | 177.91 | 1183.22 | 3.70 |
| | 4/17/20 8:24 | 244.02 | 28.31 | 10.61 | 14.46 | 186.45 | 1184.70 | 3.70 |
| | 4/17/20 8:25 | 244.19 | 28.36 | 10.61 | 14.19 | 185.90 | 1183.22 | 3.70 |
| | 4/17/20 8:26 | 244.44 | 28.48 | 10.61 | 14.72 | 187.55 | 1184.87 | 3.70 |
| | 4/17/20 8:27 | 243.86 | 28.36 | 10.61 | 14.40 | 177.86 | 1183.73 | 3.70 |
| | 4/17/20 8:28 | 243.64 | 28.33 | 10.61 | 14.21 | 174.50 | 1182.89 | 3.70 |
| | 4/17/20 8:29 | 244.16 | 28.42 | 10.61 | 14.27 | 186.16 | 1182.70 | 3.70 |
| | 4/17/20 8:30 | 243.71 | 28.35 | 10.61 | 14.07 | 174.32 | 1183.63 | 3.70 |
| | 4/17/20 8:31 | 243.71 | 28.49 | 10.60 | 14.25 | 174.65 | 1183.20 | 3.70 |
| | 4/17/20 8:32 | 243.99 | 28.32 | 10.60 | 14.73 | 170.35 | 1183.55 | 3.70 |
| | 4/17/20 8:33 | 243.85 | 28.35 | 10.60 | 14.35 | 177.55 | 1182.83 | 3.70 |
| | 4/17/20 8:34 | 244.10 | 28.35 | 10.60 | 14.21 | 185.12 | 1184.08 | 3.70 |
| | 4/17/20 8:35 | 243.87 | 28.49 | 10.60 | 14.27 | 174.46 | 1182.60 | 3.70 |
| | 4/17/20 8:36 | 243.76 | 28.33 | 10.60 | 13.96 | 178.14 | 1183.68 | 3.70 |
| | 4/17/20 8:37 | 243.93 | 28.34 | 10.60 | 14.27 | 182.48 | 1183.42 | 3.70 |
| | 4/17/20 8:38 | 244.02 | 28.33 | 10.60 | 14.18 | 180.98 | 1183.15 | 3.70 |
| | 4/17/20 8:39 | 243.81 | 28.35 | 10.60 | 14.25 | 173.21 | 1183.26 | 3.70 |
| | 4/17/20 8:40 | 243.51 | 28.35 | 10.60 | 14.26 | 178.01 | 1182.69 | 3.70 |
| | 4/17/20 8:41 | 243.32 | 28.32 | 10.60 | 14.27 | 168.70 | 1183.50 | 3.70 |
| | 4/17/20 8:42 | 243.35 | 28.31 | 10.60 | 14.07 | 167.05 | 1182.63 | 3.70 |
| | 4/17/20 8:43 | 243.82 | 28.47 | 10.60 | 14.17 | 173.35 | 1183.23 | 3.70 |
| | 4/17/20 8:44 | 243.72 | 28.38 | 10.60 | 14.17 | 183.18 | 1182.70 | 3.70 |
| | 4/17/20 8:45 | 243.41 | 28.31 | 10.60 | 14.43 | 180.03 | 1183.51 | 3.70 |
| | 4/17/20 8:46 | 243.66 | 28.33 | 10.60 | 14.21 | 170.69 | 1182.31 | 3.70 |
| | 4/17/20 8:47 | 243.20 | 28.38 | 10.60 | 14.29 | 178.64 | 1182.56 | 3.70 |
| | 4/17/20 8:48 | 243.54 | 28.36 | 10.60 | 14.34 | 182.08 | 1182.91 | 3.70 |
| | 4/17/20 8:49 | 243.26 | 28.32 | 10.60 | 13.99 | 181.53 | 1183.85 | 3.70 |
| | 4/17/20 8:50 | 243.54 | 28.27 | 10.60 | 14.16 | 183.58 | 1183.42 | 3.70 |
| | 4/17/20 8:51 | 243.92 | 28.38 | 10.60 | 14.35 | 179.82 | 1183.91 | 3.70 |
| | 4/17/20 8:52 | 243.70 | 28.39 | 10.60 | 14.24 | 177.04 | 1183.22 | 3.70 |
| | 4/17/20 8:53 | 243.18 | 28.35 | 10.60 | 14.05 | 171.57 | 1182.51 | 3.70 |
| | 4/17/20 8:54 | 243.61 | 28.27 | 10.60 | 14.19 | 187.01 | 1182.90 | 3.70 |
| | 4/17/20 8:55 | 243.55 | 28.34 | 10.60 | 14.23 | 180.54 | 1182.87 | 3.70 |
| | 4/17/20 8:56 | 243.20 | 28.46 | 10.60 | 14.37 | 166.92 | 1183.53 | 3.70 |
| | 4/17/20 8:57 | 243.63 | 28.40 | 10.60 | 14.22 | 173.13 | 1183.26 | 3.70 |
| | 4/17/20 8:58 | 243.38 | 28.27 | 10.60 | 14.29 | 182.06 | 1183.39 | 3.70 |
| | 4/17/20 8:59 | 243.84 | 28.30 | 10.60 | 14.55 | 180.43 | 1183.33 | 3.70 |
| | 4/17/20 9:00 | 243.75 | 28.43 | 10.60 | 14.23 | 177.54 | 1183.42 | 3.70 |

# EMISSION DATA RECORDS

## Operating Data Base+DB Load
## (provided by Cricket Valley Energy Center LLC)
## Opacity

| Description | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/17 10:00 - 4/17 11:00) | 242.57 | 28.29 | 10.58 | 14.22 | 170.06 | 1182.50 | 3.70 |
| COUNT = 61 | | | | | | | |
| Signal Tagname | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| 4/17/20 10:00 | 242.41 | 28.26 | 10.58 | 14.26 | 168.31 | 1182.55 | 3.70 |
| 4/17/20 10:01 | 242.49 | 28.33 | 10.58 | 14.42 | 175.44 | 1183.06 | 3.70 |
| 4/17/20 10:02 | 242.66 | 28.32 | 10.58 | 14.34 | 179.06 | 1181.90 | 3.70 |
| 4/17/20 10:03 | 242.72 | 28.18 | 10.58 | 14.26 | 180.69 | 1183.31 | 3.70 |
| 4/17/20 10:04 | 242.40 | 28.29 | 10.58 | 14.30 | 179.85 | 1182.29 | 3.70 |
| 4/17/20 10:05 | 242.35 | 28.37 | 10.58 | 13.91 | 177.35 | 1181.80 | 3.70 |
| 4/17/20 10:06 | 242.56 | 28.36 | 10.58 | 14.23 | 178.98 | 1182.20 | 3.70 |
| 4/17/20 10:07 | 242.47 | 28.29 | 10.58 | 14.21 | 170.85 | 1182.41 | 3.70 |
| 4/17/20 10:08 | 242.77 | 28.24 | 10.58 | 14.58 | 176.20 | 1182.67 | 3.70 |
| 4/17/20 10:09 | 242.54 | 28.33 | 10.58 | 14.44 | 170.12 | 1182.57 | 3.70 |
| 4/17/20 10:10 | 242.24 | 28.30 | 10.58 | 14.14 | 164.62 | 1182.93 | 3.70 |
| 4/17/20 10:11 | 242.42 | 28.24 | 10.58 | 14.06 | 157.48 | 1183.45 | 3.70 |
| 4/17/20 10:12 | 242.39 | 28.15 | 10.58 | 14.08 | 163.17 | 1182.59 | 3.70 |
| 4/17/20 10:13 | 243.18 | 28.28 | 10.58 | 14.39 | 169.46 | 1183.53 | 3.70 |
| 4/17/20 10:14 | 242.53 | 28.36 | 10.58 | 14.13 | 175.97 | 1182.37 | 3.70 |
| 4/17/20 10:15 | 242.33 | 28.41 | 10.58 | 14.38 | 167.43 | 1182.63 | 3.70 |
| 4/17/20 10:16 | 242.78 | 28.28 | 10.58 | 14.51 | 164.23 | 1182.72 | 3.70 |
| 4/17/20 10:17 | 242.66 | 28.25 | 10.58 | 14.08 | 169.12 | 1181.88 | 3.70 |
| 4/17/20 10:18 | 242.30 | 28.38 | 10.58 | 14.34 | 173.21 | 1182.86 | 3.70 |
| 4/17/20 10:19 | 242.74 | 28.36 | 10.58 | 13.98 | 167.31 | 1182.88 | 3.70 |
| 4/17/20 10:20 | 242.44 | 28.24 | 10.58 | 14.40 | 171.25 | 1181.31 | 3.70 |
| 4/17/20 10:21 | 242.68 | 28.23 | 10.58 | 14.08 | 164.29 | 1182.72 | 3.70 |
| 4/17/20 10:22 | 242.53 | 28.35 | 10.58 | 14.10 | 169.12 | 1182.73 | 3.70 |
| 4/17/20 10:23 | 242.55 | 28.42 | 10.58 | 14.10 | 174.86 | 1181.88 | 3.70 |
| 4/17/20 10:24 | 242.80 | 28.25 | 10.58 | 14.20 | 162.33 | 1182.03 | 3.70 |
| 4/17/20 10:25 | 242.86 | 28.22 | 10.58 | 13.95 | 167.14 | 1181.98 | 3.70 |
| 4/17/20 10:26 | 242.49 | 28.29 | 10.58 | 14.09 | 179.04 | 1182.37 | 3.70 |
| 4/17/20 10:27 | 242.78 | 28.35 | 10.58 | 14.36 | 171.22 | 1182.66 | 3.70 |
| 4/17/20 10:28 | 242.86 | 28.36 | 10.58 | 14.45 | 165.19 | 1182.28 | 3.70 |
| 4/17/20 10:29 | 243.39 | 28.24 | 10.58 | 14.28 | 171.50 | 1183.25 | 3.70 |
| 4/17/20 10:30 | 242.92 | 28.27 | 10.58 | 14.28 | 177.70 | 1183.33 | 3.70 |
| 4/17/20 10:31 | 242.95 | 28.32 | 10.58 | 14.14 | 171.53 | 1182.62 | 3.70 |
| 4/17/20 10:32 | 242.60 | 28.36 | 10.58 | 14.16 | 165.15 | 1182.39 | 3.70 |
| 4/17/20 10:33 | 242.63 | 28.21 | 10.58 | 14.08 | 169.12 | 1182.14 | 3.70 |
| 4/17/20 10:34 | 242.29 | 28.23 | 10.58 | 14.45 | 173.51 | 1182.52 | 3.70 |
| 4/17/20 10:35 | 242.12 | 28.31 | 10.58 | 14.19 | 172.40 | 1182.76 | 3.70 |
| 4/17/20 10:36 | 242.46 | 28.34 | 10.58 | 14.32 | 171.12 | 1182.90 | 3.70 |
| 4/17/20 10:37 | 242.33 | 28.23 | 10.58 | 14.35 | 163.08 | 1182.36 | 3.70 |
| 4/17/20 10:38 | 242.51 | 28.17 | 10.58 | 14.37 | 163.37 | 1183.25 | 3.70 |
| 4/17/20 10:39 | 242.05 | 28.32 | 10.58 | 14.15 | 163.95 | 1181.96 | 3.70 |
| 4/17/20 10:40 | 242.81 | 28.38 | 10.57 | 14.18 | 168.61 | 1181.63 | 3.70 |
| 4/17/20 10:41 | 242.78 | 28.36 | 10.57 | 14.24 | 162.23 | 1182.50 | 3.70 |
| 4/17/20 10:42 | 242.70 | 28.22 | 10.57 | 14.47 | 166.83 | 1182.40 | 3.70 |
| 4/17/20 10:43 | 242.67 | 28.13 | 10.57 | 14.41 | 171.73 | 1182.54 | 3.70 |
| 4/17/20 10:44 | 243.43 | 28.36 | 10.57 | 14.45 | 178.40 | 1183.13 | 3.70 |
| 4/17/20 10:45 | 242.76 | 28.37 | 10.57 | 14.14 | 165.99 | 1182.34 | 3.70 |
| 4/17/20 10:46 | 242.51 | 28.19 | 10.57 | 14.10 | 178.01 | 1181.56 | 3.70 |
| 4/17/20 10:47 | 242.29 | 28.24 | 10.57 | 14.15 | 173.78 | 1183.00 | 3.70 |
| 4/17/20 10:48 | 242.15 | 28.32 | 10.57 | 14.45 | 169.27 | 1183.14 | 3.70 |
| 4/17/20 10:49 | 242.40 | 28.38 | 10.57 | 14.09 | 177.20 | 1182.63 | 3.70 |
| 4/17/20 10:50 | 242.10 | 28.22 | 10.57 | 14.03 | 161.03 | 1181.80 | 3.70 |
| 4/17/20 10:51 | 242.03 | 28.15 | 10.57 | 13.99 | 160.48 | 1182.28 | 3.70 |
| 4/17/20 10:52 | 242.25 | 28.23 | 10.57 | 13.89 | 167.25 | 1182.21 | 3.70 |
| 4/17/20 10:53 | 242.32 | 28.38 | 10.57 | 14.36 | 169.02 | 1183.07 | 3.70 |
| 4/17/20 10:54 | 242.46 | 28.25 | 10.57 | 14.13 | 165.10 | 1182.81 | 3.70 |
| 4/17/20 10:55 | 242.56 | 28.14 | 10.57 | 14.03 | 161.00 | 1182.48 | 3.70 |
| 4/17/20 10:56 | 243.01 | 28.28 | 10.57 | 14.10 | 172.76 | 1182.31 | 3.70 |
| 4/17/20 10:57 | 242.47 | 28.35 | 10.57 | 14.46 | 164.35 | 1182.33 | 3.70 |
| 4/17/20 10:58 | 242.65 | 28.34 | 10.57 | 14.09 | 171.87 | 1182.38 | 3.70 |
| 4/17/20 10:59 | 242.71 | 28.25 | 10.57 | 14.16 | 176.19 | 1182.29 | 3.70 |
| 4/17/20 11:00 | 242.61 | 28.23 | 10.57 | 14.20 | 177.13 | 1181.81 | 3.70 |

| Description | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/17 11:00 - 4/17 12:00) | 242.07 | 28.26 | 10.56 | 14.28 | 167.28 | 1182.19 | 3.70 |
| COUNT = 61 | | | | | | | |

| Signal Tagname | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
|---|---|---|---|---|---|---|---|
| 4/17/20 11:00 | 242.61 | 28.23 | 10.57 | 14.20 | 177.13 | 1181.81 | 3.70 |
| 4/17/20 11:01 | 243.07 | 28.32 | 10.57 | 14.17 | 172.33 | 1182.79 | 3.70 |
| 4/17/20 11:02 | 242.64 | 28.41 | 10.57 | 14.20 | 165.11 | 1183.37 | 3.70 |
| 4/17/20 11:03 | 242.27 | 28.26 | 10.57 | 14.15 | 177.69 | 1182.31 | 3.70 |
| 4/17/20 11:04 | 242.31 | 28.19 | 10.57 | 14.17 | 168.64 | 1182.77 | 3.70 |
| 4/17/20 11:05 | 243.23 | 28.29 | 10.57 | 14.66 | 166.34 | 1183.97 | 3.70 |
| 4/17/20 11:06 | 243.35 | 28.53 | 10.57 | 14.46 | 161.07 | 1183.65 | 3.70 |
| 4/17/20 11:07 | 242.49 | 28.29 | 10.57 | 14.38 | 174.44 | 1182.15 | 3.70 |
| 4/17/20 11:08 | 243.23 | 28.25 | 10.57 | 14.13 | 164.82 | 1182.99 | 3.70 |
| 4/17/20 11:09 | 242.54 | 28.30 | 10.57 | 14.31 | 165.21 | 1182.54 | 3.70 |
| 4/17/20 11:10 | 243.19 | 28.31 | 10.57 | 14.28 | 165.52 | 1182.75 | 3.70 |
| 4/17/20 11:11 | 242.53 | 28.42 | 10.57 | 14.47 | 164.84 | 1184.25 | 3.70 |
| 4/17/20 11:12 | 242.47 | 28.27 | 10.57 | 14.49 | 169.16 | 1183.32 | 3.70 |
| 4/17/20 11:13 | 242.84 | 28.25 | 10.57 | 14.17 | 166.36 | 1182.40 | 3.70 |
| 4/17/20 11:14 | 242.52 | 28.26 | 10.57 | 14.44 | 169.86 | 1183.56 | 3.70 |
| 4/17/20 11:15 | 242.46 | 28.41 | 10.57 | 14.23 | 166.21 | 1183.28 | 3.70 |
| 4/17/20 11:16 | 242.59 | 28.30 | 10.57 | 14.42 | 172.12 | 1182.35 | 3.70 |
| 4/17/20 11:17 | 242.34 | 28.25 | 10.57 | 14.19 | 161.41 | 1182.70 | 3.70 |
| 4/17/20 11:18 | 242.63 | 28.21 | 10.57 | 14.31 | 174.71 | 1182.96 | 3.70 |
| 4/17/20 11:19 | 242.13 | 28.25 | 10.57 | 14.23 | 159.83 | 1182.47 | 3.70 |
| 4/17/20 11:20 | 242.03 | 28.32 | 10.57 | 14.39 | 160.37 | 1181.98 | 3.70 |
| 4/17/20 11:21 | 241.78 | 28.26 | 10.57 | 14.31 | 171.24 | 1182.28 | 3.70 |
| 4/17/20 11:22 | 242.07 | 28.22 | 10.57 | 14.42 | 158.33 | 1182.51 | 3.70 |
| 4/17/20 11:23 | 241.96 | 28.27 | 10.57 | 14.00 | 169.58 | 1182.03 | 3.70 |
| 4/17/20 11:24 | 241.59 | 28.36 | 10.56 | 14.38 | 194.63 | 1181.88 | 3.70 |
| 4/17/20 11:25 | 242.05 | 28.30 | 10.56 | 14.37 | 199.57 | 1182.61 | 3.70 |
| 4/17/20 11:26 | 241.67 | 28.23 | 10.56 | 14.34 | 201.23 | 1181.95 | 3.70 |
| 4/17/20 11:27 | 242.01 | 28.26 | 10.56 | 14.10 | 193.18 | 1181.75 | 3.70 |
| 4/17/20 11:28 | 241.73 | 28.28 | 10.56 | 14.24 | 172.25 | 1182.28 | 3.70 |
| 4/17/20 11:29 | 242.13 | 28.27 | 10.56 | 14.01 | 179.83 | 1183.18 | 3.70 |
| 4/17/20 11:30 | 241.86 | 28.26 | 10.56 | 13.97 | 162.87 | 1181.88 | 3.70 |
| 4/17/20 11:31 | 242.20 | 28.17 | 10.56 | 14.48 | 172.40 | 1183.53 | 3.70 |
| 4/17/20 11:32 | 241.66 | 28.21 | 10.56 | 14.21 | 157.89 | 1182.11 | 3.70 |
| 4/17/20 11:33 | 242.15 | 28.31 | 10.56 | 14.38 | 171.82 | 1181.38 | 3.70 |
| 4/17/20 11:34 | 241.90 | 28.25 | 10.56 | 14.13 | 160.94 | 1181.66 | 3.70 |
| 4/17/20 11:35 | 242.30 | 28.21 | 10.56 | 14.26 | 166.35 | 1181.32 | 3.70 |
| 4/17/20 11:36 | 242.45 | 28.20 | 10.56 | 14.32 | 167.06 | 1182.16 | 3.70 |
| 4/17/20 11:37 | 242.02 | 28.26 | 10.56 | 14.34 | 160.88 | 1181.65 | 3.70 |
| 4/17/20 11:38 | 242.18 | 28.30 | 10.56 | 14.17 | 162.68 | 1182.74 | 3.70 |
| 4/17/20 11:39 | 241.78 | 28.23 | 10.56 | 14.29 | 171.06 | 1182.75 | 3.70 |
| 4/17/20 11:40 | 241.63 | 28.16 | 10.56 | 14.50 | 160.81 | 1182.36 | 3.70 |
| 4/17/20 11:41 | 241.56 | 28.16 | 10.56 | 14.19 | 166.38 | 1180.56 | 3.70 |
| 4/17/20 11:42 | 241.68 | 28.33 | 10.56 | 14.10 | 155.42 | 1181.35 | 3.70 |
| 4/17/20 11:43 | 241.93 | 28.21 | 10.56 | 13.99 | 168.70 | 1182.34 | 3.70 |
| 4/17/20 11:44 | 241.62 | 28.11 | 10.56 | 14.19 | 155.41 | 1181.69 | 3.70 |
| 4/17/20 11:45 | 242.02 | 28.24 | 10.56 | 14.56 | 163.88 | 1182.36 | 3.70 |
| 4/17/20 11:46 | 242.07 | 28.21 | 10.56 | 14.50 | 158.50 | 1181.36 | 3.70 |
| 4/17/20 11:47 | 241.23 | 28.29 | 10.56 | 14.02 | 155.97 | 1180.67 | 3.70 |
| 4/17/20 11:48 | 241.74 | 28.16 | 10.56 | 14.23 | 157.41 | 1182.07 | 3.70 |
| 4/17/20 11:49 | 241.46 | 28.19 | 10.56 | 14.45 | 161.43 | 1181.44 | 3.70 |
| 4/17/20 11:50 | 241.54 | 28.28 | 10.56 | 13.92 | 169.47 | 1181.17 | 3.70 |
| 4/17/20 11:51 | 241.35 | 28.24 | 10.56 | 14.30 | 154.69 | 1181.38 | 3.70 |
| 4/17/20 11:52 | 241.30 | 28.19 | 10.56 | 14.24 | 160.67 | 1181.23 | 3.70 |
| 4/17/20 11:53 | 241.67 | 28.21 | 10.56 | 14.10 | 162.86 | 1181.36 | 3.70 |
| 4/17/20 11:54 | 241.59 | 28.19 | 10.56 | 14.50 | 157.91 | 1181.66 | 3.70 |
| 4/17/20 11:55 | 241.79 | 28.31 | 10.56 | 14.29 | 166.05 | 1182.02 | 3.70 |
| 4/17/20 11:56 | 241.46 | 28.22 | 10.56 | 13.98 | 153.95 | 1180.91 | 3.70 |
| 4/17/20 11:57 | 241.52 | 28.16 | 10.56 | 14.44 | 167.57 | 1181.98 | 3.70 |
| 4/17/20 11:58 | 241.27 | 28.12 | 10.56 | 14.65 | 167.14 | 1182.26 | 3.70 |
| 4/17/20 11:59 | 241.14 | 28.26 | 10.56 | 14.32 | 156.36 | 1180.38 | 3.70 |
| 4/17/20 12:00 | 241.59 | 28.28 | 10.56 | 14.23 | 166.83 | 1180.96 | 3.70 |

| Description | CTG3 Gross output | CT3 gas flow | U3 duct burner gas flow | HRSG3 duct inlet pressure | U3 SCR NH3 flow rate | CT3 exhaust gas flow | Aux boiler fuel gas flow |
|---|---|---|---|---|---|---|---|
| UOM | MW | lbm/s | kpph | inH2O | pph | lbm/s | pph |
| AVERAGE (4/17 12:00 - 4/17 13:00) | 240.84 | 28.16 | 10.55 | 14.25 | 157.70 | 1180.44 | 3.70 |
| COUNT = 61 | | | | | | | |
| Signal Tagname | G3.DWATT | G3.FQG | H3.03JBFT105_ MassFlow | H3.03BAPT001 | H3.03BSFIT500 | G3.WEXH | BOPC2. 00SBFY061 |
| 4/17/20 12:00 | 241.59 | 28.28 | 10.56 | 14.23 | 166.83 | 1180.96 | 3.70 |
| 4/17/20 12:01 | 241.00 | 28.17 | 10.56 | 14.11 | 154.69 | 1180.78 | 3.70 |
| 4/17/20 12:02 | 241.32 | 28.13 | 10.56 | 14.31 | 166.92 | 1180.93 | 3.70 |
| 4/17/20 12:03 | 241.27 | 28.21 | 10.56 | 14.54 | 161.16 | 1181.04 | 3.70 |
| 4/17/20 12:04 | 241.49 | 28.25 | 10.56 | 14.11 | 155.46 | 1181.12 | 3.70 |
| 4/17/20 12:05 | 241.63 | 28.29 | 10.56 | 14.48 | 157.62 | 1181.83 | 3.70 |
| 4/17/20 12:06 | 242.13 | 28.18 | 10.56 | 14.22 | 156.55 | 1181.44 | 3.70 |
| 4/17/20 12:07 | 242.05 | 28.21 | 10.56 | 14.29 | 162.48 | 1181.21 | 3.70 |
| 4/17/20 12:08 | 241.36 | 28.29 | 10.56 | 14.11 | 164.83 | 1181.77 | 3.70 |
| 4/17/20 12:09 | 241.33 | 28.27 | 10.56 | 14.36 | 168.74 | 1180.75 | 3.70 |
| 4/17/20 12:10 | 241.12 | 28.15 | 10.56 | 14.54 | 159.53 | 1181.59 | 3.70 |
| 4/17/20 12:11 | 241.18 | 28.17 | 10.56 | 14.38 | 164.87 | 1182.25 | 3.70 |
| 4/17/20 12:12 | 241.52 | 28.20 | 10.56 | 14.13 | 159.32 | 1182.13 | 3.70 |
| 4/17/20 12:13 | 241.35 | 28.29 | 10.56 | 14.15 | 153.46 | 1180.75 | 3.70 |
| 4/17/20 12:14 | 241.80 | 28.24 | 10.56 | 14.32 | 155.20 | 1180.56 | 3.70 |
| 4/17/20 12:15 | 241.30 | 28.17 | 10.56 | 13.92 | 160.77 | 1180.71 | 3.70 |
| 4/17/20 12:16 | 241.17 | 28.19 | 10.56 | 14.56 | 165.49 | 1182.10 | 3.70 |
| 4/17/20 12:17 | 241.68 | 28.24 | 10.56 | 14.12 | 165.76 | 1181.53 | 3.70 |
| 4/17/20 12:18 | 241.70 | 28.24 | 10.56 | 13.91 | 157.41 | 1181.10 | 3.70 |
| 4/17/20 12:19 | 240.76 | 28.14 | 10.56 | 13.90 | 157.09 | 1180.87 | 3.70 |
| 4/17/20 12:20 | 240.92 | 28.18 | 10.56 | 14.05 | 156.97 | 1180.66 | 3.70 |
| 4/17/20 12:21 | 241.01 | 28.20 | 10.56 | 14.17 | 164.55 | 1180.81 | 3.70 |
| 4/17/20 12:22 | 240.68 | 28.17 | 10.56 | 14.36 | 150.94 | 1180.55 | 3.70 |
| 4/17/20 12:23 | 240.81 | 28.13 | 10.56 | 14.22 | 160.86 | 1180.50 | 3.70 |
| 4/17/20 12:24 | 240.46 | 28.11 | 10.56 | 14.42 | 148.74 | 1179.89 | 3.70 |
| 4/17/20 12:25 | 240.94 | 28.23 | 10.56 | 14.30 | 158.05 | 1180.96 | 3.70 |
| 4/17/20 12:26 | 240.74 | 28.18 | 10.56 | 14.22 | 154.27 | 1180.24 | 3.70 |
| 4/17/20 12:27 | 240.69 | 28.18 | 10.55 | 14.10 | 162.85 | 1179.62 | 3.70 |
| 4/17/20 12:28 | 240.51 | 28.12 | 10.55 | 14.21 | 150.09 | 1180.02 | 3.70 |
| 4/17/20 12:29 | 240.42 | 28.09 | 10.55 | 14.62 | 152.80 | 1180.89 | 3.70 |
| 4/17/20 12:30 | 240.77 | 28.19 | 10.55 | 14.09 | 161.74 | 1180.67 | 3.70 |
| 4/17/20 12:31 | 240.54 | 28.22 | 10.55 | 14.27 | 148.48 | 1180.58 | 3.70 |
| 4/17/20 12:32 | 240.49 | 28.07 | 10.55 | 14.60 | 159.37 | 1180.76 | 3.70 |
| 4/17/20 12:33 | 240.80 | 28.12 | 10.55 | 14.31 | 158.19 | 1181.20 | 3.70 |
| 4/17/20 12:34 | 240.66 | 28.22 | 10.55 | 14.21 | 160.51 | 1179.89 | 3.70 |
| 4/17/20 12:35 | 240.81 | 28.24 | 10.55 | 14.08 | 148.43 | 1180.02 | 3.70 |
| 4/17/20 12:36 | 240.48 | 28.14 | 10.55 | 14.12 | 160.27 | 1180.17 | 3.70 |
| 4/17/20 12:37 | 240.42 | 28.11 | 10.55 | 14.40 | 162.38 | 1180.71 | 3.70 |
| 4/17/20 12:38 | 240.47 | 28.07 | 10.55 | 14.24 | 158.33 | 1180.17 | 3.70 |
| 4/17/20 12:39 | 240.61 | 28.16 | 10.55 | 14.02 | 150.71 | 1179.57 | 3.70 |
| 4/17/20 12:40 | 240.39 | 28.21 | 10.55 | 14.24 | 150.94 | 1179.62 | 3.70 |
| 4/17/20 12:41 | 240.75 | 28.09 | 10.55 | 14.04 | 156.87 | 1179.41 | 3.70 |
| 4/17/20 12:42 | 240.89 | 28.10 | 10.55 | 14.03 | 153.78 | 1179.88 | 3.70 |
| 4/17/20 12:43 | 241.20 | 28.18 | 10.55 | 14.14 | 154.50 | 1181.54 | 3.70 |
| 4/17/20 12:44 | 240.97 | 28.22 | 10.55 | 14.15 | 151.27 | 1179.95 | 3.70 |
| 4/17/20 12:45 | 240.60 | 28.06 | 10.55 | 14.88 | 157.20 | 1180.53 | 3.70 |
| 4/17/20 12:46 | 240.43 | 28.10 | 10.55 | 14.17 | 163.46 | 1179.49 | 3.70 |
| 4/17/20 12:47 | 241.07 | 28.11 | 10.55 | 14.21 | 162.67 | 1179.93 | 3.70 |
| 4/17/20 12:48 | 240.70 | 28.14 | 10.55 | 14.28 | 159.54 | 1179.52 | 3.70 |
| 4/17/20 12:49 | 240.20 | 28.21 | 10.55 | 14.44 | 156.93 | 1179.79 | 3.70 |
| 4/17/20 12:50 | 240.09 | 28.07 | 10.55 | 14.50 | 152.66 | 1179.36 | 3.70 |
| 4/17/20 12:51 | 239.83 | 28.02 | 10.55 | 14.00 | 150.37 | 1180.03 | 3.70 |
| 4/17/20 12:52 | 239.93 | 28.13 | 10.55 | 14.12 | 150.92 | 1179.19 | 3.70 |
| 4/17/20 12:53 | 240.12 | 28.10 | 10.55 | 14.02 | 146.79 | 1179.66 | 3.70 |
| 4/17/20 12:54 | 239.48 | 27.99 | 10.55 | 14.49 | 159.18 | 1178.96 | 3.70 |
| 4/17/20 12:55 | 240.08 | 28.03 | 10.55 | 14.09 | 147.23 | 1179.16 | 3.70 |
| 4/17/20 12:56 | 240.20 | 28.09 | 10.55 | 14.16 | 156.36 | 1178.87 | 3.70 |
| 4/17/20 12:57 | 240.29 | 28.15 | 10.55 | 14.56 | 162.13 | 1180.20 | 3.70 |
| 4/17/20 12:58 | 240.41 | 28.07 | 10.55 | 14.39 | 160.80 | 1179.49 | 3.70 |
| 4/17/20 12:59 | 240.88 | 28.09 | 10.55 | 14.44 | 161.91 | 1179.95 | 3.70 |
| 4/17/20 13:00 | 240.49 | 28.12 | 10.55 | 14.31 | 161.66 | 1179.14 | 3.70 |

# EMISSION DATA RECORDS

## Reference Method Data
## Base Load
## NOx, CO, VOC, and $NH_3$

**Cricket Valley Energy Center LLC**
**April 15, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,638 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,014 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,651 | lb/min |
| Duct Burner Fuel Flow | 0 | lb/min |
| Total Fuel Flow | 2,293,723 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.99 | in. Hg |
| Relative Humidity | 23 | % |
| Ambient Temperature | 53 | ° F |
| Specific Humidity | 0.001939 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 237.6 | megawatts |
| Heat Input | 2,327 | MMBtu/hr |
| $NH_3$ Flow Rate | 142 | lb/hr |
| Meas. Stack Moisture | 8.8 | % |
| Stack Exhaust Flow (M19) | 52,372,088 | SCFH |

Data from: From PM Run PM U-00003 Base-1

Base Load, Run - 1-1

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 04/15/20 12:10:05 | 6570 | 12.72 | 1.88 | -0.47 | 0.00 | 4.56 | 0.39 |
| 04/15/20 12:10:35 | 6600 | 12.73 | 1.78 | -0.49 | 0.00 | 4.56 | 0.34 |
| 04/15/20 12:11:05 | 6630 | 12.74 | 1.84 | -0.47 | 0.00 | 4.56 | 0.37 |
| 04/15/20 12:11:35 | 6660 | 12.74 | 1.85 | -0.46 | 0.00 | 4.57 | 0.37 |
| 04/15/20 12:12:05 | 6690 | 12.75 | 1.85 | -0.46 | 0.00 | 4.57 | 0.36 |
| 04/15/20 12:12:35 | 6720 | 12.76 | 1.81 | -0.46 | 0.00 | 4.57 | 0.39 |
| 04/15/20 12:13:05 | 6750 | 12.77 | 1.79 | -0.47 | 0.00 | 4.56 | 0.38 |
| 04/15/20 12:13:35 | 6780 | 12.76 | 1.78 | -0.46 | 0.00 | 4.56 | 0.36 |
| 04/15/20 12:14:05 | 6810 | 12.77 | 1.74 | -0.46 | 0.00 | 4.56 | 0.36 |
| 04/15/20 12:14:35 | 6840 | 12.76 | 1.75 | -0.47 | 0.00 | 4.57 | 0.36 |
| 04/15/20 12:15:05 | 6870 | 12.76 | 1.79 | -0.46 | 0.00 | 4.57 | 0.37 |
| 04/15/20 12:15:35 | 6900 | 12.76 | 1.85 | -0.46 | 0.00 | 4.57 | 0.38 |
| 04/15/20 12:16:05 | 6930 | 12.75 | 1.86 | -0.46 | 0.01 | 4.57 | 0.37 |
| 04/15/20 12:16:35 | 6960 | 12.75 | 1.85 | -0.47 | 0.00 | 4.57 | 0.38 |
| 04/15/20 12:17:05 | 6990 | 12.74 | 1.81 | -0.47 | 0.00 | 4.57 | 0.36 |
| 04/15/20 12:17:35 | 7020 | 12.74 | 1.83 | -0.47 | 0.00 | 4.57 | 0.38 |
| 04/15/20 12:18:05 | 7050 | 12.76 | 1.92 | -0.44 | 0.01 | 4.58 | 0.36 |
| 04/15/20 12:18:35 | 7080 | 12.76 | 1.90 | -0.46 | 0.00 | 4.57 | 0.35 |
| 04/15/20 12:19:05 | 7110 | 12.76 | 1.87 | -0.47 | 0.00 | 4.56 | 0.36 |
| 04/15/20 12:19:35 | 7140 | 12.76 | 1.83 | -0.47 | 0.00 | 4.56 | 0.38 |
| 04/15/20 12:20:05 | 7170 | 12.76 | 1.78 | -0.47 | 0.00 | 4.56 | 0.36 |
| 04/15/20 12:20:35 | 7200 | 12.77 | 1.78 | -0.45 | 0.01 | 4.56 | 0.35 |
| 04/15/20 12:21:05 | 7230 | 12.77 | 1.68 | -0.49 | 0.00 | 4.56 | 0.35 |
| 04/15/20 12:21:35 | 7260 | 12.78 | 1.81 | -0.46 | 0.01 | 4.56 | 0.37 |
| 04/15/20 12:22:05 | 7290 | 12.79 | 1.79 | -0.46 | 0.00 | 4.56 | 0.36 |
| 04/15/20 12:22:35 | 7320 | 12.79 | 1.79 | -0.47 | 0.00 | 4.56 | 0.33 |
| 04/15/20 12:23:05 | 7350 | 12.77 | 1.81 | -0.46 | 0.00 | 4.57 | 0.33 |
| 04/15/20 12:23:35 | 7380 | 12.77 | 1.79 | -0.46 | 0.00 | 4.57 | 0.36 |
| 04/15/20 12:24:05 | 7410 | 12.77 | 1.80 | -0.46 | 0.00 | 4.56 | 0.38 |
| 04/15/20 12:24:35 | 7440 | 12.77 | 1.75 | -0.46 | 0.00 | 4.56 | 0.34 |
| 04/15/20 12:25:05 | 7470 | 12.77 | 1.76 | -0.46 | 0.01 | 4.56 | 0.33 |
| 04/15/20 12:25:35 | 7500 | 12.77 | 1.79 | -0.46 | 0.00 | 4.56 | 0.30 |
| 04/15/20 12:26:05 | 7530 | 12.77 | 1.78 | -0.47 | 0.00 | 4.56 | 0.34 |
| 04/15/20 12:26:35 | 7560 | 12.78 | 1.74 | -0.46 | 0.01 | 4.56 | 0.31 |
| 04/15/20 12:27:05 | 7590 | 12.77 | 1.76 | -0.47 | 0.01 | 4.56 | 0.32 |
| 04/15/20 12:27:35 | 7620 | 12.77 | 1.76 | -0.46 | 0.01 | 4.56 | 0.34 |
| 04/15/20 12:28:05 | 7650 | 12.76 | 1.79 | -0.47 | 0.00 | 4.56 | 0.34 |
| 04/15/20 12:28:35 | 7680 | 12.76 | 1.85 | -0.47 | 0.00 | 4.56 | 0.30 |
| 04/15/20 12:29:05 | 7710 | 12.77 | 1.84 | -0.46 | 0.00 | 4.57 | 0.35 |
| 04/15/20 12:29:35 | 7740 | 12.77 | 1.81 | -0.48 | 0.00 | 4.57 | 0.34 |
| 04/15/20 12:30:05 | 7770 | 12.77 | 1.87 | -0.46 | 0.00 | 4.57 | 0.33 |
| 04/15/20 12:30:35 | 7800 | 12.76 | 1.85 | -0.47 | 0.00 | 4.57 | 0.33 |
| 04/15/20 12:31:05 | 7830 | 12.75 | 1.92 | -0.45 | 0.01 | 4.56 | 0.31 |
| 04/15/20 12:31:35 | 7860 | 12.76 | 1.90 | -0.46 | 0.00 | 4.56 | 0.33 |
| 04/15/20 12:32:05 | 7890 | 12.78 | 1.93 | -0.45 | 0.01 | 4.57 | 0.33 |
| 04/15/20 12:32:35 | 7920 | 12.78 | 1.84 | -0.48 | 0.00 | 4.56 | 0.34 |
| 04/15/20 12:33:05 | 7950 | 12.75 | 1.87 | -0.45 | 0.01 | 4.56 | 0.30 |
| 04/15/20 12:33:35 | 7980 | 12.76 | 1.85 | -0.48 | 0.00 | 4.56 | 0.27 |
| 04/15/20 12:34:05 | 8010 | 12.77 | 1.80 | -0.48 | 0.00 | 4.56 | 0.30 |
| 04/15/20 12:34:35 | 8040 | 12.78 | 1.87 | -0.46 | 0.00 | 4.56 | 0.32 |
| 04/15/20 12:35:05 | 8070 | 12.76 | 1.85 | -0.46 | 0.00 | 4.56 | 0.30 |
| 04/15/20 12:35:35 | 8100 | 12.77 | 1.85 | -0.46 | 0.00 | 4.56 | 0.29 |
| 04/15/20 12:36:05 | 8130 | 12.76 | 1.75 | -0.48 | 0.00 | 4.57 | 0.33 |
| 04/15/20 12:36:35 | 8160 | 12.76 | 1.69 | -0.47 | 0.00 | 4.56 | 0.32 |
| 04/15/20 12:37:05 | 8190 | 12.78 | 1.63 | -0.46 | 0.00 | 4.56 | 0.35 |
| 04/15/20 12:37:35 | 8220 | 12.78 | 1.60 | -0.46 | 0.00 | 4.56 | 0.30 |
| 04/15/20 12:38:05 | 8250 | 12.76 | 1.61 | -0.45 | 0.01 | 4.56 | 0.31 |
| 04/15/20 12:38:35 | 8280 | 12.76 | 1.54 | -0.47 | 0.00 | 4.56 | 0.31 |
| 04/15/20 12:39:05 | 8310 | 12.77 | 1.48 | -0.47 | 0.00 | 4.56 | 0.34 |
| 04/15/20 12:39:35 | 8340 | 12.77 | 1.41 | -0.48 | 0.00 | 4.56 | 0.31 |
| 04/15/20 12:40:05 | 8370 | 12.76 | 1.34 | -0.49 | 0.00 | 4.56 | 0.29 |
| 04/15/20 12:40:35 | 8400 | 12.76 | 1.40 | -0.47 | 0.00 | 4.56 | 0.29 |
| 04/15/20 12:41:05 | 8430 | 12.77 | 1.37 | -0.47 | 0.00 | 4.57 | 0.32 |
| 04/15/20 12:41:35 | 8460 | 12.77 | 1.46 | -0.46 | 0.00 | 4.57 | 0.32 |
| 04/15/20 12:42:05 | 8490 | 12.77 | 1.46 | -0.46 | 0.00 | 4.56 | 0.28 |
| 04/15/20 12:42:35 | 8520 | 12.77 | 1.45 | -0.46 | 0.00 | 4.56 | 0.30 |
| 04/15/20 12:43:05 | 8550 | 12.79 | 1.44 | -0.46 | 0.00 | 4.56 | 0.28 |
| 04/15/20 12:43:35 | 8580 | 12.78 | 1.46 | -0.46 | 0.00 | 4.56 | 0.27 |
| 04/15/20 12:44:05 | 8610 | 12.77 | 1.47 | -0.48 | 0.00 | 4.56 | 0.29 |
| 04/15/20 12:44:35 | 8640 | 12.77 | 1.51 | -0.47 | 0.00 | 4.56 | 0.27 |
| 04/15/20 12:45:05 | 8670 | 12.77 | 1.57 | -0.47 | 0.00 | 4.57 | 0.29 |
| 04/15/20 12:45:35 | 8700 | 12.77 | 1.55 | -0.47 | 0.00 | 4.56 | 0.29 |
| 04/15/20 12:46:05 | 8730 | 12.76 | 1.66 | -0.46 | 0.01 | 4.56 | 0.30 |
| 04/15/20 12:46:35 | 8760 | 12.76 | 1.66 | -0.46 | 0.01 | 4.56 | 0.30 |
| 04/15/20 12:47:05 | 8790 | 12.76 | 1.68 | -0.46 | 0.01 | 4.56 | 0.26 |
| 04/15/20 12:47:35 | 8820 | 12.77 | 1.67 | -0.46 | 0.00 | 4.56 | 0.27 |
| 04/15/20 12:48:05 | 8850 | 12.77 | 1.67 | -0.46 | 0.01 | 4.56 | 0.25 |

**Cricket Valley Energy Center LLC**
**April 15, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,638 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,014 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,651 | lb/min |
| Duct Burner Fuel Flow | 0 | lb/min |
| Total Fuel Flow | 2,293,723 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.99 | in. Hg |
| Relative Humidity | 23 | % |
| Ambient Temperature | 53 | ° F |
| Specific Humidity | 0.001939 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 237.6 | megawatts |
| Heat Input | 2,327 | MMBtu/hr |
| $NH_3$ Flow Rate | 142 | lb/hr |
| Meas. Stack Moisture | 8.8 | % |
| Stack Exhaust Flow (M19) | 52,372,088 | SCFH |

Data from: From PM Run PM U-00003 Base-1

Base Load, Run - 1-1

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 04/15/20 12:48:35 | 8880 | 12.77 | 1.71 | -0.46 | 0.00 | 4.56 | 0.26 |
| 04/15/20 12:49:05 | 8910 | 12.76 | 1.71 | -0.47 | 0.00 | 4.56 | 0.27 |
| 04/15/20 12:49:35 | 8940 | 12.77 | 1.73 | -0.47 | 0.00 | 4.56 | 0.28 |
| 04/15/20 12:50:05 | 8970 | 12.75 | 1.73 | -0.46 | 0.00 | 4.55 | 0.33 |
| 04/15/20 12:50:35 | 9000 | 12.77 | 1.79 | -0.45 | 0.01 | 4.56 | 0.35 |
| 04/15/20 12:51:05 | 9030 | 12.77 | 1.84 | -0.45 | 0.01 | 4.56 | 0.36 |
| 04/15/20 12:51:35 | 9060 | 12.77 | 1.93 | -0.47 | 0.00 | 4.56 | 0.35 |
| 04/15/20 12:52:05 | 9090 | 12.77 | 1.93 | -0.46 | 0.00 | 4.56 | 0.36 |
| 04/15/20 12:52:35 | 9120 | 12.77 | 1.96 | -0.46 | 0.00 | 4.56 | 0.31 |
| 04/15/20 12:53:05 | 9150 | 12.78 | 1.94 | -0.46 | 0.00 | 4.56 | 0.32 |
| 04/15/20 12:53:35 | 9180 | 12.78 | 1.93 | -0.45 | 0.01 | 4.56 | 0.30 |
| 04/15/20 12:54:05 | 9210 | 12.77 | 1.93 | -0.45 | 0.01 | 4.56 | 0.32 |
| 04/15/20 12:54:35 | 9240 | 12.77 | 1.88 | -0.47 | 0.00 | 4.56 | 0.33 |
| 04/15/20 12:55:05 | 9270 | 12.77 | 1.92 | -0.45 | 0.01 | 4.56 | 0.32 |
| 04/15/20 12:55:35 | 9300 | 12.77 | 1.86 | -0.47 | 0.00 | 4.56 | 0.30 |
| 04/15/20 12:56:05 | 9330 | 12.76 | 1.91 | -0.46 | 0.01 | 4.55 | 0.33 |
| 04/15/20 12:56:35 | 9360 | 12.77 | 1.95 | -0.46 | 0.00 | 4.56 | 0.33 |
| 04/15/20 12:57:05 | 9390 | 12.78 | 1.98 | -0.47 | 0.00 | 4.56 | 0.33 |
| 04/15/20 12:57:35 | 9420 | 12.77 | 1.97 | -0.47 | 0.00 | 4.56 | 0.35 |
| 04/15/20 12:58:05 | 9450 | 12.78 | 1.99 | -0.47 | 0.00 | 4.56 | 0.32 |
| 04/15/20 12:58:35 | 9480 | 12.77 | 2.00 | -0.47 | 0.00 | 4.56 | 0.34 |
| 04/15/20 12:59:05 | 9510 | 12.77 | 2.00 | -0.47 | 0.00 | 4.56 | 0.30 |
| 04/15/20 12:59:35 | 9540 | 12.77 | 1.99 | -0.46 | 0.00 | 4.56 | 0.30 |
| 04/15/20 13:00:05 | 9570 | 12.76 | 1.95 | -0.47 | 0.00 | 4.56 | 0.31 |
| 04/15/20 13:00:35 | 9600 | 12.76 | 1.97 | -0.46 | 0.00 | 4.56 | 0.31 |
| 04/15/20 13:01:05 | 9630 | 12.77 | 1.95 | -0.46 | 0.00 | 4.56 | 0.29 |
| 04/15/20 13:01:35 | 9660 | 12.76 | 1.92 | -0.46 | 0.00 | 4.55 | 0.31 |
| 04/15/20 13:02:05 | 9690 | 12.77 | 1.89 | -0.46 | 0.01 | 4.56 | 0.29 |
| 04/15/20 13:02:35 | 9720 | 12.76 | 1.87 | -0.46 | 0.01 | 4.56 | 0.35 |
| 04/15/20 13:03:05 | 9750 | 12.78 | 1.84 | -0.46 | 0.00 | 4.56 | 0.31 |
| 04/15/20 13:03:35 | 9780 | 12.78 | 1.81 | -0.46 | 0.00 | 4.56 | 0.30 |
| 04/15/20 13:04:05 | 9810 | 12.77 | 1.78 | -0.47 | 0.00 | 4.55 | 0.33 |
| 04/15/20 13:04:35 | 9840 | 12.77 | 1.85 | -0.46 | 0.00 | 4.55 | 0.32 |
| 04/15/20 13:05:05 | 9870 | 12.79 | 1.85 | -0.46 | 0.00 | 4.56 | 0.34 |
| 04/15/20 13:05:35 | 9900 | 12.79 | 1.88 | -0.47 | 0.00 | 4.55 | 0.32 |
| 04/15/20 13:06:05 | 9930 | 12.78 | 1.81 | -0.46 | 0.00 | 4.55 | 0.30 |
| 04/15/20 13:06:35 | 9960 | 12.79 | 1.83 | -0.45 | 0.01 | 4.55 | 0.30 |
| 04/15/20 13:07:05 | 9990 | 12.78 | 1.76 | -0.47 | 0.00 | 4.55 | 0.33 |
| 04/15/20 13:07:35 | 10020 | 12.78 | 1.80 | -0.46 | 0.00 | 4.55 | 0.34 |
| 04/15/20 13:08:05 | 10050 | 12.78 | 1.85 | -0.46 | 0.00 | 4.55 | 0.32 |
| 04/15/20 13:08:35 | 10080 | 12.78 | 1.90 | -0.46 | 0.01 | 4.55 | 0.33 |
| 04/15/20 13:09:05 | 10110 | 12.77 | 1.88 | -0.47 | 0.00 | 4.55 | 0.33 |
| 04/15/20 13:09:35 | 10140 | 12.77 | 1.91 | -0.47 | 0.00 | 4.56 | 0.30 |
| **RAW AVERAGE** | | **12.77** | **1.78** | **-0.46** | **0.00** | **4.56** | **0.33** |

| | | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|---|
| | **Serial Number:** | inst-02-0024 | inst-nx-0031 | inst-co-0029 | inst-th-0013 | inst-c2-0016 | inst-ir-0004 |
| | | (%) | (ppmvd) | (ppmvd) | (ppmvw) | (%) | |
| Bias | **Initial Zero** | 0.03 | 0.06 | 0.06 | -0.01 | -0.02 | |
| Bias | **Final Zero** | 0.09 | 0.05 | -0.17 | 0.00 | -0.16 | |
| Bias | **Avg. Zero** | 0.06 | 0.06 | -0.06 | 0.00 | -0.09 | |
| Bias | **Initial UpScale** | 11.90 | 4.60 | 5.19 | 3.02 | 8.89 | |
| Bias | **Final UpScale** | 11.86 | 4.62 | 4.88 | 3.15 | 8.89 | |
| Bias | **Avg. UpScale** | 11.88 | 4.61 | 5.04 | 3.09 | 8.89 | |
| **Upscale Cal Gas** | | 11.98 | 4.55 | 5.22 | 3.03 | 8.91 | |

| **EMISSIONS DATA** | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 12.88 | 1.73 | 0.00 | 0.00 | 4.62 | 0.36 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.27 | 0.00 | 0.00 | N/A | 0.26 |

Non-Bias Adjusted Averages Include: *

**Cricket Valley Energy Center LLC**
**April 15, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,638 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,014 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,646 | lb/min |
| Duct Burner Fuel Flow | 0 | lb/min |
| Total Fuel Flow | 2,287,005 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.11 | in. Hg |
| Relative Humidity | 25 | % |
| Ambient Temperature | 54 | ° F |
| Specific Humidity | 0.002178 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 237.1 | megawatts |
| Heat Input | 2,320 | MMBtu/hr |
| $NH_3$ Flow Rate | 135 | lb/hr |
| Meas. Stack Moisture | 8.8 | % |
| Stack Exhaust Flow (M19) | 52,469,624 | SCFH |

Data from: From PM Run PM U-00003 Base-1

Base Load, Run - 1-2

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 04/15/20 13:23:05 | 10950 | 12.72 | 1.95 | -0.47 | 0.00 | 4.88 | 0.30 |
| 04/15/20 13:23:35 | 10980 | 12.70 | 1.92 | -0.46 | 0.00 | 4.88 | 0.30 |
| 04/15/20 13:24:05 | 11010 | 12.73 | 1.90 | -0.46 | 0.00 | 4.87 | 0.28 |
| 04/15/20 13:24:35 | 11040 | 12.75 | 1.83 | -0.47 | 0.00 | 4.88 | 0.32 |
| 04/15/20 13:25:05 | 11070 | 12.76 | 1.82 | -0.47 | 0.00 | 4.89 | 0.28 |
| 04/15/20 13:25:35 | 11100 | 12.76 | 1.84 | -0.46 | 0.01 | 4.89 | 0.27 |
| 04/15/20 13:26:05 | 11130 | 12.76 | 1.76 | -0.48 | 0.00 | 4.89 | 0.30 |
| 04/15/20 13:26:35 | 11160 | 12.76 | 1.79 | -0.47 | 0.00 | 4.89 | 0.25 |
| 04/15/20 13:27:05 | 11190 | 12.76 | 1.89 | -0.45 | 0.01 | 4.89 | 0.27 |
| 04/15/20 13:27:35 | 11220 | 12.76 | 1.87 | -0.46 | 0.00 | 4.89 | 0.31 |
| 04/15/20 13:28:05 | 11250 | 12.77 | 1.90 | -0.46 | 0.00 | 4.89 | 0.26 |
| 04/15/20 13:28:35 | 11280 | 12.72 | 1.89 | -0.47 | 0.00 | 4.87 | 0.28 |
| 04/15/20 13:29:05 | 11310 | 12.75 | 1.91 | -0.46 | 0.00 | 4.89 | 0.26 |
| 04/15/20 13:29:35 | 11340 | 12.76 | 1.95 | -0.46 | 0.00 | 4.89 | 0.29 |
| 04/15/20 13:30:05 | 11370 | 12.77 | 1.94 | -0.47 | 0.00 | 4.89 | 0.30 |
| 04/15/20 13:30:35 | 11400 | 12.77 | 1.93 | -0.47 | 0.00 | 4.89 | 0.28 |
| 04/15/20 13:31:05 | 11430 | 12.77 | 1.95 | -0.47 | 0.00 | 4.89 | 0.28 |
| 04/15/20 13:31:35 | 11460 | 12.77 | 1.98 | -0.46 | 0.00 | 4.89 | 0.28 |
| 04/15/20 13:32:05 | 11490 | 12.76 | 1.97 | -0.47 | 0.00 | 4.89 | 0.28 |
| 04/15/20 13:32:35 | 11520 | 12.76 | 2.00 | -0.46 | 0.01 | 4.89 | 0.28 |
| 04/15/20 13:33:05 | 11550 | 12.76 | 2.00 | -0.47 | 0.00 | 4.89 | 0.30 |
| 04/15/20 13:33:35 | 11580 | 12.76 | 1.98 | -0.47 | 0.00 | 4.89 | 0.27 |
| 04/15/20 13:34:05 | 11610 | 12.77 | 2.06 | -0.46 | 0.00 | 4.89 | 0.29 |
| 04/15/20 13:34:35 | 11640 | 12.76 | 2.05 | -0.47 | 0.00 | 4.90 | 0.27 |
| 04/15/20 13:35:05 | 11670 | 12.77 | 2.06 | -0.47 | 0.00 | 4.90 | 0.28 |
| 04/15/20 13:35:35 | 11700 | 12.77 | 2.07 | -0.47 | 0.00 | 4.90 | 0.26 |
| 04/15/20 13:36:05 | 11730 | 12.78 | 2.05 | -0.46 | 0.00 | 4.90 | 0.27 |
| 04/15/20 13:36:35 | 11760 | 12.77 | 2.04 | -0.47 | 0.00 | 4.90 | 0.27 |
| 04/15/20 13:37:05 | 11790 | 12.77 | 2.07 | -0.45 | 0.01 | 4.89 | 0.25 |
| 04/15/20 13:37:35 | 11820 | 12.77 | 2.00 | -0.46 | 0.00 | 4.89 | 0.28 |
| 04/15/20 13:38:05 | 11850 | 12.76 | 1.95 | -0.47 | 0.00 | 4.90 | 0.28 |
| 04/15/20 13:38:35 | 11880 | 12.76 | 1.91 | -0.47 | 0.00 | 4.90 | 0.26 |
| 04/15/20 13:39:05 | 11910 | 12.76 | 1.89 | -0.47 | 0.00 | 4.90 | 0.27 |
| 04/15/20 13:39:35 | 11940 | 12.78 | 1.89 | -0.46 | 0.00 | 4.90 | 0.23 |
| 04/15/20 13:40:05 | 11970 | 12.76 | 1.90 | -0.47 | 0.00 | 4.89 | 0.25 |
| 04/15/20 13:40:35 | 12000 | 12.76 | 1.88 | -0.46 | 0.00 | 4.89 | 0.24 |
| 04/15/20 13:41:05 | 12030 | 12.76 | 1.81 | -0.48 | 0.00 | 4.90 | 0.27 |
| 04/15/20 13:41:35 | 12060 | 12.76 | 1.90 | -0.47 | 0.00 | 4.90 | 0.23 |
| 04/15/20 13:42:05 | 12090 | 12.76 | 1.95 | -0.46 | 0.00 | 4.89 | 0.25 |
| 04/15/20 13:42:35 | 12120 | 12.76 | 1.98 | -0.47 | 0.00 | 4.89 | 0.26 |
| 04/15/20 13:43:05 | 12150 | 12.77 | 2.00 | -0.46 | 0.00 | 4.90 | 0.28 |
| 04/15/20 13:43:35 | 12180 | 12.77 | 1.94 | -0.47 | 0.00 | 4.90 | 0.25 |
| 04/15/20 13:44:05 | 12210 | 12.77 | 1.98 | -0.47 | 0.00 | 4.90 | 0.25 |
| 04/15/20 13:44:35 | 12240 | 12.75 | 1.98 | -0.46 | 0.00 | 4.89 | 0.25 |
| 04/15/20 13:45:05 | 12270 | 12.75 | 1.94 | -0.46 | 0.00 | 4.88 | 0.26 |
| 04/15/20 13:45:35 | 12300 | 12.77 | 1.97 | -0.47 | 0.00 | 4.89 | 0.24 |
| 04/15/20 13:46:05 | 12330 | 12.78 | 1.90 | -0.47 | 0.00 | 4.89 | 0.25 |
| 04/15/20 13:46:35 | 12360 | 12.77 | 1.82 | -0.46 | 0.00 | 4.89 | 0.24 |
| 04/15/20 13:47:05 | 12390 | 12.76 | 1.77 | -0.47 | 0.00 | 4.89 | 0.25 |
| 04/15/20 13:47:35 | 12420 | 12.77 | 1.77 | -0.45 | 0.01 | 4.90 | 0.26 |
| 04/15/20 13:48:05 | 12450 | 12.77 | 1.78 | -0.45 | 0.01 | 4.89 | 0.25 |
| 04/15/20 13:48:35 | 12480 | 12.76 | 1.73 | -0.47 | 0.00 | 4.89 | 0.23 |
| 04/15/20 13:49:05 | 12510 | 12.78 | 1.73 | -0.47 | 0.00 | 4.89 | 0.23 |
| 04/15/20 13:49:35 | 12540 | 12.78 | 1.78 | -0.46 | 0.01 | 4.89 | 0.22 |
| 04/15/20 13:50:05 | 12570 | 12.77 | 1.76 | -0.46 | 0.00 | 4.89 | 0.25 |
| 04/15/20 13:50:35 | 12600 | 12.77 | 1.79 | -0.47 | 0.00 | 4.89 | 0.22 |
| 04/15/20 13:51:05 | 12630 | 12.77 | 1.73 | -0.48 | 0.00 | 4.90 | 0.26 |
| 04/15/20 13:51:35 | 12660 | 12.77 | 1.75 | -0.48 | 0.00 | 4.90 | 0.25 |
| 04/15/20 13:52:05 | 12690 | 12.77 | 1.82 | -0.46 | 0.00 | 4.89 | 0.25 |
| 04/15/20 13:52:35 | 12720 | 12.77 | 1.78 | -0.47 | 0.00 | 4.89 | 0.21 |
| 04/15/20 13:53:05 | 12750 | 12.78 | 1.80 | -0.47 | 0.00 | 4.89 | 0.22 |
| 04/15/20 13:53:35 | 12780 | 12.78 | 1.80 | -0.47 | 0.00 | 4.89 | 0.23 |
| 04/15/20 13:54:05 | 12810 | 12.77 | 1.88 | -0.46 | 0.01 | 4.89 | 0.21 |
| 04/15/20 13:54:35 | 12840 | 12.77 | 1.90 | -0.46 | 0.00 | 4.89 | 0.24 |
| 04/15/20 13:55:05 | 12870 | 12.76 | 1.95 | -0.46 | 0.00 | 4.89 | 0.23 |
| 04/15/20 13:55:35 | 12900 | 12.76 | 1.99 | -0.46 | 0.00 | 4.89 | 0.21 |
| 04/15/20 13:56:05 | 12930 | 12.76 | 2.03 | -0.46 | 0.00 | 4.89 | 0.25 |
| 04/15/20 13:56:35 | 12960 | 12.77 | 2.03 | -0.45 | 0.01 | 4.89 | 0.22 |
| 04/15/20 13:57:05 | 12990 | 12.77 | 2.02 | -0.46 | 0.01 | 4.89 | 0.21 |
| 04/15/20 13:57:35 | 13020 | 12.77 | 1.95 | -0.48 | 0.00 | 4.89 | 0.23 |
| 04/15/20 13:58:05 | 13050 | 12.77 | 2.00 | -0.46 | 0.00 | 4.89 | 0.22 |
| 04/15/20 13:58:35 | 13080 | 12.77 | 2.02 | -0.46 | 0.00 | 4.89 | 0.26 |
| 04/15/20 13:59:05 | 13110 | 12.78 | 2.05 | -0.47 | 0.00 | 4.89 | 0.27 |
| 04/15/20 13:59:35 | 13140 | 12.78 | 2.09 | -0.46 | 0.00 | 4.89 | 0.25 |
| 04/15/20 14:00:05 | 13170 | 12.77 | 2.02 | -0.47 | 0.00 | 4.88 | 0.26 |
| 04/15/20 14:00:35 | 13200 | 12.77 | 1.95 | -0.46 | 0.00 | 4.88 | 0.24 |
| 04/15/20 14:01:05 | 13230 | 12.79 | 1.90 | -0.46 | 0.00 | 4.89 | 0.25 |

**Cricket Valley Energy Center LLC**
**April 15, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,638 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,014 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,646 | lb/min |
| Duct Burner Fuel Flow | 0 | lb/min |
| Total Fuel Flow | 2,287,005 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.11 | in. Hg |
| Relative Humidity | 25 | % |
| Ambient Temperature | 54 | °F |
| Specific Humidity | 0.002178 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 237.1 | megawatts |
| Heat Input | 2,320 | MMBtu/hr |
| $NH_3$ Flow Rate | 135 | lb/hr |
| Meas. Stack Moisture | 8.8 | % |
| Stack Exhaust Flow (M19) | 52,469,624 | SCFH |

Data from: From PM Run PM U-00003 Base-1

Base Load, Run - 1-2

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 04/15/20 14:01:35 | 13260 | 12.79 | 1.90 | -0.46 | 0.00 | 4.89 | 0.26 |
| 04/15/20 14:02:05 | 13290 | 12.78 | 1.86 | -0.48 | 0.00 | 4.89 | 0.25 |
| 04/15/20 14:02:35 | 13320 | 12.78 | 1.89 | -0.46 | 0.00 | 4.89 | 0.26 |
| 04/15/20 14:03:05 | 13350 | 12.77 | 1.90 | -0.46 | 0.00 | 4.89 | 0.28 |
| 04/15/20 14:03:35 | 13380 | 12.78 | 1.93 | -0.46 | 0.00 | 4.89 | 0.25 |
| 04/15/20 14:04:05 | 13410 | 12.77 | 1.91 | -0.47 | 0.00 | 4.89 | 0.25 |
| 04/15/20 14:04:35 | 13440 | 12.77 | 1.96 | -0.46 | 0.00 | 4.89 | 0.24 |
| 04/15/20 14:05:05 | 13470 | 12.77 | 1.96 | -0.47 | 0.00 | 4.89 | 0.27 |
| 04/15/20 14:05:35 | 13500 | 12.78 | 1.98 | -0.45 | 0.01 | 4.89 | 0.28 |
| 04/15/20 14:06:05 | 13530 | 12.78 | 1.95 | -0.47 | 0.00 | 4.89 | 0.30 |
| 04/15/20 14:06:35 | 13560 | 12.78 | 2.01 | -0.47 | 0.00 | 4.89 | 0.26 |
| 04/15/20 14:07:05 | 13590 | 12.77 | 2.00 | -0.47 | 0.00 | 4.89 | 0.28 |
| 04/15/20 14:07:35 | 13620 | 12.77 | 1.97 | -0.47 | 0.00 | 4.89 | 0.27 |
| 04/15/20 14:08:05 | 13650 | 12.77 | 2.03 | -0.46 | 0.01 | 4.89 | 0.25 |
| 04/15/20 14:08:35 | 13680 | 12.77 | 2.04 | -0.47 | 0.00 | 4.88 | 0.27 |
| 04/15/20 14:09:05 | 13710 | 12.78 | 2.03 | -0.46 | 0.00 | 4.89 | 0.25 |
| 04/15/20 14:09:35 | 13740 | 12.78 | 1.98 | -0.47 | 0.00 | 4.89 | 0.22 |
| 04/15/20 14:10:05 | 13770 | 12.79 | 2.05 | -0.46 | 0.01 | 4.89 | 0.25 |
| 04/15/20 14:10:35 | 13800 | 12.78 | 2.04 | -0.47 | 0.00 | 4.89 | 0.23 |
| 04/15/20 14:11:05 | 13830 | 12.78 | 2.04 | -0.46 | 0.00 | 4.89 | 0.27 |
| 04/15/20 14:11:35 | 13860 | 12.78 | 2.05 | -0.47 | 0.00 | 4.89 | 0.24 |
| 04/15/20 14:12:05 | 13890 | 12.78 | 2.03 | -0.46 | 0.00 | 4.89 | 0.26 |
| 04/15/20 14:12:35 | 13920 | 12.78 | 2.06 | -0.46 | 0.00 | 4.89 | 0.25 |
| 04/15/20 14:13:05 | 13950 | 12.77 | 2.06 | -0.47 | 0.00 | 4.88 | 0.25 |
| 04/15/20 14:13:35 | 13980 | 12.77 | 2.06 | -0.47 | 0.00 | 4.89 | 0.26 |
| 04/15/20 14:14:05 | 14010 | 12.77 | 2.09 | -0.46 | 0.00 | 4.88 | 0.23 |
| 04/15/20 14:14:35 | 14040 | 12.77 | 2.05 | -0.46 | 0.00 | 4.88 | 0.27 |
| 04/15/20 14:15:05 | 14070 | 12.77 | 2.04 | -0.47 | 0.00 | 4.88 | 0.24 |
| 04/15/20 14:15:35 | 14100 | 12.77 | 2.04 | -0.47 | 0.00 | 4.88 | 0.25 |
| 04/15/20 14:16:05 | 14130 | 12.79 | 2.01 | -0.47 | 0.00 | 4.88 | 0.26 |
| 04/15/20 14:16:35 | 14160 | 12.79 | 2.00 | -0.47 | 0.00 | 4.88 | 0.26 |
| 04/15/20 14:17:05 | 14190 | 12.78 | 2.06 | -0.46 | 0.00 | 4.88 | 0.25 |
| 04/15/20 14:17:35 | 14220 | 12.79 | 2.05 | -0.46 | 0.00 | 4.88 | 0.24 |
| 04/15/20 14:18:05 | 14250 | 12.78 | 2.02 | -0.46 | 0.00 | 4.88 | 0.24 |
| 04/15/20 14:18:35 | 14280 | 12.78 | 2.03 | -0.47 | 0.00 | 4.88 | 0.22 |
| 04/15/20 14:19:05 | 14310 | 12.78 | 2.03 | -0.45 | 0.01 | 4.88 | 0.25 |
| 04/15/20 14:19:35 | 14340 | 12.78 | 2.00 | -0.46 | 0.00 | 4.88 | 0.22 |
| 04/15/20 14:20:05 | 14370 | 12.78 | 1.98 | -0.46 | 0.00 | 4.88 | 0.22 |
| 04/15/20 14:20:35 | 14400 | 12.78 | 2.00 | -0.47 | 0.00 | 4.88 | 0.27 |
| 04/15/20 14:21:05 | 14430 | 12.78 | 2.03 | -0.46 | 0.00 | 4.88 | 0.26 |
| 04/15/20 14:21:35 | 14460 | 12.79 | 2.05 | -0.46 | 0.00 | 4.88 | 0.25 |
| 04/15/20 14:22:05 | 14490 | 12.79 | 2.01 | -0.47 | 0.00 | 4.88 | 0.24 |
| 04/15/20 14:22:35 | 14520 | 12.79 | 2.06 | -0.46 | 0.01 | 4.88 | 0.23 |
| **RAW AVERAGE** | | **12.77** | **1.95** | **-0.46** | **0.00** | **4.89** | **0.26** |

| | | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|---|
| | **Serial Number:** | inst-02-0024 | inst-nx-0031 | inst-co-0029 | inst-th-0013 | inst-c2-0016 | inst-ir-0004 |
| | | (%) | (ppmvd) | (ppmvd) | (ppmvw) | (%) | |
| Bias | **Initial Zero** | 0.09 | 0.05 | -0.17 | 0.00 | -0.16 | |
| Bias | **Final Zero** | 0.12 | 0.29 | -0.17 | -0.01 | 0.08 | |
| Bias | **Avg. Zero** | 0.11 | 0.17 | -0.17 | 0.00 | -0.04 | |
| Bias | **Initial UpScale** | 11.86 | 4.62 | 4.88 | 3.15 | 8.89 | |
| Bias | **Final UpScale** | 11.84 | 4.66 | 5.01 | 2.92 | 8.98 | |
| Bias | **Avg. UpScale** | 11.85 | 4.64 | 4.95 | 3.04 | 8.94 | |
| **Upscale Cal Gas** | | 11.98 | 4.55 | 5.22 | 3.03 | 8.91 | |

| **EMISSIONS DATA** | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 12.92 | 1.81 | 0.00 | 0.00 | 4.89 | 0.28 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.34 | 0.00 | 0.00 | N/A | 0.21 |

Non-Bias Adjusted Averages Include: *

**Cricket Valley Energy Center LLC**
**April 15, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,638 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,014 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,643 | lb/min |
| Duct Burner Fuel Flow | 0 | lb/min |
| Total Fuel Flow | 2,282,441 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.09 | in. Hg |
| Relative Humidity | 29 | % |
| Ambient Temperature | 50 | °F |
| Specific Humidity | 0.002181 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 237.5 | megawatts |
| Heat Input | 2,315 | MMBtu/hr |
| $NH_3$ Flow Rate | 137 | lb/hr |
| Meas. Stack Moisture | 8.6 | % |
| Stack Exhaust Flow (M19) | 52,110,077 | SCFH |

Data from: From PM Run PM U-00003 Base-2

Base Load, Run - 1-3

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 04/15/20 14:35:05 | 15270 | 12.68 | 2.06 | -0.45 | 0.34 | 4.85 | 0.33 |
| 04/15/20 14:35:35 | 15300 | 12.69 | 1.98 | -0.47 | 0.21 | 4.86 | 0.37 |
| 04/15/20 14:36:05 | 15330 | 12.70 | 2.05 | -0.44 | 0.04 | 4.86 | 0.38 |
| 04/15/20 14:36:35 | 15360 | 12.71 | 1.98 | -0.47 | 0.02 | 4.86 | 0.41 |
| 04/15/20 14:37:05 | 15390 | 12.71 | 1.99 | -0.47 | 0.00 | 4.87 | 0.46 |
| 04/15/20 14:37:35 | 15420 | 12.71 | 1.97 | -0.46 | 0.00 | 4.87 | 0.47 |
| 04/15/20 14:38:05 | 15450 | 12.71 | 1.93 | -0.47 | 0.00 | 4.87 | 0.51 |
| 04/15/20 14:38:35 | 15480 | 12.71 | 1.93 | -0.47 | 0.00 | 4.87 | 0.47 |
| 04/15/20 14:39:05 | 15510 | 12.71 | 1.94 | -0.46 | 0.00 | 4.87 | 0.48 |
| 04/15/20 14:39:35 | 15540 | 12.71 | 1.91 | -0.46 | 0.00 | 4.87 | 0.48 |
| 04/15/20 14:40:05 | 15570 | 12.70 | 1.93 | -0.47 | 0.00 | 4.88 | 0.45 |
| 04/15/20 14:40:35 | 15600 | 12.71 | 1.91 | -0.47 | 0.00 | 4.87 | 0.49 |
| 04/15/20 14:41:05 | 15630 | 12.70 | 1.87 | -0.46 | 0.00 | 4.87 | 0.51 |
| 04/15/20 14:41:35 | 15660 | 12.70 | 1.85 | -0.46 | 0.00 | 4.87 | 0.47 |
| 04/15/20 14:42:05 | 15690 | 12.70 | 1.86 | -0.46 | 0.00 | 4.87 | 0.49 |
| 04/15/20 14:42:35 | 15720 | 12.71 | 1.88 | -0.46 | 0.00 | 4.88 | 0.48 |
| 04/15/20 14:43:05 | 15750 | 12.71 | 1.89 | -0.46 | 0.00 | 4.88 | 0.49 |
| 04/15/20 14:43:35 | 15780 | 12.70 | 1.86 | -0.47 | 0.00 | 4.88 | 0.46 |
| 04/15/20 14:44:05 | 15810 | 12.70 | 1.89 | -0.46 | 0.00 | 4.88 | 0.45 |
| 04/15/20 14:44:35 | 15840 | 12.70 | 1.88 | -0.47 | 0.00 | 4.88 | 0.44 |
| 04/15/20 14:45:05 | 15870 | 12.71 | 1.83 | -0.46 | 0.00 | 4.88 | 0.44 |
| 04/15/20 14:45:35 | 15900 | 12.71 | 1.84 | -0.46 | 0.00 | 4.88 | 0.44 |
| 04/15/20 14:46:05 | 15930 | 12.72 | 1.81 | -0.46 | 0.00 | 4.88 | 0.44 |
| 04/15/20 14:46:35 | 15960 | 12.72 | 1.79 | -0.47 | 0.00 | 4.88 | 0.45 |
| 04/15/20 14:47:05 | 15990 | 12.71 | 1.80 | -0.46 | 0.00 | 4.88 | 0.40 |
| 04/15/20 14:47:35 | 16020 | 12.71 | 1.80 | -0.46 | 0.00 | 4.88 | 0.44 |
| 04/15/20 14:48:05 | 16050 | 12.71 | 1.80 | -0.47 | 0.00 | 4.88 | 0.40 |
| 04/15/20 14:48:35 | 16080 | 12.71 | 1.83 | -0.46 | 0.00 | 4.88 | 0.42 |
| 04/15/20 14:49:05 | 16110 | 12.72 | 1.85 | -0.47 | 0.00 | 4.88 | 0.41 |
| 04/15/20 14:49:35 | 16140 | 12.72 | 1.87 | -0.47 | 0.00 | 4.88 | 0.41 |
| 04/15/20 14:50:05 | 16170 | 12.73 | 1.87 | -0.46 | 0.00 | 4.88 | 0.40 |
| 04/15/20 14:50:35 | 16200 | 12.73 | 1.84 | -0.46 | 0.00 | 4.88 | 0.38 |
| 04/15/20 14:51:05 | 16230 | 12.71 | 1.79 | -0.47 | 0.00 | 4.88 | 0.38 |
| 04/15/20 14:51:35 | 16260 | 12.71 | 1.80 | -0.46 | 0.00 | 4.88 | 0.38 |
| 04/15/20 14:52:05 | 16290 | 12.71 | 1.81 | -0.46 | 0.01 | 4.88 | 0.37 |
| 04/15/20 14:52:35 | 16320 | 12.71 | 1.79 | -0.47 | 0.00 | 4.88 | 0.35 |
| 04/15/20 14:53:05 | 16350 | 12.73 | 1.78 | -0.46 | 0.00 | 4.88 | 0.37 |
| 04/15/20 14:53:35 | 16380 | 12.73 | 1.85 | -0.46 | 0.00 | 4.88 | 0.37 |
| 04/15/20 14:54:05 | 16410 | 12.72 | 1.85 | -0.47 | 0.00 | 4.88 | 0.36 |
| 04/15/20 14:54:35 | 16440 | 12.72 | 1.87 | -0.46 | 0.00 | 4.88 | 0.34 |
| 04/15/20 14:55:05 | 16470 | 12.72 | 1.92 | -0.47 | 0.00 | 4.88 | 0.34 |
| 04/15/20 14:55:35 | 16500 | 12.72 | 1.92 | -0.46 | 0.01 | 4.88 | 0.35 |
| 04/15/20 14:56:05 | 16530 | 12.72 | 1.94 | -0.46 | 0.00 | 4.88 | 0.33 |
| 04/15/20 14:56:35 | 16560 | 12.73 | 1.95 | -0.46 | 0.00 | 4.88 | 0.37 |
| 04/15/20 14:57:05 | 16590 | 12.73 | 1.93 | -0.47 | 0.00 | 4.88 | 0.34 |
| 04/15/20 14:57:35 | 16620 | 12.73 | 1.90 | -0.47 | 0.00 | 4.88 | 0.33 |
| 04/15/20 14:58:05 | 16650 | 12.72 | 1.90 | -0.46 | 0.00 | 4.88 | 0.33 |
| 04/15/20 14:58:35 | 16680 | 12.72 | 1.83 | -0.46 | 0.00 | 4.88 | 0.33 |
| 04/15/20 14:59:05 | 16710 | 12.73 | 1.81 | -0.46 | 0.00 | 4.88 | 0.32 |
| 04/15/20 14:59:35 | 16740 | 12.73 | 1.85 | -0.46 | 0.00 | 4.88 | 0.32 |
| 04/15/20 15:00:05 | 16770 | 12.72 | 1.85 | -0.46 | 0.00 | 4.88 | 0.31 |
| 04/15/20 15:00:35 | 16800 | 12.72 | 1.85 | -0.46 | 0.00 | 4.88 | 0.34 |
| 04/15/20 15:01:05 | 16830 | 12.72 | 1.84 | -0.47 | 0.00 | 4.88 | 0.32 |
| 04/15/20 15:01:35 | 16860 | 12.71 | 1.90 | -0.46 | 0.01 | 4.88 | 0.30 |
| 04/15/20 15:02:05 | 16890 | 12.73 | 1.93 | -0.46 | 0.00 | 4.88 | 0.33 |
| 04/15/20 15:02:35 | 16920 | 12.73 | 1.94 | -0.47 | 0.00 | 4.88 | 0.29 |
| 04/15/20 15:03:05 | 16950 | 12.72 | 1.94 | -0.47 | 0.00 | 4.88 | 0.29 |
| 04/15/20 15:03:35 | 16980 | 12.72 | 1.95 | -0.46 | 0.00 | 4.88 | 0.30 |
| 04/15/20 15:04:05 | 17010 | 12.71 | 1.97 | -0.47 | 0.00 | 4.88 | 0.30 |
| 04/15/20 15:04:35 | 17040 | 12.71 | 2.00 | -0.45 | 0.01 | 4.88 | 0.29 |
| 04/15/20 15:05:05 | 17070 | 12.72 | 1.95 | -0.47 | 0.00 | 4.88 | 0.31 |
| 04/15/20 15:05:35 | 17100 | 12.72 | 1.95 | -0.47 | 0.00 | 4.88 | 0.27 |
| 04/15/20 15:06:05 | 17130 | 12.71 | 1.90 | -0.46 | 0.00 | 4.88 | 0.30 |
| 04/15/20 15:06:35 | 17160 | 12.71 | 1.93 | -0.47 | 0.00 | 4.88 | 0.31 |
| 04/15/20 15:07:05 | 17190 | 12.71 | 1.91 | -0.46 | 0.01 | 4.88 | 0.28 |
| 04/15/20 15:07:35 | 17220 | 12.71 | 1.88 | -0.45 | 0.01 | 4.88 | 0.32 |
| 04/15/20 15:08:05 | 17250 | 12.70 | 1.83 | -0.47 | 0.00 | 4.88 | 0.28 |
| 04/15/20 15:08:35 | 17280 | 12.71 | 1.81 | -0.47 | 0.00 | 4.88 | 0.26 |
| 04/15/20 15:09:05 | 17310 | 12.72 | 1.87 | -0.45 | 0.01 | 4.88 | 0.27 |
| 04/15/20 15:09:35 | 17340 | 12.73 | 1.83 | -0.47 | 0.00 | 4.88 | 0.31 |
| 04/15/20 15:10:05 | 17370 | 12.71 | 1.85 | -0.46 | 0.00 | 4.89 | 0.27 |
| 04/15/20 15:10:35 | 17400 | 12.71 | 1.86 | -0.46 | 0.00 | 4.89 | 0.28 |
| 04/15/20 15:11:05 | 17430 | 12.71 | 1.90 | -0.46 | 0.00 | 4.88 | 0.28 |
| 04/15/20 15:11:35 | 17460 | 12.71 | 1.90 | -0.46 | 0.00 | 4.88 | 0.29 |
| 04/15/20 15:12:05 | 17490 | 12.71 | 1.88 | -0.47 | 0.00 | 4.88 | 0.27 |
| 04/15/20 15:12:35 | 17520 | 12.71 | 1.91 | -0.46 | 0.01 | 4.88 | 0.27 |
| 04/15/20 15:13:05 | 17550 | 12.71 | 1.91 | -0.46 | 0.00 | 4.88 | 0.27 |

**Cricket Valley Energy Center LLC**
**April 15, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,638 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,014 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,643 | lb/min |
| Duct Burner Fuel Flow | 0 | lb/min |
| Total Fuel Flow | 2,282,441 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.09 | in. Hg |
| Relative Humidity | 29 | % |
| Ambient Temperature | 50 | °F |
| Specific Humidity | 0.002181 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 237.5 | megawatts |
| Heat Input | 2,315 | MMBtu/hr |
| $NH_3$ Flow Rate | 137 | lb/hr |
| Meas. Stack Moisture | 8.6 | % |
| Stack Exhaust Flow (M19) | 52,110,077 | SCFH |

Data from: From PM Run PM U-00003 Base-2

Base Load, Run - 1-3

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 04/15/20 15:13:35 | 17580 | 12.71 | 1.91 | -0.46 | 0.00 | 4.88 | 0.24 |
| 04/15/20 15:14:05 | 17610 | 12.72 | 1.89 | -0.46 | 0.00 | 4.89 | 0.27 |
| 04/15/20 15:14:35 | 17640 | 12.72 | 1.87 | -0.47 | 0.00 | 4.89 | 0.29 |
| 04/15/20 15:15:05 | 17670 | 12.72 | 1.89 | -0.47 | 0.00 | 4.88 | 0.28 |
| 04/15/20 15:15:35 | 17700 | 12.72 | 1.88 | -0.47 | 0.00 | 4.88 | 0.26 |
| 04/15/20 15:16:05 | 17730 | 12.73 | 1.92 | -0.45 | 0.01 | 4.89 | 0.23 |
| 04/15/20 15:16:35 | 17760 | 12.73 | 1.94 | -0.45 | 0.01 | 4.89 | 0.28 |
| 04/15/20 15:17:05 | 17790 | 12.71 | 1.93 | -0.45 | 0.01 | 4.88 | 0.28 |
| 04/15/20 15:17:35 | 17820 | 12.71 | 1.90 | -0.46 | 0.00 | 4.88 | 0.28 |
| 04/15/20 15:18:05 | 17850 | 12.71 | 1.90 | -0.46 | 0.00 | 4.88 | 0.24 |
| 04/15/20 15:18:35 | 17880 | 12.71 | 1.89 | -0.47 | 0.00 | 4.88 | 0.25 |
| 04/15/20 15:19:05 | 17910 | 12.72 | 1.89 | -0.46 | 0.00 | 4.88 | 0.28 |
| 04/15/20 15:19:35 | 17940 | 12.72 | 1.85 | -0.47 | 0.00 | 4.88 | 0.27 |
| 04/15/20 15:20:05 | 17970 | 12.71 | 1.86 | -0.48 | 0.00 | 4.88 | 0.29 |
| 04/15/20 15:20:35 | 18000 | 12.72 | 1.94 | -0.47 | 0.00 | 4.88 | 0.27 |
| 04/15/20 15:21:05 | 18030 | 12.72 | 2.04 | -0.46 | 0.00 | 4.88 | 0.26 |
| 04/15/20 15:21:35 | 18060 | 12.72 | 2.04 | -0.48 | 0.00 | 4.88 | 0.25 |
| 04/15/20 15:22:05 | 18090 | 12.71 | 2.09 | -0.47 | 0.01 | 4.88 | 0.29 |
| 04/15/20 15:22:35 | 18120 | 12.71 | 2.03 | -0.47 | 0.00 | 4.88 | 0.24 |
| 04/15/20 15:23:05 | 18150 | 12.71 | 2.02 | -0.47 | 0.00 | 4.88 | 0.26 |
| 04/15/20 15:23:35 | 18180 | 12.71 | 2.09 | -0.45 | 0.01 | 4.88 | 0.28 |
| 04/15/20 15:24:05 | 18210 | 12.72 | 2.04 | -0.47 | 0.00 | 4.88 | 0.26 |
| 04/15/20 15:24:35 | 18240 | 12.72 | 2.05 | -0.46 | 0.00 | 4.88 | 0.28 |
| 04/15/20 15:25:05 | 18270 | 12.72 | 2.06 | -0.46 | 0.00 | 4.88 | 0.25 |
| 04/15/20 15:25:35 | 18300 | 12.72 | 2.05 | -0.46 | 0.00 | 4.88 | 0.26 |
| 04/15/20 15:26:05 | 18330 | 12.70 | 2.09 | -0.47 | 0.00 | 4.88 | 0.27 |
| 04/15/20 15:26:35 | 18360 | 12.71 | 2.08 | -0.46 | 0.00 | 4.88 | 0.23 |
| 04/15/20 15:27:05 | 18390 | 12.71 | 2.04 | -0.46 | 0.00 | 4.88 | 0.31 |
| 04/15/20 15:27:35 | 18420 | 12.71 | 2.08 | -0.45 | 0.01 | 4.88 | 0.36 |
| 04/15/20 15:28:05 | 18450 | 12.71 | 2.00 | -0.48 | 0.00 | 4.88 | 0.34 |
| 04/15/20 15:28:35 | 18480 | 12.72 | 2.07 | -0.47 | 0.00 | 4.88 | 0.36 |
| 04/15/20 15:29:05 | 18510 | 12.71 | 2.08 | -0.46 | 0.00 | 4.87 | 0.37 |
| 04/15/20 15:29:35 | 18540 | 12.72 | 2.06 | -0.46 | 0.00 | 4.87 | 0.35 |
| 04/15/20 15:30:05 | 18570 | 12.72 | 2.06 | -0.46 | 0.00 | 4.88 | 0.33 |
| 04/15/20 15:30:35 | 18600 | 12.72 | 2.01 | -0.44 | 0.01 | 4.88 | 0.36 |
| 04/15/20 15:31:05 | 18630 | 12.71 | 1.81 | -0.46 | 0.01 | 4.87 | 0.34 |
| 04/15/20 15:31:35 | 18660 | 12.71 | 1.70 | -0.46 | 0.01 | 4.87 | 0.33 |
| 04/15/20 15:32:05 | 18690 | 12.73 | 1.62 | -0.46 | 0.01 | 4.88 | 0.31 |
| 04/15/20 15:32:35 | 18720 | 12.73 | 1.55 | -0.47 | 0.00 | 4.88 | 0.33 |
| 04/15/20 15:33:05 | 18750 | 12.71 | 1.55 | -0.46 | 0.00 | 4.88 | 0.36 |
| 04/15/20 15:33:35 | 18780 | 12.71 | 1.54 | -0.47 | 0.00 | 4.87 | 0.35 |
| 04/15/20 15:34:05 | 18810 | 12.72 | 1.56 | -0.45 | 0.01 | 4.88 | 0.34 |
| 04/15/20 15:34:35 | 18840 | 12.72 | 1.59 | -0.45 | 0.01 | 4.87 | 0.36 |
| **RAW AVERAGE** | | **12.71** | **1.90** | **-0.46** | **0.01** | **4.88** | **0.34** |

| | | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|---|
| | **Serial Number:** | inst-02-0024 | inst-nx-0031 | inst-co-0029 | inst-th-0013 | inst-c2-0016 | inst-ir-0004 |
| | | (%) | (ppmvd) | (ppmvd) | (ppmvw) | (%) | |
| Bias | **Initial Zero** | 0.12 | 0.29 | -0.17 | -0.01 | 0.08 | |
| Bias | **Final Zero** | 0.10 | 0.09 | -0.43 | 0.01 | 0.09 | |
| Bias | **Avg. Zero** | 0.11 | 0.19 | -0.30 | 0.00 | 0.09 | |
| Bias | **Initial UpScale** | 11.84 | 4.66 | 5.01 | 2.92 | 8.98 | |
| Bias | **Final UpScale** | 11.83 | 4.56 | 4.82 | 2.78 | 9.08 | |
| Bias | **Avg. UpScale** | 11.84 | 4.61 | 4.92 | 2.85 | 9.03 | |
| **Upscale Cal Gas** | | 11.98 | 4.55 | 5.22 | 3.03 | 8.91 | |

| **EMISSIONS DATA** | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 12.88 | 1.76 | 0.00 | 0.01 | 4.78 | 0.37 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.29 | 0.00 | 0.01 | N/A | 0.27 |

Non-Bias Adjusted Averages Include: *

# EMISSION DATA RECORDS

## Reference Method Data
## Base Load
## $PM_{10}$

## METHOD 201A (FRONT) AND 202 (BACK) SOURCE SAMPLING TITLE PAGE

| Source Information | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base |
| **Fuel Type** | Gas, Natural |

| Test Information | | | |
|---|---|---|---|
| **Project #** | | bec-19-cricketvalley.ny-start#3 | |
| **Operator** | | Rob White | |
| **Date for Preliminary Run** | (mm/dd/yy) | 04/15/20 | |
| **Standard Temperature** | | 68 | °F |
| **Standard Pressure** | | 29.92 | in Hg |
| **Required Sample Vol.** | indust. spec. | 50 | scf |
| **Run Duration** | chk Subpart | 240 | minutes |
| **Unit Number** | | U-00003 | |
| **Base Run Number** | | PM U-00003 Base | |
| **Number of Ports Available** | | 4 | |
| **Number of Ports Used** | | 4 | |
| **Port Inside Diameter** | | 6.00 | in |
| **Stack Shape** | | Circular | |

| Test Equipment Information | | | | | |
|---|---|---|---|---|---|
| **Run** | | **1** | **2** | **3** | |
| **Test Date** | (mm/dd/yy) | 04/15/20 | 04/15/20 | 04/16/20 | |
| **Load** | | Base | Base | Base | % or w/DB |
| **Fuel F-Factor** | | 8638.02 | 8638.02 | 8641.42 | dscf/MMBtu |
| **Meter Box Number** | from ACS | Samp-cp-0033 | Samp-cp-0033 | Samp-cp-0033 | |
| **Meter Calibration Factor** | (Y) | 0.978 | 0.978 | 0.978 | |
| **Orifice Meter Coefficient** | ($\Delta H_@$) | 1.846 | 1.846 | 1.846 | in $H_2O$ |
| **Non-Console Manometer Used** | | No | No | No | |
| **Pitot Identification** | from ACS | 5266/10 | 5266/10 | 5266/10 | |
| **Pitot Tube Coefficient** | ($C_p$) | 0.7720 | 0.7720 | 0.7720 | |
| **Nozzle Number** | from ACS | 4a | 4a | 4a | must match cyc nozz tab (e.g. 3a, 4b, etc.) |
| **Nozzle Diameter** | ($D_n$) | 0.157 | 0.157 | 0.157 | in |
| **Probe Number** | from ACS | SAMP-HP-0138 | SAMP-HP-0138 | SAMP-HP-0138 | |
| **Probe Length** | | 120.0 | 120.0 | 120.0 | in |
| **(SS, Glass …. ) Liner Material** | from list | glass | glass | glass | |
| **Sample Case / Oven Number** | from ACS | SAMP-BH-0039 | SAMP-BH-0039 | SAMP-BH-0039 | |
| **Impinger Case Number** | from ACS | SAMP-SBC-0099 | SAMP-SBC-0099 | SAMP-SBC-0099 | |

| Testing Company Information | |
|---|---|
| **Company Name** | Air Hygiene International, Inc. (Tulsa, Oklahoma) |
| **Address** | 1600 W Tacoma Street |
| **City, State Zip** | Broken Arrow, Oklahoma 74012 |
| **Project Manager** | Rob White |
| **Phone Number** | (918) 307-8865 |
| **Fax Number** | (918) 307-9131 |

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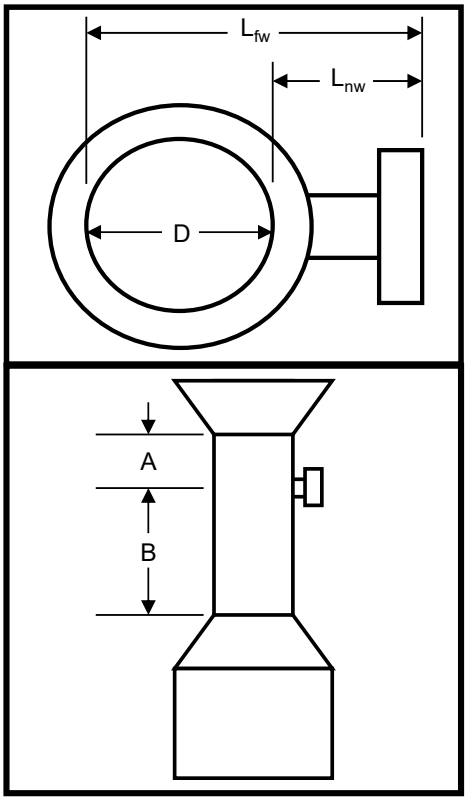
## METHOD 1 - SAMPLE AND VELOCITY TRAVERSES FOR CIRCULAR SOURCES

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Date** | 04/15/20 |
| **Sampling Location** | U-00003 Base | **Stack Type** | Circular |
| **Operator** | Rob White | **Ports Available** | 4 |
| **Project #** | bec-19-cricketvalley.ny-start#3 | **Ports Used** | 4 |
| **Stack Size** | Large (>24 inch diameter) | **Port ID (inches)** | 6.00 |

| **Circular Stack or Duct Diameter** | | | |
|---|---|---|---|
| **Distance to Far Wall of Stack** | ($L_{fw}$) | 236.00 | in |
| **Distance to Near Wall of Stack** | ($L_{nw}$) | 8.00 | in |
| **Diameter of Stack** | (D) | 228.00 | in |
| **Area of Stack** | ($A_s$) | 283.53 | ft² |

| **Distance from Port to Disturbances** | | | |
|---|---|---|---|
| **Distance Upstream** | (A) | 200.40 | in |
| **Diameters Upstream** | ($A_D$) | 0.88 | diameters |
| **Distance Downstream** | (B) | 850.00 | in |
| **Diameters Downstream** | ($B_D$) | 3.73 | diameters |




| **Number of Traverse Points Required** | | | |
|---|---|---|---|
| **Diameters to Flow Disturbance** | | **Minimum Number of[1] Traverse Points** | |
| **Down Stream** | **Up Stream** | **Particulate Points** | **Velocity Points** |
| 2.00-4.99 | 0.50-1.24 | 24 | 16 |
| 5.00-5.99 | 1.25-1.49 | 20 | 16 |
| 6.00-6.99 | 1.50-1.74 | 16 | 12 |
| 7.00-7.99 | 1.75-1.99 | 12 | 12 |
| >= 8.00 | >=2.00 | 8 or 12[2] | 8 or 12[2] |
| **Upstream Spec** | | 24 | 16 |
| **Downstream Spec** | | 24 | 16 |
| **Traverse Pts Required** | | 24 | 16 |

[1] Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.

[2] 8 for Circular Stacks 12 to 24 inches
12 for Circular Stacks over 24 inches

○ Method 1 Trav

◉ 12 Point PM Trav (M201a ONLY)

○ Velocity

| **Number of Traverse Points Used** | | | |
|---|---|---|---|
| 4 | **Ports by** | 3 | **Across** |
| 12 | **Pts Used** | 12 | **Required** |

| **Location of Traverse Points in Circular Stacks** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point Number** | (Fraction of Stack Dimension from Inside Wall to Traverse Point) Number of Traverse Points Across the Stack | | | | | | | | |
| | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 |
| 1 | .146 | .067 | .044 | .032 | .026 | .021 | .018 | .016 | .014 |
| 2 | .854 | .250 | .146 | .105 | .082 | .067 | .057 | .049 | .044 |
| 3 | | .750 | .296 | .194 | .146 | .118 | .099 | .085 | .075 |
| 4 | | .933 | .704 | .323 | .226 | .177 | .146 | .125 | .109 |
| 5 | | | .854 | .677 | .342 | .250 | .201 | .169 | .146 |
| 6 | | | .956 | .806 | .658 | .356 | .269 | .220 | .188 |
| 7 | | | | .895 | .774 | .644 | .366 | .283 | .236 |
| 8 | | | | .968 | .854 | .750 | .634 | .375 | .296 |
| 9 | | | | | .918 | .823 | .731 | .625 | .382 |
| 10 | | | | | .974 | .882 | .799 | .717 | .618 |
| 11 | | | | | | .933 | .854 | .780 | .704 |
| 12 | | | | | | .979 | .901 | .831 | .764 |

| **Traverse Point Locations** | | | |
|---|---|---|---|
| **Traverse Point Number** | **Fraction of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
| | | in | in |
| **1** | 0.044 | 10 | 18 |
| **2** | 0.146 | 33 2/8 | 41 2/8 |
| **3** | 0.296 | 67 4/8 | 75 4/8 |
| **4** | | | |
| **5** | | | |
| **6** | | | |
| **7** | | | |
| **8** | | | |
| **9** | | | |

## METHOD 2 - DETERMINATION OF STACK GAS VELOCITY AND VOLUMETRIC FLOW RATE

| | | | | |
|---|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | | | |
| **Sampling Location** | U-00003 Base | | | |
| **Operator** | Rob White | | | |
| **Project #** | bec-19-cricketvalley.ny-start#3 | | | |
| **Pitot Leak Check** | x | **PreTest** | x | **PostTest** |

| | | | |
|---|---|---|---|
| **Preliminary Run Date** | 04/15/20 | | |
| **Stack Type** | Circular | | |
| **Ports Available** | 4 | | |
| **Thermocouple ID** | SAMP-HP-0138 | | |
| **Pitot Coefficient** | 0.8198 | **Pitot Identification** | 4187 |

| **RM 201A or OTM 27 Blckag.** | **RM 201A or OTM 27 Pitot Coeff.** |
|---|---|
| 5.39E-04 | 0.7720 |

| **Stack Dimensions** | | | |
|---|---|---|---|
| **Area of Stack** | ($A_s$) | 283.53 | ft² |
| **Diameter of Stack** | (D) | 228.00 | in |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 29.94 | in Hg |
| **Static Pressure** | ($P_{static}$) | -0.92 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 29.87 | in Hg |

| **Stack Gas Composition** | | | |
|---|---|---|---|
| **Composition Data:** | **Estimated Composition** | | |
| **Carbon Dioxide Concentration** | ($\%CO_2$) | 4.90 | %vd |
| **Oxygen Concentration** | ($\%O_2$) | 13.00 | %vd |
| **Carbon Monoxide Concentration** | (ppmCO) | 0.00 | ppmvd |
| **Nitrogen Concentration** | ($\%N_2$) | 82.10 | %vd |
| **Stack Moisture Content** | ($B_{ws}$) | 8.00 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.30 | lb/lb-mole |
| **Stack Wet Molecular Weight** | ($M_w$) | 28.40 | lb/lb-mole |

| **Results** | | | |
|---|---|---|---|
| **Avg Stack Gas Velocity** | ($v_s$) | 68.88 | ft/sec |
| **Avg Stack Dry Std Flow Rate** | ($Q_{sd}$) | 50,648,445 | dscf/hr |
| **Avg Stack Dry Std Flow Rate** | ($Q_{sd}$) | 844,141 | dscf/min |
| **Avg Stack Wet Flow Rate** | ($Q_{aw}$) | 1,171,822 | acf/min |
| **Avg Stack Wet Std Flow Rate** | ($Q_{sw}$) | 55,052,658 | ascf/hr |

**40 CFR 60, Method 2G, Section 8.11.1 (but applies to all Method 2 type static pressure measurements):**
If a Type S probe is used for this measurement, position the probe at or between any traverse point(s) and rotate the probe until a null differential pressure reading is obtained. Disconnect the tubing from one of the pressure ports; read and record the ΔP. For pressure devices with one-directional scales, if a deflection in the positive direction is noted with the negative side disconnected, then the static pressure is positive. Likewise, if a deflection in the positive direction is noted with the positive side disconnected, then the static pressure is negative.

**Stack Cross Section Schematic**

**Velocity Traverse Data**

| **Run Number** | PM U-00003 Base-V1 | | | | |
|---|---|---|---|---|---|
| **Run Time** | 06:45 | **Start** | 07:10 | **End** | |

| **Traverse Point** | **Velocity Head** ($\Delta p$) | **Null Angle** ($N_a$) | **Zero Deg Pressure** ($0°_a$) | **Stack Temp** ($t_s$) | **Local Velocity** ($v_{s(l)}$) | **Adjusted Velocity Pressure** | **Adjusted Velocity Pressure w/BF, if app** |
|---|---|---|---|---|---|---|---|
| | in $H_2O$ | deg | in $H_2O$ | °F | ft/sec | in $H_2O$ | in $H_2O$ |
| A-1 | 1.70 | -10 | 0.25 | 214 | 81.45 | 1.51 | 1.51 |
| A-2 | 1.70 | -5 | 0.15 | 214 | 81.45 | 1.51 | 1.51 |
| A-3 | 1.30 | -5 | 0.17 | 212 | 71.12 | 1.15 | 1.15 |
| B-1 | 1.60 | 0 | 0.00 | 214 | 79.02 | 1.42 | 1.42 |
| B-2 | 1.50 | 0 | 0.00 | 214 | 76.51 | 1.33 | 1.33 |
| B-3 | 1.50 | -5 | 0.14 | 212 | 76.39 | 1.33 | 1.33 |
| C-1 | 1.60 | 0 | 0.00 | 214 | 79.02 | 1.42 | 1.42 |
| C-2 | 1.60 | -5 | 0.18 | 214 | 79.02 | 1.42 | 1.42 |
| C-3 | 1.40 | 0 | 0.00 | 210 | 73.69 | 1.24 | 1.24 |
| D-1 | 1.50 | 0 | 0.00 | 214 | 76.51 | 1.33 | 1.33 |
| D-2 | 1.60 | 0 | 0.00 | 213 | 78.96 | 1.42 | 1.42 |
| D-3 | 1.60 | 0 | 0.00 | 214 | 79.02 | 1.42 | 1.42 |
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| | | | | | | | |
| **Average** | 1.55 | 3 | | 213 | | 1.37 | 1.37 |
| | 1.24 | **= Square roots of Δp** | | | | | 1.17 |
| **Standard deviation of null angles =** | | | | 3.4 | | | |

## METHOD 201A and OTM 27 - DETERMINATION OF NOZZLE SIZE AND POST RUN QUALITY CONTROL

| Gas Analysis | Prelim | PM U-00003 Base-1 | PM U-00003 Base-2 | PM U-00003 Base-3 | PM U-00003 Base-4 | PM U-00003 Base-5 | PM U-00003 Base-6 | |
|---|---|---|---|---|---|---|---|---|
| Carbon Dioxide Content | 4.9 | 4.9 | 4.8 | 4.8 | | | | % |
| Oxygen Content | 13.0 | 12.7 | 12.8 | 12.8 | | | | % |
| Stack Moisture Content | 8.0 | 8.8 | 8.6 | 7.3 | | | | % |
| Nitrogen plus CO Content | 82.1 | 82.4 | 82.4 | 82.4 | | | | % |

| Corrected Velocity Head, $\Delta p_{2.5}$ (in $H_2O$) | Min. | 1.15 | Max. | 1.51 |
|---|---|---|---|---|

| Stack and Equipment Information | Prelim | PM U-00003 Base-1 | PM U-00003 Base-2 | PM U-00003 Base-3 | PM U-00003 Base-4 | PM U-00003 Base-5 | PM U-00003 Base-6 | |
|---|---|---|---|---|---|---|---|---|
| Barometric Pressure | 29.94 | 29.94 | 30.11 | 29.95 | | | | in Hg |
| Stack Static Pressure | -0.92 | -0.92 | -0.92 | -0.92 | | | | in $H_2O$ |
| Absolute Stack Pressure | 29.87 | 29.87 | 30.04 | 29.88 | | | | in Hg |
| Average Stack Temp | 213 | 209 | 192 | 185 | | | | 0.00 |
| Average Stack Temp | 673 | 669 | 652 | 645 | | | | °R |
| Average Meter Temp | 85 | 80 | 82 | 70 | | | | 0.00 |
| Orifice Meter Coefficient | 1.846 | 1.846 | 1.846 | 1.846 | | | | in $H_2O$ |
| Pitot Coefficient | 0.772 | 0.772 | 0.772 | 0.772 | | | | |
| Stack Dry Molecular Weight | 29.30 | 29.29 | 29.28 | 29.28 | | | | lb/lb mole |
| Stack Wet Molecular Weight | 28.40 | 28.29 | 28.30 | 28.46 | | | | lb/lb mole |
| Stack Viscosity | 207.77 | 205.84 | 202.01 | 201.57 | | | | µP |
| Cunningham Correction Factor, for a 2.25 µm particle | 1.09 | | | | | | | |
| Cunningham Correction Factor, for a 2.5 µm particle | | 1.08 | 1.07 | 1.07 | | | | |
| Prelim Cut Dia., Cyclone I, $D_{50LL}$, $N_{re}$<3162 | 10.21 | 2.27 | 2.26 | 2.27 | | | | µm |
| Middle Zone Dia., Cyclone I, $D_{50T}$, $N_{re}$<3162 | 10.60 | | | | | | | µm |
| Sampling Rate ($PM_{10}$ & $PM_{2.5}$ Cyc.), $N_{re}$<3162 | 0.51 | | | | | | | dscfm |
| Reynolds Number, Cyc I & IV, $N_{re}$<3162 | 2656.73 | 2792.37 | 2837.93 | 2841.40 | | | | |
| Dia. of 50% Prob. ($D_{50}$) Cyc IV ($N_{re}$<3162) | 2.40 | 2.27 | 2.27 | 2.28 | | | | µm |
| Sampling Rate, Cyc IV, $N_{re}$<3,162 | 0.51 | | | | | | | dscfm |
| Reynolds Number, Cyc IV, $N_{re}$<3162 | 2656.69 | 2792.37 | 2837.93 | 2841.40 | | | | |
| Prelim Cut Dia., Cyclone I, $D_{50LL\geq3162}$ | 10.62 | | | | | | | µm |
| Middle Zone Dia., Cyclone I, $D_{50T\geq3162}$ | 10.81 | | | | | | | µm |
| Sampling Rate ($PM_{10}$ & $PM_{2.5}$ Cyc.)≥3162 | 0.49 | | | | | | | dscfm |
| Reynolds Number, Cyc I & IV, $N_{re}$≥3162 | 2585.93 | | | | | | | |
| Dia. of 50% Prob. ($D_{50}$) CIV ($N_{re}$≥3162) | 2.30 | | | | | | | µm |
| Sampling Rate, Cyc IV, $N_{re}$≥3,162 | 4.93 | | | | | | | dscfm |
| Reynolds Number ≥ 3162 | 25859.42 | | | | | | | |
| Cyclone Flow Rate | 0.51 | 0.53 | 0.51 | 0.50 | | | | ft³/min |
| Recalculated $D_{50-1}$ for $C_{IV}$ | | 2.27 | 2.26 | 2.27 | | | | |
| Recalculated Cunninham | | 1.08 | 1.08 | 1.08 | | | | |
| Z | | 1.00 | 1.00 | 1.00 | | | | |
| Isokinetics | | 93.40 | 92.63 | 92.75 | | | | % |
| No. Sampling Pts. Outside Δp | | 0 | 0 | 0 | | | | |
| Sample Nozzle Diameter | | 0.157 | 0.157 | 0.157 | | | | in |

| Orifice Head and Nozzle Selection Calculation | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nozzle No. | 2a | 2b | 3a | 3b | 4a | 4b | 5a | 5b | 6a | 6b | 7a |
| Nozzle diameter, $D_n$, in. | 0.088 | 0.103 | 0.119 | 0.130 | 0.157 | 0.175 | 0.197 | 0.212 | 0.284 | 0.331 | 0.374 |
| Nozzle velocity, $v_n$, ft/sec | 200.06 | 146.03 | 109.41 | 91.67 | 62.85 | 50.59 | 39.92 | 34.47 | 19.21 | 14.14 | 11.08 |
| $R_{min}$ | 0.79 | 0.78 | 0.77 | 0.76 | 0.73 | 0.69 | 0.64 | 0.59 | 0.50 | 0.50 | 0.50 |
| $v_{min}$, ft/sec | 157.56 | 113.89 | 84.10 | 69.57 | 45.58 | 35.06 | 25.50 | 20.26 | 9.60 | 7.07 | 5.54 |
| $R_{max}$ | 1.21 | 1.21 | 1.22 | 1.23 | 1.25 | 1.27 | 1.30 | 1.32 | 1.46 | 1.50 | 1.50 |
| $v_{max}$, ft/sec | 241.87 | 177.34 | 133.69 | 112.63 | 78.54 | 64.14 | 51.71 | 45.40 | 28.02 | 21.21 | 16.61 |
| $\Delta p_{min}$, in. $H_2O$ @ $t_{s-50}o_F$ | 7.76 | 4.05 | 2.21 | 1.51 | 0.65 | 0.38 | 0.20 | 0.13 | 0.03 | 0.02 | 0.01 |
| $\Delta p_{min}$, in. $H_2O$ @ $t_s$ | 7.18 | 3.75 | 2.05 | 1.40 | 0.60 | 0.36 | 0.19 | 0.12 | 0.03 | 0.01 | 0.01 |
| $\Delta p_{max}$, in. $H_2O$ @ $t_s$ | 16.93 | 9.10 | 5.17 | 3.67 | 1.79 | 1.19 | 0.77 | 0.60 | 0.23 | 0.13 | 0.08 |
| $\Delta p_{min}$, in. $H_2O$ @ $t_{s+50}o_F$ | 15.76 | 8.47 | 4.81 | 3.42 | 1.66 | 1.11 | 0.72 | 0.56 | 0.21 | 0.12 | 0.07 |
| ΔH, in. $H_2O$ @ $t_s$+50°F | 0.396 | | | | | | | | | | |
| **ΔH, in. $H_2O$ @ $t_s$** | **0.457** | | | | | | | | | | |
| ΔH, in. $H_2O$ @ $t_s$-50°F | 0.533 | | | | | | | | | | |

## METHOD 3a - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

| | | | | | |
|---|---|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Preliminary Run Date** | 04/15/20 | | |
| **Sampling Location** | U-00003 Base | **Operator** | Rob White | | |
| **Project #** | bec-19-cricketvalley.ny-start#3 | **# of Ports Used** | 1 (gas probe) | | |
| **Fuel Type** | Gas, Natural | **Min. Fuel Factor** | 1.600 | **Max. Fuel Factor** | 1.836 |

**Gas Analysis Data**

| **Run Number** | PM U-00003 Base-1 | | **Date** | 04/15/20 | **Run Start Time** | 08:23 | **Run Stop Time** | 12:46 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 04:23 | 4.9 | 12.7 | 0.0 | 82.4 | 29.29 | 1.673 | 140.3 | YES |

**Gas Analysis Data**

| **Run Number** | PM U-00003 Base-2 | | **Date** | 04/15/20 | **Run Start Time** | 13:45 | **Run Stop Time** | 18:02 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 04:17 | 4.8 | 12.8 | 0.0 | 82.4 | 29.28 | 1.688 | 143.0 | YES |

**Gas Analysis Data**

| **Run Number** | PM U-00003 Base-3 | | **Date** | 04/16/20 | **Run Start Time** | 06:46 | **Run Stop Time** | 11:15 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 04:29 | 4.8 | 12.8 | 0.0 | 82.4 | 29.28 | 1.688 | 143.0 | YES |

## METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Preliminary Run Date** | 04/15/20 |
| **Sampling Location** | U-00003 Base | **Operator** | Rob White |
| **Project #** | bec-19-cricketvalley.ny-start#3 | **Ports Used** | 4 |

| **Scale Daily Calibration** | | | | | |
|---|---|---|---|---|---|
| **Scale Number** | SAMP-SC-0028 | **Standard** | **Result** | **Difference** | **Pass/Fail** |
| **Date** | | (g) | (g) | (g) | (± 0.5 g) |
| **Test Day 1** | 04/15/20 | 500 | 499.7 | -0.3 | Pass |
| **Test Day 2** | 04/16/16 | 500 | 499.6 | -0.4 | Pass |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | PM U-00003 Base-1 | | **Date** | 04/15/20 | **Start Time** | 08:23 | **Stop Time** | 12:46 |
| **Meter Box Number** | | Samp-cp-0033 | | | | **Meter Cal Factor** | (Y) | 0.978 | |
| **Total Meter Volume** | | ($V_m$) | 96.840 | dcf | | **Barometric Pressure** | ($P_b$) | 29.94 | in Hg |
| **Average Stack Temp** | | $(t_s)_{avg}$ | 209 | °F | | **Stack Static Pressure** | ($P_{static}$) | -0.92 | in $H_2O$ |
| **Average Meter Temp** | | $(t_m)_{avg}$ | 80 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.46 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | Dry | Dry | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 540.40 | 585.00 | 748.30 | 951.60 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 377.50 | 581.50 | 747.50 | 927.80 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 162.9 | 3.5 | 0.8 | 23.8 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | | ($W_t$) | 191.00 | g | | **Water Vol Weighed** | $(V_{wsg(std)})$ | 9.006 | scf |
| **Std Meter Volume** | | $(V_{m(std)})$ | 92.757 | dscf | | **Sat. Moisture Content** | $(B_{ws(svp)})$ | 94.46 | % |
| **Calc Moisture Content** | | $(B_{ws(calc)})$ | 8.85 | % | | **Final Moisture Content** | ($B_{ws}$) | 8.85 | % |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | PM U-00003 Base-2 | | **Date** | 04/15/20 | **Start Time** | 13:45 | **Stop Time** | 18:02 |
| **Meter Box Number** | | Samp-cp-0033 | | | | **Meter Cal Factor** | (Y) | 0.978 | |
| **Total Meter Volume** | | ($V_m$) | 95.730 | dcf | | **Barometric Pressure** | ($P_b$) | 30.11 | in Hg |
| **Average Stack Temp** | | $(t_s)_{avg}$ | 192 | °F | | **Stack Static Pressure** | ($P_{static}$) | -0.92 | in $H_2O$ |
| **Average Meter Temp** | | $(t_m)_{avg}$ | 82 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.47 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | Dry | Dry | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 514.60 | 585.70 | 727.80 | 936.80 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 362.50 | 580.70 | 727.70 | 909.60 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 152.1 | 5.0 | 0.1 | 27.2 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | | ($W_t$) | 184.40 | g | | **Water Vol Weighed** | $(V_{wsg(std)})$ | 8.694 | scf |
| **Std Meter Volume** | | $(V_{m(std)})$ | 91.834 | dscf | | **Sat. Moisture Content** | $(B_{ws(svp)})$ | 65.83 | % |
| **Calc Moisture Content** | | $(B_{ws(calc)})$ | 8.65 | % | | **Final Moisture Content** | ($B_{ws}$) | 8.65 | % |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | PM U-00003 Base-3 | | **Date** | 04/16/20 | **Start Time** | 06:46 | **Stop Time** | 11:15 |
| **Meter Box Number** | | Samp-cp-0033 | | | | **Meter Cal Factor** | (Y) | 0.978 | |
| **Total Meter Volume** | | ($V_m$) | 93.900 | dcf | | **Barometric Pressure** | ($P_b$) | 29.95 | in Hg |
| **Average Stack Temp** | | $(t_s)_{avg}$ | 185 | °F | | **Stack Static Pressure** | ($P_{static}$) | -0.92 | in $H_2O$ |
| **Average Meter Temp** | | $(t_m)_{avg}$ | 70 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.46 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | Dry | Dry | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 522.80 | 586.00 | 649.10 | 1060.00 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 378.90 | 586.00 | 748.40 | 952.30 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 143.9 | 0.0 | -99.3 | 107.7 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | | ($W_t$) | 152.30 | g | | **Water Vol Weighed** | $(V_{wsg(std)})$ | 7.181 | scf |
| **Std Meter Volume** | | $(V_{m(std)})$ | 91.769 | dscf | | **Sat. Moisture Content** | $(B_{ws(svp)})$ | 56.49 | % |
| **Calc Moisture Content** | | $(B_{ws(calc)})$ | 7.26 | % | | **Final Moisture Content** | ($B_{ws}$) | 7.26 | % |

## METHOD 201A (FRONT) AND 202 (BACK) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| | |
|---|---|
| **Date** | 04/15/20 |
| **Operator** | Rob White |
| **Run Number** | PM U-00003 Base-1 |

| **Filter #** |
|---|
| 19031839 |
| PM U-00003 Base-1-CPM |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | 0.7720 | 5266/10 |
| **Average Stack Temp** | ($t_s$) | 209.1 | °F |
| **Average Meter Temp** | ($t_m$) | 80.1 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.846 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | 1.19 | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | 8.85 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.29 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.75 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | 0.39 | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | 0.00 | in $H_2O$ | 3.6 | in $H_2O$ for | 15.0 | sec [≥15] |
| PASS | **Pre (-)** | 0.00 | in $H_2O$ | 3.7 | in $H_2O$ for | 15.0 | sec [≥15] |
| | **Post (+)** | 0.00 | in $H_2O$ | 3.8 | in $H_2O$ for | 15.0 | sec [≥15] |
| | **Post (-)** | 0.00 | in $H_2O$ | 4.3 | in $H_2O$ for | 15.0 | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | Samp-cp-0033 | | |
| **Meter Cal Factor** | (Y) | 0.978 | |
| **Nozzle Number** | 4a | | |
| **Average Nozzle Diameter** | ($D_{ns}$) | 0.1570 | in |
| **Suggested Nozzle Diameter** | ($D_n$) | 0.2111 | in |
| **Probe Number** | SAMP-HP-0138 | | in |
| **Probe Length** | 120 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | SAMP-BH-0039 | | |
| **Impinger Case Number** | SAMP-SBC-0099 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 29.94 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | -0.92 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 29.87 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.08 | in Hg |

| **Nozzle Measurements** | | | | |
|---|---|---|---|---|
| **Pre** | 0.156 | 0.157 | 0.158 | **PASS** |
| **Post** | 0.156 | 0.157 | 0.158 | **PASS** |

| **ID: 4a** |
|---|

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 08:23 | **End** | 12:46 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 377.5 | 581.5 | 747.5 | 927.8 | | | | |
| **Post** | 540.4 | 585.0 | 748.3 | 951.6 | | | | |

| | | | | |
|---|---|---|---|---|
| **Wash Volumes** | | | | ml |
| | | | | ml |

| **Identification Nos.** | | Samp-cp-0033 | Samp-cp-0033 | Samp-cp-0033 | | | SAMP-HP-0138 | SAMP-HP-0138 | SAMP-BH-0039 | SAMP-SBC-0099 | 1048 | 1018 | Samp-cp-0033 | | Samp-cp-0033 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head ($\Delta p$)** | **Desired Orifice ΔH ($\Delta H_@$)** | **Actual Orifice ΔH ($\Delta H_@$)** | **Stack Temp ($t_s$)** | **Probe Temp (248±25°F)** | **Filter Temp (248±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤85°F)** | **CPM Filter Temp (76.5±8.5°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 258.170 | 1.50 | 0.457 | 0.46 | 212 | 248 | 240 | 45 | 55 | 70 | 68 | 68 | 5.0 | 1.22 | 72.08 | 8.073 | 92.5 | 94.284 |
| A-2 | 21.0 | 00:21:00 | 266.410 | 1.40 | 0.457 | 0.46 | 214 | 248 | 245 | 44 | 57 | 71 | 73 | 73 | 5.0 | 1.18 | 69.74 | 15.644 | 92.9 | 93.009 |
| A-3 | 41.3 | 00:41:15 | 274.210 | 1.40 | 0.457 | 0.46 | 216 | 250 | 251 | 47 | 58 | 73 | 78 | 78 | 5.0 | 1.18 | 69.84 | 24.125 | 97.0 | 96.204 |
| B-1 | 61.5 | 01:01:30 | 283.030 | 1.50 | 0.457 | 0.46 | 213 | 254 | 256 | 51 | 60 | 74 | 80 | 80 | 5.0 | 1.22 | 72.13 | 32.296 | 96.2 | 96.008 |
| B-2 | 82.5 | 01:22:30 | 291.560 | 1.50 | 0.457 | 0.46 | 214 | 243 | 234 | 53 | 60 | 74 | 81 | 81 | 5.0 | 1.22 | 72.18 | 40.261 | 95.2 | 95.402 |
| B-3 | 103.5 | 01:43:30 | 299.890 | 1.30 | 0.457 | 0.46 | 212 | 245 | 244 | 55 | 60 | 75 | 82 | 82 | 5.0 | 1.14 | 67.10 | 47.238 | 94.8 | 94.189 |
| C-1 | 123.0 | 02:03:00 | 307.200 | 1.40 | 0.457 | 0.46 | 213 | 248 | 246 | 56 | 61 | 73 | 82 | 82 | 5.0 | 1.18 | 69.68 | 55.017 | 95.0 | 94.192 |
| C-2 | 143.3 | 02:23:15 | 315.350 | 1.50 | 0.457 | 0.46 | 210 | 248 | 245 | 56 | 62 | 75 | 83 | 83 | 5.0 | 1.22 | 71.97 | 63.020 | 94.5 | 94.098 |
| C-3 | 164.3 | 02:44:15 | 323.750 | 1.40 | 0.457 | 0.46 | 204 | 250 | 254 | 58 | 63 | 76 | 84 | 84 | 6.0 | 1.18 | 69.22 | 71.084 | 95.0 | 94.490 |
| D-1 | 184.5 | 03:04:30 | 332.230 | 1.40 | 0.457 | 0.46 | 200 | 247 | 251 | 58 | 65 | 72 | 84 | 84 | 6.0 | 1.18 | 69.01 | 78.368 | 94.4 | 93.869 |
| D-2 | 204.8 | 03:24:45 | 339.890 | 1.50 | 0.457 | 0.46 | 200 | 245 | 252 | 60 | 66 | 74 | 83 | 83 | 6.0 | 1.22 | 71.43 | 86.113 | 93.9 | 93.552 |
| D-3 | 225.8 | 03:45:45 | 348.020 | 1.30 | 0.457 | 0.46 | 201 | 248 | 237 | 61 | 67 | 75 | 83 | 83 | 6.0 | 1.14 | 66.55 | 92.773 | 93.4 | 92.773 |
| Last Pt | 245.3 | 04:05:15 | 355.010 | | | | | | | | | | | | | | | | | |
| **Final Val** | 245.3 | 04:05:15 | 355.010 | | | | | | | | | | | **Max Vac** | 6.0 | **Final Values** | | 92.773 | 93.4 | |
| **Average Values** | | | | 1.43 | | 0.46 | 209 | 248 | 246 | 54 | 61 | 74 | 80 | 80 | | 1.19 | 70.08 | | | |
| | | | | | | | | | | | | | 80 | | | | | | | |

| **Actual** | **DP to** | **Point-by-point** | **Point-by-point** | **Point** |
|---|---|---|---|---|
| **Actual Nozzle Diameter ($D_{na}$)** | **DP to DH Iso Factor (K)** | **Point-by-point Meter Volume ($V_m$)$_{std}$** | **Point-by-point Percent IsoKinetic (I)** | **Point Weighted Average Isokinetics** |
| in | | dscf | % | ($V_m$)$_{std}$ x (I) |
| 0.157 | 0.39 | 8.073 | 92.5 | 747.0 |
| 0.157 | 0.39 | 7.570 | 93.3 | 706.2 |
| 0.157 | 0.39 | 8.481 | 104.7 | 887.5 |
| 0.157 | 0.39 | 8.172 | 93.7 | 765.9 |
| 0.157 | 0.39 | 7.965 | 91.4 | 728.3 |
| 0.157 | 0.39 | 6.977 | 92.5 | 645.4 |
| 0.157 | 0.39 | 7.779 | 95.8 | 745.0 |
| 0.157 | 0.39 | 8.003 | 91.6 | 732.9 |
| 0.157 | 0.39 | 8.064 | 98.6 | 795.3 |
| 0.157 | 0.39 | 7.284 | 88.8 | 646.9 |
| 0.157 | 0.39 | 7.745 | 88.0 | 681.4 |
| 0.157 | 0.39 | 6.659 | 87.6 | 583.1 |
| | | | | |
| 0.157 | 0.39 | 92.773 | | |

| **RM 201A Calculations** | | | | | |
|---|---|---|---|---|---|
| **Trav. Point** | **First Point** | **First Point** | **Subs. Point** | **Velocity** | |
| **Trav. Point Estimated Dwell Times ($t_1$), ($t_n$)** | **First Point Dwell Times ($t_1$)** | **First Point Vel. Head Prelim. Trav. ($\Delta p_{RM2}$)** | **Subs. Point Dwell Times Current Trav. ($t_n$)** | **Velocity Head Current Trav. ($\Delta p_{201A}$)** | **Violations** |
| min | min | in $H_2O$ | min | in $H_2O$ | |
| 21.00 | 20.91 | 1.50 | | 1.50 | 0 |
| 20.25 | 20.20 | 1.40 | 20.20 | 1.40 | 0 |
| 20.25 | 20.20 | 1.40 | 20.20 | 1.40 | 0 |
| 21.00 | 20.91 | 1.50 | | 1.50 | 0 |
| 21.00 | 20.91 | 1.50 | 20.91 | 1.50 | 0 |
| 19.50 | 19.46 | 1.30 | 19.46 | 1.30 | 0 |
| 20.25 | 20.20 | 1.40 | | 1.40 | 0 |
| 21.00 | 20.91 | 1.50 | 20.91 | 1.50 | 0 |
| 20.25 | 20.20 | 1.40 | 20.20 | 1.40 | 0 |
| 20.25 | 20.20 | 1.40 | | 1.40 | 0 |
| 21.00 | 20.91 | 1.50 | 20.91 | 1.50 | 0 |
| 19.50 | 19.46 | 1.30 | 19.46 | 1.30 | 0 |
| | | | | | |

Notes:

Z must be between 0.99 and 1.01, but the initial calculation is based on assumptions of the Cunniham Correction Factor and the Reynolds Number. In cases where your Z value is not between the limits and is producing an error, you need to run a second iteration based on the re-calculated numbers. To do this, copy the value in "Recalculated Cunninham, C =" [BH189] and do a "paste special value only" into "Calculated Cunninham, C =" [BH174]. This sets the initially calculated C equal to the C determined during this test run. At this point the program may recognize the second iteration and your error may go away. If it doesn't it is probably because it is having difficulties deciding between the Reynolds number at the threshold.

| | | | |
|---|---|---|---|
| | Stack Gas Viscosity (μs) | 205.84 | μP |
| | Cyclone Flow Rate ($Q_a$) | 0.53 | ft³/min |
| | Dia. of 50% Prob. ($D_{50}$) CI | 10.25 | μm |
| >> | Calculated Cunninham, C | 1.08 | |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{re}$<3162) | 10.21 | μm |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{re}$≥3162) | | μm |
| | Middle of Zone Dia. ($D_{50T}$) CI | 10.60 | μm |
| | Sampling Rate ($PM_{10}$ and $PM_{2.5}$ Cyc.) | 0.50 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$<3162) | 2.27 | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{re}$<3162) | 0.53 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$≥3162) | | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{re}$≥3162) | | dscfm |
| | Actual Test Run C (2.5 μm) | 1.08 | |
| | Actual Test Run $N_{RE}$ | 2792.37 | |
| | Actual Particle Cut Diameter for CI | 10.25 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$<3162) | 2.27 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$≥3162) | | μm |
| << | Recalculated Cunninham, C = | 1.08 | |
| | Recalculated $D_{50-1}$ for $C_{IV}$ = | 2.27 | |
| >> | Z (limits 0.99 to 1.01) = | 1.00 | |
| | Isokinetics (I) (80 to 120%) = | 93.40 | % |
| | No. Sampling Pts. Outside Δp = | 0 | |
| | Sample Nozzle Diameter = | 0.157 | in |
| | $\Delta p_{min}$ | 0.601 | in $H_2O$ |
| | $\Delta p_{max}$ | 1.785 | in $H_2O$ |

## METHOD 201A (FRONT) AND 202 (BACK) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| | |
|---|---|
| **Date** | 04/15/20 |
| **Operator** | Rob White |
| **Run Number** | PM U-00003 Base-2 |

| **Filter #** |
|---|
| 19031840 |
| PM U-00003 Base-2-CPM |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | 0.7720 | 5266/10 |
| **Average Stack Temp** | ($t_s$) | 191.9 | °F |
| **Average Meter Temp** | ($t_m$) | 82.3 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.846 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | 1.18 | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | 8.65 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.28 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.38 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | 0.41 | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | 0.000 | in $H_2O$ | 3.7 | in $H_2O$ for | 15.0 | sec [≥15] |
| PASS | **Pre (-)** | 0.000 | in $H_2O$ | 4.0 | in $H_2O$ for | 15.0 | sec [≥15] |
| | **Post (+)** | 0.000 | in $H_2O$ | 3.7 | in $H_2O$ for | 15.0 | sec [≥15] |
| | **Post (-)** | 0.000 | in $H_2O$ | 4.3 | in $H_2O$ for | 15.0 | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | Samp-cp-0033 | | |
| **Meter Cal Factor** | (Y) | 0.978 | |
| **Nozzle Number** | 4a | | |
| **Average Nozzle Diameter** | ($D_{ns}$) | 0.1570 | in |
| **Suggested Nozzle Diameter** | ($D_n$) | 0.1492 | in |
| **Probe Number** | SAMP-HP-0138 | | in |
| **Probe Length** | 120 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | SAMP-BH-0039 | | |
| **Impinger Case Number** | SAMP-SBC-0099 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.11 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | -0.92 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.04 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.25 | in Hg |

| **Nozzle Measurements** | | | **ID: 4a** | |
|---|---|---|---|---|
| **Pre** | 0.156 | 0.157 | 0.158 | **PASS** |
| **Post** | 0.156 | 0.157 | 0.158 | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 13:45 | **End** | 18:02 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 362.5 | 580.7 | 727.7 | 909.6 | | | | |
| **Post** | 514.6 | 585.7 | 727.8 | 936.8 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | Samp-cp-0033 | Samp-cp-0033 | Samp-cp-0033 | | | SAMP-HP-0138 | SAMP-HP-0138 | SAMP-BH-0039 | SAMP-SBC-0099 | 8082 | 1026 | Samp-cp-0033 | | Samp-cp-0033 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head ($\Delta p$)** | **Desired Orifice ΔH ($\Delta H_@$)** | **Actual Orifice ΔH ($\Delta H_@$)** | **Stack Temp ($t_s$)** | **Probe Temp (248±25°F)** | **Filter Temp (248±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤85°F)** | **CPM Filter Temp (76.5±8.5°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 358.270 | 1.40 | 0.457 | 0.47 | 191 | 251 | 261 | 56 | 61 | 68 | 75 | 75 | 5.0 | 1.18 | 68.33 | 7.682 | 92.6 | 92.188 |
| A-2 | 20.3 | 00:20:15 | 366.170 | 1.50 | 0.457 | 0.47 | 192 | 250 | 262 | 55 | 63 | 70 | 81 | 81 | 5.0 | 1.22 | 70.78 | 15.885 | 92.4 | 93.579 |
| A-3 | 41.3 | 00:41:15 | 374.700 | 1.30 | 0.457 | 0.47 | 191 | 254 | 255 | 57 | 63 | 72 | 81 | 81 | 5.0 | 1.14 | 65.84 | 22.973 | 92.3 | 91.891 |
| B-1 | 60.8 | 01:00:45 | 382.070 | 1.40 | 0.457 | 0.47 | 190 | 253 | 255 | 58 | 65 | 72 | 83 | 83 | 5.0 | 1.18 | 68.27 | 31.634 | 95.6 | 94.903 |
| B-2 | 81.0 | 01:21:00 | 391.110 | 1.50 | 0.457 | 0.47 | 191 | 255 | 253 | 60 | 66 | 74 | 85 | 85 | 5.0 | 1.22 | 70.73 | 40.407 | 96.2 | 96.264 |
| B-3 | 102.0 | 01:42:00 | 400.300 | 1.50 | 0.457 | 0.47 | 190 | 256 | 255 | 61 | 67 | 75 | 84 | 84 | 5.0 | 1.22 | 70.67 | 48.536 | 95.4 | 95.888 |
| C-1 | 123.0 | 02:03:00 | 408.800 | 1.40 | 0.457 | 0.47 | 196 | 242 | 243 | 62 | 66 | 73 | 83 | 83 | 5.0 | 1.18 | 68.59 | 56.718 | 95.9 | 96.213 |
| C-2 | 143.3 | 02:23:15 | 417.340 | 1.30 | 0.457 | 0.47 | 194 | 244 | 248 | 63 | 64 | 74 | 84 | 84 | 5.0 | 1.14 | 65.99 | 63.413 | 95.0 | 94.681 |
| C-3 | 162.8 | 02:42:45 | 424.340 | 1.50 | 0.457 | 0.47 | 193 | 245 | 250 | 64 | 65 | 75 | 82 | 82 | 5.0 | 1.22 | 70.83 | 71.610 | 94.6 | 94.701 |
| D-1 | 183.8 | 03:03:45 | 432.880 | 1.40 | 0.457 | 0.47 | 194 | 249 | 251 | 65 | 66 | 76 | 83 | 83 | 5.0 | 1.18 | 68.48 | 79.074 | 94.2 | 94.191 |
| D-2 | 204.0 | 03:24:00 | 440.670 | 1.30 | 0.457 | 0.47 | 190 | 243 | 244 | 67 | 70 | 77 | 84 | 84 | 5.0 | 1.14 | 65.79 | 85.453 | 93.4 | 92.909 |
| D-3 | 223.5 | 03:43:30 | 447.340 | 1.30 | 0.457 | 0.47 | 191 | 245 | 256 | 64 | 65 | 73 | 83 | 83 | 5.0 | 1.14 | 65.84 | 91.834 | 92.6 | 91.834 |
| Last Pt | 243.0 | 04:03:00 | 454.000 | | | | | | | | | | | | | | | | | |
| **Final Val** | 243.0 | 04:03:00 | 454.000 | | | | | | | | | | | **Max Vac** | 5.0 | **Final Values** | | 91.834 | 92.6 | |
| **Average Values** | | | | 1.40 | | 0.47 | 192 | 249 | 253 | 61 | 65 | 73 | 82 | 82 | | 1.18 | 68.35 | | | |
| | | | | | | | | | | | | | 82 | | | | | | | |

| **Actual** | **DP to** | **Point-by-point** | **Point-by-point** | **Point** |
|---|---|---|---|---|
| **Actual Nozzle Diameter ($D_{na}$)** | **DP to DH Iso Factor (K)** | **Point-by-point Meter Volume ($V_m$)$_{std}$** | **Point-by-point Percent IsoKinetic (I)** | **Point Weighted Average Isokinetics** |
| in | | dscf | % | ($V_m$)$_{std}$ x (I) |
| 0.157 | 0.41 | 7.682 | 92.6 | 711.2 |
| 0.157 | 0.41 | 8.203 | 92.2 | 756.0 |
| 0.157 | 0.41 | 7.087 | 92.0 | 652.4 |
| 0.157 | 0.41 | 8.661 | 104.3 | 903.4 |
| 0.157 | 0.41 | 8.773 | 98.5 | 864.0 |
| 0.157 | 0.41 | 8.129 | 91.2 | 741.3 |
| 0.157 | 0.41 | 8.182 | 99.0 | 809.9 |
| 0.157 | 0.41 | 6.695 | 87.1 | 583.4 |
| 0.157 | 0.41 | 8.197 | 92.2 | 755.6 |
| 0.157 | 0.41 | 7.464 | 90.2 | 672.9 |
| 0.157 | 0.41 | 6.379 | 82.8 | 528.0 |
| 0.157 | 0.41 | 6.381 | 82.9 | 528.8 |
| | | | | |
| 0.157 | 0.41 | 91.834 | | |

| **RM 201A Calculations** | | | | | |
|---|---|---|---|---|---|
| **Trav. Point** | **First Point** | **First Point** | **Subs. Point** | **Velocity** | |
| **Trav. Point Estimated Dwell Times ($t_1$), ($t_n$)** | **First Point Dwell Times ($t_1$)** | **First Point Vel. Head Current Trav. ($\Delta p_{RM2}$)** | **Subs. Point Dwell Times Current Trav. ($t_n$)** | **Velocity Head Current Trav. ($\Delta p_{201A}$)** | **Violations** |
| min | min | in $H_2O$ | min | in $H_2O$ | |
| 20.25 | 20.20 | 1.40 | | 1.40 | 0 |
| 21.00 | 20.91 | 1.50 | 20.91 | 1.50 | 0 |
| 19.50 | 19.46 | 1.30 | 19.46 | 1.30 | 0 |
| 20.25 | 20.20 | 1.40 | | 1.40 | 0 |
| 21.00 | 20.91 | 1.50 | 20.91 | 1.50 | 0 |
| 21.00 | 20.91 | 1.50 | 20.91 | 1.50 | 0 |
| 20.25 | 20.20 | 1.40 | | 1.40 | 0 |
| 19.50 | 19.46 | 1.30 | 19.46 | 1.30 | 0 |
| 21.00 | 20.91 | 1.50 | 20.91 | 1.50 | 0 |
| 20.25 | 20.20 | 1.40 | | 1.40 | 0 |
| 19.50 | 19.46 | 1.30 | 19.46 | 1.30 | 0 |
| 19.50 | 19.46 | 1.30 | 19.46 | 1.30 | 0 |
| | | | | | |

| | | |
|---|---|---|
| Stack Gas Viscosity (μs) | 202.01 | μP |
| Cyclone Flow Rate ($Q_s$) | 0.51 | ft³/min |
| Dia. of 50% Prob. ($D_{50}$) CI | 10.29 | μm |
| >> Calculated Cunninham, C | 1.08 | |
| Lower Limit Dia. ($D_{50LL}$) CI ($N_{Re}$<3162) | 10.26 | μm |
| Lower Limit Dia. ($D_{50LL}$) CI ($N_{Re}$≥3162) | | μm |
| Middle of Zone Dia. ($D_{50T}$) CI | 10.63 | μm |
| Sampling Rate ($PM_{10}$ and $PM_{2.5}$ Cyc.) | 0.49 | dscfm |
| Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$<3162) | 2.26 | μm |
| Sampling Rate ($PM_{2.5}$ Cyc., $N_{Re}$<3162) | 0.51 | dscfm |
| Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$≥3162) | | μm |
| Sampling Rate ($PM_{2.5}$ Cyc., $N_{Re}$≥3162) | | dscfm |
| Actual Test Run C (2.5 μm) | 1.07 | |
| Actual Test Run $N_{RE}$ | 2837.93 | |
| Actual Particle Cut Diameter for CI | 10.29 | μm |
| Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$<3162) | 2.27 | μm |
| Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$≥3162) | | μm |
| << Recalculated Cunninham, C = | 1.08 | |
| Recalculated $D_{50-1}$ for $C_{IV}$ = | 2.26 | |
| >> Z (limits 0.99 to 1.01) = | 1.00 | |
| Isokinetics (I) (80 to 120%) = | 92.63 | % |
| No. Sampling Pts. Outside Δp = | 0 | |
| Sample Nozzle Diameter = | 0.157 | in |
| $\Delta p_{min}$ | 0.601 | in $H_2O$ |
| $\Delta p_{max}$ | 1.785 | in $H_2O$ |

Z must be between 0.99 and 1.01, but the initial calculation is based on assumptions of the Cunniham Correction Factor and the Reynolds Number. In cases where your Z value is not between the limits and is producing an error, you need to run a second iteration based on the re-calculated numbers. To do this, copy the value in "Recalculated Cunninham, C =" [BH189] and do a "paste special value only" into "Calculated Cunninham, C =" [BH174]. This sets the initially calculated C equal to the C determined during this test run. At this point the program may recognize the second iteration and your error may go away. If it doesn't it is probably because it is having difficulties deciding between the Reynolds number at the threshold.

Notes:

## METHOD 201A (FRONT) AND 202 (BACK) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| | |
|---|---|
| **Date** | 04/16/20 |
| **Operator** | Rob White |
| **Run Number** | PM U-00003 Base-3 |

| **Filter #** |
|---|
| 19031831 |
| PM U-00003 Base-3-CPM |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | 0.7720 | 5266/10 |
| **Average Stack Temp** | ($t_s$) | 184.6 | °F |
| **Average Meter Temp** | ($t_m$) | 69.5 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.846 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | 1.17 | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | 7.26 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.28 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.38 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | 0.41 | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec ≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec ≥60] |
| **Pitot** | **Pre (+)** | 0.00 | in $H_2O$ | 3.7 | in $H_2O$ for | 15.0 | sec ≥15] |
| PASS | **Pre (-)** | 0.00 | in $H_2O$ | 4.0 | in $H_2O$ for | 15.0 | sec ≥15] |
| | **Post (+)** | 0.00 | in $H_2O$ | 3.6 | in $H_2O$ for | 15.0 | sec ≥15] |
| | **Post (-)** | 0.00 | in $H_2O$ | 4.2 | in $H_2O$ for | 15.0 | sec ≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | Samp-cp-0033 | | |
| **Meter Cal Factor** | (Y) | 0.978 | |
| **Nozzle Number** | 4a | | |
| **Average Nozzle Diameter** | ($D_{ns}$) | 0.1570 | in |
| **Suggested Nozzle Diameter** | ($D_n$) | 0.1509 | in |
| **Probe Number** | SAMP-HP-0138 | | in |
| **Probe Length** | 120 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | SAMP-BH-0039 | | |
| **Impinger Case Number** | SAMP-SBC-0099 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 29.95 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | -0.92 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 29.88 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.09 | in Hg |

| **Nozzle Measurements** | | | **ID: 4a** | |
|---|---|---|---|---|
| **Pre** | 0.156 | 0.157 | 0.158 | **PASS** |
| **Post** | 0.156 | 0.157 | 0.158 | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 06:46 | **End** | 11:15 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 378.9 | 586.0 | 748.4 | 952.3 | | | | |
| **Post** | 522.8 | 586.0 | 649.1 | 1060.0 | | | | |

| | | | | |
|---|---|---|---|---|
| **Wash Volumes** | | | | ml |
| | | | | ml |

| **Identification Nos.** | | Samp-cp-0033 | Samp-cp-0033 | Samp-cp-0033 | | | SAMP-HP-0138 | SAMP-HP-0138 | SAMP-BH-0039 | SAMP-SBC-0099 | 1048 | 1018 | Samp-cp-0033 | | Samp-cp-0033 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head ($\Delta p$)** | **Desired Orifice ΔH ($\Delta H_@$)** | **Actual Orifice ΔH ($\Delta H_@$)** | **Stack Temp ($t_s$)** | **Probe Temp (248±25°F)** | **Filter Temp (248±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤85°F)** | **CPM Filter Temp (76.5±8.5°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 461.100 | 1.30 | 0.457 | 0.46 | 184 | 252 | 246 | 40 | 55 | 68 | 54 | 54 | 5.0 | 1.14 | 65.48 | 7.843 | 100.3 | 96.828 |
| A-2 | 19.5 | 00:19:30 | 468.890 | 1.40 | 0.457 | 0.46 | 185 | 255 | 256 | 44 | 56 | 68 | 60 | 60 | 5.0 | 1.18 | 68.01 | 16.013 | 98.7 | 96.985 |
| A-3 | 39.8 | 00:39:45 | 477.100 | 1.30 | 0.457 | 0.46 | 187 | 254 | 257 | 55 | 57 | 69 | 63 | 63 | 5.0 | 1.14 | 65.63 | 23.859 | 99.3 | 96.948 |
| B-1 | 59.3 | 00:59:15 | 485.030 | 1.50 | 0.457 | 0.46 | 184 | 255 | 254 | 56 | 57 | 70 | 64 | 64 | 5.0 | 1.22 | 70.34 | 32.728 | 99.0 | 98.183 |
| B-2 | 80.3 | 01:20:15 | 494.010 | 1.50 | 0.457 | 0.46 | 183 | 256 | 252 | 57 | 58 | 71 | 65 | 65 | 5.0 | 1.22 | 70.28 | 40.929 | 97.3 | 97.319 |
| B-3 | 101.3 | 01:41:15 | 502.330 | 1.30 | 0.457 | 0.46 | 182 | 262 | 265 | 58 | 60 | 71 | 66 | 66 | 5.0 | 1.14 | 65.38 | 47.983 | 96.2 | 95.667 |
| C-1 | 120.8 | 02:00:45 | 509.500 | 1.30 | 0.457 | 0.46 | 186 | 247 | 257 | 55 | 59 | 68 | 68 | 68 | 5.0 | 1.14 | 65.58 | 54.794 | 95.1 | 94.059 |
| C-2 | 140.3 | 02:20:15 | 516.450 | 1.40 | 0.457 | 0.46 | 187 | 254 | 255 | 57 | 62 | 70 | 74 | 74 | 5.0 | 1.18 | 68.11 | 62.314 | 94.4 | 93.471 |
| C-3 | 160.5 | 02:40:30 | 524.210 | 1.30 | 0.457 | 0.46 | 188 | 253 | 256 | 58 | 63 | 72 | 77 | 77 | 5.0 | 1.14 | 65.68 | 69.050 | 93.7 | 92.355 |
| D-1 | 180.0 | 03:00:00 | 531.200 | 1.50 | 0.457 | 0.46 | 184 | 245 | 257 | 61 | 65 | 75 | 80 | 80 | 6.0 | 1.22 | 70.34 | 77.119 | 93.2 | 92.370 |
| D-2 | 201.0 | 03:21:00 | 539.620 | 1.40 | 0.457 | 0.46 | 182 | 250 | 246 | 62 | 66 | 77 | 81 | 81 | 6.0 | 1.18 | 67.85 | 84.714 | 92.9 | 92.180 |
| D-3 | 221.3 | 03:41:15 | 547.560 | 1.30 | 0.457 | 0.46 | 183 | 253 | 247 | 63 | 67 | 77 | 82 | 82 | 6.0 | 1.14 | 65.43 | 91.818 | 92.7 | 91.818 |
| Last Pt | 240.8 | 04:00:45 | 555.000 | | | | | | | | | | | | | | | | | |
| **Final Val** | 240.8 | 04:00:45 | 555.000 | | | | | | | | | | | **Max Vac** | 6.0 | **Final Values** | | 91.818 | 92.7 | |
| **Average Values** | | | | 1.38 | | 0.46 | 185 | 253 | 254 | 56 | 60 | 71 | 70 | 70 | | 1.17 | 67.34 | | | |
| | | | | | | | | | | | | | 70 | | | | | | | |

| **Actual Actual Nozzle Diameter ($D_{na}$)** | **DP to DP to DH Iso Factor (K)** | **Point-by-point Point-by-point Meter Volume ($V_m$)$_{std}$** | **Point-by-point Percent IsoKinetic (I)** | **Point Point Weighted Average Isokinetics** |
|---|---|---|---|---|
| in | | dscf | % | ($V_m$)$_{std}$ x (I) |
| 0.157 | 0.41 | 7.843 | 100.3 | 786.8 |
| 0.157 | 0.41 | 8.170 | 97.1 | 793.0 |
| 0.157 | 0.41 | 7.846 | 100.6 | 789.4 |
| 0.157 | 0.41 | 8.868 | 98.1 | 869.7 |
| 0.157 | 0.41 | 8.201 | 90.6 | 743.2 |
| 0.157 | 0.41 | 7.054 | 90.1 | 635.5 |
| 0.157 | 0.41 | 6.812 | 87.3 | 594.5 |
| 0.157 | 0.41 | 7.520 | 89.5 | 672.8 |
| 0.157 | 0.41 | 6.736 | 86.4 | 582.2 |
| 0.157 | 0.41 | 8.069 | 89.2 | 720.0 |
| 0.157 | 0.41 | 7.595 | 90.0 | 683.7 |
| 0.157 | 0.41 | 7.103 | 90.8 | 645.0 |
| | | | | |
| 0.157 | 0.41 | 91.818 | | |

| **RM 201A Calculations** | | | | | |
|---|---|---|---|---|---|
| **Trav. Point Trav. Point Estimated Dwell Times ($t_1$), ($t_n$)** | **First Point First Point Dwell Times ($t_1$)** | **First Point Vel. Head Current Trav. ($\Delta p_{RM2}$)** | **Subs. Point Subs. Point Dwell Times Current Trav. ($t_n$)** | **Velocity Velocity Head Current Trav. ($\Delta p_{201A}$)** | **Violations** |
| min | min | in $H_2O$ | min | in $H_2O$ | |
| 19.50 | 19.46 | 1.30 | | 1.30 | 0 |
| 20.25 | 20.20 | 1.40 | 20.20 | 1.40 | 0 |
| 19.50 | 19.46 | 1.30 | 19.46 | 1.30 | 0 |
| 21.00 | 20.91 | 1.50 | | 1.50 | 0 |
| 21.00 | 20.91 | 1.50 | 20.91 | 1.50 | 0 |
| 19.50 | 19.46 | 1.30 | 19.46 | 1.30 | 0 |
| 19.50 | 19.46 | 1.30 | | 1.30 | 0 |
| 20.25 | 20.20 | 1.40 | 20.20 | 1.40 | 0 |
| 19.50 | 19.46 | 1.30 | 19.46 | 1.30 | 0 |
| 21.00 | 20.91 | 1.50 | | 1.50 | 0 |
| 20.25 | 20.20 | 1.40 | 20.20 | 1.40 | 0 |
| 19.50 | 19.46 | 1.30 | 19.46 | 1.30 | 0 |
| | | | | | |

| | | |
|---|---|---|
| Stack Gas Viscosity (μs) | 201.57 | μP |
| Cyclone Flow Rate ($Q_s$) | 0.50 | ft³/min |
| Dia. of 50% Prob. ($D_{50}$) CI | 10.34 | μm |
| >> Calculated Cunninham, C | 1.08 | |
| Lower Limit Dia. ($D_{50LL}$) CI ($N_{Re}$<3162) | 10.28 | μm |
| Lower Limit Dia. ($D_{50LL}$) CI ($N_{Re}$≥3162) | | μm |
| Middle of Zone Dia. ($D_{50T}$) CI | 10.64 | μm |
| Sampling Rate ($PM_{10}$ and $PM_{2.5}$ Cyc.) | 0.48 | dscfm |
| Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$<3162) | 2.27 | μm |
| Sampling Rate ($PM_{2.5}$ Cyc., $N_{Re}$<3162) | 0.50 | dscfm |
| Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$≥3162) | | μm |
| Sampling Rate ($PM_{2.5}$ Cyc., $N_{Re}$≥3162) | | dscfm |
| Actual Test Run C (2.5 μm) | 1.07 | |
| Actual Test Run $N_{RE}$ | 2841.40 | |
| Actual Particle Cut Diameter for CI | 10.34 | μm |
| Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$<3162) | 2.28 | μm |
| Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$≥3162) | | μm |
| << Recalculated Cunninham, C = | 1.08 | |
| Recalculated $D_{50-1}$ for $C_{IV}$ = | 2.27 | |
| >> Z (limits 0.99 to 1.01) = | 1.00 | |
| Isokinetics (I) (80 to 120%) = | 92.75 | % |
| No. Sampling Pts. Outside Δp = | 0 | |
| Sample Nozzle Diameter = | 0.157 | in |
| $\Delta p_{min}$ | 0.601 | in $H_2O$ |
| $\Delta p_{max}$ | 1.785 | in $H_2O$ |

Z must be between 0.99 and 1.01, but the initial calculation is based on assumptions of the Cunniham Correction Factor and the Reynolds Number. In cases where your Z value is not between the limits and is producing an error, you need to run a second iteration based on the re-calculated numbers. To do this, copy the value in "Recalculated Cunninham, C =" [BH189] and do a "paste special value only" into "Calculated Cunninham, C =" [BH174]. This sets the initially calculated C equal to the C determined during this test run. At this point the program may recognize the second iteration and your error may go away. If it doesn't it is probably because it is having difficulties deciding between the Reynolds number at the threshold.

Notes:

# EMISSION DATA RECORDS

## Reference Method Data
## Base Load
## SAM

## METHOD 8A (CONTROLLED CONDENSATE) SOURCE SAMPLING TITLE PAGE

| Source Information | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base |
| **Fuel Type** | Gas, Natural |

| Test Information | | | |
|---|---|---|---|
| **Project #** | | bec-19-cricketvalley.ny-start#3 | |
| **Operator** | | GT | |
| **Date for Preliminary Run** | (mm/dd/yy) | 04/15/20 | |
| **Standard Temperature** | | 68 | °F |
| **Standard Pressure** | | 29.92 | in Hg |
| **Required Sample Vol.** | 10 L/min | 10.6 | scf |
| **Run Duration** | 8a, 2.4.1.3 | 120 | minutes |
| **Unit Number** | | U-00003 | |
| **Base Run Number** | | SAM U-00003 Base | |
| **Number of Ports Available** | | 4 | |
| **Number of Ports Used** | | 1 | |
| **Port Inside Diameter** | | 6.00 | in |
| **Stack Shape** | | Circular | |

| Test Equipment Information | | | | | |
|---|---|---|---|---|---|
| **Run** | | **1** | **2** | **3** | |
| **Test Date** | (mm/dd/yy) | 04/15/20 | 04/16/20 | 04/16/20 | |
| **Load** | | Base | Base | Base | % or w/DB |
| **Fuel F-Factor** | | 8638.02 | 8641.42 | 8641.42 | dscf/MMBtu |
| **Meter Box Number** | from ACS | samp-cp-0030 | samp-cp-0030 | samp-cp-0030 | |
| **Meter Calibration Factor** | (Y) | 0.974 | 0.974 | 0.974 | |
| **Orifice Meter Coefficient** | ($\Delta H_@$) | 1.878 | 1.878 | 1.878 | in $H_2O$ |
| **Non-Console Manometer Used** | | No | No | No | |
| **Probe Number** | from ACS | SAMP-HP-0138 | SAMP-HP-0138 | SAMP-HP-0138 | |
| **Probe Length** | | 72.0 | 72.0 | 72.0 | in |
| **(SS, Glass …. ) Liner Material** | from list | glass | glass | glass | |
| **Sample Case / Oven Number** | from ACS | samp-bh-0013 | samp-bh-0013 | samp-bh-0013 | |
| **Impinger Case Number** | from ACS | samp-bc-0032 | samp-bc-0032 | samp-bc-0032 | |

| Testing Company Information | |
|---|---|
| **Company Name** | Air Hygiene International, Inc. (Tulsa, Oklahoma) |
| **Address** | 1600 W Tacoma Street |
| **City, State Zip** | Broken Arrow, Oklahoma 74012 |
| **Project Manager** | Rob White |
| **Phone Number** | (918) 307-8865 |
| **Fax Number** | (918) 307-9131 |

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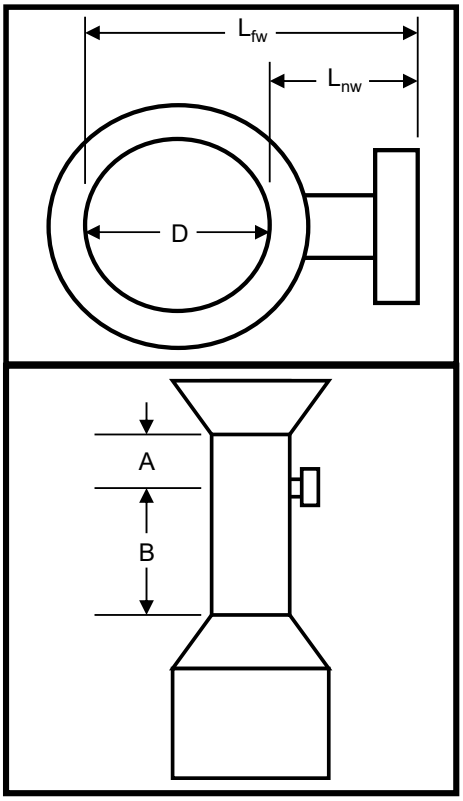
## METHOD 1 - SAMPLE AND VELOCITY TRAVERSES FOR CIRCULAR SOURCES

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Date** | 04/15/20 |
| **Sampling Location** | U-00003 Base | **Stack Type** | Circular |
| **Operator** | GT | **Ports Available** | 4 |
| **Project #** | bec-19-cricketvalley.ny-start#3 | **Ports Used** | 1 |
| **Stack Size** | Large (>24 inch diameter) | **Port ID (inches)** | 6.00 |

| **Circular Stack or Duct Diameter** | | | |
|---|---|---|---|
| **Distance to Far Wall of Stack** | ($L_{fw}$) | 236.00 | in |
| **Distance to Near Wall of Stack** | ($L_{nw}$) | 8.00 | in |
| **Diameter of Stack** | (D) | 228.00 | in |
| **Area of Stack** | ($A_s$) | 283.53 | ft² |

| **Distance from Port to Disturbances** | | | |
|---|---|---|---|
| **Distance Upstream** | (A) | 200.40 | in |
| **Diameters Upstream** | ($A_D$) | 0.88 | diameters |
| **Distance Downstream** | (B) | 850.00 | in |
| **Diameters Downstream** | ($B_D$) | 3.73 | diameters |




| **Number of Traverse Points Required** | | | |
|---|---|---|---|
| **Diameters to Flow Disturbance** | | **Minimum Number of[1] Traverse Points** | |
| **Down Stream** | **Up Stream** | **Particulate Points** | **Velocity Points** |
| 2.00-4.99 | 0.50-1.24 | 24 | 16 |
| 5.00-5.99 | 1.25-1.49 | 20 | 16 |
| 6.00-6.99 | 1.50-1.74 | 16 | 12 |
| 7.00-7.99 | 1.75-1.99 | 12 | 12 |
| >= 8.00 | >=2.00 | 8 or 12[2] | 8 or 12[2] |
| **Upstream Spec** | | 24 | 16 |
| **Downstream Spec** | | 24 | 16 |
| **Traverse Pts Required** | | 24 | 16 |

[1] Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.

[2] 8 for Circular Stacks 12 to 24 inches
12 for Circular Stacks over 24 inches

◉ Method 1 Trav

○ 12 Point PM Trav (M201a ONLY)

○ Velocity

| **Number of Traverse Points Used** | | | |
|---|---|---|---|
| 1 | **Ports by** | 1 | **Across** |
| 1 | **Pts Used** | 1 | **Required** |

| Location of Traverse Points in Circular Stacks | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Traverse Point | (Fraction of Stack Dimension from Inside Wall to Traverse Point) Number of Traverse Points Across the Stack | | | | | | | | |
| Number | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 |
| 1 | .146 | .067 | .044 | .032 | .026 | .021 | .018 | .016 | .014 |
| 2 | .854 | .250 | .146 | .105 | .082 | .067 | .057 | .049 | .044 |
| 3 | | .750 | .296 | .194 | .146 | .118 | .099 | .085 | .075 |
| 4 | | .933 | .704 | .323 | .226 | .177 | .146 | .125 | .109 |
| 5 | | | .854 | .677 | .342 | .250 | .201 | .169 | .146 |
| 6 | | | .956 | .806 | .658 | .356 | .269 | .220 | .188 |
| 7 | | | | .895 | .774 | .644 | .366 | .283 | .236 |
| 8 | | | | .968 | .854 | .750 | .634 | .375 | .296 |
| 9 | | | | | .918 | .823 | .731 | .625 | .382 |
| 10 | | | | | .974 | .882 | .799 | .717 | .618 |
| 11 | | | | | | .933 | .854 | .780 | .704 |
| 12 | | | | | | .979 | .901 | .831 | .764 |

| **Traverse Point Locations** | | | |
|---|---|---|---|
| **Traverse Point Number** | **Fraction of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
| | | in | in |
| **1** | 0.275 | 62 6/8 | 70 6/8 |
| **2** | | | |
| **3** | | | |
| **4** | | | |
| **5** | | | |
| **6** | | | |
| **7** | | | |
| **8** | | | |
| **9** | | | |

## METHOD 3a - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

| | | | | | |
|---|---|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Preliminary Run Date** | 04/15/20 | | |
| **Sampling Location** | U-00003 Base | **Operator** | GT | | |
| **Project #** | bec-19-cricketvalley.ny-start#3 | **# of Ports Used** | 1 (gas probe) | | |
| **Fuel Type** | Gas, Natural | **Min. Fuel Factor** | 1.600 | **Max. Fuel Factor** | 1.836 |

**Gas Analysis Data**

| **Run Number** | SAM U-00003 Base-1 | | **Date** | 04/15/20 | **Run Start Time** | 13:56 | **Run Stop Time** | 15:56 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 02:00 | 4.5 | 12.9 | 0.0 | 82.6 | 29.24 | 1.778 | 144.8 | YES |

**Gas Analysis Data**

| **Run Number** | SAM U-00003 Base-2 | | **Date** | 04/16/20 | **Run Start Time** | 06:24 | **Run Stop Time** | 08:24 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 02:00 | 4.5 | 12.9 | 0.0 | 82.6 | 29.24 | 1.778 | 144.8 | YES |

**Gas Analysis Data**

| **Run Number** | SAM U-00003 Base-3 | | **Date** | 04/16/20 | **Run Start Time** | 08:57 | **Run Stop Time** | 10:57 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 02:00 | 4.5 | 12.9 | 0.0 | 82.6 | 29.24 | 1.778 | 144.8 | YES |

## METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Preliminary Run Date** | 04/15/20 |
| **Sampling Location** | U-00003 Base | **Operator** | GT |
| **Project #** | bec-19-cricketvalley.ny-start#3 | **Ports Used** | 1 |

| **Scale Daily Calibration** | | | | | |
|---|---|---|---|---|---|
| **Scale Number** | SAMP-SC-0028 | **Standard** | **Result** | **Difference** | **Pass/Fail** |
| **Date** | | (g) | (g) | (g) | (± 0.5 g) |
| **Test Day 2** | 04/16/20 | 500 | 499.7 | -0.3 | Pass |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | SAM U-00003 Base-1 | | **Date** | 04/15/20 | **Start Time** | 13:56 | **Stop Time** | 15:56 |
| **Meter Box Number** | | samp-cp-0030 | | | | **Meter Cal Factor** | (Y) | 0.974 | |
| **Total Meter Volume** | | ($V_m$) | 42.410 | dcf | | **Barometric Pressure** | ($P_b$) | 29.91 | in Hg |
| **Average Stack Temp** | | $(t_s)_{avg}$ | 191 | °F | | **Stack Static Pressure** | ($P_{static}$) | -0.92 | in $H_2O$ |
| **Average Meter Temp** | | $(t_m)_{avg}$ | 69 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.41 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | $H_2O_2$ | $H_2O_2$ | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 761.80 | 681.30 | 575.00 | 946.20 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 703.90 | 675.10 | 574.50 | 932.80 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 57.9 | 6.2 | 0.5 | 13.4 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | | ($W_t$) | 78.00 | g | | **Water Vol Weighed** | ($V_{wsg(std)}$) | 3.678 | scf |
| **Std Meter Volume** | | ($V_{m(std)}$) | 41.293 | dscf | | **Sat. Moisture Content** | ($B_{ws(svp)}$) | 64.98 | % |
| **Calc Moisture Content** | | ($B_{ws(calc)}$) | 8.18 | % | | **Final Moisture Content** | ($B_{ws}$) | 8.18 | % |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | SAM U-00003 Base-2 | | **Date** | 04/16/20 | **Start Time** | 06:24 | **Stop Time** | 08:24 |
| **Meter Box Number** | | samp-cp-0030 | | | | **Meter Cal Factor** | (Y) | 0.974 | |
| **Total Meter Volume** | | ($V_m$) | 42.040 | dcf | | **Barometric Pressure** | ($P_b$) | 30.04 | in Hg |
| **Average Stack Temp** | | $(t_s)_{avg}$ | 182 | °F | | **Stack Static Pressure** | ($P_{static}$) | -0.92 | in $H_2O$ |
| **Average Meter Temp** | | $(t_m)_{avg}$ | 67 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.41 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | $H_2O_2$ | $H_2O_2$ | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 825.20 | 688.90 | 575.70 | 955.10 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 761.80 | 681.30 | 575.00 | 946.20 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 63.4 | 7.6 | 0.7 | 8.9 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | | ($W_t$) | 80.60 | g | | **Water Vol Weighed** | ($V_{wsg(std)}$) | 3.800 | scf |
| **Std Meter Volume** | | ($V_{m(std)}$) | 41.266 | dscf | | **Sat. Moisture Content** | ($B_{ws(svp)}$) | 53.21 | % |
| **Calc Moisture Content** | | ($B_{ws(calc)}$) | 8.43 | % | | **Final Moisture Content** | ($B_{ws}$) | 8.43 | % |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | SAM U-00003 Base-3 | | **Date** | 04/16/20 | **Start Time** | 08:57 | **Stop Time** | 10:57 |
| **Meter Box Number** | | samp-cp-0030 | | | | **Meter Cal Factor** | (Y) | 0.974 | |
| **Total Meter Volume** | | ($V_m$) | 41.640 | dcf | | **Barometric Pressure** | ($P_b$) | 30.06 | in Hg |
| **Average Stack Temp** | | $(t_s)_{avg}$ | 182 | °F | | **Stack Static Pressure** | ($P_{static}$) | -0.92 | in $H_2O$ |
| **Average Meter Temp** | | $(t_m)_{avg}$ | 58 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.41 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | $H_2O_2$ | $H_2O_2$ | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 884.50 | 696.20 | 576.30 | 966.20 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 825.20 | 688.90 | 575.70 | 955.10 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 59.3 | 7.3 | 0.6 | 11.1 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | | ($W_t$) | 78.30 | g | | **Water Vol Weighed** | ($V_{wsg(std)}$) | 3.692 | scf |
| **Std Meter Volume** | | ($V_{m(std)}$) | 41.545 | dscf | | **Sat. Moisture Content** | ($B_{ws(svp)}$) | 53.18 | % |
| **Calc Moisture Content** | | ($B_{ws(calc)}$) | 8.16 | % | | **Final Moisture Content** | ($B_{ws}$) | 8.16 | % |

**METHOD 8A (CONTROLLED CONDENSATE) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA**

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| | |
|---|---|
| **Date** | 04/15/20 |
| **Operator** | GT |
| **Run Number** | SAM U-00003 Base-1 |

| |
|---|
| **Filter #** |
| R0001 |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | | |
| **Average Stack Temp** | ($t_s$) | 191.0 | °F |
| **Average Meter Temp** | ($t_m$) | 68.5 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.878 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | 8.18 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.24 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.75 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Pre (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | samp-cp-0030 | | |
| **Meter Cal Factor** | (Y) | 0.974 | |
| **Nozzle Number** | NA | | |
| **Average Nozzle Diameter** | ($D_{na}$) | | in |
| **Suggested Nozzle Diameter** | ($D_{ni}$) | | in |
| **Probe Number** | SAMP-HP-0138 | | in |
| **Probe Length** | 72 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | samp-bh-0013 | | |
| **Impinger Case Number** | samp-bc-0032 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 29.91 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | -0.92 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 29.84 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.05 | in Hg |

| **Nozzle Measurements** | | | **ID: NA** |
|---|---|---|---|
| **Pre** | | | **PASS** |
| **Post** | | | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 13:56 | **End** | 15:56 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 703.9 | 675.1 | 574.5 | 932.8 | | | | |
| **Post** | 761.8 | 681.3 | 575.0 | 946.2 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | samp-cp-0030 | samp-cp-0030 | samp-cp-0030 | | | SAMP-HP-0138 | SAMP-HP-0138 | samp-bh-0013 | samp-bc-0032 | TCSAM1 | | samp-cp-0030 | | samp-cp-0030 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head (Δp)** | **Desired Orifice ΔH ($\Delta H_d$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (375±25°F)** | **Filter Temp (525±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤185°F)** | **CPM Filter Temp (--±--°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)$_l$** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 829.310 | -- | 0.411 | 0.41 | -- | 350 | 510 | 57 | 176 | -- | 59 | 59 | 2.0 | | | 1.725 | | 41.407 |
| A-2 | 5.0 | 00:05:00 | 831.050 | -- | 0.411 | 0.41 | -- | 350 | 515 | 55 | 185 | -- | 60 | 60 | 2.0 | | | 3.447 | | 41.368 |
| A-3 | 10.0 | 00:10:00 | 832.790 | -- | 0.411 | 0.41 | -- | 350 | 513 | 56 | 185 | -- | 61 | 61 | 2.0 | | | 5.196 | | 41.565 |
| A-4 | 15.0 | 00:15:00 | 834.560 | -- | 0.411 | 0.41 | -- | 350 | 516 | 60 | 185 | -- | 62 | 62 | 2.0 | | | 6.911 | | 41.466 |
| A-5 | 20.0 | 00:20:00 | 836.300 | -- | 0.411 | 0.41 | -- | 350 | 521 | 61 | 183 | -- | 62 | 62 | 2.0 | | | 8.617 | | 41.359 |
| A-6 | 25.0 | 00:25:00 | 838.030 | -- | 0.411 | 0.41 | -- | 350 | 524 | 63 | 184 | -- | 63 | 63 | 2.0 | | | 10.358 | | 41.433 |
| A-7 | 30.0 | 00:30:00 | 839.800 | -- | 0.411 | 0.41 | -- | 350 | 527 | 65 | 182 | -- | 64 | 64 | 2.0 | | | 12.077 | | 41.406 |
| A-8 | 35.0 | 00:35:00 | 841.550 | -- | 0.411 | 0.41 | -- | 350 | 528 | 60 | 158 | -- | 65 | 65 | 2.0 | | | 13.812 | | 41.436 |
| A-9 | 40.0 | 00:40:00 | 843.320 | -- | 0.411 | 0.41 | -- | 350 | 517 | 55 | 158 | -- | 65 | 65 | 2.0 | | | 15.547 | | 41.458 |
| A-10 | 45.0 | 00:45:00 | 845.090 | -- | 0.411 | 0.41 | -- | 350 | 520 | 54 | 123 | -- | 66 | 66 | 2.0 | | | 17.288 | | 41.492 |
| A-11 | 50.0 | 00:50:00 | 846.870 | -- | 0.411 | 0.41 | -- | 350 | 522 | 60 | 114 | -- | 66 | 66 | 2.0 | | | 19.010 | | 41.477 |
| A-12 | 55.0 | 00:55:00 | 848.630 | -- | 0.411 | 0.41 | -- | 350 | 519 | 62 | 109 | -- | 67 | 67 | 2.0 | | | 20.729 | | 41.458 |
| A-13 | 60.0 | 01:00:00 | 850.390 | -- | 0.411 | 0.41 | -- | 350 | 516 | 58 | 105 | -- | 67 | 67 | 2.0 | | | 22.448 | | 41.442 |
| A-14 | 65.0 | 01:05:00 | 852.150 | -- | 0.411 | 0.41 | -- | 350 | 515 | 58 | 105 | -- | 67 | 67 | 2.0 | | | 24.166 | | 41.428 |
| A-15 | 70.0 | 01:10:00 | 853.910 | -- | 0.411 | 0.41 | -- | 350 | 523 | 56 | 103 | -- | 68 | 68 | 2.0 | | | 25.911 | | 41.457 |
| A-16 | 75.0 | 01:15:00 | 855.700 | -- | 0.411 | 0.41 | -- | 350 | 521 | 53 | 102 | -- | 70 | 70 | 2.0 | | | 27.620 | | 41.430 |
| A-17 | 80.0 | 01:20:00 | 857.460 | -- | 0.411 | 0.41 | -- | 350 | 525 | 53 | 103 | -- | 72 | 72 | 2.0 | | | 29.322 | | 41.396 |
| A-18 | 85.0 | 01:25:00 | 859.220 | -- | 0.411 | 0.41 | -- | 350 | 519 | 53 | 104 | -- | 73 | 73 | 2.0 | | | 31.099 | | 41.465 |
| A-19 | 90.0 | 01:30:00 | 861.060 | -- | 0.411 | 0.41 | -- | 350 | 524 | 52 | 101 | -- | 75 | 75 | 2.0 | | | 32.782 | | 41.409 |
| A-20 | 95.0 | 01:35:00 | 862.810 | -- | 0.411 | 0.41 | -- | 350 | 517 | 51 | 101 | -- | 76 | 76 | 2.0 | | | 34.491 | | 41.389 |
| A-21 | 100.0 | 01:40:00 | 864.590 | -- | 0.411 | 0.41 | -- | 350 | 523 | 54 | 106 | -- | 78 | 78 | 2.0 | | | 36.175 | | 41.342 |
| A-22 | 105.0 | 01:45:00 | 866.350 | -- | 0.411 | 0.41 | -- | 350 | 513 | 55 | 109 | -- | 79 | 79 | 2.0 | | | 37.874 | | 41.317 |
| A-23 | 110.0 | 01:50:00 | 868.130 | -- | 0.411 | 0.41 | -- | 350 | 524 | 54 | 106 | -- | 80 | 80 | 2.0 | | | 39.580 | | 41.301 |
| A-24 | 115.0 | 01:55:00 | 869.920 | -- | 0.411 | 0.41 | -- | 350 | 521 | 53 | 103 | -- | 80 | 80 | 2.0 | | | 41.295 | | 41.295 |
| Last Pt | 120.0 | 02:00:00 | 871.720 | | | | | | | | | | | | | | | | | |
| **Final Val** | 120.0 | 02:00:00 | 871.720 | | | | | | | | | | | **Max Vac** | 2.0 | **Final Values** | | 41.295 | | |
| **Average Values** | | | | | | 0.41 | 191 | 350 | 520 | 57 | 133 | | 69 | 69 | | | | | | |
| | | | | | | | | | | | | | 69 | | | | | | | |

Notes:

**METHOD 8A (CONTROLLED CONDENSATE) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA**

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| | |
|---|---|
| **Date** | 04/16/20 |
| **Operator** | GT |
| **Run Number** | SAM U-00003 Base-2 |

| |
|---|
| **Filter #** |
| R0001 |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | | |
| **Average Stack Temp** | ($t_s$) | 182.0 | °F |
| **Average Meter Temp** | ($t_m$) | 66.5 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.878 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | 8.43 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.24 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.34 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Pre (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | samp-cp-0030 | | |
| **Meter Cal Factor** | (Y) | 0.974 | |
| **Nozzle Number** | NA | | |
| **Average Nozzle Diameter** | ($D_{na}$) | | in |
| **Suggested Nozzle Diameter** | ($D_{ni}$) | | in |
| **Probe Number** | SAMP-HP-0138 | | in |
| **Probe Length** | 72 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | samp-bh-0013 | | |
| **Impinger Case Number** | samp-bc-0032 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.04 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | -0.92 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 29.97 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.18 | in Hg |

| **Nozzle Measurements** | | | **ID: NA** |
|---|---|---|---|
| **Pre** | | | **PASS** |
| **Post** | | | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 06:24 | **End** | 08:24 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 761.8 | 681.3 | 575.0 | 946.2 | | | | |
| **Post** | 825.2 | 688.9 | 575.7 | 955.1 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | samp-cp-0030 | samp-cp-0030 | samp-cp-0030 | | | SAMP-HP-0138 | SAMP-HP-0138 | samp-bh-0013 | samp-bc-0032 | TCSAM1 | | samp-cp-0030 | | samp-cp-0030 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head (Δp)** | **Desired Orifice ΔH ($\Delta H_d$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (375±25°F)** | **Filter Temp (525±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤185°F)** | **CPM Filter Temp (--±--°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)$_l$** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 871.950 | -- | 0.411 | 0.41 | -- | 350 | 500 | 39 | 64 | -- | 75 | 75 | 2.0 | | | 1.729 | | 41.503 |
| A-2 | 5.0 | 00:05:00 | 873.740 | -- | 0.411 | 0.41 | -- | 350 | 502 | 41 | 65 | -- | 74 | 74 | 2.0 | | | 3.413 | | 40.961 |
| A-3 | 10.0 | 00:10:00 | 875.480 | -- | 0.411 | 0.41 | -- | 350 | 507 | 43 | 84 | -- | 72 | 72 | 2.0 | | | 5.143 | | 41.142 |
| A-4 | 15.0 | 00:15:00 | 877.260 | -- | 0.411 | 0.41 | -- | 350 | 509 | 44 | 96 | -- | 71 | 71 | 2.0 | | | 6.856 | | 41.135 |
| A-5 | 20.0 | 00:20:00 | 879.020 | -- | 0.411 | 0.41 | -- | 350 | 533 | 45 | 104 | -- | 71 | 71 | 2.0 | | | 8.559 | | 41.084 |
| A-6 | 25.0 | 00:25:00 | 880.770 | -- | 0.411 | 0.41 | -- | 350 | 516 | 46 | 107 | -- | 70 | 70 | 2.0 | | | 10.285 | | 41.141 |
| A-7 | 30.0 | 00:30:00 | 882.540 | -- | 0.411 | 0.41 | -- | 350 | 525 | 46 | 109 | -- | 69 | 69 | 2.0 | | | 12.015 | | 41.193 |
| A-8 | 35.0 | 00:35:00 | 884.310 | -- | 0.411 | 0.41 | -- | 350 | 528 | 47 | 110 | -- | 69 | 69 | 2.0 | | | 13.744 | | 41.232 |
| A-9 | 40.0 | 00:40:00 | 886.080 | -- | 0.411 | 0.41 | -- | 350 | 526 | 47 | 110 | -- | 68 | 68 | 2.0 | | | 15.447 | | 41.193 |
| A-10 | 45.0 | 00:45:00 | 887.820 | -- | 0.411 | 0.41 | -- | 350 | 529 | 49 | 112 | -- | 67 | 67 | 2.0 | | | 17.164 | | 41.193 |
| A-11 | 50.0 | 00:50:00 | 889.570 | -- | 0.411 | 0.41 | -- | 350 | 523 | 50 | 111 | -- | 67 | 67 | 2.0 | | | 18.880 | | 41.192 |
| A-12 | 55.0 | 00:55:00 | 891.320 | -- | 0.411 | 0.41 | -- | 350 | 524 | 51 | 112 | -- | 66 | 66 | 2.0 | | | 20.590 | | 41.179 |
| A-13 | 60.0 | 01:00:00 | 893.060 | -- | 0.411 | 0.41 | -- | 350 | 522 | 51 | 112 | -- | 65 | 65 | 2.0 | | | 22.303 | | 41.174 |
| A-14 | 65.0 | 01:05:00 | 894.800 | -- | 0.411 | 0.41 | -- | 350 | 523 | 51 | 113 | -- | 65 | 65 | 2.0 | | | 24.016 | | 41.170 |
| A-15 | 70.0 | 01:10:00 | 896.540 | -- | 0.411 | 0.41 | -- | 350 | 515 | 52 | 112 | -- | 65 | 65 | 2.0 | | | 25.748 | | 41.197 |
| A-16 | 75.0 | 01:15:00 | 898.300 | -- | 0.411 | 0.41 | -- | 350 | 521 | 51 | 112 | -- | 64 | 64 | 2.0 | | | 27.484 | | 41.226 |
| A-17 | 80.0 | 01:20:00 | 900.060 | -- | 0.411 | 0.41 | -- | 350 | 523 | 51 | 110 | -- | 63 | 63 | 2.0 | | | 29.224 | | 41.257 |
| A-18 | 85.0 | 01:25:00 | 901.820 | -- | 0.411 | 0.41 | -- | 350 | 505 | 50 | 110 | -- | 63 | 63 | 2.0 | | | 30.943 | | 41.258 |
| A-19 | 90.0 | 01:30:00 | 903.560 | -- | 0.411 | 0.41 | -- | 350 | 525 | 51 | 110 | -- | 63 | 63 | 2.0 | | | 32.643 | | 41.233 |
| A-20 | 95.0 | 01:35:00 | 905.280 | -- | 0.411 | 0.41 | -- | 350 | 530 | 53 | 111 | -- | 63 | 63 | 2.0 | | | 34.363 | | 41.235 |
| A-21 | 100.0 | 01:40:00 | 907.020 | -- | 0.411 | 0.41 | -- | 350 | 528 | 53 | 112 | -- | 62 | 62 | 2.0 | | | 36.075 | | 41.229 |
| A-22 | 105.0 | 01:45:00 | 908.750 | -- | 0.411 | 0.41 | -- | 350 | 517 | 54 | 113 | -- | 62 | 62 | 2.0 | | | 37.788 | | 41.224 |
| A-23 | 110.0 | 01:50:00 | 910.480 | -- | 0.411 | 0.41 | -- | 350 | 508 | 54 | 113 | -- | 62 | 62 | 2.0 | | | 39.511 | | 41.229 |
| A-24 | 115.0 | 01:55:00 | 912.220 | -- | 0.411 | 0.41 | -- | 350 | 528 | 56 | 113 | -- | 61 | 61 | 2.0 | | | 41.267 | | 41.267 |
| Last Pt | 120.0 | 02:00:00 | 913.990 | | | | | | | | | | | | | | | | | |
| **Final Val** | 120.0 | 02:00:00 | 913.990 | | | | | | | | | | | **Max Vac** | 2.0 | **Final Values** | | 41.267 | | |
| **Average Values** | | | | | | 0.41 | 182 | 350 | 519 | 49 | 105 | | 67 | 67 | | | | | | |
| | | | | | | | | | | | | | 67 | | | | | | | |

Notes:

**METHOD 8A (CONTROLLED CONDENSATE) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA**

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| | |
|---|---|
| **Date** | 04/16/20 |
| **Operator** | GT |
| **Run Number** | SAM U-00003 Base-3 |

| |
|---|
| **Filter #** |
| R0001 |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | | |
| **Average Stack Temp** | ($t_s$) | 182.0 | °F |
| **Average Meter Temp** | ($t_m$) | 58.4 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.878 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | 8.16 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.24 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.34 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Pre (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | samp-cp-0030 | | |
| **Meter Cal Factor** | (Y) | 0.974 | |
| **Nozzle Number** | NA | | |
| **Average Nozzle Diameter** | ($D_{na}$) | | in |
| **Suggested Nozzle Diameter** | ($D_{ni}$) | | in |
| **Probe Number** | SAMP-HP-0138 | | in |
| **Probe Length** | 72 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | samp-bh-0013 | | |
| **Impinger Case Number** | samp-bc-0032 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.06 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | -0.92 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 29.99 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.20 | in Hg |

| **Nozzle Measurements** | | | **ID: NA** |
|---|---|---|---|
| **Pre** | | | **PASS** |
| **Post** | | | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 08:57 | **End** | 10:57 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 825.2 | 688.9 | 575.7 | 955.1 | | | | |
| **Post** | 884.5 | 696.2 | 576.3 | 966.2 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | samp-cp-0030 | samp-cp-0030 | samp-cp-0030 | | | SAMP-HP-0138 | SAMP-HP-0138 | samp-bh-0013 | samp-bc-0032 | TCSAM1 | | samp-cp-0030 | | samp-cp-0030 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head (Δp)** | **Desired Orifice ΔH ($\Delta H_d$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (375±25°F)** | **Filter Temp (525±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤185°F)** | **CPM Filter Temp (--±--°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)$_l$** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 914.590 | -- | 0.411 | 0.41 | -- | 350 | 500 | 52 | 62 | -- | 57 | 57 | 1.0 | | | 1.731 | | 41.536 |
| A-2 | 5.0 | 00:05:00 | 916.320 | -- | 0.411 | 0.41 | -- | 350 | 502 | 51 | 59 | -- | 57 | 57 | 1.0 | | | 3.491 | | 41.896 |
| A-3 | 10.0 | 00:10:00 | 918.080 | -- | 0.411 | 0.41 | -- | 350 | 505 | 51 | 62 | -- | 57 | 57 | 1.0 | | | 5.232 | | 41.856 |
| A-4 | 15.0 | 00:15:00 | 919.820 | -- | 0.411 | 0.41 | -- | 350 | 510 | 54 | 68 | -- | 57 | 57 | 1.0 | | | 6.963 | | 41.776 |
| A-5 | 20.0 | 00:20:00 | 921.550 | -- | 0.411 | 0.41 | -- | 350 | 516 | 55 | 69 | -- | 57 | 57 | 1.0 | | | 8.683 | | 41.680 |
| A-6 | 25.0 | 00:25:00 | 923.270 | -- | 0.411 | 0.41 | -- | 350 | 521 | 57 | 72 | -- | 57 | 57 | 1.0 | | | 10.424 | | 41.696 |
| A-7 | 30.0 | 00:30:00 | 925.010 | -- | 0.411 | 0.41 | -- | 350 | 524 | 60 | 77 | -- | 57 | 57 | 1.0 | | | 12.115 | | 41.536 |
| A-8 | 35.0 | 00:35:00 | 926.700 | -- | 0.411 | 0.41 | -- | 350 | 525 | 59 | 79 | -- | 58 | 58 | 1.0 | | | 13.842 | | 41.526 |
| A-9 | 40.0 | 00:40:00 | 928.430 | -- | 0.411 | 0.41 | -- | 350 | 508 | 58 | 80 | -- | 58 | 58 | 1.0 | | | 15.569 | | 41.518 |
| A-10 | 45.0 | 00:45:00 | 930.160 | -- | 0.411 | 0.41 | -- | 350 | 505 | 56 | 81 | -- | 58 | 58 | 1.0 | | | 17.317 | | 41.560 |
| A-11 | 50.0 | 00:50:00 | 931.910 | -- | 0.411 | 0.41 | -- | 350 | 513 | 54 | 79 | -- | 58 | 58 | 1.0 | | | 19.064 | | 41.594 |
| A-12 | 55.0 | 00:55:00 | 933.660 | -- | 0.411 | 0.41 | -- | 350 | 517 | 55 | 77 | -- | 58 | 58 | 1.0 | | | 20.791 | | 41.582 |
| A-13 | 60.0 | 01:00:00 | 935.390 | -- | 0.411 | 0.41 | -- | 350 | 520 | 57 | 77 | -- | 59 | 59 | 1.0 | | | 22.535 | | 41.603 |
| A-14 | 65.0 | 01:05:00 | 937.140 | -- | 0.411 | 0.41 | -- | 350 | 524 | 55 | 76 | -- | 59 | 59 | 1.0 | | | 24.279 | | 41.621 |
| A-15 | 70.0 | 01:10:00 | 938.890 | -- | 0.411 | 0.41 | -- | 350 | 521 | 55 | 76 | -- | 58 | 58 | 1.0 | | | 26.006 | | 41.610 |
| A-16 | 75.0 | 01:15:00 | 940.620 | -- | 0.411 | 0.41 | -- | 350 | 502 | 56 | 78 | -- | 59 | 59 | 1.0 | | | 27.710 | | 41.566 |
| A-17 | 80.0 | 01:20:00 | 942.330 | -- | 0.411 | 0.41 | -- | 350 | 505 | 58 | 81 | -- | 59 | 59 | 1.0 | | | 29.444 | | 41.568 |
| A-18 | 85.0 | 01:25:00 | 944.070 | -- | 0.411 | 0.41 | -- | 350 | 517 | 55 | 79 | -- | 59 | 59 | 1.0 | | | 31.158 | | 41.544 |
| A-19 | 90.0 | 01:30:00 | 945.790 | -- | 0.411 | 0.41 | -- | 350 | 521 | 57 | 81 | -- | 60 | 60 | 1.0 | | | 32.879 | | 41.531 |
| A-20 | 95.0 | 01:35:00 | 947.520 | -- | 0.411 | 0.41 | -- | 350 | 519 | 59 | 80 | -- | 59 | 59 | 1.0 | | | 34.623 | | 41.547 |
| A-21 | 100.0 | 01:40:00 | 949.270 | -- | 0.411 | 0.41 | -- | 350 | 525 | 59 | 80 | -- | 60 | 60 | 1.0 | | | 36.354 | | 41.547 |
| A-22 | 105.0 | 01:45:00 | 951.010 | -- | 0.411 | 0.41 | -- | 350 | 531 | 63 | 79 | -- | 60 | 60 | 1.0 | | | 38.074 | | 41.535 |
| A-23 | 110.0 | 01:50:00 | 952.740 | -- | 0.411 | 0.41 | -- | 350 | 528 | 60 | 77 | -- | 60 | 60 | 1.0 | | | 39.805 | | 41.535 |
| A-24 | 115.0 | 01:55:00 | 954.480 | -- | 0.411 | 0.41 | -- | 350 | 524 | 59 | 77 | -- | 60 | 60 | 1.0 | | | 41.545 | | 41.545 |
| Last Pt | 120.0 | 02:00:00 | 956.230 | | | | | | | | | | | | | | | | | |
| **Final Val** | 120.0 | 02:00:00 | 956.230 | | | | | | | | | | | **Max Vac** | 1.0 | **Final Values** | | 41.545 | | |
| **Average Values** | | | | | | 0.41 | 182 | 350 | 516 | 56 | 75 | | 58 | 58 | | | | | | |
| | | | | | | | | | | | | | 58 | | | | | | | |

Notes:

# EMISSION DATA RECORDS

## Reference Method Data
## Base Load
## Opacity

Method Used (Circle One)
Method 9 203A 203B Other: _____

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) Page 1 of 6

Continued on Form Number (AHI Project Code)

Company Name: Air Hygiene
Facility Name: Cricket Valley Energy Plant
Street Address: 1600 W Tacoma St
City: Broken Arrow State: OK Zip: 74012

Observation Date | Time Zone | Start Time: 6:00 am | End Time: 8:00 am

Process | Unit # 3 | Operating Mode
Control Equipment | Operating Mode

Describe Emissions Pont

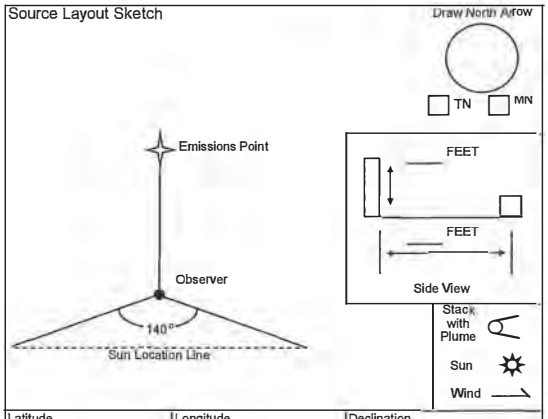
Height of Emiss. Pt. Start 145 End 146 | Height of Emiss. Pt. Rel. to Observer Start 148 End 148
Distance to Emiss. Pt. Start 4 End 4 | Direction to Emiss. Pt. (Degrees) Start NW End NW

Vetical Angle to Obs. Pt. Start 12 End 12 | Direction to Obs. Pt. (Degrees) Start End
Distance and Direction to Observation Point from Emission Point Start 138 End 138

Describe Emissions
Start NA End NA
Emission Color Start NA End NA | Water Droplet Plume Start NA End NA

Describe Plume Background
Start End
Background Color Start Sky Blue End Sky Blue | Sky Conditions Start Clear End Clear
Wind Speed Start 8 End 8 | Wind Direction Start N End N
Ambient Temp. Start End | Wet Bulb Temp. | RH Percent

Source Layout Sketch




Latitude | Longitude | Declination

| Sec. / Min. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
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| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print): Sean Fields
Observer's Signature: [signature] Date: 11/15/20
Organization: Air Hygiene International, Inc.
Certified By: Comp Assurance Assoc Date: 01/03/2020

Additional Information

# VISUAL EMISSIONS OBSERVATION FORM

Method Used (Circle One)
Method 9 203A 203B Other: _____

Company Name: Air Hygiene
Facility Name: Cricket Valley Energy Plant
Street Address: 1600 W Tacoma St
City: Broken Arrow State: OK Zip: 74012

Process: Unit # 3 Operating Mode:
Control Equipment: Operating Mode:

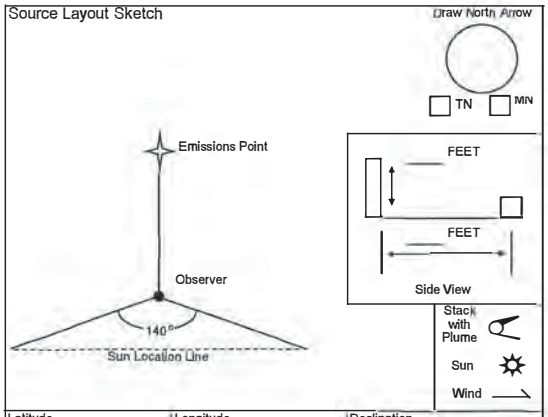
Describe Emissions Pont:
Height of Emiss. Pt. Start 137 End 137
Height of Emiss. Pt. Rel. to Observer Start 144 End 144
Distance to Emiss. Pt. Start 8 End 8
Direction to Emiss. Pt. (Degrees) Start NW End NW

Vertical Angle to Obs. Pt. Start 9 End 9
Direction to Obs. Pt. (Degrees) Start End
Distance and Direction to Observation Point from Emission Point Start 142 End 142

Describe Emissions
Start NA End NA
Emission Color Start NA End NA
Water Droplet Plume Start NA End NA

Describe Plume Background
Start End
Background Color Start Blue End Blue
Sky Conditions Start Clear End Clear
Wind Speed Start 9 End 9
Wind Direction Start NW End NW
Ambient Temp. Start End
Wet Bulb Temp. RH Percent

Source Layout Sketch




Latitude | Longitude | Declination

Additional Information

Form Number (AHI Project Code) | Page 2 of 4
Continued on Form Number (AHI Project Code)

Observation Date | Time Zone | Start Time 6:30 | End Time 7:00

| Min. \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print): SEAN FIELDS
Observer's Signature: [signature] Date: 4/15/20
Organization: Air Hygiene International, Inc.
Certified By: Comp Assurance Assoc Date: 01/03/2020

# VISUAL EMISSIONS OBSERVATION FORM

Method Used (Circle One)
Method 9 203A 203B Other: _____

Company Name: Air Hygiene
Facility Name: Cricket Valley Energy Plant
Street Address: 1600 W Tacoma St
City: Broken Arrow State: OK Zip: 74012

Process: Unit # 3 Operating Mode:
Control Equipment: Operating Mode:

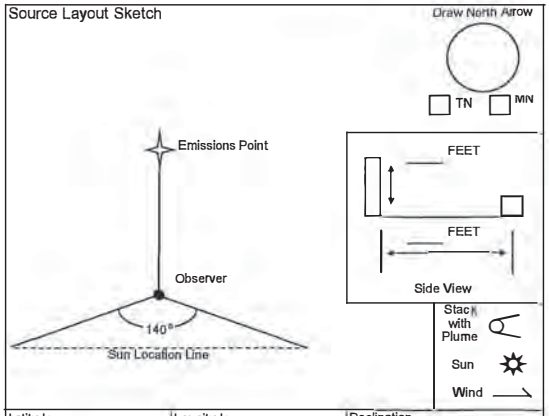
Describe Emissions Pont:
Height of Emiss. Pt. Start 141 End 141
Height of Emiss. Pt. Rel. to Observer Start 149 End 149
Distance to Emiss. Pt. Start 6 End 6
Direction to Emiss. Pt. (Degrees) Start ~ End ~

Vetical Angle to Obs. Pt. Start 11 End 11
Direction to Obs. Pt. (Degrees) Start End
Distance and Direction to Observation Point from Emission Point Start 147 End 142

Describe Emissions Start NA End NA
Emission Color Start NA End NA
Water Droplet Plume Start NA End NA

Describe Plume Background Start End
Background Color Start Blue End Blue
Sky Conditions Start Clear End Clear
Wind Speed Start 9 End 9
Wind Direction Start NW End NW
Ambient Temp. Start End
Wet Bulb Temp. RH Percent

Source Layout Sketch




Latitude | Longitude | Declination

Additional Information

Form Number (AHI Project Code) Page 3 of 6
Continued on Form Number (AHI Project Code)

Observation Date | Time Zone | Start Time 7:00 am | End Time 7:30 am

| Sec. / Min. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print): SEAN FIELDS
Observer's Signature: [signature] Date: 1/1/20
Organization: Air Hygiene International, Inc.
Certified By: Comp Assurance Assoc Date: 01/03/2020

# VISUAL EMISSIONS OBSERVATION FORM

Method Used (Circle One)
Method 9 203A 203B Other: _____

Company Name: AirHygiene
Facility Name: Cricket Valley Energy Plant
Street Address: 1600 W Tacoma St
City: Broken Arrow State: OK Zip: 74012

Process: Unit # 3 Operating Mode:
Control Equipment: Operating Mode:

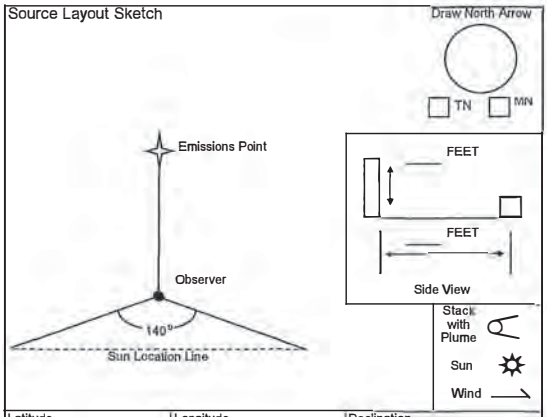
Describe Emissions Pont:
Height of Emiss. Pt. Start 144 End 144
Height of Emiss. Pt. Rel. to Observer Start 157 End 157
Distance to Emiss. Pt. Start 5 End 5
Direction to Emiss. Pt. (Degrees) Start N End N

Vertical Angle to Obs. Pt. Start 11 End 11
Direction to Obs. Pt. (Degrees) Start End
Distance and Direction to Observation Point from Emission Point Start 143 End 143

Describe Emissions
Start NA End NA
Emission Color Start NA End NA
Water Droplet Plume Start NA End NA

Describe Plume Background
Start End
Background Color Start Blue End Blue
Sky Conditions Start Clear End clear
Wind Speed Start 10 End 10
Wind Direction Start NW End NW
Ambient Temp. Start End
Wet Bulb Temp. RH Percent

Source Layout Sketch




Latitude | Longitude | Declination

Additional Information

Form Number (AHI Project Code) Page 4 of 6
Continued on Form Number (AHI Project Code)

Observation Date | Time Zone | Start Time 7:30 am | End Time 8:00 am

| Min. / Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print): SEAN FIELDS
Observer's Signature: [signature] Date: 4/15/20
Organization: Air Hygiene International, Inc.
Certified By: Comp Assurance Assoc Date: 01/03/2020

Method Used (Circle One)
Method 9 203A 203B Other: _____

Company Name: Air Hygiene
Facility Name: Cricket Valley Energy Plant
Street Address: 1600 W Tacoma St
City: Broken Arrow State: OK Zip: 74012

Process Unit # 3 Operating Mode
Control Equipment Operating Mode

Describe Emissions Pont

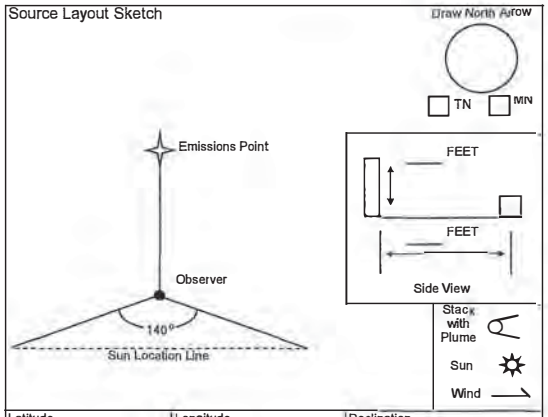
Height of Emiss. Pt. Start 138 End 138
Height of Emiss. Pt. Rel. to Observer Start 146 End 146
Distance to Emiss. Pt. Start 6 End 6
Direction to Emiss. Pt. (Degrees) Start End

Vetical Angle to Obs. Pt. Start 10 End 10
Direction to Obs. Pt. (Degrees) Start End
Distance and Direction to Observation Point from Emission Point Start 144 End 144

Describe Emissions Start NA End NA
Emission Color Start NA End NA
Water Droplet Plume Start NA End NA

Describe Plume Background Start End
Background Color Start Blue End Blue
Sky Conditions Start Clear End Clear
Wind Speed Start 9 End 9
Wind Direction Start NW End NW
Ambient Temp. Start End
Wet Bulb Temp. RH Percent

Source Layout Sketch




Latitude Longitude Declination

Additional Information

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) Page 5 of 6
Continued on Form Number (AHI Project Code)

Observation Date Time Zone Start Time 8:00 am End Time 8:30 am

| Min / Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print) SEAN FIELDS
Observer's Signature Date 4/15/20
Organization Air Hygiene International, Inc.
Certified By Comp Assurance Assoc Date 01/03/2020

Method Used (Circle One)
Method 9 203A 203B Other: _____

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) Page 6 of 6

Continued on Form Number (AHI Project Code)

Company Name: Air Hygiene
Facility Name: Crickot Valley Energy Plant
Street Address: 1600 W Tacoma St
City: Broken Arrow State: OK Zip: 74012

Observation Date | Time Zone | Start Time: 8:30 | End Time: 9:00

Process | Unit #: 3 | Operating Mode
Control Equipment | Operating Mode

Describe Emissions Pont

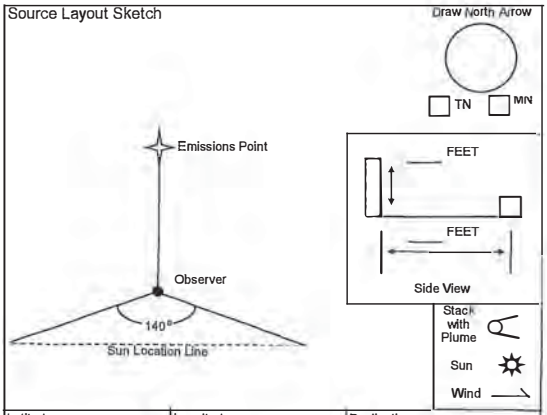
Height of Emiss. Pt. Start 147 End 147 | Height of Emiss. Pt. Rel. to Observer Start 153' End 153'
Distance to Emiss. Pt. Start 8' End 8' | Direction to Emiss. Pt. (Degrees) Start NW End NW

Vetical Angle to Obs. Pt. Start 12 End 12 | Direction to Obs. Pt. (Degrees) Start End
Distance and Direction to Observation Point from Emission Point Start 149' End 149'

Describe Emissions Start NA End NA
Emission Color Start NA End NA | Water Droplet Plume Start NA End NA

Describe Plume Background Start End
Background Color Start Blue End Blue | Sky Conditions Start Clear End Clear
Wind Speed Start 11 End 11 | Wind Direction Start NW End NW
Ambient Temp. Start End | Wet Bulb Temp. | RH Percent

Source Layout Sketch




Latitude | Longitude | Declination

| Sec. / Min. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print): SEAN FIELDS
Observer's Signature: [signature] Date: 11/15/20
Organization: Air Hygiene International, Inc.
Certified By: Comp Assurance Assoc Date: 01/03/2020

Additional Information

# EMISSION DATA RECORDS

## Reference Method Data
## Base+DB Load
## NOx, CO, VOC, and $NH_3$

**Cricket Valley Energy Center LLC**
**April 16, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,641 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,010 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,681 | lb/min |
| Duct Burner Fuel Flow | 174 | lb/min |
| Total Fuel Flow | 2,578,392 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.99 | in. Hg |
| Relative Humidity | 54 | % |
| Ambient Temperature | 43 | °F |
| Specific Humidity | 0.003133 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 240.3 | megawatts |
| Heat Input | 2,603 | MMBtu/hr |
| $NH_3$ Flow Rate | 164 | lb/hr |
| Meas. Stack Moisture | 9.5 | % |
| Stack Exhaust Flow (M19) | 52,449,328 | SCFH |

Data from: From PM Run PM U-00003 Base+DB-1

Base+Db Load, Run - 2-1

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 04/16/20 14:04:12 | 32190 | 11.78 | 2.46 | 0.15 | 0.00 | 5.16 | 1.37 |
| 04/16/20 14:04:42 | 32220 | 11.78 | 2.45 | 0.16 | 0.00 | 5.17 | 1.35 |
| 04/16/20 14:05:12 | 32250 | 11.79 | 2.40 | 0.15 | 0.00 | 5.17 | 1.39 |
| 04/16/20 14:05:42 | 32280 | 11.80 | 2.37 | 0.14 | 0.00 | 5.17 | 1.39 |
| 04/16/20 14:06:12 | 32310 | 11.79 | 2.35 | 0.13 | 0.00 | 5.17 | 1.45 |
| 04/16/20 14:06:42 | 32340 | 11.80 | 2.42 | 0.16 | 0.01 | 5.17 | 1.48 |
| 04/16/20 14:07:12 | 32370 | 11.80 | 2.35 | 0.11 | 0.00 | 5.17 | 1.46 |
| 04/16/20 14:07:42 | 32400 | 11.80 | 2.43 | 0.15 | 0.01 | 5.17 | 1.47 |
| 04/16/20 14:08:12 | 32430 | 11.80 | 2.45 | 0.13 | 0.00 | 5.17 | 1.51 |
| 04/16/20 14:08:42 | 32460 | 11.80 | 2.45 | 0.14 | 0.00 | 5.17 | 1.51 |
| 04/16/20 14:09:12 | 32490 | 11.79 | 2.49 | 0.12 | 0.00 | 5.17 | 1.53 |
| 04/16/20 14:09:42 | 32520 | 11.79 | 2.50 | 0.14 | 0.01 | 5.17 | 1.56 |
| 04/16/20 14:10:12 | 32550 | 11.79 | 2.48 | 0.13 | 0.00 | 5.17 | 1.56 |
| 04/16/20 14:10:42 | 32580 | 11.79 | 2.50 | 0.13 | 0.00 | 5.18 | 1.57 |
| 04/16/20 14:11:12 | 32610 | 11.79 | 2.51 | 0.13 | 0.00 | 5.18 | 1.58 |
| 04/16/20 14:11:42 | 32640 | 11.80 | 2.46 | 0.14 | 0.00 | 5.18 | 1.61 |
| 04/16/20 14:12:12 | 32670 | 11.81 | 2.36 | 0.13 | 0.00 | 5.17 | 1.58 |
| 04/16/20 14:12:42 | 32700 | 11.81 | 2.40 | 0.14 | 0.00 | 5.18 | 1.57 |
| 04/16/20 14:13:12 | 32730 | 11.80 | 2.44 | 0.14 | 0.00 | 5.20 | 1.59 |
| 04/16/20 14:13:42 | 32760 | 11.81 | 2.43 | 0.12 | 0.00 | 5.17 | 1.58 |
| 04/16/20 14:14:12 | 32790 | 11.81 | 2.42 | 0.15 | 0.00 | 5.17 | 1.57 |
| 04/16/20 14:14:42 | 32820 | 11.81 | 2.39 | 0.12 | 0.00 | 5.18 | 1.56 |
| 04/16/20 14:15:12 | 32850 | 11.79 | 2.38 | 0.11 | 0.00 | 5.18 | 1.61 |
| 04/16/20 14:15:42 | 32880 | 11.79 | 2.44 | 0.13 | 0.01 | 5.17 | 1.58 |
| 04/16/20 14:16:12 | 32910 | 11.80 | 2.40 | 0.13 | 0.00 | 5.18 | 1.60 |
| 04/16/20 14:16:42 | 32940 | 11.79 | 2.39 | 0.10 | 0.00 | 5.18 | 1.60 |
| 04/16/20 14:17:12 | 32970 | 11.80 | 2.40 | 0.11 | 0.00 | 5.18 | 1.58 |
| 04/16/20 14:17:42 | 33000 | 11.79 | 2.42 | 0.12 | 0.00 | 5.18 | 1.57 |
| 04/16/20 14:18:12 | 33030 | 11.80 | 2.42 | 0.12 | 0.00 | 5.18 | 1.59 |
| 04/16/20 14:18:42 | 33060 | 11.81 | 2.41 | 0.11 | 0.00 | 5.18 | 1.59 |
| 04/16/20 14:19:12 | 33090 | 11.79 | 2.40 | 0.10 | 0.00 | 5.17 | 1.58 |
| 04/16/20 14:19:42 | 33120 | 11.80 | 2.36 | 0.12 | 0.00 | 5.17 | 1.56 |
| 04/16/20 14:20:12 | 33150 | 11.80 | 2.36 | 0.12 | 0.00 | 5.17 | 1.59 |
| 04/16/20 14:20:42 | 33180 | 11.80 | 2.35 | 0.14 | 0.00 | 5.17 | 1.56 |
| 04/16/20 14:21:12 | 33210 | 11.80 | 2.40 | 0.11 | 0.00 | 5.18 | 1.57 |
| 04/16/20 14:21:42 | 33240 | 11.80 | 2.39 | 0.13 | 0.00 | 5.18 | 1.56 |
| 04/16/20 14:22:12 | 33270 | 11.80 | 2.41 | 0.12 | 0.00 | 5.18 | 1.56 |
| 04/16/20 14:22:42 | 33300 | 11.80 | 2.38 | 0.12 | 0.00 | 5.19 | 1.58 |
| 04/16/20 14:23:12 | 33330 | 11.80 | 2.39 | 0.10 | 0.00 | 5.18 | 1.53 |
| 04/16/20 14:23:42 | 33360 | 11.79 | 2.45 | 0.13 | 0.01 | 5.18 | 1.50 |
| 04/16/20 14:24:12 | 33390 | 11.81 | 2.46 | 0.13 | 0.01 | 5.18 | 1.52 |
| 04/16/20 14:24:42 | 33420 | 11.81 | 2.42 | 0.13 | 0.01 | 5.18 | 1.49 |
| 04/16/20 14:25:12 | 33450 | 11.80 | 2.36 | 0.12 | 0.00 | 5.18 | 1.48 |
| 04/16/20 14:25:42 | 33480 | 11.80 | 2.37 | 0.10 | 0.00 | 5.18 | 1.53 |
| 04/16/20 14:26:12 | 33510 | 11.80 | 2.34 | 0.11 | 0.00 | 5.17 | 1.51 |
| 04/16/20 14:26:42 | 33540 | 11.80 | 2.25 | 0.10 | 0.00 | 5.17 | 1.46 |
| 04/16/20 14:27:12 | 33570 | 11.80 | 2.30 | 0.12 | 0.00 | 5.18 | 1.45 |
| 04/16/20 14:27:42 | 33600 | 11.80 | 2.35 | 0.11 | 0.00 | 5.18 | 1.43 |
| 04/16/20 14:28:12 | 33630 | 11.81 | 2.34 | 0.10 | 0.00 | 5.17 | 1.39 |
| 04/16/20 14:28:42 | 33660 | 11.81 | 2.34 | 0.12 | 0.00 | 5.17 | 1.38 |
| 04/16/20 14:29:12 | 33690 | 11.81 | 2.35 | 0.12 | 0.00 | 5.17 | 1.38 |
| 04/16/20 14:29:42 | 33720 | 11.81 | 2.34 | 0.09 | 0.00 | 5.17 | 1.35 |
| 04/16/20 14:30:12 | 33750 | 11.81 | 2.34 | 0.11 | 0.00 | 5.17 | 1.31 |
| 04/16/20 14:30:42 | 33780 | 11.82 | 2.34 | 0.11 | 0.00 | 5.17 | 1.31 |
| 04/16/20 14:31:12 | 33810 | 11.82 | 2.33 | 0.10 | 0.00 | 5.17 | 1.31 |
| 04/16/20 14:31:42 | 33840 | 11.82 | 2.34 | 0.12 | 0.00 | 5.17 | 1.27 |
| 04/16/20 14:32:12 | 33870 | 11.83 | 2.41 | 0.11 | 0.00 | 5.17 | 1.29 |
| 04/16/20 14:32:42 | 33900 | 11.83 | 2.40 | 0.13 | 0.00 | 5.17 | 1.26 |
| 04/16/20 14:33:12 | 33930 | 11.83 | 2.41 | 0.13 | 0.00 | 5.17 | 1.27 |
| 04/16/20 14:33:42 | 33960 | 11.83 | 2.41 | 0.13 | 0.00 | 5.17 | 1.26 |
| 04/16/20 14:34:12 | 33990 | 11.81 | 2.44 | 0.10 | 0.00 | 5.17 | 1.24 |
| 04/16/20 14:34:42 | 34020 | 11.82 | 2.44 | 0.12 | 0.00 | 5.17 | 1.23 |
| 04/16/20 14:35:12 | 34050 | 11.82 | 2.39 | 0.12 | 0.01 | 5.17 | 1.32 |
| 04/16/20 14:35:42 | 34080 | 11.83 | 2.36 | 0.14 | 0.00 | 5.17 | 1.58 |
| 04/16/20 14:36:12 | 34110 | 11.82 | 2.31 | 0.14 | 0.00 | 5.17 | 1.58 |
| 04/16/20 14:36:42 | 34140 | 11.83 | 2.29 | 0.15 | 0.00 | 5.17 | 1.53 |
| 04/16/20 14:37:12 | 34170 | 11.82 | 2.25 | 0.12 | 0.00 | 5.17 | 1.50 |
| 04/16/20 14:37:42 | 34200 | 11.81 | 2.30 | 0.14 | 0.01 | 5.17 | 1.44 |
| 04/16/20 14:38:12 | 34230 | 11.82 | 2.41 | 0.13 | 0.00 | 5.21 | 1.46 |
| 04/16/20 14:38:42 | 34260 | 11.83 | 2.53 | 0.14 | 0.00 | 5.21 | 1.48 |
| 04/16/20 14:39:12 | 34290 | 11.82 | 2.53 | 0.14 | 0.00 | 5.19 | 1.56 |
| 04/16/20 14:39:42 | 34320 | 11.82 | 2.45 | 0.13 | 0.00 | 5.19 | 1.63 |
| 04/16/20 14:40:12 | 34350 | 11.82 | 2.43 | 0.13 | 0.00 | 5.19 | 1.57 |
| 04/16/20 14:40:42 | 34380 | 11.81 | 2.44 | 0.11 | 0.00 | 5.19 | 1.52 |
| 04/16/20 14:41:12 | 34410 | 11.83 | 2.45 | 0.12 | 0.01 | 5.19 | 1.47 |
| 04/16/20 14:41:42 | 34440 | 11.83 | 2.46 | 0.11 | 0.01 | 5.18 | 1.44 |
| 04/16/20 14:42:12 | 34470 | 11.83 | 2.45 | 0.12 | 0.00 | 5.18 | 1.38 |

**Cricket Valley Energy Center LLC**
**April 16, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,641 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,010 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,681 | lb/min |
| Duct Burner Fuel Flow | 174 | lb/min |
| Total Fuel Flow | 2,578,392 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.99 | in. Hg |
| Relative Humidity | 54 | % |
| Ambient Temperature | 43 | °F |
| Specific Humidity | 0.003133 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 240.3 | megawatts |
| Heat Input | 2,603 | MMBtu/hr |
| $NH_3$ Flow Rate | 164 | lb/hr |
| Meas. Stack Moisture | 9.5 | % |
| Stack Exhaust Flow (M19) | 52,449,328 | SCFH |

Data from: From PM Run PM U-00003 Base+DB-1

Base+Db Load, Run - 2-1

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 04/16/20 14:42:42 | 34500 | 11.83 | 2.44 | 0.12 | 0.00 | 5.18 | 1.49 |
| 04/16/20 14:43:12 | 34530 | 11.82 | 2.46 | 0.11 | 0.01 | 5.18 | 1.51 |
| 04/16/20 14:43:42 | 34560 | 11.83 | 2.45 | 0.13 | 0.01 | 5.18 | 1.50 |
| 04/16/20 14:44:12 | 34590 | 11.82 | 2.44 | 0.11 | 0.00 | 5.18 | 1.45 |
| 04/16/20 14:44:42 | 34620 | 11.81 | 2.44 | 0.11 | 0.00 | 5.18 | 1.50 |
| 04/16/20 14:45:12 | 34650 | 11.82 | 2.42 | 0.10 | 0.00 | 5.18 | 1.42 |
| 04/16/20 14:45:42 | 34680 | 11.82 | 2.55 | 0.15 | 0.01 | 5.19 | 1.39 |
| 04/16/20 14:46:12 | 34710 | 11.82 | 2.56 | 0.14 | 0.01 | 5.19 | 1.37 |
| 04/16/20 14:46:42 | 34740 | 11.81 | 2.55 | 0.12 | 0.01 | 5.19 | 1.35 |
| 04/16/20 14:47:12 | 34770 | 11.81 | 2.64 | 0.15 | 0.01 | 5.19 | 1.35 |
| 04/16/20 14:47:42 | 34800 | 11.81 | 2.64 | 0.13 | 0.00 | 5.19 | 1.31 |
| 04/16/20 14:48:12 | 34830 | 11.81 | 2.54 | 0.12 | 0.00 | 5.19 | 1.27 |
| 04/16/20 14:48:42 | 34860 | 11.81 | 2.48 | 0.12 | 0.00 | 5.18 | 1.35 |
| 04/16/20 14:49:12 | 34890 | 11.81 | 2.48 | 0.16 | 0.01 | 5.18 | 1.35 |
| 04/16/20 14:49:42 | 34920 | 11.82 | 2.40 | 0.13 | 0.00 | 5.18 | 1.36 |
| 04/16/20 14:50:12 | 34950 | 11.81 | 2.33 | 0.12 | 0.00 | 5.18 | 1.29 |
| 04/16/20 14:50:42 | 34980 | 11.82 | 2.37 | 0.13 | 0.01 | 5.18 | 1.23 |
| 04/16/20 14:51:12 | 35010 | 11.83 | 2.39 | 0.15 | 0.00 | 5.18 | 1.16 |
| 04/16/20 14:51:42 | 35040 | 11.83 | 2.45 | 0.13 | 0.00 | 5.18 | 1.15 |
| 04/16/20 14:52:12 | 35070 | 11.84 | 2.41 | 0.15 | 0.00 | 5.18 | 1.11 |
| 04/16/20 14:52:42 | 35100 | 11.85 | 2.40 | 0.15 | 0.00 | 5.17 | 1.07 |
| 04/16/20 14:53:12 | 35130 | 11.84 | 2.40 | 0.13 | 0.01 | 5.18 | 1.13 |
| 04/16/20 14:53:42 | 35160 | 11.84 | 2.36 | 0.13 | 0.00 | 5.18 | 1.10 |
| 04/16/20 14:54:12 | 35190 | 11.86 | 2.36 | 0.12 | 0.00 | 5.18 | 1.10 |
| 04/16/20 14:54:42 | 35220 | 11.86 | 2.33 | 0.12 | 0.00 | 5.17 | 1.15 |
| 04/16/20 14:55:12 | 35250 | 11.86 | 2.34 | 0.14 | 0.01 | 5.17 | 1.14 |
| 04/16/20 14:55:42 | 35280 | 11.86 | 2.36 | 0.16 | 0.01 | 5.17 | 1.13 |
| 04/16/20 14:56:12 | 35310 | 11.86 | 2.44 | 0.15 | 0.01 | 5.16 | 1.06 |
| 04/16/20 14:56:42 | 35340 | 11.85 | 2.43 | 0.14 | 0.00 | 5.17 | 1.05 |
| 04/16/20 14:57:12 | 35370 | 11.84 | 2.44 | 0.11 | 0.00 | 5.16 | 1.06 |
| 04/16/20 14:57:42 | 35400 | 11.83 | 2.52 | 0.13 | 0.00 | 5.17 | 1.04 |
| 04/16/20 14:58:12 | 35430 | 11.83 | 2.57 | 0.13 | 0.00 | 5.17 | 1.09 |
| 04/16/20 14:58:42 | 35460 | 11.83 | 2.57 | 0.14 | 0.00 | 5.17 | 1.09 |
| 04/16/20 14:59:12 | 35490 | 11.83 | 2.57 | 0.12 | 0.00 | 5.17 | 1.08 |
| 04/16/20 14:59:42 | 35520 | 11.83 | 2.54 | 0.12 | 0.00 | 5.17 | 1.03 |
| 04/16/20 15:00:12 | 35550 | 11.84 | 2.59 | 0.13 | 0.00 | 5.18 | 0.79 |
| 04/16/20 15:00:42 | 35580 | 11.84 | 2.52 | 0.12 | 0.00 | 5.17 | 0.94 |
| 04/16/20 15:01:12 | 35610 | 11.86 | 2.54 | 0.15 | 0.00 | 5.17 | 0.96 |
| 04/16/20 15:01:42 | 35640 | 11.85 | 2.58 | 0.14 | 0.00 | 5.16 | 0.94 |
| 04/16/20 15:02:12 | 35670 | 11.84 | 2.55 | 0.13 | 0.00 | 5.16 | 0.90 |
| 04/16/20 15:02:42 | 35700 | 11.85 | 2.51 | 0.12 | 0.00 | 5.16 | 0.95 |
| 04/16/20 15:03:12 | 35730 | 11.85 | 2.51 | 0.13 | 0.00 | 5.17 | 0.95 |
| 04/16/20 15:03:42 | 35760 | 11.85 | 2.48 | 0.13 | 0.00 | 5.17 | 0.91 |
| **RAW AVERAGE** | | **11.82** | **2.43** | **0.13** | **0.00** | **5.18** | **1.37** |

| | | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|---|
| | **Serial Number:** | inst-02-0024 | inst-nx-0031 | inst-co-0029 | inst-th-0013 | inst-c2-0016 | inst-ir-0004 |
| | | (%) | (ppmvd) | (ppmvd) | (ppmvw) | (%) | |
| Bias | **Initial Zero** | 0.03 | 0.06 | -0.05 | 0.01 | -0.01 | |
| Bias | **Final Zero** | 0.07 | 0.23 | 0.05 | 0.00 | 0.09 | |
| Bias | **Avg. Zero** | 0.05 | 0.15 | 0.00 | 0.00 | 0.04 | |
| Bias | **Initial UpScale** | 11.88 | 4.53 | 5.16 | 3.01 | 9.02 | |
| Bias | **Final UpScale** | 11.84 | 4.61 | 5.10 | 3.11 | 8.94 | |
| Bias | **Avg. UpScale** | 11.86 | 4.57 | 5.13 | 3.06 | 8.98 | |
| **Upscale Cal Gas** | | 11.98 | 4.55 | 5.22 | 3.03 | 8.91 | |

| **EMISSIONS DATA** | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 11.94 | 2.35 | 0.13 | 0.00 | 5.12 | 1.52 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.54 | 0.08 | 0.00 | N/A | 1.00 |

Non-Bias Adjusted Averages Include: *

**Cricket Valley Energy Center LLC**
**April 16, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,641 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,010 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,678 | lb/min |
| Duct Burner Fuel Flow | 175 | lb/min |
| Total Fuel Flow | 2,573,884 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.04 | in. Hg |
| Relative Humidity | 55 | % |
| Ambient Temperature | 44 | ° F |
| Specific Humidity | 0.003311 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 239.6 | megawatts |
| Heat Input | 2,599 | MMBtu/hr |
| $NH_3$ Flow Rate | 159 | lb/hr |
| Meas. Stack Moisture | 9.5 | % |
| Stack Exhaust Flow (M19) | 52,688,699 | SCFH |

Data from: From PM Run PM U-00003 Base+DB-1

Base+Db Load, Run - 2-2

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 04/16/20 15:23:12 | 36930 | 11.84 | 2.43 | 0.10 | 0.00 | 5.15 | 2.12 |
| 04/16/20 15:23:42 | 36960 | 11.84 | 2.47 | 0.06 | 0.00 | 5.16 | 1.98 |
| 04/16/20 15:24:12 | 36990 | 11.84 | 2.50 | 0.09 | 0.00 | 5.16 | 1.98 |
| 04/16/20 15:24:42 | 37020 | 11.83 | 2.50 | 0.06 | 0.00 | 5.16 | 2.06 |
| 04/16/20 15:25:12 | 37050 | 11.83 | 2.46 | 0.09 | 0.01 | 5.15 | 2.16 |
| 04/16/20 15:25:42 | 37080 | 11.82 | 2.43 | 0.07 | 0.00 | 5.16 | 2.10 |
| 04/16/20 15:26:12 | 37110 | 11.84 | 2.51 | 0.12 | 0.00 | 5.16 | 2.14 |
| 04/16/20 15:26:42 | 37140 | 11.84 | 2.58 | 0.10 | 0.01 | 5.16 | 2.06 |
| 04/16/20 15:27:12 | 37170 | 11.83 | 2.54 | 0.09 | 0.01 | 5.16 | 1.93 |
| 04/16/20 15:27:42 | 37200 | 11.84 | 2.46 | 0.11 | 0.00 | 5.16 | 2.04 |
| 04/16/20 15:28:12 | 37230 | 11.85 | 2.38 | 0.09 | 0.00 | 5.16 | 2.02 |
| 04/16/20 15:28:42 | 37260 | 11.85 | 2.35 | 0.09 | 0.01 | 5.16 | 1.95 |
| 04/16/20 15:29:12 | 37290 | 11.85 | 2.34 | 0.07 | 0.01 | 5.16 | 1.88 |
| 04/16/20 15:29:42 | 37320 | 11.85 | 2.27 | 0.06 | 0.02 | 5.16 | 1.84 |
| 04/16/20 15:30:12 | 37350 | 11.84 | 2.31 | 0.06 | 0.00 | 5.16 | 1.85 |
| 04/16/20 15:30:42 | 37380 | 11.84 | 2.29 | 0.07 | 0.00 | 5.16 | 1.75 |
| 04/16/20 15:31:12 | 37410 | 11.84 | 2.32 | 0.09 | 0.00 | 5.16 | 1.83 |
| 04/16/20 15:31:42 | 37440 | 11.85 | 2.35 | 0.10 | 0.00 | 5.16 | 1.94 |
| 04/16/20 15:32:12 | 37470 | 11.86 | 2.34 | 0.09 | 0.00 | 5.16 | 1.97 |
| 04/16/20 15:32:42 | 37500 | 11.86 | 2.38 | 0.08 | 0.00 | 5.16 | 2.02 |
| 04/16/20 15:33:12 | 37530 | 11.85 | 2.40 | 0.09 | 0.00 | 5.16 | 1.93 |
| 04/16/20 15:33:42 | 37560 | 11.85 | 2.34 | 0.09 | 0.00 | 5.16 | 2.10 |
| 04/16/20 15:34:12 | 37590 | 11.85 | 2.35 | 0.08 | 0.00 | 5.15 | 2.04 |
| 04/16/20 15:34:42 | 37620 | 11.85 | 2.33 | 0.06 | 0.00 | 5.16 | 2.09 |
| 04/16/20 15:35:12 | 37650 | 11.86 | 2.35 | 0.09 | 0.01 | 5.16 | 2.04 |
| 04/16/20 15:35:42 | 37680 | 11.86 | 2.38 | 0.07 | 0.00 | 5.16 | 1.98 |
| 04/16/20 15:36:12 | 37710 | 11.85 | 2.38 | 0.07 | 0.00 | 5.16 | 2.01 |
| 04/16/20 15:36:42 | 37740 | 11.86 | 2.38 | 0.07 | 0.00 | 5.16 | 2.11 |
| 04/16/20 15:37:12 | 37770 | 11.86 | 2.36 | 0.07 | 0.00 | 5.16 | 2.08 |
| 04/16/20 15:37:42 | 37800 | 11.86 | 2.34 | 0.08 | 0.00 | 5.16 | 2.08 |
| 04/16/20 15:38:12 | 37830 | 11.86 | 2.35 | 0.07 | 0.00 | 5.17 | 1.95 |
| 04/16/20 15:38:42 | 37860 | 11.86 | 2.38 | 0.10 | 0.01 | 5.17 | 2.01 |
| 04/16/20 15:39:12 | 37890 | 11.86 | 2.36 | 0.11 | 0.01 | 5.16 | 2.15 |
| 04/16/20 15:39:42 | 37920 | 11.86 | 2.34 | 0.09 | 0.00 | 5.16 | 1.97 |
| 04/16/20 15:40:12 | 37950 | 11.85 | 2.39 | 0.10 | 0.01 | 5.16 | 2.21 |
| 04/16/20 15:40:42 | 37980 | 11.85 | 2.36 | 0.10 | 0.00 | 5.16 | 2.16 |
| 04/16/20 15:41:12 | 38010 | 11.85 | 2.42 | 0.08 | 0.00 | 5.16 | 2.27 |
| 04/16/20 15:41:42 | 38040 | 11.85 | 2.47 | 0.09 | 0.00 | 5.16 | 2.24 |
| 04/16/20 15:42:12 | 38070 | 11.85 | 2.46 | 0.08 | 0.00 | 5.16 | 2.24 |
| 04/16/20 15:42:42 | 38100 | 11.85 | 2.49 | 0.09 | 0.00 | 5.16 | 2.26 |
| 04/16/20 15:43:12 | 38130 | 11.84 | 2.46 | 0.09 | 0.01 | 5.17 | 2.18 |
| 04/16/20 15:43:42 | 38160 | 11.84 | 2.41 | 0.07 | 0.00 | 5.16 | 2.13 |
| 04/16/20 15:44:12 | 38190 | 11.85 | 2.41 | 0.10 | 0.00 | 5.16 | 1.99 |
| 04/16/20 15:44:42 | 38220 | 11.84 | 2.33 | 0.08 | 0.00 | 5.16 | 1.97 |
| 04/16/20 15:45:12 | 38250 | 11.84 | 2.35 | 0.11 | 0.00 | 5.17 | 2.04 |
| 04/16/20 15:45:42 | 38280 | 11.85 | 2.52 | 0.11 | 0.01 | 5.17 | 1.95 |
| 04/16/20 15:46:12 | 38310 | 11.84 | 2.33 | 0.10 | 0.00 | 5.17 | 2.03 |
| 04/16/20 15:46:42 | 38340 | 11.84 | 2.34 | 0.08 | 0.00 | 5.17 | 2.02 |
| 04/16/20 15:47:12 | 38370 | 11.84 | 2.39 | 0.11 | 0.00 | 5.17 | 2.07 |
| 04/16/20 15:47:42 | 38400 | 11.83 | 2.40 | 0.08 | 0.00 | 5.17 | 1.98 |
| 04/16/20 15:48:12 | 38430 | 11.84 | 2.41 | 0.10 | 0.00 | 5.17 | 1.94 |
| 04/16/20 15:48:42 | 38460 | 11.85 | 2.35 | 0.06 | 0.00 | 5.17 | 2.00 |
| 04/16/20 15:49:12 | 38490 | 11.85 | 2.37 | 0.07 | 0.00 | 5.17 | 1.98 |
| 04/16/20 15:49:42 | 38520 | 11.86 | 2.35 | 0.06 | 0.00 | 5.17 | 1.92 |
| 04/16/20 15:50:12 | 38550 | 11.85 | 2.37 | 0.08 | 0.00 | 5.17 | 1.96 |
| 04/16/20 15:50:42 | 38580 | 11.84 | 2.36 | 0.07 | 0.00 | 5.17 | 2.09 |
| 04/16/20 15:51:12 | 38610 | 11.85 | 2.44 | 0.08 | 0.01 | 5.17 | 1.99 |
| 04/16/20 15:51:42 | 38640 | 11.85 | 2.41 | 0.08 | 0.00 | 5.17 | 2.03 |
| 04/16/20 15:52:12 | 38670 | 11.84 | 2.45 | 0.07 | 0.01 | 5.17 | 2.09 |
| 04/16/20 15:52:42 | 38700 | 11.85 | 2.39 | 0.08 | 0.00 | 5.17 | 2.06 |
| 04/16/20 15:53:12 | 38730 | 11.85 | 2.40 | 0.08 | 0.00 | 5.17 | 2.12 |
| 04/16/20 15:53:42 | 38760 | 11.84 | 2.38 | 0.07 | 0.00 | 5.17 | 2.15 |
| 04/16/20 15:54:12 | 38790 | 11.84 | 2.43 | 0.07 | 0.01 | 5.17 | 2.04 |
| 04/16/20 15:54:42 | 38820 | 11.84 | 2.40 | 0.07 | 0.00 | 5.17 | 2.10 |
| 04/16/20 15:55:12 | 38850 | 11.84 | 2.41 | 0.07 | 0.01 | 5.17 | 1.91 |
| 04/16/20 15:55:42 | 38880 | 11.85 | 2.39 | 0.06 | 0.00 | 5.17 | 2.08 |
| 04/16/20 15:56:12 | 38910 | 11.85 | 2.38 | 0.08 | 0.00 | 5.17 | 1.98 |
| 04/16/20 15:56:42 | 38940 | 11.85 | 2.33 | 0.06 | 0.00 | 5.17 | 1.88 |
| 04/16/20 15:57:12 | 38970 | 11.84 | 2.43 | 0.09 | 0.01 | 5.17 | 1.96 |
| 04/16/20 15:57:42 | 39000 | 11.85 | 2.39 | 0.08 | 0.01 | 5.17 | 1.92 |
| 04/16/20 15:58:12 | 39030 | 11.86 | 2.30 | 0.08 | 0.00 | 5.17 | 1.78 |
| 04/16/20 15:58:42 | 39060 | 11.86 | 2.40 | 0.09 | 0.00 | 5.17 | 1.90 |
| 04/16/20 15:59:12 | 39090 | 11.84 | 2.43 | 0.11 | 0.01 | 5.17 | 1.91 |
| 04/16/20 15:59:42 | 39120 | 11.84 | 2.35 | 0.06 | 0.00 | 5.17 | 1.86 |
| 04/16/20 16:00:12 | 39150 | 11.85 | 2.36 | 0.08 | 0.00 | 5.17 | 1.75 |
| 04/16/20 16:00:42 | 39180 | 11.85 | 2.37 | 0.07 | 0.00 | 5.17 | 1.87 |
| 04/16/20 16:01:12 | 39210 | 11.85 | 2.41 | 0.09 | 0.01 | 5.17 | 1.84 |

**Cricket Valley Energy Center LLC**
**April 16, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,641 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,010 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,678 | lb/min |
| Duct Burner Fuel Flow | 175 | lb/min |
| Total Fuel Flow | 2,573,884 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.04 | in. Hg |
| Relative Humidity | 55 | % |
| Ambient Temperature | 44 | °F |
| Specific Humidity | 0.003311 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 239.6 | megawatts |
| Heat Input | 2,599 | MMBtu/hr |
| $NH_3$ Flow Rate | 159 | lb/hr |
| Meas. Stack Moisture | 9.5 | % |
| Stack Exhaust Flow (M19) | 52,688,699 | SCFH |

Data from: From PM Run PM U-00003 Base+DB-1

Base+Db Load, Run - 2-2

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 04/16/20 16:01:42 | 39240 | 11.85 | 2.40 | 0.10 | 0.00 | 5.17 | 1.90 |
| 04/16/20 16:02:12 | 39270 | 11.86 | 2.39 | 0.08 | 0.00 | 5.17 | 2.11 |
| 04/16/20 16:02:42 | 39300 | 11.86 | 2.37 | 0.09 | 0.00 | 5.17 | 2.00 |
| 04/16/20 16:03:12 | 39330 | 11.85 | 2.45 | 0.05 | 0.00 | 5.17 | 2.06 |
| 04/16/20 16:03:42 | 39360 | 11.84 | 2.47 | 0.07 | 0.00 | 5.17 | 1.94 |
| 04/16/20 16:04:12 | 39390 | 11.84 | 2.49 | 0.06 | 0.00 | 5.17 | 1.99 |
| 04/16/20 16:04:42 | 39420 | 11.83 | 2.47 | 0.06 | 0.00 | 5.17 | 2.00 |
| 04/16/20 16:05:12 | 39450 | 11.85 | 2.46 | 0.06 | 0.00 | 5.18 | 1.93 |
| 04/16/20 16:05:42 | 39480 | 11.84 | 2.43 | 0.07 | 0.00 | 5.18 | 1.96 |
| 04/16/20 16:06:12 | 39510 | 11.84 | 2.43 | 0.08 | 0.01 | 5.18 | 2.03 |
| 04/16/20 16:06:42 | 39540 | 11.84 | 2.46 | 0.06 | 0.00 | 5.17 | 2.03 |
| 04/16/20 16:07:12 | 39570 | 11.85 | 2.51 | 0.09 | 0.00 | 5.17 | 2.05 |
| 04/16/20 16:07:42 | 39600 | 11.85 | 2.49 | 0.07 | 0.00 | 5.17 | 1.87 |
| 04/16/20 16:08:12 | 39630 | 11.84 | 2.46 | 0.09 | 0.00 | 5.18 | 2.03 |
| 04/16/20 16:08:42 | 39660 | 11.84 | 2.46 | 0.10 | 0.00 | 5.18 | 1.71 |
| 04/16/20 16:09:12 | 39690 | 11.83 | 2.45 | 0.09 | 0.00 | 5.18 | 1.63 |
| 04/16/20 16:09:42 | 39720 | 11.84 | 2.45 | 0.09 | 0.00 | 5.18 | 1.84 |
| 04/16/20 16:10:12 | 39750 | 11.85 | 2.38 | 0.09 | 0.00 | 5.17 | 1.88 |
| 04/16/20 16:10:42 | 39780 | 11.86 | 2.39 | 0.11 | 0.01 | 5.18 | 1.83 |
| 04/16/20 16:11:12 | 39810 | 11.85 | 2.36 | 0.10 | 0.01 | 5.18 | 1.96 |
| 04/16/20 16:11:42 | 39840 | 11.85 | 2.32 | 0.08 | 0.00 | 5.18 | 1.83 |
| 04/16/20 16:12:12 | 39870 | 11.84 | 2.36 | 0.10 | 0.01 | 5.19 | 1.88 |
| 04/16/20 16:12:42 | 39900 | 11.84 | 2.43 | 0.11 | 0.01 | 5.18 | 1.87 |
| 04/16/20 16:13:12 | 39930 | 11.82 | 2.42 | 0.08 | 0.00 | 5.18 | 2.14 |
| 04/16/20 16:13:42 | 39960 | 11.84 | 2.46 | 0.08 | 0.00 | 5.19 | 2.10 |
| 04/16/20 16:14:12 | 39990 | 11.85 | 2.56 | 0.07 | 0.00 | 5.19 | 2.13 |
| 04/16/20 16:14:42 | 40020 | 11.84 | 2.58 | 0.08 | 0.00 | 5.19 | 1.99 |
| 04/16/20 16:15:12 | 40050 | 11.84 | 2.56 | 0.07 | 0.00 | 5.18 | 2.05 |
| 04/16/20 16:15:42 | 40080 | 11.84 | 2.52 | 0.08 | 0.00 | 5.19 | 1.99 |
| 04/16/20 16:16:12 | 40110 | 11.84 | 2.50 | 0.06 | 0.01 | 5.19 | 1.84 |
| 04/16/20 16:16:42 | 40140 | 11.83 | 2.42 | 0.09 | 0.00 | 5.19 | 1.75 |
| 04/16/20 16:17:12 | 40170 | 11.85 | 2.38 | 0.08 | 0.00 | 5.19 | 1.70 |
| 04/16/20 16:17:42 | 40200 | 11.85 | 2.32 | 0.07 | 0.00 | 5.19 | 2.05 |
| 04/16/20 16:18:12 | 40230 | 11.84 | 2.44 | 0.11 | 0.00 | 5.20 | 1.93 |
| 04/16/20 16:18:42 | 40260 | 11.84 | 2.48 | 0.12 | 0.00 | 5.20 | 2.01 |
| 04/16/20 16:19:12 | 40290 | 11.84 | 2.53 | 0.13 | 0.00 | 5.20 | 2.09 |
| 04/16/20 16:19:42 | 40320 | 11.84 | 2.54 | 0.11 | 0.01 | 5.20 | 1.90 |
| 04/16/20 16:20:12 | 40350 | 11.85 | 2.51 | 0.08 | 0.00 | 5.20 | 1.68 |
| 04/16/20 16:20:42 | 40380 | 11.85 | 2.53 | 0.08 | 0.00 | 5.20 | 1.59 |
| 04/16/20 16:21:12 | 40410 | 11.86 | 2.48 | 0.07 | 0.00 | 5.20 | 1.92 |
| 04/16/20 16:21:42 | 40440 | 11.85 | 2.42 | 0.09 | 0.00 | 5.19 | 1.72 |
| 04/16/20 16:22:12 | 40470 | 11.85 | 2.39 | 0.07 | 0.00 | 5.19 | 1.78 |
| 04/16/20 16:22:42 | 40500 | 11.85 | 2.42 | 0.09 | 0.00 | 5.20 | 1.89 |
| **RAW AVERAGE** | | **11.85** | **2.41** | **0.08** | **0.00** | **5.17** | **1.98** |

| | | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|---|
| | **Serial Number:** | inst-02-0024 | inst-nx-0031 | inst-co-0029 | inst-th-0013 | inst-c2-0016 | inst-ir-0004 |
| | | (%) | (ppmvd) | (ppmvd) | (ppmvw) | (%) | |
| Bias | **Initial Zero** | 0.07 | 0.23 | 0.05 | 0.00 | 0.09 | |
| Bias | **Final Zero** | 0.05 | 0.22 | 0.05 | 0.00 | 0.10 | |
| Bias | **Avg. Zero** | 0.06 | 0.23 | 0.05 | 0.00 | 0.10 | |
| Bias | **Initial UpScale** | 11.84 | 4.61 | 5.10 | 3.11 | 8.94 | |
| Bias | **Final UpScale** | 11.83 | 4.64 | 5.14 | 3.13 | 8.96 | |
| Bias | **Avg. UpScale** | 11.84 | 4.63 | 5.12 | 3.12 | 8.95 | |
| **Upscale Cal Gas** | | 11.98 | 4.55 | 5.22 | 3.03 | 8.91 | |

| **EMISSIONS DATA** | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 11.99 | 2.26 | 0.03 | 0.00 | 5.11 | 2.19 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.50 | 0.02 | 0.00 | N/A | 1.45 |

Non-Bias Adjusted Averages Include: *

**Cricket Valley Energy Center LLC**
**April 16, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,641 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,010 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,681 | lb/min |
| Duct Burner Fuel Flow | 175 | lb/min |
| Total Fuel Flow | 2,579,455 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.10 | in. Hg |
| Relative Humidity | 53 | % |
| Ambient Temperature | 46 | ° F |
| Specific Humidity | 0.003436 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 240.5 | megawatts |
| Heat Input | 2,604 | MMBtu/hr |
| $NH_3$ Flow Rate | 164 | lb/hr |
| Meas. Stack Moisture | 9.5 | % |
| Stack Exhaust Flow (M19) | 52,766,594 | SCFH |

Data from: From PM Run PM U-00003 Base+DB-1

Base+Db Load, Run - 2-3

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 04/16/20 17:40:12 | 45150 | 11.84 | 2.27 | 0.03 | 0.00 | 5.18 | 0.52 |
| 04/16/20 17:40:42 | 45180 | 11.84 | 2.29 | 0.04 | 0.01 | 5.18 | 0.63 |
| 04/16/20 17:41:12 | 45210 | 11.83 | 2.25 | -0.01 | 0.00 | 5.18 | 0.83 |
| 04/16/20 17:41:42 | 45240 | 11.84 | 2.30 | 0.00 | 0.00 | 5.17 | 0.96 |
| 04/16/20 17:42:12 | 45270 | 11.83 | 2.33 | 0.00 | 0.00 | 5.18 | 1.01 |
| 04/16/20 17:42:42 | 45300 | 11.83 | 2.36 | 0.01 | 0.00 | 5.18 | 0.99 |
| 04/16/20 17:43:12 | 45330 | 11.83 | 2.35 | 0.01 | 0.00 | 5.18 | 0.94 |
| 04/16/20 17:43:42 | 45360 | 11.83 | 2.33 | -0.01 | 0.00 | 5.17 | 0.89 |
| 04/16/20 17:44:12 | 45390 | 11.85 | 2.36 | 0.00 | 0.01 | 5.17 | 0.87 |
| 04/16/20 17:44:42 | 45420 | 11.85 | 2.35 | 0.00 | 0.01 | 5.17 | 0.86 |
| 04/16/20 17:45:12 | 45450 | 11.84 | 2.26 | -0.03 | 0.00 | 5.17 | 0.82 |
| 04/16/20 17:45:42 | 45480 | 11.84 | 2.29 | 0.00 | 0.00 | 5.18 | 0.81 |
| 04/16/20 17:46:12 | 45510 | 11.85 | 2.28 | -0.01 | 0.00 | 5.18 | 0.80 |
| 04/16/20 17:46:42 | 45540 | 11.85 | 2.31 | 0.03 | 0.01 | 5.18 | 0.80 |
| 04/16/20 17:47:12 | 45570 | 11.84 | 2.28 | 0.00 | 0.00 | 5.18 | 0.84 |
| 04/16/20 17:47:42 | 45600 | 11.83 | 2.28 | 0.00 | 0.00 | 5.18 | 0.82 |
| 04/16/20 17:48:12 | 45630 | 11.83 | 2.34 | 0.01 | 0.00 | 5.17 | 0.82 |
| 04/16/20 17:48:42 | 45660 | 11.83 | 2.38 | -0.01 | 0.00 | 5.17 | 0.77 |
| 04/16/20 17:49:12 | 45690 | 11.84 | 2.33 | 0.01 | 0.00 | 5.17 | 0.76 |
| 04/16/20 17:49:42 | 45720 | 11.83 | 2.31 | 0.00 | 0.01 | 5.18 | 0.78 |
| 04/16/20 17:50:12 | 45750 | 11.83 | 2.30 | 0.01 | 0.00 | 5.19 | 0.77 |
| 04/16/20 17:50:42 | 45780 | 11.81 | 2.31 | -0.01 | 0.00 | 5.19 | 0.77 |
| 04/16/20 17:51:12 | 45810 | 11.83 | 2.27 | 0.00 | 0.00 | 5.18 | 0.75 |
| 04/16/20 17:51:42 | 45840 | 11.84 | 2.26 | -0.01 | 0.00 | 5.17 | 0.71 |
| 04/16/20 17:52:12 | 45870 | 11.84 | 2.25 | -0.02 | 0.00 | 5.17 | 0.77 |
| 04/16/20 17:52:42 | 45900 | 11.84 | 2.32 | 0.00 | 0.01 | 5.17 | 0.82 |
| 04/16/20 17:53:12 | 45930 | 11.83 | 2.38 | 0.00 | 0.01 | 5.18 | 0.91 |
| 04/16/20 17:53:42 | 45960 | 11.83 | 2.38 | 0.01 | 0.00 | 5.18 | 0.93 |
| 04/16/20 17:54:12 | 45990 | 11.84 | 2.35 | 0.00 | 0.00 | 5.17 | 0.86 |
| 04/16/20 17:54:42 | 46020 | 11.84 | 2.33 | -0.01 | 0.01 | 5.17 | 0.82 |
| 04/16/20 17:55:12 | 46050 | 11.84 | 2.29 | -0.01 | 0.00 | 5.18 | 0.81 |
| 04/16/20 17:55:42 | 46080 | 11.84 | 2.29 | -0.01 | 0.00 | 5.19 | 0.81 |
| 04/16/20 17:56:12 | 46110 | 11.84 | 2.29 | -0.02 | 0.01 | 5.19 | 0.75 |
| 04/16/20 17:56:42 | 46140 | 11.83 | 2.28 | 0.00 | 0.00 | 5.19 | 0.76 |
| 04/16/20 17:57:12 | 46170 | 11.84 | 2.31 | -0.04 | 0.00 | 5.19 | 0.78 |
| 04/16/20 17:57:42 | 46200 | 11.83 | 2.39 | 0.00 | 0.00 | 5.19 | 0.85 |
| 04/16/20 17:58:12 | 46230 | 11.84 | 2.49 | -0.01 | 0.01 | 5.19 | 0.87 |
| 04/16/20 17:58:42 | 46260 | 11.85 | 2.46 | -0.02 | 0.00 | 5.19 | 0.83 |
| 04/16/20 17:59:12 | 46290 | 11.84 | 2.41 | 0.01 | 0.00 | 5.19 | 0.82 |
| 04/16/20 17:59:42 | 46320 | 11.84 | 2.37 | -0.03 | 0.00 | 5.20 | 0.82 |
| 04/16/20 18:00:12 | 46350 | 11.84 | 2.35 | 0.02 | 0.00 | 5.19 | 0.81 |
| 04/16/20 18:00:42 | 46380 | 11.84 | 2.37 | 0.00 | 0.00 | 5.19 | 0.81 |
| 04/16/20 18:01:12 | 46410 | 11.84 | 2.34 | -0.02 | 0.00 | 5.19 | 0.77 |
| 04/16/20 18:01:42 | 46440 | 11.84 | 2.34 | -0.03 | 0.00 | 5.20 | 0.74 |
| 04/16/20 18:02:12 | 46470 | 11.84 | 2.36 | -0.01 | 0.00 | 5.20 | 0.71 |
| 04/16/20 18:02:42 | 46500 | 11.84 | 2.33 | -0.02 | 0.00 | 5.20 | 0.68 |
| 04/16/20 18:03:12 | 46530 | 11.84 | 2.36 | -0.01 | 0.00 | 5.20 | 0.67 |
| 04/16/20 18:03:42 | 46560 | 11.85 | 2.34 | -0.01 | 0.00 | 5.19 | 0.64 |
| 04/16/20 18:04:12 | 46590 | 11.84 | 2.29 | -0.03 | 0.00 | 5.19 | 0.65 |
| 04/16/20 18:04:42 | 46620 | 11.84 | 2.30 | 0.01 | 0.01 | 5.18 | 0.63 |
| 04/16/20 18:05:12 | 46650 | 11.84 | 2.28 | 0.02 | 0.01 | 5.18 | 0.64 |
| 04/16/20 18:05:42 | 46680 | 11.84 | 2.23 | 0.00 | 0.00 | 5.18 | 0.64 |
| 04/16/20 18:06:12 | 46710 | 11.83 | 2.29 | 0.01 | 0.01 | 5.18 | 0.63 |
| 04/16/20 18:06:42 | 46740 | 11.83 | 2.23 | -0.01 | 0.00 | 5.19 | 0.64 |
| 04/16/20 18:07:12 | 46770 | 11.84 | 2.22 | -0.01 | 0.00 | 5.19 | 0.66 |
| 04/16/20 18:07:42 | 46800 | 11.84 | 2.20 | 0.02 | 0.00 | 5.19 | 0.67 |
| 04/16/20 18:08:12 | 46830 | 11.83 | 2.22 | 0.00 | 0.00 | 5.19 | 0.66 |
| 04/16/20 18:08:42 | 46860 | 11.83 | 2.26 | 0.02 | 0.01 | 5.20 | 0.65 |
| 04/16/20 18:09:12 | 46890 | 11.84 | 2.28 | 0.02 | 0.01 | 5.20 | 0.73 |
| 04/16/20 18:09:42 | 46920 | 11.83 | 2.34 | 0.01 | 0.00 | 5.20 | 0.75 |
| 04/16/20 18:10:12 | 46950 | 11.83 | 2.37 | 0.00 | 0.00 | 5.20 | 0.86 |
| 04/16/20 18:10:42 | 46980 | 11.84 | 2.38 | 0.01 | 0.00 | 5.21 | 0.91 |
| 04/16/20 18:11:12 | 47010 | 11.83 | 2.43 | 0.02 | 0.00 | 5.20 | 0.88 |
| 04/16/20 18:11:42 | 47040 | 11.83 | 2.29 | 0.01 | 0.00 | 5.20 | 0.87 |
| 04/16/20 18:12:12 | 47070 | 11.83 | 2.31 | 0.04 | 0.00 | 5.20 | 0.84 |
| 04/16/20 18:12:42 | 47100 | 11.83 | 2.31 | 0.01 | 0.00 | 5.21 | 0.82 |
| 04/16/20 18:13:12 | 47130 | 11.85 | 2.29 | 0.01 | 0.00 | 5.19 | 0.83 |
| 04/16/20 18:13:42 | 47160 | 11.85 | 2.24 | 0.00 | 0.00 | 5.19 | 0.82 |
| 04/16/20 18:14:12 | 47190 | 11.84 | 2.31 | 0.01 | 0.00 | 5.19 | 0.79 |
| 04/16/20 18:14:42 | 47220 | 11.83 | 2.25 | 0.01 | 0.00 | 5.20 | 0.80 |
| 04/16/20 18:15:12 | 47250 | 11.84 | 2.23 | 0.00 | 0.00 | 5.20 | 0.80 |
| 04/16/20 18:15:42 | 47280 | 11.84 | 2.23 | 0.01 | 0.00 | 5.20 | 0.79 |
| 04/16/20 18:16:12 | 47310 | 11.83 | 2.27 | 0.01 | 0.00 | 5.20 | 0.83 |
| 04/16/20 18:16:42 | 47340 | 11.82 | 2.26 | 0.01 | 0.00 | 5.21 | 0.81 |
| 04/16/20 18:17:12 | 47370 | 11.83 | 2.29 | 0.01 | 0.00 | 5.20 | 0.77 |
| 04/16/20 18:17:42 | 47400 | 11.83 | 2.24 | -0.01 | 0.00 | 5.20 | 0.77 |
| 04/16/20 18:18:12 | 47430 | 11.84 | 2.32 | 0.00 | 0.01 | 5.20 | 0.80 |

**Cricket Valley Energy Center LLC**
**April 16, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,641 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,010 | Btu/SCF fuel |
| Turbine Fuel Flow | 1,681 | lb/min |
| Duct Burner Fuel Flow | 175 | lb/min |
| Total Fuel Flow | 2,579,455 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 30.10 | in. Hg |
| Relative Humidity | 53 | % |
| Ambient Temperature | 46 | °F |
| Specific Humidity | 0.003436 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 240.5 | megawatts |
| Heat Input | 2,604 | MMBtu/hr |
| $NH_3$ Flow Rate | 164 | lb/hr |
| Meas. Stack Moisture | 9.5 | % |
| Stack Exhaust Flow (M19) | 52,766,594 | SCFH |

Data from: From PM Run PM U-00003 Base+DB-1

Base+Db Load, Run - 2-3

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | VOC (as C1) (ppmvw) | $CO_2$ (%) | $NH_3$ (ppmvw) |
|---|---|---|---|---|---|---|---|
| 04/16/20 18:18:42 | 47460 | 11.84 | 2.37 | 0.02 | 0.00 | 5.21 | 0.81 |
| 04/16/20 18:19:12 | 47490 | 11.83 | 2.37 | 0.02 | 0.01 | 5.21 | 0.82 |
| 04/16/20 18:19:42 | 47520 | 11.83 | 2.35 | 0.01 | 0.00 | 5.21 | 0.83 |
| 04/16/20 18:20:12 | 47550 | 11.84 | 2.33 | -0.01 | 0.00 | 5.22 | 0.86 |
| 04/16/20 18:20:42 | 47580 | 11.84 | 2.38 | 0.04 | 0.01 | 5.21 | 0.94 |
| 04/16/20 18:21:12 | 47610 | 11.83 | 2.35 | 0.02 | 0.01 | 5.20 | 0.99 |
| 04/16/20 18:21:42 | 47640 | 11.84 | 2.41 | 0.04 | 0.01 | 5.20 | 0.99 |
| 04/16/20 18:22:12 | 47670 | 11.82 | 2.40 | 0.01 | 0.01 | 5.19 | 0.98 |
| 04/16/20 18:22:42 | 47700 | 11.82 | 2.33 | 0.00 | 0.00 | 5.19 | 0.99 |
| 04/16/20 18:23:12 | 47730 | 11.84 | 2.31 | 0.01 | 0.00 | 5.19 | 0.92 |
| 04/16/20 18:23:42 | 47760 | 11.84 | 2.29 | 0.02 | 0.00 | 5.19 | 0.95 |
| 04/16/20 18:24:12 | 47790 | 11.84 | 2.25 | 0.03 | 0.00 | 5.19 | 0.90 |
| 04/16/20 18:24:42 | 47820 | 11.83 | 2.23 | 0.03 | 0.00 | 5.19 | 0.91 |
| 04/16/20 18:25:12 | 47850 | 11.84 | 2.21 | 0.04 | 0.00 | 5.19 | 0.90 |
| 04/16/20 18:25:42 | 47880 | 11.84 | 2.23 | 0.02 | 0.00 | 5.19 | 0.86 |
| 04/16/20 18:26:12 | 47910 | 11.83 | 2.26 | 0.02 | 0.01 | 5.19 | 0.89 |
| 04/16/20 18:26:42 | 47940 | 11.83 | 2.26 | 0.03 | 0.00 | 5.20 | 0.88 |
| 04/16/20 18:27:12 | 47970 | 11.83 | 2.27 | 0.03 | 0.01 | 5.20 | 0.89 |
| 04/16/20 18:27:42 | 48000 | 11.84 | 2.26 | 0.00 | 0.00 | 5.20 | 0.89 |
| 04/16/20 18:28:12 | 48030 | 11.84 | 2.32 | 0.02 | 0.00 | 5.20 | 0.86 |
| 04/16/20 18:28:42 | 48060 | 11.83 | 2.31 | 0.03 | 0.01 | 5.20 | 0.91 |
| 04/16/20 18:29:12 | 48090 | 11.85 | 2.27 | 0.02 | 0.00 | 5.19 | 0.87 |
| 04/16/20 18:29:42 | 48120 | 11.84 | 2.26 | 0.04 | 0.01 | 5.20 | 0.93 |
| 04/16/20 18:30:12 | 48150 | 11.83 | 2.20 | 0.03 | 0.00 | 5.20 | 0.95 |
| 04/16/20 18:30:42 | 48180 | 11.83 | 2.26 | 0.04 | 0.00 | 5.20 | 1.01 |
| 04/16/20 18:31:12 | 48210 | 11.83 | 2.36 | 0.03 | 0.00 | 5.19 | 0.96 |
| 04/16/20 18:31:42 | 48240 | 11.82 | 2.35 | 0.04 | 0.00 | 5.19 | 1.01 |
| 04/16/20 18:32:12 | 48270 | 11.84 | 2.38 | 0.03 | 0.00 | 5.20 | 0.96 |
| 04/16/20 18:32:42 | 48300 | 11.84 | 2.36 | 0.04 | 0.00 | 5.20 | 0.94 |
| 04/16/20 18:33:12 | 48330 | 11.83 | 2.31 | 0.00 | 0.00 | 5.20 | 0.97 |
| 04/16/20 18:33:42 | 48360 | 11.83 | 2.35 | 0.04 | 0.01 | 5.20 | 0.94 |
| 04/16/20 18:34:12 | 48390 | 11.83 | 2.30 | 0.02 | 0.00 | 5.20 | 0.92 |
| 04/16/20 18:34:42 | 48420 | 11.84 | 2.33 | 0.04 | 0.01 | 5.20 | 0.93 |
| 04/16/20 18:35:12 | 48450 | 11.83 | 2.32 | 0.03 | 0.01 | 5.20 | 0.94 |
| 04/16/20 18:35:42 | 48480 | 11.82 | 2.37 | 0.01 | 0.00 | 5.20 | 0.95 |
| 04/16/20 18:36:12 | 48510 | 11.82 | 2.33 | 0.05 | 0.01 | 5.20 | 0.96 |
| 04/16/20 18:36:42 | 48540 | 11.82 | 2.37 | 0.04 | 0.01 | 5.20 | 0.91 |
| 04/16/20 18:37:12 | 48570 | 11.84 | 2.31 | 0.03 | 0.00 | 5.20 | 0.93 |
| 04/16/20 18:37:42 | 48600 | 11.84 | 2.30 | 0.03 | 0.01 | 5.20 | 0.93 |
| 04/16/20 18:38:12 | 48630 | 11.82 | 2.25 | 0.01 | 0.00 | 5.19 | 0.91 |
| 04/16/20 18:38:42 | 48660 | 11.82 | 2.32 | 0.04 | 0.00 | 5.19 | 0.88 |
| 04/16/20 18:39:12 | 48690 | 11.83 | 2.31 | 0.00 | 0.00 | 5.19 | 0.92 |
| 04/16/20 18:39:42 | 48720 | 11.83 | 2.30 | 0.02 | 0.00 | 5.19 | 0.93 |
| **RAW AVERAGE** | | **11.84** | **2.31** | **0.01** | **0.00** | **5.19** | **0.83** |

| | | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|---|
| | **Serial Number:** | inst-02-0024 | inst-nx-0031 | inst-co-0029 | inst-th-0013 | inst-c2-0016 | inst-ir-0004 |
| | | (%) | (ppmvd) | (ppmvd) | (ppmvw) | (%) | |
| Bias | **Initial Zero** | 0.05 | 0.22 | 0.05 | 0.00 | 0.10 | |
| Bias | **Final Zero** | 0.08 | 0.15 | -0.04 | 0.00 | 0.11 | |
| Bias | **Avg. Zero** | 0.07 | 0.19 | 0.01 | 0.00 | 0.11 | |
| | **Initial UpScale** | 11.83 | 4.64 | 5.14 | 3.13 | 8.96 | |
| | **Final UpScale** | 11.83 | 4.64 | 5.25 | 3.16 | 8.90 | |
| | **Avg. UpScale** | 11.83 | 4.64 | 5.20 | 3.15 | 8.93 | |
| **Upscale Cal Gas** | | 11.98 | 4.55 | 5.22 | 3.03 | 8.91 | |

| **EMISSIONS DATA** | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ | $NH_3$ |
|---|---|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 11.99 | 2.17 | 0.00 | 0.00 | 5.13 | 0.92 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.44 | 0.00 | 0.00 | N/A | 0.61 |

Non-Bias Adjusted Averages Include: *

# EMISSION DATA RECORDS

## Reference Method Data
## Base+DB Load
## $PM_{10}$

## METHOD 201A (FRONT) AND 202 (BACK) SOURCE SAMPLING TITLE PAGE

| Source Information | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base+DB |
| **Fuel Type** | Gas, Natural |

| Test Information | | | |
|---|---|---|---|
| **Project #** | | bec-19-cricketvalley.ny-start#3 | |
| **Operator** | | Rob White | |
| **Date for Preliminary Run** | (mm/dd/yy) | 04/16/20 | |
| **Standard Temperature** | | 68 | °F |
| **Standard Pressure** | | 29.92 | in Hg |
| **Required Sample Vol.** | indust. spec. | 50 | scf |
| **Run Duration** | chk Subpart | 240 | minutes |
| **Unit Number** | | U-00003 | |
| **Base Run Number** | | PM U-00003 Base+DB | |
| **Number of Ports Available** | | 4 | |
| **Number of Ports Used** | | 4 | |
| **Port Inside Diameter** | | 6.00 | in |
| **Stack Shape** | | Circular | |

| Test Equipment Information | | | | | |
|---|---|---|---|---|---|
| **Run** | | **1** | **2** | **3** | |
| **Test Date** | (mm/dd/yy) | 04/16/20 | 04/17/20 | 04/17/20 | |
| **Load** | | Base+DB | Base+DB | Base+DB | % or w/DB |
| **Fuel F-Factor** | | 8641.42 | 8663.09 | 8663.09 | dscf/MMBtu |
| **Meter Box Number** | from ACS | Samp-cp-0033 | Samp-cp-0033 | Samp-cp-0033 | |
| **Meter Calibration Factor** | (Y) | 0.978 | 0.978 | 0.978 | |
| **Orifice Meter Coefficient** | ($\Delta H_@$) | 1.846 | 1.846 | 1.846 | in $H_2O$ |
| **Non-Console Manometer Used** | | No | No | No | |
| **Pitot Identification** | from ACS | 5266/10 | 5266/10 | 5266/10 | |
| **Pitot Tube Coefficient** | ($C_p$) | 0.7720 | 0.7720 | 0.7720 | |
| **Nozzle Number** | from ACS | 4a | 4a | 4a | must match cyc nozz tab (e.g. 3a, 4b, etc.) |
| **Nozzle Diameter** | ($D_n$) | 0.157 | 0.157 | 0.157 | in |
| **Probe Number** | from ACS | SAMP-HP-0138 | SAMP-HP-0138 | SAMP-HP-0138 | |
| **Probe Length** | | 120.0 | 120.0 | 120.0 | in |
| **(SS, Glass …. ) Liner Material** | from list | glass | glass | glass | |
| **Sample Case / Oven Number** | from ACS | SAMP-BH-0039 | SAMP-BH-0039 | SAMP-BH-0039 | |
| **Impinger Case Number** | from ACS | SAMP-SBC-0099 | SAMP-SBC-0099 | SAMP-SBC-0099 | |

| Testing Company Information | |
|---|---|
| **Company Name** | Air Hygiene International, Inc. (Tulsa, Oklahoma) |
| **Address** | 1600 W Tacoma Street |
| **City, State Zip** | Broken Arrow, Oklahoma 74012 |
| **Project Manager** | Rob White |
| **Phone Number** | (918) 307-8865 |
| **Fax Number** | (918) 307-9131 |

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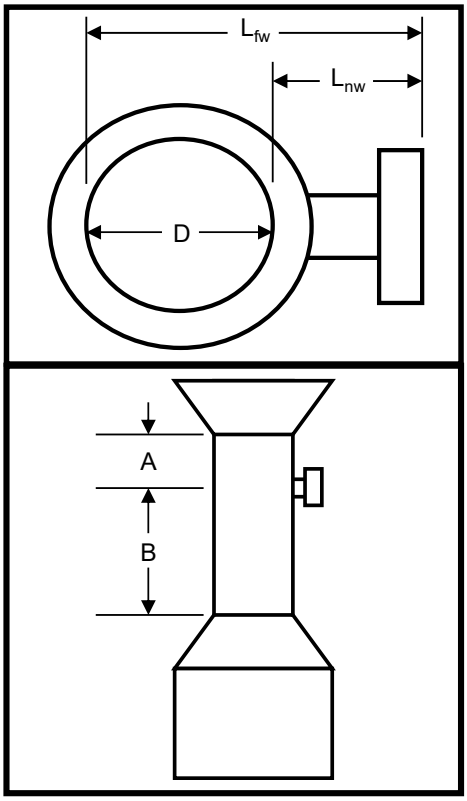
## METHOD 1 - SAMPLE AND VELOCITY TRAVERSES FOR CIRCULAR SOURCES

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Date** | 04/16/20 |
| **Sampling Location** | U-00003 Base+DB | **Stack Type** | Circular |
| **Operator** | Rob White | **Ports Available** | 4 |
| **Project #** | bec-19-cricketvalley.ny-start#3 | **Ports Used** | 4 |
| **Stack Size** | Large (>24 inch diameter) | **Port ID (inches)** | 6.00 |

| **Circular Stack or Duct Diameter** | | | |
|---|---|---|---|
| **Distance to Far Wall of Stack** | ($L_{fw}$) | 236.00 | in |
| **Distance to Near Wall of Stack** | ($L_{nw}$) | 8.00 | in |
| **Diameter of Stack** | (D) | 228.00 | in |
| **Area of Stack** | ($A_s$) | 283.53 | ft² |

| **Distance from Port to Disturbances** | | | |
|---|---|---|---|
| **Distance Upstream** | (A) | 200.40 | in |
| **Diameters Upstream** | ($A_D$) | 0.88 | diameters |
| **Distance Downstream** | (B) | 850.00 | in |
| **Diameters Downstream** | ($B_D$) | 3.73 | diameters |




| **Number of Traverse Points Required** | | | |
|---|---|---|---|
| **Diameters to Flow Disturbance** | | **Minimum Number of[1] Traverse Points** | |
| **Down Stream** | **Up Stream** | **Particulate Points** | **Velocity Points** |
| 2.00-4.99 | 0.50-1.24 | 24 | 16 |
| 5.00-5.99 | 1.25-1.49 | 20 | 16 |
| 6.00-6.99 | 1.50-1.74 | 16 | 12 |
| 7.00-7.99 | 1.75-1.99 | 12 | 12 |
| >= 8.00 | >=2.00 | 8 or 12[2] | 8 or 12[2] |
| **Upstream Spec** | | 24 | 16 |
| **Downstream Spec** | | 24 | 16 |
| **Traverse Pts Required** | | 24 | 16 |

[1] Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.

[2] 8 for Circular Stacks 12 to 24 inches
12 for Circular Stacks over 24 inches

○ Method 1 Trav

◉ 12 Point PM Trav (M201a ONLY)

○ Velocity

| **Number of Traverse Points Used** | | | |
|---|---|---|---|
| 4 | **Ports by** | 3 | **Across** |
| 12 | **Pts Used** | 12 | **Required** |

| **Location of Traverse Points in Circular Stacks** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point Number** | (Fraction of Stack Dimension from Inside Wall to Traverse Point) Number of Traverse Points Across the Stack | | | | | | | | |
| | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 |
| 1 | .146 | .067 | .044 | .032 | .026 | .021 | .018 | .016 | .014 |
| 2 | .854 | .250 | .146 | .105 | .082 | .067 | .057 | .049 | .044 |
| 3 | | .750 | .296 | .194 | .146 | .118 | .099 | .085 | .075 |
| 4 | | .933 | .704 | .323 | .226 | .177 | .146 | .125 | .109 |
| 5 | | | .854 | .677 | .342 | .250 | .201 | .169 | .146 |
| 6 | | | .956 | .806 | .658 | .356 | .269 | .220 | .188 |
| 7 | | | | .895 | .774 | .644 | .366 | .283 | .236 |
| 8 | | | | .968 | .854 | .750 | .634 | .375 | .296 |
| 9 | | | | | .918 | .823 | .731 | .625 | .382 |
| 10 | | | | | .974 | .882 | .799 | .717 | .618 |
| 11 | | | | | | .933 | .854 | .780 | .704 |
| 12 | | | | | | .979 | .901 | .831 | .764 |

| **Traverse Point Locations** | | | |
|---|---|---|---|
| **Traverse Point Number** | **Fraction of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
| | | in | in |
| **1** | 0.044 | 10 | 18 |
| **2** | 0.146 | 33 2/8 | 41 2/8 |
| **3** | 0.296 | 67 4/8 | 75 4/8 |
| **4** | | | |
| **5** | | | |
| **6** | | | |
| **7** | | | |
| **8** | | | |
| **9** | | | |

## METHOD 2 - DETERMINATION OF STACK GAS VELOCITY AND VOLUMETRIC FLOW RATE

| | | | | |
|---|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | | | |
| **Sampling Location** | U-00003 Base+DB | | | |
| **Operator** | Rob White | | | |
| **Project #** | bec-19-cricketvalley.ny-start#3 | | | |
| **Pitot Leak Check** | x | **PreTest** | x | **PostTest** |

| | | | |
|---|---|---|---|
| **Preliminary Run Date** | 04/16/20 | | |
| **Stack Type** | Circular | | |
| **Ports Available** | 4 | | |
| **Thermocouple ID** | SAMP-HP-0138 | | |
| **Pitot Coefficient** | 0.8198 | **Pitot Identification** | 4187 |

| **RM 201A or OTM 27 Blckag.** | **RM 201A or OTM 27 Pitot Coeff.** |
|---|---|
| 5.39E-04 | 0.7720 |

| **Stack Dimensions** | | | |
|---|---|---|---|
| **Area of Stack** | ($A_s$) | 283.53 | ft² |
| **Diameter of Stack** | (D) | 228.00 | in |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 29.99 | in Hg |
| **Static Pressure** | ($P_{static}$) | -0.96 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 29.92 | in Hg |

| **Stack Gas Composition** | | | |
|---|---|---|---|
| **Composition Data:** | **Estimated Composition** | | |
| **Carbon Dioxide Concentration** | ($\%CO_2$) | 5.76 | %vd |
| **Oxygen Concentration** | ($\%O_2$) | 12.78 | %vd |
| **Carbon Monoxide Concentration** | (ppmCO) | 0.00 | ppmvd |
| **Nitrogen Concentration** | ($\%N_2$) | 81.46 | %vd |
| **Stack Moisture Content** | ($B_{ws}$) | 8.00 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.43 | lb/lb-mole |
| **Stack Wet Molecular Weight** | ($M_w$) | 28.52 | lb/lb-mole |

| **Results** | | | |
|---|---|---|---|
| **Avg Stack Gas Velocity** | ($v_s$) | 66.24 | ft/sec |
| **Avg Stack Dry Std Flow Rate** | ($Q_{sd}$) | 51,309,129 | dscf/hr |
| **Avg Stack Dry Std Flow Rate** | ($Q_{sd}$) | 855,152 | dscf/min |
| **Avg Stack Wet Flow Rate** | ($Q_{aw}$) | 1,126,852 | acf/min |
| **Avg Stack Wet Std Flow Rate** | ($Q_{sw}$) | 55,770,793 | ascf/hr |

**40 CFR 60, Method 2G, Section 8.11.1 (but applies to all Method 2 type static pressure measurements):**
If a Type S probe is used for this measurement, position the probe at or between any traverse point(s) and rotate the probe until a null differential pressure reading is obtained. Disconnect the tubing from one of the pressure ports; read and record the ΔP. For pressure devices with one-directional scales, if a deflection in the positive direction is noted with the negative side disconnected, then the static pressure is positive. Likewise, if a deflection in the positive direction is noted with the positive side disconnected, then the static pressure is negative.

**Stack Cross Section Schematic**

**Velocity Traverse Data**

| **Run Number** | PM U-00003 Base+DB-V1 | | | | |
|---|---|---|---|---|---|
| **Run Time** | 12:09 | **Start** | 12:21 | **End** | |

| **Traverse Point** | **Velocity Head** ($\Delta p$) | **Null Angle** ($N_a$) | **Zero Deg Pressure** ($0°_a$) | **Stack Temp** ($t_s$) | **Local Velocity** ($v_{s(l)}$) | **Adjusted Velocity Pressure** | **Adjusted Velocity Pressure w/BF, if app** |
|---|---|---|---|---|---|---|---|
| | in $H_2O$ | deg | in $H_2O$ | °F | ft/sec | in $H_2O$ | in $H_2O$ |
| A-1 | 1.70 | 0 | 0.00 | 181 | 79.20 | 1.51 | 1.51 |
| A-2 | 1.60 | -5 | 0.15 | 181 | 76.84 | 1.42 | 1.42 |
| A-3 | 1.40 | -5 | 0.17 | 180 | 71.82 | 1.24 | 1.24 |
| B-1 | 1.40 | 0 | 0.00 | 181 | 71.88 | 1.24 | 1.24 |
| B-2 | 1.50 | 0 | 0.00 | 180 | 74.34 | 1.33 | 1.33 |
| B-3 | 1.60 | 0 | 0.00 | 181 | 76.84 | 1.42 | 1.42 |
| C-1 | 1.70 | -5 | 0.08 | 180 | 79.14 | 1.51 | 1.51 |
| C-2 | 1.30 | -5 | 0.18 | 180 | 69.21 | 1.15 | 1.15 |
| C-3 | 1.40 | 0 | 0.00 | 180 | 71.82 | 1.24 | 1.24 |
| D-1 | 1.50 | 0 | 0.00 | 179 | 74.28 | 1.33 | 1.33 |
| D-2 | 1.50 | -5 | 0.16 | 178 | 74.22 | 1.33 | 1.33 |
| D-3 | 1.60 | -5 | 0.13 | 180 | 76.78 | 1.42 | 1.42 |
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| | | | | | | | |
| **Average** | 1.52 | 3 | | 180 | | 1.34 | 1.34 |
| | 1.23 | **= Square roots of Δp** | | | | | 1.16 |
| **Standard deviation of null angles =** | | | | 2.6 | | | |

## METHOD 201A and OTM 27 - DETERMINATION OF NOZZLE SIZE AND POST RUN QUALITY CONTROL

| Gas Analysis | Prelim | PM U-00003 Base+DB-1 | PM U-00003 Base+DB-2 | PM U-00003 Base+DB-3 | PM U-00003 Base+DB-4 | PM U-00003 Base+DB-5 | PM U-00003 Base+DB-6 | |
|---|---|---|---|---|---|---|---|---|
| Carbon Dioxide Content | 5.8 | 5.1 | 5.1 | 5.1 | | | | % |
| Oxygen Content | 12.8 | 11.8 | 11.8 | 11.8 | | | | % |
| Stack Moisture Content | 8.0 | 9.5 | 9.9 | 10.0 | | | | % |
| Nitrogen plus CO Content | 81.5 | 83.1 | 83.1 | 83.1 | | | | % |

| Corrected Velocity Head, $\Delta p_{2.5}$ (in $H_2O$) | Min. | 1.15 | Max. | 1.51 |
|---|---|---|---|---|

| Stack and Equipment Information | Prelim | PM U-00003 Base+DB-1 | PM U-00003 Base+DB-2 | PM U-00003 Base+DB-3 | PM U-00003 Base+DB-4 | PM U-00003 Base+DB-5 | PM U-00003 Base+DB-6 | |
|---|---|---|---|---|---|---|---|---|
| Barometric Pressure | 29.99 | 30.05 | 30.21 | 30.22 | | | | in Hg |
| Stack Static Pressure | -0.96 | -0.96 | -0.96 | -0.96 | | | | in $H_2O$ |
| Absolute Stack Pressure | 29.92 | 29.98 | 30.14 | 30.15 | | | | in Hg |
| Average Stack Temp | 180 | 182 | 177 | 178 | | | | 0.00 |
| Average Stack Temp | 640 | 642 | 637 | 638 | | | | °R |
| Average Meter Temp | 85 | 80 | 70 | 75 | | | | 0.00 |
| Orifice Meter Coefficient | 1.846 | 1.846 | 1.846 | 1.846 | | | | in $H_2O$ |
| Pitot Coefficient | 0.772 | 0.772 | 0.772 | 0.772 | | | | |
| Stack Dry Molecular Weight | 29.43 | 29.29 | 29.29 | 29.29 | | | | lb/lb mole |
| Stack Wet Molecular Weight | 28.52 | 28.22 | 28.18 | 28.16 | | | | lb/lb mole |
| Stack Viscosity | 199.79 | 198.41 | 196.82 | 196.86 | | | | µP |
| Cunningham Correction Factor, for a 2.25 µm particle | 1.08 | | | | | | | |
| Cunningham Correction Factor, for a 2.5 µm particle | | 1.07 | 1.07 | 1.07 | | | | |
| Prelim Cut Dia., Cyclone I, $D_{50LL}$, $N_{re}$<3162 | 10.30 | 2.28 | 2.27 | 2.25 | | | | µm |
| Middle Zone Dia., Cyclone I, $D_{50T}$, $N_{re}$<3162 | 10.65 | | | | | | | µm |
| Sampling Rate ($PM_{10}$ & $PM_{2.5}$ Cyc.), $N_{re}$<3162 | 0.48 | | | | | | | dscfm |
| Reynolds Number, Cyc I & IV, $N_{re}$<3162 | 2746.16 | 2831.81 | 2862.75 | 2877.55 | | | | |
| Dia. of 50% Prob. ($D_{50}$) Cyc IV ($N_{re}$<3162) | 2.38 | 2.29 | 2.28 | 2.26 | | | | µm |
| Sampling Rate, Cyc IV, $N_{re}$<3,162 | 0.48 | | | | | | | dscfm |
| Reynolds Number, Cyc IV, $N_{re}$<3162 | 2746.12 | 2831.81 | 2862.75 | 2877.55 | | | | |
| Prelim Cut Dia., Cyclone I, $D_{50LL\geq3162}$ | 10.63 | | | | | | | µm |
| Middle Zone Dia., Cyclone I, $D_{50T\geq3162}$ | 10.81 | | | | | | | µm |
| Sampling Rate ($PM_{10}$ & $PM_{2.5}$ Cyc.)≥3162 | 0.47 | | | | | | | dscfm |
| Reynolds Number, Cyc I & IV, $N_{re}$≥3162 | 2688.56 | | | | | | | |
| Dia. of 50% Prob. ($D_{50}$) CIV ($N_{re}$≥3162) | 2.29 | | | | | | | µm |
| Sampling Rate, Cyc IV, $N_{re}$≥3,162 | 4.66 | | | | | | | dscfm |
| Reynolds Number ≥ 3162 | 26885.76 | | | | | | | |
| Cyclone Flow Rate | 0.48 | 0.49 | 0.49 | 0.49 | | | | ft³/min |
| Recalculated $D_{50-1}$ for $C_{IV}$ | | 2.28 | 2.27 | 2.25 | | | | |
| Recalculated Cunninham | | 1.08 | 1.08 | 1.08 | | | | |
| Z | | 1.00 | 1.00 | 1.00 | | | | |
| Isokinetics | | 91.09 | 90.33 | 90.47 | | | | % |
| No. Sampling Pts. Outside Δp | | 0 | 0 | 0 | | | | |
| Sample Nozzle Diameter | | 0.157 | 0.157 | 0.157 | | | | in |

| Orifice Head and Nozzle Selection Calculation | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nozzle No. | 2a | 2b | 3a | 3b | 4a | 4b | 5a | 5b | 6a | 6b | 7a |
| Nozzle diameter, $D_n$, in. | 0.088 | 0.103 | 0.119 | 0.130 | 0.157 | 0.175 | 0.197 | 0.212 | 0.284 | 0.331 | 0.374 |
| Nozzle velocity, $v_n$, ft/sec | 187.98 | 137.21 | 102.80 | 86.14 | 59.06 | 47.53 | 37.51 | 32.39 | 18.05 | 13.29 | 10.41 |
| $R_{min}$ | 0.79 | 0.78 | 0.77 | 0.76 | 0.72 | 0.69 | 0.63 | 0.58 | 0.50 | 0.50 | 0.50 |
| $v_{min}$, ft/sec | 147.98 | 106.95 | 78.94 | 65.28 | 42.72 | 32.81 | 23.79 | 18.82 | 9.02 | 6.64 | 5.20 |
| $R_{max}$ | 1.21 | 1.21 | 1.22 | 1.23 | 1.25 | 1.27 | 1.30 | 1.32 | 1.46 | 1.50 | 1.50 |
| $v_{max}$, ft/sec | 227.30 | 166.67 | 125.67 | 105.88 | 73.86 | 60.34 | 48.66 | 42.74 | 26.42 | 19.93 | 15.61 |
| $\Delta p_{min}$, in. $H_2O$ @ $t_{s-50}{}^oF$ | 7.27 | 3.80 | 2.07 | 1.41 | 0.61 | 0.36 | 0.19 | 0.12 | 0.03 | 0.01 | 0.01 |
| $\Delta p_{min}$, in. $H_2O$ @ $t_s$ | 6.70 | 3.50 | 1.91 | 1.30 | 0.56 | 0.33 | 0.17 | 0.11 | 0.02 | 0.01 | 0.01 |
| $\Delta p_{max}$, in. $H_2O$ @ $t_s$ | 15.82 | 8.50 | 4.83 | 3.43 | 1.67 | 1.11 | 0.72 | 0.56 | 0.21 | 0.12 | 0.07 |
| $\Delta p_{min}$, in. $H_2O$ @ $t_{s+50}{}^oF$ | 14.67 | 7.89 | 4.48 | 3.18 | 1.55 | 1.03 | 0.67 | 0.52 | 0.20 | 0.11 | 0.07 |
| ΔH, in. $H_2O$ @ $t_s$+50°F | 0.386 | | | | | | | | | | |
| **ΔH, in. $H_2O$ @ $t_s$** | **0.449** | | | | | | | | | | |
| ΔH, in. $H_2O$ @ $t_s$-50°F | 0.528 | | | | | | | | | | |

## METHOD 3a - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

| | | | | | |
|---|---|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Preliminary Run Date** | 04/16/20 | | |
| **Sampling Location** | U-00003 Base+DB | **Operator** | Rob White | | |
| **Project #** | bec-19-cricketvalley.ny-start#3 | **# of Ports Used** | 1 (gas probe) | | |
| **Fuel Type** | Gas, Natural | **Min. Fuel Factor** | 1.600 | **Max. Fuel Factor** | 1.836 |

**Gas Analysis Data**

| **Run Number** | PM U-00003 Base+DB-1 | | **Date** | 04/16/20 | **Run Start Time** | 12:23 | **Run Stop Time** | 16:49 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 04:26 | 5.1 | 11.8 | 0.0 | 83.1 | 29.29 | 1.772 | 116.7 | YES |

**Gas Analysis Data**

| **Run Number** | PM U-00003 Base+DB-2 | | **Date** | 04/17/20 | **Run Start Time** | 04:15 | **Run Stop Time** | 08:34 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 04:19 | 5.1 | 11.8 | 0.0 | 83.1 | 29.29 | 1.768 | 116.8 | YES |

**Gas Analysis Data**

| **Run Number** | PM U-00003 Base+DB-3 | | **Date** | 04/17/20 | **Run Start Time** | 09:35 | **Run Stop Time** | 14:03 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 04:28 | 5.1 | 11.8 | 0.0 | 83.1 | 29.29 | 1.773 | 116.9 | YES |

## METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Preliminary Run Date** | 04/16/20 |
| **Sampling Location** | U-00003 Base+DB | **Operator** | Rob White |
| **Project #** | bec-19-cricketvalley.ny-start#3 | **Ports Used** | 4 |

| **Scale Daily Calibration** | | | | | |
|---|---|---|---|---|---|
| **Scale Number** | SAMP-SC-0028 | **Standard** | **Result** | **Difference** | **Pass/Fail** |
| **Date** | | (g) | (g) | (g) | (± 0.5 g) |
| **Test Day 1** | 04/16/20 | 500 | 499.6 | -0.4 | Pass |
| **Test Day 2** | 04/17/20 | 500 | 499.7 | -0.3 | Pass |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | PM U-00003 Base+DB-1 | | **Date** | 04/16/20 | **Start Time** | 12:23 | **Stop Time** | 16:49 |
| **Meter Box Number** | | Samp-cp-0033 | | | | **Meter Cal Factor** | (Y) | 0.978 | |
| **Total Meter Volume** | ($V_m$) | 93.650 | dcf | | | **Barometric Pressure** | ($P_b$) | 30.05 | in Hg |
| **Average Stack Temp** | $(t_s)_{avg}$ | 182 | °F | | | **Stack Static Pressure** | ($P_{static}$) | -0.96 | in $H_2O$ |
| **Average Meter Temp** | $(t_m)_{avg}$ | 80 | °F | | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.45 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | Dry | Dry | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 529.70 | 587.00 | 728.50 | 884.60 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 363.90 | 586.90 | 722.80 | 856.00 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 165.8 | 0.1 | 5.7 | 28.6 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | ($W_t$) | 200.20 | g | | | **Water Vol Weighed** | $(V_{wsg(std)})$ | 9.439 | scf |
| **Std Meter Volume** | $(V_{m(std)})$ | 89.987 | dscf | | | **Sat. Moisture Content** | $(B_{ws(svp)})$ | 53.59 | % |
| **Calc Moisture Content** | $(B_{ws(calc)})$ | 9.49 | % | | | **Final Moisture Content** | ($B_{ws}$) | 9.49 | % |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | PM U-00003 Base+DB-2 | | **Date** | 04/17/20 | **Start Time** | 04:15 | **Stop Time** | 08:34 |
| **Meter Box Number** | | Samp-cp-0033 | | | | **Meter Cal Factor** | (Y) | 0.978 | |
| **Total Meter Volume** | ($V_m$) | 91.890 | dcf | | | **Barometric Pressure** | ($P_b$) | 30.21 | in Hg |
| **Average Stack Temp** | $(t_s)_{avg}$ | 177 | °F | | | **Stack Static Pressure** | ($P_{static}$) | -0.96 | in $H_2O$ |
| **Average Meter Temp** | $(t_m)_{avg}$ | 70 | °F | | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.45 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | Dry | Dry | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 564.80 | 578.80 | 650.00 | 988.00 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 379.70 | 578.80 | 649.10 | 963.40 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 185.1 | 0.0 | 0.9 | 24.6 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | ($W_t$) | 210.60 | g | | | **Water Vol Weighed** | $(V_{wsg(std)})$ | 9.930 | scf |
| **Std Meter Volume** | $(V_{m(std)})$ | 90.539 | dscf | | | **Sat. Moisture Content** | $(B_{ws(svp)})$ | 47.52 | % |
| **Calc Moisture Content** | $(B_{ws(calc)})$ | 9.88 | % | | | **Final Moisture Content** | ($B_{ws}$) | 9.88 | % |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | | PM U-00003 Base+DB-3 | | **Date** | 04/17/20 | **Start Time** | 09:35 | **Stop Time** | 14:03 |
| **Meter Box Number** | | Samp-cp-0033 | | | | **Meter Cal Factor** | (Y) | 0.978 | |
| **Total Meter Volume** | ($V_m$) | 93.400 | dcf | | | **Barometric Pressure** | ($P_b$) | 30.22 | in Hg |
| **Average Stack Temp** | $(t_s)_{avg}$ | 178 | °F | | | **Stack Static Pressure** | ($P_{static}$) | -0.96 | in $H_2O$ |
| **Average Meter Temp** | $(t_m)_{avg}$ | 75 | °F | | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.45 | in $H_2O$ |
| | | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** |
| | | (g) | (g) | (g) | (g) | | | | |
| **Contents** | | Dry | Dry | DI Water | Sil Gel | | | | |
| **Final Value** | ($V_f$),($W_f$) | 544.30 | 586.70 | 729.00 | 901.30 | | | | |
| **Initial Value** | ($V_i$),($W_i$) | 363.80 | 584.40 | 722.80 | 875.40 | | | | |
| **Net Value** | ($V_n$),($W_n$) | 180.5 | 2.3 | 6.2 | 25.9 | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | ($W_t$) | 214.90 | g | | | **Water Vol Weighed** | $(V_{wsg(std)})$ | 10.133 | scf |
| **Std Meter Volume** | $(V_{m(std)})$ | 91.239 | dscf | | | **Sat. Moisture Content** | $(B_{ws(svp)})$ | 48.13 | % |
| **Calc Moisture Content** | $(B_{ws(calc)})$ | 10.00 | % | | | **Final Moisture Content** | ($B_{ws}$) | 10.00 | % |

## METHOD 201A (FRONT) AND 202 (BACK) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| | |
|---|---|
| **Date** | 04/16/20 |
| **Operator** | Rob White |
| **Run Number** | PM U-00003 Base+DB-1 |

| **Filter #** |
|---|
| 19031829 |
| PM U-00003 Base+DB-1-CPM |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | 0.7720 | 5266/10 |
| **Average Stack Temp** | ($t_s$) | 182.3 | °F |
| **Average Meter Temp** | ($t_m$) | 80.3 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.846 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | 1.18 | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | 9.49 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.29 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.75 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | 0.40 | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec (≥60) |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec (≥60) |
| **Pitot** | **Pre (+)** | 0.00 | in $H_2O$ | 3.6 | in $H_2O$ for | 15.0 | sec (≥15) |
| PASS | **Pre (-)** | 0.00 | in $H_2O$ | 4.0 | in $H_2O$ for | 15.0 | sec (≥15) |
| | **Post (+)** | 0.00 | in $H_2O$ | 3.9 | in $H_2O$ for | 15.0 | sec (≥15) |
| | **Post (-)** | 0.00 | in $H_2O$ | 4.3 | in $H_2O$ for | 15.0 | sec (≥15) |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | Samp-cp-0033 | | |
| **Meter Cal Factor** | (Y) | 0.978 | |
| **Nozzle Number** | 4a | | |
| **Average Nozzle Diameter** | ($D_{na}$) | 0.1570 | in |
| **Suggested Nozzle Diameter** | ($D_n$) | 0.2098 | in |
| **Probe Number** | SAMP-HP-0138 | | in |
| **Probe Length** | 120 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | SAMP-BH-0039 | | |
| **Impinger Case Number** | SAMP-SBC-0099 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.05 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | -0.96 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 29.98 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.19 | in Hg |

| **Nozzle Measurements** | | | **ID: 4a** | |
|---|---|---|---|---|
| **Pre** | 0.156 | 0.157 | 0.158 | **PASS** |
| **Post** | 0.156 | 0.157 | 0.158 | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 12:23 | **End** | 16:49 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 363.9 | 586.9 | 722.8 | 856.0 | | | | |
| **Post** | 529.7 | 587.0 | 728.5 | 884.6 | | | | |

| | | | | |
|---|---|---|---|---|
| **Wash Volumes** | | | | ml |
| | | | | ml |

| **Identification Nos.** | | Samp-cp-0033 | Samp-cp-0033 | Samp-cp-0033 | | | SAMP-HP-0138 | SAMP-HP-0138 | SAMP-BH-0039 | SAMP-SBC-0099 | 1048 | 1018 | Samp-cp-0033 | | Samp-cp-0033 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head ($\Delta p$)** | **Desired Orifice ΔH ($\Delta H_@$)** | **Actual Orifice ΔH ($\Delta H_@$)** | **Stack Temp ($t_s$)** | **Probe Temp (248±25°F)** | **Filter Temp (248±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤85°F)** | **CPM Filter Temp (76.5±8.5°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 558.350 | 1.30 | 0.449 | 0.45 | 181 | 254 | 255 | 55 | 56 | 68 | 75 | 75 | 6.0 | 1.14 | 65.50 | 7.754 | 99.5 | 95.993 |
| A-2 | 19.8 | 00:19:45 | 566.340 | 1.40 | 0.449 | 0.45 | 181 | 252 | 256 | 57 | 60 | 69 | 78 | 78 | 6.0 | 1.18 | 67.97 | 15.571 | 96.3 | 94.586 |
| A-3 | 40.3 | 00:40:15 | 574.440 | 1.30 | 0.449 | 0.45 | 183 | 255 | 253 | 60 | 62 | 72 | 81 | 81 | 6.0 | 1.14 | 65.60 | 23.575 | 98.6 | 96.068 |
| B-1 | 60.0 | 01:00:00 | 582.780 | 1.50 | 0.449 | 0.45 | 182 | 243 | 245 | 61 | 63 | 74 | 82 | 82 | 6.0 | 1.22 | 70.41 | 31.765 | 96.6 | 95.589 |
| B-2 | 81.3 | 01:21:15 | 591.330 | 1.40 | 0.449 | 0.45 | 180 | 242 | 244 | 62 | 65 | 75 | 83 | 83 | 6.0 | 1.18 | 67.92 | 39.950 | 96.8 | 95.998 |
| B-3 | 101.8 | 01:41:45 | 599.890 | 1.30 | 0.449 | 0.45 | 181 | 245 | 246 | 63 | 66 | 76 | 85 | 85 | 6.0 | 1.14 | 65.50 | 47.457 | 96.7 | 95.500 |
| C-1 | 121.5 | 02:01:30 | 607.770 | 1.50 | 0.449 | 0.45 | 183 | 246 | 257 | 64 | 67 | 77 | 84 | 84 | 6.0 | 1.22 | 70.47 | 55.837 | 96.2 | 95.636 |
| C-2 | 142.8 | 02:22:45 | 616.550 | 1.40 | 0.449 | 0.45 | 182 | 247 | 254 | 60 | 62 | 73 | 80 | 80 | 6.0 | 1.18 | 68.02 | 62.788 | 94.7 | 94.038 |
| C-3 | 163.3 | 02:43:15 | 623.780 | 1.30 | 0.449 | 0.45 | 183 | 245 | 255 | 62 | 63 | 73 | 81 | 81 | 6.0 | 1.14 | 65.60 | 69.074 | 93.5 | 92.288 |
| D-1 | 183.0 | 03:03:00 | 630.330 | 1.50 | 0.449 | 0.45 | 185 | 245 | 254 | 63 | 65 | 74 | 79 | 79 | 6.0 | 1.22 | 70.58 | 76.684 | 92.6 | 91.795 |
| D-2 | 204.3 | 03:24:15 | 638.230 | 1.30 | 0.449 | 0.45 | 183 | 254 | 255 | 64 | 66 | 76 | 78 | 78 | 6.0 | 1.14 | 65.60 | 82.928 | 91.7 | 90.517 |
| D-3 | 224.0 | 03:44:00 | 644.700 | 1.40 | 0.449 | 0.45 | 184 | 255 | 256 | 66 | 68 | 78 | 78 | 78 | 6.0 | 1.18 | 68.13 | 89.973 | 91.1 | 89.973 |
| Last Pt | 244.5 | 04:04:30 | 652.000 | | | | | | | | | | | | | | | | | |
| **Final Val** | 244.5 | 04:04:30 | 652.000 | | | | | | | | | | | **Max Vac** | 6.0 | **Final Values** | | 89.973 | 91.1 | |
| **Average Values** | | | | 1.38 | | 0.45 | 182 | 249 | 253 | 61 | 64 | 74 | 80 | 80 | | 1.18 | 67.61 | | | |
| | | | | | | | | | | | | | 80 | | | | | | | |

| **Actual Actual Nozzle Diameter ($D_{na}$)** | **DP to DP to DH Iso Factor (K)** | **Point-by-point Point-by-point Meter Volume ($V_m$)$_{std}$** | **Point-by-point Percent IsoKinetic (I)** | **Point Point Weighted Average Isokinetics** |
|---|---|---|---|---|
| in | | dscf | % | ($V_m$)$_{std}$ x (I) |
| 0.157 | 0.40 | 7.754 | 99.5 | 771.8 |
| 0.157 | 0.40 | 7.817 | 93.2 | 728.2 |
| 0.157 | 0.40 | 8.004 | 102.9 | 823.6 |
| 0.157 | 0.40 | 8.190 | 91.0 | 745.6 |
| 0.157 | 0.40 | 8.185 | 97.5 | 797.7 |
| 0.157 | 0.40 | 7.507 | 96.4 | 723.4 |
| 0.157 | 0.40 | 8.380 | 93.2 | 781.1 |
| 0.157 | 0.40 | 6.951 | 82.9 | 576.3 |
| 0.157 | 0.40 | 6.286 | 80.8 | 508.0 |
| 0.157 | 0.40 | 7.610 | 84.8 | 645.2 |
| 0.157 | 0.40 | 6.244 | 80.3 | 501.2 |
| 0.157 | 0.40 | 7.045 | 84.2 | 592.8 |
| | | | | |
| 0.157 | 0.40 | 89.973 | | |

**RM 201A Calculations**

| **Trav. Point Trav. Point Estimated Dwell Times ($t_1$), ($t_n$)** | **First Point First Point Dwell Times Prelim. Trav. ($t_1$)** | **First Point First Point Vel. Head Current Trav. ($\Delta p_{RM2}$)** | **Subs. Point Subs. Point Dwell Times Current Trav. ($t_n$)** | **Velocity Velocity Head Current Trav. ($\Delta p_{201A}$)** | **Violations** |
|---|---|---|---|---|---|
| min | min | in $H_2O$ | min | in $H_2O$ | |
| 19.75 | 19.68 | 1.30 | | 1.30 | 0 |
| 20.50 | 20.42 | 1.40 | 20.42 | 1.40 | 0 |
| 19.75 | 19.68 | 1.30 | 19.68 | 1.30 | 0 |
| 21.25 | 21.14 | 1.50 | | 1.50 | 0 |
| 20.50 | 20.42 | 1.40 | 20.42 | 1.40 | 0 |
| 19.75 | 19.68 | 1.30 | 19.68 | 1.30 | 0 |
| 21.25 | 21.14 | 1.50 | | 1.50 | 0 |
| 20.50 | 20.42 | 1.40 | 20.42 | 1.40 | 0 |
| 19.75 | 19.68 | 1.30 | 19.68 | 1.30 | 0 |
| 21.25 | 21.14 | 1.50 | | 1.50 | 0 |
| 19.75 | 19.68 | 1.30 | 19.68 | 1.30 | 0 |
| 20.50 | 20.42 | 1.40 | 20.42 | 1.40 | 0 |
| | | | | | |

Z must be between 0.99 and 1.01, but the initial calculation is based on assumptions of the Cunniham Correction Factor and the Reynolds Number. In cases where your Z value is not between the limits and is producing an error, you need to run a second iteration based on the re-calculated numbers. To do this, copy the value in "Recalculated Cunninham, C =" [BH189] and do a "paste special value only" into "Calculated Cunninham, C =" [BH174]. This sets the initially calculated C equal to the C determined during this test run. At this point the program may recognize the second iteration and your error may go away. If it doesn't it is probably because it is having difficulties deciding between the Reynolds number at the threshold.

| | | | |
|---|---|---|---|
| | Stack Gas Viscosity (μs) | 198.41 | μP |
| | Cyclone Flow Rate ($Q_a$) | 0.49 | ft³/min |
| | Dia. of 50% Prob. ($D_{50}$) CI | 10.36 | μm |
| >> | Calculated Cunninham, C | 1.08 | |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{re}$<3162) | 10.28 | μm |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{re}$≥3162) | | μm |
| | Middle of Zone Dia. ($D_{50T}$) CI | 10.64 | μm |
| | Sampling Rate ($PM_{10}$ and $PM_{2.5}$ Cyc.) | 0.48 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$<3162) | 2.28 | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{re}$<3162) | 0.49 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$≥3162) | | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{re}$≥3162) | | dscfm |
| | Actual Test Run C (2.5 μm) | 1.07 | |
| | Actual Test Run $N_{RE}$ | 2831.81 | |
| | Actual Particle Cut Diameter for CI | 10.36 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$<3162) | 2.29 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{re}$≥3162) | | μm |
| << | Recalculated Cunninham, C = | 1.08 | |
| | Recalculated $D_{50-1}$ for $C_{IV}$ = | 2.28 | |
| >> | Z (limits 0.99 to 1.01) = | 1.00 | |
| | Isokinetics (I) (80 to 120%) = | 91.09 | % |
| | No. Sampling Pts. Outside Δp = | 0 | |
| | Sample Nozzle Diameter = | 0.157 | in |
| | $\Delta p_{min}$ | 0.559 | in $H_2O$ |
| | $\Delta p_{max}$ | 1.670 | in $H_2O$ |

Notes:

## METHOD 201A (FRONT) AND 202 (BACK) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| | |
|---|---|
| **Date** | 04/17/20 |
| **Operator** | Rob White |
| **Run Number** | PM U-00003 Base+DB-2 |

| **Filter #** |
|---|
| 19031826 |
| PM U-00003 Base+DB-2-CPM |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | 0.7720 | 5266/10 |
| **Average Stack Temp** | ($t_s$) | 177.2 | °F |
| **Average Meter Temp** | ($t_m$) | 69.8 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.846 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | 1.18 | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | 9.88 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.29 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.37 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | 0.40 | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | $ft^3$/min@ | 15.0 | in Hg for | 60.0 | sec ≥60] |
| PASS | **Post** | 0.000 | $ft^3$/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | 0.000 | in $H_2O$ | 3.7 | in $H_2O$ for | 15.0 | sec [≥15] |
| PASS | **Pre (-)** | 0.000 | in $H_2O$ | 4.0 | in $H_2O$ for | 15.0 | sec [≥15] |
| | **Post (+)** | 0.000 | in $H_2O$ | 3.7 | in $H_2O$ for | 15.0 | sec [≥15] |
| | **Post (-)** | 0.000 | in $H_2O$ | 4.3 | in $H_2O$ for | 15.0 | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | Samp-cp-0033 | | |
| **Meter Cal Factor** | (Y) | 0.978 | |
| **Nozzle Number** | 4a | | |
| **Average Nozzle Diameter** | ($D_{ns}$) | 0.1570 | in |
| **Suggested Nozzle Diameter** | ($D_n$) | 0.1480 | in |
| **Probe Number** | SAMP-HP-0138 | | in |
| **Probe Length** | 120 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | SAMP-BH-0039 | | |
| **Impinger Case Number** | SAMP-SBC-0099 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.21 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | -0.96 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.14 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.35 | in Hg |

| **Nozzle Measurements** | | | **ID: 4a** | |
|---|---|---|---|---|
| **Pre** | 0.156 | 0.157 | 0.158 | **PASS** |
| **Post** | 0.156 | 0.157 | 0.158 | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 04:15 | **End** | 08:34 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 379.7 | 578.8 | 649.1 | 963.4 | | | | |
| **Post** | 564.8 | 578.8 | 650.0 | 988.0 | | | | |

| | | | | |
|---|---|---|---|---|
| **Wash Volumes** | | | | ml |
| | | | | ml |

| **Identification Nos.** | | Samp-cp-0033 | Samp-cp-0033 | Samp-cp-0033 | | | SAMP-HP-0138 | SAMP-HP-0138 | SAMP-BH-0039 | SAMP-SBC-0099 | 8082 | 1026 | Samp-cp-0033 | | Samp-cp-0033 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head ($\Delta p$)** | **Desired Orifice ΔH ($\Delta H_a$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (248±25°F)** | **Filter Temp (248±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤85°F)** | **CPM Filter Temp (76.5±8.5°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | $ft^3$ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 657.110 | 1.30 | 0.449 | 0.45 | 178 | 251 | 257 | 38 | 40 | 78 | 47 | 47 | 5.0 | 1.14 | 65.22 | 7.670 | 98.3 | 95.533 |
| A-2 | 19.8 | 00:19:45 | 664.560 | 1.50 | 0.449 | 0.45 | 177 | 265 | 258 | 40 | 49 | 76 | 62 | 62 | 5.0 | 1.22 | 70.00 | 16.129 | 95.9 | 96.775 |
| A-3 | 41.0 | 00:41:00 | 673.020 | 1.40 | 0.449 | 0.45 | 177 | 251 | 263 | 43 | 50 | 77 | 64 | 64 | 5.0 | 1.18 | 67.63 | 23.959 | 95.0 | 95.834 |
| B-1 | 61.5 | 01:01:30 | 680.880 | 1.30 | 0.449 | 0.45 | 178 | 253 | 266 | 45 | 51 | 77 | 64 | 64 | 5.0 | 1.14 | 65.22 | 31.937 | 96.8 | 96.697 |
| B-2 | 81.3 | 01:21:15 | 688.890 | 1.50 | 0.449 | 0.45 | 176 | 254 | 254 | 48 | 54 | 78 | 70 | 70 | 6.0 | 1.22 | 69.95 | 40.890 | 97.3 | 98.135 |
| B-3 | 102.5 | 01:42:30 | 697.980 | 1.40 | 0.449 | 0.45 | 175 | 255 | 257 | 49 | 56 | 78 | 74 | 74 | 6.0 | 1.18 | 67.52 | 47.849 | 95.2 | 95.698 |
| C-1 | 123.0 | 02:03:00 | 705.100 | 1.50 | 0.449 | 0.45 | 178 | 247 | 253 | 52 | 57 | 78 | 77 | 77 | 6.0 | 1.22 | 70.06 | 55.848 | 94.3 | 95.242 |
| C-2 | 144.3 | 02:24:15 | 713.330 | 1.30 | 0.449 | 0.45 | 177 | 251 | 253 | 54 | 58 | 78 | 78 | 78 | 6.0 | 1.14 | 65.17 | 62.514 | 93.3 | 93.770 |
| C-3 | 164.0 | 02:44:00 | 720.200 | 1.40 | 0.449 | 0.45 | 178 | 256 | 254 | 55 | 58 | 77 | 76 | 76 | 6.0 | 1.18 | 67.68 | 69.301 | 92.1 | 92.401 |
| D-1 | 184.5 | 03:04:30 | 727.170 | 1.50 | 0.449 | 0.45 | 176 | 249 | 247 | 52 | 61 | 76 | 75 | 75 | 6.0 | 1.22 | 69.95 | 76.726 | 91.1 | 91.735 |
| D-2 | 205.8 | 03:25:45 | 734.780 | 1.40 | 0.449 | 0.45 | 177 | 250 | 250 | 54 | 62 | 78 | 76 | 76 | 6.0 | 1.18 | 67.63 | 83.533 | 90.3 | 90.824 |
| D-3 | 226.3 | 03:46:15 | 741.770 | 1.30 | 0.449 | 0.45 | 179 | 256 | 246 | 53 | 62 | 77 | 74 | 74 | 6.0 | 1.14 | 65.27 | 90.599 | 90.3 | 90.599 |
| Last Pt | 246.0 | 04:06:00 | 749.000 | | | | | | | | | | | | | | | | | |
| **Final Val** | 246.0 | 04:06:00 | 749.000 | | | | | | | | | | | **Max Vac** | 6.0 | **Final Values** | | 90.599 | 90.3 | |
| **Average Values** | | | | 1.40 | | 0.45 | 177 | 253 | 255 | 49 | 55 | 77 | 70 | 70 | | 1.18 | 67.61 | | | |
| | | | | | | | | | | | | | 70 | | | | | | | |

| **Actual Actual Nozzle Diameter ($D_{na}$)** | **DP to DP to DH Iso Factor (K)** | **Point-by-point Point-by-point Meter Volume ($V_m$)$_{std}$** | **Point-by-point Percent IsoKinetic (I)** | **Point Point Weighted Average Isokinetics** |
|---|---|---|---|---|
| in | | dscf | % | ($V_m$)$_{std}$ x (I) |
| 0.157 | 0.40 | 7.670 | 98.3 | 754.1 |
| 0.157 | 0.40 | 8.459 | 93.7 | 793.0 |
| 0.157 | 0.40 | 7.829 | 93.1 | 728.9 |
| 0.157 | 0.40 | 7.979 | 102.3 | 816.0 |
| 0.157 | 0.40 | 8.952 | 99.1 | 887.4 |
| 0.157 | 0.40 | 6.959 | 82.6 | 575.0 |
| 0.157 | 0.40 | 8.000 | 88.7 | 709.7 |
| 0.157 | 0.40 | 6.665 | 85.4 | 569.0 |
| 0.157 | 0.40 | 6.787 | 80.8 | 548.2 |
| 0.157 | 0.40 | 7.425 | 82.2 | 610.4 |
| 0.157 | 0.40 | 6.807 | 80.9 | 550.9 |
| 0.157 | 0.40 | 7.067 | 90.7 | 640.7 |
| | | | | |
| 0.157 | 0.40 | 90.599 | | |

| **RM 201A Calculations** | | | | | | |
|---|---|---|---|---|---|---|
| **Trav. Point Trav. Point Estimated Dwell Times ($t_1$), ($t_n$)** | **First Point First Point Dwell Times Prelim. Trav. ($t_1$)** | **First Point Vel. Head Current Trav. ($\Delta p_{RM2}$)** | **Subs. Point Dwell Times Current Trav. ($t_n$)** | **Velocity Velocity Head Current Trav. ($\Delta p_{201A}$)** | **Violations** |
| min | min | in $H_2O$ | min | in $H_2O$ | |
| 19.75 | 19.68 | 1.30 | | 1.30 | 0 |
| 21.25 | 21.14 | 1.50 | 21.14 | 1.50 | 0 |
| 20.50 | 20.42 | 1.40 | 20.42 | 1.40 | 0 |
| 19.75 | 19.68 | 1.30 | | 1.30 | 0 |
| 21.25 | 21.14 | 1.50 | 21.14 | 1.50 | 0 |
| 20.50 | 20.42 | 1.40 | 20.42 | 1.40 | 0 |
| 21.25 | 21.14 | 1.50 | | 1.50 | 0 |
| 19.75 | 19.68 | 1.30 | 19.68 | 1.30 | 0 |
| 20.50 | 20.42 | 1.40 | 20.42 | 1.40 | 0 |
| 21.25 | 21.14 | 1.50 | | 1.50 | 0 |
| 20.50 | 20.42 | 1.40 | 20.42 | 1.40 | 0 |
| 19.75 | 19.68 | 1.30 | 19.68 | 1.30 | 0 |
| | | | | | |

Z must be between 0.99 and 1.01, but the initial calculation is based on assumptions of the Cunniham Correction Factor and the Reynolds Number. In cases where your Z value is not between the limits and is producing an error, you need to run a second iteration based on the re-calculated numbers. To do this, copy the value in "Recalculated Cunninham, C =" [BH189] and do a "paste special value only" into "Calculated Cunninham, C =" [BH174]. This sets the initially calculated C equal to the C determined during this test run. At this point the program may recognize the second iteration and your error may go away. If it doesn't it is probably because it is having difficulties deciding between the Reynolds number at the threshold.

| | | | |
|---|---|---|---|
| | Stack Gas Viscosity (μs) | 196.82 | μP |
| | Cyclone Flow Rate ($Q_s$) | 0.49 | $ft^3$/min |
| | Dia. of 50% Prob. ($D_{50}$) CI | 10.34 | μm |
| >> | Calculated Cunninham, C | 1.08 | |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{Re}$<3162) | 10.30 | μm |
| | Lower Limit Dia. ($D_{50LL}$) CI ($N_{Re}$≥3162) | | μm |
| | Middle of Zone Dia. ($D_{50T}$) CI | 10.65 | μm |
| | Sampling Rate ($PM_{10}$ and $PM_{2.5}$ Cyc.) | 0.47 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$<3162) | 2.27 | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{Re}$<3162) | 0.49 | dscfm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$≥3162) | | μm |
| | Sampling Rate ($PM_{2.5}$ Cyc., $N_{Re}$≥3162) | | dscfm |
| | Actual Test Run C (2.5 μm) | 1.07 | |
| | Actual Test Run $N_{RE}$ | 2862.75 | |
| | Actual Particle Cut Diameter for CI | 10.34 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$<3162) | 2.28 | μm |
| | Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$≥3162) | | μm |
| << | Recalculated Cunninham, C = | 1.08 | |
| | Recalculated $D_{50-1}$ for $C_{IV}$ = | 2.27 | |
| >> | Z (limits 0.99 to 1.01) = | 1.00 | |
| | Isokinetics (I) (80 to 120%) = | 90.33 | % |
| | No. Sampling Pts. Outside Δp = | 0 | |
| | Sample Nozzle Diameter = | 0.157 | in |
| | $\Delta p_{min}$ | 0.559 | in $H_2O$ |
| | $\Delta p_{max}$ | 1.670 | in $H_2O$ |

Notes:

## METHOD 201A (FRONT) AND 202 (BACK) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| | |
|---|---|
| **Date** | 04/17/20 |
| **Operator** | Rob White |
| **Run Number** | PM U-00003 Base+DB-3 |

| **Filter #** |
|---|
| 18081503 |
| PM U-00003 Base+DB-3-CPM |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | 0.7720 | 5266/10 |
| **Average Stack Temp** | ($t_s$) | 177.8 | °F |
| **Average Meter Temp** | ($t_m$) | 74.5 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.846 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | 1.19 | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | 10.00 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.29 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.37 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | 0.40 | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | $ft^3$/min@ | 15.0 | in Hg for | 60.0 | sec (≥60) |
| PASS | **Post** | 0.000 | $ft^3$/min@ | 15.0 | in Hg for | 60.0 | sec (≥60) |
| **Pitot** | **Pre (+)** | 0.00 | in $H_2O$ | 3.7 | in $H_2O$ for | 15.0 | sec (≥15) |
| PASS | **Pre (-)** | 0.00 | in $H_2O$ | 4.0 | in $H_2O$ for | 15.0 | sec (≥15) |
| | **Post (+)** | 0.00 | in $H_2O$ | 3.6 | in $H_2O$ for | 15.0 | sec (≥15) |
| | **Post (-)** | 0.00 | in $H_2O$ | 4.2 | in $H_2O$ for | 15.0 | sec (≥15) |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | Samp-cp-0033 | | |
| **Meter Cal Factor** | (Y) | 0.978 | |
| **Nozzle Number** | 4a | | |
| **Average Nozzle Diameter** | ($D_{ns}$) | 0.1570 | in |
| **Suggested Nozzle Diameter** | ($D_n$) | 0.1473 | in |
| **Probe Number** | SAMP-HP-0138 | | in |
| **Probe Length** | 120 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | SAMP-BH-0039 | | |
| **Impinger Case Number** | SAMP-SBC-0099 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.22 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | -0.96 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.15 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.36 | in Hg |

| **Nozzle Measurements** | | | **ID: 4a** | |
|---|---|---|---|---|
| **Pre** | 0.156 | 0.157 | 0.158 | **PASS** |
| **Post** | 0.156 | 0.157 | 0.158 | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 09:35 | **End** | 14:03 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 363.8 | 584.4 | 722.8 | 875.4 | | | | |
| **Post** | 544.3 | 586.7 | 729.0 | 901.3 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | Samp-cp-0033 | Samp-cp-0033 | Samp-cp-0033 | | | SAMP-HP-0138 | SAMP-HP-0138 | SAMP-BH-0039 | SAMP-SBC-0099 | 1048 | 1018 | Samp-cp-0033 | | Samp-cp-0033 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head ($\Delta p$)** | **Desired Orifice ΔH ($\Delta H_a$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (248±25°F)** | **Filter Temp (248±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤85°F)** | **CPM Filter Temp (76.5±8.5°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | $ft^3$ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 756.100 | 1.30 | 0.449 | 0.45 | 175 | 249 | 257 | 55 | 54 | 78 | 65 | 65 | 5.0 | 1.14 | 65.07 | 7.966 | 102.0 | 99.528 |
| A-2 | 19.8 | 00:19:45 | 764.110 | 1.50 | 0.449 | 0.45 | 178 | 254 | 243 | 56 | 60 | 78 | 65 | 65 | 6.0 | 1.22 | 70.07 | 16.589 | 98.7 | 99.837 |
| A-3 | 41.0 | 00:41:00 | 772.780 | 1.40 | 0.449 | 0.45 | 176 | 243 | 245 | 57 | 63 | 77 | 66 | 66 | 6.0 | 1.18 | 67.58 | 24.768 | 98.2 | 99.375 |
| B-1 | 61.5 | 01:01:30 | 781.020 | 1.40 | 0.449 | 0.45 | 177 | 246 | 243 | 59 | 64 | 78 | 70 | 70 | 6.0 | 1.18 | 67.64 | 32.610 | 97.1 | 98.129 |
| B-2 | 82.0 | 01:22:00 | 788.980 | 1.50 | 0.449 | 0.45 | 179 | 254 | 255 | 60 | 63 | 79 | 73 | 73 | 6.0 | 1.22 | 70.12 | 41.123 | 96.5 | 98.277 |
| B-3 | 103.3 | 01:43:15 | 797.670 | 1.30 | 0.449 | 0.45 | 180 | 254 | 242 | 61 | 65 | 77 | 77 | 77 | 6.0 | 1.14 | 65.33 | 47.501 | 94.6 | 95.292 |
| C-1 | 123.0 | 02:03:00 | 804.230 | 1.50 | 0.449 | 0.45 | 179 | 254 | 247 | 64 | 67 | 78 | 78 | 78 | 6.0 | 1.22 | 70.12 | 55.673 | 94.0 | 95.233 |
| C-2 | 144.3 | 02:24:15 | 812.650 | 1.40 | 0.449 | 0.45 | 177 | 257 | 243 | 61 | 63 | 77 | 78 | 78 | 6.0 | 1.18 | 67.64 | 63.243 | 93.5 | 94.721 |
| C-3 | 164.8 | 02:44:45 | 820.450 | 1.50 | 0.449 | 0.45 | 179 | 253 | 245 | 63 | 65 | 78 | 80 | 80 | 6.0 | 1.22 | 70.12 | 70.534 | 92.3 | 93.571 |
| D-1 | 186.0 | 03:06:00 | 827.990 | 1.30 | 0.449 | 0.45 | 178 | 254 | 254 | 62 | 66 | 77 | 80 | 80 | 7.0 | 1.14 | 65.23 | 77.089 | 91.6 | 92.451 |
| D-2 | 205.8 | 03:25:45 | 834.770 | 1.50 | 0.449 | 0.45 | 177 | 251 | 257 | 63 | 67 | 78 | 81 | 81 | 7.0 | 1.22 | 70.01 | 84.858 | 91.1 | 92.241 |
| D-3 | 227.0 | 03:47:00 | 842.820 | 1.30 | 0.449 | 0.45 | 178 | 253 | 256 | 64 | 68 | 78 | 81 | 81 | 7.0 | 1.14 | 65.23 | 91.305 | 90.5 | 91.305 |
| Last Pt | 246.8 | 04:06:45 | 849.500 | | | | | | | | | | | | | | | | | |
| **Final Val** | 246.8 | 04:06:45 | 849.500 | | | | | | | | | | | **Max Vac** | 7.0 | **Final Values** | | 91.305 | 90.5 | |
| **Average Values** | | | | 1.41 | | 0.45 | 178 | 252 | 249 | 60 | 64 | 78 | 75 | 75 | | 1.19 | 67.85 | | | |
| | | | | | | | | | | | | | 75 | | | | | | | |

| **Actual Nozzle Diameter ($D_{na}$)** | **DP to Actual DP to DH Iso Factor (K)** | **Point-by-point Meter Volume ($V_m$)$_{std}$** | **Point-by-point Percent IsoKinetic (I)** | **Point Weighted Average Isokinetics** |
|---|---|---|---|---|
| in | | dscf | % | ($V_m$)$_{std}$ x (I) |
| 0.157 | 0.40 | 7.966 | 102.0 | 812.2 |
| 0.157 | 0.40 | 8.623 | 95.7 | 825.3 |
| 0.157 | 0.40 | 8.179 | 97.3 | 795.5 |
| 0.157 | 0.40 | 7.842 | 93.3 | 731.8 |
| 0.157 | 0.40 | 8.513 | 94.6 | 805.0 |
| 0.157 | 0.40 | 6.378 | 82.0 | 522.7 |
| 0.157 | 0.40 | 8.172 | 90.8 | 741.8 |
| 0.157 | 0.40 | 7.570 | 90.1 | 681.9 |
| 0.157 | 0.40 | 7.291 | 81.0 | 590.4 |
| 0.157 | 0.40 | 6.556 | 84.1 | 551.3 |
| 0.157 | 0.40 | 7.769 | 86.2 | 669.5 |
| 0.157 | 0.40 | 6.447 | 82.7 | 533.2 |
| | | | | |
| 0.157 | 0.40 | 91.305 | | |

**RM 201A Calculations**

| **Trav. Point Estimated Dwell Times ($t_1$), ($t_n$)** | **First Point Dwell Times ($t_1$)** | **First Point Vel. Head Current Trav. ($\Delta p_{RM2}$)** | **Subs. Point Dwell Times Current Trav. ($t_n$)** | **Velocity Velocity Head Current Trav. ($\Delta p_{201A}$)** | **Violations** |
|---|---|---|---|---|---|
| min | min | in $H_2O$ | min | in $H_2O$ | |
| 19.75 | 19.68 | 1.30 | | 1.30 | 0 |
| 21.25 | 21.14 | 1.50 | 21.14 | 1.50 | 0 |
| 20.50 | 20.42 | 1.40 | 20.42 | 1.40 | 0 |
| 20.50 | 20.42 | 1.40 | | 1.40 | 0 |
| 21.25 | 21.14 | 1.50 | 21.14 | 1.50 | 0 |
| 19.75 | 19.68 | 1.30 | 19.68 | 1.30 | 0 |
| 21.25 | 21.14 | 1.50 | | 1.50 | 0 |
| 20.50 | 20.42 | 1.40 | 20.42 | 1.40 | 0 |
| 21.25 | 21.14 | 1.50 | 21.14 | 1.50 | 0 |
| 19.75 | 19.68 | 1.30 | | 1.30 | 0 |
| 21.25 | 21.14 | 1.50 | 21.14 | 1.50 | 0 |
| 19.75 | 19.68 | 1.30 | 19.68 | 1.30 | 0 |
| | | | | | |

| | | |
|---|---|---|
| Stack Gas Viscosity (μs) | 196.86 | μP |
| Cyclone Flow Rate ($Q_s$) | 0.49 | $ft^3$/min |
| Dia. of 50% Prob. ($D_{50}$) CI | 10.30 | μm |
| >> Calculated Cunninham, C | 1.08 | |
| Lower Limit Dia. ($D_{50LL}$) CI ($N_{Re}$<3162) | 10.30 | μm |
| Lower Limit Dia. ($D_{50LL}$) CI ($N_{Re}$≥3162) | | μm |
| Middle of Zone Dia. ($D_{50T}$) CI | 10.65 | μm |
| Sampling Rate ($PM_{10}$ and $PM_{2.5}$ Cyc.) | 0.47 | dscfm |
| Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$<3162) | 2.25 | μm |
| Sampling Rate ($PM_{2.5}$ Cyc., $N_{Re}$<3162) | 0.49 | dscfm |
| Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$≥3162) | | μm |
| Sampling Rate ($PM_{2.5}$ Cyc., $N_{Re}$≥3162) | | dscfm |
| Actual Test Run C (2.5 μm) | 1.07 | |
| Actual Test Run $N_{RE}$ | 2877.55 | |
| Actual Particle Cut Diameter for CI | 10.30 | μm |
| Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$<3162) | 2.26 | μm |
| Dia. of 50% Prob. ($D_{50}$) $C_{IV}$ ($N_{Re}$≥3162) | | μm |
| << Recalculated Cunninham, C = | 1.08 | |
| Recalculated $D_{50-1}$ for $C_{IV}$ = | 2.25 | |
| >> Z (limits 0.99 to 1.01) = | 1.00 | |
| Isokinetics (I) (80 to 120%) = | 90.47 | % |
| No. Sampling Pts. Outside Δp = | 0 | |
| Sample Nozzle Diameter = | 0.157 | in |
| $\Delta p_{min}$ | 0.559 | in $H_2O$ |
| $\Delta p_{max}$ | 1.670 | in $H_2O$ |

Z must be between 0.99 and 1.01, but the initial calculation is based on assumptions of the Cunniham Correction Factor and the Reynolds Number. In cases where your Z value is not between the limits and is producing an error, you need to run a second iteration based on the re-calculated numbers. To do this, copy the value in "Recalculated Cunninham, C =" [BH189] and do a "paste special value only" into "Calculated Cunninham, C =" [BH174]. This sets the initially calculated C equal to the C determined during this test run. At this point the program may recognize the second iteration and your error may go away. If it doesn't it is probably because it is having difficulties deciding between the Reynolds number at the threshold.

Notes:

# EMISSION DATA RECORDS

## Reference Method Data
## Base+DB Load
## SAM

## METHOD 8A (CONTROLLED CONDENSATE) SOURCE SAMPLING TITLE PAGE

| Source Information | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base+DB |
| **Fuel Type** | Gas, Natural |

| Test Information | | | |
|---|---|---|---|
| **Project #** | | bec-19-cricketvalley.ny-start#3 | |
| **Operator** | | GT | |
| **Date for Preliminary Run** | (mm/dd/yy) | 04/16/20 | |
| **Standard Temperature** | | 68 | °F |
| **Standard Pressure** | | 29.92 | in Hg |
| **Required Sample Vol.** | 10 L/min | 10.6 | scf |
| **Run Duration** | 8a, 2.4.1.3 | 120 | minutes |
| **Unit Number** | | U-00003 | |
| **Base Run Number** | | SAM U-00003 Base+DB | |
| **Number of Ports Available** | | 4 | |
| **Number of Ports Used** | | 1 | |
| **Port Inside Diameter** | | 6.00 | in |
| **Stack Shape** | | Circular | |

| Test Equipment Information | | | | | |
|---|---|---|---|---|---|
| **Run** | | **1** | **2** | **3** | |
| **Test Date** | (mm/dd/yy) | 04/16/20 | 04/17/20 | 04/17/20 | |
| **Load** | | Base | Base | Base | % or w/DB |
| **Fuel F-Factor** | | 8641.42 | 8663.09 | 8663.09 | dscf/MMBtu |
| **Meter Box Number** | from ACS | samp-cp-0030 | samp-cp-0030 | samp-cp-0030 | |
| **Meter Calibration Factor** | (Y) | 0.974 | 0.974 | 0.974 | |
| **Orifice Meter Coefficient** | ($\Delta H_@$) | 1.878 | 1.878 | 1.878 | in $H_2O$ |
| **Non-Console Manometer Used** | | No | No | No | |
| **Probe Number** | from ACS | SAMP-HP-0138 | SAMP-HP-0138 | SAMP-HP-0138 | |
| **Probe Length** | | 72.0 | 72.0 | 72.0 | in |
| **(SS, Glass …. ) Liner Material** | from list | glass | glass | glass | |
| **Sample Case / Oven Number** | from ACS | samp-bh-0013 | samp-bh-0013 | samp-bh-0013 | |
| **Impinger Case Number** | from ACS | samp-bc-0032 | samp-bc-0032 | samp-bc-0032 | |

| Testing Company Information | |
|---|---|
| **Company Name** | Air Hygiene International, Inc. (Tulsa, Oklahoma) |
| **Address** | 1600 W Tacoma Street |
| **City, State Zip** | Broken Arrow, Oklahoma 74012 |
| **Project Manager** | Rob White |
| **Phone Number** | (918) 307-8865 |
| **Fax Number** | (918) 307-9131 |

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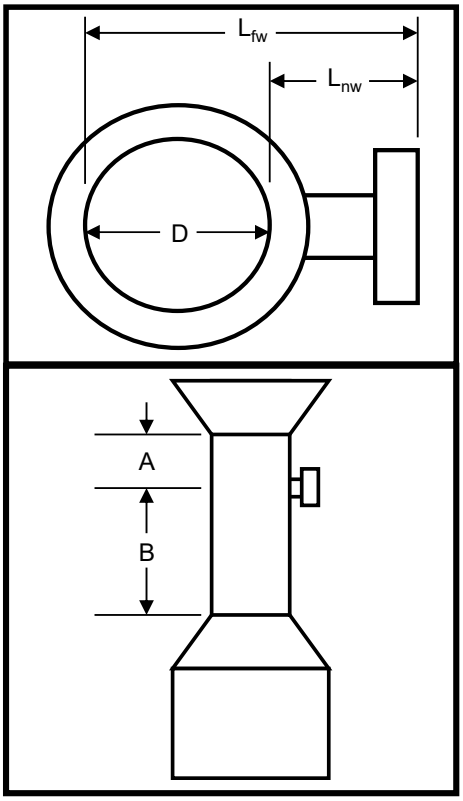
## METHOD 1 - SAMPLE AND VELOCITY TRAVERSES FOR CIRCULAR SOURCES

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Date** | 04/16/20 |
| **Sampling Location** | U-00003 Base+DB | **Stack Type** | Circular |
| **Operator** | GT | **Ports Available** | 4 |
| **Project #** | bec-19-cricketvalley.ny-start#3 | **Ports Used** | 1 |
| **Stack Size** | Large (>24 inch diameter) | **Port ID (inches)** | 6.00 |

| **Circular Stack or Duct Diameter** | | | |
|---|---|---|---|
| **Distance to Far Wall of Stack** | ($L_{fw}$) | 236.00 | in |
| **Distance to Near Wall of Stack** | ($L_{nw}$) | 8.00 | in |
| **Diameter of Stack** | (D) | 228.00 | in |
| **Area of Stack** | ($A_s$) | 283.53 | ft² |

| **Distance from Port to Disturbances** | | | |
|---|---|---|---|
| **Distance Upstream** | (A) | 200.40 | in |
| **Diameters Upstream** | ($A_D$) | 0.88 | diameters |
| **Distance Downstream** | (B) | 850.00 | in |
| **Diameters Downstream** | ($B_D$) | 3.73 | diameters |




| **Number of Traverse Points Required** | | | |
|---|---|---|---|
| **Diameters to Flow Disturbance** | | **Minimum Number of[1] Traverse Points** | |
| **Down Stream** | **Up Stream** | **Particulate Points** | **Velocity Points** |
| 2.00-4.99 | 0.50-1.24 | 24 | 16 |
| 5.00-5.99 | 1.25-1.49 | 20 | 16 |
| 6.00-6.99 | 1.50-1.74 | 16 | 12 |
| 7.00-7.99 | 1.75-1.99 | 12 | 12 |
| >= 8.00 | >=2.00 | 8 or 12[2] | 8 or 12[2] |
| **Upstream Spec** | | 24 | 16 |
| **Downstream Spec** | | 24 | 16 |
| **Traverse Pts Required** | | 24 | 16 |

[1] Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.

[2] 8 for Circular Stacks 12 to 24 inches
12 for Circular Stacks over 24 inches

◉ Method 1 Trav

○ 12 Point PM Trav (M201a ONLY)

○ Velocity

| **Number of Traverse Points Used** | | | |
|---|---|---|---|
| 1 | **Ports by** | 1 | **Across** |
| 1 | **Pts Used** | 1 | **Required** |

| Location of Traverse Points in Circular Stacks | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Traverse Point | (Fraction of Stack Dimension from Inside Wall to Traverse Point) Number of Traverse Points Across the Stack | | | | | | | | |
| Number | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 |
| 1 | .146 | .067 | .044 | .032 | .026 | .021 | .018 | .016 | .014 |
| 2 | .854 | .250 | .146 | .105 | .082 | .067 | .057 | .049 | .044 |
| 3 | | .750 | .296 | .194 | .146 | .118 | .099 | .085 | .075 |
| 4 | | .933 | .704 | .323 | .226 | .177 | .146 | .125 | .109 |
| 5 | | | .854 | .677 | .342 | .250 | .201 | .169 | .146 |
| 6 | | | .956 | .806 | .658 | .356 | .269 | .220 | .188 |
| 7 | | | | .895 | .774 | .644 | .366 | .283 | .236 |
| 8 | | | | .968 | .854 | .750 | .634 | .375 | .296 |
| 9 | | | | | .918 | .823 | .731 | .625 | .382 |
| 10 | | | | | .974 | .882 | .799 | .717 | .618 |
| 11 | | | | | | .933 | .854 | .780 | .704 |
| 12 | | | | | | .979 | .901 | .831 | .764 |

| **Traverse Point Locations** | | | |
|---|---|---|---|
| **Traverse Point Number** | **Fraction of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
| | | in | in |
| **1** | 0.275 | 62 6/8 | 70 6/8 |
| **2** | | | |
| **3** | | | |
| **4** | | | |
| **5** | | | |
| **6** | | | |
| **7** | | | |
| **8** | | | |
| **9** | | | |

## METHOD 3a - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

| | | | | | |
|---|---|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Preliminary Run Date** | 04/16/20 | | |
| **Sampling Location** | U-00003 Base+DB | **Operator** | GT | | |
| **Project #** | bec-19-cricketvalley.ny-start#3 | **# of Ports Used** | 1 (gas probe) | | |
| **Fuel Type** | Gas, Natural | **Min. Fuel Factor** | 1.600 | **Max. Fuel Factor** | 1.836 |

**Gas Analysis Data**

| **Run Number** | SAM U-00003 Base+DB-1 | | **Date** | 04/16/20 | **Run Start Time** | 13:10 | **Run Stop Time** | 15:10 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 02:00 | 4.5 | 12.9 | 0.0 | 82.6 | 29.24 | 1.778 | 144.8 | YES |

**Gas Analysis Data**

| **Run Number** | SAM U-00003 Base+DB-2 | | **Date** | 04/17/20 | **Run Start Time** | 03:58 | **Run Stop Time** | 05:58 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 02:00 | 4.5 | 12.9 | 0.0 | 82.6 | 29.24 | 1.778 | 144.8 | YES |

**Gas Analysis Data**

| **Run Number** | SAM U-00003 Base+DB-3 | | **Date** | 04/17/20 | **Run Start Time** | 07:00 | **Run Stop Time** | 09:00 |
|---|---|---|---|---|---|---|---|---|
| **Sample Analysis Time** | **$CO_2$ Conc.** | **$O_2$ Conc.** | **CO Conc.** | **$N_2$ Conc.** | **Dry Molecular Weight** | **Calculated Fuel Factor** | **Excess Air** | **Fuel Factor in Range** |
| | ($\%CO_2$) | ($\%O_2$) | (ppmCO) | ($\%N_2$) | ($M_d$) | $(F_o)_{avg}$ | $(\%EA)_{avg}$ | |
| hh:mm | % | % | ppm | % | lb/lb-mole | | % | |
| 02:00 | 4.5 | 12.9 | 0.0 | 82.6 | 29.24 | 1.778 | 144.8 | YES |

## METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Preliminary Run Date** | 04/16/20 |
| **Sampling Location** | U-00003 Base+DB | **Operator** | GT |
| **Project #** | bec-19-cricketvalley.ny-start#3 | **Ports Used** | 1 |

| **Scale Daily Calibration** | | | | | |
|---|---|---|---|---|---|
| **Scale Number** | SAMP-SC-0028 | **Standard** | **Result** | **Difference** | **Pass/Fail** |
| **Date** | | (g) | (g) | (g) | (± 0.5 g) |
| **Test Day 2** | 04/16/20 | 500 | 499.7 | -0.3 | Pass |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | SAM U-00003 Base+DB-1 | | **Date** | 04/16/20 | **Start Time** | 13:10 | **Stop Time** | 15:10 | |
| **Meter Box Number** | samp-cp-0030 | | | | **Meter Cal Factor** | (Y) | 0.974 | | |
| **Total Meter Volume** | ($V_m$) | 41.730 | dcf | | **Barometric Pressure** | ($P_b$) | 30.07 | in Hg | |
| **Average Stack Temp** | $(t_s)_{avg}$ | 182 | °F | | **Stack Static Pressure** | ($P_{static}$) | -0.92 | in $H_2O$ | |
| **Average Meter Temp** | $(t_m)_{avg}$ | 63 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.41 | in $H_2O$ | |
| | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** | |
| | (g) | (g) | (g) | (g) | | | | | |
| **Contents** | $H_2O_2$ | $H_2O_2$ | DI Water | Sil Gel | | | | | |
| **Final Value** ($V_f$),($W_f$) | 768.60 | 695.20 | 575.90 | 928.50 | | | | | |
| **Initial Value** ($V_i$),($W_i$) | 699.70 | 688.10 | 575.40 | 913.90 | | | | | |
| **Net Value** ($V_n$),($W_n$) | 68.9 | 7.1 | 0.5 | 14.6 | | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | ($W_t$) | 91.10 | g | | **Water Vol Weighed** | ($V_{wsg(std)}$) | 4.295 | scf | |
| **Std Meter Volume** | ($V_{m(std)}$) | 41.297 | dscf | | **Sat. Moisture Content** | ($B_{ws(svp)}$) | 53.16 | % | |
| **Calc Moisture Content** | ($B_{ws(calc)}$) | 9.42 | % | | **Final Moisture Content** | ($B_{ws}$) | 9.42 | % | |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | SAM U-00003 Base+DB-2 | | **Date** | 04/17/20 | **Start Time** | 03:58 | **Stop Time** | 05:58 | |
| **Meter Box Number** | samp-cp-0030 | | | | **Meter Cal Factor** | (Y) | 0.974 | | |
| **Total Meter Volume** | ($V_m$) | 41.780 | dcf | | **Barometric Pressure** | ($P_b$) | 30.22 | in Hg | |
| **Average Stack Temp** | $(t_s)_{avg}$ | 182 | °F | | **Stack Static Pressure** | ($P_{static}$) | -0.92 | in $H_2O$ | |
| **Average Meter Temp** | $(t_m)_{avg}$ | 83 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.41 | in $H_2O$ | |
| | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** | |
| | (g) | (g) | (g) | (g) | | | | | |
| **Contents** | $H_2O_2$ | $H_2O_2$ | DI Water | Sil Gel | | | | | |
| **Final Value** ($V_f$),($W_f$) | 774.70 | 690.40 | 575.60 | 938.60 | | | | | |
| **Initial Value** ($V_i$),($W_i$) | 697.40 | 687.50 | 575.60 | 928.50 | | | | | |
| **Net Value** ($V_n$),($W_n$) | 77.3 | 2.9 | 0.0 | 10.1 | | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | ($W_t$) | 90.30 | g | | **Water Vol Weighed** | ($V_{wsg(std)}$) | 4.258 | scf | |
| **Std Meter Volume** | ($V_{m(std)}$) | 40.040 | dscf | | **Sat. Moisture Content** | ($B_{ws(svp)}$) | 52.90 | % | |
| **Calc Moisture Content** | ($B_{ws(calc)}$) | 9.61 | % | | **Final Moisture Content** | ($B_{ws}$) | 9.61 | % | |

| **Moisture Content Data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Run Number** | SAM U-00003 Base+DB-3 | | **Date** | 04/17/20 | **Start Time** | 07:00 | **Stop Time** | 09:00 | |
| **Meter Box Number** | samp-cp-0030 | | | | **Meter Cal Factor** | (Y) | 0.974 | | |
| **Total Meter Volume** | ($V_m$) | 41.790 | dcf | | **Barometric Pressure** | ($P_b$) | 30.27 | in Hg | |
| **Average Stack Temp** | $(t_s)_{avg}$ | 182 | °F | | **Stack Static Pressure** | ($P_{static}$) | -0.92 | in $H_2O$ | |
| **Average Meter Temp** | $(t_m)_{avg}$ | 82 | °F | | **Avg Orifice Pressure** | $(\Delta H)_{avg}$ | 0.41 | in $H_2O$ | |
| | **Impinger 1** | **Impinger 2** | **Impinger 3** | **Impinger 4** | **Impinger 5** | **Impinger 6** | **Impinger 7** | **Impinger 8** | |
| | (g) | (g) | (g) | (g) | | | | | |
| **Contents** | $H_2O_2$ | $H_2O_2$ | DI Water | Sil Gel | | | | | |
| **Final Value** ($V_f$),($W_f$) | 853.70 | 691.20 | 575.60 | 929.60 | | | | | |
| **Initial Value** ($V_i$),($W_i$) | 774.70 | 690.40 | 575.60 | 921.80 | | | | | |
| **Net Value** ($V_n$),($W_n$) | 79.0 | 0.8 | 0.0 | 7.8 | | | | | |
| **Results** | | | | | | | | | |
| **Total Weight** | ($W_t$) | 87.60 | g | | **Water Vol Weighed** | ($V_{wsg(std)}$) | 4.130 | scf | |
| **Std Meter Volume** | ($V_{m(std)}$) | 40.144 | dscf | | **Sat. Moisture Content** | ($B_{ws(svp)}$) | 52.81 | % | |
| **Calc Moisture Content** | ($B_{ws(calc)}$) | 9.33 | % | | **Final Moisture Content** | ($B_{ws}$) | 9.33 | % | |

**METHOD 8A (CONTROLLED CONDENSATE) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA**

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| | |
|---|---|
| **Date** | 04/16/20 |
| **Operator** | GT |
| **Run Number** | SAM U-00003 Base+DB-1 |

| |
|---|
| **Filter #** |
| R0001 |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | | |
| **Average Stack Temp** | ($t_s$) | 182.0 | °F |
| **Average Meter Temp** | ($t_m$) | 62.8 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.878 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | 9.42 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.24 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.75 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Pre (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | samp-cp-0030 | | |
| **Meter Cal Factor** | (Y) | 0.974 | |
| **Nozzle Number** | NA | | |
| **Average Nozzle Diameter** | ($D_{na}$) | | in |
| **Suggested Nozzle Diameter** | ($D_{ni}$) | | in |
| **Probe Number** | SAMP-HP-0138 | | in |
| **Probe Length** | 72 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | samp-bh-0013 | | |
| **Impinger Case Number** | samp-bc-0032 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.07 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | -0.92 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.00 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.21 | in Hg |

| **Nozzle Measurements** | | | **ID: NA** |
|---|---|---|---|
| **Pre** | | | **PASS** |
| **Post** | | | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 13:10 | **End** | 15:10 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 699.7 | 688.1 | 575.4 | 913.9 | | | | |
| **Post** | 768.6 | 695.2 | 575.9 | 928.5 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | samp-cp-0030 | samp-cp-0030 | samp-cp-0030 | | | SAMP-HP-0138 | SAMP-HP-0138 | samp-bh-0013 | samp-bc-0032 | TCSAM1 | | samp-cp-0030 | | samp-cp-0030 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head (Δp)** | **Desired Orifice ΔH ($\Delta H_d$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (375±25°F)** | **Filter Temp (525±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤185°F)** | **CPM Filter Temp (--±--°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)$_l$** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 961.540 | -- | 0.411 | 0.41 | -- | 350 | 501 | 61 | 65 | -- | 58 | 58 | 1.0 | | | 1.708 | | 40.990 |
| A-2 | 5.0 | 00:05:00 | 963.250 | -- | 0.411 | 0.41 | -- | 350 | 504 | 61 | 70 | -- | 58 | 58 | 1.0 | | | 3.426 | | 41.110 |
| A-3 | 10.0 | 00:10:00 | 964.970 | -- | 0.411 | 0.41 | -- | 350 | 510 | 59 | 82 | -- | 59 | 59 | 1.0 | | | 5.180 | | 41.442 |
| A-4 | 15.0 | 00:15:00 | 966.730 | -- | 0.411 | 0.41 | -- | 350 | 517 | 56 | 80 | -- | 59 | 59 | 1.0 | | | 6.885 | | 41.309 |
| A-5 | 20.0 | 00:20:00 | 968.440 | -- | 0.411 | 0.41 | -- | 350 | 520 | 58 | 74 | -- | 60 | 60 | 1.0 | | | 8.452 | | 40.569 |
| A-6 | 25.0 | 00:25:00 | 970.015 | -- | 0.411 | 0.41 | -- | 350 | 522 | 60 | 77 | -- | 60 | 60 | 1.0 | | | 10.327 | | 41.310 |
| A-7 | 30.0 | 00:30:00 | 971.900 | -- | 0.411 | 0.41 | -- | 350 | 519 | 60 | 76 | -- | 61 | 61 | 1.0 | | | 12.035 | | 41.264 |
| A-8 | 35.0 | 00:35:00 | 973.620 | -- | 0.411 | 0.41 | -- | 350 | 525 | 62 | 79 | -- | 62 | 62 | 1.0 | | | 13.760 | | 41.280 |
| A-9 | 40.0 | 00:40:00 | 975.360 | -- | 0.411 | 0.41 | -- | 350 | 530 | 60 | 77 | -- | 62 | 62 | 1.0 | | | 15.455 | | 41.213 |
| A-10 | 45.0 | 00:45:00 | 977.070 | -- | 0.411 | 0.41 | -- | 350 | 528 | 55 | 72 | -- | 62 | 62 | 1.0 | | | 17.160 | | 41.183 |
| A-11 | 50.0 | 00:50:00 | 978.790 | -- | 0.411 | 0.41 | -- | 350 | 527 | 59 | 74 | -- | 63 | 63 | 1.0 | | | 18.891 | | 41.216 |
| A-12 | 55.0 | 00:55:00 | 980.540 | -- | 0.411 | 0.41 | -- | 350 | 524 | 59 | 75 | -- | 63 | 63 | 1.0 | | | 20.632 | | 41.263 |
| A-13 | 60.0 | 01:00:00 | 982.300 | -- | 0.411 | 0.41 | -- | 350 | 526 | 60 | 76 | -- | 64 | 64 | 1.0 | | | 22.360 | | 41.279 |
| A-14 | 65.0 | 01:05:00 | 984.050 | -- | 0.411 | 0.41 | -- | 350 | 520 | 59 | 76 | -- | 64 | 64 | 1.0 | | | 24.078 | | 41.276 |
| A-15 | 70.0 | 01:10:00 | 985.790 | -- | 0.411 | 0.41 | -- | 350 | 518 | 57 | 77 | -- | 64 | 64 | 1.0 | | | 25.805 | | 41.289 |
| A-16 | 75.0 | 01:15:00 | 987.540 | -- | 0.411 | 0.41 | -- | 350 | 522 | 62 | 79 | -- | 64 | 64 | 1.0 | | | 27.533 | | 41.300 |
| A-17 | 80.0 | 01:20:00 | 989.290 | -- | 0.411 | 0.41 | -- | 350 | 522 | 59 | 77 | -- | 65 | 65 | 1.0 | | | 29.268 | | 41.319 |
| A-18 | 85.0 | 01:25:00 | 991.050 | -- | 0.411 | 0.41 | -- | 350 | 523 | 60 | 76 | -- | 65 | 65 | 1.0 | | | 30.982 | | 41.310 |
| A-19 | 90.0 | 01:30:00 | 992.790 | -- | 0.411 | 0.41 | -- | 350 | 524 | 63 | 77 | -- | 65 | 65 | 1.0 | | | 32.707 | | 41.314 |
| A-20 | 95.0 | 01:35:00 | 994.540 | -- | 0.411 | 0.41 | -- | 350 | 521 | 62 | 77 | -- | 65 | 65 | 1.0 | | | 34.412 | | 41.294 |
| A-21 | 100.0 | 01:40:00 | 996.270 | -- | 0.411 | 0.41 | -- | 350 | 519 | 60 | 77 | -- | 65 | 65 | 1.0 | | | 36.196 | | 41.366 |
| A-22 | 105.0 | 01:45:00 | 998.080 | -- | 0.411 | 0.41 | -- | 350 | 517 | 53 | 68 | -- | 66 | 66 | 1.0 | | | 37.877 | | 41.321 |
| A-23 | 110.0 | 01:50:00 | 999.790 | -- | 0.411 | 0.41 | -- | 350 | 523 | 60 | 71 | -- | 66 | 66 | 1.0 | | | 39.579 | | 41.300 |
| A-24 | 115.0 | 01:55:00 | 1001.520 | -- | 0.411 | 0.41 | -- | 350 | 528 | 64 | 76 | -- | 67 | 67 | 1.0 | | | 41.297 | | 41.297 |
| Last Pt | 120.0 | 02:00:00 | 1003.270 | | | | | | | | | | | | | | | | | |
| **Final Val** | 120.0 | 02:00:00 | 1003.270 | | | | | | | | | | | **Max Vac** | 1.0 | **Final Values** | | 41.297 | | |
| **Average Values** | | | | | | 0.41 | 182 | 350 | 520 | 60 | 75 | | 63 | 63 | | | | | | |
| | | | | | | | | | | | | | 63 | | | | | | | |

Notes:

**METHOD 8A (CONTROLLED CONDENSATE) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA**

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| | |
|---|---|
| **Date** | 04/17/20 |
| **Operator** | GT |
| **Run Number** | SAM U-00003 Base+DB-2 |

| |
|---|
| **Filter #** |
| R0001 |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | | |
| **Average Stack Temp** | ($t_s$) | 182.0 | °F |
| **Average Meter Temp** | ($t_m$) | 82.5 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.878 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | 9.61 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.24 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.34 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Pre (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | samp-cp-0030 | | |
| **Meter Cal Factor** | (Y) | 0.974 | |
| **Nozzle Number** | NA | | |
| **Average Nozzle Diameter** | ($D_{na}$) | | in |
| **Suggested Nozzle Diameter** | ($D_{ni}$) | | in |
| **Probe Number** | SAMP-HP-0138 | | in |
| **Probe Length** | 72 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | samp-bh-0013 | | |
| **Impinger Case Number** | samp-bc-0032 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.22 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | -0.92 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.15 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.36 | in Hg |

| **Nozzle Measurements** | | | **ID: NA** |
|---|---|---|---|
| **Pre** | | | **PASS** |
| **Post** | | | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 03:58 | **End** | 05:58 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 697.4 | 687.5 | 575.6 | 928.5 | | | | |
| **Post** | 774.7 | 690.4 | 575.6 | 938.6 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | samp-cp-0030 | samp-cp-0030 | samp-cp-0030 | | | SAMP-HP-0138 | SAMP-HP-0138 | samp-bh-0013 | samp-bc-0032 | TCSAM1 | | samp-cp-0030 | | samp-cp-0030 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head (Δp)** | **Desired Orifice ΔH ($\Delta H_d$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (375±25°F)** | **Filter Temp (525±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤185°F)** | **CPM Filter Temp (--±--°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)$_l$** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 11.320 | -- | 0.411 | 0.41 | -- | 350 | 501 | 40 | 44 | -- | 78 | 78 | 3.0 | | | 1.691 | | 40.591 |
| A-2 | 5.0 | 00:05:00 | 13.070 | -- | 0.411 | 0.41 | -- | 350 | 505 | 39 | 56 | -- | 78 | 78 | 3.0 | | | 3.363 | | 40.359 |
| A-3 | 10.0 | 00:10:00 | 14.800 | -- | 0.411 | 0.41 | -- | 350 | 512 | 41 | 67 | -- | 78 | 78 | 3.0 | | | 5.045 | | 40.359 |
| A-4 | 15.0 | 00:15:00 | 16.540 | -- | 0.411 | 0.41 | -- | 350 | 518 | 45 | 76 | -- | 79 | 79 | 3.0 | | | 6.743 | | 40.456 |
| A-5 | 20.0 | 00:20:00 | 18.300 | -- | 0.411 | 0.41 | -- | 350 | 521 | 47 | 85 | -- | 79 | 79 | 3.0 | | | 8.460 | | 40.607 |
| A-6 | 25.0 | 00:25:00 | 20.080 | -- | 0.411 | 0.41 | -- | 350 | 524 | 49 | 90 | -- | 80 | 80 | 3.0 | | | 10.154 | | 40.617 |
| A-7 | 30.0 | 00:30:00 | 21.840 | -- | 0.411 | 0.41 | -- | 350 | 528 | 47 | 91 | -- | 81 | 81 | 3.0 | | | 11.846 | | 40.614 |
| A-8 | 35.0 | 00:35:00 | 23.600 | -- | 0.411 | 0.41 | -- | 350 | 530 | 50 | 93 | -- | 81 | 81 | 3.0 | | | 13.547 | | 40.641 |
| A-9 | 40.0 | 00:40:00 | 25.370 | -- | 0.411 | 0.41 | -- | 350 | 527 | 48 | 92 | -- | 82 | 82 | 3.0 | | | 15.283 | | 40.756 |
| A-10 | 45.0 | 00:45:00 | 27.180 | -- | 0.411 | 0.41 | -- | 350 | 526 | 43 | 86 | -- | 82 | 82 | 3.0 | | | 17.020 | | 40.847 |
| A-11 | 50.0 | 00:50:00 | 28.990 | -- | 0.411 | 0.41 | -- | 350 | 521 | 40 | 83 | -- | 83 | 83 | 3.0 | | | 18.762 | | 40.936 |
| A-12 | 55.0 | 00:55:00 | 30.810 | -- | 0.411 | 0.41 | -- | 350 | 522 | 39 | 81 | -- | 83 | 83 | 3.0 | | | 20.496 | | 40.991 |
| A-13 | 60.0 | 01:00:00 | 32.620 | -- | 0.411 | 0.41 | -- | 350 | 519 | 39 | 81 | -- | 83 | 83 | 3.0 | | | 22.229 | | 41.038 |
| A-14 | 65.0 | 01:05:00 | 34.430 | -- | 0.411 | 0.41 | -- | 350 | 524 | 43 | 84 | -- | 84 | 84 | 3.0 | | | 23.940 | | 41.039 |
| A-15 | 70.0 | 01:10:00 | 36.220 | -- | 0.411 | 0.41 | -- | 350 | 529 | 45 | 86 | -- | 84 | 84 | 3.0 | | | 25.650 | | 41.041 |
| A-16 | 75.0 | 01:15:00 | 38.010 | -- | 0.411 | 0.41 | -- | 350 | 525 | 46 | 87 | -- | 84 | 84 | 3.0 | | | 27.352 | | 41.028 |
| A-17 | 80.0 | 01:20:00 | 39.790 | -- | 0.411 | 0.41 | -- | 350 | 518 | 49 | 89 | -- | 85 | 85 | 3.0 | | | 29.050 | | 41.012 |
| A-18 | 85.0 | 01:25:00 | 41.570 | -- | 0.411 | 0.41 | -- | 350 | 523 | 52 | 93 | -- | 85 | 85 | 3.0 | | | 30.748 | | 40.997 |
| A-19 | 90.0 | 01:30:00 | 43.350 | -- | 0.411 | 0.41 | -- | 350 | 527 | 55 | 95 | -- | 85 | 85 | 3.0 | | | 32.465 | | 41.009 |
| A-20 | 95.0 | 01:35:00 | 45.150 | -- | 0.411 | 0.41 | -- | 350 | 530 | 57 | 97 | -- | 85 | 85 | 3.0 | | | 34.183 | | 41.019 |
| A-21 | 100.0 | 01:40:00 | 46.950 | -- | 0.411 | 0.41 | -- | 350 | 528 | 58 | 99 | -- | 85 | 85 | 3.0 | | | 35.881 | | 41.007 |
| A-22 | 105.0 | 01:45:00 | 48.730 | -- | 0.411 | 0.41 | -- | 350 | 525 | 58 | 99 | -- | 85 | 85 | 3.0 | | | 37.608 | | 41.026 |
| A-23 | 110.0 | 01:50:00 | 50.540 | -- | 0.411 | 0.41 | -- | 350 | 526 | 58 | 101 | -- | 86 | 86 | 3.0 | | | 39.322 | | 41.031 |
| A-24 | 115.0 | 01:55:00 | 52.340 | -- | 0.411 | 0.41 | -- | 350 | 525 | 57 | 103 | -- | 86 | 86 | 3.0 | | | 40.045 | | 40.045 |
| Last Pt | 120.0 | 02:00:00 | 53.100 | | | | | | | | | | | | | | | | | |
| **Final Val** | 120.0 | 02:00:00 | 53.100 | | | | | | | | | | | **Max Vac** | 3.0 | **Final Values** | | 40.045 | | |
| **Average Values** | | | | | | 0.41 | 182 | 350 | 522 | 48 | 86 | | 83 | 83 | | | | | | |
| | | | | | | | | | | | | | 83 | | | | | | | |

Notes:

**METHOD 8A (CONTROLLED CONDENSATE) SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA**

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| | |
|---|---|
| **Date** | 04/17/20 |
| **Operator** | GT |
| **Run Number** | SAM U-00003 Base+DB-3 |

| |
|---|
| **Filter #** |
| R0001 |

| **Ideal Nozzle Diameter and IsoKinetic Factor Setup** | | | |
|---|---|---|---|
| **Pitot Coefficient / ID** | ($C_p$) | | |
| **Average Stack Temp** | ($t_s$) | 182.0 | °F |
| **Average Meter Temp** | ($t_m$) | 82.2 | |
| **Orifice Meter Coefficient** | ($\Delta H@$) | 1.878 | in $H_2O$ |
| **Square Root ΔP** | ($\Delta p^{1/2}_{avg}$) | | in $H_2O$ |
| **Stack Moisture Content** | ($B_{ws}$) | 9.33 | % |
| **Stack Dry Molecular Weight** | ($M_d$) | 29.24 | lb/lb-mole |
| **Estimated Orifice Flow Rate** | ($Q_m$) | 0.33 | acfm |
| **ΔP to ΔH Isokinetic Factor** | (K) | | |

| **Leak Checks** | | *[change]* | | *[level]* | | *[time]* | |
|---|---|---|---|---|---|---|---|
| **Train** | **Pre** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| PASS | **Post** | 0.000 | ft³/min@ | 15.0 | in Hg for | 60.0 | sec [≥60] |
| **Pitot** | **Pre (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Pre (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (+)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |
| | **Post (-)** | | in $H_2O$ | | in $H_2O$ for | | sec [≥15] |

| **Sampling Equipment** | | | |
|---|---|---|---|
| **Meter Box Number** | samp-cp-0030 | | |
| **Meter Cal Factor** | (Y) | 0.974 | |
| **Nozzle Number** | NA | | |
| **Average Nozzle Diameter** | ($D_{na}$) | | in |
| **Suggested Nozzle Diameter** | ($D_{ni}$) | | in |
| **Probe Number** | SAMP-HP-0138 | | in |
| **Probe Length** | 72 | | in |
| **Liner Material** | glass | | |
| **Sample Case / Oven Number** | samp-bh-0013 | | |
| **Impinger Case Number** | samp-bc-0032 | | |

| **Pressures** | | | |
|---|---|---|---|
| **Barometric Pressure** | ($P_b$) | 30.27 | in Hg |
| **Stack Static Pressure** | ($P_{static}$) | -0.92 | in $H_2O$ |
| **Absolute Stack Pressure** | ($P_s$) | 30.20 | in Hg |
| **Absolute Meter Pressure** | ($P_m$) | 30.41 | in Hg |

| **Nozzle Measurements** | | | **ID: NA** |
|---|---|---|---|
| **Pre** | | | **PASS** |
| **Post** | | | **PASS** |

| **Barometer ID** |
|---|
| SAMP-WE-0014 |
| **Scale ID** |
| SAMP-SC-0028 |

| **Run Time** | | | |
|---|---|---|---|
| **Start** | 07:00 | **End** | 09:00 |

| **Weights** | **Imp 1** | **Imp 2** | **Imp 3** | **Imp 4** | **Imp 5** | **Imp 6** | **Imp 7** | **Imp 8** |
|---|---|---|---|---|---|---|---|---|
| **Pre** | 774.7 | 690.4 | 575.6 | 921.8 | | | | |
| **Post** | 853.7 | 691.2 | 575.6 | 929.6 | | | | |

| **Wash Volumes** | | | | | |
|---|---|---|---|---|---|
| | | | | | ml |
| | | | | | ml |

| **Identification Nos.** | | samp-cp-0030 | samp-cp-0030 | samp-cp-0030 | | | SAMP-HP-0138 | SAMP-HP-0138 | samp-bh-0013 | samp-bc-0032 | TCSAM1 | | samp-cp-0030 | | samp-cp-0030 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Traverse Point #** | **Sampling Time (Θ)** | **Timer Time** | **Dry Gas Meter Reading ($V_m$)** | **Velocity Head (Δp)** | **Desired Orifice ΔH ($\Delta H_d$)** | **Actual Orifice ΔH ($\Delta H_a$)** | **Stack Temp ($t_s$)** | **Probe Temp (375±25°F)** | **Filter Temp (525±25°F)** | **Impinger Exit Temp (≤68°F)** | **Cond. Temp (≤185°F)** | **CPM Filter Temp (--±--°F)** | **Meter Inlet Temp ($t_{mi}$)** | **Meter Outlet Temp ($t_{mo}$)** | **Pump Vacuum** | **Square Root ΔP ($\Delta p^{1/2}$)** | **Local Stack Velocity ($v_s$)$_l$** | **Cumul. Meter Volume ($V_m$)$_{std}$** | **Cumul. Percent IsoKinetic (I)** | **Est-Run Meter Volume ($V_m$)$_{std}$** |
| | min | hh:mm:ss | ft³ | in $H_2O$ | in $H_2O$ | in $H_2O$ | °F | °F | °F | °F | °F | °F | °F | °F | in Hg | √(in $H_2O$) | ft/sec | dscf | % | dscf |
| A-1 | 0.0 | 00:00:00 | 61.770 | -- | 0.411 | 0.41 | -- | 350 | 502 | 45 | 54 | -- | 80 | 80 | 3.0 | | | 1.697 | | 40.739 |
| A-2 | 5.0 | 00:05:00 | 63.530 | -- | 0.411 | 0.41 | -- | 350 | 506 | 42 | 59 | -- | 80 | 80 | 3.0 | | | 3.395 | | 40.739 |
| A-3 | 10.0 | 00:10:00 | 65.290 | -- | 0.411 | 0.41 | -- | 350 | 511 | 39 | 66 | -- | 80 | 80 | 3.0 | | | 5.102 | | 40.816 |
| A-4 | 15.0 | 00:15:00 | 67.060 | -- | 0.411 | 0.41 | -- | 350 | 515 | 38 | 68 | -- | 80 | 80 | 3.0 | | | 6.790 | | 40.739 |
| A-5 | 20.0 | 00:20:00 | 68.810 | -- | 0.411 | 0.41 | -- | 350 | 519 | 37 | 69 | -- | 80 | 80 | 3.0 | | | 8.516 | | 40.877 |
| A-6 | 25.0 | 00:25:00 | 70.600 | -- | 0.411 | 0.41 | -- | 350 | 522 | 37 | 70 | -- | 81 | 81 | 3.0 | | | 10.220 | | 40.880 |
| A-7 | 30.0 | 00:30:00 | 72.370 | -- | 0.411 | 0.41 | -- | 350 | 524 | 38 | 71 | . | 81 | 81 | 3.0 | | | 11.924 | | 40.882 |
| A-8 | 35.0 | 00:35:00 | 74.140 | -- | 0.411 | 0.41 | -- | 350 | 526 | 38 | 71 | -- | 81 | 81 | 3.0 | | | 13.618 | | 40.855 |
| A-9 | 40.0 | 00:40:00 | 75.900 | -- | 0.411 | 0.41 | -- | 350 | 525 | 38 | 74 | -- | 82 | 82 | 3.0 | | | 15.329 | | 40.877 |
| A-10 | 45.0 | 00:45:00 | 77.680 | -- | 0.411 | 0.41 | -- | 350 | 527 | 37 | 73 | -- | 82 | 82 | 3.0 | | | 17.049 | | 40.917 |
| A-11 | 50.0 | 00:50:00 | 79.470 | -- | 0.411 | 0.41 | -- | 350 | 530 | 36 | 72 | -- | 82 | 82 | 3.0 | | | 18.740 | | 40.887 |
| A-12 | 55.0 | 00:55:00 | 81.230 | -- | 0.411 | 0.41 | -- | 350 | 529 | 37 | 72 | -- | 82 | 82 | 3.0 | | | 20.460 | | 40.920 |
| A-13 | 60.0 | 01:00:00 | 83.020 | -- | 0.411 | 0.41 | -- | 350 | 526 | 38 | 73 | -- | 83 | 83 | 3.0 | | | 22.167 | | 40.924 |
| A-14 | 65.0 | 01:05:00 | 84.800 | -- | 0.411 | 0.41 | -- | 350 | 530 | 39 | 74 | -- | 83 | 83 | 3.0 | | | 23.874 | | 40.928 |
| A-15 | 70.0 | 01:10:00 | 86.580 | -- | 0.411 | 0.41 | -- | 350 | 532 | 40 | 76 | -- | 83 | 83 | 3.0 | | | 25.610 | | 40.977 |
| A-16 | 75.0 | 01:15:00 | 88.390 | -- | 0.411 | 0.41 | -- | 350 | 527 | 40 | 76 | -- | 83 | 83 | 3.0 | | | 27.346 | | 41.020 |
| A-17 | 80.0 | 01:20:00 | 90.200 | -- | 0.411 | 0.41 | -- | 350 | 524 | 41 | 77 | -- | 83 | 83 | 3.0 | | | 29.073 | | 41.044 |
| A-18 | 85.0 | 01:25:00 | 92.000 | -- | 0.411 | 0.41 | -- | 350 | 525 | 41 | 78 | -- | 83 | 83 | 3.0 | | | 30.790 | | 41.053 |
| A-19 | 90.0 | 01:30:00 | 93.790 | -- | 0.411 | 0.41 | -- | 350 | 521 | 41 | 76 | -- | 83 | 83 | 3.0 | | | 32.516 | | 41.073 |
| A-20 | 95.0 | 01:35:00 | 95.590 | -- | 0.411 | 0.41 | -- | 350 | 519 | 42 | 76 | -- | 84 | 84 | 3.0 | | | 34.230 | | 41.076 |
| A-21 | 100.0 | 01:40:00 | 97.380 | -- | 0.411 | 0.41 | -- | 350 | 526 | 41 | 75 | -- | 84 | 84 | 3.0 | | | 35.953 | | 41.089 |
| A-22 | 105.0 | 01:45:00 | 99.180 | -- | 0.411 | 0.41 | -- | 350 | 529 | 42 | 75 | -- | 84 | 84 | 3.0 | | | 37.676 | | 41.101 |
| A-23 | 110.0 | 01:50:00 | 100.980 | -- | 0.411 | 0.41 | -- | 350 | 524 | 42 | 75 | -- | 84 | 84 | 3.0 | | | 39.380 | | 41.093 |
| A-24 | 115.0 | 01:55:00 | 102.760 | -- | 0.411 | 0.41 | -- | 350 | 528 | 42 | 75 | -- | 84 | 84 | 3.0 | | | 40.146 | | 40.146 |
| Last Pt | 120.0 | 02:00:00 | 103.560 | | | | | | | | | | | | | | | | | |
| **Final Val** | 120.0 | 02:00:00 | 103.560 | | | | | | | | | | | **Max Vac** | 3.0 | **Final Values** | | 40.146 | | |
| **Average Values** | | | | | | 0.41 | 182 | 350 | 523 | 40 | 72 | | 82 | 82 | | | | | | |
| | | | | | | | | | | | | | 82 | | | | | | | |

Notes:

# EMISSION DATA RECORDS

## Reference Method Data
## Base+DB Load
## Opacity

Method Used (Circle One)
Method 9 203A 203B Other: _____

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) Page 1 of 6

Continued on Form Number (AHI Project Code)

Company Name: A-C Hygiene
Facility Name: Cricket Valley Energy Plant
Street Address: 1600 W Tacoma St
City: Broken Arrow State: OK Zip: 74012

Observation Date | Time Zone | Start Time: 10:00 am | End Time: 10:30

Process | Unit # 3 | Operating Mode
Control Equipment | Operating Mode: Duct B

Describe Emissions Pont

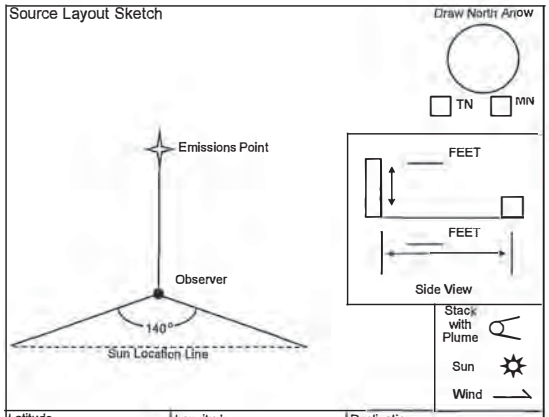
Height of Emiss. Pt. Start 141 End 141 | Height of Emiss. Pt. Rel. to Observer Start 137 End 137
Distance to Emiss. Pt. Start 7 End 7 | Direction to Emiss. Pt. (Degrees) Start 5 End 5

Vetical Angle to Obs. Pt. Start 13 End 13 | Direction to Obs. Pt. (Degrees) Start End
Distance and Direction to Observation Point from Emission Point Start 142 End 142

Describe Emissions Start NA End NA
Emission Color Start NA End NA | Water Droplet Plume Start NA End NA

Describe Plume Background Start End
Background Color Start Blue End Blue | Sky Conditions Start Cloudy End Cloudy
Wind Speed Start 12 End 12 | Wind Direction Start S End S
Ambient Temp. Start End | Wet Bulb Temp. | RH Percent

Source Layout Sketch




Latitude | Longitude | Declination

| Min. \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
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| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print): SEAN FIELDS
Observer's Signature: [signature] Date: 4/10/20
Organization: Air Hygiene International, Inc.
Certified By: Comp Assurance Assoc Date: 01/03/2020

Additional Information

Method Used (Circle One)
Method 9 203A 203B Other: _____

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) Page 2 of 6

Continued on Form Number (AHI Project Code)

Company Name: Air Hygiene
Facility Name: Cricket Valley Energy Plant
Street Address: 1600 W Tacoma St
City: Broken Arrow State: OK Zip: 74012

Process Unit # 3 Operating Mode
Control Equipment Operating Mode DB

Describe Emissions Pont

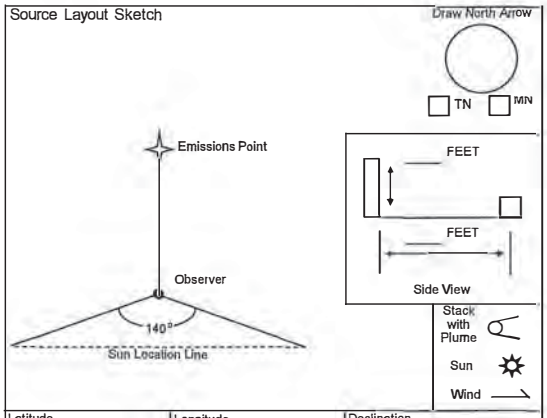
Height of Emiss. Pt. Start 140 End 146
Height of Emiss. Pt. Rel. to Observer Start End
Distance to Emiss. Pt. Start 8 End 8
Direction to Emiss. Pt. (Degrees) Start 5 End 5

Vetical Angle to Obs. Pt. Start 12 End 12
Direction to Obs. Pt. (Degrees) Start End
Distance and Direction to Observation Point from Emission Point Start 143 End 143

Describe Emissions Start NA End NA
Emission Color Start NA End NA
Water Droplet Plume Start NA End NA

Describe Plume Background Start End
Background Color Start Blue End Blue
Sky Conditions Start Cloudy End Cloudy
Wind Speed Start 11 End 11
Wind Direction Start S End S
Ambient Temp. Start End
Wet Bulb Temp.
RH Percent

Source Layout Sketch




Latitude Longitude Declination

| Observation Date | Time Zone | Start Time | End Time |
|---|---|---|---|
| | | 10:30 | 11:00 |

| Min. \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print): SEAN FIELDS
Observer's Signature: [signature] Date: 4/1/2020
Organization: Air Hygiene International, Inc.
Certified By: Comp Assurance Assoc Date: 01/03/2020

Additional Information

Method Used (Circle One)
Method 9 203A 203B Other: _____

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) Page 3 of 6

Continued on Form Number (AHI Project Code)

Company Name: Air Hygiene
Facility Name: Cricket Valley Energy Plant
Street Address: 1600 W Tacoma St
City: Broken Arrow State: OK Zip: 74012

Observation Date | Time Zone | Start Time: 11:00 | End Time: 11:30

Process | Unit #: 3 | Operating Mode
Control Equipment | Operating Mode: DB

Describe Emissions Pont

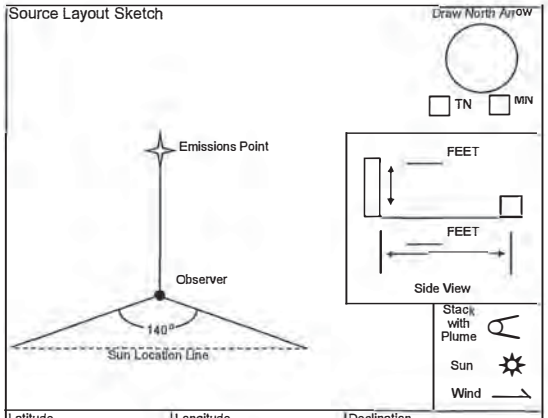
Height of Emiss. Pt. Start 140 End 140
Height of Emiss. Pt. Rel. to Observer Start 150 End 150
Distance to Emiss. Pt. Start 6 End 6
Direction to Emiss. Pt. (Degrees) Start 5 End 5

Vetical Angle to Obs. Pt. Start 14 End 14
Direction to Obs. Pt. (Degrees) Start End
Distance and Direction to Observation Point from Emission Point Start 144 End 144

Describe Emissions
Start NA End NA
Emission Color Start NA End NA
Water Droplet Plume Start NA End NA

Describe Plume Background
Start End
Background Color Start Blue End Blue
Sky Conditions Start Cloudy End Cloudy
Wind Speed Start 11 End 11
Wind Direction Start S End S
Ambient Temp. Start End
Wet Bulb Temp. RH Percent

Source Layout Sketch




Latitude | Longitude | Declination

Additional Information

| Min. \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
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| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
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| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print): SEAN FIELDS
Observer's Signature: [signature] Date: 4/17/20
Organization: Air Hygiene International, Inc.
Certified By: Comp Assurance Assoc Date: 01/03/2020

Method Used (Circle One)
Method 9 203A 203B Other: _____

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) Page 4 of 6

Continued on Form Number (AHI Project Code)

Company Name: Air Hygiene
Facility Name: Cricket Valley Energy Plant
Street Address: 1600 W Tacoma St
City: Broken Arrow State: OK Zip: 74012

Process Unit # 3 Operating Mode
Control Equipment Operating Mode DB

Describe Emissions Pont

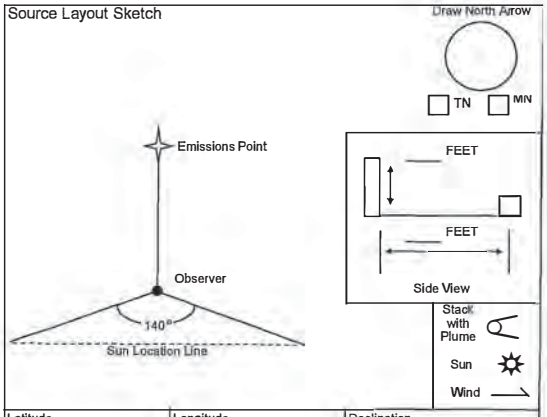
Height of Emiss. Pt. Start 142 End 142
Height of Emiss. Pt. Rel. to Observer Start 148 End 148
Distance to Emiss. Pt. Start 7 End 7
Direction to Emiss. Pt. (Degrees) Start S End S

Vetical Angle to Obs. Pt. Start 10 End 10
Direction to Obs. Pt. (Degrees) Start End
Distance and Direction to Observation Point from Emission Point Start 141 End 141

Describe Emissions Start NA End NA
Emission Color Start NA End NA
Water Droplet Plume Start NA End NA

Describe Plume Background Start End
Background Color Start Blue End Blue
Sky Conditions Start Cloudy End Cloudy
Wind Speed Start 9 End 9
Wind Direction Start S End S
Ambient Temp. Start End
Wet Bulb Temp.
RH Percent

Source Layout Sketch




Latitude Longitude Declination

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| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observation Date Time Zone Start Time 11:30 End Time 12:00pm

Observer's Name (Print) SEAN FIELDS
Observer's Signature Date 4/10/20
Organization Air Hygiene International, Inc.
Certified By Comp Assurance Assoc Date 01/03/2020

Additional Information

Method Used (Circle One)
Method 9 203A 203B Other: _____

Company Name: AIC Hygiene
Facility Name: Cricket Valley Energy Plant
Street Address: 1600 W Tacoma St
City: Broken Arrow State: OK Zip: 74012

Process Unit # 3 Operating Mode
Control Equipment Operating Mode DB

Describe Emissions Pont

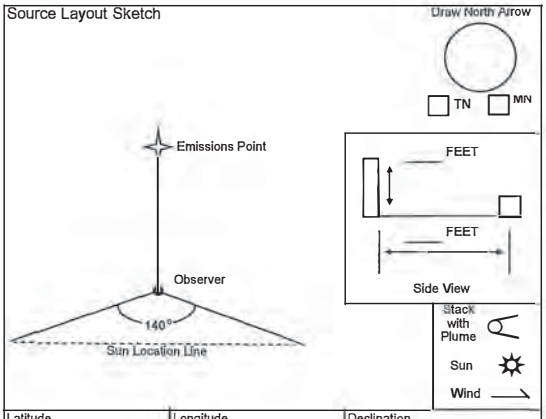
Height of Emiss. Pt. Start 137 End 137
Height of Emiss. Pt. Rel. to Observer Start 140 End 140
Distance to Emiss. Pt. Start 5 End 5
Direction to Emiss. Pt. (Degrees) Start 5 End 5

Vetical Angle to Obs. Pt. Start 12 End 12
Direction to Obs. Pt. (Degrees) Start End
Distance and Direction to Observation Point from Emission Point Start 146 End 146

Describe Emissions Start NA End NA
Emission Color Start NA End NA
Water Droplet Plume Start NA End NA

Describe Plume Background Start End
Background Color Start Blue End Blue
Sky Conditions Start Cloudy End Cloudy
Wind Speed Start 5 End 5
Wind Direction Start 5 End 5
Ambient Temp. Start End
Wet Bulb Temp.
RH Percent

Source Layout Sketch




Latitude Longitude Declination

Additional Information

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) Page 5 of 6
Continued on Form Number (AHI Project Code)
Observation Date Time Zone Start Time 12:00 PM End Time 12:30

| Min. \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print) SEAN FIELDS
Observer's Signature Date 1/3/20
Organization Air Hygiene International, Inc.
Certified By Comp Assurance Assoc Date 01/03/2020

Method Used (Circle One)
Method 9 203A 203B Other: _____

Company Name: Air Hygiene
Facility Name: Cricket Valley Energy Plant
Street Address: 1600 W Tacoma St
City: Broken Arrow State: OK Zip: 74012

Process: Unit # 3 Operating Mode:
Control Equipment: Operating Mode: DB

Describe Emissions Pont

| | | | |
|---|---|---|---|
| Height of Emiss. Pt. | | Height of Emiss. Pt. Rel. to Observer | |
| Start 139 | End 139 | Start 145 | End 145 |
| Distance to Emiss. Pt. | | Direction to Emiss. Pt. (Degrees) | |
| Start 8 | End 8 | Start 5 | End 5 |

| | | | |
|---|---|---|---|
| Vetical Angle to Obs. Pt. | | Direction to Obs. Pt. (Degrees) | |
| Start 142 | End 142 | Start | End |
| Distance and Direction to Observation Point from Emission Point | | | |
| Start 149 | | End 149 | |

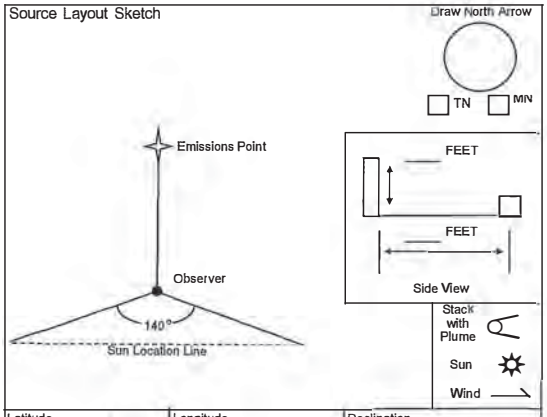
Describe Emissions
Start NA End NA

| | | | |
|---|---|---|---|
| Emission Color | | Water Droplet Plume | |
| Start NA | End NA | Start NA | End NA |

Describe Plume Background
Start End

| | | | |
|---|---|---|---|
| Background Color | | Sky Conditions | |
| Start Blue | End Blue | Start cloudy | End Cloudy |
| Wind Speed | | Wind Direction | |
| Start 12 | End 12 | Start 5 | End 5 |
| Ambient Temp. | | Wet Bulb Temp. | RH Percent |
| Start | End | | |

Source Layout Sketch




Latitude | Longitude | Declination

Additional Information

# VISUAL EMISSIONS OBSERVATION FORM

Form Number (AHI Project Code) Page 6 of 6
Continued on Form Number (AHI Project Code)

| Observation Date | Time Zone | Start Time | End Time |
|---|---|---|---|
| | | 12:50 pm | 1:00 |

| Min. \ Sec. | 0 | 15 | 30 | 45 | Comments |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | |
| 2 | 0 | 0 | 0 | 0 | |
| 3 | 0 | 0 | 0 | 0 | |
| 4 | 0 | 0 | 0 | 0 | |
| 5 | 0 | 0 | 0 | 0 | |
| 6 | 0 | 0 | 0 | 0 | |
| 7 | 0 | 0 | 0 | 0 | |
| 8 | 0 | 0 | 0 | 0 | |
| 9 | 0 | 0 | 0 | 0 | |
| 10 | 0 | 0 | 0 | 0 | |
| 11 | 0 | 0 | 0 | 0 | |
| 12 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 0 | 0 | |
| 14 | 0 | 0 | 0 | 0 | |
| 15 | 0 | 0 | 0 | 0 | |
| 16 | 0 | 0 | 0 | 0 | |
| 17 | 0 | 0 | 0 | 0 | |
| 18 | 0 | 0 | 0 | 0 | |
| 19 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0 | 0 | 0 | |
| 21 | 0 | 0 | 0 | 0 | |
| 22 | 0 | 0 | 0 | 0 | |
| 23 | 0 | 0 | 0 | 0 | |
| 24 | 0 | 0 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 0 | |
| 26 | 0 | 0 | 0 | 0 | |
| 27 | 0 | 0 | 0 | 0 | |
| 28 | 0 | 0 | 0 | 0 | |
| 29 | 0 | 0 | 0 | 0 | |
| 30 | 0 | 0 | 0 | 0 | |

Observer's Name (Print): SEAN FIELDS
Observer's Signature: [signature] Date: 11/12/20
Organization: Air Hygiene International, Inc.
Certified By: Comp Assurance Assoc Date: 01/03/2020

# APPENDIX C

# CALIBRATION GAS CERTIFICATIONS

Assay Laboratory: Red Ball TGS
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150

# CERTIFICATE OF ANALYSIS
## (Zero Ambient Nitrogen)

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0058639 | **Certification Date:** | 02/25/2020 |
| **Product ID Number:** | 121026 | **Expiration Date:** | 02/23/2028 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | RBTGS-Shreveport-LA |
| **COA #** | EB0058639.20200225-0 | **Lot Number:** | EB0058639.20200225 |
| **Customer PO. NO.:** | | **Tracking Number:** | 074332593 |
| **Customer:** | | **Previous Certification Dates:** | |

**This mixture is for laboratory use only, not for drug, household or other use.**
**This mixture is certified in Mole % to be within ±2% of the actual number reported with a confidence of 95%.**
**This mixture was manufactured by scale; weights traceable to N.I.S.T. Certificate #822/266926-02.**
**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

**Composing Material: Zero Ambient Nitrogen, Cert., Sz152**

| Component | Specification | Concentration |
|---|---|---|
| Nitrogen | Balance | Balance |
| Oxygen as Impurity | <1.0 PPM | <1.0 PPM |
| Carbon Dioxide as Impurity | <0.5 PPM | <0.5 PPM |
| Carbon Monoxide as Impurity | <0.5 PPM | <0.5 PPM |
| Total Oxides of Nitrogen as Impurity | <0.1 PPM | <0.1 PPM |
| Sulfur Dioxide as Impurity | <0.1 PPM | <0.1 PPM |
| Total Hydrocarbons as Impurity | <0.1 PPM | <0.1 PPM |

Red Ball Technical Gas Service
PGVP Vendor ID # G12020
Information and Ordering
800-551-8150
Fax (318-425-6309)

Accreditation #62754

Anthony Cyr
Assistant Operations Manager

Version 02-B, Revised on 2015-05-27

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12018

PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | CC722643 | **Certification Date**: | 11/26/2018 |
| **Product ID Number:** | 124605 | **Expiration Date:** | 11/24/2026 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | CC722643.20181121-0 | **Lot Number:** | CC722643.20181121 |
| **Customer PO. NO.:** | | **Tracking Number:** | 098499928 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Dioxide** | **18.9 %** | ±0.10 % | NDIR | 11/26/2018 |
| **Oxygen** | **20.9 %** | ±0.11 % | MPA | 11/26/2018 |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0005996 | EB0005996.20170209 | 05/09/2026 | GMIS | N2 | O2 | 20 % | 0.077 | 071001 |
| EB0032246 | EB0032246.20170209 | 08/05/2025 | GMIS | N2 | O2 | 24 % | 0.502 | 071001 |
| EB0097768 | EB0097768.20171018 | 02/06/2026 | GMIS | N2 | CO2 | 24.8 % | 0.398 | C1309410.01 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| O2 | MPA | Thermo | 410i | 1162980025 | 11/06/2018 |
| CO2 | NDIR | Thermo | 410i | 1162980025 | 11/26/2018 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Amisha Jewitt**
**Analytical Chemist**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12020

PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | CC716390 | **Certification Date**: | 02/25/2020 |
| **Product ID Number:** | 124606 | **Expiration Date:** | 02/23/2028 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | CC716390.20200220-0 | **Lot Number:** | CC716390.20200220 |
| **Customer PO. NO.:** | | **Tracking Number:** | 098496532 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Dioxide** | **8.91 %** | ±0.03 % | NDIR | 02/25/2020 |
| **Oxygen** | **11.98 %** | ±0.07 % | MPA | 02/24/2020 |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0007908 | EB0007908.20190327 | 06/18/2027 | GMIS | N2 | CO2 | 9.5 % | 0.191 | C1579010.02 |
| EB0080793 | EB0080793.20180118 | 07/21/2026 | GMIS | N2 | O2 | 11.97 % | 0.507 | 071001 |
| EB0087693 | EB0087693.20180504 | 07/21/2026 | GMIS | N2 | O2 | 24 % | 0.497 | 071001 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| O2 | MPA | Thermo | 410i | 1162980025 | 02/11/2020 |
| CO2 | NDIR | Thermo | 410i | 1162980025 | 02/25/2020 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Amisha Jewitt**
**Analytical Chemist**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12019

PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0040961 | **Certification Date**: | 10/31/2019 |
| **Product ID Number:** | 124737 | **Expiration Date:** | 10/30/2022 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0040961.20191017-0 | **Lot Number:** | EB0040961.20191017 |
| **Customer PO. NO.:** | | **Tracking Number:** | 065159907 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Monoxide** | **9.1 PPM** | ±0.12 PPM | FTIR | 10/30/2019 |
| **Nitric Oxide** | **8.8 PPM** | ±0.10 PPM | Chemiluminescence | 10/23/2019, 10/31/2019 |
| Total Oxides of Nitrogen | 8.9 PPM | | | |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| ALM005307 | ALM0053007.20181025 | 10/09/2022 | GMIS | N2 | NO | 34.2 PPM | 1.062 | 1684B |
| CC202290 | CC202290.20160721 | 01/11/2025 | GMIS | N2 | CO | 12.14 PPM | 1.033 | 091002 |
| EB0076031 | EB0076031.20190205 | 05/27/2027 | GMIS | N2 | CO | 18.7 PPM | 1.036 | 091002 |
| EB0089797 | EB0089797.20171116 | 11/09/2022 | GMIS | N2 | NO | 9.8 PPM | 1.085 | 12100115 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NO | Chemiluminescence | Thermo | T42C | 42C-68400-360 | 10/18/2019 |
| CO | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 09/30/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Amisha Jewitt**
**Analytical Chemist**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12019

PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | CC727541 | **Certification Date**: | 09/04/2019 |
| **Product ID Number:** | 125564 | **Expiration Date:** | 09/03/2022 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | CC727541.20190821-0 | **Lot Number:** | CC727541.20190821 |
| **Customer PO. NO.:** | | **Tracking Number:** | 098853162 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Monoxide** | **5.22 PPM** | ±0.07 PPM | FTIR | 08/27/2019 |
| **Nitric Oxide** | **4.51 PPM** | ±0.06 PPM | Chemiluminescence | 08/27/2019, 09/04/2019 |
| Total Oxides of Nitrogen | 4.55 PPM | | | |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| ALM047128 | ALM047128.20171116 | 11/08/2022 | GMIS | N2 | NO | 9.7 PPM | 1.06 | 12100115 |
| CC238352 | CC238352.20180209 | 07/18/2022 | GMIS | N2 | NO | 5.68 PPM | 1.131 | 12100115 |
| EB0076031 | EB0076031.20190205 | 05/27/2027 | GMIS | N2 | CO | 18.7 PPM | 1.036 | 091002 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NO | Chemiluminescence | Thermo | T42C | 42C-68400-360 | 08/09/2019 |
| CO | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 08/26/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

LaMeka Dennis
**Operations Manager**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12019

PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0075711 | **Certification Date:** | 05/09/2019 |
| **Product ID Number:** | 126123 | **Expiration Date:** | 05/07/2027 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0075711.20190429-0 | **Lot Number:** | EB0075711.20190429 |
| **Customer PO. NO.:** | | **Tracking Number:** | 084269029 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Methane** | **8.78 PPM** | ±0.07 PPM | FTIR | 05/09/2019 |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0058163 | EB0058163.201411231g | 03/17/2023 | GMIS | N2 | CH4 | 30.38 PPM | 0.277 | 2751 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| CH4 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 05/09/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Brandon Theus**
**Laboratory Supervisor**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12020

PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0078043 | **Certification Date:** | 02/25/2020 |
| **Product ID Number:** | 124609 | **Expiration Date:** | 02/23/2028 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0078043.20200220-0 | **Lot Number:** | EB0078043.20200220 |
| **Customer PO. NO.:** | | **Tracking Number:** | 084268978 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Methane** | **5.19 PPM** | ±0.03 PPM | FTIR | 02/25/2020 |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0058163 | EB0058163.201411231g | 03/17/2023 | GMIS | N2 | CH4 | 30.38 PPM | 0.277 | 2751 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| CH4 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 02/25/2020 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Brandon Theus**
**Laboratory Supervisor**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12018

PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0065886 | **Certification Date**: | 09/27/2018 |
| **Product ID Number:** | 125892 | **Expiration Date:** | 09/25/2026 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0065886.20180918-0 | **Lot Number:** | EB0065886.20180918 |
| **Customer PO. NO.:** | | **Tracking Number:** | 083031632 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Methane** | **3.03 PPM** | ±0.02 PPM | FTIR | 09/27/2018 |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0042063 | EB0042063.20171231 | 03/17/2023 | GMIS | N2 | CH4 | 30.37 PPM | 0.277 | 2751 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| CH4 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 09/27/2018 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Amisha Jewitt**
**Analytical Chemist**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12020

PJLA Calibration and Testing
Accreditation #62754

# CERTIFIED GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0093359 | **Certification Date:** | 03/26/2020 |
| **Product ID Number:** | 125123 | **Expiration Date:** | 03/26/2021 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0093359.20200325-0 | **Lot Number:** | EB0093359.20200325 |
| **Customer PO. NO.:** | | **Tracking Number:** | 095486048 |
| **Customer:** | | **Previous Certification Dates:** | |

**This mixture is for laboratory use only, not for drug, household or other use.**
**This mixture is certified in Mole % to be within ±2% of the actual number reported with a confidence of 95%.**
**This mixture was manufactured by scale; weights traceable to N.I.S.T. Certificate #822/266926-02.**
**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle |
|---|---|---|---|
| **Ammonia** | **48.9 PPM** | ± 2% NIST | FTIR |
| **Sulfur Hexafluoride** | **9.74 PPM** | ± 2% NIST | FTIR |
| Nitrogen | Balance | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| SA18481 | 70086910005 | 04/12/2020 | PS | N2 | NH3 | 21.1 PPM | 1.2 | 73248226 |
| EB0079029 | EB0079029 | 06/27/2020 | PS | N2 | SF6 | 10.1 PPM | 5 | 191064 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NH3 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | |
| SF6 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Brandon Theus**
**Laboratory Supervisor**
Assay Laboratory: Red Ball TGS
Version 02-G, Revised on 2017-07-02

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12019

PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0098845 | **Certification Date**: | 05/03/2019 |
| **Product ID Number:** | 124731 | **Expiration Date:** | 05/02/2022 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0098845.20190416-0 | **Lot Number:** | EB0098845.20190416 |
| **Customer PO. NO.:** | | **Tracking Number:** | 095689140 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Nitrogen Dioxide** | **48.7 PPM** | ±0.6 PPM | FTIR | 04/26/2019, 05/03/2019 |

Air Balance

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0003640 | EB0003640.20190102 | 03/20/2022 | GMIS | AIR | NO2 | 87.8 PPM | 1.061 | C1579010.01 |
| EB0096848 | EB0096848.20190102 | 03/21/2022 | GMIS | AIR | NO2 | 61.1 PPM | 1.072 | C1579010.01 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NO2 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 04/26/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Brandon Theus**
**Laboratory Supervisor**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

# APPENDIX D

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

# QA/QC PROGRAM

AIR HYGIENE ensures the quality and validity of its emission measurement and reporting procedures through a rigorous quality assurance (QA) program. The program is developed and administered by an internal QA team and encompasses six major areas:

1. Field Qualifications
2. QA reviews of reports, laboratory work, and field testing;
3. Equipment calibration and maintenance;
4. Chain-of-custody;
5. Training; and
6. Knowledge of current test methods

## Field Qualifications

Air Hygiene personnel are required to gain and maintain competence with testing methods and techniques according to their job titles and the roles they play during field testing events. Qualifications for each job description include:

Staff Technician - An entry level position with responsibility to test on the stack by performing duties that include: keep trucks and trailers stocked and clean, travel to and from job site, be the "hands of the test" on the stack; stay on a stack during the sample test, set up and tear down equipment on-site, perform maintenance on equipment in the shop and on-site.

Test Technician or Specialist - Acts as the "hands of the test" on the stack by performing duties that include: stay on a stack during the sample test, migrate to the testing trailer and learn the different analyzers and testing methods used on site, set up and tear down testing equipment on site, learn the system for testing from Testing Managers and Project Managers, travel to and from job site; including driving responsibilities under DOT requirements, follow directions of Testing Managers and Project Managers, learn the proper way to conduct on-site test of stationary stacks

Test Manager or Engineer - Directs and coordinates all aspects of a successful test by performing the following duties personally or through subordinate supervisors including: operating analyzers and consoles during testing along with QA/QC procedures, supervise set up and tear down of equipment on site, writing, reviewing, and revising final test reports, working with the client or state personnel while on the job site, managing pre-test checklists and onsite testing procedures, diagnose and repair any problems that may arise with the equipment, safely operate a man lift and drive a truck with or without a trailer, act as crew leader in the field, write protocols and reports, maintain project log of services performed on the job, verify all equipment needed for a job was loaded on the trailer. Test Managers must hold at least one QSTI certificate.

Project Manager - Directs and coordinates all aspects of a successful test by performing the following duties personally or through subordinate supervisors including: operating analyzers and consoles during testing along with QA/QC procedures, supervise set up and tear down of equipment on site, writing, reviewing, and revising final test reports, working with the client or state personnel while on the job site, managing pre-test checklists and onsite testing procedures, diagnose and repair any problems that may arise with the equipment, safely operate a man lift and drive a truck with or without a trailer, act as crew leader in the field, write protocols and reports, maintain project log of services performed on the job, verify all equipment needed for a job was loaded on the trailer. Project Managers typically hold QSTI certificates in Groups 1 through 4.

## QA Reviews

Air Hygiene's review procedure includes review of each source test report, along with laboratory and fieldwork, by the QA Team. The most important review is the one that takes place before a test program begins. The QA Team works closely with technical division personnel to prepare and review test protocols. Test protocol review includes selection of appropriate test procedures, evaluation of interferences or other restrictions that might preclude use of standard test procedures, and evaluation and/or development of alternate procedures.

## Equipment Calibration and Maintenance

The equipment used to conduct the emission measurements is maintained according to the manufacturer's instructions to ensure proper operation. In addition to the maintenance program, calibrations are carried out on each measurement device according to the schedule outlined by the Environmental Protection Agency. Quality control checks are also conducted in the field for each test program. In conformance with ASTM D7036 Section 15.3.15, all metering and monitoring equipment meets or exceeds the uncertainty criteria contained in the method language that pertains to that equipment.

### Chain-of-Custody

Air Hygiene maintains full chain-of-custody documentation on all samples and data sheets. In addition to normal documentation of changes between field sample custodians, laboratory personnel, and field test personnel, Air Hygiene documents every individual who handles any test component in the field (e.g., probe wash, impinger loading and recovery, filter loading and recovery, etc.). Samples are stored in a locked area to which only Air Hygiene personnel have access. Field data sheets are secured at Air Hygiene's offices upon return from the field.

### Training

Personnel's training is essential to ensure quality testing. Air Hygiene has formal and informal training programs, which include:

1. Attendance at EPA-sponsored training courses
2. Enrollment in EPA correspondence courses
3 A requirement for all technicians to read and understand Air Hygiene's QA manual
4. In-house training and QA meetings on a regular basis
5. Maintenance of training records

### Knowledge of Current Test Methods

With the constant updating of standard test methods and the wide variety of emerging test procedures, it is essential that any qualified source tester keep abreast of new developments. Air Hygiene subscribes to services, which provide updates on EPA reference methods, rules, and regulations. Additionally, source test personnel regularly attend and present papers at testing and emission-related seminars and conferences. Air Hygiene personnel maintain membership in the Air and Waste Management Association and the American Industrial Hygiene Association.

### Reproduction and Distribution Policy

Reproducing portions of this test report may omit critical or substantial documentation or be taken out of context and due care must be exercised in this regard. Furthermore, this test report and its associated data shall not be reproduced in full or in part without the written consent of the customer.

### Data Provided by Client

Data provided by the Client is clearly identified in the report. Air Hygiene accepts data provided by the Client as accurate.

# COMBUSTION TESTING QUALITY ASSURANCE ACTIVITIES

In conformance with ASTM D7036 Section 15.3.11 and 13, all testing was performed without any real or apparent errors, with the exception of those that would be listed in Section 2.0 of this report. In addition, all testing was conducted according to the approved testing protocol, test methods, Air Hygiene Quality Manual, or ASTM D7036, with the exception of specifics noted in Section 2.0 of this report. A number of quality assurance activities were undertaken before, during, and after this testing project. This section of the report combined with the documentation in Appendix C describes each of those activities.

Each instrument's response was checked and adjusted in the field prior to the collection of data via multi-point calibration. The instrument's linearity was checked by adjusting its zero and span responses to zero nitrogen and an upscale calibration gas in the range of the expected concentrations. The instrument response was then challenged with other calibration gases of known concentration and accepted as being linear if the response of the other calibration gases agreed within plus or minus two percent of the range of predicted values. $NO_2$ to NO conversion was checked via direct connect with an EPA Protocol certified concentration of $NO_2$ in a balance of air or nitrogen. Conversion was verified to be between 90 and 110 percent.

After each test run, the analyzers were checked for zero and span drift. This allowed each test run to be bracketed by calibrations and documents the precision of the data just collected. The criterion for acceptable data is that the instrument drift is no more than three percent of the full-scale response. The quality assurance worksheets in the following pages summarize all multipoint calibration checks and zero to span checks performed during the tests. These worksheets (as prepared from the data records of Appendix A) show that no drifts in excess of three percent occurred in the zero to span checks following each test run.

The sampling systems were leak checked by demonstrating that a vacuum greater than 10 in Hg could be held for at least one minute with a decline of less than one inch of Hg. A leak test was conducted after the sample system was set up and before the system was dismantled. This test was conducted to ensure that ambient air had not diluted the sample. Any leakage detected prior to the tests would be repaired and another leak check conducted before testing commenced. No leaks were found during the pre or post-test leak checks.

The absence of leaks in the sampling system was also verified by a sampling system bias check. The sampling system's integrity was tested by comparing the responses of the analyzers to the calibration gases introduced via two paths. The first path was directly into the analyzer and the second path via the sample system at the sample probe. Any difference in the instrument responses by these two methods was attributed to sampling system bias or leakage. The criterion for acceptance is agreement within five percent of the span of the analyzer.

The control gases used to calibrate the instruments were analyzed and certified by the compressed gas vendors to plus or minus one percent accuracy for all gases. EPA Protocol No. 1 was used, where applicable to assign the concentration values traceable to the National Institute of Standards and Technology (NIST), Standard Reference Materials (SRM's). The gas calibration sheets as prepared by the vendor are contained in Appendix C.

Air Hygiene collected and reported the enclosed test data in accordance with the procedures and quality assurance activities described in this test report. Air Hygiene makes no warranty as to the suitability of the test methods. Air Hygiene also assumes no liability relating to the interpretation and use of the test data.

## INSTRUMENTAL ANALYSIS
## QUALITY ASSURANCE DATA

Date: April 15-17, 2020
Company: Cricket Valley Energy Center LLC
Location: Dover Plains, New York
Techs: RW / AM / SF / JJ / MJ / GT

**Sample System Leak Check**

| Date | Sample System | Leak Rate (l/min) |
|---|---|---|
| April 15-17, 2020 | 1 | 0 |

bec-19-cricketvalley.ny-start#3-U-00003-rpt

# Accredited Laboratory

A2LA has accredited

## AIR HYGIENE INTERNATIONAL, INC.

*Broken Arrow, OK*

for technical competence in the field of

## Environmental Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets the A2LA *R219 – Specific Requirements – TNI Field Sampling and Measurement Organization Accreditation Program*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 18th day of December 2019

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3796.01
Valid to August 31, 2021

*For the tests to which this accreditation applies, please refer to the laboratory's Envrionmental Scope of Accreditation.*

STAC STACK TESTING ACCREDITATION COUNCIL

A2LA American Association for Laboratory Accreditation

# *Accredited Air Emission Testing Body*

A2LA has accredited

## AIR HYGIENE INTERNATIONAL, INC.

In recognition of the successful completion of the joint A2LA and Stack Testing Accreditation Council (STAC) evaluation process, this laboratory is accredited to perform testing activities in compliance with ASTM D7036:2004 - Standard Practice for Competence of Air Emission Testing Bodies.

Presented this 18th day of December 2019.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3796.02
Valid to August 31, 2021

*This accreditation program is not included under the A2LA ILAC Mutual Recognition Arrangement.*

# SOURCE EVALUATION SOCIETY

## Qualified Source Testing Individual

LET IT BE KNOWN THAT

## ROBERT C. WHITE, Jr.

HAS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED EXPERIENCE REQUIREMENTS IN ACCORDANCE WITH THE GUIDELINES ISSUED BY THE SES QUALIFIED SOURCE TEST INDIVIDUAL REVIEW BOARD FOR

***GASEOUS POLLUTANTS INSTRUMENTAL SAMPLING METHODS***

ISSUED THIS 25TH DAY OF OCTOBER 2019 AND EFFECTIVE UNTIL OCTOBER 24TH, 2024

*Peter R. Westlin, QSTI/QSTO Review Board*

*Peter S. Pakalnis, QSTI/QSTO Review Board*

*Tina Sanderson, QSTI/QSTO Review Board*

*J. Wade Bice, QSTI/QSTO Review Board*

*Karen D. Kajiya-Mills , QSTI/QSTO Review Board*

*Bruce Randall QSTI/QSTO Review Board*

**CERTIFICATE NO. 2015-898**

# Compliance Assurance Associates Inc.

Helping Industry Comply with Environmental Regulations

This is to acknowledge that

## Sean Fields

BRO200103-17227

Certificate verification is available at www.Compliance.Assurance.com/certs.php using the last name and 17227

successfully participated in Visible Emissions Evaluation field training and certification and pursuant to US EPA 40 CFR 60 Appendix A, Reference Method 9, as amended, is certified to evaluate Visible Emissions for a period of six (6) months from the date of this certification.



| Anthony Ferro - Field Manager | Broken Arrow, OK | 01/03/2020 |
|---|---|---|
| | Location | Date |

Compliance Assurance Associates, Inc. 682 Orvil Smith Rd, Harvest, AL, 35749. 901-381-9960. compliance-assurance.com

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

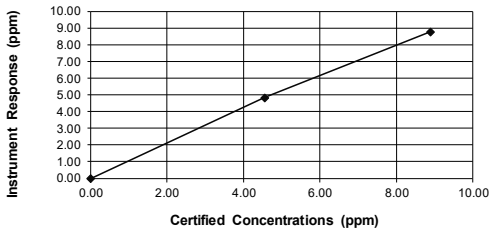
## Daily Reference Method Analyzer Calibration Data

**Calibration Date: April 15, 2020** **Location: Cricket Valley Energy Center - Unit U-00003**

**Client: Cricket Valley Energy Center LLC**

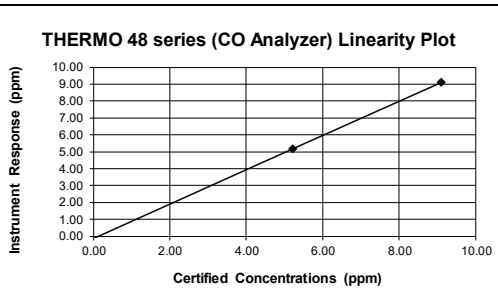
NOx Span (ppm) = 8.90

| THERMO 42 series (NOx Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Absolute Conc. (ppm) | Pass (±2%, ≤0.5ppm) |
| 0.00 | 0.01 | 0.11 | 0.01 | YES (%) |
| 4.55 | 4.85 | 3.37 | 0.30 | YES (abs) |
| 8.90 | 8.82 | -0.90 | 0.08 | YES (%) |
| Linearity = 1.008 | | | | |



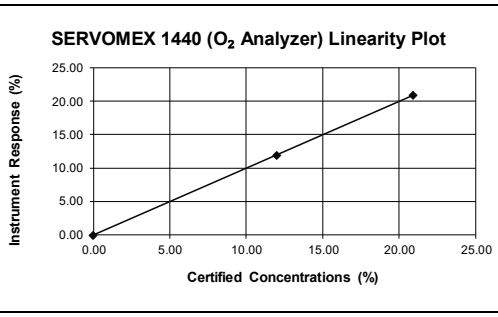

CO Span (ppm) = 9.10

| THERMO 48 series (CO Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Absolute Conc. (ppm) | Pass (±2%, ≤0.5ppm) |
| 0.00 | -0.11 | -1.18 | 0.11 | YES (%) |
| 5.22 | 5.16 | -0.66 | 0.06 | YES (%) |
| 9.10 | 9.11 | 0.11 | 0.01 | YES (%) |
| Linearity = 0.988 | | | | |




$O_2$ Span (%) = 20.90

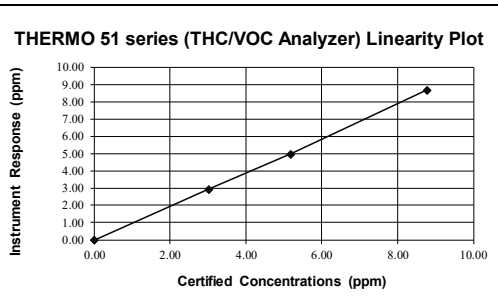
| SERVOMEX 1440 ($O_2$ Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (%) | Instrument Response (%) | Calibration Error (%) | Absolute Conc. (%) | Pass (±2%, ≤0.5%) |
| 0.00 | 0.03 | 0.14 | 0.03 | YES (%) |
| 11.98 | 11.96 | -0.10 | 0.02 | YES (%) |
| 20.90 | 20.93 | 0.14 | 0.03 | YES (%) |
| Linearity = 1.000 | | | | |




VOC (as C1) Range (ppm) = 10.5

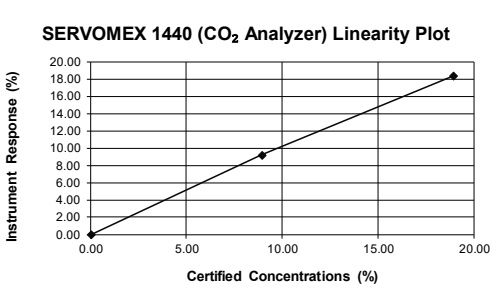
| THERMO 51 series (THC/VOC Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Estimated Point (ppm) | Pass (±2,5%)[1] |
| 0.00 | 0.00 | 0.00 | N/A | YES |
| 3.03 | 2.96 | -1.40 | 3.00 | YES |
| 5.19 | 4.97 | -3.33 | 5.14 | YES |
| 8.78 | 8.70 | -0.76 | N/A | YES |
| Linearity = 0.997 | | | | |

[1]-zero/high based on 2% of span, low/mid based on 5% of concentration




$CO_2$ Span (%) = 18.90

| SERVOMEX 1440 ($CO_2$ Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (%) | Instrument Response (%) | Calibration Error (%) | Absolute Conc. (%) | Pass (±2%, ≤0.5%) |
| 0.00 | 0.00 | 0.00 | 0.00 | YES (%) |
| 8.91 | 9.25 | 1.80 | 0.34 | YES (%) |
| 18.90 | 18.41 | -2.59 | 0.49 | YES (abs) |
| Linearity = 1.027 | | | | |

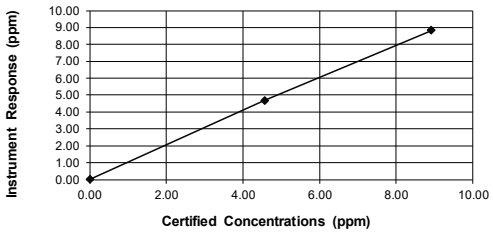


**Calibration Date: April 16, 2020** **Location: Cricket Valley Energy Center - Unit U-00003**

**Client: Cricket Valley Energy Center LLC**

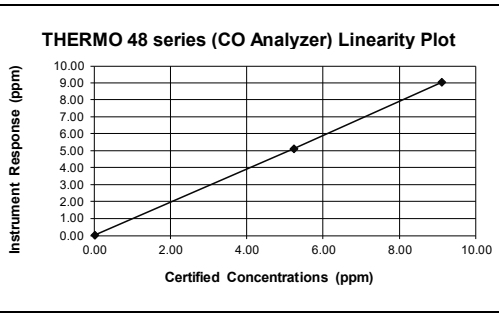
NOx Span (ppm) = 8.90

| THERMO 42 series (NOx Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Absolute Conc. (ppm) | Pass (±2%, ≤0.5ppm) |
| 0.00 | 0.02 | 0.22 | 0.02 | YES (%) |
| 4.55 | 4.69 | 1.57 | 0.14 | YES (%) |
| 8.90 | 8.83 | -0.79 | 0.07 | YES (%) |
| Linearity = 1.009 | | | | |



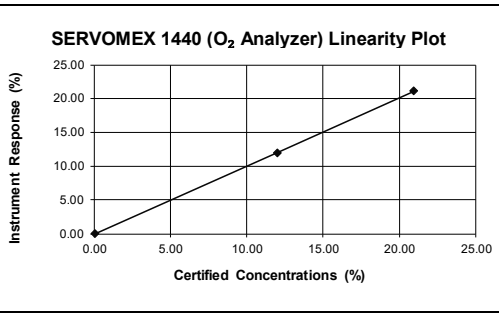

CO Span (ppm) = 9.10

| THERMO 48 series (CO Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Absolute Conc. (ppm) | Pass (±2%, ≤0.5ppm) |
| 0.00 | 0.01 | 0.13 | 0.01 | YES (%) |
| 5.22 | 5.10 | -1.32 | 0.12 | YES (%) |
| 9.10 | 9.05 | -0.55 | 0.05 | YES (%) |
| Linearity = 1.008 | | | | |




$O_2$ Span (%) = 20.90

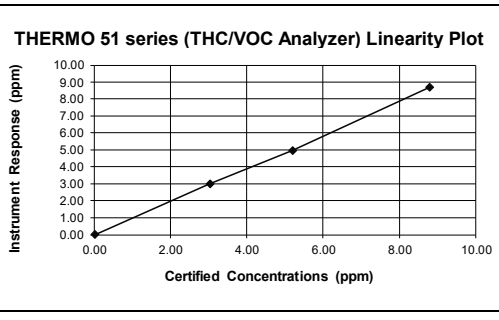
| SERVOMEX 1440 ($O_2$ Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (%) | Instrument Response (%) | Calibration Error (%) | Absolute Conc. (%) | Pass (±2%, ≤0.5%) |
| 0.00 | 0.00 | 0.00 | 0.00 | YES (%) |
| 11.98 | 11.97 | -0.05 | 0.01 | YES (%) |
| 20.90 | 21.10 | 0.96 | 0.20 | YES (%) |
| Linearity = 0.991 | | | | |




VOC (as C1) Range (ppm) = 10.5

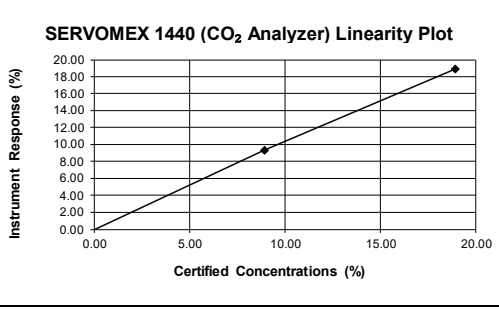
| THERMO 51 series (THC/VOC Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Estimated Point (ppm) | Pass (±2,5%)[1] |
| 0.00 | 0.01 | 0.05 | N/A | YES |
| 3.03 | 3.01 | 0.14 | 3.01 | YES |
| 5.19 | 4.96 | -3.56 | 5.14 | YES |
| 8.78 | 8.70 | -0.76 | N/A | YES |
| Linearity = 1.004 | | | | |

[1]-zero/high based on 2% of span,low/mid based on 5% of concentration




$CO_2$ Span (%) = 18.90

| SERVOMEX 1440 ($CO_2$ Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (%) | Instrument Response (%) | Calibration Error (%) | Absolute Conc. (%) | Pass (±2%, ≤0.5%) |
| 0.00 | -0.02 | -0.09 | 0.02 | YES (%) |
| 8.91 | 9.32 | 2.17 | 0.41 | YES (abs) |
| 18.90 | 18.93 | 0.16 | 0.03 | YES (%) |
| Linearity = 0.998 | | | | |



**NOx Converter Efficiency**

**Date:** April 15, 2020

**Analyzer:** inst-nx-0031

RM 7E, (02-27-14), Sections 7.1.4; 8.2.4.1; 12.7; and 13.5 Introduce $NO_2$ to the analyzer and record the NOx concentration displayed. ... Calculate the converter efficiency using Equation 7E-7. The specification for converter efficiency must be met. ... Air Hygiene also references ALT-0013 for specific $NO_2$ concentration (40-60 ppm) and EPA Traceability Protocol requirements (±2%).

| | | |
|---|---|---|
| **Audit Gas:** | $NO_2$ Concentration ($C_v$), ppmvd | **48.70** |
| **Converter Efficiency Calculations:** | | |
| | Analyzer Reading, NO Channel, ppmvd | **2.19** |
| | Analyzer Reading, NOx Channel, ppmvd | **49.10** |
| | Analyzer Reading, $NO_2$ Channel ($C_{Dir(NO2)}$), ppmvd | **46.91** |
| | Converter Efficiency, % | **96.32** |

RM 7E, (02-27-14), 13.5 $NO_2$ to NO Conversion Efficiency Test (as applicable). The $NO_2$ to NO conversion efficiency, calculated according to Equation 7E-7, must be greater than or equal to 90 percent.

$$Eff_{NO2} = \left(\frac{C_{Dir}}{C_V}\right) \times 100$$

Eq. 7E-7 = $\frac{46.91 \text{ ppmvd}}{48.70 \text{ ppmvd}}$ x 100 = 96.32%

| Date/Time | Elapsed Time | NOx | NO |
|---|---|---|---|
| mm/dd/yy hh:mm:ss | Seconds | ppmvd | ppmvd |
| 04/15/20 10:01:00 | 0 | 45.97 | 3.13 |
| 04/15/20 10:01:10 | 10 | 46.40 | 3.03 |
| 04/15/20 10:01:20 | 20 | 46.97 | 3.00 |
| 04/15/20 10:01:30 | 30 | 47.34 | 2.85 |
| 04/15/20 10:01:40 | 40 | 47.72 | 2.76 |
| 04/15/20 10:01:50 | 50 | 48.13 | 2.71 |
| 04/15/20 10:02:00 | 60 | 48.35 | 2.56 |
| 04/15/20 10:02:10 | 70 | 48.57 | 2.46 |
| 04/15/20 10:02:20 | 80 | 48.76 | 2.44 |
| 04/15/20 10:02:30 | 90 | 48.94 | 2.36 |
| 04/15/20 10:02:40 | 100 | 49.04 | 2.29 |
| 04/15/20 10:02:50 | 110 | 49.10 | 2.24 |
| ***04/15/20 10:03:00*** | ***120*** | ***49.10*** | ***2.19*** |
| 04/15/20 10:03:10 | 130 | 49.23 | 2.22 |
| 04/15/20 10:03:20 | 140 | 49.34 | 2.18 |
| 04/15/20 10:03:30 | 150 | 49.43 | 2.12 |
| 04/15/20 10:03:40 | 160 | 49.48 | 2.10 |
| 04/15/20 10:03:50 | 170 | 48.49 | 2.07 |

**NOx Converter Efficiency**

**Date:** April 16, 2020

**Analyzer:** inst-nx-0031

RM 7E, (02-27-14), Sections 7.1.4; 8.2.4.1; 12.7; and 13.5 Introduce $NO_2$ to the analyzer and record the NOx concentration displayed. ... Calculate the converter efficiency using Equation 7E-7. The specification for converter efficiency must be met. ... Air Hygiene also references ALT-0013 for specific $NO_2$ concentration (40-60 ppm) and EPA Traceability Protocol requirements (±2%).

| | | |
|---|---|---|
| **Audit Gas:** | $NO_2$ Concentration ($C_v$), ppmvd | **48.70** |
| **Converter Efficiency Calculations:** | | |
| | Analyzer Reading, NO Channel, ppmvd | **1.70** |
| | Analyzer Reading, NOx Channel, ppmvd | **46.19** |
| | Analyzer Reading, $NO_2$ Channel ($C_{Dir(NO2)}$), ppmvd | **44.49** |
| | Converter Efficiency, % | **91.36** |

RM 7E, (02-27-14), 13.5 $NO_2$ to NO Conversion Efficiency Test (as applicable). The $NO_2$ to NO conversion efficiency, calculated according to Equation 7E-7, must be greater than or equal to 90 percent.

$$Eff_{NO2} = \left(\frac{C_{Dir}}{C_V}\right) \times 100$$

Eq. 7E-7 = $\frac{44.49 \text{ ppmvd}}{48.70 \text{ ppmvd}}$ x 100 = 91.36%

| Date/Time | Elapsed Time | NOx | NO |
|---|---|---|---|
| mm/dd/yy hh:mm:ss | Seconds | ppmvd | ppmvd |
| 04/16/20 05:20:02 | 740 | 44.92 | 1.76 |
| 04/16/20 05:20:12 | 750 | 45.17 | 1.74 |
| 04/16/20 05:20:22 | 760 | 45.17 | 1.73 |
| 04/16/20 05:20:32 | 770 | 45.21 | 1.76 |
| 04/16/20 05:20:42 | 780 | 45.13 | 1.69 |
| 04/16/20 05:20:52 | 790 | 45.16 | 1.71 |
| 04/16/20 05:21:02 | 800 | 45.98 | 1.68 |
| 04/16/20 05:21:12 | 810 | 46.20 | 1.71 |
| 04/16/20 05:21:22 | 820 | 46.21 | 1.67 |
| 04/16/20 05:21:32 | 830 | 46.20 | 1.69 |
| ***04/16/20 05:21:42*** | ***840*** | ***46.19*** | ***1.70*** |
| 04/16/20 05:21:52 | 850 | 46.08 | 1.60 |
| 04/16/20 05:22:02 | 860 | 46.06 | 1.63 |
| 04/16/20 05:22:12 | 870 | 46.11 | 1.65 |
| 04/16/20 05:22:22 | 880 | 46.14 | 1.67 |
| 04/16/20 05:22:32 | 890 | 45.25 | 1.66 |
| 04/16/20 05:22:42 | 900 | 44.01 | 1.71 |
| 04/16/20 05:22:52 | 910 | 43.35 | 1.71 |
| 04/16/20 05:23:02 | 920 | 42.90 | 2.17 |

**Cricket Valley Energy Center LLC**
**April 15, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - PRE TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ (%) |
|---|---|---|---|
| 04/15/20 | 9:11:40 | 20200415CAL&SPIKE_0425.LAB | 9.1282 |
| 04/15/20 | 9:11:50 | 20200415CAL&SPIKE_0426.LAB | 9.1524 |
| 04/15/20 | 9:12:01 | 20200415CAL&SPIKE_0427.LAB | 9.1538 |
| 04/15/20 | 9:12:11 | 20200415CAL&SPIKE_0428.LAB | 9.1495 |
| 04/15/20 | 9:12:21 | 20200415CAL&SPIKE_0429.LAB | 9.1561 |

**PRE TEST AVERAGE** **9.15**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - POST TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ (%) |
|---|---|---|---|
| 04/15/20 | 13:25:09 | 20200415RUN#3_0001.LAB | 9.1662 |
| 04/15/20 | 13:25:39 | 20200415RUN#3_0002.LAB | 9.2259 |
| 04/15/20 | 13:26:09 | 20200415RUN#3_0003.LAB | 9.2390 |
| 04/15/20 | 13:26:39 | 20200415RUN#3_0004.LAB | 9.2362 |
| 04/15/20 | 13:27:09 | 20200415RUN#3_0005.LAB | 9.2510 |

**POST TEST AVERAGE** **9.22**

**Analyzer Make:** MKS **Analyzer Model:** 2030

$CO_2$ Cylinder Conc. % = 8.91

| Run ID | Instrument Response (%) | Error (%) | Pass / Fail ±5% |
|---|---|---|---|
| Pre Test | 9.15 | 2.67 | PASS |
| Post Test | 9.22 | 3.52 | PASS |

**Cricket Valley Energy Center LLC**
**April 15, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - PRE TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ (ppm) |
|---|---|---|---|
| 04/15/20 | 8:28:17 | 20200415CAL&SPIKE_0173.LAB | 47.7009 |
| 04/15/20 | 8:28:27 | 20200415CAL&SPIKE_0174.LAB | 47.5497 |
| 04/15/20 | 8:28:37 | 20200415CAL&SPIKE_0175.LAB | 47.5848 |
| 04/15/20 | 8:28:48 | 20200415CAL&SPIKE_0176.LAB | 47.5393 |
| 04/15/20 | 8:28:58 | 20200415CAL&SPIKE_0177.LAB | 47.5565 |

**PRE TEST AVERAGE** **47.59**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - POST TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ (ppm) |
|---|---|---|---|
| 04/16/20 | 4:59:05 | 20200415SPIKE_0872.LAB | 47.9093 |
| 04/16/20 | 4:59:15 | 20200415SPIKE_0873.LAB | 47.9443 |
| 04/16/20 | 4:59:26 | 20200415SPIKE_0874.LAB | 47.9725 |
| 04/16/20 | 4:59:36 | 20200415SPIKE_0875.LAB | 48.0365 |
| 04/16/20 | 4:59:47 | 20200415SPIKE_0876.LAB | 48.0709 |

**POST TEST AVERAGE** **47.99**

**Analyzer Make:** MKS **Analyzer Model:** 2030

$NH_3$ Cylinder Conc. ppm = 48.90

| Run ID | Instrument Response (%) | Error (%) | Pass / Fail ±5% |
|---|---|---|---|
| Pre Test | 47.59 | -2.69 | PASS |
| Post Test | 47.99 | -1.87 | PASS |

**Cricket Valley Energy Center LLC**
**April 15, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

## Calibration Gas #1

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ ppmvd |
|---|---|---|---|
| 04/15/20 | 8:27:46 | 20200415CAL&SPIKE_0170.LAB | 47.4839 |
| 04/15/20 | 8:27:56 | 20200415CAL&SPIKE_0171.LAB | 47.4808 |
| 04/15/20 | 8:28:06 | 20200415CAL&SPIKE_0172.LAB | 47.5834 |
| 04/15/20 | 8:28:17 | 20200415CAL&SPIKE_0173.LAB | 47.7009 |
| 04/15/20 | 8:28:27 | 20200415CAL&SPIKE_0174.LAB | 47.5497 |
| 04/15/20 | 8:28:37 | 20200415CAL&SPIKE_0175.LAB | 47.5848 |
| 04/15/20 | 8:28:48 | 20200415CAL&SPIKE_0176.LAB | 47.5393 |
| 04/15/20 | 8:28:58 | 20200415CAL&SPIKE_0177.LAB | 47.5565 |
| **RAW AVERAGE** | | | **47.560** |

## Calibration Gas #2

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $SF_6$ ppmvd |
|---|---|---|---|
| 04/15/20 | 8:19:09 | 20200415CAL&SPIKE_0120.LAB | 10.2301 |
| 04/15/20 | 8:19:19 | 20200415CAL&SPIKE_0121.LAB | 10.2182 |
| 04/15/20 | 8:19:30 | 20200415CAL&SPIKE_0122.LAB | 10.2299 |
| 04/15/20 | 8:19:40 | 20200415CAL&SPIKE_0123.LAB | 10.2233 |
| 04/15/20 | 8:19:50 | 20200415CAL&SPIKE_0124.LAB | 10.2322 |
| 04/15/20 | 8:20:01 | 20200415CAL&SPIKE_0125.LAB | 10.2258 |
| 04/15/20 | 8:20:11 | 20200415CAL&SPIKE_0126.LAB | 10.2182 |
| 04/15/20 | 8:20:22 | 20200415CAL&SPIKE_0127.LAB | 10.2138 |
| **RAW AVERAGE** | | | **10.224** |

## Run #1: Pre-Spike - Native

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $NH_3$ ppmvw | $SF_6$ ppmvw |
|---|---|---|---|---|---|---|
| 04/15/20 | 15:10:50 | 20200415RUN#3_0212.LAB | 4.5235 | 4.3240 | 0.2707 | 0.0006 |
| 04/15/20 | 15:11:20 | 20200415RUN#3_0213.LAB | 4.5245 | 4.3205 | 0.2504 | 0.0012 |
| 04/15/20 | 15:11:50 | 20200415RUN#3_0214.LAB | 4.5271 | 4.2876 | 0.2727 | 0.0003 |
| 04/15/20 | 15:12:20 | 20200415RUN#3_0215.LAB | 4.5442 | 4.2094 | 0.2554 | -0.0025 |
| 04/15/20 | 15:12:50 | 20200415RUN#3_0216.LAB | 4.5324 | 4.1599 | 0.2369 | -0.0011 |
| 04/15/20 | 15:13:20 | 20200415RUN#3_0217.LAB | 4.5443 | 4.1716 | 0.2545 | -0.0027 |
| 04/15/20 | 15:13:50 | 20200415RUN#3_0218.LAB | 4.5385 | 4.1663 | 0.2405 | -0.0019 |
| 04/15/20 | 15:14:20 | 20200415RUN#3_0219.LAB | 4.5389 | 4.1462 | 0.2546 | -0.0018 |
| **RAW AVERAGE** | | | **4.534** | **4.223** | **0.254** | **-0.001** |

**Cricket Valley Energy Center LLC**
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**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Run #1: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $SF_6$ ppmvw | $NH_3$ ppmvw |
|---|---|---|---|---|---|---|
| 04/15/20 | 15:32:04 | 20200415SPIKE_0097.LAB | 4.1273 | 2.7738 | 1.0243 | 3.6900 |
| 04/15/20 | 15:32:14 | 20200415SPIKE_0098.LAB | 4.1247 | 2.7299 | 1.0063 | 3.5985 |
| 04/15/20 | 15:32:25 | 20200415SPIKE_0099.LAB | 4.1403 | 2.6976 | 1.0001 | 3.6008 |
| 04/15/20 | 15:32:35 | 20200415SPIKE_0100.LAB | 4.1236 | 3.0493 | 0.9957 | 3.7726 |
| 04/15/20 | 15:32:45 | 20200415SPIKE_0101.LAB | 4.0903 | 3.3813 | 0.9940 | 3.7888 |
| 04/15/20 | 15:32:56 | 20200415SPIKE_0102.LAB | 4.0742 | 3.8885 | 0.9923 | 3.9360 |
| 04/15/20 | 15:33:06 | 20200415SPIKE_0103.LAB | 4.0400 | 4.5620 | 0.9872 | 4.0751 |
| 04/15/20 | 15:33:16 | 20200415SPIKE_0104.LAB | 4.0694 | 5.3042 | 0.8312 | 4.1363 |
| **RAW AVERAGE** | | | **4.099** | **3.548** | **0.979** | **3.825** |

**Run #2: Pre-Spike - Native**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $NH_3$ ppmvw | $SF_6$ ppmvw |
|---|---|---|---|---|---|---|
| 04/15/20 | 15:42:03 | 20200415SPIKE_0155.LAB | 4.3191 | 8.0914 | 0.7755 | 0.0018 |
| 04/15/20 | 15:42:14 | 20200415SPIKE_0156.LAB | 4.3088 | 8.1076 | 0.7703 | 0.0009 |
| 04/15/20 | 15:42:24 | 20200415SPIKE_0157.LAB | 4.3275 | 8.0690 | 0.7358 | 0.0005 |
| 04/15/20 | 15:42:34 | 20200415SPIKE_0158.LAB | 4.3137 | 8.0129 | 0.7437 | 0.0015 |
| 04/15/20 | 15:42:44 | 20200415SPIKE_0159.LAB | 4.2955 | 8.2107 | 0.7785 | -0.0003 |
| 04/15/20 | 15:42:55 | 20200415SPIKE_0160.LAB | 4.3033 | 8.2988 | 0.7468 | 0.0008 |
| 04/15/20 | 15:43:05 | 20200415SPIKE_0161.LAB | 4.3109 | 8.0401 | 0.7380 | 0.0013 |
| 04/15/20 | 15:43:15 | 20200415SPIKE_0162.LAB | 4.2880 | 7.9006 | 0.7045 | 0.0152 |
| **RAW AVERAGE** | | | **4.308** | **8.091** | **0.749** | **0.003** |

**Run #2: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $SF_6$ ppmvw | $NH_3$ ppmvw |
|---|---|---|---|---|---|---|
| 04/15/20 | 16:00:28 | 20200415SPIKE_0262.LAB | 3.9367 | 6.3520 | 0.9931 | 3.9958 |
| 04/15/20 | 16:00:39 | 20200415SPIKE_0263.LAB | 3.9243 | 6.5516 | 0.9940 | 4.0464 |
| 04/15/20 | 16:00:49 | 20200415SPIKE_0264.LAB | 3.9636 | 6.6642 | 0.9069 | 4.0010 |
| 04/15/20 | 16:01:00 | 20200415SPIKE_0265.LAB | 3.9579 | 6.6672 | 0.8997 | 3.8731 |
| 04/15/20 | 16:01:10 | 20200415SPIKE_0266.LAB | 3.9595 | 6.6572 | 0.9026 | 3.8705 |
| 04/15/20 | 16:01:20 | 20200415SPIKE_0267.LAB | 3.9675 | 6.6527 | 0.9022 | 3.8132 |
| 04/15/20 | 16:01:30 | 20200415SPIKE_0268.LAB | 3.9486 | 6.6679 | 0.8947 | 3.7853 |
| 04/15/20 | 16:01:41 | 20200415SPIKE_0269.LAB | 3.9551 | 6.6432 | 0.8995 | 3.7947 |
| **RAW AVERAGE** | | | **3.952** | **6.607** | **0.924** | **3.897** |

**Cricket Valley Energy Center LLC**
**April 15, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Run #3: Pre-Spike - Native**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $NH_3$ ppmvw | $SF_6$ ppmvw |
|---|---|---|---|---|---|---|
| 04/15/20 | 16:15:48 | 20200415SPIKE_0351.LAB | 4.2048 | 9.5861 | 0.6437 | 0.0001 |
| 04/15/20 | 16:15:58 | 20200415SPIKE_0352.LAB | 4.2055 | 9.5252 | 0.5934 | -0.0020 |
| 04/15/20 | 16:16:08 | 20200415SPIKE_0353.LAB | 4.1947 | 9.6407 | 0.5687 | 0.0006 |
| 04/15/20 | 16:16:19 | 20200415SPIKE_0354.LAB | 4.1980 | 9.6435 | 0.6502 | -0.0018 |
| 04/15/20 | 16:16:29 | 20200415SPIKE_0355.LAB | 4.1718 | 10.1725 | 0.6049 | -0.0020 |
| 04/15/20 | 16:16:40 | 20200415SPIKE_0356.LAB | 4.1652 | 10.3723 | 0.6192 | -0.0005 |
| 04/15/20 | 16:16:50 | 20200415SPIKE_0357.LAB | 4.1219 | 10.5080 | 0.6269 | 0.0196 |
| 04/15/20 | 16:17:00 | 20200415SPIKE_0358.LAB | 3.8276 | 10.0626 | 0.5873 | 0.7175 |
| **RAW AVERAGE** | | | **4.136** | **9.939** | **0.612** | **0.091** |

**Run #3: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $SF_6$ ppmvw | $NH_3$ ppmvw |
|---|---|---|---|---|---|---|
| 04/15/20 | 16:27:51 | 20200415SPIKE_0421.LAB | 3.9636 | 6.4576 | 0.9279 | 4.1122 |
| 04/15/20 | 16:28:01 | 20200415SPIKE_0422.LAB | 3.9680 | 6.4509 | 0.9109 | 3.9723 |
| 04/15/20 | 16:28:11 | 20200415SPIKE_0423.LAB | 3.9732 | 6.4388 | 0.9065 | 3.9004 |
| 04/15/20 | 16:28:22 | 20200415SPIKE_0424.LAB | 3.9767 | 6.4072 | 0.9043 | 3.8530 |
| 04/15/20 | 16:28:32 | 20200415SPIKE_0425.LAB | 3.9871 | 6.4201 | 0.9029 | 3.8507 |
| 04/15/20 | 16:28:42 | 20200415SPIKE_0426.LAB | 3.9850 | 6.3950 | 0.9000 | 3.8180 |
| 04/15/20 | 16:28:53 | 20200415SPIKE_0427.LAB | 3.9818 | 6.3714 | 0.9006 | 3.8110 |
| 04/15/20 | 16:29:03 | 20200415SPIKE_0428.LAB | 3.9921 | 6.2970 | 0.8988 | 3.7491 |
| **RAW AVERAGE** | | | **3.978** | **6.405** | **0.907** | **3.883** |

**Cricket Valley Energy Center LLC**
**April 15, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

| Parameter | Unit | Run 1 | Run 2 | Run 3 |
|---|---|---|---|---|
| Concentration of $NH_3$ Cylinder | ppmvd | 47.56 | 47.56 | 47.56 |
| Concentration of $SF_6$ Cylinder | ppmvd | 10.22 | 10.22 | 10.22 |

Spike A

| | | | | |
|---|---|---|---|---|
| Stack $CO_2$ Concentration | %vd | 4.534 | 4.308 | 4.136 |
| Stack $H_2O$ Concentration | % | 4.223 | 8.091 | 9.939 |
| Stack $NH_3$ Concentration | ppmvw | 0.254 | 0.749 | 0.612 |
| Stack $SF_6$ Concentration | ppmvw | -0.001 | 0.003 | 0.091 |
| Stack + Spike $CO_2$ Concentration | %vd | 4.099 | 3.952 | 3.978 |
| Stack + Spike $H_2O$ Concentration | % | 3.548 | 6.607 | 6.405 |
| Stack + Spike $NH_3$ Concentration | ppmvw | 3.825 | 3.897 | 3.883 |
| Stack + Spike $SF_6$ Concentration | ppmvw | 0.979 | 0.924 | 0.907 |
| Dilution Ratio | | 0.099 | 0.097 | 0.095 |
| Ideal $NH_3$ Spike Yield | ppmvd | 4.960 | 5.339 | 5.120 |
| Percent Recovery $NH_3$ | % | 78.92% | 74.67% | 78.44% |

**Cricket Valley Energy Center LLC**
**April 16, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - PRE TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ (%) |
|---|---|---|---|
| 04/16/20 | 4:38:26 | 20200415SPIKE_0752.LAB | 8.7633 |
| 04/16/20 | 4:38:36 | 20200415SPIKE_0753.LAB | 9.1456 |
| 04/16/20 | 4:38:46 | 20200415SPIKE_0754.LAB | 9.1752 |
| 04/16/20 | 4:38:56 | 20200415SPIKE_0755.LAB | 9.2008 |
| 04/16/20 | 4:39:07 | 20200415SPIKE_0756.LAB | 9.2479 |

**PRE TEST AVERAGE** **9.11**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - POST TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ (%) |
|---|---|---|---|
| 04/16/20 | 17:44:46 | 20200416RUN#3_0494.LAB | 9.2052 |
| 04/16/20 | 17:45:16 | 20200416RUN#3_0495.LAB | 9.1884 |
| 04/16/20 | 17:45:47 | 20200416RUN#3_0496.LAB | 9.1816 |
| 04/16/20 | 17:46:17 | 20200416RUN#3_0497.LAB | 9.1695 |
| 04/16/20 | 17:46:47 | 20200416RUN#3_0498.LAB | 9.1873 |

**POST TEST AVERAGE** **9.19**

**Analyzer Make:** MKS **Analyzer Model:** 2030

$CO_2$ Cylinder Conc. % = 8.91

| Run ID | Instrument Response (%) | Error (%) | Pass / Fail ±5% |
|---|---|---|---|
| Pre Test | 9.11 | 2.21 | PASS |
| Post Test | 9.19 | 3.10 | PASS |

**Cricket Valley Energy Center LLC**
**April 16, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - PRE TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ (ppm) |
|---|---|---|---|
| 04/16/20 | 4:59:05 | 20200415SPIKE_0872.LAB | 47.9093 |
| 04/16/20 | 4:59:15 | 20200415SPIKE_0873.LAB | 47.9443 |
| 04/16/20 | 4:59:26 | 20200415SPIKE_0874.LAB | 47.9725 |
| 04/16/20 | 4:59:36 | 20200415SPIKE_0875.LAB | 48.0365 |
| 04/16/20 | 4:59:47 | 20200415SPIKE_0876.LAB | 48.0709 |

**PRE TEST AVERAGE** **47.99**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - POST TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ (ppm) |
|---|---|---|---|
| 04/16/20 | 17:50:17 | 20200416RUN#3_0505.LAB | 47.6024 |
| 04/16/20 | 17:50:47 | 20200416RUN#3_0506.LAB | 47.8209 |
| 04/16/20 | 17:51:17 | 20200416RUN#3_0507.LAB | 47.8932 |
| 04/16/20 | 17:51:47 | 20200416RUN#3_0508.LAB | 48.0216 |
| 04/16/20 | 17:52:17 | 20200416RUN#3_0509.LAB | 48.2362 |

**POST TEST AVERAGE** **47.91**

**Analyzer Make:** MKS **Analyzer Model:** 2030

$NH_3$ Cylinder Conc. ppm = 48.90

| Run ID | Instrument Response (%) | Error (%) | Pass / Fail ±5% |
|---|---|---|---|
| Pre Test | 47.99 | -1.87 | PASS |
| Post Test | 47.91 | -2.01 | PASS |

**Cricket Valley Energy Center LLC**
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**Cricket Valley Energy Center**

## Calibration Gas #1

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ ppmvd |
|---|---|---|---|
| 04/16/20 | 4:58:24 | 20200415SPIKE_0868.LAB | 47.6362 |
| 04/16/20 | 4:58:34 | 20200415SPIKE_0869.LAB | 47.6883 |
| 04/16/20 | 4:58:44 | 20200415SPIKE_0870.LAB | 47.7292 |
| 04/16/20 | 4:58:55 | 20200415SPIKE_0871.LAB | 47.7872 |
| 04/16/20 | 4:59:05 | 20200415SPIKE_0872.LAB | 47.9093 |
| 04/16/20 | 4:59:15 | 20200415SPIKE_0873.LAB | 47.9443 |
| 04/16/20 | 4:59:26 | 20200415SPIKE_0874.LAB | 47.9725 |
| 04/16/20 | 4:59:36 | 20200415SPIKE_0875.LAB | 48.0365 |
| **RAW AVERAGE** | | | **47.838** |

## Calibration Gas #2

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $SF_6$ ppmvd |
|---|---|---|---|
| 04/16/20 | 4:58:34 | 20200415SPIKE_0869.LAB | 10.2488 |
| 04/16/20 | 4:58:44 | 20200415SPIKE_0870.LAB | 10.2581 |
| 04/16/20 | 4:58:55 | 20200415SPIKE_0871.LAB | 10.2375 |
| 04/16/20 | 4:59:05 | 20200415SPIKE_0872.LAB | 10.2589 |
| 04/16/20 | 4:59:15 | 20200415SPIKE_0873.LAB | 10.2581 |
| 04/16/20 | 4:59:26 | 20200415SPIKE_0874.LAB | 10.2443 |
| 04/16/20 | 4:59:36 | 20200415SPIKE_0875.LAB | 10.2557 |
| 04/16/20 | 4:59:47 | 20200415SPIKE_0876.LAB | 10.2474 |
| **RAW AVERAGE** | | | **10.251** |

## Run #1: Pre-Spike - Native

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $NH_3$ ppmvw | $SF_6$ ppmvw |
|---|---|---|---|---|---|---|
| 04/16/20 | 5:55:52 | 20200416SPIKE_0183.LAB | 4.7820 | 0.9422 | 0.1539 | -0.0006 |
| 04/16/20 | 5:56:02 | 20200416SPIKE_0184.LAB | 4.7556 | 0.9441 | 0.1680 | -0.0021 |
| 04/16/20 | 5:56:13 | 20200416SPIKE_0185.LAB | 4.7573 | 0.9424 | 0.2106 | -0.0016 |
| 04/16/20 | 5:56:23 | 20200416SPIKE_0186.LAB | 4.7691 | 0.9450 | 0.1387 | -0.0002 |
| 04/16/20 | 5:56:33 | 20200416SPIKE_0187.LAB | 4.7673 | 0.9492 | 0.1356 | 0.0012 |
| 04/16/20 | 5:56:43 | 20200416SPIKE_0188.LAB | 4.7649 | 0.9480 | 0.1676 | -0.0014 |
| 04/16/20 | 5:56:54 | 20200416SPIKE_0189.LAB | 4.7552 | 0.9437 | 0.1702 | -0.0044 |
| 04/16/20 | 5:57:04 | 20200416SPIKE_0190.LAB | 4.7519 | 0.9436 | 0.2152 | -0.0018 |
| **RAW AVERAGE** | | | **4.763** | **0.945** | **0.170** | **-0.001** |

**Cricket Valley Energy Center LLC**
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**Cricket Valley Energy Center**

**Run #1: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $SF_6$ ppmvw | $NH_3$ ppmvw |
|---|---|---|---|---|---|---|
| 04/16/20 | 6:05:19 | 20200416SPIKE_0238.LAB | 4.3272 | 0.8523 | 0.9308 | 3.2745 |
| 04/16/20 | 6:05:30 | 20200416SPIKE_0239.LAB | 4.3224 | 0.8554 | 0.9274 | 3.2823 |
| 04/16/20 | 6:05:40 | 20200416SPIKE_0240.LAB | 4.3358 | 0.8569 | 0.9236 | 3.2639 |
| 04/16/20 | 6:05:51 | 20200416SPIKE_0241.LAB | 4.3290 | 0.8541 | 0.9263 | 3.2988 |
| 04/16/20 | 6:06:01 | 20200416SPIKE_0242.LAB | 4.3215 | 0.8583 | 0.9239 | 3.2724 |
| 04/16/20 | 6:06:11 | 20200416SPIKE_0243.LAB | 4.3205 | 0.8593 | 0.9244 | 3.2850 |
| 04/16/20 | 6:06:21 | 20200416SPIKE_0244.LAB | 4.3231 | 0.8592 | 0.9228 | 3.3060 |
| 04/16/20 | 6:06:32 | 20200416SPIKE_0245.LAB | 4.3262 | 0.8620 | 0.9201 | 3.3256 |
| **RAW AVERAGE** | | | **4.326** | **0.857** | **0.925** | **3.289** |

**Run #2: Pre-Spike - Native**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $NH_3$ ppmvw | $SF_6$ ppmvw |
|---|---|---|---|---|---|---|
| 04/16/20 | 6:18:35 | 20200416SPIKE_0315.LAB | 4.7402 | 1.2027 | 0.3876 | -0.0014 |
| 04/16/20 | 6:18:45 | 20200416SPIKE_0316.LAB | 4.7501 | 1.2185 | 0.4118 | 0.0024 |
| 04/16/20 | 6:18:56 | 20200416SPIKE_0317.LAB | 4.7780 | 1.2307 | 0.3194 | -0.0040 |
| 04/16/20 | 6:19:06 | 20200416SPIKE_0318.LAB | 4.7621 | 1.2559 | 0.3657 | -0.0027 |
| 04/16/20 | 6:19:16 | 20200416SPIKE_0319.LAB | 4.7542 | 1.2867 | 0.3318 | -0.0030 |
| 04/16/20 | 6:19:27 | 20200416SPIKE_0320.LAB | 4.7446 | 1.3154 | 0.3318 | -0.0055 |
| 04/16/20 | 6:19:37 | 20200416SPIKE_0321.LAB | 4.7576 | 1.3445 | 0.3577 | -0.0025 |
| 04/16/20 | 6:19:47 | 20200416SPIKE_0322.LAB | 4.7355 | 1.3503 | 0.3459 | 0.0008 |
| **RAW AVERAGE** | | | **4.753** | **1.276** | **0.356** | **-0.002** |

**Run #2: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $SF_6$ ppmvw | $NH_3$ ppmvw |
|---|---|---|---|---|---|---|
| 04/16/20 | 6:28:03 | 20200416SPIKE_0370.LAB | 4.2839 | 1.4085 | 0.9171 | 3.5395 |
| 04/16/20 | 6:28:13 | 20200416SPIKE_0371.LAB | 4.2992 | 1.4100 | 0.9269 | 3.6219 |
| 04/16/20 | 6:28:24 | 20200416SPIKE_0372.LAB | 4.2960 | 1.4165 | 0.9206 | 3.5542 |
| 04/16/20 | 6:28:34 | 20200416SPIKE_0373.LAB | 4.3049 | 1.4070 | 0.9240 | 3.6200 |
| 04/16/20 | 6:28:44 | 20200416SPIKE_0374.LAB | 4.3075 | 1.4139 | 0.9208 | 3.5396 |
| 04/16/20 | 6:28:54 | 20200416SPIKE_0375.LAB | 4.2952 | 1.4044 | 0.9231 | 3.6026 |
| 04/16/20 | 6:29:05 | 20200416SPIKE_0376.LAB | 4.2841 | 1.4168 | 0.9219 | 3.5841 |
| 04/16/20 | 6:29:15 | 20200416SPIKE_0377.LAB | 4.2916 | 1.4089 | 0.9214 | 3.5879 |
| **RAW AVERAGE** | | | **4.295** | **1.411** | **0.922** | **3.581** |

**Cricket Valley Energy Center LLC**
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**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Run #3: Pre-Spike - Native**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $NH_3$ ppmvw | $SF_6$ ppmvw |
|---|---|---|---|---|---|---|
| 04/16/20 | 6:48:32 | 20200416SPIKE_0489.LAB | 4.4207 | 6.9832 | 0.4635 | 0.0059 |
| 04/16/20 | 6:48:42 | 20200416SPIKE_0490.LAB | 4.4083 | 7.1622 | 0.4619 | 0.0020 |
| 04/16/20 | 6:48:52 | 20200416SPIKE_0491.LAB | 4.4096 | 7.1675 | 0.4503 | 0.0040 |
| 04/16/20 | 6:49:03 | 20200416SPIKE_0492.LAB | 4.3961 | 7.0997 | 0.4230 | 0.0019 |
| 04/16/20 | 6:49:13 | 20200416SPIKE_0493.LAB | 4.3857 | 7.6501 | 0.4309 | 0.0013 |
| 04/16/20 | 6:49:23 | 20200416SPIKE_0494.LAB | 4.3981 | 7.5485 | 0.4648 | 0.0037 |
| 04/16/20 | 6:49:33 | 20200416SPIKE_0495.LAB | 4.4089 | 7.2687 | 0.4359 | 0.0017 |
| 04/16/20 | 6:49:44 | 20200416SPIKE_0496.LAB | 4.4034 | 7.0484 | 0.4228 | 0.0054 |
| **RAW AVERAGE** | | | **4.404** | **7.241** | **0.444** | **0.003** |

**Run #3: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vd | $H_2O$ (%) | $SF_6$ ppmvw | $NH_3$ ppmvw |
|---|---|---|---|---|---|---|
| 04/16/20 | 6:58:10 | 20200416SPIKE_0545.LAB | 4.1186 | 5.1727 | 0.9222 | 3.6885 |
| 04/16/20 | 6:58:20 | 20200416SPIKE_0546.LAB | 4.0940 | 5.3279 | 0.9223 | 3.7172 |
| 04/16/20 | 6:58:30 | 20200416SPIKE_0547.LAB | 4.0959 | 5.3622 | 0.9196 | 3.7382 |
| 04/16/20 | 6:58:41 | 20200416SPIKE_0548.LAB | 4.0900 | 5.3540 | 0.9187 | 3.6908 |
| 04/16/20 | 6:58:51 | 20200416SPIKE_0549.LAB | 4.0841 | 5.4307 | 0.9183 | 3.7077 |
| 04/16/20 | 6:59:01 | 20200416SPIKE_0550.LAB | 4.0798 | 5.4271 | 0.9160 | 3.6657 |
| 04/16/20 | 6:59:12 | 20200416SPIKE_0551.LAB | 4.0952 | 5.3989 | 0.9160 | 3.7498 |
| 04/16/20 | 6:59:22 | 20200416SPIKE_0552.LAB | 4.0655 | 5.4220 | 0.9479 | 3.7334 |
| **RAW AVERAGE** | | | **4.090** | **5.362** | **0.923** | **3.711** |

**Cricket Valley Energy Center LLC**
**April 16, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

| Parameter | Unit | Run 1 | Run 2 | Run 3 |
|---|---|---|---|---|
| Concentration of $NH_3$ Cylinder | ppmvd | 47.84 | 47.84 | 47.84 |
| Concentration of $SF_6$ Cylinder | ppmvd | 10.25 | 10.25 | 10.25 |

Spike A

| | | | | |
|---|---|---|---|---|
| Stack $CO_2$ Concentration | %vd | 4.763 | 4.753 | 4.404 |
| Stack $H_2O$ Concentration | % | 0.945 | 1.276 | 7.241 |
| Stack $NH_3$ Concentration | ppmvw | 0.170 | 0.356 | 0.444 |
| Stack $SF_6$ Concentration | ppmvw | -0.001 | -0.002 | 0.003 |
| Stack + Spike $CO_2$ Concentration | %vd | 4.326 | 4.295 | 4.090 |
| Stack + Spike $H_2O$ Concentration | % | 0.857 | 1.411 | 5.362 |
| Stack + Spike $NH_3$ Concentration | ppmvw | 3.289 | 3.581 | 3.711 |
| Stack + Spike $SF_6$ Concentration | ppmvw | 0.925 | 0.922 | 0.923 |
| Dilution Ratio | | 0.091 | 0.091 | 0.095 |
| Ideal $NH_3$ Spike Yield | ppmvd | 4.509 | 4.692 | 4.983 |
| Percent Recovery $NH_3$ | % | 72.61% | 75.72% | 76.68% |

| DRIFT AND BIAS CHECK AND RESPONSE TIME CALCULATOR | | |
|---|---|---|
| **Strat Test Pre and Post QA/QC Check** | **$O_2$** | **NOx** |
| **Initial Zero** | 0.00 | 0.06 |
| **Final Zero** | 0.11 | 0.15 |
| **Avg. Zero** | 0.06 | 0.11 |
| **Initial UpScale** | 11.91 | 4.56 |
| **Final UpScale** | 11.86 | 4.40 |
| **Avg. UpScale** | 11.89 | 4.48 |
| **Sys Resp (Zero)** | 0.03 | 0.01 |
| **Sys Resp (Upscale)** | 11.96 | 4.85 |
| **Upscale Cal Gas** | 11.98 | 4.55 |
| **Initial Zero Bias** | -0.14% | 0.56% |
| **Final Zero Bias** | 0.38% | 1.57% |
| **Zero Drift** | 0.53% | 1.01% |
| **Initial Upscale Bias** | -0.24% | -3.26% |
| **Final Upscale Bias** | -0.48% | -5.06% |
| **Upscale Drift** | 0.24% | 1.80% |
| Alternative Specification Abs Diff **Initial Zero** | 0.03 | 0.05 |
| Alternative Specification Abs Diff **Final Zero** | 0.08 | 0.14 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.05 | 0.29 |
| Alternative Specification Abs Diff **Final Upscale** | 0.10 | 0.45 |
| **Calibration Span** | 20.90 | 8.90 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 |
| **5% of Cal. Span (bias)** | 1.05 | 0.45 |

| | | |
|---|---|---|
| **Response Time (min)** | 2.2 | 2.5 |
| **Sys. Response (min)** | 2.5 | |

| Date/Time mm/dd/yy hh:mm:ss | z | $O_2$ %-10 | s | z | NOx ppm-10 | s | INJECTIONS |
|---|---|---|---|---|---|---|---|
| 04/15/20 10:07:00 | | **12.37** | | | 2.16 | | x |
| 04/15/20 10:07:10 | | **12.38** | | | 2.17 | | |
| 04/15/20 10:07:20 | | **12.36** | | | 2.17 | | |
| 04/15/20 10:07:30 | | **11.79** | | | 2.11 | | |
| 04/15/20 10:07:40 | | 6.29 | | | 1.84 | | |
| 04/15/20 10:07:50 | | 3.57 | | | 1.59 | | |
| 04/15/20 10:08:00 | | 3.27 | | | 1.18 | | |
| 04/15/20 10:08:10 | | 3.27 | | | 0.81 | | |
| 04/15/20 10:08:20 | | 3.29 | | | 0.73 | | |
| 04/15/20 10:08:30 | | 3.29 | | | 0.69 | | |
| 04/15/20 10:08:40 | | 1.67 | | | 0.69 | | |
| 04/15/20 10:08:50 | | **0.31** | | | 0.69 | | |
| 04/15/20 10:09:00 | | 0.66 | | | **0.28** | | |
| 04/15/20 10:09:10 | x | **0.50** | | | 1.88 | | |
| 04/15/20 10:09:20 | | **0.46** | | | 3.96 | | |
| 04/15/20 10:09:30 | | **0.45** | | | **4.45** | x | |
| 04/15/20 10:09:40 | | **0.44** | | | **4.54** | | |
| 04/15/20 10:09:50 | | **0.43** | | | **4.57** | | |
| 04/15/20 10:10:00 | | **0.42** | | | **4.57** | | |
| 04/15/20 10:10:10 | | **0.41** | | | **4.61** | | |
| 04/15/20 10:10:20 | | **0.40** | | | **4.60** | | |
| 04/15/20 10:10:30 | | **0.40** | | | **4.57** | | |
| 04/15/20 10:10:40 | | **0.39** | | | **4.57** | | |
| 04/15/20 10:10:50 | | **0.39** | | | **4.57** | | |
| 04/15/20 10:11:00 | | **0.38** | | | **4.63** | | |
| 04/15/20 10:11:10 | | **0.38** | | | **4.57** | | |
| 04/15/20 10:11:20 | | **0.38** | | | **4.59** | | |
| 04/15/20 10:11:30 | | **0.37** | | | **4.57** | | |
| 04/15/20 10:11:40 | | **0.37** | | | **4.54** | | |
| 04/15/20 10:11:50 | | **0.37** | | | **4.55** | | |
| 04/15/20 10:12:00 | | **0.38** | | | **4.59** | | |
| 04/15/20 10:12:10 | | **0.37** | | | **4.65** | | |
| 04/15/20 10:12:20 | | **0.38** | | | **4.59** | | x |
| 04/15/20 10:12:30 | | **0.46** | | | **4.60** | | |
| 04/15/20 10:12:40 | | 7.23 | | | **4.61** | | |
| 04/15/20 10:12:50 | | 11.26 | | | 4.24 | | |
| 04/15/20 10:13:00 | | **11.81** | x | | 3.90 | | |
| 04/15/20 10:13:10 | | **11.89** | | | 2.41 | | |
| 04/15/20 10:13:20 | | **11.91** | | x | **0.34** | | |
| 04/15/20 10:13:30 | | **11.93** | | | **0.19** | | |
| 04/15/20 10:13:40 | | **11.94** | | | **0.08** | | |
| 04/15/20 10:13:50 | | **11.94** | | | **0.12** | | |
| 04/15/20 10:14:00 | | **11.96** | | | **0.08** | | |
| 04/15/20 10:14:10 | | **11.96** | | | **0.08** | | |
| 04/15/20 10:14:20 | | **11.96** | | | **0.09** | | |
| 04/15/20 10:14:30 | | **11.97** | | | **0.07** | | |
| 04/15/20 10:14:40 | | **11.98** | | | **0.06** | | |

| DRIFT AND BIAS CHECK AND RESPONSE TIME CALCULATOR | | |
|---|---|---|
| **Strat Test Pre and Post QA/QC Check** | **$O_2$** | **NOx** |
| **Initial Zero** | 0.03 | 0.06 |
| **Final Zero** | 0.09 | 0.11 |
| **Avg. Zero** | 0.06 | 0.09 |
| **Initial UpScale** | 11.88 | 4.53 |
| **Final UpScale** | 11.81 | 4.55 |
| **Avg. UpScale** | 11.85 | 4.54 |
| **Sys Resp (Zero)** | 0.00 | 0.02 |
| **Sys Resp (Upscale)** | 11.97 | 4.69 |
| **Upscale Cal Gas** | 11.98 | 4.55 |
| **Initial Zero Bias** | 0.14% | 0.45% |
| **Final Zero Bias** | 0.43% | 1.01% |
| **Zero Drift** | 0.29% | 0.56% |
| **Initial Upscale Bias** | -0.43% | -1.80% |
| **Final Upscale Bias** | -0.77% | -1.57% |
| **Upscale Drift** | 0.33% | 0.22% |
| Alternative Specification Abs Diff **Initial Zero** | 0.03 | 0.04 |
| Alternative Specification Abs Diff **Final Zero** | 0.09 | 0.09 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.09 | 0.16 |
| Alternative Specification Abs Diff **Final Upscale** | 0.16 | 0.14 |
| **Calibration Span** | 20.90 | 8.90 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 |
| **5% of Cal. Span (bias)** | 1.05 | 0.45 |

| | | |
|---|---|---|
| **Response Time (min)** | 2.2 | 2.5 |
| **Sys. Response (min)** | 2.5 | |

| Date/Time mm/dd/yy hh:mm:ss | z | $O_2$ %-10 | s | z | NOx ppm-10 | s | INJECTIONS |
|---|---|---|---|---|---|---|---|
| 04/15/20 10:07:00 | | **12.37** | | | 2.16 | | x |
| 04/15/20 10:07:10 | | **12.38** | | | 2.17 | | |
| 04/15/20 10:07:20 | | **12.36** | | | 2.17 | | |
| 04/15/20 10:07:30 | | **11.79** | | | 2.11 | | |
| 04/15/20 10:07:40 | | 6.29 | | | 1.84 | | |
| 04/15/20 10:07:50 | | 3.57 | | | 1.59 | | |
| 04/15/20 10:08:00 | | 3.27 | | | 1.18 | | |
| 04/15/20 10:08:10 | | 3.27 | | | 0.81 | | |
| 04/15/20 10:08:20 | | 3.29 | | | 0.73 | | |
| 04/15/20 10:08:30 | | 3.29 | | | 0.69 | | |
| 04/15/20 10:08:40 | | 1.67 | | | 0.69 | | |
| 04/15/20 10:08:50 | | **0.31** | | | 0.69 | | |
| 04/15/20 10:09:00 | | 0.66 | | | **0.28** | | |
| 04/15/20 10:09:10 | x | **0.50** | | | 1.88 | | |
| 04/15/20 10:09:20 | | **0.46** | | | 3.96 | | |
| 04/15/20 10:09:30 | | **0.45** | | | **4.45** | x | |
| 04/15/20 10:09:40 | | **0.44** | | | **4.54** | | |
| 04/15/20 10:09:50 | | **0.43** | | | **4.57** | | |
| 04/15/20 10:10:00 | | **0.42** | | | **4.57** | | |
| 04/15/20 10:10:10 | | **0.41** | | | **4.61** | | |
| 04/15/20 10:10:20 | | **0.40** | | | **4.60** | | |
| 04/15/20 10:10:30 | | **0.40** | | | **4.57** | | |
| 04/15/20 10:10:40 | | **0.39** | | | **4.57** | | |
| 04/15/20 10:10:50 | | **0.39** | | | **4.57** | | |
| 04/15/20 10:11:00 | | **0.38** | | | **4.63** | | |
| 04/15/20 10:11:10 | | **0.38** | | | **4.57** | | |
| 04/15/20 10:11:20 | | **0.38** | | | **4.59** | | |
| 04/15/20 10:11:30 | | **0.37** | | | **4.57** | | |
| 04/15/20 10:11:40 | | **0.37** | | | **4.54** | | |
| 04/15/20 10:11:50 | | **0.37** | | | **4.55** | | |
| 04/15/20 10:12:00 | | **0.38** | | | **4.59** | | |
| 04/15/20 10:12:10 | | **0.37** | | | **4.65** | | |
| 04/15/20 10:12:20 | | **0.38** | | | **4.59** | | x |
| 04/15/20 10:12:30 | | **0.46** | | | **4.60** | | |
| 04/15/20 10:12:40 | | 7.23 | | | **4.61** | | |
| 04/15/20 10:12:50 | | 11.26 | | | 4.24 | | |
| 04/15/20 10:13:00 | | **11.81** | x | | 3.90 | | |
| 04/15/20 10:13:10 | | **11.89** | | | 2.41 | | |
| 04/15/20 10:13:20 | | **11.91** | | x | **0.34** | | |
| 04/15/20 10:13:30 | | **11.93** | | | **0.19** | | |
| 04/15/20 10:13:40 | | **11.94** | | | **0.08** | | |
| 04/15/20 10:13:50 | | **11.94** | | | **0.12** | | |
| 04/15/20 10:14:00 | | **11.96** | | | **0.08** | | |
| 04/15/20 10:14:10 | | **11.96** | | | **0.08** | | |
| 04/15/20 10:14:20 | | **11.96** | | | **0.09** | | |
| 04/15/20 10:14:30 | | **11.97** | | | **0.07** | | |
| 04/15/20 10:14:40 | | **11.98** | | | **0.06** | | |

| DRIFT AND BIAS CHECK | | | | | |
|---|---|---|---|---|---|
| **Base Load, Run - 1-1** | **$O_2$** | **NOx** | **CO** | **VOC (as C1)** | **$CO_2$** |
| **Raw Average** | 12.77 | 1.78 | -0.46 | 0.00 | 4.56 |
| **Corrected Average** | 12.88 | 1.73 | 0.00 | 0.00 | 4.62 |
| **Initial Zero** | 0.03 | 0.06 | 0.06 | -0.01 | -0.02 |
| **Final Zero** | 0.09 | 0.05 | -0.17 | 0.00 | -0.16 |
| **Avg. Zero** | 0.06 | 0.06 | -0.06 | 0.00 | -0.09 |
| **Initial UpScale** | 11.90 | 4.60 | 5.19 | 3.02 | 8.89 |
| **Final UpScale** | 11.86 | 4.62 | 4.88 | 3.15 | 8.89 |
| **Avg. UpScale** | 11.88 | 4.61 | 5.04 | 3.09 | 8.89 |
| **Sys Resp (Zero)** | 0.03 | 0.01 | -0.11 | 0.00 | 0.00 |
| **Sys Resp (Upscale)** | 11.96 | 4.85 | 5.16 | 2.96 | 9.25 |
| **Upscale Cal Gas** | 11.98 | 4.55 | 5.22 | 3.03 | 8.91 |
| **Initial Zero Bias** | 0.00% | 0.56% | 1.84% | -0.08% | -0.11% |
| **Final Zero Bias** | 0.29% | 0.45% | -0.69% | 0.00% | -0.85% |
| **Zero Drift** | 0.29% | 0.11% | 2.53% | 0.08% | 0.74% |
| **Initial Upscale Bias** | -0.29% | -2.81% | 0.33% | 0.57% | -1.90% |
| **Final Upscale Bias** | -0.48% | -2.58% | -3.08% | 1.81% | -1.90% |
| **Upscale Drift** | 0.19% | 0.22% | 3.41% | 1.24% | 0.00% |
| Alternative Specification Abs Diff **Initial Zero** | 0.00 | 0.05 | 0.17 | -- | 0.02 |
| Alternative Specification Abs Diff **Final Zero** | 0.06 | 0.04 | 0.06 | -- | 0.16 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.06 | 0.25 | 0.03 | -- | 0.36 |
| Alternative Specification Abs Diff **Final Upscale** | 0.10 | 0.23 | 0.28 | -- | 0.36 |
| **Calibration Span** | 20.90 | 8.90 | 9.10 | 10.50 | 18.90 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 | 0.32 | 0.57 |
| **5% of Cal. Span (bias)** | 1.05 | 0.45 | 0.46 | 0.53 | 0.95 |

| DRIFT AND BIAS CHECK | | | | | |
|---|---|---|---|---|---|
| **Base Load, Run - 1-2** | **$O_2$** | **NOx** | **CO** | **VOC (as C1)** | **$CO_2$** |
| **Raw Average** | 12.77 | 1.95 | -0.46 | 0.00 | 4.89 |
| **Corrected Average** | 12.92 | 1.81 | 0.00 | 0.00 | 4.89 |
| **Initial Zero** | 0.09 | 0.05 | -0.17 | 0.00 | -0.16 |
| **Final Zero** | 0.12 | 0.29 | -0.17 | -0.01 | 0.08 |
| **Avg. Zero** | 0.11 | 0.17 | -0.17 | 0.00 | -0.04 |
| **Initial UpScale** | 11.86 | 4.62 | 4.88 | 3.15 | 8.89 |
| **Final UpScale** | 11.84 | 4.66 | 5.01 | 2.92 | 8.98 |
| **Avg. UpScale** | 11.85 | 4.64 | 4.95 | 3.04 | 8.94 |
| **Sys Resp (Zero)** | 0.03 | 0.01 | -0.11 | 0.00 | 0.00 |
| **Sys Resp (Upscale)** | 11.96 | 4.85 | 5.16 | 2.96 | 9.25 |
| **Upscale Cal Gas** | 11.98 | 4.55 | 5.22 | 3.03 | 8.91 |
| **Initial Zero Bias** | 0.29% | 0.45% | -0.69% | 0.00% | -0.85% |
| **Final Zero Bias** | 0.43% | 3.15% | -0.69% | -0.07% | 0.42% |
| **Zero Drift** | 0.14% | 2.70% | 0.00% | 0.07% | 1.27% |
| **Initial Upscale Bias** | -0.48% | -2.58% | -3.08% | 1.81% | -1.90% |
| **Final Upscale Bias** | -0.57% | -2.13% | -1.65% | -0.38% | -1.43% |
| **Upscale Drift** | 0.10% | 0.45% | 1.43% | 2.19% | 0.48% |
| Alternative Specification Abs Diff **Initial Zero** | 0.06 | 0.04 | 0.06 | -- | 0.16 |
| Alternative Specification Abs Diff **Final Zero** | 0.09 | 0.28 | 0.06 | -- | 0.08 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.10 | 0.23 | 0.28 | -- | 0.36 |
| Alternative Specification Abs Diff **Final Upscale** | 0.12 | 0.19 | 0.15 | -- | 0.27 |
| **Calibration Span** | 20.90 | 8.90 | 9.10 | 10.50 | 18.90 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 | 0.32 | 0.57 |
| **5% of Cal. Span (bias)** | 1.05 | 0.45 | 0.46 | 0.53 | 0.95 |

| DRIFT AND BIAS CHECK | | | | | |
|---|---|---|---|---|---|
| **Base Load, Run - 1-3** | **$O_2$** | **NOx** | **CO** | **VOC (as C1)** | **$CO_2$** |
| **Raw Average** | 12.71 | 1.90 | -0.46 | 0.01 | 4.88 |
| **Corrected Average** | 12.88 | 1.76 | 0.00 | 0.01 | 4.78 |
| **Initial Zero** | 0.12 | 0.29 | -0.17 | -0.01 | 0.08 |
| **Final Zero** | 0.10 | 0.09 | -0.43 | 0.01 | 0.09 |
| **Avg. Zero** | 0.11 | 0.19 | -0.30 | 0.00 | 0.09 |
| **Initial UpScale** | 11.84 | 4.66 | 5.01 | 2.92 | 8.98 |
| **Final UpScale** | 11.83 | 4.56 | 4.82 | 2.78 | 9.08 |
| **Avg. UpScale** | 11.84 | 4.61 | 4.92 | 2.85 | 9.03 |
| **Sys Resp (Zero)** | 0.03 | 0.01 | -0.11 | 0.00 | 0.00 |
| **Sys Resp (Upscale)** | 11.96 | 4.85 | 5.16 | 2.96 | 9.25 |
| **Upscale Cal Gas** | 11.98 | 4.55 | 5.22 | 3.03 | 8.91 |
| **Initial Zero Bias** | 0.43% | 3.15% | -0.69% | -0.07% | 0.42% |
| **Final Zero Bias** | 0.33% | 0.90% | -3.55% | 0.10% | 0.48% |
| **Zero Drift** | 0.10% | 2.25% | 2.86% | 0.16% | 0.05% |
| **Initial Upscale Bias** | -0.57% | -2.13% | -1.65% | -0.38% | -1.43% |
| **Final Upscale Bias** | -0.62% | -3.26% | -3.74% | -1.71% | -0.90% |
| **Upscale Drift** | 0.05% | 1.12% | 2.09% | 1.33% | 0.53% |
| Alternative Specification Abs Diff **Initial Zero** | 0.09 | 0.28 | 0.06 | -- | 0.08 |
| Alternative Specification Abs Diff **Final Zero** | 0.07 | 0.08 | 0.32 | -- | 0.09 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.12 | 0.19 | 0.15 | -- | 0.27 |
| Alternative Specification Abs Diff **Final Upscale** | 0.13 | 0.29 | 0.34 | -- | 0.17 |
| **Calibration Span** | 20.90 | 8.90 | 9.10 | 10.50 | 18.90 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 | 0.32 | 0.57 |
| **5% of Cal. Span (bias)** | 1.05 | 0.45 | 0.46 | 0.53 | 0.95 |

| DRIFT AND BIAS CHECK | | | | | |
|---|---|---|---|---|---|
| **Base+Db Load, Run - 2-1** | **$O_2$** | **NOx** | **CO** | **VOC (as C1)** | **$CO_2$** |
| **Raw Average** | 11.82 | 2.43 | 0.13 | 0.00 | 5.18 |
| **Corrected Average** | 11.94 | 2.35 | 0.13 | 0.00 | 5.12 |
| **Initial Zero** | 0.03 | 0.06 | -0.05 | 0.01 | -0.01 |
| **Final Zero** | 0.07 | 0.23 | 0.05 | 0.00 | 0.09 |
| **Avg. Zero** | 0.05 | 0.15 | 0.00 | 0.00 | 0.04 |
| **Initial UpScale** | 11.88 | 4.53 | 5.16 | 3.01 | 9.02 |
| **Final UpScale** | 11.84 | 4.61 | 5.10 | 3.11 | 8.94 |
| **Avg. UpScale** | 11.86 | 4.57 | 5.13 | 3.06 | 8.98 |
| **Sys Resp (Zero)** | 0.00 | 0.02 | 0.01 | 0.01 | -0.02 |
| **Sys Resp (Upscale)** | 11.97 | 4.69 | 5.10 | 3.01 | 9.32 |
| **Upscale Cal Gas** | 11.98 | 4.55 | 5.22 | 3.03 | 8.91 |
| **Initial Zero Bias** | 0.14% | 0.45% | -0.68% | 0.00% | 0.04% |
| **Final Zero Bias** | 0.33% | 2.36% | 0.42% | -0.05% | 0.57% |
| **Zero Drift** | 0.19% | 1.91% | 1.10% | 0.05% | 0.53% |
| **Initial Upscale Bias** | -0.43% | -1.80% | 0.66% | 0.00% | -1.59% |
| **Final Upscale Bias** | -0.62% | -0.90% | 0.00% | 0.95% | -2.01% |
| **Upscale Drift** | 0.19% | 0.90% | 0.66% | 0.95% | 0.42% |
| Alternative Specification Abs Diff **Initial Zero** | 0.03 | 0.04 | 0.06 | -- | 0.01 |
| Alternative Specification Abs Diff **Final Zero** | 0.07 | 0.21 | 0.04 | -- | 0.11 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.09 | 0.16 | 0.06 | -- | 0.30 |
| Alternative Specification Abs Diff **Final Upscale** | 0.13 | 0.08 | 0.00 | -- | 0.38 |
| **Calibration Span** | 20.90 | 8.90 | 9.10 | 10.50 | 18.90 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 | 0.32 | 0.57 |
| **5% of Cal. Span (bias)** | 1.05 | 0.45 | 0.46 | 0.53 | 0.95 |

| DRIFT AND BIAS CHECK | | | | | |
|---|---|---|---|---|---|
| Base+Db Load, Run - 2-2 | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ |
| Raw Average | 11.85 | 2.41 | 0.08 | 0.00 | 5.17 |
| Corrected Average | 11.99 | 2.26 | 0.03 | 0.00 | 5.11 |
| Initial Zero | 0.07 | 0.23 | 0.05 | 0.00 | 0.09 |
| Final Zero | 0.05 | 0.22 | 0.05 | 0.00 | 0.10 |
| Avg. Zero | 0.06 | 0.23 | 0.05 | 0.00 | 0.10 |
| Initial UpScale | 11.84 | 4.61 | 5.10 | 3.11 | 8.94 |
| Final UpScale | 11.83 | 4.64 | 5.14 | 3.13 | 8.96 |
| Avg. UpScale | 11.84 | 4.63 | 5.12 | 3.12 | 8.95 |
| Sys Resp (Zero) | 0.00 | 0.02 | 0.01 | 0.01 | -0.02 |
| Sys Resp (Upscale) | 11.97 | 4.69 | 5.10 | 3.01 | 9.32 |
| Upscale Cal Gas | 11.98 | 4.55 | 5.22 | 3.03 | 8.91 |
| Initial Zero Bias | 0.33% | 2.36% | 0.42% | -0.05% | 0.57% |
| Final Zero Bias | 0.24% | 2.25% | 0.42% | -0.01% | 0.62% |
| Zero Drift | 0.10% | 0.11% | 0.00% | 0.04% | 0.05% |
| Initial Upscale Bias | -0.62% | -0.90% | 0.00% | 0.95% | -2.01% |
| Final Upscale Bias | -0.67% | -0.56% | 0.44% | 1.14% | -1.90% |
| Upscale Drift | 0.05% | 0.34% | 0.44% | 0.19% | 0.11% |
| Alternative Specification Abs Diff: Initial Zero | 0.07 | 0.21 | 0.04 | -- | 0.11 |
| Alternative Specification Abs Diff: Final Zero | 0.05 | 0.20 | 0.04 | -- | 0.12 |
| Alternative Specification Abs Diff: Initial Upscale | 0.13 | 0.08 | 0.00 | -- | 0.38 |
| Alternative Specification Abs Diff: Final Upscale | 0.14 | 0.05 | 0.04 | -- | 0.36 |
| Calibration Span | 20.90 | 8.90 | 9.10 | 10.50 | 18.90 |
| 3% of Cal. Span (drift) | 0.63 | 0.27 | 0.27 | 0.32 | 0.57 |
| 5% of Cal. Span (bias) | 1.05 | 0.45 | 0.46 | 0.53 | 0.95 |

| DRIFT AND BIAS CHECK | | | | | |
|---|---|---|---|---|---|
| Base+Db Load, Run - 2-3 | $O_2$ | NOx | CO | VOC (as C1) | $CO_2$ |
| Raw Average | 11.84 | 2.31 | 0.01 | 0.00 | 5.19 |
| Corrected Average | 11.99 | 2.17 | 0.00 | 0.00 | 5.13 |
| Initial Zero | 0.05 | 0.22 | 0.05 | 0.00 | 0.10 |
| Final Zero | 0.08 | 0.15 | -0.04 | 0.00 | 0.11 |
| Avg. Zero | 0.07 | 0.19 | 0.01 | 0.00 | 0.11 |
| Initial UpScale | 11.83 | 4.64 | 5.14 | 3.13 | 8.96 |
| Final UpScale | 11.83 | 4.64 | 5.25 | 3.16 | 8.90 |
| Avg. UpScale | 11.83 | 4.64 | 5.20 | 3.15 | 8.93 |
| Sys Resp (Zero) | 0.00 | 0.02 | 0.01 | 0.01 | -0.02 |
| Sys Resp (Upscale) | 11.97 | 4.69 | 5.10 | 3.01 | 9.32 |
| Upscale Cal Gas | 11.98 | 4.55 | 5.22 | 3.03 | 8.91 |
| Initial Zero Bias | 0.24% | 2.25% | 0.42% | -0.01% | 0.62% |
| Final Zero Bias | 0.38% | 1.46% | -0.57% | -0.02% | 0.67% |
| Zero Drift | 0.14% | 0.79% | 0.99% | 0.01% | 0.05% |
| Initial Upscale Bias | -0.67% | -0.56% | 0.44% | 1.14% | -1.90% |
| Final Upscale Bias | -0.67% | -0.56% | 1.65% | 1.43% | -2.22% |
| Upscale Drift | 0.00% | 0.00% | 1.21% | 0.29% | 0.32% |
| Alternative Specification Abs Diff: Initial Zero | 0.05 | 0.20 | 0.04 | -- | 0.12 |
| Alternative Specification Abs Diff: Final Zero | 0.08 | 0.13 | 0.05 | -- | 0.13 |
| Alternative Specification Abs Diff: Initial Upscale | 0.14 | 0.05 | 0.04 | -- | 0.36 |
| Alternative Specification Abs Diff: Final Upscale | 0.14 | 0.05 | 0.15 | -- | 0.42 |
| Calibration Span | 20.90 | 8.90 | 9.10 | 10.50 | 18.90 |
| 3% of Cal. Span (drift) | 0.63 | 0.27 | 0.27 | 0.32 | 0.57 |
| 5% of Cal. Span (bias) | 1.05 | 0.45 | 0.46 | 0.53 | 0.95 |

# SINGLE LOAD TEST - FIELD DATA SHEET

AIR HYGIENE

| | | | |
|---|---|---|---|
| **Company:** | Bechtel | | |
| **Location:** | Cricket Valley, New York | | |
| **Date:** | 4/15/2020 | **Project Code:** | bec-19-cricketvalley.ny-start#3 |
| **Unit Make and Model:** | | | |
| **Unit Number:** | | | |
| **Serial Number:** | | | |
| **Data Recorded By:** | | | |
| **Tested With AHI Unit(s):** | **Truck(s):** 163 | **Trailer(s):** | 215 |
| **LDEQ Warmup/Cal Req:** | **On (Day/Time):** | **Cal (Day/Time):** | |

| **CYLINDER SERIAL NUMBERS** | | $O_2$ | NOx | CO |
|---|---|---|---|---|
| | **Low** | EB0058639 | EB0058639 | EB0058639 |
| | **Mid** | CC716390 | CC727541 | CC727541 |
| | **High** | CC722643 | EB040961 | EB040961 |

Stack Dia. = _____
Measured By: _____
Measured With: _____

| **CYLINDER SERIAL NUMBERS** | | THC | $CO_2$ | $SO_2$ |
|---|---|---|---|---|
| | **Low** | EB0065886 | EB0058639 | N/a |
| | **Mid** | EB0078043 | CC716390 | N/a |
| | **High** | EB0075711 | CC722643 | N/a |

| **RUN INFORMATION** | **Load** | | |
|---|---|---|---|
| | _____% #1 | _____% #2 | _____% #3 |
| **Time Start (hh:mm:ss)** | 12:10:05 | 13:23:05 | 14:35:05 |
| **Time Stop (hh:mm:ss)** | 13:09:35 | 14:22:35 | 15:34:35 |
| **Rated Power (MW or hp)** | | | |
| **Actual Power (MW or hp)** | | | |
| **Barometric Pressure (in. Hg)** | | | |
| **Ambient Temperature (°F)** | | | |
| **Relative Humidity (%)** | | | |
| **Fuel Flow (lb/min)** | | | |
| **Fuel Flow (SCF/hr)=(lb/min)*21.7** | | | |
| **Specific Humidity (gr/lb)** | | | |
| **Spec. Hum. (lb $H_2O$/lb air)=(gr/lb)/7000** | | | |
| **PCD (psi)** | | | |
| **PCD (mm Hg)=(psi+14.24)*51.71493** | | | |
| **NOx Water Injection (gpm)** | | | |

| **$NO_2$ CONVERSION** | |
|---|---|
| **$NO_2$ Gas (ppm)** | 48.7 |
| **NO Reading (ppm)** | 2.24 |
| **NOx Reading (ppm)** | 49.1 |
| **Cylinder Num** | EB0098845 |

| **REPORT INFORMATION** | | |
|---|---|---|
| | **INSTRUMENT** | **SERIAL #** |
| **$O_2$** | Sevromex 1440 | Inst-O2-0033 |
| **NOx** | Thermo 42c | Inst-Nx-0049 |
| **CO** | Thermo 48c | Inst-Co-0030 |
| **THC** | Thermo 51i | Inst-Th-0013 |
| **$CO_2$** | Sevromex 1440 | Inst-C2-0015 |
| **$SO_2$** | N/a | N/a |

| **RESPONSE TIME** | | |
|---|---|---|
| | **TIME (hh:mm)** | **RESP (min)** |
| **1st Gas Inject** | | |
| **1st Inst. @ 95%** | | |
| **2nd Inst. @ 95%** | | |
| **3rd Inst. @ 95%** | | |
| **2nd Gas Inject** | | |
| **1st Inst. @ 95%** | | |
| **2nd Inst. @ 95%** | | |
| **3rd Inst. @ 95%** | | |
| **3rd Gas Inject** | | |
| **1st Inst. @ 95%** | | |
| **2nd Inst. @ 95%** | | |
| **3rd Inst. @ 95%** | | |

| **CALIBRATION** | $O_2$ | | NOx | | CO | | THC | | $CO_2$ | | $SO_2$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Conc.** | **Actual** | **Conc.** | **Actual** | **Conc.** | **Actual** | **Conc.** | **Actual** | **Conc.** | **Actual** | **Conc.** | **Actual** |
| **Zero Gas** | 0 | 0.03 | 0 | 0.01 | 0 | -0.107 | 0 | 0 | 0 | -0.08 | N/a | N/a |
| **Low Gas** | N/a | N/a | N/a | N/a | N/a | N/a | 3.03 | 2.96 | N/a | N/a | N/a | N/a |
| **Mid Gas** | 11.98 | 11.96 | 4.55 | 4.85 | 5.22 | 5.16 | 5.19 | 4.97 | 8.91 | 9.25 | N/a | N/a |
| **High Gas** | 20.9 | 20.93 | 8.9 | 8.82 | 9.1 | 9.11 | 8.78 | 8.7 | 18.9 | 18.46 | N/a | N/a |

| **5** | $O_2$ | | NOx | | CO | | THC | | $CO_2$ | | $SO_2$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Zero** | **Mid** | **Zero** | **Mid** | **Zero** | **Mid** | **Zero** | **Mid** | **Zero** | **Mid** | **Zero** | **Mid** |
| **Initial Run #1** | 0.03 | 11.91 | 0.06 | 4.6 | 0.06 | 5.19 | -0.008 | 3.02 | -0.2 | 8.98 | N/a | N/a |
| **Run #1 / Run #2** | 0.09 | 11.86 | 0.05 | 4.62 | -0.17 | 4.86 | 0 | 3.15 | -0.16 | 8.89 | N/a | N/a |
| **Run #2 / Run #3** | 0.12 | 11.84 | 0.29 | 4.66 | -0.17 | 5.01 | -0.007 | 2.92 | 0.08 | 8.98 | N/a | N/a |
| **Run #3 / Final** | 0.1 | 11.83 | 0.09 | 4.56 | -0.43 | 4.82 | 0.01 | 2.78 | 0.09 | 9.08 | N/a | N/a |
| **Bias Gas Actual Conc.** | | 11.98 | | 4.55 | | 5.22 | | 3.03 | | 8.91 | | N/a |

Signature _____

# SINGLE LOAD TEST - FIELD DATA SHEET

AIR HYGIENE

| | | | |
|---|---|---|---|
| **Company:** | Bechtel | | |
| **Location:** | Cricket Valley, New York | | |
| **Date:** | 4/16/2020 | **Project Code:** | bec-19-cricketvalley.ny-start#3 |
| **Unit Make and Model:** | | | |
| **Unit Number:** | | | |
| **Serial Number:** | | | |
| **Data Recorded By:** | | | |
| **Tested With AHI Unit(s):** | **Truck(s):** 163 | **Trailer(s):** | 215 |
| **LDEQ Warmup/Cal Req:** | **On (Day/Time):** | **Cal (Day/Time):** | |

| **CYLINDER SERIAL NUMBERS** | | $O_2$ | NOx | CO |
|---|---|---|---|---|
| | **Low** | EB0058639 | EB0058639 | EB0058639 |
| | **Mid** | CC716390 | CC727541 | CC727541 |
| | **High** | CC722643 | EB040961 | EB040961 |

Stack Dia. = _____
Measured By: _____
Measured With: _____

| **CYLINDER SERIAL NUMBERS** | | THC | $CO_2$ | $SO_2$ |
|---|---|---|---|---|
| | **Low** | EB0065886 | EB0058639 | N/a |
| | **Mid** | EB0078043 | CC716390 | N/a |
| | **High** | EB0075711 | CC722643 | N/a |

| **RUN INFORMATION** | **Load** | | |
|---|---|---|---|
| | _____% #1 | _____% #2 | _____% #3 |
| **Time Start (hh:mm:ss)** | 14:04:12 | 15:23:12 | 16:40:12 |
| **Time Stop (hh:mm:ss)** | 15:03:42 | 16:03:42 | 17:39:42 |
| **Rated Power (MW or hp)** | | | |
| **Actual Power (MW or hp)** | | | |
| **Barometric Pressure (in. Hg)** | | | |
| **Ambient Temperature (°F)** | | | |
| **Relative Humidity (%)** | | | |
| **Fuel Flow (lb/min)** | | | |
| **Fuel Flow (SCF/hr)=(lb/min)*21.7** | | | |
| **Specific Humidity (gr/lb)** | | | |
| **Spec. Hum. (lb $H_2O$/lb air)=(gr/lb)/7000** | | | |
| **PCD (psi)** | | | |
| **PCD (mm Hg)=(psi+14.24)*51.71493** | | | |
| **NOx Water Injection (gpm)** | | | |

| **$NO_2$ CONVERSION** | |
|---|---|
| **$NO_2$ Gas (ppm)** | 48.7 |
| **NO Reading (ppm)** | 1.71 |
| **NOx Reading (ppm)** | 46.19 |
| **Cylinder Num** | EB0098845 |

| **REPORT INFORMATION** | | |
|---|---|---|
| | **INSTRUMENT** | **SERIAL #** |
| **$O_2$** | Sevromex 1440 | Inst-O2-0024 |
| **NOx** | Thermo 42c | Inst-Nx-0031 |
| **CO** | Thermo 48c | Inst-Co-0029 |
| **THC** | Thermo 51i | Inst-Th-0013 |
| **$CO_2$** | Sevromex 1440 | Inst-C2-0016 |
| **$SO_2$** | N/a | N/a |

| **RESPONSE TIME** | | |
|---|---|---|
| | **TIME (hh:mm)** | **RESP (min)** |
| **1st Gas Inject** | | |
| **1st Inst. @ 95%** | | |
| **2nd Inst. @ 95%** | | |
| **3rd Inst. @ 95%** | | |
| **2nd Gas Inject** | | |
| **1st Inst. @ 95%** | | |
| **2nd Inst. @ 95%** | | |
| **3rd Inst. @ 95%** | | |
| **3rd Gas Inject** | | |
| **1st Inst. @ 95%** | | |
| **2nd Inst. @ 95%** | | |
| **3rd Inst. @ 95%** | | |

| **CALIBRATION** | $O_2$ | | NOx | | CO | | THC | | $CO_2$ | | $SO_2$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Conc.** | **Actual** | **Conc.** | **Actual** | **Conc.** | **Actual** | **Conc.** | **Actual** | **Conc.** | **Actual** | **Conc.** | **Actual** |
| **Zero Gas** | 0 | -0.002 | 0 | 0.02 | 0 | 0.012 | 0 | 0.005 | 0 | -0.017 | N/a | N/a |
| **Low Gas** | N/a | N/a | N/a | N/a | N/a | N/a | 3.03 | 3.01 | N/a | N/a | N/a | N/a |
| **Mid Gas** | 11.98 | 11.97 | 4.55 | 4.69 | 5.22 | 5.1 | 5.19 | 4.96 | 8.91 | 9.32 | N/a | N/a |
| **High Gas** | 20.9 | 21.1 | 8.9 | 8.83 | 9.1 | 9.05 | 8.78 | 8.7 | 18.9 | 18.93 | N/a | N/a |

| **BIAS** | $O_2$ | | NOx | | CO | | THC | | $CO_2$ | | $SO_2$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Zero** | **Mid** | **Zero** | **Mid** | **Zero** | **Mid** | **Zero** | **Mid** | **Zero** | **Mid** | **Zero** | **Mid** |
| **Initial Run #1** | 0.03 | 11.88 | 0.06 | 4.53 | -0.05 | 5.16 | 0.005 | 3.01 | -0.01 | 9.02 | N/a | N/a |
| **Run #1 / Run #2** | 0.07 | 11.84 | 0.23 | 4.61 | 0.05 | 5.1 | 0 | 3.11 | 0.09 | 8.94 | N/a | N/a |
| **Run #2 / Run #3** | 0.05 | 11.83 | 0.22 | 4.64 | 0.05 | 5.14 | 0.004 | 3.13 | 0.1 | 8.96 | N/a | N/a |
| **Run #3 / Final** | 0.08 | 11.83 | 0.15 | 4.64 | -0.04 | 5.25 | -0.003 | 3.16 | 0.11 | 8.9 | N/a | N/a |
| **Bias Gas Actual Conc.** | | 11.98 | | 4.55 | | 5.22 | | 5.19 | | 8.91 | | N/a |

Signature _____

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

## Laboratory Data Summary Base Load $PM_{10}$

# SAMPLE RECOVERY AND INTEGRITY DATA SHEET

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Date** | 04/15/20 |
| **Sampling Location** | U-00003 Base | **Operator** | Rob White |
| **Project #** | bec-19-cricketvalley.ny-start#3 | | |

| **Run History Data** | | | | |
|---|---|---|---|---|
| **Run Number** | PM U-00003 Base-1 | PM U-00003 Base-2 | PM U-00003 Base-3 | |
| **Run Start Time** | 08:23 | 13:45 | 06:46 | (hh:mm) |
| **Run Stop Time** | 12:46 | 18:02 | 11:15 | (hh:mm) |
| **Train Prepared By** | RW | RW | RW | |
| **Train Recovered By** | RW | RW | RW | |
| **Recovery Date** | 04/15/20 | 04/15/20 | 04/16/20 | (mm/dd/yy) |
| **Relinquished By** | RW | RW | RW | |
| **Received By** | Courier | Courier | Courier | |
| **Relinquished Date** | 04/18/20 | 04/18/20 | 04/18/20 | (mm/dd/yy) |
| **Relinquished Time** | 07:12 | 12:30 | 12:30 | (hh:mm) |

| **Equipment Identification Numbers** | | | |
|---|---|---|---|
| **Impinger Case** | SAMP-BH-0039 | SAMP-BH-0039 | SAMP-BH-0039 |
| **Sample Box** | SAMP-SBC-0099 | SAMP-SBC-0099 | SAMP-SBC-0099 |
| **PM Filter** | 19031839 | 19031840 | 19031831 |
| **CPM Filter** | PM U-00003 Base-1-CPM | PM U-00003 Base-2-CPM | PM U-00003 Base-3-CPM |

| | |
|---|---|
| Sample Blank Taken | ☑ YES |

| **Moisture Content Data** | | | | | |
|---|---|---|---|---|---|
| **Impingers 1, 2, and 3 - Liquid Weight** | | | | | |
| **Final Weight** | ($W_f$) | 1873.7 | 1828.1 | 1757.9 | g |
| **Initial Weight** | ($W_i$) | 1706.5 | 1670.9 | 1713.3 | g |
| **Net Weight** | ($W_n$) | 167.2 | 157.2 | 44.6 | g |
| **Comments** | | | | | |
| **Impinger 4 - Silica Gel Weight** | | | | | |
| **Final Weight** | ($W_f$) | 951.6 | 936.8 | 1060.0 | g |
| **Initial Weight** | ($W_i$) | 927.8 | 909.6 | 952.3 | g |
| **Net Weight** | ($W_n$) | 23.8 | 27.2 | 107.7 | g |
| **Comments** | | | | | |
| **Total Water Collected** | | | | | |
| **Total Weight** | ($W_{lc}$) | 191.0 | 184.4 | 152.3 | g |
| **Total Volume** | ($V_{lc}$) | 191.3 | 184.7 | 152.6 | ml |

## SAMPLE ANALYTICAL DATA SHEET

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| **Analytical Data** | | **Run** | PM U-00003 Base-1 | | |
|---|---|---|---|---|---|
| **Sample Leakage Evident** | NO | **Estimated Leak Volume** | | 0.00 | (mg) |

| Sample Type | Sample Number | Date | Time |
|---|---|---|---|
| Filter | BV Labs | | |
| Nozzle Wash PM>10 | BV Labs | | |
| Cyclone Wash 2.5<PM<10 | BV Labs | | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | BV Labs | | |
| Inorganic Impinger Contents | BV Labs | | |
| Organic Impinger Contents | BV Labs | | |

**Blank and Titration Concentrations**

| Blank Type | Weight | Volume | Concentration | Mass | |
|---|---|---|---|---|---|
| | (g) | (ml) | (mg/ml) | (mg) | |
| Acetone Blank Weight of Solids | 0.0000 | 201 | 0.000000 | -- | below RDL |
| DI Water Blank Weight of Solids | 0.0000 | 197 | 0.000000 | -- | below RDL |
| Hexane Blank Weight of Solids | 0.0000 | 228 | 0.000000 | -- | below RDL |

* Reported at RDL, (1) negative results observed

| **Gravimetric Concentrations** | | | **Run** | | 1 | **Start Time** | 08:23 |
|---|---|---|---|---|---|---|---|
| **Sample Portion** | **Final** | **Tare** | **Gain** | **Volume** | **Blank Adjustment** | **Adjusted Gain** | |
| | (g) | (g) | (mg) | (ml) | (mg) | (mg) | |
| Filter | | *(1) | 0.3000 | -- | -- | 0.3000 | |
| Filter Beaker | | | | -- | -- | | |
| Nozzle Wash PM>10 | | | 17.5 | 78 | 0.0000 | 17.5000 | |
| Cyclone Wash 2.5<PM<10 | | | 1.0 | 75 | 0.0000 | 1.0000 | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | | | 1.6 | 61 | 0.0000 | 1.6000 | |
| Inorganic Impinger Contents | | | 3.3 | 461 | 1.4762 | 1.8238 | |
| Organic Impinger Contents | | | 2.4 | 364 | 0.5238 | 1.8762 | |

## SAMPLE ANALYTICAL DATA SHEET

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| **Analytical Data** | | **Run** | PM U-00003 Base-2 | | |
|---|---|---|---|---|---|
| **Sample Leakage Evident** | NO | **Estimated Leak Volume** | | 0.00 | (mg) |

| Sample Type | Sample Number | Date | Time |
|---|---|---|---|
| Filter | BV Labs | | |
| Nozzle Wash PM>10 | BV Labs | | |
| Cyclone Wash 2.5<PM<10 | BV Labs | | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | BV Labs | | |
| Inorganic Impinger Contents | BV Labs | | |
| Organic Impinger Contents | BV Labs | | |

| **Blank and Titration Concentrations** | | | | | |
|---|---|---|---|---|---|
| **Blank Type** | **Weight** | **Volume** | **Concentration** | **Mass** | |
| | (g) | (ml) | (mg/ml) | (mg) | |
| Acetone Blank Weight of Solids | 0.0000 | 201 | 0.000000 | -- | below RDL |
| DI Water Blank Weight of Solids | 0.0000 | 197 | 0.000000 | -- | below RDL |
| Hexane Blank Weight of Solids | 0.0000 | 228 | 0.000000 | -- | below RDL |

* Reported at RDL

| **Gravimetric Concentrations** | | | **Run** | | 2 | **Start Time** | 13:45 |
|---|---|---|---|---|---|---|---|
| **Sample Portion** | **Final** | **Tare** | **Gain** | **Volume** | **Blank Adjustment** | **Adjusted Gain** | |
| | (g) | (g) | (mg) | (ml) | (mg) | (mg) | |
| Filter | | | 0.5000 | -- | -- | 0.5000 | |
| Filter Beaker | | | | -- | -- | | |
| Nozzle Wash PM>10 | | | 9.3 | 72 | 0.0000 | 9.3000 | |
| Cyclone Wash 2.5<PM<10 | | | 1.3 | 66 | 0.0000 | 1.3000 | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | | | 1.4 | 61 | 0.0000 | 1.4000 | |
| Inorganic Impinger Contents | | | 2.2 | 361 | 1.4762 | 0.7238 | |
| Organic Impinger Contents | | | 1.9 | 303 | 0.5238 | 1.3762 | |

## SAMPLE ANALYTICAL DATA SHEET

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| **Analytical Data** | | **Run** | PM U-00003 Base-3 | | |
|---|---|---|---|---|---|
| **Sample Leakage Evident** | NO | **Estimated Leak Volume** | | 0.00 | (mg) |

| Sample Type | Sample Number | Date | Time |
|---|---|---|---|
| Filter | BV Labs | | |
| Nozzle Wash PM>10 | BV Labs | | |
| Cyclone Wash 2.5<PM<10 | BV Labs | | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | BV Labs | | |
| Inorganic Impinger Contents | BV Labs | | |
| Organic Impinger Contents | BV Labs | | |

**Blank and Titration Concentrations**

| Blank Type | Weight | Volume | Concentration | Mass | |
|---|---|---|---|---|---|
| | (g) | (ml) | (mg/ml) | (mg) | |
| Acetone Blank Weight of Solids | 0.0000 | 201 | 0.000000 | -- | below RDL |
| DI Water Blank Weight of Solids | 0.0000 | 197 | 0.000000 | -- | below RDL |
| Hexane Blank Weight of Solids | 0.0000 | 228 | 0.000000 | -- | below RDL |

* Reported at RDL, (1) negative results observed

| **Gravimetric Concentrations** | | | **Run** | | 3 | **Start Time** | 06:46 |
|---|---|---|---|---|---|---|---|
| **Sample Portion** | **Final** | **Tare** | **Gain** | **Volume** | **Blank Adjustment** | **Adjusted Gain** | |
| | (g) | (g) | (mg) | (ml) | (mg) | (mg) | |
| Filter | | *(1) | 0.3000 | -- | -- | 0.3000 | |
| Filter Beaker | | | | -- | -- | | |
| Nozzle Wash PM>10 | | | 14.1 | 60 | 0.0000 | 14.1000 | |
| Cyclone Wash 2.5<PM<10 | | | 1.0 | 66 | 0.0000 | 1.0000 | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | | | 1.2 | 36 | 0.0000 | 1.2000 | |
| Inorganic Impinger Contents | | | 2.2 | 381 | 1.4762 | 0.7238 | |
| Organic Impinger Contents | | | 1.5 | 334 | 0.5238 | 0.9762 | |

## SAMPLE ANALYTICAL DATA SHEET

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| **Analytical Data** | | **Run** | PM U-00003 Base-FB | | |
|---|---|---|---|---|---|
| **Sample Leakage Evident** | NO | **Estimated Leak Volume** | | 0.00 | (mg) |

| Sample Type | Sample Number | Date | Time |
|---|---|---|---|
| Inorganic Impinger Contents | BV Labs | | |
| Organic Impinger Contents | BV Labs | | |

| Gravimetric Concentrations | | | | | |
|---|---|---|---|---|---|
| **Sample Portion** | **Final** | **Tare** | **Gain** | | **Actual Gain** |
| | (g) | (g) | (mg) | | (mg) |
| Inorganic Impinger Contents | 0.0031 | 0.0000 | 1.4762 | max 2 mg total blank adjustment, proportioned | 3.1000 |
| Organic Impinger Contents | 0.0011 | 0.0000 | 0.5238 | | 1.1000 |

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

## Laboratory Data Summary Base+DB Load $PM_{10}$

# SAMPLE RECOVERY AND INTEGRITY DATA SHEET

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Date** | 04/16/20 |
| **Sampling Location** | U-00003 Base+DB | **Operator** | Rob White |
| **Project #** | bec-19-cricketvalley.ny-start#3 | | |

| **Run History Data** | | | | |
|---|---|---|---|---|
| **Run Number** | PM U-00003 Base+DB-1 | PM U-00003 Base+DB-2 | PM U-00003 Base+DB-3 | |
| **Run Start Time** | 12:23 | 04:15 | 09:35 | (hh:mm) |
| **Run Stop Time** | 16:49 | 08:34 | 14:03 | (hh:mm) |
| **Train Prepared By** | RW | RW | RW | |
| **Train Recovered By** | RW | RW | RW | |
| **Recovery Date** | 04/16/20 | 04/17/20 | 04/17/20 | (mm/dd/yy) |
| **Relinquished By** | RW | RW | RW | |
| **Received By** | Courier | Courier | Courier | |
| **Relinquished Date** | 04/18/20 | 04/18/20 | 04/18/20 | (mm/dd/yy) |
| **Relinquished Time** | 12:30 | 12:30 | 12:30 | (hh:mm) |

| **Equipment Identification Numbers** | | | |
|---|---|---|---|
| **Impinger Case** | SAMP-BH-0039 | SAMP-BH-0039 | SAMP-BH-0039 |
| **Sample Box** | SAMP-SBC-0099 | SAMP-SBC-0099 | SAMP-SBC-0099 |
| **PM Filter** | 19031829 | 19031826 | 18081503 |
| **CPM Filter** | PM U-00003 Base+DB-1-CPM | PM U-00003 Base+DB-2-CPM | PM U-00003 Base+DB-3-CPM |

Sample Blank Taken ☑ YES

| **Moisture Content Data** | | | | | |
|---|---|---|---|---|---|
| **Impingers 1, 2, and 3 - Liquid Weight** | | | | | |
| **Final Weight** | ($W_f$) | 1845.2 | 1793.6 | 1860.0 | g |
| **Initial Weight** | ($W_i$) | 1673.6 | 1607.6 | 1671.0 | g |
| **Net Weight** | ($W_n$) | 171.6 | 186.0 | 189.0 | g |
| **Comments** | | | | | |
| **Impinger 4 - Silica Gel Weight** | | | | | |
| **Final Weight** | ($W_f$) | 884.6 | 988.0 | 901.3 | g |
| **Initial Weight** | ($W_i$) | 856.0 | 963.4 | 875.4 | g |
| **Net Weight** | ($W_n$) | 28.6 | 24.6 | 25.9 | g |
| **Comments** | | | | | |
| **Total Water Collected** | | | | | |
| **Total Weight** | ($W_{lc}$) | 200.2 | 210.6 | 214.9 | g |
| **Total Volume** | ($V_{lc}$) | 200.6 | 211.0 | 215.3 | ml |

## SAMPLE ANALYTICAL DATA SHEET

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| **Analytical Data** | | **Run** | PM U-00003 Base+DB-1 | | |
|---|---|---|---|---|---|
| **Sample Leakage Evident** | NO | **Estimated Leak Volume** | | 0.00 | (mg) |

| Sample Type | Sample Number | Date | Time |
|---|---|---|---|
| Filter | BV Labs | | |
| Nozzle Wash PM>10 | BV Labs | | |
| Cyclone Wash 2.5<PM<10 | BV Labs | | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | BV Labs | | |
| Inorganic Impinger Contents | BV Labs | | |
| Organic Impinger Contents | BV Labs | | |

| **Blank and Titration Concentrations** | | | | | |
|---|---|---|---|---|---|
| **Blank Type** | **Weight** | **Volume** | **Concentration** | **Mass** | |
| | (g) | (ml) | (mg/ml) | (mg) | |
| Acetone Blank Weight of Solids | 0.0000 | 201 | 0.000000 | -- | below RDL |
| DI Water Blank Weight of Solids | 0.0000 | 197 | 0.000000 | -- | below RDL |
| Hexane Blank Weight of Solids | 0.0000 | 228 | 0.000000 | -- | below RDL |

| **Gravimetric Concentrations** | | | **Run** | | 1 | **Start Time** | 12:23 |
|---|---|---|---|---|---|---|---|
| **Sample Portion** | **Final** | **Tare** | **Gain** | **Volume** | **Blank Adjustment** | **Adjusted Gain** | |
| | (g) | (g) | (mg) | (ml) | (mg) | (mg) | |
| Filter | | | 0.5000 | -- | -- | 0.5000 | |
| Filter Beaker | | | | -- | -- | | |
| Nozzle Wash PM>10 | | | 8.3 | 70 | 0.0000 | 8.3000 | |
| Cyclone Wash 2.5<PM<10 | | | 1.1 | 60 | 0.0000 | 1.1000 | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | | | 1.5 | 73 | 0.0000 | 1.5000 | |
| Inorganic Impinger Contents | | | 2.1 | 381 | 1.4762 | 0.6238 | |
| Organic Impinger Contents | | * | 1.0 | 288 | 0.5238 | 0.4762 | |

## SAMPLE ANALYTICAL DATA SHEET

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| **Analytical Data** | | **Run** | PM U-00003 Base+DB-2 | | |
|---|---|---|---|---|---|
| **Sample Leakage Evident** | NO | **Estimated Leak Volume** | | 0.00 | (mg) |

| Sample Type | Sample Number | Date | Time |
|---|---|---|---|
| Filter | BV Labs | | |
| Nozzle Wash PM>10 | BV Labs | | |
| Cyclone Wash 2.5<PM<10 | BV Labs | | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | BV Labs | | |
| Inorganic Impinger Contents | BV Labs | | |
| Organic Impinger Contents | BV Labs | | |

| **Blank and Titration Concentrations** | | | | | |
|---|---|---|---|---|---|
| **Blank Type** | **Weight** | **Volume** | **Concentration** | **Mass** | |
| | (g) | (ml) | (mg/ml) | (mg) | |
| Acetone Blank Weight of Solids | 0.0000 | 201 | 0.000000 | -- | below RDL |
| DI Water Blank Weight of Solids | 0.0000 | 197 | 0.000000 | -- | below RDL |
| Hexane Blank Weight of Solids | 0.0000 | 228 | 0.000000 | -- | below RDL |

| **Gravimetric Concentrations** | | | **Run** | | 2 | **Start Time** | 04:15 |
|---|---|---|---|---|---|---|---|
| **Sample Portion** | **Final** | **Tare** | **Gain** | **Volume** | **Blank Adjustment** | **Adjusted Gain** | |
| | (g) | (g) | (mg) | (ml) | (mg) | (mg) | |
| Filter | | | 0.7000 | -- | -- | 0.7000 | |
| Filter Beaker | | | | -- | -- | | |
| Nozzle Wash PM>10 | | | 10.9 | 76 | 0.0000 | 10.9000 | |
| Cyclone Wash 2.5<PM<10 | | | 1.0 | 76 | 0.0000 | 1.0000 | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | | | 1.3 | 62 | 0.0000 | 1.3000 | |
| Inorganic Impinger Contents | | | 3.7 | 381 | 1.4762 | 2.2238 | |
| Organic Impinger Contents | | | 1.1 | 319 | 0.5238 | 0.5762 | |

## SAMPLE ANALYTICAL DATA SHEET

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| **Analytical Data** | | **Run** | PM U-00003 Base+DB-3 | | |
|---|---|---|---|---|---|
| **Sample Leakage Evident** | NO | **Estimated Leak Volume** | | 0.00 | (mg) |

| Sample Type | Sample Number | Date | Time |
|---|---|---|---|
| Filter | BV Labs | | |
| Nozzle Wash PM>10 | BV Labs | | |
| Cyclone Wash 2.5<PM<10 | BV Labs | | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | BV Labs | | |
| Inorganic Impinger Contents | BV Labs | | |
| Organic Impinger Contents | BV Labs | | |

| **Blank and Titration Concentrations** | | | | | |
|---|---|---|---|---|---|
| **Blank Type** | **Weight** | **Volume** | **Concentration** | **Mass** | |
| | (g) | (ml) | (mg/ml) | (mg) | |
| Acetone Blank Weight of Solids | 0.0000 | 201 | 0.000000 | -- | below RDL |
| DI Water Blank Weight of Solids | 0.0000 | 197 | 0.000000 | -- | below RDL |
| Hexane Blank Weight of Solids | 0.0000 | 228 | 0.000000 | -- | below RDL |

* Reported at RDL

| **Gravimetric Concentrations** | | | **Run** | | 3 | **Start Time** | 09:35 |
|---|---|---|---|---|---|---|---|
| **Sample Portion** | **Final** | **Tare** | **Gain** | **Volume** | **Blank Adjustment** | **Adjusted Gain** | |
| | (g) | (g) | (mg) | (ml) | (mg) | (mg) | |
| Filter | | * | 0.3000 | -- | -- | 0.3000 | |
| Filter Beaker | | | | -- | -- | | |
| Nozzle Wash PM>10 | | | 1.4 | 61 | 0.0000 | 1.4000 | |
| Cyclone Wash 2.5<PM<10 | | | 3.5 | 69 | 0.0000 | 3.5000 | |
| Cyclone Exit to Front Half of Filter Wash (<2.5) | | | 1.2 | 70 | 0.0000 | 1.2000 | |
| Inorganic Impinger Contents | | | 2.1 | 331 | 1.4762 | 0.6238 | |
| Organic Impinger Contents | | | 1.4 | 288 | 0.5238 | 0.8762 | |

## SAMPLE ANALYTICAL DATA SHEET

| | |
|---|---|
| **Plant Name** | Cricket Valley Energy Center |
| **Sampling Location** | U-00003 Base+DB |
| **Project #** | bec-19-cricketvalley.ny-start#3 |

| **Analytical Data** | | **Run** | PM U-00003 Base+DB-FB | | |
|---|---|---|---|---|---|
| **Sample Leakage Evident** | NO | **Estimated Leak Volume** | | 0.00 | (mg) |

| Sample Type | Sample Number | Date | Time |
|---|---|---|---|
| Inorganic Impinger Contents | BV Labs | | |
| Organic Impinger Contents | BV Labs | | |

| **Gravimetric Concentrations** | | | | | |
|---|---|---|---|---|---|
| **Sample Portion** | **Final** | **Tare** | **Gain** | | **Actual Gain** |
| | (g) | (g) | (mg) | | (mg) |
| Inorganic Impinger Contents | 0.0031 | 0.0000 | 1.4762 | max 2 mg total blank adjustment, proportioned | 3.1000 |
| Organic Impinger Contents | 0.0011 | 0.0000 | 0.5238 | | 1.1000 |

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

## Field Collection Data QA SAM

# SAMPLE RECOVERY AND INTEGRITY DATA SHEET

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Date** | 04/15/20 |
| **Sampling Location** | U-00003 Base | **Operator** | GT |
| **Project #** | bec-19-cricketvalley.ny-start#3 | | |

| **Run History Data** | | | | |
|---|---|---|---|---|
| **Run Number** | SAM U-00003 Base-1 | SAM U-00003 Base-2 | SAM U-00003 Base-3 | |
| **Run Start Time** | 13:56 | 06:24 | 08:57 | (hh:mm) |
| **Run Stop Time** | 15:56 | 08:24 | 10:57 | (hh:mm) |
| **Train Prepared By** | AM | AM | AM | |
| **Train Recovered By** | AM | AM | AM | |
| **Recovery Date** | 03/09/20 | 03/09/20 | 03/09/20 | (mm/dd/yy) |
| **Relinquished By** | RW | RW | RW | |
| **Received By** | Courier | Courier | Courier | |
| **Relinquished Date** | 03/12/20 | 03/12/20 | 03/12/20 | (mm/dd/yy) |
| **Relinquished Time** | 14:20 | 14:20 | 14:20 | (hh:mm) |

| **Equipment Identification Numbers** | | | |
|---|---|---|---|
| **Impinger Case** | samp-bh-0013 | samp-bh-0013 | samp-bh-0013 |
| **Sample Box** | samp-bc-0032 | samp-bc-0032 | samp-bc-0032 |
| **Filter** | R0001 | R0001 | R0001 |

Sample Blank Taken ☑ YES

| **Moisture Content Data** | | | | | |
|---|---|---|---|---|---|
| **Impingers 1, 2, and 3 - Liquid Weight** | | | | | |
| **Final Weight** | ($W_f$) | 2018.1 | 2089.8 | 2157.0 | g |
| **Initial Weight** | ($W_i$) | 1953.5 | 2018.1 | 2089.8 | g |
| **Net Weight** | ($W_n$) | 64.6 | 71.7 | 67.2 | g |
| **Comments** | | | | | |
| **Impinger 4 - Silica Gel Weight** | | | | | |
| **Final Weight** | ($W_f$) | 946.2 | 955.1 | 966.2 | g |
| **Initial Weight** | ($W_i$) | 932.8 | 946.2 | 955.1 | g |
| **Net Weight** | ($W_n$) | 13.4 | 8.9 | 11.1 | g |
| **Comments** | | | | | |
| **Total Water Collected** | | | | | |
| **Total Weight** | ($W_{lc}$) | 78.0 | 80.6 | 78.3 | g |
| **Total Volume** | ($V_{lc}$) | 78.1 | 80.7 | 78.4 | ml |

# SAMPLE RECOVERY AND INTEGRITY DATA SHEET

| | | | |
|---|---|---|---|
| **Plant Name** | Cricket Valley Energy Center | **Date** | 04/16/20 |
| **Sampling Location** | U-00003 Base+DB | **Operator** | GT |
| **Project #** | bec-19-cricketvalley.ny-start#3 | | |

| **Run History Data** | | | | |
|---|---|---|---|---|
| **Run Number** | SAM U-00003 Base+DB-1 | SAM U-00003 Base+DB-2 | SAM U-00003 Base+DB-3 | |
| **Run Start Time** | 13:10 | 03:58 | 07:00 | (hh:mm) |
| **Run Stop Time** | 15:10 | 05:58 | 09:00 | (hh:mm) |
| **Train Prepared By** | AM | AM | AM | |
| **Train Recovered By** | AM | AM | AM | |
| **Recovery Date** | 03/09/20 | 03/09/20 | 03/09/20 | (mm/dd/yy) |
| **Relinquished By** | RW | RW | RW | |
| **Received By** | Courier | Courier | Courier | |
| **Relinquished Date** | 03/12/20 | 03/12/20 | 03/12/20 | (mm/dd/yy) |
| **Relinquished Time** | 14:20 | 14:20 | 14:20 | (hh:mm) |

| **Equipment Identification Numbers** | | | |
|---|---|---|---|
| **Impinger Case** | samp-bh-0013 | samp-bh-0013 | samp-bh-0013 |
| **Sample Box** | samp-bc-0032 | samp-bc-0032 | samp-bc-0032 |
| **Filter** | R0001 | R0001 | R0001 |

Sample Blank Taken ☑ YES

| **Moisture Content Data** | | | | | |
|---|---|---|---|---|---|
| **Impingers 1, 2, and 3 - Liquid Weight** | | | | | |
| **Final Weight** | ($W_f$) | 2039.7 | 2040.7 | 2120.5 | g |
| **Initial Weight** | ($W_i$) | 1963.2 | 1960.5 | 2040.7 | g |
| **Net Weight** | ($W_n$) | 76.5 | 80.2 | 79.8 | g |
| **Comments** | | | | | |
| **Impinger 4 - Silica Gel Weight** | | | | | |
| **Final Weight** | ($W_f$) | 928.5 | 938.6 | 929.6 | g |
| **Initial Weight** | ($W_i$) | 913.9 | 928.5 | 921.8 | g |
| **Net Weight** | ($W_n$) | 14.6 | 10.1 | 7.8 | g |
| **Comments** | | | | | |
| **Total Water Collected** | | | | | |
| **Total Weight** | ($W_{lc}$) | 91.1 | 90.3 | 87.6 | g |
| **Total Volume** | ($V_{lc}$) | 91.3 | 90.5 | 87.8 | ml |

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

## Laboratory Data $PM_{10}$ and SAM
## BV Labs

Your Project #: BEC-19-CRICKETVALLEY.NY-START

**Attention: Data Reports**

Air Hygiene International Inc
1600 West Tacoma Street
Broken Arrow, OK
USA 74012

**Report Date: 2020/04/27**
Report #: R6156688
Version: 1 - Final

# CERTIFICATE OF ANALYSIS

**BV LABS JOB #: C097773**
**Received: 2020/04/18, 19:45**

Sample Matrix: Stack Sampling Train
# Samples Received: 18

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Analytical Method |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | 6 | 2020/04/21 | 2020/04/24 | BRL SOP-00118 | EPA 202 m |
| Non Extractable Condensibles (M202) | 6 | 2020/04/21 | 2020/04/22 | BRL SOP-00118 / BRL SOP-00109 | EPA 202 m |
| >10um Particulates in Rinse | 6 | 2020/04/22 | 2020/04/24 | BRL SOP-00109 | EPA M201A |
| 2.5-10um Particulates in Rinse | 6 | 2020/04/22 | 2020/04/24 | BRL SOP-00109 | EPA M201A |
| 2.5 um Particulates on Filter | 6 | N/A | 2020/04/22 | BRL SOP-00109 | EPA M201A |
| <2.5um Particulates in Rinse | 6 | 2020/04/22 | 2020/04/24 | BRL SOP-00109 | EPA M201A |
| H2SO4 Acid Mist in IPA Impinger (M8mod) | 6 | 2020/04/24 | 2020/04/24 | BRL SOP-00105 | EPA 8 m |
| Sulphuric Acid Mist by Titration (M8A) | 6 | 2020/04/27 | 2020/04/27 | BRL SOP-00116 | EPA CFR PTM 8 m |
| Final Volume of Acetone Probe Rinse | 6 | N/A | 2020/04/22 | BRL SOP-00109 | |
| Final Volume of Impinger | 6 | N/A | 2020/04/24 | | |
| Weight of Solvent from Impingers | 6 | N/A | 2020/04/21 | | |
| Weight of Water from Impingers | 6 | N/A | 2020/04/21 | | |

**Remarks:**

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Your Project #: BEC-19-CRICKETVALLEY.NY-START

**Attention: Data Reports**

Air Hygiene International Inc
1600 West Tacoma Street
Broken Arrow, OK
USA 74012

**Report Date: 2020/04/27**
Report #: R6156688
Version: 1 - Final

# CERTIFICATE OF ANALYSIS

**BV LABS JOB #: C097773**
**Received: 2020/04/18, 19:45**

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

AUTHORIZED REPORT
RAPPORT AUTORISÉ

Bureau Veritas Laboratories
27 Apr 2020 17:21:33

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Clayton Johnson, Project Manager - Air Toxics, Source Evaluation
Email: Clayton.Johnson@bvlabs.com
Phone# (905)817-5769

==========

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## EPA M201A - PARTICULATES (STACK SAMPLING TRAIN)

| BV Labs ID | | MMC518 | MMC519 | MMC520 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2020/04/16 | 2020/04/17 | 2020/04/17 | | |
| | UNITS | M201A- U3 BASE W/DB- R1 | M201A- U3 BASE W/DB- R2 | M201A- U3 BASE W/DB- R3 | RDL | QC Batch |
| > 10 Particulate Weight in Acetone Rinse | mg | 8.3 | 10.9 | 1.4 | 0.5 | 6692255 |
| < 2.5 Particulate Weight in Acetone Rinse | mg | 1.5 | 1.3 | 1.2 | 0.5 | 6692239 |
| 2.5 - 10 Particulate Weight in Acetone Rinse | mg | 1.1 | 1.0 | 3.5 | 0.5 | 6692253 |
| < 2.5 Particulate Weight on Filter | mg | 0.50 | 0.70 | <0.30 | 0.30 | 6692295 |
| Acetone Rinse Volume (10) | ml | 70 | 76 | 61 | 1 | 6692260 |
| Acetone Rinse Volume (2.5 - 10) | ml | 60 | 76 | 69 | 1 | 6692260 |
| Acetone Rinse Volume (2.5) | ml | 73 | 62 | 70 | 1 | 6692260 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

| BV Labs ID | | MMC521 | MMC522 | MMC523 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2020/04/15 | 2020/04/15 | 2020/04/15 | | |
| | UNITS | M201A- U3 BASE-R1 | M201A- U3 BASE-R2 | M201A- U3 BASE-R3 | RDL | QC Batch |
| > 10 Particulate Weight in Acetone Rinse | mg | 17.5 | 9.3 | 14.1 | 0.5 | 6692255 |
| < 2.5 Particulate Weight in Acetone Rinse | mg | 1.6 | 1.4 | 1.2 | 0.5 | 6692239 |
| 2.5 - 10 Particulate Weight in Acetone Rinse | mg | 1.0 | 1.3 | 1.0 | 0.5 | 6692253 |
| < 2.5 Particulate Weight on Filter | mg | <0.30 (1) | 0.50 | <0.30 (1) | 0.30 | 6692295 |
| Acetone Rinse Volume (10) | ml | 78 | 72 | 60 | 1 | 6692260 |
| Acetone Rinse Volume (2.5 - 10) | ml | 75 | 66 | 66 | 1 | 6692260 |
| Acetone Rinse Volume (2.5) | ml | 61 | 61 | 36 | 1 | 6692260 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Negative result observed

LFT Loose filter material in the petri dish
DE Edges of the filter are frayed



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## EPA M202 CONDENSIBLE PM (STACK SAMPLING TRAIN)

| BV Labs ID | | MMC512 | MMC513 | MMC514 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2020/04/16 | 2020/04/17 | 2020/04/17 | | |
| | UNITS | M202- U3 BASE W/DB-R1 | M202- U3 BASE W/DB-R2 | M202- U3 BASE W/DB-R3 | RDL | QC Batch |
| Weight | g | 380 | 380 | 330 | 0.1 | 6690925 |
| Weight of Solvent | g | 190 | 210 | 190 | 0.1 | 6690922 |
| **Miscellaneous Parameters** | | | | | | |
| Inorganic Condensibles | mg | 2.1 | 3.7 | 2.1 | 0.5 | 6690928 |
| Organic Condensibles | mg | <1.0 | 1.1 | 1.4 | 1.0 | 6690921 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

| BV Labs ID | | MMC515 | MMC516 | MMC517 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2020/04/15 | 2020/04/15 | 2020/04/15 | | |
| | UNITS | M202- U3 BASE-R1 | M202- U3 BASE-R2 | M202- U3 BASE-R3 | RDL | QC Batch |
| Weight | g | 460 | 360 | 380 | 0.1 | 6690925 |
| Weight of Solvent | g | 240 | 200 | 220 | 0.1 | 6690922 |
| **Miscellaneous Parameters** | | | | | | |
| Inorganic Condensibles | mg | 3.3 | 2.2 | 2.2 | 0.5 | 6690928 |
| Organic Condensibles | mg | 2.4 | 1.9 | 1.5 | 1.0 | 6690921 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

| BV Labs ID | | MMC524 | | MMC525 | MMC525 | | |
|---|---|---|---|---|---|---|---|
| Sampling Date | | 2020/04/16 | | 2020/04/17 | 2020/04/17 | | |
| | UNITS | M8A- U3 BASE W/DB-R1 | RDL | M8A- U3 BASE W/DB-R2 | M8A- U3 BASE W/DB-R2 Lab-Dup | RDL | QC Batch |
| Impinger Volume | ml | 166 | 1 | 103 | N/A | 1 | 6696057 |
| **Miscellaneous Parameters** | | | | | | | |
| Sulphuric Acid Mist | mg | <0.017 | 0.017 | 0.060 | 0.058 | 0.011 | 6696051 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

| BV Labs ID | | MMC526 | | MMC527 | MMC528 | | |
|---|---|---|---|---|---|---|---|
| Sampling Date | | 2020/04/17 | | 2020/04/15 | 2020/04/16 | | |
| | UNITS | M8A- U3 BASE W/DB-R3 | RDL | M8A- U3 BASE- R1 -CW | M8A- U3 BASE- R2 -CW | RDL | QC Batch |
| Impinger Volume | ml | 108 | 1 | 125 | 132 | 1 | 6696057 |
| **Miscellaneous Parameters** | | | | | | | |
| Sulphuric Acid Mist | mg | 0.017 | 0.011 | 0.047 | 0.094 | 0.013 | 6696051 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

| BV Labs ID | | MMC529 | | |
|---|---|---|---|---|
| Sampling Date | | 2020/04/16 | | |
| | UNITS | M8A- U3 BASE- R3 -CW | RDL | QC Batch |
| Impinger Volume | ml | 183 | 1 | 6696057 |
| **Miscellaneous Parameters** | | | | |
| Sulphuric Acid Mist | mg | <0.019 | 0.019 | 6696051 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## INDUSTRIAL HYGIENE (STACK SAMPLING TRAIN)

| BV Labs ID | | MMC524 | | MMC525 | MMC525 | | |
|---|---|---|---|---|---|---|---|
| Sampling Date | | 2020/04/16 | | 2020/04/17 | 2020/04/17 | | |
| | UNITS | M8A- U3 BASE W/DB-R1 | RDL | M8A- U3 BASE W/DB-R2 | M8A- U3 BASE W/DB-R2 Lab-Dup | RDL | QC Batch |
| **Miscellaneous Parameters** | | | | | | | |
| Sulphuric Acid Mist | mg | <0.66 | 0.66 | <0.41 | <0.41 | 0.41 | 6698432 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

| BV Labs ID | | MMC526 | | MMC527 | | MMC528 | | |
|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2020/04/17 | | 2020/04/15 | | 2020/04/16 | | |
| | UNITS | M8A- U3 BASE W/DB-R3 | RDL | M8A- U3 BASE- R1 -CW | RDL | M8A- U3 BASE- R2 -CW | RDL | QC Batch |
| **Miscellaneous Parameters** | | | | | | | | |
| Sulphuric Acid Mist | mg | <0.43 | 0.43 | <0.5 | 0.5 | <0.53 | 0.53 | 6698432 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

| BV Labs ID | | MMC529 | | |
|---|---|---|---|---|
| Sampling Date | | 2020/04/16 | | |
| | UNITS | M8A- U3 BASE- R3 -CW | RDL | QC Batch |
| **Miscellaneous Parameters** | | | | |
| Sulphuric Acid Mist | mg | <0.73 | 0.73 | 6698432 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## TEST SUMMARY

**BV Labs ID:** MMC512 **Collected:** 2020/04/16
**Sample ID:** M202- U3 BASE W/DB- R1 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6690921 | 2020/04/21 | 2020/04/24 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6690928 | 2020/04/21 | 2020/04/22 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6690922 | N/A | 2020/04/21 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6690925 | N/A | 2020/04/21 | Muhammad M Rahman |

**BV Labs ID:** MMC513 **Collected:** 2020/04/17
**Sample ID:** M202- U3 BASE W/DB- R2 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6690921 | 2020/04/21 | 2020/04/24 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6690928 | 2020/04/21 | 2020/04/22 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6690922 | N/A | 2020/04/21 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6690925 | N/A | 2020/04/21 | Muhammad M Rahman |

**BV Labs ID:** MMC514 **Collected:** 2020/04/17
**Sample ID:** M202- U3 BASE W/DB- R3 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6690921 | 2020/04/21 | 2020/04/24 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6690928 | 2020/04/21 | 2020/04/22 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6690922 | N/A | 2020/04/21 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6690925 | N/A | 2020/04/21 | Muhammad M Rahman |

**BV Labs ID:** MMC515 **Collected:** 2020/04/15
**Sample ID:** M202- U3 BASE- R1 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6690921 | 2020/04/21 | 2020/04/24 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6690928 | 2020/04/21 | 2020/04/22 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6690922 | N/A | 2020/04/21 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6690925 | N/A | 2020/04/21 | Muhammad M Rahman |

**BV Labs ID:** MMC516 **Collected:** 2020/04/15
**Sample ID:** M202- U3 BASE- R2 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6690921 | 2020/04/21 | 2020/04/24 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6690928 | 2020/04/21 | 2020/04/22 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6690922 | N/A | 2020/04/21 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6690925 | N/A | 2020/04/21 | Muhammad M Rahman |



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## TEST SUMMARY

**BV Labs ID:** MMC517 **Collected:** 2020/04/15
**Sample ID:** M202- U3 BASE- R3 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6690921 | 2020/04/21 | 2020/04/24 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6690928 | 2020/04/21 | 2020/04/22 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6690922 | N/A | 2020/04/21 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6690925 | N/A | 2020/04/21 | Muhammad M Rahman |

**BV Labs ID:** MMC518 **Collected:** 2020/04/16
**Sample ID:** M201A- U3 BASE W/DB- R1 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6692255 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6692253 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6692295 | N/A | 2020/04/22 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6692239 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6692260 | N/A | 2020/04/22 | Muhammad M Rahman |

**BV Labs ID:** MMC519 **Collected:** 2020/04/17
**Sample ID:** M201A- U3 BASE W/DB- R2 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6692255 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6692253 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6692295 | N/A | 2020/04/22 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6692239 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6692260 | N/A | 2020/04/22 | Muhammad M Rahman |

**BV Labs ID:** MMC520 **Collected:** 2020/04/17
**Sample ID:** M201A- U3 BASE W/DB- R3 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6692255 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6692253 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6692295 | N/A | 2020/04/22 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6692239 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6692260 | N/A | 2020/04/22 | Muhammad M Rahman |

**BV Labs ID:** MMC521 **Collected:** 2020/04/15
**Sample ID:** M201A- U3 BASE- R1 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6692255 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6692253 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6692295 | N/A | 2020/04/22 | Brenda Moore |



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## TEST SUMMARY

**BV Labs ID:** MMC521 **Collected:** 2020/04/15
**Sample ID:** M201A- U3 BASE- R1 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| <2.5um Particulates in Rinse | BAL | 6692239 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6692260 | N/A | 2020/04/22 | Muhammad M Rahman |

**BV Labs ID:** MMC522 **Collected:** 2020/04/15
**Sample ID:** M201A- U3 BASE- R2 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6692255 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6692253 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6692295 | N/A | 2020/04/22 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6692239 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6692260 | N/A | 2020/04/22 | Muhammad M Rahman |

**BV Labs ID:** MMC523 **Collected:** 2020/04/15
**Sample ID:** M201A- U3 BASE- R3 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6692255 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6692253 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6692295 | N/A | 2020/04/22 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6692239 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6692260 | N/A | 2020/04/22 | Muhammad M Rahman |

**BV Labs ID:** MMC524 **Collected:** 2020/04/16
**Sample ID:** M8A- U3 BASE W/DB- R1 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6696051 | 2020/04/24 | 2020/04/24 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6698432 | 2020/04/27 | 2020/04/27 | Rupinder Sihota |
| Final Volume of Impinger | | 6696057 | N/A | 2020/04/24 | Frank Mo |

**BV Labs ID:** MMC525 **Collected:** 2020/04/17
**Sample ID:** M8A- U3 BASE W/DB- R2 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6696051 | 2020/04/24 | 2020/04/24 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6698432 | 2020/04/27 | 2020/04/27 | Rupinder Sihota |
| Final Volume of Impinger | | 6696057 | N/A | 2020/04/24 | Frank Mo |



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## TEST SUMMARY

**BV Labs ID:** MMC525 Dup
**Sample ID:** M8A- U3 BASE W/DB- R2
**Matrix:** Stack Sampling Train

**Collected:** 2020/04/17
**Shipped:**
**Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6696051 | 2020/04/24 | 2020/04/24 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6698432 | 2020/04/27 | 2020/04/27 | Rupinder Sihota |

**BV Labs ID:** MMC526
**Sample ID:** M8A- U3 BASE W/DB- R3
**Matrix:** Stack Sampling Train

**Collected:** 2020/04/17
**Shipped:**
**Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6696051 | 2020/04/24 | 2020/04/24 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6698432 | 2020/04/27 | 2020/04/27 | Rupinder Sihota |
| Final Volume of Impinger | | 6696057 | N/A | 2020/04/24 | Frank Mo |

**BV Labs ID:** MMC527
**Sample ID:** M8A- U3 BASE- R1 -CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/04/15
**Shipped:**
**Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6696051 | 2020/04/24 | 2020/04/24 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6698432 | 2020/04/27 | 2020/04/27 | Rupinder Sihota |
| Final Volume of Impinger | | 6696057 | N/A | 2020/04/24 | Frank Mo |

**BV Labs ID:** MMC528
**Sample ID:** M8A- U3 BASE- R2 -CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/04/16
**Shipped:**
**Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6696051 | 2020/04/24 | 2020/04/24 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6698432 | 2020/04/27 | 2020/04/27 | Rupinder Sihota |
| Final Volume of Impinger | | 6696057 | N/A | 2020/04/24 | Frank Mo |

**BV Labs ID:** MMC529
**Sample ID:** M8A- U3 BASE- R3 -CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/04/16
**Shipped:**
**Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6696051 | 2020/04/24 | 2020/04/24 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6698432 | 2020/04/27 | 2020/04/27 | Rupinder Sihota |
| Final Volume of Impinger | | 6696057 | N/A | 2020/04/24 | Frank Mo |



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## GENERAL COMMENTS

Sample MMC512 [M202- U3 BASE W/DB- R1] : ORGANIC EXTRACTION :Light oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MMC513 [M202- U3 BASE W/DB- R2] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MMC514 [M202- U3 BASE W/DB- R3] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MMC515 [M202- U3 BASE- R1] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MMC516 [M202- U3 BASE- R2] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MMC517 [M202- U3 BASE- R3] : ORGANIC EXTRACTION : Visual oily extract residue found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

**Results relate only to the items tested.**



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C097773
Report Date: 2020/04/27

Air Hygiene International Inc
Client Project #: BEC-19-CRICKETVALLEY.NY-START
Sampler Initials: RW

## QUALITY ASSURANCE REPORT

| QA/QC Batch | Init | QC Type | Parameter | Date Analyzed | Value | % Recovery | UNITS | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 6690921 | MOR | Spiked Blank | Organic Condensibles | 2020/04/24 | | 99 | % | 70 - 130 |
| 6690921 | MOR | Method Blank | Organic Condensibles | 2020/04/24 | <1.0 | | mg | |
| 6690928 | MOR | Method Blank | Inorganic Condensibles | 2020/04/24 | <0.5 | | mg | |
| 6692239 | MOR | Method Blank | < 2.5 Particulate Weight in Acetone Rinse | 2020/04/24 | <0.5 | | mg | |
| 6692253 | MOR | Method Blank | 2.5 - 10 Particulate Weight in Acetone Rinse | 2020/04/24 | <0.5 | | mg | |
| 6692255 | MOR | Method Blank | > 10 Particulate Weight in Acetone Rinse | 2020/04/24 | <0.5 | | mg | |
| 6696051 | LLE | Matrix Spike(MMC525) | Sulphuric Acid Mist | 2020/04/24 | | 93 | % | 80 - 120 |
| 6696051 | LLE | Spiked Blank | Sulphuric Acid Mist | 2020/04/24 | | 98 | % | 90 - 110 |
| 6696051 | LLE | Method Blank | Sulphuric Acid Mist | 2020/04/24 | <0.01 | | mg | |
| 6696051 | LLE | RPD - Sample/Sample Dup | Sulphuric Acid Mist | 2020/04/24 | 3.4 | | % | 20 |
| 6698432 | RSU | Matrix Spike(MMC525) | Sulphuric Acid Mist | 2020/04/27 | | 98 | % | 80 - 120 |
| 6698432 | RSU | Spiked Blank | Sulphuric Acid Mist | 2020/04/27 | | 98 | % | 90 - 110 |
| 6698432 | RSU | Method Blank | Sulphuric Acid Mist | 2020/04/27 | <0.2 | | mg | |
| 6698432 | RSU | RPD - Sample/Sample Dup | Sulphuric Acid Mist | 2020/04/27 | NC | | % | 20 |

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).



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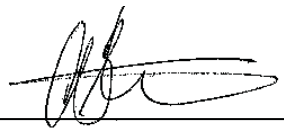
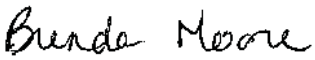
## VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Ann-Marie Stern, Team Lead, Inorganic



Brenda Moore, Team Lead, Inorganic



Frank Mo, B.Sc., Inorganic Lab. Manager

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



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C097773

Requested Standard Analysis - 5-10 business days after receipt at lab

# SAMPLE DESCRIPTION AND LABELING RECORD


**Contact Information (deliver results to)**

**Name:** Rob White
**Phone:** (918) 307-8865
**Email:** rwhite@airhygiene.com

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com


| Project Number: | bec-19-cricketvalley.ny-start#3 | Laboratory Analysis Requested: |
|---|---|---|
| Person Taking Samples: | Rob White | Gravimetric |

| Sample Number | Location | Date | Volume | Analysis Method | | | |
|---|---|---|---|---|---|---|---|
| | | | | RM 201A | RM 202 | -- | -- |
| PM U-00003 Base w/DB-1-F | Unit PM U-00003 Base w/DB - Run 1 - Filter | 04/16/20 | N/A | X | | | |
| PM U-00003 Base w/DB-1-C2 | Unit PM U-00003 Base w/DB - Run 1 - Nozzle Wash PM>10 | 04/16/20 | | X | | | |
| PM U-00003 Base w/DB-1-C3 | Unit PM U-00003 Base w/DB - Run 1 - Cyclone Wash 2.5<PM<10 | 04/16/20 | | X | | | |
| PM U-00003 Base w/DB-1-C4 | Unit PM U-00003 Base w/DB - Run 1 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 04/16/20 | N/A | X | | | |
| PM U-00003 Base w/DB-1-C5 | Unit PM U-00003 Base w/DB - Run 1 - Inorganic Impinger Contents | 04/16/20 | | | X | | |
| PM U-00003 Base w/DB-1-C6 | Unit PM U-00003 Base w/DB - Run 1 - Organic Impinger Contents | 04/16/20 | | | X | | |
| PM U-00003 Base w/DB-1-CPM | Unit PM U-00003 Base w/DB - Run 1 - CPM Filter | 04/16/20 | N/A | | X | | |
| PM U-00003 Base w/DB-2-F | Unit PM U-00003 Base w/DB - Run 2 - Filter | 04/17/20 | N/A | X | | | |
| PM U-00003 Base w/DB-2-C2 | Unit PM U-00003 Base w/DB - Run 2 - Nozzle Wash PM>10 | 04/17/20 | | X | | | |
| PM U-00003 Base w/DB-2-C3 | Unit PM U-00003 Base w/DB - Run 2 - Cyclone Wash 2.5<PM<10 | 04/17/20 | | X | | | |
| PM U-00003 Base w/DB-2-C4 | Unit PM U-00003 Base w/DB - Run 2 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 04/17/20 | N/A | X | | | |
| PM U-00003 Base w/DB-2-C5 | Unit PM U-00003 Base w/DB - Run 2 - Inorganic Impinger Contents | 04/17/20 | | | X | | |
| PM U-00003 Base w/DB-2-C6 | Unit PM U-00003 Base w/DB - Run 2 - Organic Impinger Contents | 04/17/20 | | | X | | |
| PM U-00003 Base w/DB-2-CPM | Unit PM U-00003 Base w/DB - Run 2 - CPM Filter | 04/17/20 | N/A | | X | | |
| PM U-00003 Base w/DB-3-F | Unit PM U-00003 Base w/DB - Run 3 - Filter | 04/17/20 | N/A | X | | | |
| PM U-00003 Base w/DB-3-C2 | Unit PM U-00003 Base w/DB - Run 3 - Nozzle Wash PM>10 | 04/17/20 | | X | | | |
| PM U-00003 Base w/DB-3-C3 | Unit PM U-00003 Base w/DB - Run 3 - Cyclone Wash 2.5<PM<10 | 04/17/20 | | X | | | |
| PM U-00003 Base w/DB-3-C4 | Unit PM U-00003 Base w/DB - Run 3 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 04/17/20 | N/A | X | | | |
| PM U-00003 Base w/DB-3-C5 | Unit PM U-00003 Base w/DB - Run 3 - Inorganic Impinger Contents | 04/17/20 | | | X | | |
| PM U-00003 Base w/DB-3-C6 | Unit PM U-00003 Base w/DB - Run 3 - Organic Impinger Contents | 04/17/20 | | | X | | |
| PM U-00003 Base w/DB-3-CPM | Unit PM U-00003 Base w/DB - Run 3 - CPM Filter | 04/17/20 | N/A | | X | | |

Signature 4/18 12:00 Signature Date Time

Signature DAVID CHAN 2020/04/18 19:45 Signature Date Time

Signature Date Time

Signature Date Time

C097773

Requested Standard Analysis - 5-10 business days after receipt at lab

# SAMPLE DESCRIPTION AND LABELING RECORD


**Contact Information (deliver results to)**

**Name:** Rob White
**Phone:** (918) 307-8865
**Email:** rwhite@airhygiene.com

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com


| Project Number: | bec-19-cricketvalley.ny-start#3 |
|---|---|
| Person Taking Samples: | Rob White |

| Sample Number | Location | Date | Volume | Laboratory Analysis Requested: Gravimetric Analysis Method RM 201A | RM 202 | -- | -- |
|---|---|---|---|---|---|---|---|
| PM U-00003 Base-1-F | Unit PM U-00003 Base - Run 1 - Filter | 04/15/20 | N/A | X | | | |
| PM U-00003 Base-1-C2 | Unit PM U-00003 Base - Run 1 - Nozzle Wash PM>10 | 04/15/20 | | X | | | |
| PM U-00003 Base-1-C3 | Unit PM U-00003 Base - Run 1 - Cyclone Wash 2.5<PM<10 | 04/15/20 | | X | | | |
| PM U-00003 Base-1-C4 | Unit PM U-00003 Base - Run 1 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 04/15/20 | N/A | X | | | |
| PM U-00003 Base-1-C5 | Unit PM U-00003 Base - Run 1 - Inorganic Impinger Contents | 04/15/20 | | | X | | |
| PM U-00003 Base-1-C6 | Unit PM U-00003 Base - Run 1 - Organic Impinger Contents | 04/15/20 | | | X | | |
| PM U-00003 Base-1-CPM | Unit PM U-00003 Base - Run 1 - CPM Filter | 04/15/20 | N/A | | X | | |
| PM U-00003 Base-2-F | Unit PM U-00003 Base - Run 2 - Filter | 04/15/20 | N/A | X | | | |
| PM U-00003 Base-2-C2 | Unit PM U-00003 Base - Run 2 - Nozzle Wash PM>10 | 04/15/20 | | X | | | |
| PM U-00003 Base-2-C3 | Unit PM U-00003 Base - Run 2 - Cyclone Wash 2.5<PM<10 | 04/15/20 | | X | | | |
| PM U-00003 Base-2-C4 | Unit PM U-00003 Base - Run 2 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 04/15/20 | N/A | X | | | |
| PM U-00003 Base-2-C5 | Unit PM U-00003 Base - Run 2 - Inorganic Impinger Contents | 04/15/20 | | | X | | |
| PM U-00003 Base-2-C6 | Unit PM U-00003 Base - Run 2 - Organic Impinger Contents | 04/15/20 | | | X | | |
| PM U-00003 Base-2-CPM | Unit PM U-00003 Base - Run 2 - CPM Filter | 04/15/20 | N/A | | X | | |
| PM U-00003 Base-3-F | Unit PM U-00003 Base - Run 3 - Filter | 04/15/20 | N/A | X | | | |
| PM U-00003 Base-3-C2 | Unit PM U-00003 Base - Run 3 - Nozzle Wash PM>10 | 04/15/20 | | X | | | |
| PM U-00003 Base-3-C3 | Unit PM U-00003 Base - Run 3 - Cyclone Wash 2.5<PM<10 | 04/15/20 | | X | | | |
| PM U-00003 Base-3-C4 | Unit PM U-00003 Base - Run 3 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 04/15/20 | N/A | X | | | |
| PM U-00003 Base-3-C5 | Unit PM U-00003 Base - Run 3 - Inorganic Impinger Contents | 04/15/20 | | | X | | |
| PM U-00003 Base-3-C6 | Unit PM U-00003 Base - Run 3 - Organic Impinger Contents | 04/15/20 | | | X | | |
| PM U-00003 Base-3-CPM | Unit PM U-00003 Base - Run 3 - CPM Filter | 04/15/20 | N/A | | X | | |

RW 4/18 9:00
Signature Date Time

DAVID CHAN 2020/04/18 19:45
Signature Date Time

Signature Date Time

Signature Date Time

C097773

Requested Standard Analysis - 5-10 business days after receipt at lab

# SAMPLE DESCRIPTION AND LABELING RECORD

**Contact Information (deliver results to)**

**Name:** Rob White

**Phone:** (918) 307-8865

**Email:**

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com

| Project Number: | bec-19-cricketvalley.ny-start#3 | Laboratory Analysis Requested: |
|---|---|---|
| Person Taking Samples: | GT | Titration |

| Sample Number | Location | Date | Volume | Analysis Method | | | |
|---|---|---|---|---|---|---|---|
| | | | | Cont Cond | -- | -- | -- |
| SAM U-00003 Base-1-CW | Unit SAM U-00003 Base - Run 1 - Condenser Wash | 04/16/20 | | | IC | | |
| SAM U-00003 Base-2-CW | Unit SAM U-00003 Base - Run 2 - Condenser Wash | 04/17/20 | | | IC | | |
| SAM U-00003 Base-3-CW | Unit SAM U-00003 Base - Run 3 - Condenser Wash | 04/17/20 | | | IC | | |

Signature [signature] Date 4/18/20 Time 12:00

Signature Date Time

Signature [signature] DAVID CHAN Date 2020/04/18 Time 19:45

Signature Date Time

C097773

Requested Standard Analysis - 5-10 business days after receipt at lab

# SAMPLE DESCRIPTION AND LABELING RECORD


**Contact Information (deliver results to)**

**Name:** Rob White

**Phone:** (918) 307-8865

**Email:**

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com


| Project Number: | bec-19-cricketvalley.ny-start#3 | | | Laboratory Analysis Requested: | | | |
|---|---|---|---|---|---|---|---|
| Person Taking Samples: | GT | | | Titration | | | |
| Sample Number | Location | Date | Volume | Analysis Method | | | |
| | | | | Cont Cond | -- | -- | -- |
| SAM U-00003 Base-1-CW | Unit SAM U-00003 Base - Run 1 - Condenser Wash | 04/15/20 | | | TC | | |
| SAM U-00003 Base-2-CW | Unit SAM U-00003 Base - Run 2 - Condenser Wash | 04/16/20 | | | TC | | |
| SAM U-00003 Base-3-CW | Unit SAM U-00003 Base - Run 3 - Condenser Wash | 04/16/20 | | | TC | | |

RGM 4/18 0:00
Signature Date Time

DAVID CHAN 2020/04/18 19:45
Signature Date Time

Signature Date Time

Signature Date Time

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

## Laboratory Data $PM_{10}$ and SAM Blanks
## BV Labs [U-00001 Report]

Your Project #: BEC-19-CRICKETVALLEY.NY-START1

**Attention: Data Reports**

Air Hygiene International Inc
1600 West Tacoma Street
Broken Arrow, OK
USA 74012

**Report Date: 2020/03/03**
Report #: R6096087
Version: 1 - Final

# CERTIFICATE OF ANALYSIS

**BV LABS JOB #: C048069**
**Received: 2020/02/21, 17:15**

Sample Matrix: Stack Sampling Train
# Samples Received: 23

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Analytical Method |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | 9 | 2020/02/27 | 2020/02/26 | BRL SOP-00118 | EPA 202 m |
| Non Extractable Condensibles (M202) | 8 | 2020/02/27 | 2020/02/27 | BRL SOP-00118 / BRL SOP-00109 | EPA 202 m |
| >10um Particulates in Rinse | 7 | 2020/02/27 | 2020/02/28 | BRL SOP-00109 | EPA M201A |
| 2.5-10um Particulates in Rinse | 7 | 2020/02/27 | 2020/02/28 | BRL SOP-00109 | EPA M201A |
| 2.5 um Particulates on Filter | 7 | N/A | 2020/02/26 | BRL SOP-00109 | EPA M201A |
| <2.5um Particulates in Rinse | 7 | 2020/02/27 | 2020/02/28 | BRL SOP-00109 | EPA M201A |
| Sulphuric Acid Mist by Titration (M8A) | 7 | 2020/03/02 | 2020/03/02 | BRL SOP-00116 | EPA CFR PTM 8 m |
| Final Volume of Acetone Probe Rinse | 7 | N/A | 2020/02/26 | BRL SOP-00109 | |
| Final Volume of Impinger | 7 | N/A | 2020/03/02 | | |
| Weight of Solvent from Impingers | 9 | N/A | 2020/02/26 | | |
| Weight of Water from Impingers | 8 | N/A | 2020/02/26 | | |

**Remarks:**

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
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Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.



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Your Project #: BEC-19-CRICKETVALLEY.NY-START1

**Attention: Data Reports**

Air Hygiene International Inc
1600 West Tacoma Street
Broken Arrow, OK
USA 74012

**Report Date: 2020/03/03**
Report #: R6096087
Version: 1 - Final

# CERTIFICATE OF ANALYSIS

**BV LABS JOB #: C048069**
**Received: 2020/02/21, 17:15**

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key




Bureau Veritas Laboratories
03 Mar 2020 16:17:38

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Clayton Johnson, Project Manager - Air Toxics, Source Evaluation
Email: Clayton.Johnson@bvlabs.com
Phone# (905)817-5769

==========

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## EPA M201A - PARTICULATES (STACK SAMPLING TRAIN)

| BV Labs ID | | MBP551 | MBP552 | MBP553 | MBP554 | | |
|---|---|---|---|---|---|---|---|
| Sampling Date | | | 2020/02/18 | 2020/02/18 | 2020/02/18 | | |
| | UNITS | M201A- BLANK | M201A- W/DB-R1 | M201A- W/DB-R2 | M201A- W/DB-R3 | RDL | QC Batch |
| > 10 Particulate Weight in Acetone Rinse | mg | 1.2 | 1.1 | 13.9 | 1.2 | 0.5 | 6608986 |
| < 2.5 Particulate Weight in Acetone Rinse | mg | 1.9 | 1.7 | 1.7 | 1.4 | 0.5 | 6608981 |
| 2.5 - 10 Particulate Weight in Acetone Rinse | mg | 1.7 | 0.9 | 1.4 | 1.8 | 0.5 | 6608984 |
| < 2.5 Particulate Weight on Filter | mg | <0.30 | <0.30 (1) | <0.30 | <0.30 (2) | 0.30 | 6607770 |
| Acetone Rinse Volume (10) | ml | 110 | 140 | 110 | 120 | 1 | 6608983 |
| Acetone Rinse Volume (2.5 - 10) | ml | 91 | 120 | 99 | 130 | 1 | 6608983 |
| Acetone Rinse Volume (2.5) | ml | 100 | 120 | 120 | 130 | 1 | 6608983 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Negative weight observed

LFT Loose filter material in the petri dish
DE Edges of the filter are frayed
(2) Negative weight observed

| BV Labs ID | | MBP556 | MBP557 | MBP558 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2020/02/17 | 2020/02/17 | 2020/02/17 | | |
| | UNITS | M201A- W/ODB-R1 | M201A- W/ODB-R2 | M201A- W/ODB-R3 | RDL | QC Batch |
| > 10 Particulate Weight in Acetone Rinse | mg | 16.2 | 14.5 | 14.0 | 0.5 | 6608986 |
| < 2.5 Particulate Weight in Acetone Rinse | mg | 1.7 | 2.7 | 1.7 | 0.5 | 6608981 |
| 2.5 - 10 Particulate Weight in Acetone Rinse | mg | 1.3 | 1.7 | 1.5 | 0.5 | 6608984 |
| < 2.5 Particulate Weight on Filter | mg | <0.30 (1) | <0.30 (2) | <0.30 (3) | 0.30 | 6607770 |
| Acetone Rinse Volume (10) | ml | 100 | 110 | 97 | 1 | 6608983 |
| Acetone Rinse Volume (2.5 - 10) | ml | 130 | 130 | 85 | 1 | 6608983 |
| Acetone Rinse Volume (2.5) | ml | 130 | 130 | 63 | 1 | 6608983 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Negative weight observed

WET Filters was received wet
(2) Negative weight observed
(3) Negtive results observed

WET Filters were received wet
LFT Loose filter material in the petri dish
DE Edges of the filter are frayed


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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## EPA M202 CONDENSIBLE PM (STACK SAMPLING TRAIN)

| BV Labs ID | | MBP535 | MBP536 | MBP537 | MBP538 | | |
|---|---|---|---|---|---|---|---|
| Sampling Date | | | | | | | |
| | UNITS | M8A/M202- DI WATER BLANK | M202- HEXANE BLANK | M202- ACETONE BLANK | M202- FB | RDL | QC Batch |
| Weight | g | 200 | N/A | N/A | 440 | 0.1 | 6608740 |
| Weight of Solvent | g | N/A | 130 | 150 | 320 | 0.1 | 6608738 |
| **Miscellaneous Parameters** | | | | | | | |
| Inorganic Condensibles | mg | <0.5 | N/A | N/A | 3.1 | 0.5 | 6608739 |
| Organic Condensibles | mg | N/A | <1.0 | <1.0 | 1.1 | 1.0 | 6608735 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

| BV Labs ID | | MBP539 | MBP540 | MBP541 | MBP543 | MBP544 | | |
|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2020/02/18 | 2020/02/18 | 2020/02/18 | 2020/02/17 | 2020/02/17 | | |
| | UNITS | M202- W/DB-R1 | M202- W/DB-R2 | M202- W/DB-R3 | M202- W/ODB-R1 | M202- W/ODB-R2 | RDL | QC Batch |
| Weight | g | 370 | 470 | 390 | 500 | 440 | 0.1 | 6608740 |
| Weight of Solvent | g | 220 | 280 | 210 | 150 | 230 | 0.1 | 6608738 |
| **Miscellaneous Parameters** | | | | | | | | |
| Inorganic Condensibles | mg | 4.6 | 3.7 | 3.8 | 4.6 | 4.2 | 0.5 | 6608739 |
| Organic Condensibles | mg | 1.3 | 1.2 | <1.0 | 1.6 | 2.4 | 1.0 | 6608735 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

| BV Labs ID | | MBP545 | | |
|---|---|---|---|---|
| Sampling Date | | 2020/02/17 | | |
| | UNITS | M202- W/ODB-R3 | RDL | QC Batch |
| Weight | g | 440 | 0.1 | 6608740 |
| Weight of Solvent | g | 230 | 0.1 | 6608738 |
| **Miscellaneous Parameters** | | | | |
| Inorganic Condensibles | mg | 3.6 | 0.5 | 6608739 |
| Organic Condensibles | mg | <1.0 | 1.0 | 6608735 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

| BV Labs ID | | MBP535 | | MBP785 | MBP785 | | |
|---|---|---|---|---|---|---|---|
| Sampling Date | | | | 2020/02/17 | 2020/02/17 | | |
| | UNITS | M8A/M202- DI WATER BLANK | RDL | M8A- W/DB- R1-CW | M8A- W/DB- R1-CW Lab-Dup | RDL | QC Batch |
| Impinger Volume | ml | 196 | 1 | 232 | N/A | 1 | 6613884 |
| **Miscellaneous Parameters** | | | | | | | |
| Sulphuric Acid Mist | mg | <0.78 | 0.78 | <0.93 | <0.93 | 0.93 | 6613883 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

| BV Labs ID | | MBP801 | | MBP802 | | MBP805 | | |
|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2020/02/17 | | 2020/02/17 | | 2020/02/18 | | |
| | UNITS | M8A- W/DB- R2-CW | RDL | M8A- W/DB- R3-CW | RDL | M8A- W/ODB- R1-CW | RDL | QC Batch |
| Impinger Volume | ml | 194 | 1 | 254 | 1 | 191 | 1 | 6613884 |
| **Miscellaneous Parameters** | | | | | | | | |
| Sulphuric Acid Mist | mg | <0.78 | 0.78 | <1 | 1 | <0.76 | 0.76 | 6613883 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

| BV Labs ID | | MBP806 | | MBP807 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2020/02/18 | | 2020/02/18 | | |
| | UNITS | M8A- W/ODB- R2-CW | RDL | M8A- W/ODB- R3-CW | RDL | QC Batch |
| Impinger Volume | ml | 197 | 1 | 232 | 1 | 6613884 |
| **Miscellaneous Parameters** | | | | | | |
| Sulphuric Acid Mist | mg | <0.79 | 0.79 | <0.93 | 0.93 | 6613883 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## TEST SUMMARY

**BV Labs ID:** MBP535 **Collected:**
**Sample ID:** M8A/M202- DI WATER BLANK **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Non Extractable Condensibles (M202) | BAL | 6608739 | 2020/02/27 | 2020/02/27 | Muhammad M Rahman |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |
| Final Volume of Impinger | | 6613884 | N/A | 2020/03/02 | Rupinder Sihota |
| Weight of Water from Impingers | | 6608740 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP536 **Collected:**
**Sample ID:** M202- HEXANE BLANK **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP537 **Collected:**
**Sample ID:** M202- ACETONE BLANK **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP538 **Collected:**
**Sample ID:** M202- FB **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6608739 | 2020/02/27 | 2020/02/27 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6608740 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP539 **Collected:** 2020/02/18
**Sample ID:** M202- W/DB- R1 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6608739 | 2020/02/27 | 2020/02/27 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6608740 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP540 **Collected:** 2020/02/18
**Sample ID:** M202- W/DB- R2 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## TEST SUMMARY

**BV Labs ID:** MBP540
**Sample ID:** M202- W/DB- R2
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Non Extractable Condensibles (M202) | BAL | 6608739 | 2020/02/27 | 2020/02/27 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6608740 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP541
**Sample ID:** M202- W/DB- R3
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6608739 | 2020/02/27 | 2020/02/27 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6608740 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP543
**Sample ID:** M202- W/ODB- R1
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6608739 | 2020/02/27 | 2020/02/27 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6608740 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP544
**Sample ID:** M202- W/ODB- R2
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6608739 | 2020/02/27 | 2020/02/27 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6608740 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP545
**Sample ID:** M202- W/ODB- R3
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6608735 | 2020/02/27 | 2020/02/26 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6608739 | 2020/02/27 | 2020/02/27 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6608738 | N/A | 2020/02/26 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6608740 | N/A | 2020/02/26 | Muhammad M Rahman |



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## TEST SUMMARY

**BV Labs ID:** MBP551
**Sample ID:** M201A- BLANK
**Matrix:** Stack Sampling Train

**Collected:**
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6608986 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6608984 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6607770 | N/A | 2020/02/26 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6608981 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6608983 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP552
**Sample ID:** M201A- W/DB- R1
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6608986 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6608984 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6607770 | N/A | 2020/02/26 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6608981 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6608983 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP553
**Sample ID:** M201A- W/DB- R2
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6608986 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6608984 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6607770 | N/A | 2020/02/26 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6608981 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6608983 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP554
**Sample ID:** M201A- W/DB- R3
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6608986 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6608984 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6607770 | N/A | 2020/02/26 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6608981 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6608983 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP556
**Sample ID:** M201A- W/ODB- R1
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6608986 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6608984 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6607770 | N/A | 2020/02/26 | Brenda Moore |



Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## TEST SUMMARY

**BV Labs ID:** MBP556
**Sample ID:** M201A- W/ODB- R1
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| <2.5um Particulates in Rinse | BAL | 6608981 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6608983 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP557
**Sample ID:** M201A- W/ODB- R2
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6608986 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6608984 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6607770 | N/A | 2020/02/26 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6608981 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6608983 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP558
**Sample ID:** M201A- W/ODB- R3
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6608986 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6608984 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6607770 | N/A | 2020/02/26 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6608981 | 2020/02/27 | 2020/02/28 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6608983 | N/A | 2020/02/26 | Muhammad M Rahman |

**BV Labs ID:** MBP785
**Sample ID:** M8A- W/DB- R1- CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |
| Final Volume of Impinger | | 6613884 | N/A | 2020/03/02 | Rupinder Sihota |

**BV Labs ID:** MBP785 Dup
**Sample ID:** M8A- W/DB- R1- CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |

**BV Labs ID:** MBP801
**Sample ID:** M8A- W/DB- R2- CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |
| Final Volume of Impinger | | 6613884 | N/A | 2020/03/02 | Rupinder Sihota |



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## TEST SUMMARY

**BV Labs ID:** MBP802
**Sample ID:** M8A- W/DB- R3- CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/17
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |
| Final Volume of Impinger | | 6613884 | N/A | 2020/03/02 | Rupinder Sihota |

**BV Labs ID:** MBP805
**Sample ID:** M8A- W/ODB- R1- CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |
| Final Volume of Impinger | | 6613884 | N/A | 2020/03/02 | Rupinder Sihota |

**BV Labs ID:** MBP806
**Sample ID:** M8A- W/ODB- R2- CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |
| Final Volume of Impinger | | 6613884 | N/A | 2020/03/02 | Rupinder Sihota |

**BV Labs ID:** MBP807
**Sample ID:** M8A- W/ODB- R3- CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/02/18
**Shipped:**
**Received:** 2020/02/21

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Sulphuric Acid Mist by Titration (M8A) | MT | 6613883 | 2020/03/02 | 2020/03/02 | Rupinder Sihota |
| Final Volume of Impinger | | 6613884 | N/A | 2020/03/02 | Rupinder Sihota |



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## GENERAL COMMENTS

Sample MBP535 [M8A/M202- DI WATER BLANK] : INORGANIC EXTRACTION: No residue noted in Teflon dish.

Sample MBP536 [M202- HEXANE BLANK] : ORGANIC EXTRACTION: No residue noted in vial.

Sample MBP537 [M202- ACETONE BLANK] : ORGANIC EXTRACTION: No residue noted in vial.

Sample MBP538 [M202- FB] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MBP539 [M202- W/DB- R1] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MBP540 [M202- W/DB- R2] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MBP541 [M202- W/DB- R3] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MBP543 [M202- W/ODB- R1] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MBP544 [M202- W/ODB- R2] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MBP545 [M202- W/ODB- R3] : ORGANIC EXTRACTION : Light oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

**Results relate only to the items tested.**



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## QUALITY ASSURANCE REPORT

| QA/QC Batch | Init | QC Type | Parameter | Date Analyzed | Value | % Recovery | UNITS | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 6608735 | MOR | Spiked Blank | Organic Condensibles | 2020/02/28 | | 98 | % | 70 - 130 |
| 6608735 | MOR | Method Blank | Organic Condensibles | 2020/02/26 | <1.0 | | mg | |
| 6608739 | MOR | Method Blank | Inorganic Condensibles | 2020/03/02 | <0.5 | | mg | |
| 6608981 | MOR | Method Blank | < 2.5 Particulate Weight in Acetone Rinse | 2020/02/28 | <0.5 | | mg | |
| 6608984 | MOR | Method Blank | 2.5 - 10 Particulate Weight in Acetone Rinse | 2020/02/28 | <0.5 | | mg | |
| 6608986 | MOR | Method Blank | > 10 Particulate Weight in Acetone Rinse | 2020/02/28 | <0.5 | | mg | |
| 6613883 | RSU | Matrix Spike(MBP785) | Sulphuric Acid Mist | 2020/03/02 | | 97 | % | 80 - 120 |
| 6613883 | RSU | Spiked Blank | Sulphuric Acid Mist | 2020/03/02 | | 99 | % | 90 - 110 |
| 6613883 | RSU | Method Blank | Sulphuric Acid Mist | 2020/03/02 | <0.2 | | mg | |
| 6613883 | RSU | RPD - Sample/Sample Dup | Sulphuric Acid Mist | 2020/03/02 | NC | | % | 20 |

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Brenda Moore

Brenda Moore, Team Lead, Inorganic

Frank Mo, B.Sc., Inorganic Lab. Manager

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

C048069

Requested Standard Analysis - 5-10 business days after receipt at lab

## SAMPLE DESCRIPTION AND LABELING RECORD

**Contact Information (deliver results to)**

Name: Rob White
Phone: (918) 307-8865
Email: rwhite@airhygiene.com

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com

| Project Number: | bec-19-cricketvalley.ny-start#1 | Laboratory Analysis Requested: |
|---|---|---|
| Person Taking Samples: | Aaron Blum | Gravimetric |

| Sample Number | Location | Date | Volume | Analysis Method | | | |
|---|---|---|---|---|---|---|---|
| | | | | RM 201A | RM 202 | -- | -- |
| CTG-0001_W/DB-1-F | Unit CTG-0001_W/DB - Run 1 - Filter | 02/18/20 | N/A | X | | | |
| CTG-0001_W/DB-1-C2 | Unit CTG-0001_W/DB - Run 1 - Nozzle Wash PM>10 | 02/18/20 | | X | | | |
| CTG-0001_W/DB-1-C3 | Unit CTG-0001_W/DB - Run 1 - Cyclone Wash 2.5<PM<10 | 02/18/20 | | X | | | |
| CTG-0001_W/DB-1-C4 | Unit CTG-0001_W/DB - Run 1 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 02/18/20 | N/A | X | | | |
| CTG-0001_W/DB-1-C5 | Unit CTG-0001_W/DB - Run 1 - Inorganic Impinger Contents | 02/18/20 | | | X | | |
| CTG-0001_W/DB-1-C6 | Unit CTG-0001_W/DB - Run 1 - Organic Impinger Contents | 02/18/20 | | | X | | |
| CTG-0001_W/DB-1-CPM | Unit CTG-0001_W/DB - Run 1 - CPM Filter | 02/18/20 | N/A | | X | | |
| CTG-0001_W/DB-2-F | Unit CTG-0001_W/DB - Run 2 - Filter | 02/18/20 | N/A | X | | | |
| CTG-0001_W/DB-2-C2 | Unit CTG-0001_W/DB - Run 2 - Nozzle Wash PM>10 | 02/18/20 | | X | | | |
| CTG-0001_W/DB-2-C3 | Unit CTG-0001_W/DB - Run 2 - Cyclone Wash 2.5<PM<10 | 02/18/20 | | X | | | |
| CTG-0001_W/DB-2-C4 | Unit CTG-0001_W/DB - Run 2 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 02/18/20 | N/A | X | | | |
| CTG-0001_W/DB-2-C5 | Unit CTG-0001_W/DB - Run 2 - Inorganic Impinger Contents | 02/18/20 | | | X | | |
| CTG-0001_W/DB-2-C6 | Unit CTG-0001_W/DB - Run 2 - Organic Impinger Contents | 02/18/20 | | | X | | |
| CTG-0001_W/DB-2-CPM | Unit CTG-0001_W/DB - Run 2 - CPM Filter | 02/18/20 | N/A | | X | | |
| CTG-0001_W/DB-3-F | Unit CTG-0001_W/DB - Run 3 - Filter | 02/18/20 | N/A | X | | | |
| CTG-0001_W/DB-3-C2 | Unit CTG-0001_W/DB - Run 3 - Nozzle Wash PM>10 | 02/18/20 | | X | | | |
| CTG-0001_W/DB-3-C3 | Unit CTG-0001_W/DB - Run 3 - Cyclone Wash 2.5<PM<10 | 02/18/20 | | X | | | |
| CTG-0001_W/DB-3-C4 | Unit CTG-0001_W/DB - Run 3 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 02/18/20 | N/A | X | | | |
| CTG-0001_W/DB-3-C5 | Unit CTG-0001_W/DB - Run 3 - Inorganic Impinger Contents | 02/18/20 | | | X | | |
| CTG-0001_W/DB-3-C6 | Unit CTG-0001_W/DB - Run 3 - Organic Impinger Contents | 02/18/20 | | | X | | |
| CTG-0001_W/DB-3-CPM | Unit CTG-0001_W/DB - Run 3 - CPM Filter | 02/18/20 | N/A | | X | | |
| CTG-0001_W/DB-FB-C3 | Unit CTG-0001_W/DB - Run FB - Cyclone Wash 2.5<PM<10 | FB | | X | | | |
| CTG-0001_W/DB-FB-C4 | Unit CTG-0001_W/DB - Run FB - Cyclone Exit to Front Half of Filter Wash (<2.5) | FB | N/A | X | | | |
| CTG-0001_W/DB-FB-C5 | Unit CTG-0001_W/DB - Run FB - Inorganic Impinger Contents | FB | | | X | | |
| CTG-0001_W/DB-B1-Acetone | Unit CTG-0001_W/DB - Blank - Acetone | | 200 | | X | | |
| CTG-0001_W/DB-B2-DI Water | Unit CTG-0001_W/DB - Blank - DI Water | | 200 | X | | | |
| CTG-0001_W/DB-B3-Hexane | Unit CTG-0001_W/DB - Blank - Hexane | | 200 | | X | | |

Signature: [signature] Date: 2/20/20 Time: AAC

Signature: Date: Time:

FIDELE NTAMWEMEZI
Signature: [signature] Date: 2020/02/21 Time: 17:15

FIDELE NTAMWEMEZI
Signature: [signature] Date: 2020/02/25 Time: 13:40

bec-19-cricketvalley#1-PM_W_DBxlsm.xlsm SD&L

C048-069

Requested Standard Analysis - 5-10 business days after receipt at lab

## SAMPLE DESCRIPTION AND LABELING RECORD


Contact Information (deliver results to)
Name: Rob White
Phone: (918) 307-8865
Email: rwhite@airhygiene.com

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com


| Project Number: | bec-19-cricketvalley.ny-start#1 | Laboratory Analysis Requested: |
|---|---|---|
| Person Taking Samples: | Aaron Blum | Gravimetric |

| Sample Number | Location | Date | Volume | Analysis Method | | | |
|---|---|---|---|---|---|---|---|
| | | | | RM 201A | RM 202 | – | – |
| CTG-0001_W/ODB-1-F | Unit CTG-0001_W/ODB - Run 1 - Filter | 02/17/20 | N/A | X | | | |
| CTG-0001_W/ODB-1-C2 | Unit CTG-0001_W/ODB - Run 1 - Nozzle Wash PM>10 | 02/17/20 | | X | | | |
| CTG-0001_W/ODB-1-C3 | Unit CTG-0001_W/ODB - Run 1 - Cyclone Wash 2.5<PM<10 | 02/17/20 | | X | | | |
| CTG-0001_W/ODB-1-C4 | Unit CTG-0001_W/ODB - Run 1 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 02/17/20 | N/A | X | | | |
| CTG-0001_W/ODB-1-C5 | Unit CTG-0001_W/ODB - Run 1 - Inorganic Impinger Contents | 02/17/20 | | | X | | |
| CTG-0001_W/ODB-1-C6 | Unit CTG-0001_W/ODB - Run 1 - Organic Impinger Contents | 02/17/20 | | | X | | |
| CTG-0001_W/ODB-1-CPM | Unit CTG-0001_W/ODB - Run 1 - CPM Filter | 02/17/20 | N/A | | X | | |
| CTG-0001_W/ODB-2-F | Unit CTG-0001_W/ODB - Run 2 - Filter | 02/17/20 | N/A | X | | | |
| CTG-0001_W/ODB-2-C2 | Unit CTG-0001_W/ODB - Run 2 - Nozzle Wash PM>10 | 02/17/20 | | X | | | |
| CTG-0001_W/ODB-2-C3 | Unit CTG-0001_W/ODB - Run 2 - Cyclone Wash 2.5<PM<10 | 02/17/20 | | X | | | |
| CTG-0001_W/ODB-2-C4 | Unit CTG-0001_W/ODB - Run 2 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 02/17/20 | N/A | X | | | |
| CTG-0001_W/ODB-2-C5 | Unit CTG-0001_W/ODB - Run 2 - Inorganic Impinger Contents | 02/17/20 | | | X | | |
| CTG-0001_W/ODB-2-C6 | Unit CTG-0001_W/ODB - Run 2 - Organic Impinger Contents | 02/17/20 | | | X | | |
| CTG-0001_W/ODB-2-CPM | Unit CTG-0001_W/ODB - Run 2 - CPM Filter | 02/17/20 | N/A | | X | | |
| CTG-0001_W/ODB-3-F | Unit CTG-0001_W/ODB - Run 3 - Filter | 02/17/20 | N/A | X | | | |
| CTG-0001_W/ODB-3-C2 | Unit CTG-0001_W/ODB - Run 3 - Nozzle Wash PM>10 | 02/17/20 | | X | | | |
| CTG-0001_W/ODB-3-C3 | Unit CTG-0001_W/ODB - Run 3 - Cyclone Wash 2.5<PM<10 | 02/17/20 | | X | | | |
| CTG-0001_W/ODB-3-C4 | Unit CTG-0001_W/ODB - Run 3 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 02/17/20 | N/A | X | | | |
| CTG-0001_W/ODB-3-C5 | Unit CTG-0001_W/ODB - Run 3 - Inorganic Impinger Contents | 02/17/20 | | | X | | |
| CTG-0001_W/ODB-3-C6 | Unit CTG-0001_W/ODB - Run 3 - Organic Impinger Contents | 02/17/20 | | | X | | |
| CTG-0001_W/ODB-3-CPM | Unit CTG-0001_W/ODB - Run 3 - CPM Filter | 02/17/20 | N/A | | X | | |
| CTG-0001_W/ODB-FB-C3 | Unit CTG-0001_W/ODB - Run FB - Cyclone Wash 2.5<PM<10 | FB | | X | | | |
| CTG-0001_W/ODB-FB-C4 | Unit CTG-0001_W/ODB - Run FB - Cyclone Exit to Front Half of Filter Wash (<2.5) | FB | N/A | X | | | |
| CTG-0001_W/ODB-FB-C5 | Unit CTG-0001_W/ODB - Run FB - Inorganic Impinger Contents | FB | | | X | | |
| CTG-0001_W/ODB-B1-Acetone | Unit CTG-0001_W/ODB - Blank - Acetone | | 200 | | X | | |
| CTG-0001_W/ODB-B2-DI Water | Unit CTG-0001_W/ODB - Blank - DI Water | | 200 | X | | | |
| CTG-0001_W/ODB-B3-Hexane | Unit CTG-0001_W/ODB - Blank - Hexane | | 200 | | X | | |

| Signature | Date | Time | Signature | Date | Time |
|---|---|---|---|---|---|
| [signature] | 2/20/20 | 1400 | FIDELE NTAMWEMEZI [signature] | 2020/02/21 | 17 15 |
| | | | FIDELE NTAMWEMEZI [signature] | 2020/02/25 | 13 40 |

C048069

Requested Standard Analysis - 5-10 business days after receipt at lab

## SAMPLE DESCRIPTION AND LABELING RECORD

**Contact Information (deliver results to)**
**Name:** Rob White
**Phone:** (918) 307-8865
**Email:** rwhite@airhygiene.com

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com

| Project Number: | bec-19-cricketvalley.ny-start#1 | Laboratory Analysis Requested: |
|---|---|---|
| Person Taking Samples: | Atlas Melchert | Titration |

| Sample Number | Location | Date | Volume | Analysis Method | | | |
|---|---|---|---|---|---|---|---|
| | | | | Cont Cond | -- | -- | -- |
| CT-0001W/DB-1-CW | Unit CT-0001W/DB - Run 1 - Condenser Wash | 02/17/20 | | | | | |
| CT-0001W/DB-2-CW | Unit CT-0001W/DB - Run 2 - Condenser Wash | 02/17/20 | | | | | |
| CT-0001W/DB-3-CW | Unit CT-0001W/DB - Run 3 - Condenser Wash | 02/17/20 | | | | | |
| CT-0001W/DB-B2-DI Water | Unit CT-0001W/DB - Blank - DI Water | | 100 | | | | |
| CT-0001W/DB-B3-$H_2O_2$ | Unit CT-0001W/DB - Blank - $H_2O_2$ | | 100 | | | | |

| Signature | Date | Time | Signature | Date | Time |
|---|---|---|---|---|---|
| [signature] | 2/20/20 | 1420 | FIDELE NTAMWEMEZI [signature] | 2020/02/21 | 17:15 |
| | | | FIDELE NTAMWEMEZI [signature] | 2020/02/25 | 13:40 |

bec-19-cricketvally.ny-start#1-M8a-wDB

SD&L

C048069

Requested Standard Analysis - 5-10 business days after receipt at lab

## SAMPLE DESCRIPTION AND LABELING RECORD

**Contact Information (deliver results to)**

**Name:** Rob White
**Phone:** (918) 307-8865
**Email:** rwhite@airhygiene.com

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com

Project Number: bec-19-cricketvalley.ny-start#1

Person Taking Samples:

Laboratory Analysis Requested: Titration

| Sample Number | Location | Date | Volume | Analysis Method: Cont Cond | -- | -- | -- |
|---|---|---|---|---|---|---|---|
| CT-0001w/oDB-1-CW | Unit CT-0001w/oDB - Run 1 - Condenser Wash | 02/18/20 | | | | | |
| CT-0001w/oDB-2-CW | Unit CT-0001w/oDB - Run 2 - Condenser Wash | 02/18/20 | | | | | |
| CT-0001w/oDB-3-CW | Unit CT-0001w/oDB - Run 3 - Condenser Wash | 02/18/20 | | | | | |
| CT-0001w/oDB-B2-DI Water | Unit CT-0001w/oDB - Blank - DI Water | | 100 | | | | |
| CT-0001w/oDB-B3-$H_2O_2$ | Unit CT-0001w/oDB - Blank - $H_2O_2$ | | 100 | | | | |

| | Signature | Date | Time |
|---|---|---|---|
| | [signature] | 2/20/20 | 1900 |
| | | | |

| | Signature | Date | Time |
|---|---|---|---|
| | FIDELE NTAMWEMEZI [signature] | 2020/02/21 | 17:15 |
| | FIDELE NTAMWEMEZI [signature] | 2020/02/25 | 13:40 |

bec-19-cricketvalley.ny-start#1-woDB-M8A

SD&L

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

## Supplemental Laboratory Data
## BV Labs

Specific data from the lab regarding the filter weights reported at the RDL and noted as “negative weight observed”.

Comparison of actual Lab Reported Filter Loss to the gains in the sample train sections just prior to and just after the filter. The total gains in each of these sections always accounts for the filter loss. Air Hygiene concluded that the frayed filter edges either ended up in the section prior to the filter and/or the section just downstream of the filter.

Data Summary

| Run | Filter | Gain in Cyclone End to Front Half of Filter Wash (<2.5) (mg) | Gain in Inorganic Impinger Content (mg) | Sum of Gains (mg) | Lab Reported Filter Loss (mg) |
|---|---|---|---|---|---|
| Base – Run 1 | 19031839 | 1.6 | 3.3 | 4.9 | -1.2 |
| Base – Run 3 | 19031831 | 1.2 | 2.2 | 3.4 | -3.1 |

Prepared for: Air Hygiene International

Project: BEC-19-CRICKETVALLEY.NY-START

# Analytical Data Package

Analysis: Method 8A / Method 201A / Method 202

BV Job #: C097773

Bureau Veritas Laboratories
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.bvlabs.com

I hereby certify that to the best of my knowledge all analytical data presented in this report:

- Has been checked for completeness.
- Is accurate, legible and error free.
- Has been conducted in accordance with approved SOP's and that all deviations are clearly listed in the Case Narrative.
- This report has been generated in .pdf format.

Review Performed By:

2020.05.15 11:36:08 -04'00'

Bureau Veritas Laboratories
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.bvlabs.com

# Glossary of Terms

- ***MDL*** represents the Minimum Detection Limit below which the laboratory cannot confirm the presence of the analyte to the 95% confidence level.
- ***RDL*** represents the Reportable Detection Limit and is usually set at a value equivalent to the lowest calibration standard
- ***Acceptance Criteria*** are values used by the laboratory to determine that a process is in control.
- ***Accuracy*** is the degree of agreement of a measured value with the true or expected value.
- ***Calibration Standards*** are a set of solutions containing the analytes of interest at a specified concentration.
- ***Calibration Verification Standard*** consists of a calibration standard solution of intermediate concentration (mid-point initial calibration level) used to access whether the initial calibration is still valid
- ***Certified Reference Material*** is a stable homogenous material that is certified by repetitive analysis from a supplier who is certified to generate said materials.
- ***Internal Standard*** a deuterated or $^{13}C$-labelled analyte that is added to a sample extract prior to instrumental analysis to compensate for injection variablity.
- ***Isomer*** is a member of a group of compounds that differ from each other only in the locations of a specific number of common substituent atoms or groups of atoms on the parent compound.
- ***Method Blank*** is a laboratory control sample using reagents that are known to be free of contamination.
- ***Precision*** is the degree of agreement between the data generated from repetitive measurements under specific conditions.
- ***Quality Assurance*** is a system of activities whose purpose is to provide the producer or user of a product with the assurance that the product meets a defined standard of quality.
- ***Quality Control*** is the overall system of activities whose purpose is to control the quality of a product so that it meets the needs of the end user.
- ***RSD*** is the relative standard deviation.
- ***Blank Spike*** is a laboratory control sample that has been fortified with native analytes of interest.
- ***Window Defining Mixture*** is a solution containing only the earliest and latest eluting congeners within each homologous group of target analytes on a specified GC column.
- ***RPD*** or Relative Percent Difference. A measure used to compare duplicate sample analysis.
- ***EMPC/NDR –*** Peak detected does not meet ratio criteria and has resulted in a higher detection limit.




# 1.0 Project Narrative

Bureau Veritas Laboratories
6740 Campobello Rd
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.bvlabs.com

**PROJECT NARRATIVE**

**Bureau Veritas Laboratories**
**Client Project #: BEC-19-CRICKETVALLEY.NY-START**

**Client: Air Hygiene International Inc**
**Client Project: BEC-19-CRICKETVALLEY.NY-START**

**I. SAMPLE RECEIPT/ANALYSIS**

a) Sample Listing

| BV Labs ID | Client Sample ID | Date Sampled | Date Received | Date Prepped | Date Run | Initial Calibration |
|---|---|---|---|---|---|---|
| **<2.5um Particulates in Rinse** | | | | | | |
| MMC518 | M201A- U3 BASE W/DB- R1 | 2020/04/16 | 2020/04/18 | 2020/04/22 | 2020/04/24 | N/A |
| MMC519 | M201A- U3 BASE W/DB- R2 | 2020/04/17 | 2020/04/18 | 2020/04/22 | 2020/04/24 | N/A |
| MMC520 | M201A- U3 BASE W/DB- R3 | 2020/04/17 | 2020/04/18 | 2020/04/22 | 2020/04/24 | N/A |
| MMC521 | M201A- U3 BASE- R1 | 2020/04/15 | 2020/04/18 | 2020/04/22 | 2020/04/24 | N/A |
| MMC522 | M201A- U3 BASE- R2 | 2020/04/15 | 2020/04/18 | 2020/04/22 | 2020/04/24 | N/A |
| MMC523 | M201A- U3 BASE- R3 | 2020/04/15 | 2020/04/18 | 2020/04/22 | 2020/04/24 | N/A |
| **>10um Particulates in Rinse** | | | | | | |
| MMC518 | M201A- U3 BASE W/DB- R1 | 2020/04/16 | 2020/04/18 | 2020/04/22 | 2020/04/24 | N/A |
| MMC519 | M201A- U3 BASE W/DB- R2 | 2020/04/17 | 2020/04/18 | 2020/04/22 | 2020/04/24 | N/A |
| MMC520 | M201A- U3 BASE W/DB- R3 | 2020/04/17 | 2020/04/18 | 2020/04/22 | 2020/04/24 | N/A |
| MMC521 | M201A- U3 BASE- R1 | 2020/04/15 | 2020/04/18 | 2020/04/22 | 2020/04/24 | N/A |
| MMC522 | M201A- U3 BASE- R2 | 2020/04/15 | 2020/04/18 | 2020/04/22 | 2020/04/24 | N/A |
| MMC523 | M201A- U3 BASE- R3 | 2020/04/15 | 2020/04/18 | 2020/04/22 | 2020/04/24 | N/A |
| **2.5 um Particulates on Filter** | | | | | | |
| MMC518 | M201A- U3 BASE W/DB- R1 | 2020/04/16 | 2020/04/18 | N/A | 2020/04/22 | N/A |
| MMC519 | M201A- U3 BASE W/DB- R2 | 2020/04/17 | 2020/04/18 | N/A | 2020/04/22 | N/A |
| MMC520 | M201A- U3 BASE W/DB- R3 | 2020/04/17 | 2020/04/18 | N/A | 2020/04/22 | N/A |
| MMC521 | M201A- U3 BASE- R1 | 2020/04/15 | 2020/04/18 | N/A | 2020/04/22 | N/A |
| MMC522 | M201A- U3 BASE- R2 | 2020/04/15 | 2020/04/18 | N/A | 2020/04/22 | N/A |
| MMC523 | M201A- U3 BASE- R3 | 2020/04/15 | 2020/04/18 | N/A | 2020/04/22 | N/A |
| **2.5-10um Particulates in Rinse** | | | | | | |
| MMC518 | M201A- U3 BASE W/DB- R1 | 2020/04/16 | 2020/04/18 | 2020/04/22 | 2020/04/24 | N/A |
| MMC519 | M201A- U3 BASE W/DB- R2 | 2020/04/17 | 2020/04/18 | 2020/04/22 | 2020/04/24 | N/A |
| MMC520 | M201A- U3 BASE W/DB- R3 | 2020/04/17 | 2020/04/18 | 2020/04/22 | 2020/04/24 | N/A |
| MMC521 | M201A- U3 BASE- R1 | 2020/04/15 | 2020/04/18 | 2020/04/22 | 2020/04/24 | N/A |
| MMC522 | M201A- U3 BASE- R2 | 2020/04/15 | 2020/04/18 | 2020/04/22 | 2020/04/24 | N/A |
| MMC523 | M201A- U3 BASE- R3 | 2020/04/15 | 2020/04/18 | 2020/04/22 | 2020/04/24 | N/A |
| **Extractable Condensables (M202)** | | | | | | |
| MMC512 | M202- U3 BASE W/DB- R1 | 2020/04/16 | 2020/04/18 | 2020/04/21 | 2020/04/24 | N/A |
| MMC513 | M202- U3 BASE W/DB- R2 | 2020/04/17 | 2020/04/18 | 2020/04/21 | 2020/04/24 | N/A |
| MMC514 | M202- U3 BASE W/DB- R3 | 2020/04/17 | 2020/04/18 | 2020/04/21 | 2020/04/24 | N/A |
| MMC515 | M202- U3 BASE- R1 | 2020/04/15 | 2020/04/18 | 2020/04/21 | 2020/04/24 | N/A |
| MMC516 | M202- U3 BASE- R2 | 2020/04/15 | 2020/04/18 | 2020/04/21 | 2020/04/24 | N/A |
| MMC517 | M202- U3 BASE- R3 | 2020/04/15 | 2020/04/18 | 2020/04/21 | 2020/04/24 | N/A |
| **Non Extractable Condensibles (M202)** | | | | | | |
| MMC512 | M202- U3 BASE W/DB- R1 | 2020/04/16 | 2020/04/18 | 2020/04/21 | 2020/04/22 | N/A |
| MMC513 | M202- U3 BASE W/DB- R2 | 2020/04/17 | 2020/04/18 | 2020/04/21 | 2020/04/22 | N/A |
| MMC514 | M202- U3 BASE W/DB- R3 | 2020/04/17 | 2020/04/18 | 2020/04/21 | 2020/04/22 | N/A |
| MMC515 | M202- U3 BASE- R1 | 2020/04/15 | 2020/04/18 | 2020/04/21 | 2020/04/22 | N/A |
| MMC516 | M202- U3 BASE- R2 | 2020/04/15 | 2020/04/18 | 2020/04/21 | 2020/04/22 | N/A |
| MMC517 | M202- U3 BASE- R3 | 2020/04/15 | 2020/04/18 | 2020/04/21 | 2020/04/22 | N/A |

| BV Labs ID | Client Sample ID | Date Sampled | Date Received | Date Prepped | Date Run | Initial Calibration |
|---|---|---|---|---|---|---|
| **H2SO4 Acid Mist in IPA Impinger (M8mod)** | | | | | | |
| MMC524 | M8A- U3 BASE W/DB- R1 | 2020/04/16 | 2020/04/18 | 2020/04/24 | 2020/04/24 | 2020/04/24 |
| MMC525 | M8A- U3 BASE W/DB- R2 | 2020/04/17 | 2020/04/18 | 2020/04/24 | 2020/04/24 | 2020/04/24 |
| MMC525 Dup | M8A- U3 BASE W/DB- R2 | 2020/04/17 | 2020/04/18 | 2020/04/24 | 2020/04/24 | 2020/04/24 |
| MMC526 | M8A- U3 BASE W/DB- R3 | 2020/04/17 | 2020/04/18 | 2020/04/24 | 2020/04/24 | 2020/04/24 |
| MMC527 | M8A- U3 BASE- R1 -CW | 2020/04/15 | 2020/04/18 | 2020/04/24 | 2020/04/24 | 2020/04/24 |
| MMC528 | M8A- U3 BASE- R2 -CW | 2020/04/16 | 2020/04/18 | 2020/04/24 | 2020/04/24 | 2020/04/24 |
| MMC529 | M8A- U3 BASE- R3 -CW | 2020/04/16 | 2020/04/18 | 2020/04/24 | 2020/04/24 | 2020/04/24 |
| **Sulphuric Acid Mist by Titration (M8A)** | | | | | | |
| MMC524 | M8A- U3 BASE W/DB- R1 | 2020/04/16 | 2020/04/18 | 2020/04/27 | 2020/04/27 | 2020/04/27 |
| MMC525 | M8A- U3 BASE W/DB- R2 | 2020/04/17 | 2020/04/18 | 2020/04/27 | 2020/04/27 | 2020/04/27 |
| MMC525 Dup | M8A- U3 BASE W/DB- R2 | 2020/04/17 | 2020/04/18 | 2020/04/27 | 2020/04/27 | 2020/04/27 |
| MMC526 | M8A- U3 BASE W/DB- R3 | 2020/04/17 | 2020/04/18 | 2020/04/27 | 2020/04/27 | 2020/04/27 |
| MMC527 | M8A- U3 BASE- R1 -CW | 2020/04/15 | 2020/04/18 | 2020/04/27 | 2020/04/27 | 2020/04/27 |
| MMC528 | M8A- U3 BASE- R2 -CW | 2020/04/16 | 2020/04/18 | 2020/04/27 | 2020/04/27 | 2020/04/27 |
| MMC529 | M8A- U3 BASE- R3 -CW | 2020/04/16 | 2020/04/18 | 2020/04/27 | 2020/04/27 | 2020/04/27 |

Run Date is defined as the date of injection of the last calibration standard (12 hours or less) prior to the samples analyzed within that run sequence. Therefore the time of calibration injection that defines the run date is always within 12 hours of the time of sample injection.

b) Shipping Problems: none encountered

c) Documentation Problems: none encountered

**II. SAMPLE PREP:**

No problems encountered

**III. SAMPLE ANALYSIS:**

See also comments within the appropriate Certificate of Analysis

a) Hold Times: all within recommended hold times

b) Instrument Calibration: all within control limits

c) Quality Control: All applicable QC meets control criteria, except where otherwise noted.

d) All analytes requiring manual intergration(s) are noted on the sample chromatograms

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for other than the conditions detailed above.

In addition, I certify, that to the best of my knowledge and belief, the data as reported are true and accurate. Release of the data contained in this data package has been authorized by the cognizant laboratory official or his/her designee, as verified by this signature.



Clayton Johnson, Customer Experience Team Lead

2020/05/14
Date

# 2.0 Summary Report

Bureau Veritas Laboratories
6740 Campobello Rd
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.bvlabs.com

Your Project #: BEC-19-CRICKETVALLEY.NY-START

**Attention: Data Reports**

Air Hygiene International Inc
1600 West Tacoma Street
Broken Arrow, OK
USA 74012

**Report Date: 2020/04/27**
Report #: R6156688
Version: 1 - Final

# CERTIFICATE OF ANALYSIS

**BV LABS JOB #: C097773**
**Received: 2020/04/18, 19:45**

Sample Matrix: Stack Sampling Train
# Samples Received: 18

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Analytical Method |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | 6 | 2020/04/21 | 2020/04/24 | BRL SOP-00118 | EPA 202 m |
| Non Extractable Condensibles (M202) | 6 | 2020/04/21 | 2020/04/22 | BRL SOP-00118 / BRL SOP-00109 | EPA 202 m |
| >10um Particulates in Rinse | 6 | 2020/04/22 | 2020/04/24 | BRL SOP-00109 | EPA M201A |
| 2.5-10um Particulates in Rinse | 6 | 2020/04/22 | 2020/04/24 | BRL SOP-00109 | EPA M201A |
| 2.5 um Particulates on Filter | 6 | N/A | 2020/04/22 | BRL SOP-00109 | EPA M201A |
| <2.5um Particulates in Rinse | 6 | 2020/04/22 | 2020/04/24 | BRL SOP-00109 | EPA M201A |
| H2SO4 Acid Mist in IPA Impinger (M8mod) | 6 | 2020/04/24 | 2020/04/24 | BRL SOP-00105 | EPA 8 m |
| Sulphuric Acid Mist by Titration (M8A) | 6 | 2020/04/27 | 2020/04/27 | BRL SOP-00116 | EPA CFR PTM 8 m |
| Final Volume of Acetone Probe Rinse | 6 | N/A | 2020/04/22 | BRL SOP-00109 | |
| Final Volume of Impinger | 6 | N/A | 2020/04/24 | | |
| Weight of Solvent from Impingers | 6 | N/A | 2020/04/21 | | |
| Weight of Water from Impingers | 6 | N/A | 2020/04/21 | | |

**Remarks:**

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Your Project #: BEC-19-CRICKETVALLEY.NY-START

**Attention: Data Reports**

Air Hygiene International Inc
1600 West Tacoma Street
Broken Arrow, OK
USA 74012

**Report Date: 2020/04/27**
Report #: R6156688
Version: 1 - Final

# CERTIFICATE OF ANALYSIS

**BV LABS JOB #: C097773**
**Received: 2020/04/18, 19:45**

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Clayton Johnson, Project Manager - Air Toxics, Source Evaluation
Email: Clayton.Johnson@bvlabs.com
Phone# (905)817-5769
==========
This report has been generated and distributed using a secure automated process.
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

## EPA M201A - PARTICULATES (STACK SAMPLING TRAIN)

| BV Labs ID | | MMC518 | MMC519 | MMC520 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2020/04/16 | 2020/04/17 | 2020/04/17 | | |
| | UNITS | M201A- U3 BASE W/DB- R1 | M201A- U3 BASE W/DB- R2 | M201A- U3 BASE W/DB- R3 | RDL | QC Batch |
| > 10 Particulate Weight in Acetone Rinse | mg | 8.3 | 10.9 | 1.4 | 0.5 | 6692255 |
| < 2.5 Particulate Weight in Acetone Rinse | mg | 1.5 | 1.3 | 1.2 | 0.5 | 6692239 |
| 2.5 - 10 Particulate Weight in Acetone Rinse | mg | 1.1 | 1.0 | 3.5 | 0.5 | 6692253 |
| < 2.5 Particulate Weight on Filter | mg | 0.50 | 0.70 | <0.30 | 0.30 | 6692295 |
| Acetone Rinse Volume (10) | ml | 70 | 76 | 61 | 1 | 6692260 |
| Acetone Rinse Volume (2.5 - 10) | ml | 60 | 76 | 69 | 1 | 6692260 |
| Acetone Rinse Volume (2.5) | ml | 73 | 62 | 70 | 1 | 6692260 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

| BV Labs ID | | MMC521 | MMC522 | MMC523 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2020/04/15 | 2020/04/15 | 2020/04/15 | | |
| | UNITS | M201A- U3 BASE-R1 | M201A- U3 BASE-R2 | M201A- U3 BASE-R3 | RDL | QC Batch |
| > 10 Particulate Weight in Acetone Rinse | mg | 17.5 | 9.3 | 14.1 | 0.5 | 6692255 |
| < 2.5 Particulate Weight in Acetone Rinse | mg | 1.6 | 1.4 | 1.2 | 0.5 | 6692239 |
| 2.5 - 10 Particulate Weight in Acetone Rinse | mg | 1.0 | 1.3 | 1.0 | 0.5 | 6692253 |
| < 2.5 Particulate Weight on Filter | mg | <0.30 (1) | 0.50 | <0.30 (1) | 0.30 | 6692295 |
| Acetone Rinse Volume (10) | ml | 78 | 72 | 60 | 1 | 6692260 |
| Acetone Rinse Volume (2.5 - 10) | ml | 75 | 66 | 66 | 1 | 6692260 |
| Acetone Rinse Volume (2.5) | ml | 61 | 61 | 36 | 1 | 6692260 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Negative result observed

LFT Loose filter material in the petri dish
DE Edges of the filter are frayed



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## EPA M202 CONDENSIBLE PM (STACK SAMPLING TRAIN)

| BV Labs ID | | MMC512 | MMC513 | MMC514 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2020/04/16 | 2020/04/17 | 2020/04/17 | | |
| | UNITS | M202- U3 BASE W/DB-R1 | M202- U3 BASE W/DB-R2 | M202- U3 BASE W/DB-R3 | RDL | QC Batch |
| Weight | g | 380 | 380 | 330 | 0.1 | 6690925 |
| Weight of Solvent | g | 190 | 210 | 190 | 0.1 | 6690922 |
| **Miscellaneous Parameters** | | | | | | |
| Inorganic Condensibles | mg | 2.1 | 3.7 | 2.1 | 0.5 | 6690928 |
| Organic Condensibles | mg | <1.0 | 1.1 | 1.4 | 1.0 | 6690921 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

| BV Labs ID | | MMC515 | MMC516 | MMC517 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2020/04/15 | 2020/04/15 | 2020/04/15 | | |
| | UNITS | M202- U3 BASE-R1 | M202- U3 BASE-R2 | M202- U3 BASE-R3 | RDL | QC Batch |
| Weight | g | 460 | 360 | 380 | 0.1 | 6690925 |
| Weight of Solvent | g | 240 | 200 | 220 | 0.1 | 6690922 |
| **Miscellaneous Parameters** | | | | | | |
| Inorganic Condensibles | mg | 3.3 | 2.2 | 2.2 | 0.5 | 6690928 |
| Organic Condensibles | mg | 2.4 | 1.9 | 1.5 | 1.0 | 6690921 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C097773
Report Date: 2020/04/27

Air Hygiene International Inc
Client Project #: BEC-19-CRICKETVALLEY.NY-START
Sampler Initials: RW

## RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

| BV Labs ID | | MMC524 | | MMC525 | MMC525 | | |
|---|---|---|---|---|---|---|---|
| Sampling Date | | 2020/04/16 | | 2020/04/17 | 2020/04/17 | | |
| | UNITS | M8A- U3 BASE W/DB-R1 | RDL | M8A- U3 BASE W/DB-R2 | M8A- U3 BASE W/DB-R2 Lab-Dup | RDL | QC Batch |
| Impinger Volume | ml | 166 | 1 | 103 | N/A | 1 | 6696057 |
| **Miscellaneous Parameters** | | | | | | | |
| Sulphuric Acid Mist | mg | <0.017 | 0.017 | 0.060 | 0.058 | 0.011 | 6696051 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

| BV Labs ID | | MMC526 | | MMC527 | MMC528 | | |
|---|---|---|---|---|---|---|---|
| Sampling Date | | 2020/04/17 | | 2020/04/15 | 2020/04/16 | | |
| | UNITS | M8A- U3 BASE W/DB-R3 | RDL | M8A- U3 BASE- R1 -CW | M8A- U3 BASE- R2 -CW | RDL | QC Batch |
| Impinger Volume | ml | 108 | 1 | 125 | 132 | 1 | 6696057 |
| **Miscellaneous Parameters** | | | | | | | |
| Sulphuric Acid Mist | mg | 0.017 | 0.011 | 0.047 | 0.094 | 0.013 | 6696051 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

| BV Labs ID | | MMC529 | | |
|---|---|---|---|---|
| Sampling Date | | 2020/04/16 | | |
| | UNITS | M8A- U3 BASE- R3 -CW | RDL | QC Batch |
| Impinger Volume | ml | 183 | 1 | 6696057 |
| **Miscellaneous Parameters** | | | | |
| Sulphuric Acid Mist | mg | <0.019 | 0.019 | 6696051 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

## INDUSTRIAL HYGIENE (STACK SAMPLING TRAIN)

| BV Labs ID | | MMC524 | | MMC525 | MMC525 | | |
|---|---|---|---|---|---|---|---|
| Sampling Date | | 2020/04/16 | | 2020/04/17 | 2020/04/17 | | |
| | UNITS | M8A- U3 BASE W/DB-R1 | RDL | M8A- U3 BASE W/DB-R2 | M8A- U3 BASE W/DB-R2 Lab-Dup | RDL | QC Batch |
| **Miscellaneous Parameters** | | | | | | | |
| Sulphuric Acid Mist | mg | <0.66 | 0.66 | <0.41 | <0.41 | 0.41 | 6698432 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

| BV Labs ID | | MMC526 | | MMC527 | | MMC528 | | |
|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2020/04/17 | | 2020/04/15 | | 2020/04/16 | | |
| | UNITS | M8A- U3 BASE W/DB-R3 | RDL | M8A- U3 BASE- R1 -CW | RDL | M8A- U3 BASE- R2 -CW | RDL | QC Batch |
| **Miscellaneous Parameters** | | | | | | | | |
| Sulphuric Acid Mist | mg | <0.43 | 0.43 | <0.5 | 0.5 | <0.53 | 0.53 | 6698432 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

| BV Labs ID | | MMC529 | | |
|---|---|---|---|---|
| Sampling Date | | 2020/04/16 | | |
| | UNITS | M8A- U3 BASE- R3 -CW | RDL | QC Batch |
| **Miscellaneous Parameters** | | | | |
| Sulphuric Acid Mist | mg | <0.73 | 0.73 | 6698432 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## TEST SUMMARY

**BV Labs ID:** MMC512 **Collected:** 2020/04/16
**Sample ID:** M202- U3 BASE W/DB- R1 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6690921 | 2020/04/21 | 2020/04/24 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6690928 | 2020/04/21 | 2020/04/22 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6690922 | N/A | 2020/04/21 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6690925 | N/A | 2020/04/21 | Muhammad M Rahman |

**BV Labs ID:** MMC513 **Collected:** 2020/04/17
**Sample ID:** M202- U3 BASE W/DB- R2 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6690921 | 2020/04/21 | 2020/04/24 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6690928 | 2020/04/21 | 2020/04/22 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6690922 | N/A | 2020/04/21 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6690925 | N/A | 2020/04/21 | Muhammad M Rahman |

**BV Labs ID:** MMC514 **Collected:** 2020/04/17
**Sample ID:** M202- U3 BASE W/DB- R3 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6690921 | 2020/04/21 | 2020/04/24 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6690928 | 2020/04/21 | 2020/04/22 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6690922 | N/A | 2020/04/21 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6690925 | N/A | 2020/04/21 | Muhammad M Rahman |

**BV Labs ID:** MMC515 **Collected:** 2020/04/15
**Sample ID:** M202- U3 BASE- R1 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6690921 | 2020/04/21 | 2020/04/24 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6690928 | 2020/04/21 | 2020/04/22 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6690922 | N/A | 2020/04/21 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6690925 | N/A | 2020/04/21 | Muhammad M Rahman |

**BV Labs ID:** MMC516 **Collected:** 2020/04/15
**Sample ID:** M202- U3 BASE- R2 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6690921 | 2020/04/21 | 2020/04/24 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6690928 | 2020/04/21 | 2020/04/22 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6690922 | N/A | 2020/04/21 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6690925 | N/A | 2020/04/21 | Muhammad M Rahman |



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## TEST SUMMARY

**BV Labs ID:** MMC517 **Collected:** 2020/04/15
**Sample ID:** M202- U3 BASE- R3 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| Extractable Condensables (M202) | BAL | 6690921 | 2020/04/21 | 2020/04/24 | Muhammad M Rahman |
| Non Extractable Condensibles (M202) | BAL | 6690928 | 2020/04/21 | 2020/04/22 | Muhammad M Rahman |
| Weight of Solvent from Impingers | | 6690922 | N/A | 2020/04/21 | Muhammad M Rahman |
| Weight of Water from Impingers | | 6690925 | N/A | 2020/04/21 | Muhammad M Rahman |

**BV Labs ID:** MMC518 **Collected:** 2020/04/16
**Sample ID:** M201A- U3 BASE W/DB- R1 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6692255 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6692253 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6692295 | N/A | 2020/04/22 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6692239 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6692260 | N/A | 2020/04/22 | Muhammad M Rahman |

**BV Labs ID:** MMC519 **Collected:** 2020/04/17
**Sample ID:** M201A- U3 BASE W/DB- R2 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6692255 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6692253 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6692295 | N/A | 2020/04/22 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6692239 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6692260 | N/A | 2020/04/22 | Muhammad M Rahman |

**BV Labs ID:** MMC520 **Collected:** 2020/04/17
**Sample ID:** M201A- U3 BASE W/DB- R3 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6692255 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6692253 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6692295 | N/A | 2020/04/22 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6692239 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6692260 | N/A | 2020/04/22 | Muhammad M Rahman |

**BV Labs ID:** MMC521 **Collected:** 2020/04/15
**Sample ID:** M201A- U3 BASE- R1 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6692255 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6692253 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6692295 | N/A | 2020/04/22 | Brenda Moore |

## TEST SUMMARY

**BV Labs ID:** MMC521 **Collected:** 2020/04/15
**Sample ID:** M201A- U3 BASE- R1 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| <2.5um Particulates in Rinse | BAL | 6692239 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6692260 | N/A | 2020/04/22 | Muhammad M Rahman |

**BV Labs ID:** MMC522 **Collected:** 2020/04/15
**Sample ID:** M201A- U3 BASE- R2 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6692255 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6692253 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6692295 | N/A | 2020/04/22 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6692239 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6692260 | N/A | 2020/04/22 | Muhammad M Rahman |

**BV Labs ID:** MMC523 **Collected:** 2020/04/15
**Sample ID:** M201A- U3 BASE- R3 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| >10um Particulates in Rinse | BAL | 6692255 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| 2.5-10um Particulates in Rinse | BAL | 6692253 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| 2.5 um Particulates on Filter | BAL | 6692295 | N/A | 2020/04/22 | Brenda Moore |
| <2.5um Particulates in Rinse | BAL | 6692239 | 2020/04/22 | 2020/04/24 | Muhammad M Rahman |
| Final Volume of Acetone Probe Rinse | | 6692260 | N/A | 2020/04/22 | Muhammad M Rahman |

**BV Labs ID:** MMC524 **Collected:** 2020/04/16
**Sample ID:** M8A- U3 BASE W/DB- R1 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6696051 | 2020/04/24 | 2020/04/24 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6698432 | 2020/04/27 | 2020/04/27 | Rupinder Sihota |
| Final Volume of Impinger | | 6696057 | N/A | 2020/04/24 | Frank Mo |

**BV Labs ID:** MMC525 **Collected:** 2020/04/17
**Sample ID:** M8A- U3 BASE W/DB- R2 **Shipped:**
**Matrix:** Stack Sampling Train **Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6696051 | 2020/04/24 | 2020/04/24 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6698432 | 2020/04/27 | 2020/04/27 | Rupinder Sihota |
| Final Volume of Impinger | | 6696057 | N/A | 2020/04/24 | Frank Mo |



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## TEST SUMMARY

**BV Labs ID:** MMC525 Dup
**Sample ID:** M8A- U3 BASE W/DB- R2
**Matrix:** Stack Sampling Train

**Collected:** 2020/04/17
**Shipped:**
**Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6696051 | 2020/04/24 | 2020/04/24 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6698432 | 2020/04/27 | 2020/04/27 | Rupinder Sihota |

**BV Labs ID:** MMC526
**Sample ID:** M8A- U3 BASE W/DB- R3
**Matrix:** Stack Sampling Train

**Collected:** 2020/04/17
**Shipped:**
**Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6696051 | 2020/04/24 | 2020/04/24 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6698432 | 2020/04/27 | 2020/04/27 | Rupinder Sihota |
| Final Volume of Impinger | | 6696057 | N/A | 2020/04/24 | Frank Mo |

**BV Labs ID:** MMC527
**Sample ID:** M8A- U3 BASE- R1 -CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/04/15
**Shipped:**
**Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6696051 | 2020/04/24 | 2020/04/24 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6698432 | 2020/04/27 | 2020/04/27 | Rupinder Sihota |
| Final Volume of Impinger | | 6696057 | N/A | 2020/04/24 | Frank Mo |

**BV Labs ID:** MMC528
**Sample ID:** M8A- U3 BASE- R2 -CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/04/16
**Shipped:**
**Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6696051 | 2020/04/24 | 2020/04/24 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6698432 | 2020/04/27 | 2020/04/27 | Rupinder Sihota |
| Final Volume of Impinger | | 6696057 | N/A | 2020/04/24 | Frank Mo |

**BV Labs ID:** MMC529
**Sample ID:** M8A- U3 BASE- R3 -CW
**Matrix:** Stack Sampling Train

**Collected:** 2020/04/16
**Shipped:**
**Received:** 2020/04/18

| Test Description | Instrumentation | Batch | Extracted | Date Analyzed | Analyst |
|---|---|---|---|---|---|
| H2SO4 Acid Mist in IPA Impinger (M8mod) | IC/SPEC | 6696051 | 2020/04/24 | 2020/04/24 | Lang Le |
| Sulphuric Acid Mist by Titration (M8A) | MT | 6698432 | 2020/04/27 | 2020/04/27 | Rupinder Sihota |
| Final Volume of Impinger | | 6696057 | N/A | 2020/04/24 | Frank Mo |



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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

## GENERAL COMMENTS

Sample MMC512 [M202- U3 BASE W/DB- R1] : ORGANIC EXTRACTION :Light oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MMC513 [M202- U3 BASE W/DB- R2] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MMC514 [M202- U3 BASE W/DB- R3] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MMC515 [M202- U3 BASE- R1] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MMC516 [M202- U3 BASE- R2] : ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample MMC517 [M202- U3 BASE- R3] : ORGANIC EXTRACTION : Visual oily extract residue found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

**Results relate only to the items tested.**



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BV Labs Job #: C097773
Report Date: 2020/04/27

Air Hygiene International Inc
Client Project #: BEC-19-CRICKETVALLEY.NY-START
Sampler Initials: RW

## QUALITY ASSURANCE REPORT

| QA/QC Batch | Init | QC Type | Parameter | Date Analyzed | Value | % Recovery | UNITS | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 6690921 | MOR | Spiked Blank | Organic Condensibles | 2020/04/24 | | 99 | % | 70 - 130 |
| 6690921 | MOR | Method Blank | Organic Condensibles | 2020/04/24 | <1.0 | | mg | |
| 6690928 | MOR | Method Blank | Inorganic Condensibles | 2020/04/24 | <0.5 | | mg | |
| 6692239 | MOR | Method Blank | < 2.5 Particulate Weight in Acetone Rinse | 2020/04/24 | <0.5 | | mg | |
| 6692253 | MOR | Method Blank | 2.5 - 10 Particulate Weight in Acetone Rinse | 2020/04/24 | <0.5 | | mg | |
| 6692255 | MOR | Method Blank | > 10 Particulate Weight in Acetone Rinse | 2020/04/24 | <0.5 | | mg | |
| 6696051 | LLE | Matrix Spike(MMC525) | Sulphuric Acid Mist | 2020/04/24 | | 93 | % | 80 - 120 |
| 6696051 | LLE | Spiked Blank | Sulphuric Acid Mist | 2020/04/24 | | 98 | % | 90 - 110 |
| 6696051 | LLE | Method Blank | Sulphuric Acid Mist | 2020/04/24 | <0.01 | | mg | |
| 6696051 | LLE | RPD - Sample/Sample Dup | Sulphuric Acid Mist | 2020/04/24 | 3.4 | | % | 20 |
| 6698432 | RSU | Matrix Spike(MMC525) | Sulphuric Acid Mist | 2020/04/27 | | 98 | % | 80 - 120 |
| 6698432 | RSU | Spiked Blank | Sulphuric Acid Mist | 2020/04/27 | | 98 | % | 90 - 110 |
| 6698432 | RSU | Method Blank | Sulphuric Acid Mist | 2020/04/27 | <0.2 | | mg | |
| 6698432 | RSU | RPD - Sample/Sample Dup | Sulphuric Acid Mist | 2020/04/27 | NC | | % | 20 |

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).



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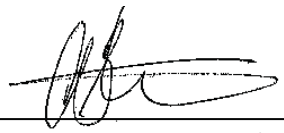
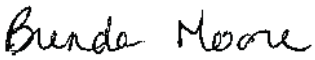
## VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Ann-Marie Stern, Team Lead, Inorganic



Brenda Moore, Team Lead, Inorganic



Frank Mo, B.Sc., Inorganic Lab. Manager

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



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# 3.0 Sample Custody

Bureau Veritas Laboratories
6740 Campobello Rd
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.bvlabs.com

C097773

Requested Standard Analysis - 5-10 business days after receipt at lab

# SAMPLE DESCRIPTION AND LABELING RECORD


**Contact Information (deliver results to)**

Name: Rob White
Phone: (918) 307-8865
Email: rwhite@airhygiene.com

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com


| Project Number: | bec-19-cricketvalley.ny-start#3 | Laboratory Analysis Requested: |
|---|---|---|
| Person Taking Samples: | Rob White | Gravimetric |

| Sample Number | Location | Date | Volume | Analysis Method | | | |
|---|---|---|---|---|---|---|---|
| | | | | RM 201A | RM 202 | – | – |
| PM U-00003 Base w/DB-1-F | Unit PM U-00003 Base w/DB - Run 1 - Filter | 04/16/20 | N/A | X | | | |
| PM U-00003 Base w/DB-1-C2 | Unit PM U-00003 Base w/DB - Run 1 - Nozzle Wash PM>10 | 04/16/20 | | X | | | |
| PM U-00003 Base w/DB-1-C3 | Unit PM U-00003 Base w/DB - Run 1 - Cyclone Wash 2.5<PM<10 | 04/16/20 | | X | | | |
| PM U-00003 Base w/DB-1-C4 | Unit PM U-00003 Base w/DB - Run 1 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 04/16/20 | N/A | X | | | |
| PM U-00003 Base w/DB-1-C5 | Unit PM U-00003 Base w/DB - Run 1 - Inorganic Impinger Contents | 04/16/20 | | | X | | |
| PM U-00003 Base w/DB-1-C6 | Unit PM U-00003 Base w/DB - Run 1 - Organic Impinger Contents | 04/16/20 | | | X | | |
| PM U-00003 Base w/DB-1-CPM | Unit PM U-00003 Base w/DB - Run 1 - CPM Filter | 04/16/20 | N/A | | X | | |
| PM U-00003 Base w/DB-2-F | Unit PM U-00003 Base w/DB - Run 2 - Filter | 04/17/20 | N/A | X | | | |
| PM U-00003 Base w/DB-2-C2 | Unit PM U-00003 Base w/DB - Run 2 - Nozzle Wash PM>10 | 04/17/20 | | X | | | |
| PM U-00003 Base w/DB-2-C3 | Unit PM U-00003 Base w/DB - Run 2 - Cyclone Wash 2.5<PM<10 | 04/17/20 | | X | | | |
| PM U-00003 Base w/DB-2-C4 | Unit PM U-00003 Base w/DB - Run 2 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 04/17/20 | N/A | X | | | |
| PM U-00003 Base w/DB-2-C5 | Unit PM U-00003 Base w/DB - Run 2 - Inorganic Impinger Contents | 04/17/20 | | | X | | |
| PM U-00003 Base w/DB-2-C6 | Unit PM U-00003 Base w/DB - Run 2 - Organic Impinger Contents | 04/17/20 | | | X | | |
| PM U-00003 Base w/DB-2-CPM | Unit PM U-00003 Base w/DB - Run 2 - CPM Filter | 04/17/20 | N/A | | X | | |
| PM U-00003 Base w/DB-3-F | Unit PM U-00003 Base w/DB - Run 3 - Filter | 04/17/20 | N/A | X | | | |
| PM U-00003 Base w/DB-3-C2 | Unit PM U-00003 Base w/DB - Run 3 - Nozzle Wash PM>10 | 04/17/20 | | X | | | |
| PM U-00003 Base w/DB-3-C3 | Unit PM U-00003 Base w/DB - Run 3 - Cyclone Wash 2.5<PM<10 | 04/17/20 | | X | | | |
| PM U-00003 Base w/DB-3-C4 | Unit PM U-00003 Base w/DB - Run 3 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 04/17/20 | N/A | X | | | |
| PM U-00003 Base w/DB-3-C5 | Unit PM U-00003 Base w/DB - Run 3 - Inorganic Impinger Contents | 04/17/20 | | | X | | |
| PM U-00003 Base w/DB-3-C6 | Unit PM U-00003 Base w/DB - Run 3 - Organic Impinger Contents | 04/17/20 | | | X | | |
| PM U-00003 Base w/DB-3-CPM | Unit PM U-00003 Base w/DB - Run 3 - CPM Filter | 04/17/20 | N/A | | X | | |

Signature 4/18 12:00 Date Time

Signature Date Time

DAVID CHAN 2020/04/18 19:45
Signature Date Time

Signature Date Time

C097773

Requested Standard Analysis - 5-10 business days after receipt at lab

# SAMPLE DESCRIPTION AND LABELING RECORD


**Contact Information (deliver results to)**

Name: Rob White
Phone: (918) 307-8865
Email: rwhite@airhygiene.com

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com


| Project Number: | bec-19-cricketvalley.ny-start#3 |
|---|---|
| Person Taking Samples: | Rob White |

| Sample Number | Location | Date | Volume | Laboratory Analysis Requested: Gravimetric Analysis Method RM 201A | RM 202 | – | – |
|---|---|---|---|---|---|---|---|
| PM U-00003 Base-1-F | Unit PM U-00003 Base - Run 1 - Filter | 04/15/20 | N/A | X | | | |
| PM U-00003 Base-1-C2 | Unit PM U-00003 Base - Run 1 - Nozzle Wash PM>10 | 04/15/20 | | X | | | |
| PM U-00003 Base-1-C3 | Unit PM U-00003 Base - Run 1 - Cyclone Wash 2.5<PM<10 | 04/15/20 | | X | | | |
| PM U-00003 Base-1-C4 | Unit PM U-00003 Base - Run 1 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 04/15/20 | N/A | X | | | |
| PM U-00003 Base-1-C5 | Unit PM U-00003 Base - Run 1 - Inorganic Impinger Contents | 04/15/20 | | | X | | |
| PM U-00003 Base-1-C6 | Unit PM U-00003 Base - Run 1 - Organic Impinger Contents | 04/15/20 | | | X | | |
| PM U-00003 Base-1-CPM | Unit PM U-00003 Base - Run 1 - CPM Filter | 04/15/20 | N/A | | X | | |
| PM U-00003 Base-2-F | Unit PM U-00003 Base - Run 2 - Filter | 04/15/20 | N/A | X | | | |
| PM U-00003 Base-2-C2 | Unit PM U-00003 Base - Run 2 - Nozzle Wash PM>10 | 04/15/20 | | X | | | |
| PM U-00003 Base-2-C3 | Unit PM U-00003 Base - Run 2 - Cyclone Wash 2.5<PM<10 | 04/15/20 | | X | | | |
| PM U-00003 Base-2-C4 | Unit PM U-00003 Base - Run 2 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 04/15/20 | N/A | X | | | |
| PM U-00003 Base-2-C5 | Unit PM U-00003 Base - Run 2 - Inorganic Impinger Contents | 04/15/20 | | | X | | |
| PM U-00003 Base-2-C6 | Unit PM U-00003 Base - Run 2 - Organic Impinger Contents | 04/15/20 | | | X | | |
| PM U-00003 Base-2-CPM | Unit PM U-00003 Base - Run 2 - CPM Filter | 04/15/20 | N/A | | X | | |
| PM U-00003 Base-3-F | Unit PM U-00003 Base - Run 3 - Filter | 04/15/20 | N/A | X | | | |
| PM U-00003 Base-3-C2 | Unit PM U-00003 Base - Run 3 - Nozzle Wash PM>10 | 04/15/20 | | X | | | |
| PM U-00003 Base-3-C3 | Unit PM U-00003 Base - Run 3 - Cyclone Wash 2.5<PM<10 | 04/15/20 | | X | | | |
| PM U-00003 Base-3-C4 | Unit PM U-00003 Base - Run 3 - Cyclone Exit to Front Half of Filter Wash (<2.5) | 04/15/20 | N/A | X | | | |
| PM U-00003 Base-3-C5 | Unit PM U-00003 Base - Run 3 - Inorganic Impinger Contents | 04/15/20 | | | X | | |
| PM U-00003 Base-3-C6 | Unit PM U-00003 Base - Run 3 - Organic Impinger Contents | 04/15/20 | | | X | | |
| PM U-00003 Base-3-CPM | Unit PM U-00003 Base - Run 3 - CPM Filter | 04/15/20 | N/A | | X | | |

| Signature | Date | Time | Signature | Date | Time |
|---|---|---|---|---|---|
| [signature] | 4/18 | 21:00 | | | |
| [signature] DAVID CHAN | 2020/04/18 | 19:45 | | | |

C097773

Requested Standard Analysis - 5-10 business days after receipt at lab

# SAMPLE DESCRIPTION AND LABELING RECORD

**Contact Information (deliver results to)**

**Name:** Rob White
**Phone:** (918) 307-8865
**Email:**

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com

| Project Number: | bec-19-cricketvalley.ny-start#3 | | | Laboratory Analysis Requested: | | | |
|---|---|---|---|---|---|---|---|
| Person Taking Samples: | GT | | | Titration | | | |
| Sample Number | Location | Date | Volume | Analysis Method | | | |
| | | | | Cont Cond | -- | -- | -- |
| SAM U-00003 Base-1-CW | Unit SAM U-00003 Base - Run 1 - Condenser Wash | 04/16/20 | | | IC | | |
| SAM U-00003 Base-2-CW | Unit SAM U-00003 Base - Run 2 - Condenser Wash | 04/17/20 | | | IC | | |
| SAM U-00003 Base-3-CW | Unit SAM U-00003 Base - Run 3 - Condenser Wash | 04/17/20 | | | IC | | |

Signature Date Time

4/15/20 12:00

Signature Date Time

DAVID CHAN 2020/04/18 19:45

Signature Date Time

Signature Date Time

Signature Date Time

Signature Date Time

C097773

Requested Standard Analysis - 5-10 business days after receipt at lab

# SAMPLE DESCRIPTION AND LABELING RECORD

**Contact Information (deliver results to)**

**Name:** Rob White
**Phone:** (918) 307-8865
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(888) 461-8778
www.airhygiene.com

| Project Number: | bec-19-cricketvalley.ny-start#3 | Laboratory Analysis Requested: |
|---|---|---|
| Person Taking Samples: | GT | Titration |

| Sample Number | Location | Date | Volume | Analysis Method | | | |
|---|---|---|---|---|---|---|---|
| | | | | Cont Cond | – | – | – |
| SAM U-00003 Base-1-CW | Unit SAM U-00003 Base - Run 1 - Condenser Wash | 04/15/20 | | | IC | | |
| SAM U-00003 Base-2-CW | Unit SAM U-00003 Base - Run 2 - Condenser Wash | 04/16/20 | | | IC | | |
| SAM U-00003 Base-3-CW | Unit SAM U-00003 Base - Run 3 - Condenser Wash | 04/16/20 | | | IC | | |

TGM 4/18 11:00
Signature Date Time

DAVID CHAN 2020/04/18 19:45
Signature Date Time

Signature Date Time

Signature Date Time

# 4.0 Sample Chromatograms

Bureau Veritas Laboratories
6740 Campobello Rd
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.bvlabs.com

# **Method 201A** – Determination of $PM_{10}$ Emissions

Bureau Veritas Laboratories
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.BVLabs.com

**Inorganic Analysis Action / Comment Form**

| | |
|---|---|
| Client ID | Air Hygiene |
| Maxxam Job # | C097773 |
| Maxxam Sample ID's (start) | MMC518-01R |

| Analytical Worksheet(s) | | | |
|---|---|---|---|
| | Filters | 6692295 | |
| | Solvent Rinse | 6692239 | |
| | Solvent Volumes | 6692260 | |
| | | | |

| | |
|---|---|
| Analysis | Particulates |
| Analyst ID | Bmoore/ MOR |

| Actions: | *Impacted Sample ID's |
|---|---|
| Bottle discrepancies | No |
| Filters damaged | Yes |
| Solvent rinse anomalies | No |
| Water impinger anomalies | N/A |
| Filter blank submitted | No |
| Solvent blank submitted | No |
| Water blank submitted | N/A |
| Other | |

Comments

See data sheets for any anomalies of samples

# Filter
## Particulate Weight Log

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Job # | C097773 | Metals | No | supplier | Pall | N/A | | |
| Client | Air Hygiene | Filter Blank Submitted | No | p/n | 61631 | N/A | | |
| Analysis | Particulate Weight on Filter | Date of Dessication | 2020/04/21 | lot # | T83173 | N/A | Type | |
| Balance ID | 220-BALANAL4 | Time of Dessication | 9:50 AM | | | | M5 | |
| Condition | Dickson THDX S/N 6213019 | | | | | | | |

DE Edges of filter frayed
LPC Loose particulate material in filter container
FT Filter torn
FCL Filter contains liquid after dessication
LFT Loose filter material

Increment 1

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Analyst | B Moore | B Moore | B Moore | | | | | |
| Weighing Date | | 2020/04/22 | 2020/04/23 | | | | | |
| Weighing Time | | 12:05 PM | 10:55 AM | | | | | |
| Temperature (°C) | | 22 | 22 | | | | | |
| Humidity (%) | | 36 | 37 | | | | | |

| Worksheet # | # | Maxxam # | Filter Condition | Filter ID # | Pre Weight gm | Weight #1 gm | Weight #2 gm | Weight #3 gm | Weight #4 gm | Weight #5 gm | Weight #6 gm | Weight #7 gm | Final Weight gm | Particulate mg | RDL mg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6692295 | 1 | MMC518-01R | NORMAL | 19031829 | 0.11620 | 0.1166 | 0.1167 | | | | | | 0.1167 | 0.5 | 0.3 |
| 6692295 | 2 | MMC519-01R | NORMAL | 19031826 | 0.11425 | 0.1148 | 0.1149 | | | | | | 0.1149 | 0.7 | 0.3 |
| 6692295 | 3 | MMC520-01R | NORMAL | 18081503 | 0.11430 | 0.1145 | 0.1145 | | | | | | 0.1145 | 0.2 | 0.3 |
| 6692295 | 4 | MMC521-01R | DE*LFT | 19031839 | 0.11365 | 0.1117 | 0.1117 | | | | | | 0.1117 | -1.2 | 0.3 |
| 6692295 | 5 | MMC522-01R | NORMAL | 19031840 | 0.11410 | 0.1146 | 0.1146 | | | | | | 0.1146 | 0.5 | 0.3 |
| 6692295 | 6 | MMC523-01R | DE*LFT | 19031831 | 0.11285 | 0.1098 | 0.1098 | | | | | | 0.1098 | -3.1 | 0.3 |
| | 7 | | | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | | |
| | 9 | | | | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | | | |
| | | | | zero | 0.0000 | 0.0000 | 0.0000 | | | | | | | | |
| | | | | 0.3000 gm | 0.3000 | 0.3000 | 0.3000 | | | | | | | | |
| | 11 | | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | |
| | 18 | | | | | | | | | | | | | | |
| | 19 | | | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | | | |
| | | | | zero | | | | | | | | | | | |
| | | | | 0.3000 gm | | | | | | | | | | | |
| | 21 | | | | | | | | | | | | | | |
| | 22 | | | | | | | | | | | | | | |
| | 23 | | | | | | | | | | | | | | |
| | 24 | | | | | | | | | | | | | | |
| | 25 | | | | | | | | | | | | | | |
| | 26 | | | | | | | | | | | | | | |
| | 27 | | | | | | | | | | | | | | |
| | 28 | | | | | | | | | | | | | | |
| | 29 | | | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | | | |
| | | | | zero | | | | | | | | | | | |
| | | | | 0.3000 gm | | | | | | | | | | | |
| | 31 | | | | | | | | | | | | | | |
| | 32 | | | | | | | | | | | | | | |
| | 33 | | | | | | | | | | | | | | |
| | 34 | | | | | | | | | | | | | | |
| | 35 | | | | | | | | | | | | | | |
| | 36 | | | | | | | | | | | | | | |
| | 37 | | | | | | | | | | | | | | |
| | 38 | | | | | | | | | | | | | | |
| | 39 | | | | | | | | | | | | | | |
| | 40 | | | | | | | | | | | | | | |
| | | | | zero | | | | | | | | | | | |
| | | | | 0.3000 gm | | | | | | | | | | | |

Filters are placed in a dessicator for 24 hours minimum prior to beginning weighing cycle.
Filters are not to be exposed to lab atmosphere for > 2 minutes at a relative humidity of≥50 %.
Verification Weight 5mg S/N 1000144533
Verification Weight 100mg S/N 29785
Verification Weight 300mg S/N 1000112492

Solvent
Particulate Weight Log

| | |
|---|---|
| Job # | C097773 |
| Client | Air Hygiene |
| Analysis | Particulate Weight in Acetone Rinse |
| Test Code | PARTACE-TR (as per M5) |
| Balance ID | NONT BALAN7 |
| Condition | Dickson THDX S/N 6003123 |

| | |
|---|---|
| Metals | No |
| Reagent Blank Submitted | No |
| Date of Dessication | 2020/04/22 |
| Time of Dessication | 4:30PM |

| | |
|---|---|
| Solvent | Acetone |
| Lab Supplier | Caledon |
| lot # | 104974 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Analyst | MOR | MOR | MOR | | | | | |
| Weighing Date | 2020/04/22 | 2020/04/24 | 2020/04/24 | | | | | |
| Weighing Time | 12:19PM | 9:17 AM | 3:32 PM | | | | | |
| Temperature (°C) | 22 | 22 | 22 | | | | | |
| Humidity (%) | 37 | 34 | 39 | | | | | |

| *reagent blank correction* |
|---|
| N/A |
| |

| Worksheet # | # | Maxxam # | Bottle Full gm | Bottle Empty gm | Solvent Volume mL | Vial ID | Pre Weight gm | Weight #1 gm | Weight #2 gm | Weight #3 gm | Weight #4 gm | Weight #5 gm | Weight #6 gm | Weight #7 gm | Final Weight gm | Particulate mg | RDL mg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6692239 | 1 | Blank | 253.0 | 174.1 | 99.9 | Q63 | 25.2314 | 25.2317 | 25.2317 | | | | | | 25.2317 | 0.3 | 0.5 |
| 6692239 | 2 | N/A | | | | | | | | | | | | | | | |
| 6692239 | 3 | MMC518-02R | 90.7 | 33.2 | 72.8 | Q64 | 25.4680 | 25.4693 | 25.4695 | | | | | | 25.4695 | 1.5 | 0.5 |
| 6692239 | 4 | MMC519-02R | 82.2 | 33.6 | 61.5 | Q65 | 25.2278 | 25.2289 | 25.2291 | | | | | | 25.2291 | 1.3 | 0.5 |
| 6692239 | 5 | MMC520-02R | 89.1 | 33.7 | 70.1 | Q66 | 25.4742 | 25.4752 | 25.4754 | | | | | | 25.4754 | 1.2 | 0.5 |
| 6692239 | 6 | MMC521-02R | 81.5 | 33.0 | 61.4 | Q67 | 25.2434 | 25.2447 | 25.2450 | | | | | | 25.2450 | 1.6 | 0.5 |
| 6692239 | 7 | MMC522-02R | 81.5 | 33.0 | 61.4 | Q68 | 24.9073 | 24.9085 | 24.9087 | | | | | | 24.9087 | 1.4 | 0.5 |
| 6692239 | 8 | MMC523-02R | 61.6 | 32.8 | 36.5 | Q69 | 25.5154 | 25.5164 | 25.5166 | | | | | | 25.5166 | 1.2 | 0.5 |
| | 9 | | | | | | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | | | | | |
| | | zero | 0.0 | 0.0 | | zero | 0.0000 | 0.0000 | 0.0000 | | | | | | | | |
| | | 100.0 gm | 100.0 | 100.0 | | 0.3000 gm | 0.2998 | 0.2998 | 0.2998 | | | | | | | | |
| | 12 | | | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | | |
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| | 20 | | | | | | | | | | | | | | | | |
| | 21 | | | | | | | | | | | | | | | | |
| | | zero | | | | zero | | | | | | | | | | | |
| | | 100.0 gm | | | | 0.3000 gm | | | | | | | | | | | |
| | 22 | Blank | | | | | | | | | | | | | | | |
| | 23 | | | | | | | | | | | | | | | | |
| | 24 | | | | | | | | | | | | | | | | |
| | 25 | | | | | | | | | | | | | | | | |
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| | 30 | | | | | | | | | | | | | | | | |
| | 31 | | | | | | | | | | | | | | | | |
| | 32 | | | | | | | | | | | | | | | | |
| | | zero | | | | zero | | | | | | | | | | | |
| | | 100.0 gm | | | | 0.3000 gm | | | | | | | | | | | |
| | 33 | | | | | | | | | | | | | | | | |
| | 34 | | | | | | | | | | | | | | | | |
| | 35 | | | | | | | | | | | | | | | | |
| | 36 | | | | | | | | | | | | | | | | |
| | 37 | | | | | | | | | | | | | | | | |
| | 38 | | | | | | | | | | | | | | | | |
| | 39 | | | | | | | | | | | | | | | | |
| | 40 | | | | | | | | | | | | | | | | |
| | 41 | | | | | | | | | | | | | | | | |
| | 42 | | | | | | | | | | | | | | | | |
| | | zero | | | | zero | | | | | | | | | | | |
| | | 100.0 gm | | | | 0.3000 gm | | | | | | | | | | | |

Unusual residue appearance is noted in the appropriate cell.
Vials are not to be exposed to lab atmosphere for > 2 minutes at a relative humidity ~~of~~ 50%. The residue appearance is noted.
Verification Weight 300mg S/N 1000112492

Solvent
Particulate Weight Log

| | |
|---|---|
| Job # | C097773 |
| Client | Air Hygiene |
| Analysis | Particulate Weight in Acetone Rinse |
| Test Code | PARTACE-TR (as per M5) |
| Balance ID | NONT BALAN7 |
| Condition | Dickson THDX S/N 6003123 |

| | |
|---|---|
| Metals | No |
| Reagent Blank Submitted | No |
| Date of Dessication | 2020/04/22 |
| Time of Dessication | 4:30PM |

| | |
|---|---|
| Solvent | Acetone |
| Lab Supplier | Caledon |
| lot # | 104974 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Analyst | MOR | MOR | MOR | | | | | | |
| Weighing Date | 2020/04/22 | 2020/04/24 | 2020/04/24 | | | | | | |
| Weighing Time | 12:25PM | 9:24 AM | 3:37 PM | | | | | | |
| Temperature (°C) | 22 | 22 | 22 | | | | | | |
| Humidity (%) | 37 | 34 | 39 | | | | | | |

| *reagent blank correction* |
|---|
| N/A |
| |

| Worksheet # | # | Maxxam # | Bottle Full gm | Bottle Empty gm | Solvent Volume mL | Vial ID | Pre Weight gm | Weight #1 gm | Weight #2 gm | Weight #3 gm | Weight #4 gm | Weight #5 gm | Weight #6 gm | Weight #7 gm | Final Weight gm | Particulate mg | RDL mg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6692253 | 1 | Blank | 253.0 | 174.1 | 99.9 | Q63 | 25.2314 | 25.2317 | 25.2317 | | | | | | 25.2317 | 0.3 | 0.5 |
| 6692253 | 2 | N/A | | | | | | | | | | | | | | | |
| 6692253 | 3 | MMC518-03R | 80.6 | 33.6 | 59.5 | Q70 | 25.0749 | 25.0759 | 25.0760 | | | | | | 25.0760 | 1.1 | 0.5 |
| 6692253 | 4 | MMC519-03R | 93.4 | 33.5 | 75.8 | Q71 | 25.7636 | 25.7645 | 25.7646 | | | | | | 25.7646 | 1.0 | 0.5 |
| 6692253 | 5 | MMC520-03R | 88.9 | 34.6 | 68.7 | Q72 | 25.5457 | 25.5491 | 25.5492 | | | | | | 25.5492 | 3.5 | 0.5 |
| 6692253 | 6 | MMC521-03R | 92.0 | 32.9 | 74.8 | R1 | 25.1516 | 25.1525 | 25.1526 | | | | | | 25.1526 | 1.0 | 0.5 |
| 6692253 | 7 | MMC522-03R | 85.3 | 33.4 | 65.7 | R2 | 25.5149 | 25.5161 | 25.5162 | | | | | | 25.5162 | 1.3 | 0.5 |
| 6692253 | 8 | MMC523-03R | 84.7 | 32.9 | 65.6 | R3 | 25.6126 | 25.6136 | 25.6136 | | | | | | 25.6136 | 1.0 | 0.5 |
| | 9 | | | | | | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | | | | | |
| | | zero | 0.0 | 0.0 | | zero | 0.0000 | 0.0000 | 0.0000 | | | | | | | | |
| | | 100.0 gm | 100.0 | 100.0 | | 0.3000 gm | 0.2998 | 0.2998 | 0.2998 | | | | | | | | |
| | 12 | | | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | | |
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| | 18 | | | | | | | | | | | | | | | | |
| | 19 | | | | | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | | | | | |
| | 21 | | | | | | | | | | | | | | | | |
| | | zero | | | | zero | | | | | | | | | | | |
| | | 100.0 gm | | | | 0.3000 gm | | | | | | | | | | | |
| | 22 | Blank | | | | | | | | | | | | | | | |
| | 23 | | | | | | | | | | | | | | | | |
| | 24 | | | | | | | | | | | | | | | | |
| | 25 | | | | | | | | | | | | | | | | |
| | 26 | | | | | | | | | | | | | | | | |
| | 27 | | | | | | | | | | | | | | | | |
| | 28 | | | | | | | | | | | | | | | | |
| | 29 | | | | | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | | | | | |
| | 31 | | | | | | | | | | | | | | | | |
| | 32 | | | | | | | | | | | | | | | | |
| | | zero | | | | zero | | | | | | | | | | | |
| | | 100.0 gm | | | | 0.3000 gm | | | | | | | | | | | |
| | 33 | | | | | | | | | | | | | | | | |
| | 34 | | | | | | | | | | | | | | | | |
| | 35 | | | | | | | | | | | | | | | | |
| | 36 | | | | | | | | | | | | | | | | |
| | 37 | | | | | | | | | | | | | | | | |
| | 38 | | | | | | | | | | | | | | | | |
| | 39 | | | | | | | | | | | | | | | | |
| | 40 | | | | | | | | | | | | | | | | |
| | 41 | | | | | | | | | | | | | | | | |
| | 42 | | | | | | | | | | | | | | | | |
| | | zero | | | | zero | | | | | | | | | | | |
| | | 100.0 gm | | | | 0.3000 gm | | | | | | | | | | | |

Unusual residue appearance is noted in the appropriate cell.
Vials are not to be exposed to lab atmosphere for > 2 minutes at a relative humidity ~~or~~ 50%. The residue appearance is noted.
Verification Weight 300mg S/N 1000112492

# Solvent
## Particulate Weight Log

| | |
|---|---|
| Job # | C097773 |
| Client | Air Hygiene |
| Analysis | Particulate Weight in Acetone Rinse |
| Test Code | PARTACE-TR (as per M5) |
| Balance ID | NONT BALAN7 |
| Condition | Dickson THDX S/N 6003123 |

| | |
|---|---|
| Metals | No |
| Reagent Blank Submitted | No |
| Date of Dessication | 2020/04/22 |
| Time of Dessication | 4:30PM |

| | |
|---|---|
| Solvent | Acetone |
| Lab Supplier | Caledon |
| lot # | 104974 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Analyst | MOR | MOR | MOR | | | | | |
| Weighing Date | 2020/04/22 | 2020/04/24 | 2020/04/24 | | | | | |
| Weighing Time | 12:31PM | 9:28 AM | 3:41 PM | | | | | |
| Temperature (°C) | 22 | 22 | 22 | | | | | |
| Humidity (%) | 37 | 34 | 39 | | | | | |

| *reagent blank correction* |
|---|
| N/A |
| |

| Worksheet # | # | Maxxam # | Bottle Full gm | Bottle Empty gm | Solvent Volume mL | Vial ID | Pre Weight gm | Weight #1 gm | Weight #2 gm | Weight #3 gm | Weight #4 gm | Weight #5 gm | Weight #6 gm | Weight #7 gm | Final Weight gm | Particulate mg | RDL mg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6692255 | 1 | Blank | 253.0 | 174.1 | 99.9 | Q63 | 25.2314 | 25.2317 | 25.2317 | | | | | | 25.2317 | 0.3 | 0.5 |
| 6692255 | 2 | N/A | | | | | | | | | | | | | | | |
| 6692255 | 3 | MMC518-04R | 88.5 | 33.4 | 69.7 | R4 | 25.3876 | 25.3958 | 25.3959 | | | | | | 25.3959 | 8.3 | 0.5 |
| 6692255 | 4 | MMC519-04R | 93.7 | 33.7 | 75.9 | R5 | 25.0149 | 25.0257 | 25.0258 | | | | | | 25.0258 | 10.9 | 0.5 |
| 6692255 | 5 | MMC520-04R | 82.1 | 33.7 | 61.3 | R6 | 25.6094 | 25.6108 | 25.6108 | | | | | | 25.6108 | 1.4 | 0.5 |
| 6692255 | 6 | MMC521-04R | 94.8 | 33.3 | 77.8 | R7 | 25.3433 | 25.3608 | 25.3608 | | | | | | 25.3608 | 17.5 | 0.5 |
| 6692255 | 7 | MMC522-04R | 89.8 | 33.1 | 71.8 | R8 | 25.6114 | 25.6207 | 25.6207 | | | | | | 25.6207 | 9.3 | 0.5 |
| 6692255 | 8 | MMC523-04R | 80.7 | 33.0 | 60.4 | R9 | 25.4866 | 25.5008 | 25.5007 | | | | | | 25.5007 | 14.1 | 0.5 |
| | 9 | | | | | | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | | | | | |
| | | zero | 0.0 | 0.0 | | zero | 0.0000 | 0.0000 | 0.0000 | | | | | | | | |
| | | 100.0 gm | 100.0 | 100.0 | | 0.3000 gm | 0.2998 | 0.2998 | 0.2998 | | | | | | | | |
| | 12 | | | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | | |
| | 18 | | | | | | | | | | | | | | | | |
| | 19 | | | | | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | | | | | |
| | 21 | | | | | | | | | | | | | | | | |
| | | zero | | | | zero | | | | | | | | | | | |
| | | 100.0 gm | | | | 0.3000 gm | | | | | | | | | | | |
| | 22 | Blank | | | | | | | | | | | | | | | |
| | 23 | | | | | | | | | | | | | | | | |
| | 24 | | | | | | | | | | | | | | | | |
| | 25 | | | | | | | | | | | | | | | | |
| | 26 | | | | | | | | | | | | | | | | |
| | 27 | | | | | | | | | | | | | | | | |
| | 28 | | | | | | | | | | | | | | | | |
| | 29 | | | | | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | | | | | |
| | 31 | | | | | | | | | | | | | | | | |
| | 32 | | | | | | | | | | | | | | | | |
| | | zero | | | | zero | | | | | | | | | | | |
| | | 100.0 gm | | | | 0.3000 gm | | | | | | | | | | | |
| | 33 | | | | | | | | | | | | | | | | |
| | 34 | | | | | | | | | | | | | | | | |
| | 35 | | | | | | | | | | | | | | | | |
| | 36 | | | | | | | | | | | | | | | | |
| | 37 | | | | | | | | | | | | | | | | |
| | 38 | | | | | | | | | | | | | | | | |
| | 39 | | | | | | | | | | | | | | | | |
| | 40 | | | | | | | | | | | | | | | | |
| | 41 | | | | | | | | | | | | | | | | |
| | 42 | | | | | | | | | | | | | | | | |
| | | zero | | | | zero | | | | | | | | | | | |
| | | 100.0 gm | | | | 0.3000 gm | | | | | | | | | | | |

Unusual residue appearance is noted in the appropriate cell.

Vials are not to be exposed to lab atmosphere for > 2 minutes at a relative humidity ~~of~~ 50%. The residue appearance is noted.

Verification Weight 300mg S/N 1000112492

# **Method 202** – Determination of Condensible Particulate Emissions from Stationary Sources

Bureau Veritas Laboratories
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.BVLabs.com

# METHOD-202 ANALYSIS ACTION/COMMENT FORM

| | |
|---|---|
| **Client ID** | Air Hygiene |
| **Maxxam Job #** | C097773 |

| | |
|---|---|
| **Analytical Worksheet(s) - solvent** | **6690921** |
| **Analytical Worksheet(s) - water** | **6690928** |

| | |
|---|---|
| **Analysis** | **Method 202** |
| **Analyst ID - solvent** | M Rahman |
| **Analyst ID - water** | M Rahman |

| ACTIONS | | *COMMENTS |
|---|---|---|
| **Bottle discrepancies** | No | No discrepancies were noted regarding bottles used for samples. |
| **Solvent rinse anomalies** | No | No anomalies were noted in this submission. |
| **Water impinger anomalies** | No | No anomalies were noted in this submission. |
| **Solvent blank submitted** | No | Not Applicable |
| **Water blank submitted** | No | Not Applicable |
| **Filter anomalies** | No | No anomalies were noted in this submission. |
| **Other** | No | Not Applicable |

** Please note any action or anomalies impacting this set of samples*

**GENERAL COMMENTS:**

# Non-Extractable CPM (Method-202)

| | |
|---|---|
| Job # | C097773 |
| Client | Air Hygiene |
| Analysis | Non-Extractable Condensibles |
| Balance ID | NONT BALAN7 |
| Condition | Fisher S/N 191863398 |

| | | |
|---|---|---|
| Water Blank Submitted | No | |
| Date of Dessication | 2020/04/23 | |
| Time of Dessication | 8:40AM | |
| Date/Time of Transfer | 2020/04/22 | 9:40 AM |

| | |
|---|---|
| $NH_4OH$ Supplier | Not Applicable |
| p/n | Not Applicable |
| lot # | Not Applicable |
| Normailty | Not Applicable |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Analyst | MOR | MOR | MOR | | | | | |
| Weighing Date | 2020/04/22 | 2020/04/24 | 2020/04/24 | | | | | |
| Weighing Time | 9:25 AM | 8:57 AM | 3:25 PM | | | | | |
| Temperature (°C) | 22.0 | 21.9 | 21.6 | | | | | |
| Humidity (%) | 0 | 0 | 0 | | | | | |

| Worksheet # | # | Maxxam # | Residue Appearance | Water Weight Before g | Water Weight After g | Water Weight g | Neutralization Required | Volume of 0.1 N $NH_4OH$ used ml | Pre Weight g | 1st Weight after 24hrs desiccation g | 2nd Weight after 6hrs of 1st wt. g | 3rd Weight after 24hrs desiccation g (Not Applicable) | 4th Weight after 6hrs of 3rd wt. g | 5th Weight after 6hrs of 4th wt. g | 6th Weight after 6hrs of 5th wt. g | Final Weight g | Non Extractable Condensibles mg | RDL mg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6690928 | 1 | Blank | | | | 200 ml | No | 0 | 2.3927 | 2.3929 | 2.3928 | | | | | 2.3928 | 0.1 | 0.5 |
| | | Spike | | | | 200 ml | | | | | | | | | | | | |
| | | Spike:D1 | | | | 200 ml | | | | | | | | | | | | |
| 6690928 | 2 | MMC512-01R | Whitish | 472.8 | 90.2 | 383 | No | 0 | 2.3150 | 2.3171 | 2.3171 | | | | | 2.3171 | 2.1 | 0.5 |
| 6690928 | 3 | MMC513-01R | Whitish | 465.4 | 89.7 | 376 | No | 0 | 2.3272 | 2.3310 | 2.3309 | | | | | 2.3309 | 3.7 | 0.5 |
| 6690928 | 4 | MMC514-01R | Whitish | 416.7 | 89.8 | 327 | No | 0 | 2.2505 | 2.2527 | 2.2526 | | | | | 2.2526 | 2.1 | 0.5 |
| 6690928 | 5 | MMC515-01R | Whitish | 548.0 | 88.6 | 459 | No | 0 | 2.2931 | 2.2963 | 2.2964 | | | | | 2.2964 | 3.3 | 0.5 |
| 6690928 | 6 | MMC516-01R | Whitish | 449.7 | 89.6 | 360 | No | 0 | 2.3088 | 2.3109 | 2.3110 | | | | | 2.3110 | 2.2 | 0.5 |
| 6690928 | 7 | MMC517-01R | Whitish | 469.0 | 89.1 | 380 | No | 0 | 2.2602 | 2.2623 | 2.2624 | | | | | 2.2624 | 2.2 | 0.5 |
| | 8 | | | | | | | | | | | | | | | | | |
| | 9 | | | | | | | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | | | | | | |
| | | | zero | 0.0 | 0.0 | | | zero | 0.0000 | 0.0000 | 0.0000 | | | | | | | |
| | | | 100.0 gm | 100.0 | 100.0 | | | 0.3000 | 0.2998 | 0.2998 | 0.2998 | | | | | | | |
| | 12 | | | | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | | | |
| | 18 | | | | | | | | | | | | | | | | | |
| | 19 | | | | | | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | | | | | | |
| | 21 | | | | | | | | | | | | | | | | | |
| | | | zero | | | | | zero | | | | | | | | | | |
| | | | 100.0 gm | | | | | 0.3000 | | | | | | | | | | |

**NOTE:** Vials are not to be exposed to lab atmosphere for > 2 minutes at a relative humidity of 50 %.

Appearance of residue is noted in the Residue column (Oily residues, color of residues etc.)

**COMMENTS:** Verification weight 100g S/N 29785

Verification weight 0.3g S/N 4392-1

Digital Hygrometer S/N 192590073

# Extractable CPM (Method-202)

| | |
|---|---|
| Job # | C097773 |
| Client | Air Hygiene |
| Analysis | Condensibles |
| Balance ID | NONT BALAN7 |
| Condition | Fisher S/N 191863398 |

| | | |
|---|---|---|
| Solvent Blank Submitted | No | |
| Date of Dessication | 2020/04/22 | |
| Time of Dessication | 1:37 PM | |
| Date/Time of Extraction | 2020/04/21 | 2:15PM |

| | | |
|---|---|---|
| Solvent | Hexane | Acetone |
| Lab Supplier | Fisher | Caledon |
| lot # | 193856 | 103774 |

| | | | | |
|---|---|---|---|---|
| Spike ID | MOGC202# 23 | Vial # | V-1 | |
| Solvent Spike | Acetone | | | |
| Date Prepared | 2020/01/08 | | | |
| Date Expired | 2020/07/08 | | | |

| | | | | |
|---|---|---|---|---|
| Spike Mean | 94.88 | | | |
| Std. Deviation | 3.25 | | | |
| Spike Range | Min: | 85.1 | Max: | 104.6 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Analyst | MOR | MOR | MOR | | | | | |
| Weighing Date | 2020/04/22 | 2020/04/24 | 2020/04/24 | | | | | |
| Weighing Time | 9:50 AM | 8:52 AM | 3:16 PM | | | | | |
| Temperature (°C) | 22.0 | 21.9 | 21.6 | | | | | |
| Humidity (%) | 0 | 0 | 0 | | | | | |

| Worksheet # | # | Maxxam # | Residue Appearance | Solvent Weight Before g | Solvent Weight After g | Solvent Weight g | Pre Weight g | Weight #1 g | Weight #2 g | Weight #3 g | Weight #4 g | Weight #5 g | Weight #6 g | Weight #7 g | Final Weight g | Residue mg | RDL mg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6690921 | 1 | Blank | | | | 200 ml | 12.1405 | 12.1405 | 12.1405 | | | | | | 12.1405 | 0.0 | 1.0 |
| 6690921 | 2 | Spike | | | | 200 ml | 12.1726 | 12.2121 | 12.2121 | | | | | | 12.2121 | 98.8 % | 1.0 |
| 6690921 | 3 | Spike:D1 | | | | 200 ml | N/A | N/A | N/A | | | | | | | ##### ## | 1.0 |
| 6690921 | 4 | MMC512-02R | Light oily | 469.1 | 279.3 | 190 | 12.1429 | 12.1432 | 12.1433 | | | | | | 12.1433 | 0.4 | 1.0 |
| 6690921 | 5 | MMC513-02R | Oily | 485.4 | 277.8 | 208 | 12.0783 | 12.0791 | 12.0794 | | | | | | 12.0794 | 1.1 | 1.0 |
| 6690921 | 6 | MMC514-02R | Oily | 471.3 | 277.9 | 193 | 12.0754 | 12.0765 | 12.0768 | | | | | | 12.0768 | 1.4 | 1.0 |
| 6690921 | 7 | MMC515-02R | Oily | 513.8 | 278.0 | 236 | 12.1115 | 12.1137 | 12.1139 | | | | | | 12.1139 | 2.4 | 1.0 |
| 6690921 | 8 | MMC516-02R | Oily | 477.0 | 277.8 | 199 | 12.3403 | 12.3420 | 12.3422 | | | | | | 12.3422 | 1.9 | 1.0 |
| 6690921 | 9 | MMC517-02R | Oily | 498.5 | 276.9 | 222 | 12.3423 | 12.3437 | 12.3438 | | | | | | 12.3438 | 1.5 | 1.0 |
| | 10 | | | | | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | | |
| | | | zero | 0.0 | 0.0 | zero | 0.0000 | 0.0000 | 0.0000 | | | | | | | | |
| | | | 100.0 gm | 100.0 | 100.0 | 0.3000 | 0.2998 | 0.2998 | 0.2998 | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | | |
| | 18 | | | | | | | | | | | | | | | | |
| | 19 | | | | | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | | | | | |
| | 21 | | | | | | | | | | | | | | | | |
| | 22 | | | | | | | | | | | | | | | | |
| | 23 | | | | | | | | | | | | | | | | |
| | | | zero | | | zero | | | | | | | | | | | |
| | | | 100.0 gm | | | 0.3000 | | | | | | | | | | | |

**NOTE:** Vials are not to be exposed to lab atmosphere for > 2 minutes at a relative humidity of 50 %

Appearance of residue is noted in the Residue column (Oily residues, color of residues etc.)

**COMMENTS:** Verification weight 100g S/N 29785

Verification weight 0.3g S/N 4392-1

Digital Hygrometer S/N 192590073

# **Method 8A** – Sulfuric Acid Mist by Titration

Bureau Veritas Laboratories
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.BVLabs.com

## Inorganic Analysis Action / Comment Form

* Please note any action or anomalies impacting this set of samples

Client ID: Air Hygiene International Inc

Maxxam Job #: GC097773

Autosampler Index

| Analysis | Worksheet | Run Date | Run # | Start Lab ID | End Lab ID | START | END | Analyst ID |
|---|---|---|---|---|---|---|---|---|
| Sulfuric Acid Mist | 6696051 | 2020/04/24 | 1 | MMC524 | MMC529 | 16 | 23 | LLE |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Actions: *Impacted Sample ID's

Bottle discrepancies NO

Interferences observed NO

Reintegrations performed YES

Dilutions performed NO

Field / Trip blanks missing NA

Other

Explanation/comments:

Re-integrated due to poor automated baseline construction .

# Inorganic Analysis Action / Comment Form

| | | | |
|---|---|---|---|
| **Client ID :** | Air Hygiene | **Maxxam Job # :** | C097773 |
| **Analysis :** | | **Analyst :** | R. Sihota |

| | Start | End |
|---|---|---|
| **Maxxam Sample ID's :** | MMC524-01R | MMC529-01R |

| | |
|---|---|
| **Analytical Worksheet(s) :** | 6698432 |
| | 6696057 |
| | |

| Actions | *Impacted Sample ID's |
|---|---|
| Re-analysis needed (alternate technique) | No |
| Bottle discrepancies | No |
| Interferences observed | No |
| Dilutions needed | No |
| Internal calculations modified | No |
| Field / Trip blanks missing | No |
| Other | No |

**NOTE :** * Please note any action or anomalies impacting this set of samples.

**Comments :**

# Sulphuric Acid Mist

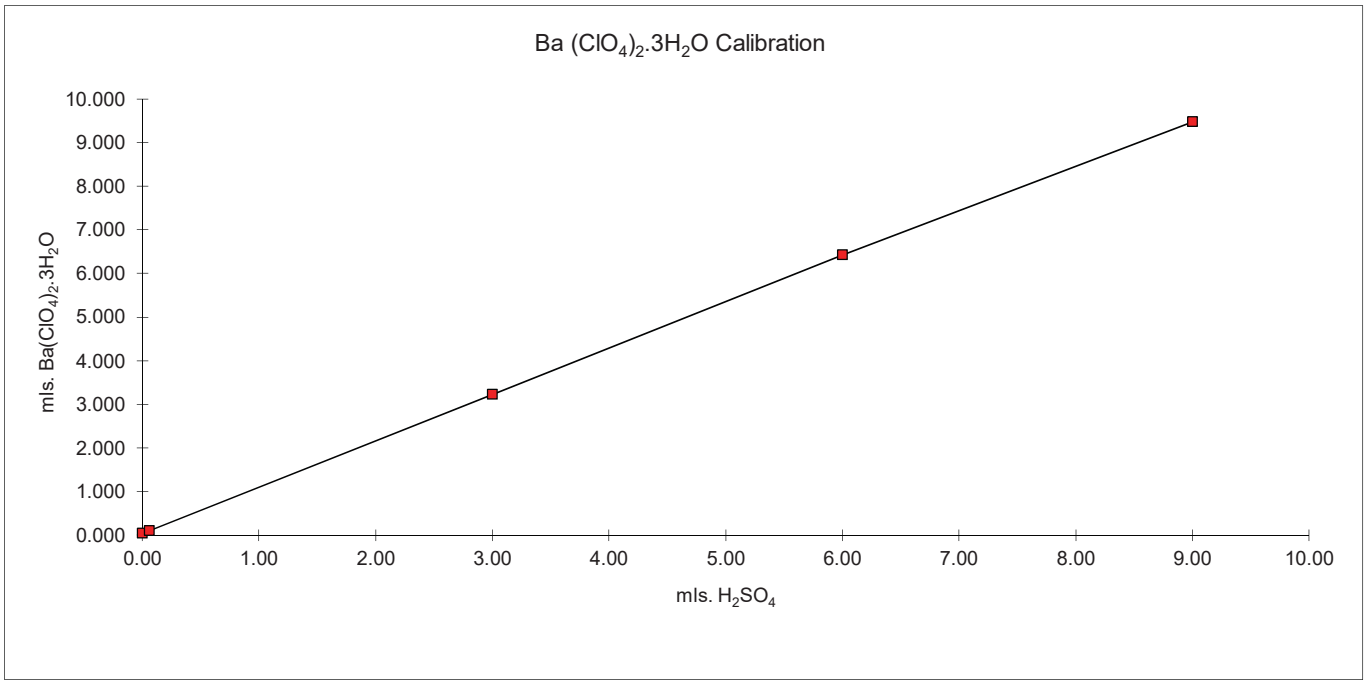
| | |
|---|---|
| Run Date | 2020/04/27 |
| Calibration Date | 2020/04/27 |
| Analyst | R. Sihota |
| Test Code | SAMT8A-IP |
| Component | Sulphuric Acid Mist |
| RDL ($H_2SO_4$) | 0.20 |

| | | |
|---|---|---|
| Normality $H_2SO_4$ | 0.0100 | Up-to-date normality for $H_2SO_4$ taken from the bottle |
| Normality $Ba(ClO_4)_2.3H_2O$ | 0.0095 | |
| Correlation | 0.99996 | |
| Slope | 1.052 | |
| Intercept | 0.0617 | |

| | Prep Date | Exp Date |
|---|---|---|
| 0.01N $Ba(ClO_4)_2.3H_2O$: | 2020/02/28 | 2020/08/28 |
| Thorin Indicator : | 2019/05/28 | 2020/05/28 |

| Standard Number | $H_2SO_4$ Volume (mL) | Titrant Volume (mL) | $H_2SO_4$ (mg) | % |
|---|---|---|---|---|
| 1 | 0.00 | 0.050 | RSE | **16.6%** |
| 2 | 0.06 | 0.110 | 0.05 | -23% |
| 3 | 3.00 | 3.230 | 3.01 | 0% |
| 4 | 6.00 | 6.430 | 6.06 | 1% |
| 5 | 9.00 | 9.490 | 8.97 | 0% |
| **ICV (IPA)** | 6.00 | 6.260 | 5.90 | 98.3 |

| | Lot Number/ID |
|---|---|
| $H_2SO_4$ Calibration : | 4002D76 |
| $H_2SO_4$ Reference : | 4804K72 |
| 2-Propanol : | 186011 |
| Pipet # 1 : | IAWVE-8 |
| Pipet # 2 : | IAWVE-12 |
| Pipet # 3 : | IAWVE-16 |
| Burette ID # | Buret#1 (Standard) |



EPA 8 & 8A $H_2SO_4$ TITRATIONS (ISOPROPANOL SOLUTIONS)
(Samples are diluted to 250 ml with 80 % IPA before titration for method 8)
(20 mL aliquots are diluted with 80 mL IPA before titration for method 8A)
(Titrations are performed in duplicate - 100 mls aliquots - if sufficient sample exists)
Titrations must be repeated (if sufficient sample) if the absolute titration volume difference is > 0.20 mL

| Job # | Worksheet # | Maxxam Sample ID | Sample Volume (mL) | Titration Volume (mL) | Barium Volume # 1 (mL) | Barium Volume # 2 (mL) | Barium Average Volume (mL) | Titrant Δ (mL) | $H_2SO_4$ (mg) | RDL (mg) | Spike or Dups (%) | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C097773 | 6698432 | Blank | 50 | 20.000 | 0.060 | | 0.060 | | -0.002 | 0.20 | | Blank Pass |
| | 6698432 | Spike | 50 | 20.000 | 3.160 | | 3.160 | | 3.610 | 0.20 | 97.8 | Spike Pass |
| | 6698432 | MMC524-01R | 166 | 20.000 | 0.100 | 0.080 | 0.090 | 0.020 | 0.109 | 0.66 | | Pass |
| | 6698432 | MMC525-01R | 103 | 20.000 | 0.060 | | 0.055 | 0.010 | -0.016 | 0.41 | | Pass |
| | 6698432 | MMC525-01R:D1 | 103 | 20.000 | 0.050 | | | | -0.028 | 0.41 | 18.2 | **Dup Fail** |
| | 6698432 | MATSPK | 103 | 20.000 | 3.220 | | | | 7.581 | 0.41 | 98.0 | MATSPK Pass |
| | 6698432 | MMC526-01R | 108 | 20.000 | 0.080 | 0.070 | 0.075 | 0.010 | 0.033 | 0.43 | | Pass |
| | 6698432 | MMC527-01R | 125 | 20.000 | 0.050 | 0.080 | 0.065 | 0.030 | 0.010 | 0.50 | | Pass |
| | 6698432 | MMC528-01R | 132 | 20.000 | 0.060 | 0.060 | 0.060 | 0.000 | -0.005 | 0.53 | | Pass |
| | 6698432 | MMC529-01R | 183 | 20.000 | 0.080 | 0.070 | 0.075 | 0.010 | 0.057 | 0.73 | | Pass |
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| Audit #1 | | | | | | | | | | | | |
| Audit #2 | | | | | | | | | | | | |
| | | Titrant Check | | | 3.230 | | | | | | | Titrant Pass |

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| Audit #1 | | | | | | | | | | | | |
| Audit #2 | | | | | | | | | | | | |
| | | Titrant Check | | | | | | | | | | |

# Volume Adjustment- Sulfuric Acid Mist

Run Date : 2020/04/27 | Analyst : R. Sihota | Method : M-8A | Component : Volume

| Job # | Worksheet # | Maxxam Sample # | Sample Type Enter Blank | Charged Impinger Volume (mL) | Volume of sample received (mL) | Measured Bottle Contents (mL) | Volume Removed at Source (mL) | Volume Adjusted Theoretical (mL) | Final Volume to 50 mL with RODI |
|---|---|---|---|---|---|---|---|---|---|
| C097773 | 6696057 | MMC524-01R | | | 166.000 | 166.0 | 0 | 166 | NA |
| | 6696057 | MMC525-01R | | | 103.000 | 103.0 | 0 | 103 | NA |
| | 6696057 | MMC526-01R | | | 108.000 | 108.0 | 0 | 108 | NA |
| | 6696057 | MMC527-01R | | | 125.000 | 125.0 | 0 | 125 | NA |
| | 6696057 | MMC528-01R | | | 132.000 | 132.0 | 0 | 132 | NA |
| | 6696057 | MMC529-01R | | | 183.000 | 183.0 | 0 | 183 | NA |
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# **Method 8A** – Sulfuric Acid Mist by IC

Bureau Veritas Laboratories
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.BVLabs.com

**WS# : 6696051**

Page #: 1/1

**RUSH**

Report Name : Worksheet - (Liquids and Solids)

Assignment Date : Friday, April 24, 2020

Assigned to : Lang Le

Test Code : SAMIC-TR

Test Description : Sulphuric Acid Mist - IC

Instrument Id: NONT-ICEC2

| Job Number | Sample Number | D | Sample ID | F | % Moisture | Wt or Vol | Final Vol | DF or AF | # Cont | Expiry Date | Test DeadLine | Criteria | Extract Date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MTRX SPK | | MSO3% MMC525-* | | | | | | | | | | 2020/04/24 |
| | SPIKE | | MSO3% | | | | | | | | | | 2020/04/24 |
| | BLANK | | | | | | | | | | | | 2020/04/24 |
| C097773* | MMC524-01R | | M8A- U3 BASE W/* | | | | 166.0 | 1X | 1 | 2020/05/14 | 2020/04/27 17:00 | | 2020/04/24 |
| C097773* | MMC525-01R | 0 | M8A- U3 BASE W/* | | | | 103 | | 1 | 2020/05/15 | 2020/04/27 17:00 | | 2020/04/24 |
| C097773* | MMC525-01R | 1 | M8A- U3 BASE W/* | | | | 108 | | 1 | 2020/05/15 | 2020/04/27 17:00 | | 2020/04/24 |
| C097773* | MMC526-01R | | M8A- U3 BASE W/* | | | | 125 | | 1 | 2020/05/13 | 2020/04/27 17:00 | | 2020/04/24 |
| C097773* | MMC527-01R | | M8A- U3 BASE- R* | | | | 132 | | 1 | 2020/05/14 | 2020/04/27 17:00 | | 2020/04/24 |
| C097773* | MMC528-01R | | M8A- U3 BASE- R* | | | | 183 | 1X | 1 | 2020/05/14 | 2020/04/27 17:00 | | 2020/04/24 |
| C097773* | MMC529-01R | | M8A- U3 BASE- R* | | | | | | | | | | |

Remarks: FV = weighed LE APR 2 4 2020

Samples extracted by: Lang Le

Instrumentation performed by: Lang Le Date: APR 2 4 2020

Calculations performed by: Lang Le Date: 2020/04/24

Validated by: Date: APR 2 4 2020 LE

| Job No. | Rep / Client Name / Remarks | Contact | Client Tier | National |
|---|---|---|---|---|
| GC097773 | CJO Air Hygiene International Inc | Data Reports | Tier 3 (Enviro.) | |

M8 titration requested therefore SAMTIT-TR added previous job C067891 M201A/ M202/M8A by IC (client confirmed to proceed with IC for this project). Field blank samples not received updgraded to rush by Sean Barnes 2020/04/21 cjo
Project #: BEC-19-CRICKETVALLEY.NY-START

| Job | Sample | Lab Comments |
|---|---|---|
| | MTRX SPK | |
| | SPIKE | |
| | BLANK | |
| C097773 | MMC524-01R | |
| C097773 | MMC525-01R | |
| C097773 | MMC525-01R:DUP | |
| C097773 | MMC526-01R | |
| C097773 | MMC527-01R | |
| C097773 | MMC528-01R | |
| C097773 | MMC529-01R | |

## WorkSheet 6696051 Instrument Sequences

| | | |
|---|---|---|
| 1. |  6696051:MTRX SPK | MTRX SPK |
| 2. |  6696051:SPIKE | SPIKE |
| 3. |  6696051:BLANK | BLANK |
| 4. |  6696051:MMC524-01 | M8A- U3 BASE W/DB- R1 |
| 5. |  6696051:MMC525-01 | M8A- U3 BASE W/DB- R2 |
| 6. |  6696051:MMC525-01:D1 | M8A- U3 BASE W/DB- R2 :D1 |
| 7. |  6696051:MMC526-01 | M8A- U3 BASE W/DB- R3 |
| 8. |  6696051:MMC527-01 | M8A- U3 BASE- R1 -CW |
| 9. |  6696051:MMC528-01 | M8A- U3 BASE- R2 -CW |
| 10. |  6696051:MMC529-01 | M8A- U3 BASE- R3 -CW |

## Internal Data Validation Checklist

Analysis: Anions Run Date: 20200424

Worksheet # (s): 669051, 669057

| | Primary review by the analyst - 100 % analysis review | yes | no | n/a |
|---|---|---|---|---|
| 1 | Sample analyses meet hold time criteria | ✓ | | |
| 2 | Analysis set-up meets method criteria | ✓ | | |
| 3 | Tuning and correct calibration used - criteria meets method criteria | ✓ | | |
| 4 | SQC/Control Charts updated, analysis in statistical/method control | ✓ | | |
| 5 | Internal area counts checked (if applicable) | | | ✓ |
| 6 | LCS, SRM are within acceptance criteria | ✓ | | |
| 7 | Surrogate Recovery(s) is within acceptance criteria | | | ✓ |
| 8 | Method Blank meets acceptance criteria | ✓ | | |
| 9 | Matrix Spike recovery(s) meets acceptance criteria | ✓ | | |
| 10 | Duplicate precision meets acceptance criteria | ✓ | | |
| 11 | QC is documented on the run logs | | | ✓ |
| 12 | Runs checked for carryover | ✓ | | |
| 13 | Prep log / worksheet(s) are present, signed / dated by a prep / instrument analysts | ✓ | | |
| 14 | Initial weights, splits, impringer volumes (where applicable) are documented | ✓ | | |
| 15 | Standards and reagents traceable to Certificates of Analysis | ✓ | | |
| 16 | Samples above calibration range diluted and reanalyzed | | | ✓ |
| 17 | Dilution factors (where justified) have been checked for correctness and entered | | | ✓ |
| 18 | Dilution results compared to original results - Comparison sound | | | ✓ |
| 19 | Analytical observations/anomalies documented in LIMS | | | ✓ |
| 20 | Random calculation checked and in correct units | ✓ | | |
| 21 | If corrective actions were applied they are documented, initialed & dated | | | ✓ |
| 22 | Manual integration – before & after data with a reason included, initialed & dated | ✓ | | |
| 24 | Transferred data is validated in LIMS for correctness | ✓ | | |
| 25 | Data package assembled (where required) | | | ✓ |

Reviewed by: Ling Li Date: 20200424

Comments:

| | Secondary Supervisor/Qualified Data Review Staff | yes | no | n/a |
|---|---|---|---|---|
| 1 | Primary Review completed and correct | ✓ | | |
| 2 | Repeats documented and referenced | | | ✓ |
| 3 | Method and sample deviations noted, anomalies described (if applicable) | | | ✓ |
| 4 | Data and QC validated in LIMS | ✓ | | |
| 5 | Random calculation checked | ✓ | | |
| 6 | Dilution factors/results have been checked and and compared to original results | | | ✓ |
| 7 | Worksheet(s) and sample prep sheets (FCDs) signed and dated | ✓ | | |
| 8 | Data Package (if required) checked for completeness APR 24 2020 | | | ✓ |

Reviewed by: Date:

Comments:

**Note: Primary and Secondary Internal Data Review Check must be performed by a different person**

Report Name: Entry

Job #: C097773

Client: Air Hygiene International Inc
1600 West Tacoma Street
Broken Arrow, OK
USA 74012

Inv Attn: Accounts Payable

Task Order:
Line Item:

Report: same

Attention: Data Reports
Phone: (918)994 - 4163
Fax: () -
EMAIL: sbarnes@airhygiene.com ...

Project Coordinator: CJO

Printed: 2020/04/20 Version 3
Reception Date: 2020/04/18
Reception Time: 19:45
Login Date: 2020/04/20
**REQUIRED DATE: 2020/05/04, 18:00**
**Quote Number: B90673**
COC:
P.O. Number:
Project Number: BEC-19-CRICKETVALLEY.NY-START
Site Location:
Site #:
Client Number: 23832
Rpt Address #:
Q.C Samples: No

| BV Labs Number | Client Sample ID/Report ID/Sample Info | Cont's | Store Code | Recd. OK | Sampling Date | Matrix | Test Codes |
|---|---|---|---|---|---|---|---|
| MMC512-01R | M202- U3 BASE W/DB- R1<br>M202- U3 BASE W/DB- R1 | 1-IMP | N/A | Yes | 2020/04/16 | TR | COND202-TR, WWATER-TR, SHIPPINGPU |
| MMC512-02R | M202- U3 BASE W/DB- R1<br>M202- U3 BASE W/DB- R1 | 1-IR | N/A | Yes | 2020/04/16 | TR | CON202E-TR, WSOLV-TR |
| MMC512-03R | M202- U3 BASE W/DB- R1<br>M202- U3 BASE W/DB- R1 | 1-FILT | N/A | Yes | 2020/04/16 | TR | FILPREP-TR |
| MMC513-01R | M202- U3 BASE W/DB- R2<br>M202- U3 BASE W/DB- R2 | 1-IMP | N/A | Yes | 2020/04/17 | TR | COND202-TR, WWATER-TR |
| MMC513-02R | M202- U3 BASE W/DB- R2<br>M202- U3 BASE W/DB- R2 | 1-IR | N/A | Yes | 2020/04/17 | TR | CON202E-TR, WSOLV-TR |
| MMC513-03R | M202- U3 BASE W/DB- R2<br>M202- U3 BASE W/DB- R2 | 1-FILT | N/A | Yes | 2020/04/17 | TR | FILPREP-TR |
| MMC514-01R | M202- U3 BASE W/DB- R3<br>M202- U3 BASE W/DB- R3 | 1-IMP | N/A | Yes | 2020/04/17 | TR | COND202-TR, WWATER-TR |
| MMC514-02R | M202- U3 BASE W/DB- R3<br>M202- U3 BASE W/DB- R3 | 1-IR | N/A | Yes | 2020/04/17 | TR | CON202E-TR, WSOLV-TR |
| MMC514-03R | M202- U3 BASE W/DB- R3<br>M202- U3 BASE W/DB- R3 | 1-FILT | N/A | Yes | 2020/04/17 | TR | FILPREP-TR |
| MMC515-01R | M202- U3 BASE- R1<br>M202- U3 BASE- R1 | 1-IMP | N/A | Yes | 2020/04/15 | TR | COND202-TR, WWATER-TR |
| MMC515-02R | M202- U3 BASE- R1<br>M202- U3 BASE- R1 | 1-IR | N/A | Yes | 2020/04/15 | TR | CON202E-TR, WSOLV-TR |
| MMC515-03R | M202- U3 BASE- R1<br>M202- U3 BASE- R1 | 1-FILT | N/A | Yes | 2020/04/15 | TR | FILPREP-TR |
| MMC516-01R | M202- U3 BASE- R2<br>M202- U3 BASE- R2 | 1-IMP | N/A | Yes | 2020/04/15 | TR | COND202-TR, WWATER-TR |
| MMC516-02R | M202- U3 BASE- R2<br>M202- U3 BASE- R2 | 1-IR | N/A | Yes | 2020/04/15 | TR | CON202E-TR, WSOLV-TR |
| MMC516-03R | M202- U3 BASE- R2<br>M202- U3 BASE- R2 | 1-FILT | N/A | Yes | 2020/04/15 | TR | FILPREP-TR |
| MMC517-01R | M202- U3 BASE- R3<br>M202- U3 BASE- R3 | 1-IMP | N/A | Yes | 2020/04/15 | TR | COND202-TR, WWATER-TR |
| MMC517-02R | M202- U3 BASE- R3<br>M202- U3 BASE- R3 | 1-IR | N/A | Yes | 2020/04/15 | TR | CON202E-TR, WSOLV-TR |
| MMC517-03R | M202- U3 BASE- R3<br>M202- U3 BASE- R3 | 1-FILT | N/A | Yes | 2020/04/15 | TR | FILPREP-TR |
| MMC518-01R | M201A- U3 BASE W/DB- R1<br>M201A- U3 BASE W/DB- R1 | 1-FILT | N/A | Yes | 2020/04/16 | TR | P2.5FIL-TR |
| MMC518-02R | M201A- U3 BASE W/DB- R1<br>M201A- U3 BASE W/DB- R1 | 1-PRA | N/A | Yes | 2020/04/16 | TR | P2.5-TR, *VOLACE-TR |

| BV Labs Number | Client Sample ID/Report ID/Sample Info | Cont's | Store Code | Recd. OK | Sampling Date | Matrix | Test Codes |
|---|---|---|---|---|---|---|---|
| MMC518-03R | M201A- U3 BASE W/DB- R1<br>M201A- U3 BASE W/DB- R1 | 1-PRA2 | N/A | Yes | 2020/04/16 | TR | P2.5-10-TR |
| MMC518-04R | M201A- U3 BASE W/DB- R1<br>M201A- U3 BASE W/DB- R1 | 1-PRA3 | N/A | Yes | 2020/04/16 | TR | P10-TR |
| MMC519-01R | M201A- U3 BASE W/DB- R2<br>M201A- U3 BASE W/DB- R2 | 1-FILT | N/A | Yes | 2020/04/17 | TR | P2.5FIL-TR |
| MMC519-02R | M201A- U3 BASE W/DB- R2<br>M201A- U3 BASE W/DB- R2 | 1-PRA | N/A | Yes | 2020/04/17 | TR | P2.5-TR, *VOLACE-TR |
| MMC519-03R | M201A- U3 BASE W/DB- R2<br>M201A- U3 BASE W/DB- R2 | 1-PRA2 | N/A | Yes | 2020/04/17 | TR | P2.5-10-TR |
| MMC519-04R | M201A- U3 BASE W/DB- R2<br>M201A- U3 BASE W/DB- R2 | 1-PRA3 | N/A | Yes | 2020/04/17 | TR | P10-TR |
| MMC520-01R | M201A- U3 BASE W/DB- R3<br>M201A- U3 BASE W/DB- R3 | 1-FILT | N/A | Yes | 2020/04/17 | TR | P2.5FIL-TR |
| MMC520-02R | M201A- U3 BASE W/DB- R3<br>M201A- U3 BASE W/DB- R3 | 1-PRA | N/A | Yes | 2020/04/17 | TR | P2.5-TR, *VOLACE-TR |
| MMC520-03R | M201A- U3 BASE W/DB- R3<br>M201A- U3 BASE W/DB- R3 | 1-PRA2 | N/A | Yes | 2020/04/17 | TR | P2.5-10-TR |
| MMC520-04R | M201A- U3 BASE W/DB- R3<br>M201A- U3 BASE W/DB- R3 | 1-PRA3 | N/A | Yes | 2020/04/17 | TR | P10-TR |
| MMC521-01R | M201A- U3 BASE- R1<br>M201A- U3 BASE- R1 | 1-FILT | N/A | Yes | 2020/04/15 | TR | P2.5FIL-TR |
| MMC521-02R | M201A- U3 BASE- R1<br>M201A- U3 BASE- R1 | 1-PRA | N/A | Yes | 2020/04/15 | TR | P2.5-TR, *VOLACE-TR |
| MMC521-03R | M201A- U3 BASE- R1<br>M201A- U3 BASE- R1 | 1-PRA2 | N/A | Yes | 2020/04/15 | TR | P2.5-10-TR |
| MMC521-04R | M201A- U3 BASE- R1<br>M201A- U3 BASE- R1 | 1-PRA3 | N/A | Yes | 2020/04/15 | TR | P10-TR |
| MMC522-01R | M201A- U3 BASE- R2<br>M201A- U3 BASE- R2 | 1-FILT | N/A | Yes | 2020/04/15 | TR | P2.5FIL-TR |
| MMC522-02R | M201A- U3 BASE- R2<br>M201A- U3 BASE- R2 | 1-PRA | N/A | Yes | 2020/04/15 | TR | P2.5-TR, *VOLACE-TR |
| MMC522-03R | M201A- U3 BASE- R2<br>M201A- U3 BASE- R2 | 1-PRA2 | N/A | Yes | 2020/04/15 | TR | P2.5-10-TR |
| MMC522-04R | M201A- U3 BASE- R2<br>M201A- U3 BASE- R2 | 1-PRA3 | N/A | Yes | 2020/04/15 | TR | P10-TR |
| MMC523-01R | M201A- U3 BASE- R3<br>M201A- U3 BASE- R3 | 1-FILT | N/A | Yes | 2020/04/15 | TR | P2.5FIL-TR |
| MMC523-02R | M201A- U3 BASE- R3<br>M201A- U3 BASE- R3 | 1-PRA | N/A | Yes | 2020/04/15 | TR | P2.5-TR, *VOLACE-TR |
| MMC523-03R | M201A- U3 BASE- R3<br>M201A- U3 BASE- R3 | 1-PRA2 | N/A | Yes | 2020/04/15 | TR | P2.5-10-TR |
| MMC523-04R | M201A- U3 BASE- R3<br>M201A- U3 BASE- R3 | 1-PRA3 | N/A | Yes | 2020/04/15 | TR | P10-TR |
| MMC524-01R | M8A- U3 BASE W/DB- R1<br>M8A- U3 BASE W/DB- R1 | 1-WI | N/A | Yes | 2020/04/16 | TR | SAMIC-TR, SAMT8A-IP, VOLUME-TR |
| MMC525-01R | M8A- U3 BASE W/DB- R2<br>M8A- U3 BASE W/DB- R2 | 1-WI | N/A | Yes | 2020/04/17 | TR | SAMIC-TR, SAMT8A-IP, VOLUME-TR |
| MMC526-01R | M8A- U3 BASE W/DB- R3<br>M8A- U3 BASE W/DB- R3 | 1-WI | N/A | Yes | 2020/04/17 | TR | SAMIC-TR, SAMT8A-IP, VOLUME-TR |
| MMC527-01R | M8A- U3 BASE- R1 -CW<br>M8A- U3 BASE- R1 -CW | 1-WI | N/A | Yes | 2020/04/15 | TR | SAMIC-TR, SAMT8A-IP, VOLUME-TR |
| MMC528-01R | M8A- U3 BASE- R2 -CW<br>M8A- U3 BASE- R2 -CW | 1-WI | N/A | Yes | 2020/04/16 | TR | SAMIC-TR, SAMT8A-IP, VOLUME-TR |
| MMC529-01R | M8A- U3 BASE- R3 -CW<br>M8A- U3 BASE- R3 -CW | 1-WI | N/A | Yes | 2020/04/16 | TR | SAMIC-TR, SAMT8A-IP, VOLUME-TR |

Remarks: M8 titration requested therefore SAMTIT-TR added previous job C067891

| BV Labs Number | Client Sample ID/Report ID/Sample Info | Cont's | Store Code | Recd. OK | Sampling Date | Matrix | Test Codes |
|---|---|---|---|---|---|---|---|
| | M201A/ M202/M8A by IC (client confirmed to proceed with IC for this project). Field blank samples not received | | | | | | |

Entered by: DKN
Date: 2020/04/20
Time: 15:59

Approved by:
Date:
Time:

Date of Sample Disposal:
Disposal by:

Worksheet Number: **6696051**

H2SO4 Acid Mist in IPA Impinger (M8mod) - Stack Sampling Train

mg

| Parameter Name | Units | MTRX SPK | DL | SPIKE | DL | BLANK | DL |
|---|---|---|---|---|---|---|---|
| Sulphuric Acid Mist | mg | 92.8 | 0.011 | 98.4 | 0.01 | 0 | 0.01 |

| Parameter Name | C097773 MMC524 | DL | C097773 MMC525 | DL | C097773 MMC525 Dup1 | DL | C097773 MMC526 |
|---|---|---|---|---|---|---|---|
| Sulphuric Acid Mist | 0.014 | 0.017 | 0.06 | 0.011 | 0.058 | 0.011 | 0.017 |

| Parameter Name | DL | C097773 MMC527 | DL | C097773 MMC528 | DL | C097773 MMC529 | DL |
|---|---|---|---|---|---|---|---|
| Sulphuric Acid Mist | 0.011 | 0.047 | 0.013 | 0.094 | 0.013 | 0 | 0.019 |

| Parameter Name | RDL | MDL | IDL | | | | |
|---|---|---|---|---|---|---|---|
| Sulphuric Acid Mist | 0.01 | 0.01 | 0 | | | | |

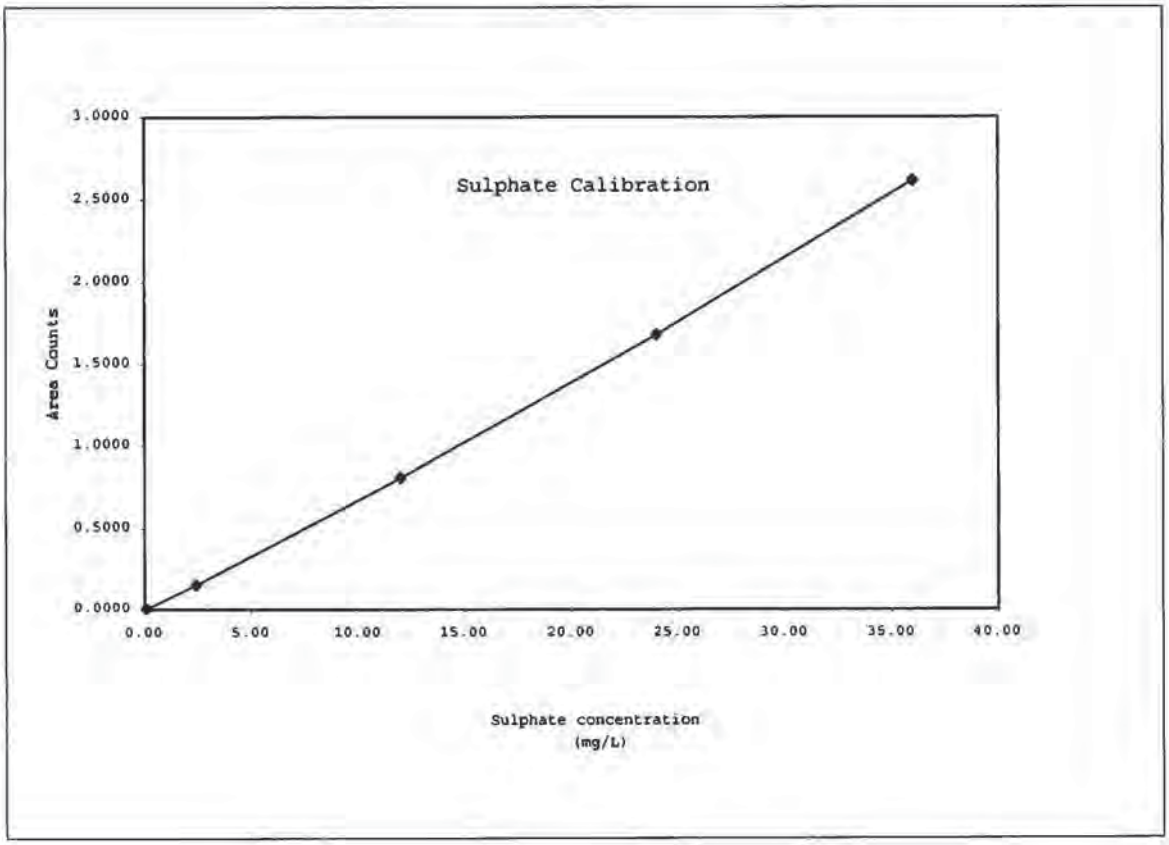
## Sulphuric Acid Mist

| | |
|---|---|
| RUN DATE | 2020/04/24 |
| ANALYST | L Le |
| INSTRUMENT | DX-120 |
| TESTCODE | SAMIC-TR |
| COMPONENT | Sulphuric Acid Mist |
| | |
| Spike (mg/L) | 12.0 |
| Units factor | 0.001021 |

| Standard / Reagent | Prepared | Traceability |
|---|---|---|
| Stock Calibration Standard | NA | #VALUE! |
| Stock Reference Standard | NA | #VALUE! |
| Intermediate Mixed Cal. Standard (IS) | 2020/03/27 | good |
| Intermediate Mixed Ref. Standard (IR) | 2020/04/15 | good |
| Working Calibration Standards | 2020/04/16 | good |
| Working Reference Standards | 2020/04/15 | good |
| Eluent Stock Solution | 2020/04/02 | good |
| Working Eluent Solution | 2020/04/23 | good |
| Regenerant Solution | NA | #VALUE! |

| Std ID | Actual Amount ppm | Area Counts |
|---|---|---|
| 1 | 0.10 | 0.0056 |
| 2 | 2.40 | 0.1548 |
| 3 | 12.0 | 0.8078 |
| 4 | 24.0 | 1.6795 |
| 5 | 36.0 | 2.6191 |

| Method Criteria | Limits | Expected | Results |
|---|---|---|---|
| 2nd Order Correlation | - | ≥0.990 | 0.99955 |
| ICV (ppm) | ± 0.90 | 18.0 | 17.781 |
| QCS ICMIX6 (ppm) | ± 0.75 | 15.0 | 15.015 |
| Blank (ppm) | - | < 0.10 | |
| Blank Spike (ppm) | ± 1.20 | 12.0 | |
| Duplicates (±%) | 20 | - | |
| Matrix Spike (%) | 80 - 120 | 100 | |
| CCB (ppm) | - | < 0.10 | |
| CCV (ppm) | ± 1.20 | 12.0 | |



| Job # | Worksheet # | Maxxam ID | Volume (mL) | Sulphate reading (mg/L) | Dilution at IC | H2SO4 (mg) | RDL (mg) | Spike or Dups (%) | Pass Fail |
|---|---|---|---|---|---|---|---|---|---|
| C097773 | 6696051 | Blank | 100 | 0.0000 | | 0.000 | 0.010 | | Blank pass |
| | 6696051 | Spike | 100 | 11.8114 | | 1.206 | 0.010 | 98.4 | BSPK pass |
| | 6696051 | MMC524-01R | 166 | 0.0811 | 1.0 | 0.014 | 0.017 | | |
| | 6696051 | MMC525-01R | 103 | 0.5718 | 1.0 | 0.060 | 0.011 | | |
| | 6696051 | MMC525-01R DI | | 0.5481 | | 0.058 | 0.011 | 4.2 | Dup pass |
| | 6696051 | MATSPK | | 11.6922 | | 1.230 | 0.011 | 92.8 | MSPK pass |
| | 6696051 | MMC526-01R | 108 | 0.1535 | 1.0 | 0.017 | 0.011 | | |
| | 6696051 | MMC527-01R | 125 | 0.3669 | 1.0 | 0.047 | 0.013 | | |
| | 6696051 | MMC528-01R | 132 | 0.6950 | 1.0 | 0.094 | 0.013 | | |
| | 6696051 | MMC529-01R | 183 | 0.0000 | 1.0 | 0.000 | 0.019 | | |
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| | | | | | | | | | |
| | | CCB | | 0.0000 | | | | | ccb pass |
| | | CCV | | 12.0860 | | | | | ccv pass |
| | | | | | | | | | |
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| | | CCB | | | | | | | |
| | | CCV | | | | | | | |
| | | Blank | | | | | | | |
| | | Spike | | | | | | | |
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| | | CCB | | | | | | | |
| | | CCV | | | | | | | |
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| | | CCB | | | | | | | |
| | | CCV | | | | | | | |

$MMC528 = 0.6950 \frac{mg}{L} \times 132 ml \times 0.001021$

$= 0.09367 mg\ H_2SO_4$



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Worksheet Number: **6696057**

Final Volume of Impinger - Stack Sampling Train

ml

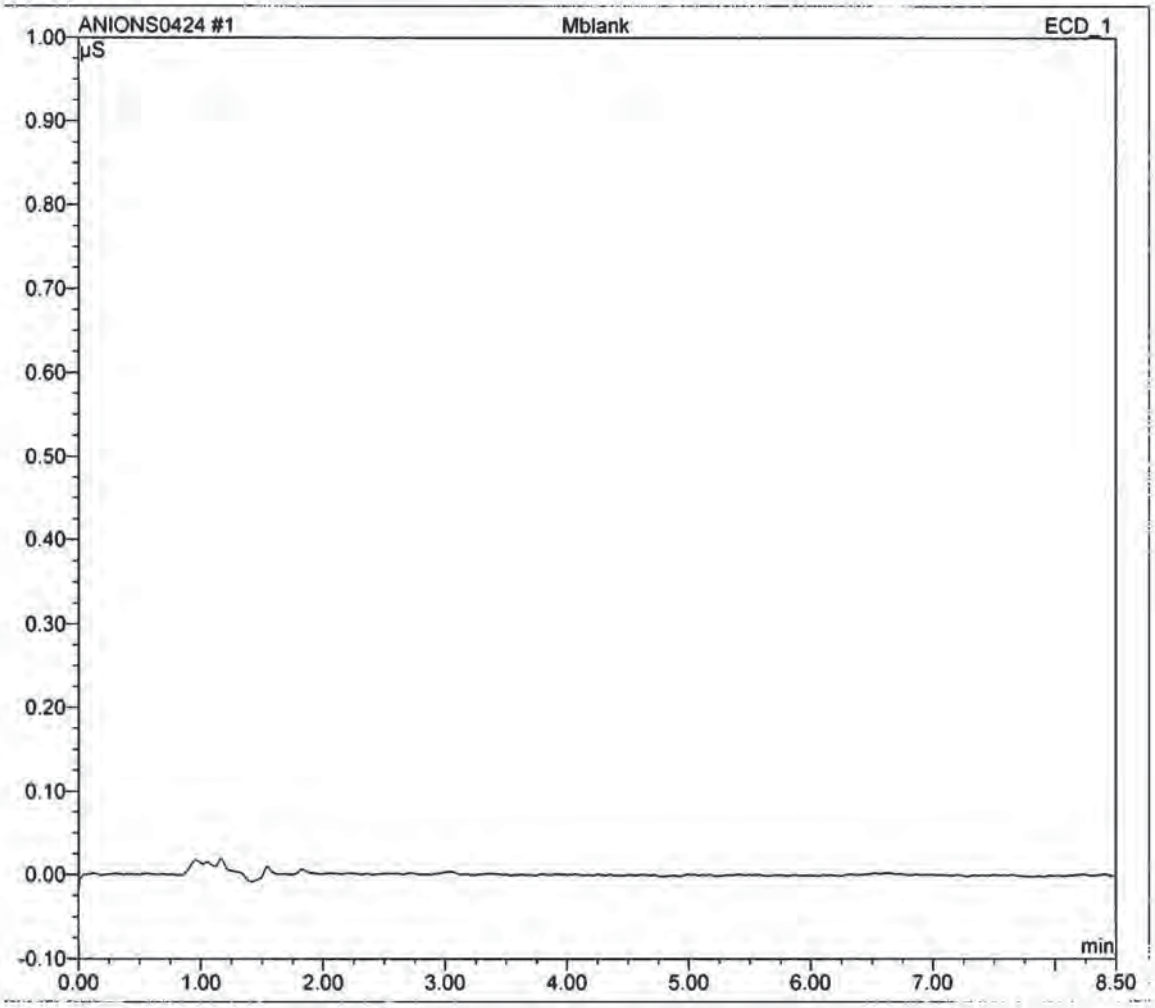
| Parameter Name | Units | C097773 MMC524 | DL | C097773 MMC525 | DL | C097773 MMC526 | DL |
|---|---|---|---|---|---|---|---|
| Volume | ml | 166 | 1 | 103 | 1 | 108 | 1 |

| Parameter Name | C097773 MMC527 | DL | C097773 MMC528 | DL | C097773 MMC529 | DL | RDL |
|---|---|---|---|---|---|---|---|
| Volume | 125 | 1 | 132 | 1 | 183 | 1 | 1 |

| Parameter Name | MDL | IDL | | | | | |
|---|---|---|---|---|---|---|---|
| Volume | 1 | 0 | | | | | |

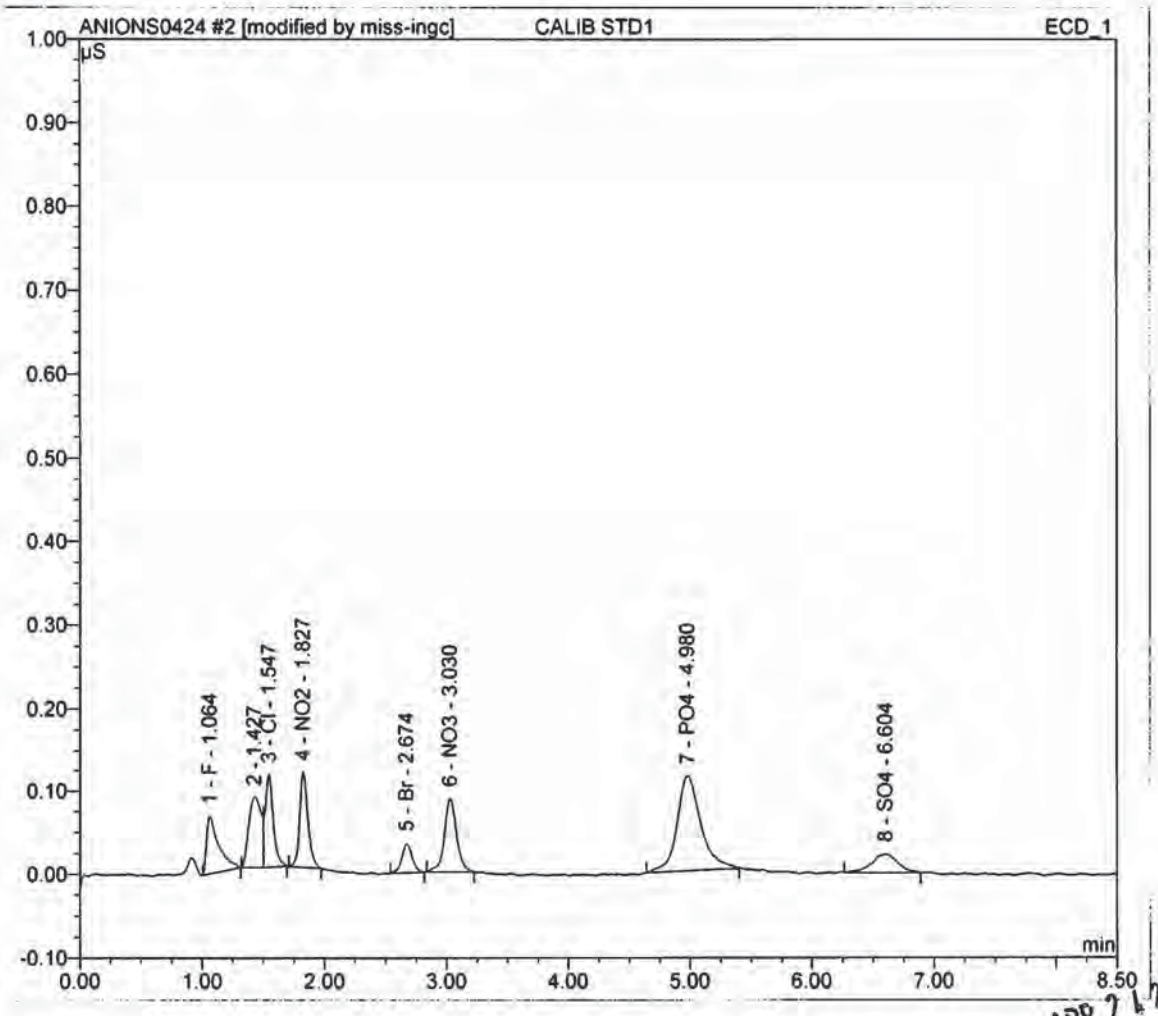
| | | | |
|---|---|---|---|
| *Sample Name:* | **Mblank** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **unknown** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 10:53** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| | | TOTAL: | | 0.00 | 0.00 | 0.00 |



| | | | |
|---|---|---|---|
| *Sample Name:* | **CALIB STD1** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **standard** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 11:04** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| 1 | 1.06 | F | BMB | 0.008 | 0.069 | 0.1177 |
| 3 | 1.55 | Cl | MB* | 0.009 | 0.112 | 0.0493 |
| 4 | 1.83 | NO2 | BMB | 0.009 | 0.115 | 0.0547 |
| 5 | 2.67 | Br | BMB | 0.003 | 0.035 | 0.1010 |
| 6 | 3.03 | NO3 | BMB | 0.010 | 0.088 | 0.0540 |
| 7 | 4.98 | PO4 | BMB | 0.026 | 0.114 | 0.5140 |
| 8 | 6.60 | SO4 | BMB* | 0.006 | 0.023 | 0.1030 |
| | | TOTAL: | | 0.07 | 0.56 | 0.99 |

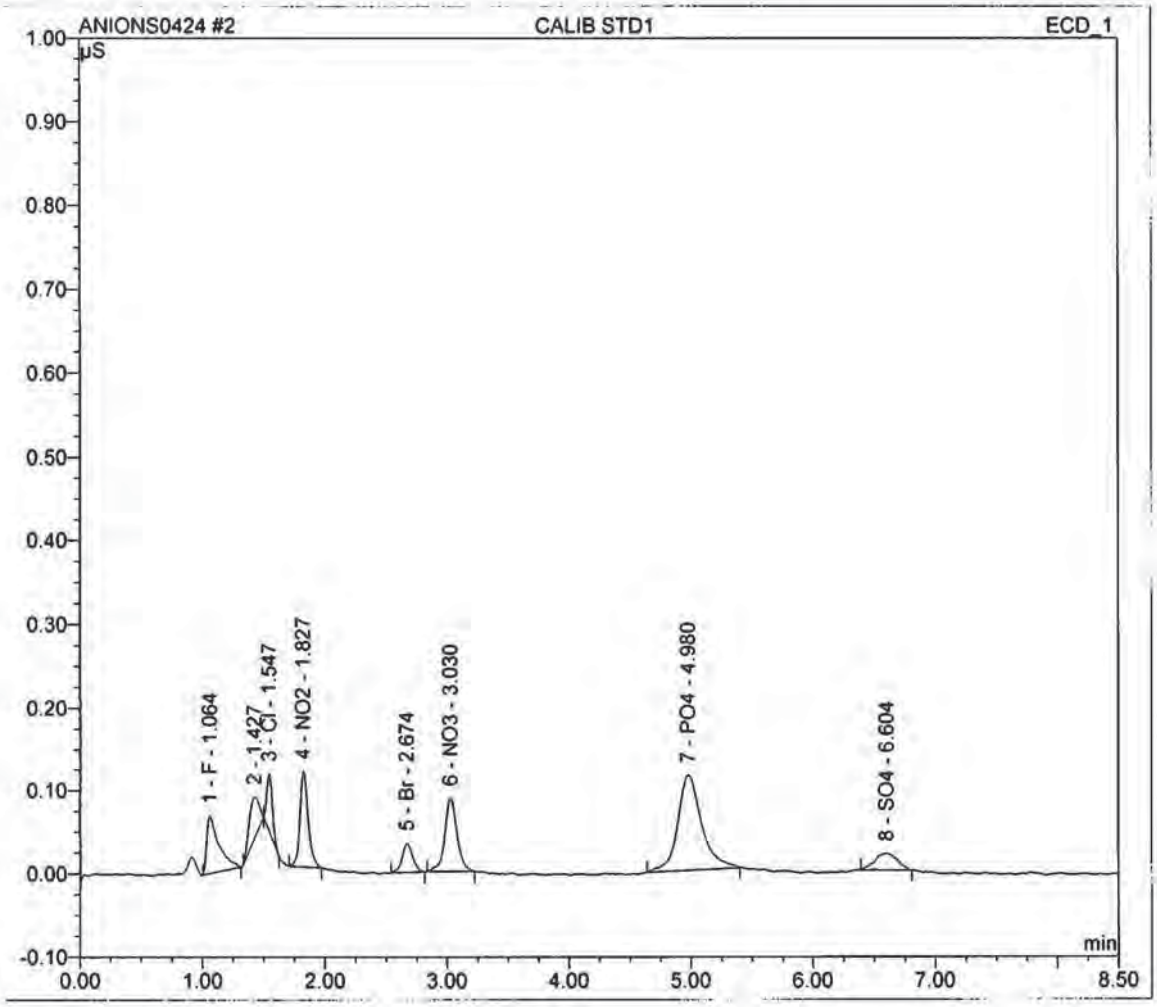



APR 2 4 2020

M3 LK APR 2 4 2020

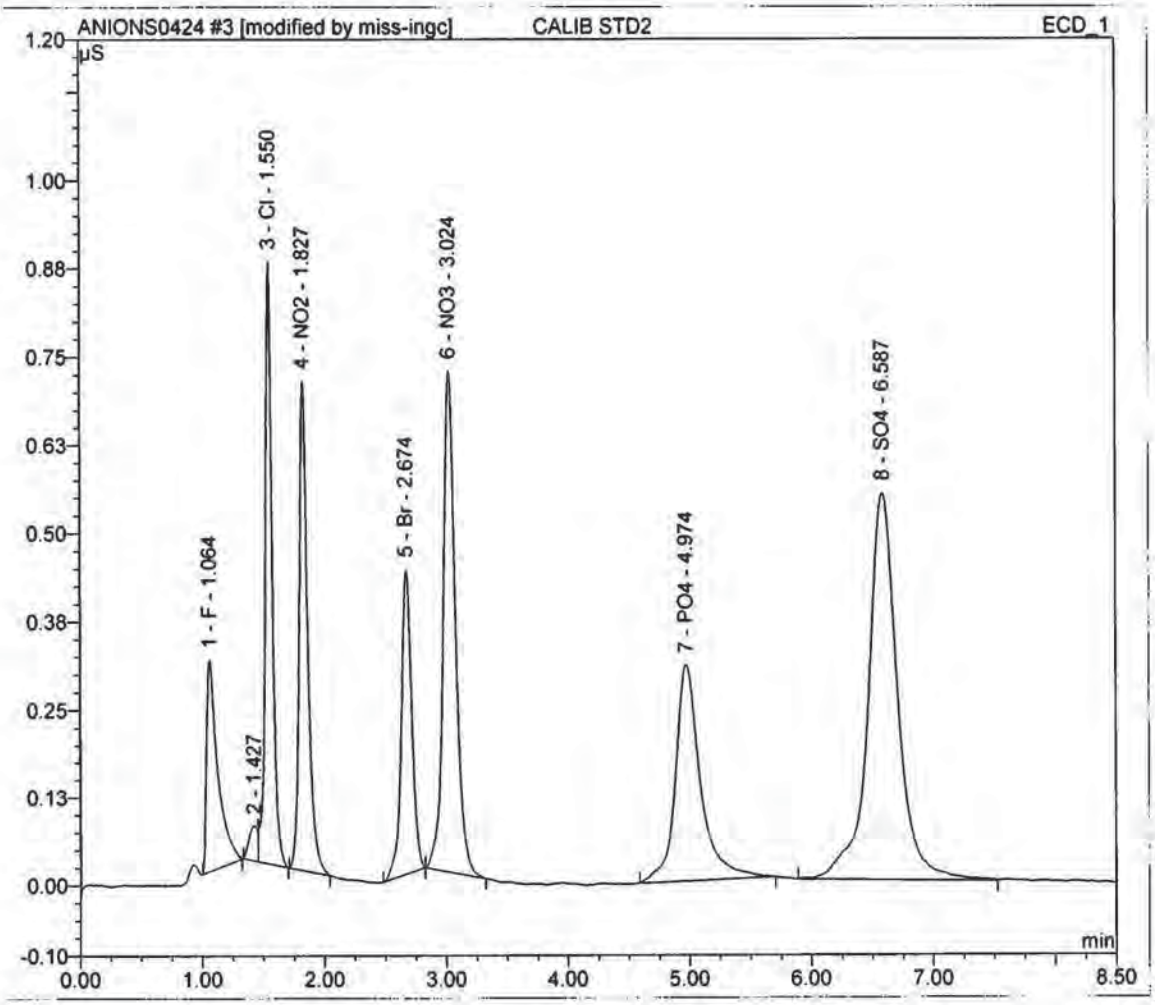
| | | | |
|---|---|---|---|
| *Sample Name:* | **CALIB STD1** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **standard** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 11:04** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| 1 | 1.06 | F | BMB | 0.008 | 0.069 | 0.1177 |
| 3 | 1.55 | Cl | bMB | 0.004 | 0.070 | 0.0552 |
| 4 | 1.83 | NO2 | BMB | 0.009 | 0.115 | 0.0547 |
| 5 | 2.67 | Br | BMB | 0.003 | 0.035 | 0.1010 |
| 6 | 3.03 | NO3 | BMB | 0.010 | 0.088 | 0.0540 |
| 7 | 4.98 | PO4 | BMB | 0.026 | 0.114 | 0.5313 |
| 8 | 6.60 | SO4 | BMB | 0.004 | 0.020 | 0.1388 |
| | | TOTAL: | | 0.06 | 0.51 | 1.05 |



| | | | |
|---|---|---|---|
| *Sample Name:* | **CALIB STD2** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **standard** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 11:15** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| 1 | 1.06 | F | BMB | 0.032 | 0.300 | 0.3786 |
| 3 | 1.55 | Cl | MB* | 0.056 | 0.855 | 0.6041 |
| 4 | 1.83 | NO2 | BMB | 0.056 | 0.695 | 0.2983 |
| 5 | 2.67 | Br | BMB | 0.043 | 0.433 | 1.1953 |
| 6 | 3.02 | NO3 | BMB | 0.083 | 0.711 | 0.3934 |
| 7 | 4.97 | PO4 | BMB* | 0.073 | 0.307 | 1.1882 |
| 8 | 6.59 | SO4 | BMB* | 0.155 | 0.549 | 2.3911 |
| | | TOTAL: | | 0.50 | 3.85 | 6.45 |




APR 2 4 2020

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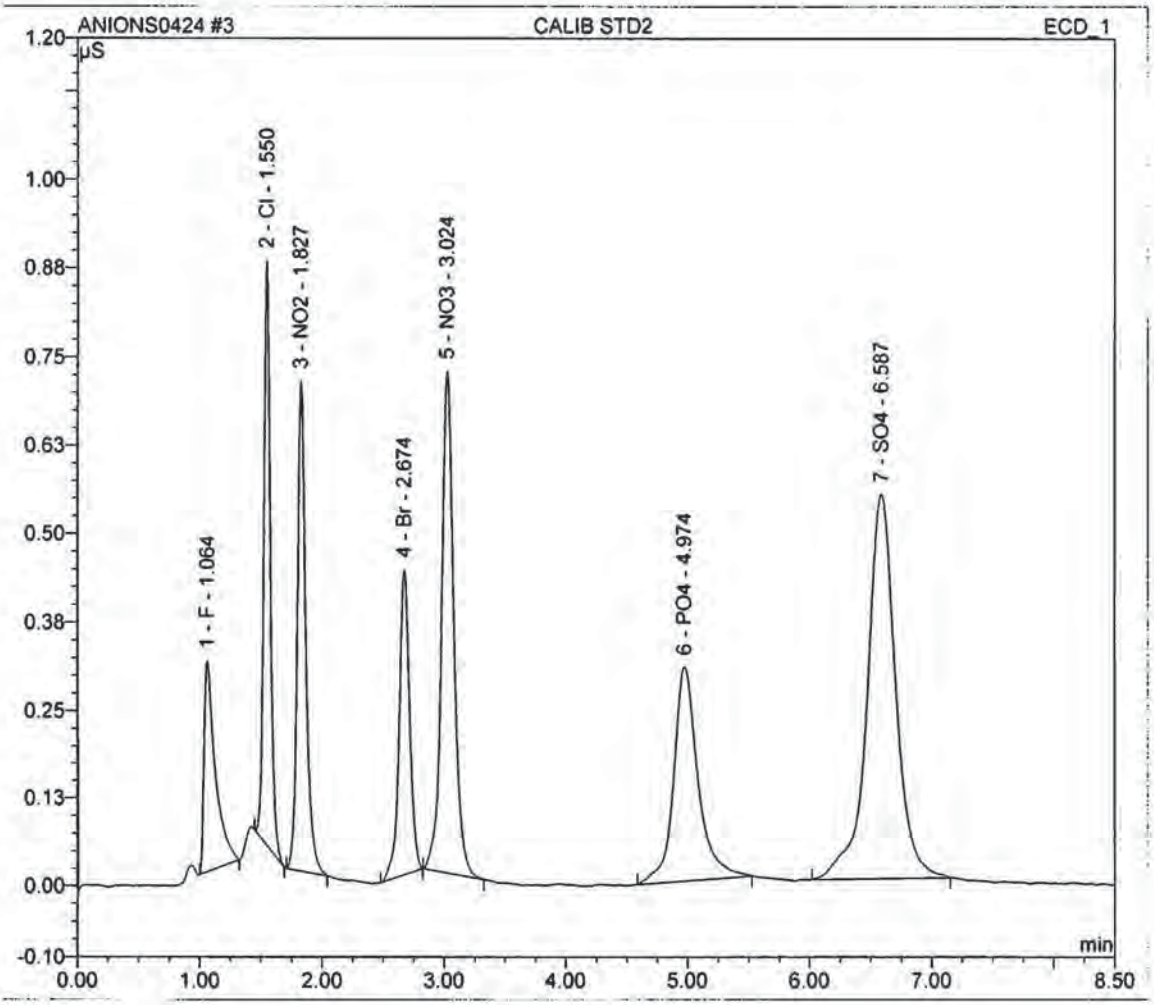
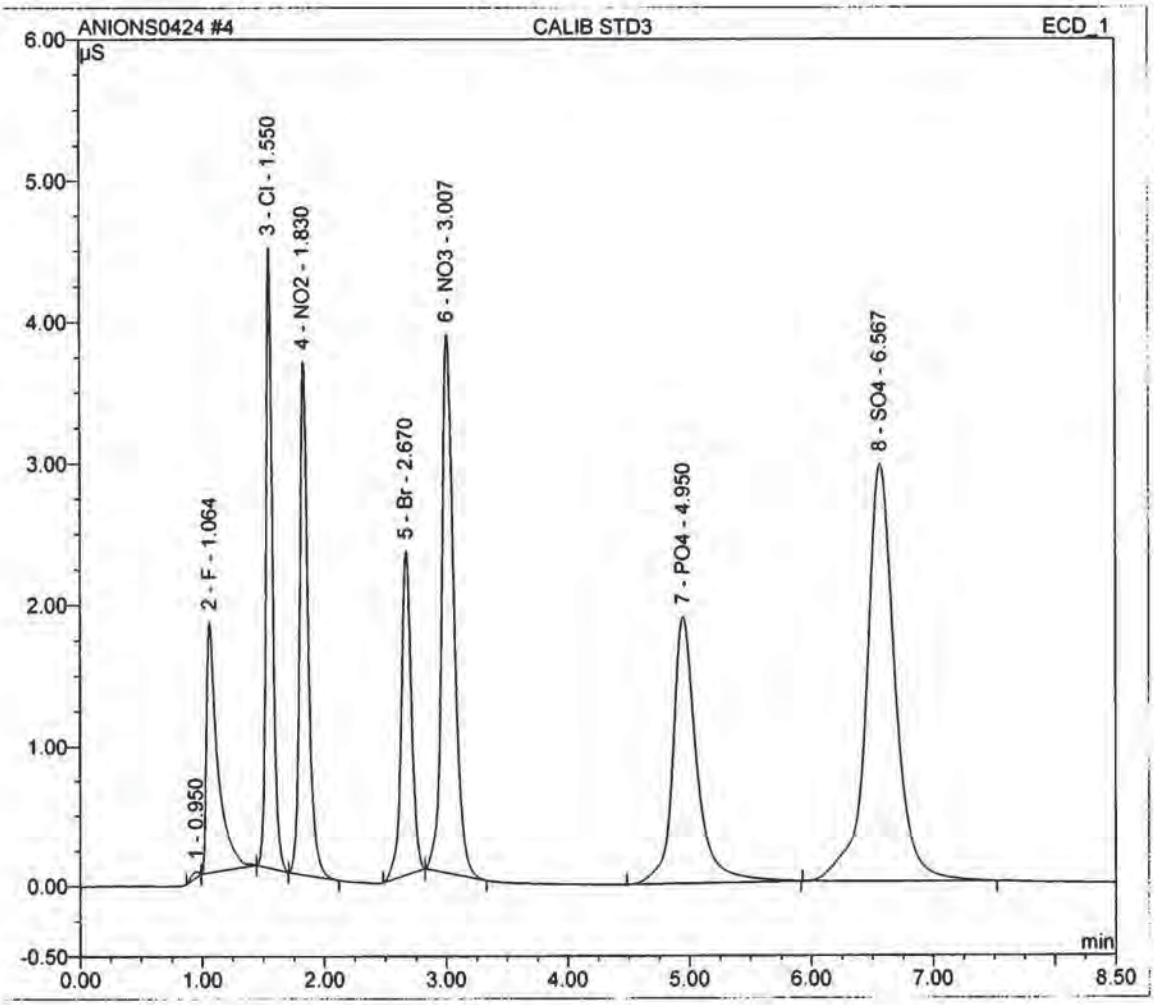
| | | | |
|---|---|---|---|
| *Sample Name:* | **CALIB STD2** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **standard** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 11:15** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| 1 | 1.06 | F | BMB | 0.032 | 0.300 | 0.3786 |
| 2 | 1.55 | Cl | BMB | 0.051 | 0.828 | 0.5927 |
| 3 | 1.83 | NO2 | BMB | 0.056 | 0.695 | 0.2983 |
| 4 | 2.67 | Br | BMB | 0.043 | 0.433 | 1.1953 |
| 5 | 3.02 | NO3 | BMB | 0.083 | 0.711 | 0.3934 |
| 6 | 4.97 | PO4 | BMB | 0.071 | 0.305 | 1.1673 |
| 7 | 6.59 | SO4 | BMB | 0.148 | 0.545 | 2.3430 |
| | | TOTAL: | | 0.48 | 3.82 | 6.37 |



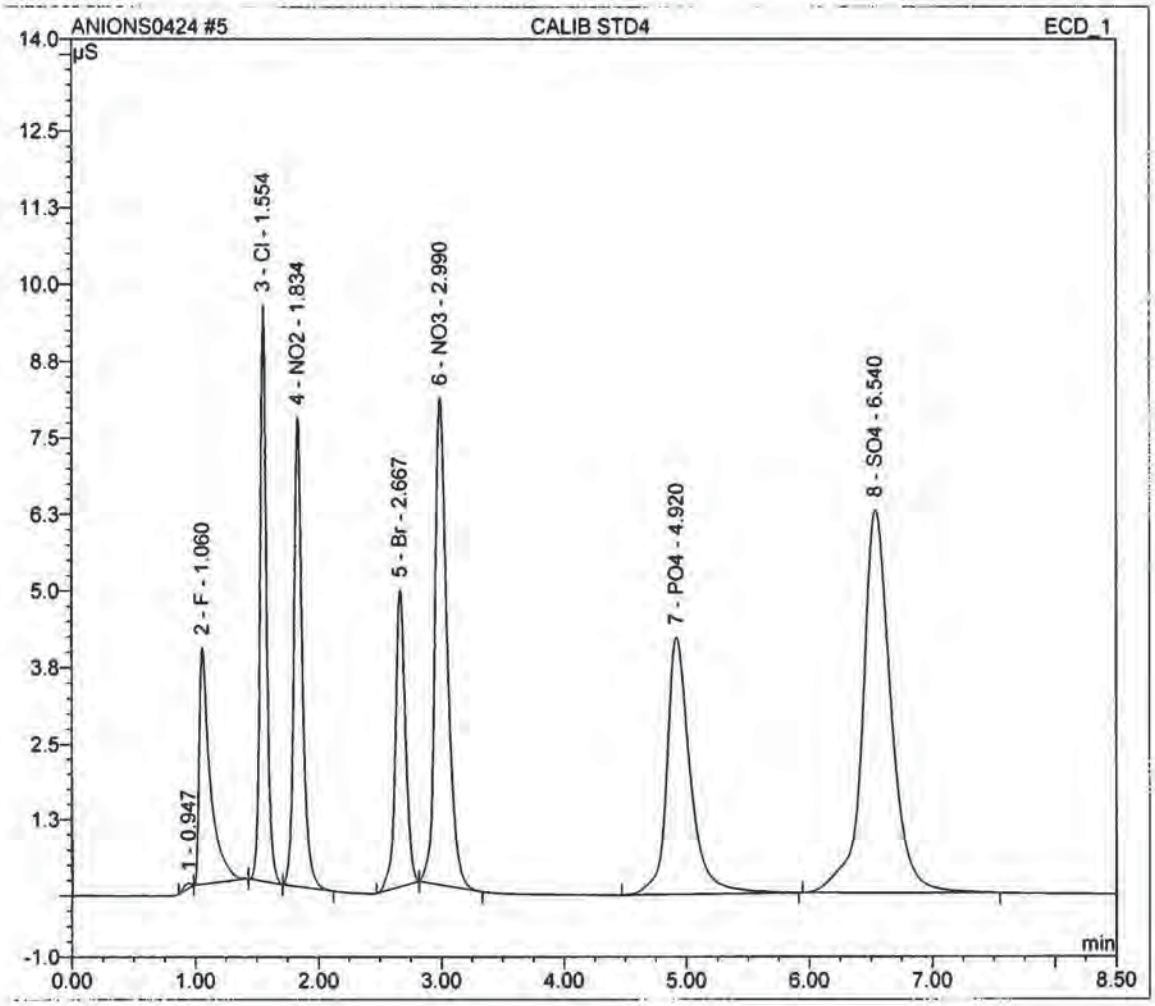
| | | | |
|---|---|---|---|
| *Sample Name:* | **CALIB STD3** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **standard** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 11:26** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| 2 | 1.06 | F | bMb | 0.189 | 1.783 | 2.0034 |
| 3 | 1.55 | Cl | bMB | 0.274 | 4.396 | 2.9924 |
| 4 | 1.83 | NO2 | BMB | 0.294 | 3.644 | 1.4912 |
| 5 | 2.67 | Br | BMb | 0.224 | 2.302 | 6.0086 |
| 6 | 3.01 | NO3 | bMB | 0.445 | 3.822 | 2.0047 |
| 7 | 4.95 | PO4 | BMB | 0.433 | 1.900 | 5.9921 |
| 8 | 6.57 | SO4 | BMB | 0.808 | 2.966 | 12.0128 |
| | | TOTAL: | | 2.67 | 20.81 | 32.51 |



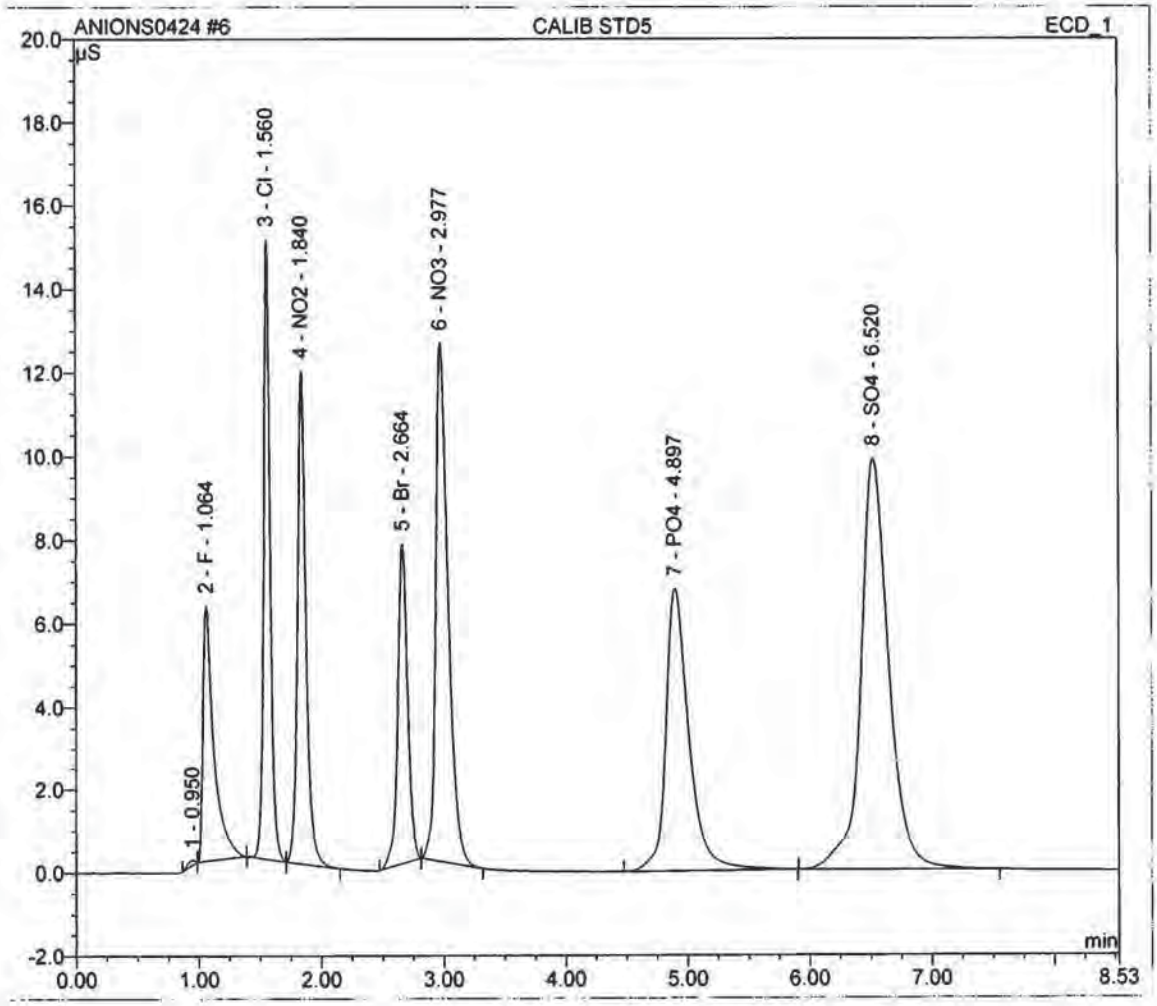
| | | | |
|---|---|---|---|
| *Sample Name:* | **CALIB STD4** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **standard** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 11:37** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| 2 | 1.06 | F | bMB | 0.400 | 3.884 | 4.0008 |
| 3 | 1.55 | Cl | bMB | 0.576 | 9.433 | 6.0059 |
| 4 | 1.83 | NO2 | BMB | 0.614 | 7.694 | 3.0085 |
| 5 | 2.67 | Br | BMb | 0.462 | 4.868 | 11.9931 |
| 6 | 2.99 | NO3 | bMB | 0.929 | 7.985 | 3.9972 |
| 7 | 4.92 | PO4 | BMB | 0.935 | 4.227 | 12.0084 |
| 8 | 6.54 | SO4 | BMB | 1.679 | 6.284 | 23.9902 |
| | | TOTAL: | | 5.60 | 44.38 | 65.00 |



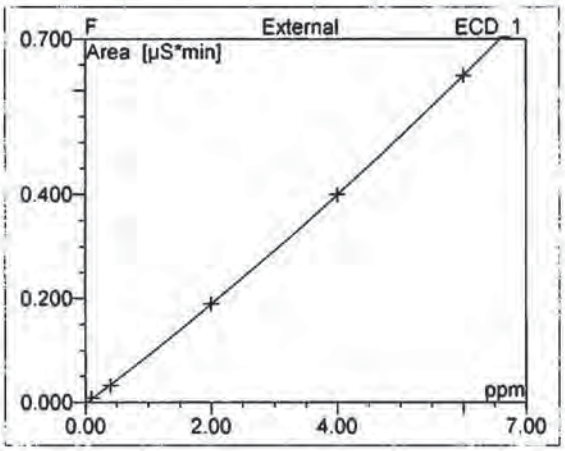
| | | | |
|---|---|---|---|
| *Sample Name:* | **CALIB STD5** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **standard** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 11:48** | *Run Time:* | **8.53** |

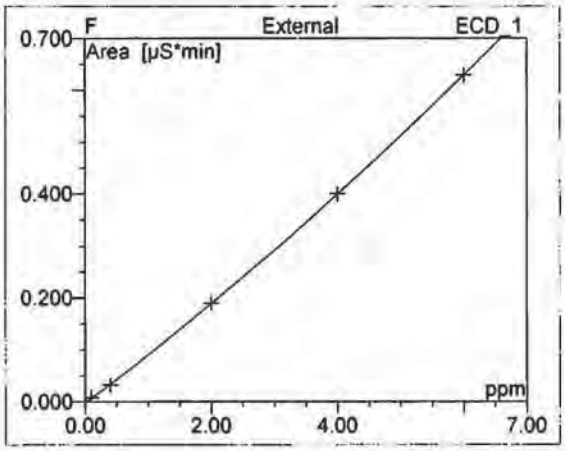
| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| 2 | 1.06 | F | bMb | 0.629 | 6.151 | 5.9994 |
| 3 | 1.56 | Cl | bMb | 0.908 | 14.874 | 8.9983 |
| 4 | 1.84 | NO2 | bMB | 0.949 | 11.836 | 4.4973 |
| 5 | 2.66 | Br | BMb | 0.717 | 7.702 | 18.0021 |
| 6 | 2.98 | NO3 | bMB | 1.458 | 12.459 | 6.0007 |
| 7 | 4.90 | PO4 | BMB | 1.491 | 6.802 | 17.9974 |
| 8 | 6.52 | SO4 | BMB | 2.619 | 9.878 | 36.0028 |
| | | TOTAL: | | 8.77 | 69.70 | 97.50 |

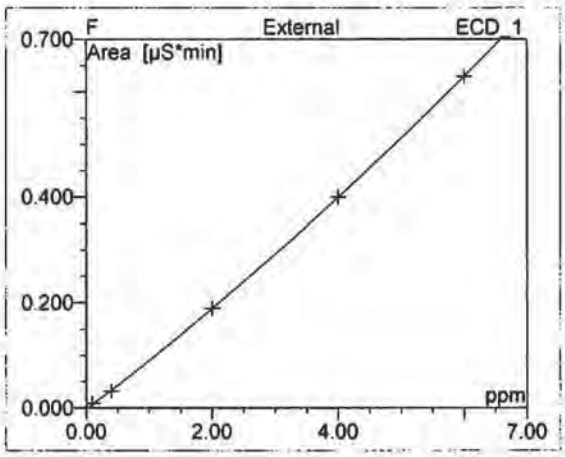


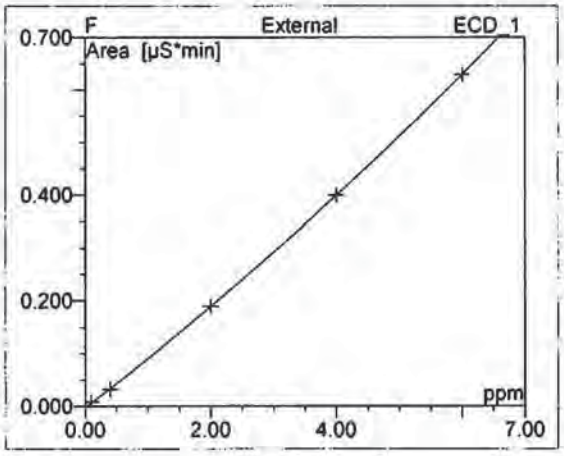
## Calibration Batch Report

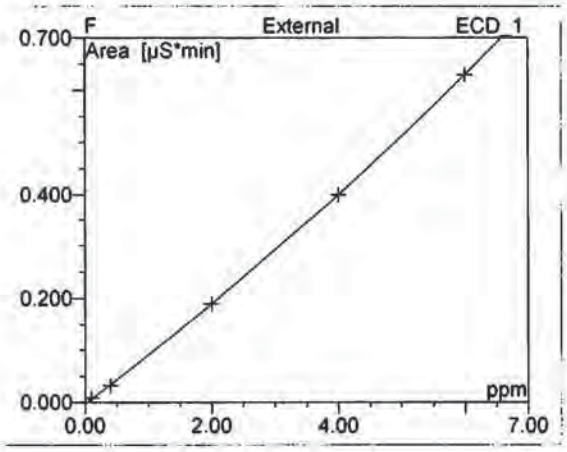
| | | | |
|---|---|---|---|
| Sequence: | ANIONS0424 | Inj. Vol.: | 25.0 |
| Program: | AS4A | Operator: | MISS-I-04-2402 |
| Inj. Date/Time: | 04/24/20 11:48 | Run Time: | 8.53 |

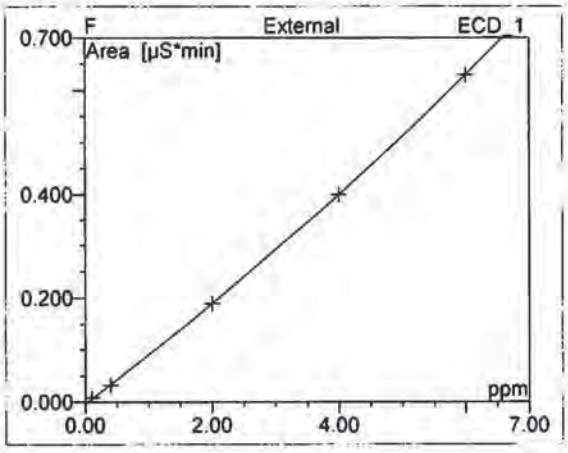


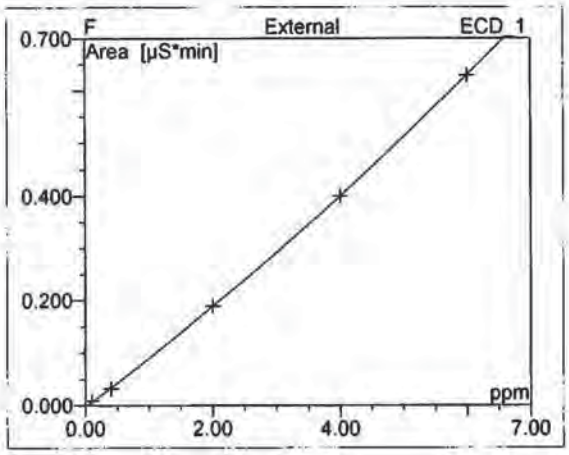



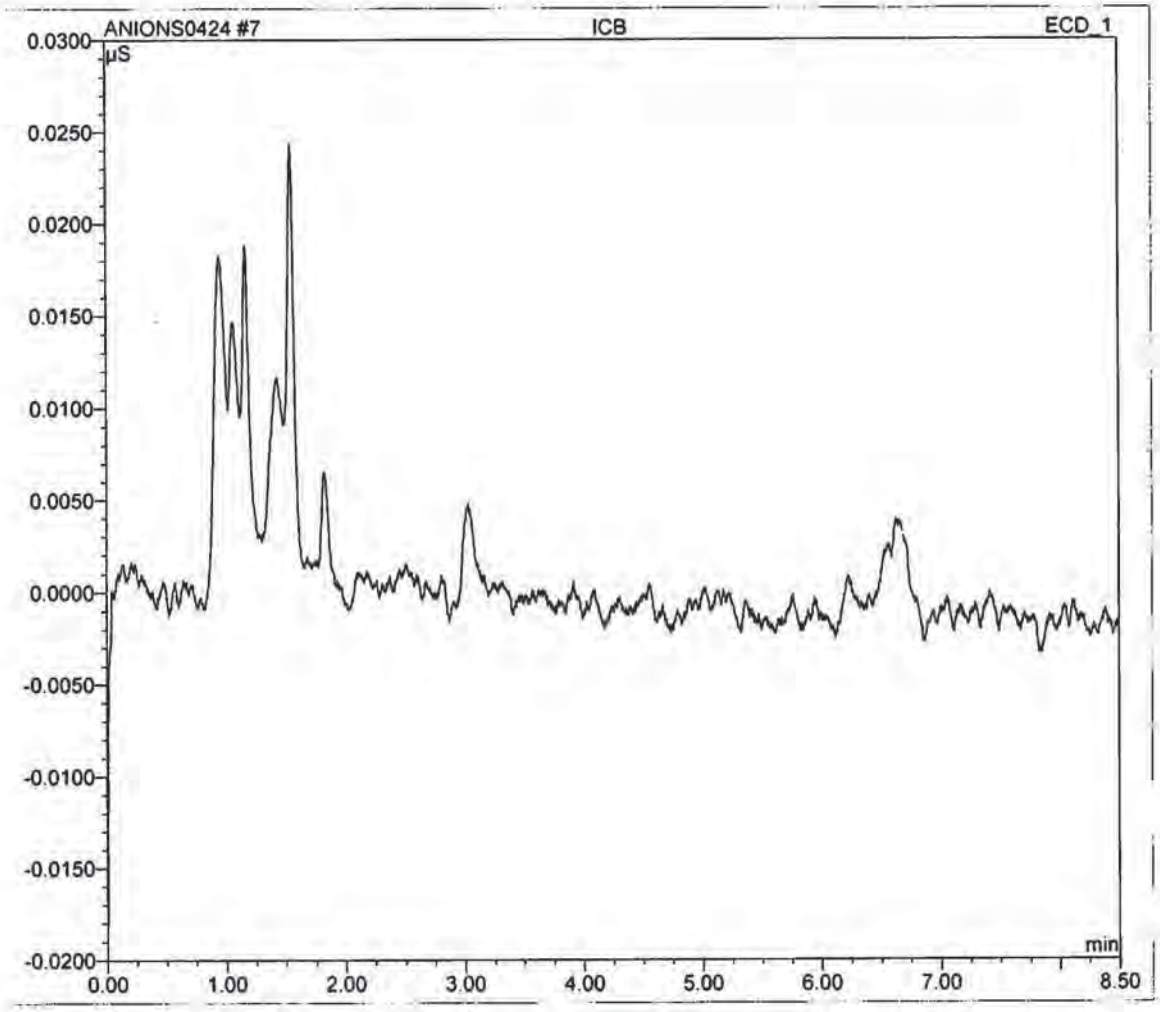
| | | | |
|---|---|---|---|
| *Sequence:* | **ANIONS0424** | *Inj. Vol.:* | **25.0** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **############** | *Run Time:* | **8.53** |




| No. | Ret.Time min | Peak Name | Cal.Type | Points | Offset (C0) | Slope (C1) | Curve (C2) | Corr.Coeff. % |
|---|---|---|---|---|---|---|---|---|
| 2 | 1.06 | F | QOff | 5 | -0.003 | 0.091 | 0.002 | 99.936 |
| 3 | 1.56 | Cl | QOff | 5 | 0.004 | 0.085 | 0.002 | 99.915 |
| 4 | 1.84 | NO2 | QOff | 5 | -0.001 | 0.192 | 0.004 | 99.969 |
| 5 | 2.66 | Br | QOff | 5 | 0.000 | 0.036 | 0.000 | 99.967 |
| 6 | 2.98 | NO3 | QOff | 5 | -0.001 | 0.212 | 0.005 | 99.942 |
| 7 | 4.90 | PO4 | QOff | 5 | -0.010 | 0.069 | 0.001 | 99.901 |
| 8 | 6.52 | SO4 | QOff | 5 | -0.001 | 0.065 | 0.000 | 99.955 |
| AVERAGE: | | | | | -0.0017 | 0.1070 | 0.0021 | 99.9404 |

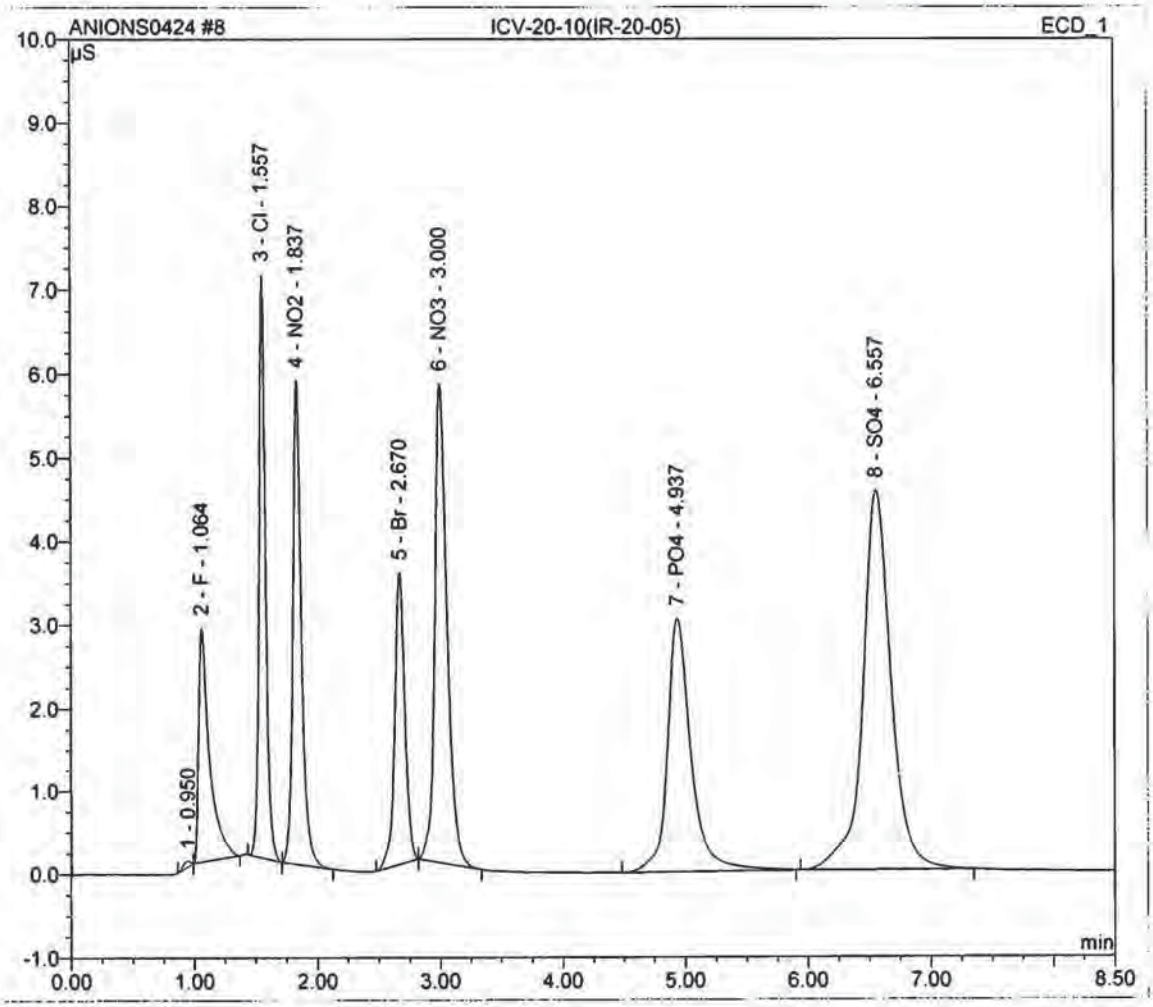
| | | | |
|---|---|---|---|
| *Sample Name:* | **ICB** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **unknown** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 12:10** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| | | TOTAL: | | 0.00 | 0.00 | 0.00 |



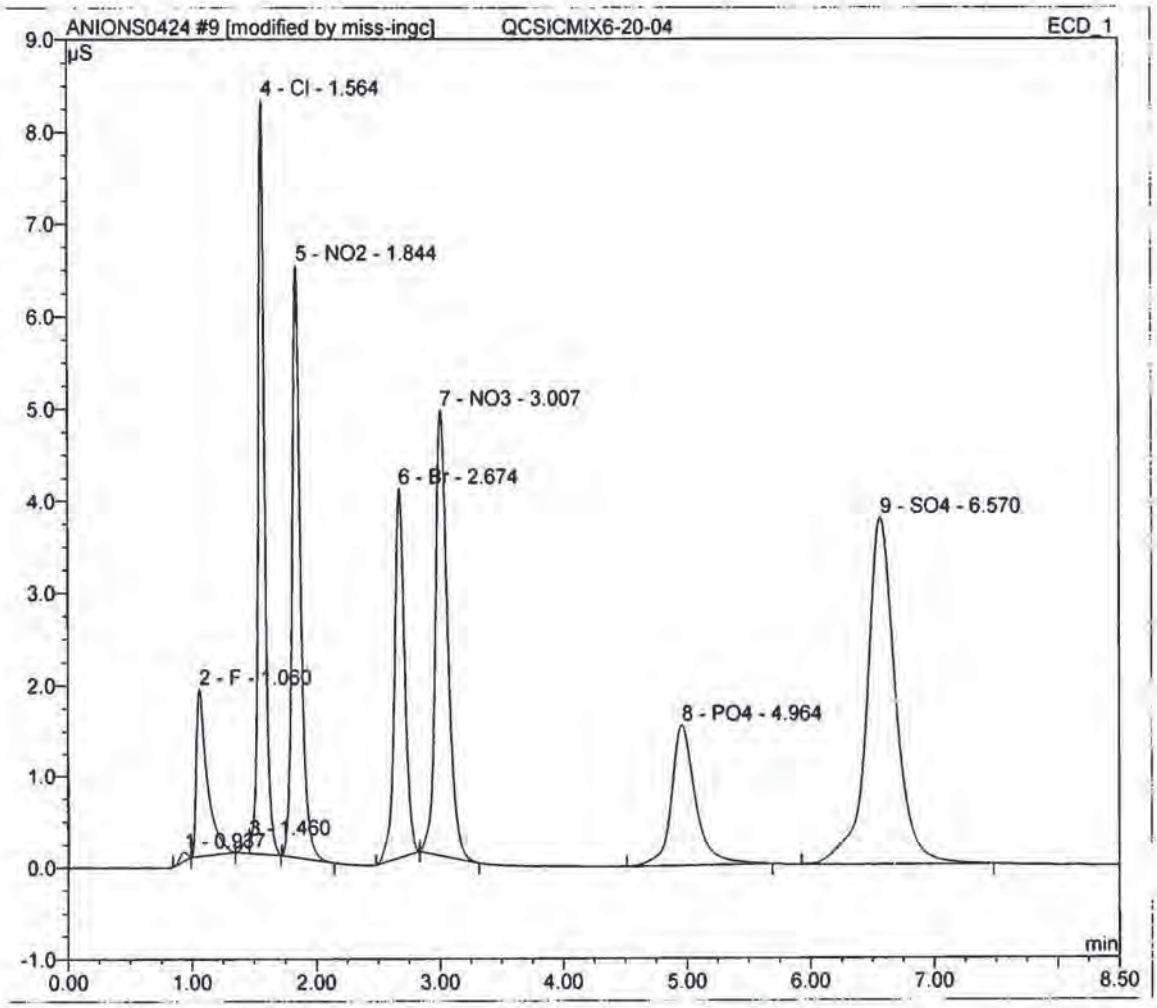
| | | | |
|---|---|---|---|
| *Sample Name:* | **ICV-20-10(IR-20-05)** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **unknown** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 12:20** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| 2 | 1.06 | F | bMB | 0.288 | 2.825 | 2.9639 |
| 3 | 1.56 | Cl | BMB | 0.427 | 6.989 | 4.5605 |
| 4 | 1.84 | NO2 | BMB | 0.465 | 5.814 | 2.3136 |
| 5 | 2.67 | Br | BMb | 0.337 | 3.514 | 8.8957 |
| 6 | 3.00 | NO3 | bMB | 0.666 | 5.758 | 2.9377 |
| 7 | 4.94 | PO4 | BMB | 0.682 | 3.056 | 9.0622 |
| 8 | 6.56 | SO4 | BMB | 1.219 | 4.559 | 17.7813 |
| | | TOTAL: | | 4.09 | 32.52 | 48.51 |



| | | | |
|---|---|---|---|
| *Sample Name:* | **QCSICMIX6-20-04** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **unknown** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 12:31** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| 2 | 1.06 | F | BMb* | 0.186 | 1.836 | 1.9703 |
| 4 | 1.56 | Cl | MB* | 0.500 | 8.203 | 5.2702 |
| 5 | 1.84 | NO2 | BMB | 0.512 | 6.445 | 2.5321 |
| 6 | 2.67 | Br | BMb* | 0.387 | 4.029 | 10.1503 |
| 7 | 3.01 | NO3 | bMB | 0.558 | 4.854 | 2.4853 |
| 8 | 4.96 | PO4 | BMB | 0.349 | 1.549 | 4.9074 |
| 9 | 6.57 | SO4 | BMB | 1.020 | 3.790 | 15.0148 |
| | | TOTAL: | | 3.51 | 30.71 | 42.33 |

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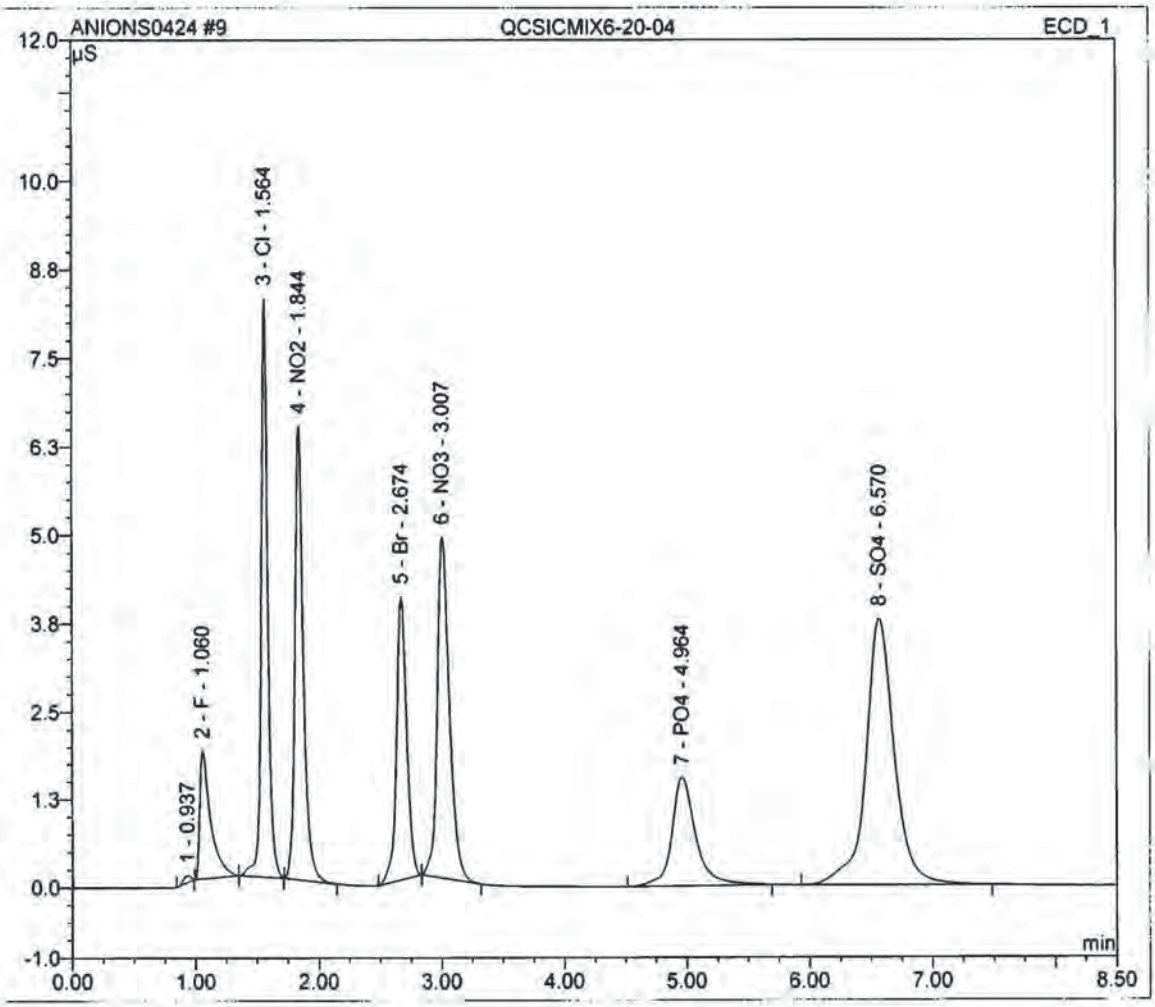
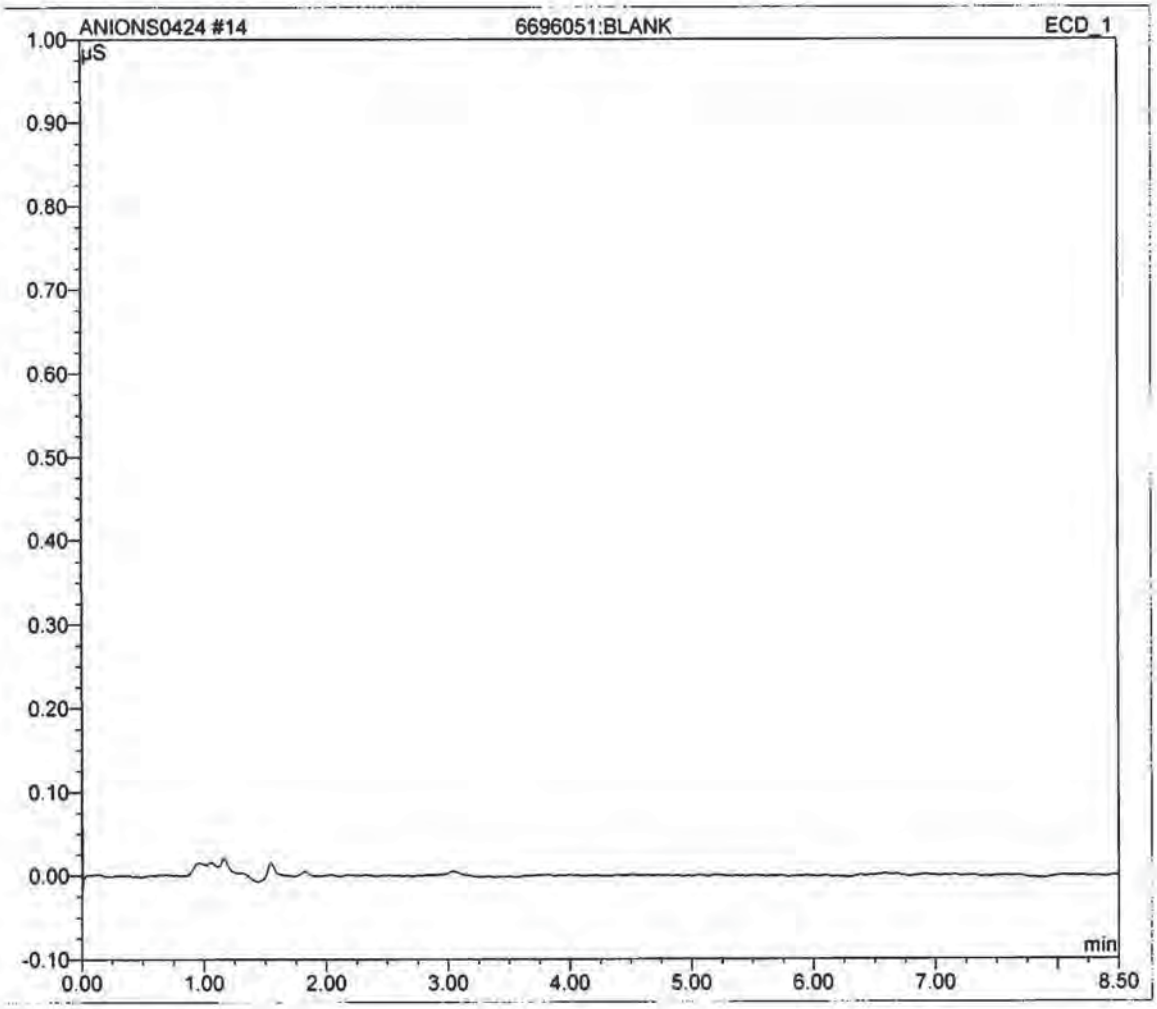
| | | | |
|---|---|---|---|
| *Sample Name:* | **QCSICMIX6-20-04** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **unknown** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 12:31** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| 2 | 1.06 | F | BMB | 0.186 | 1.836 | 1.9703 |
| 3 | 1.56 | Cl | bMB | 0.508 | 8.203 | 5.3506 |
| 4 | 1.84 | NO2 | BMB | 0.512 | 6.445 | 2.5321 |
| 5 | 2.67 | Br | BMB | 0.387 | 4.029 | 10.1503 |
| 6 | 3.01 | NO3 | bMB | 0.558 | 4.854 | 2.4853 |
| 7 | 4.96 | PO4 | BMB | 0.349 | 1.549 | 4.9074 |
| 8 | 6.57 | SO4 | BMB | 1.020 | 3.790 | 15.0148 |
| | | TOTAL: | | 3.52 | 30.71 | 42.41 |



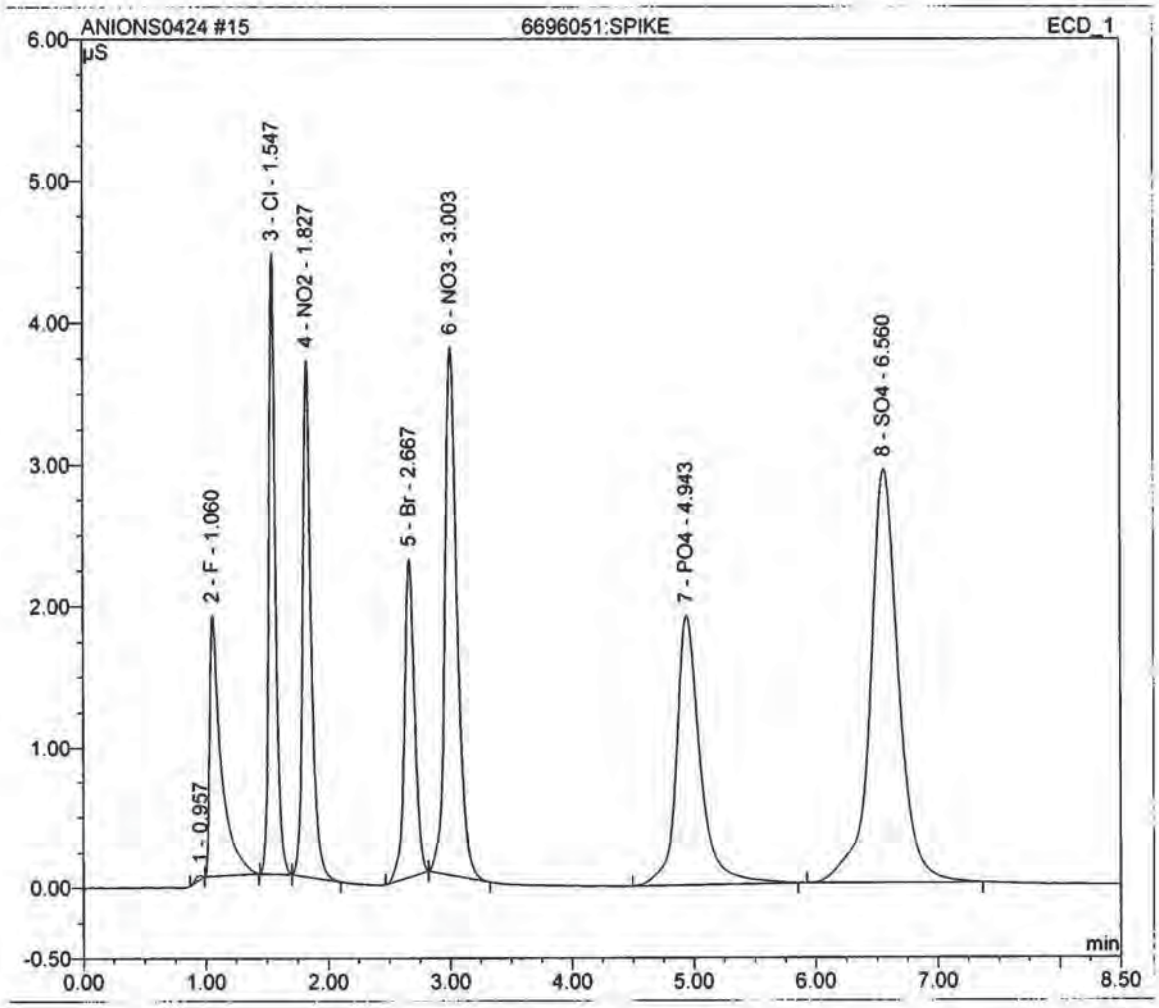
| | | | |
|---|---|---|---|
| *Sample Name:* | **6696051:BLANK** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **unknown** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 13:26** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| | | TOTAL: | | 0.00 | 0.00 | 0.00 |



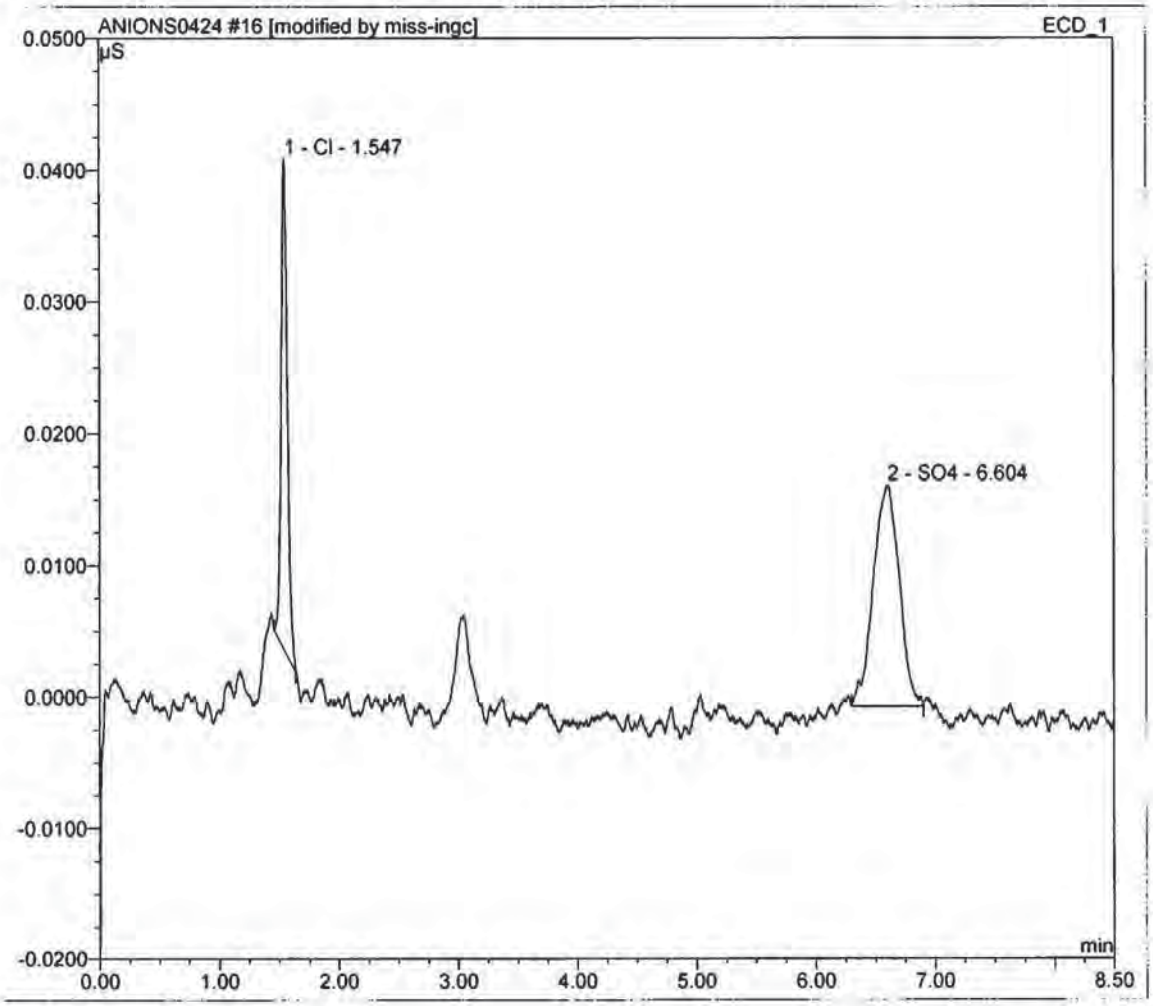
| | | | |
|---|---|---|---|
| *Sample Name:* | **6696051:SPIKE** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **unknown** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 13:37** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| 2 | 1.06 | F | BMB | 0.202 | 1.855 | 2.1251 |
| 3 | 1.55 | Cl | BMB | 0.278 | 4.393 | 3.0330 |
| 4 | 1.83 | NO2 | BMB | 0.297 | 3.664 | 1.5044 |
| 5 | 2.67 | Br | BMb | 0.220 | 2.256 | 5.9057 |
| 6 | 3.00 | NO3 | bMB | 0.436 | 3.743 | 1.9688 |
| 7 | 4.94 | PO4 | BMB | 0.434 | 1.918 | 6.0087 |
| 8 | 6.56 | SO4 | BMB | 0.794 | 2.936 | 11.8114 |
| | | TOTAL: | | 2.66 | 20.76 | 32.36 |



| | | | |
|---|---|---|---|
| *Sample Name:* | **6696051:MMC524-01** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **unknown** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 13:48** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| 1 | 1.55 | Cl | BMB | 0.002 | 0.037 | -0.0252 |
| 2 | 6.60 | SO4 | BMB* | 0.004 | 0.017 | 0.0811 |
| | | TOTAL: | | 0.01 | 0.05 | 0.06 |

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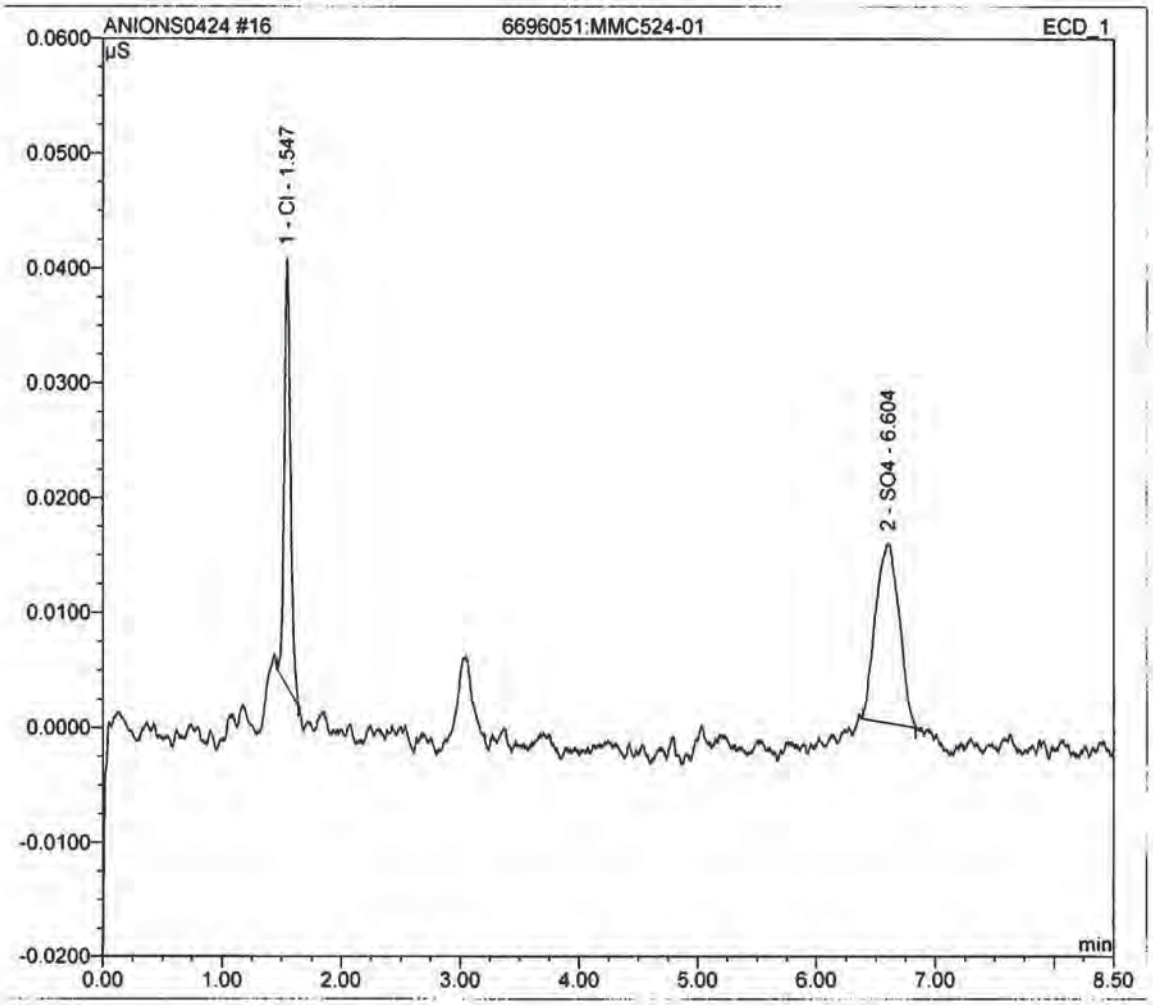
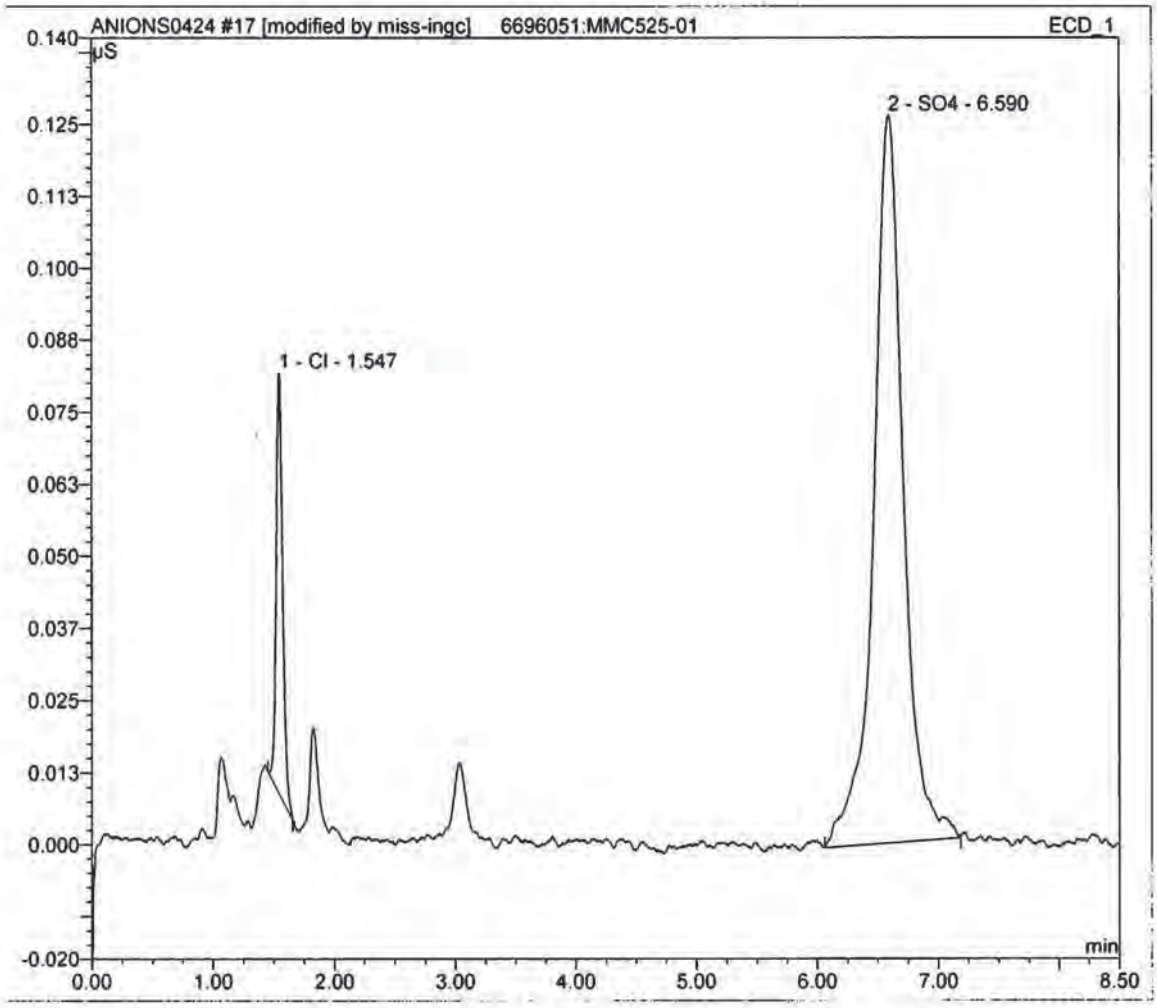
|---|---|---|---|
| *Sample Name:* | **6696051:MMC524-01** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **unknown** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 13:48** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| 1 | 1.55 | Cl | BMB | 0.002 | 0.037 | -0.0252 |
| 2 | 6.60 | SO4 | BMB | 0.004 | 0.016 | 0.0711 |
| | | TOTAL: | | 0.01 | 0.05 | 0.05 |



| | | | |
|---|---|---|---|
| *Sample Name:* | **6696051:MMC525-01** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **unknown** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 13:59** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| 1 | 1.55 | Cl | BMB | 0.004 | 0.073 | 0.0012 |
| 2 | 6.59 | SO4 | BMB* | 0.036 | 0.126 | 0.5718 |
| | | TOTAL: | | 0.04 | 0.20 | 0.57 |

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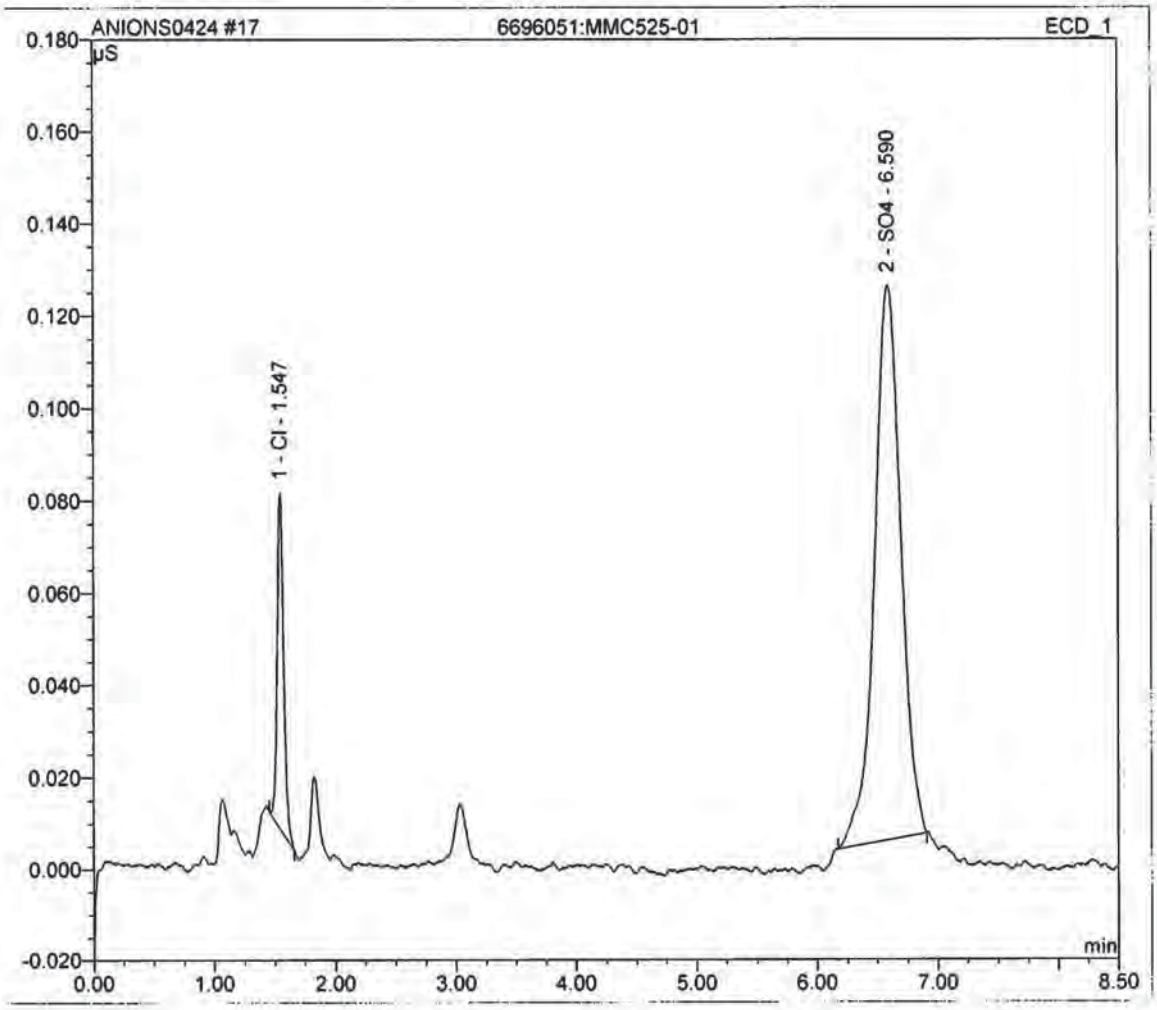
|---|---|---|---|
| *Sample Name:* | **6696051:MMC525-01** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **unknown** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 13:59** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| 1 | 1.55 | Cl | BMB | 0.004 | 0.073 | 0.0012 |
| 2 | 6.59 | SO4 | BMB | 0.030 | 0.120 | 0.4855 |
| | | TOTAL: | | 0.03 | 0.19 | 0.49 |



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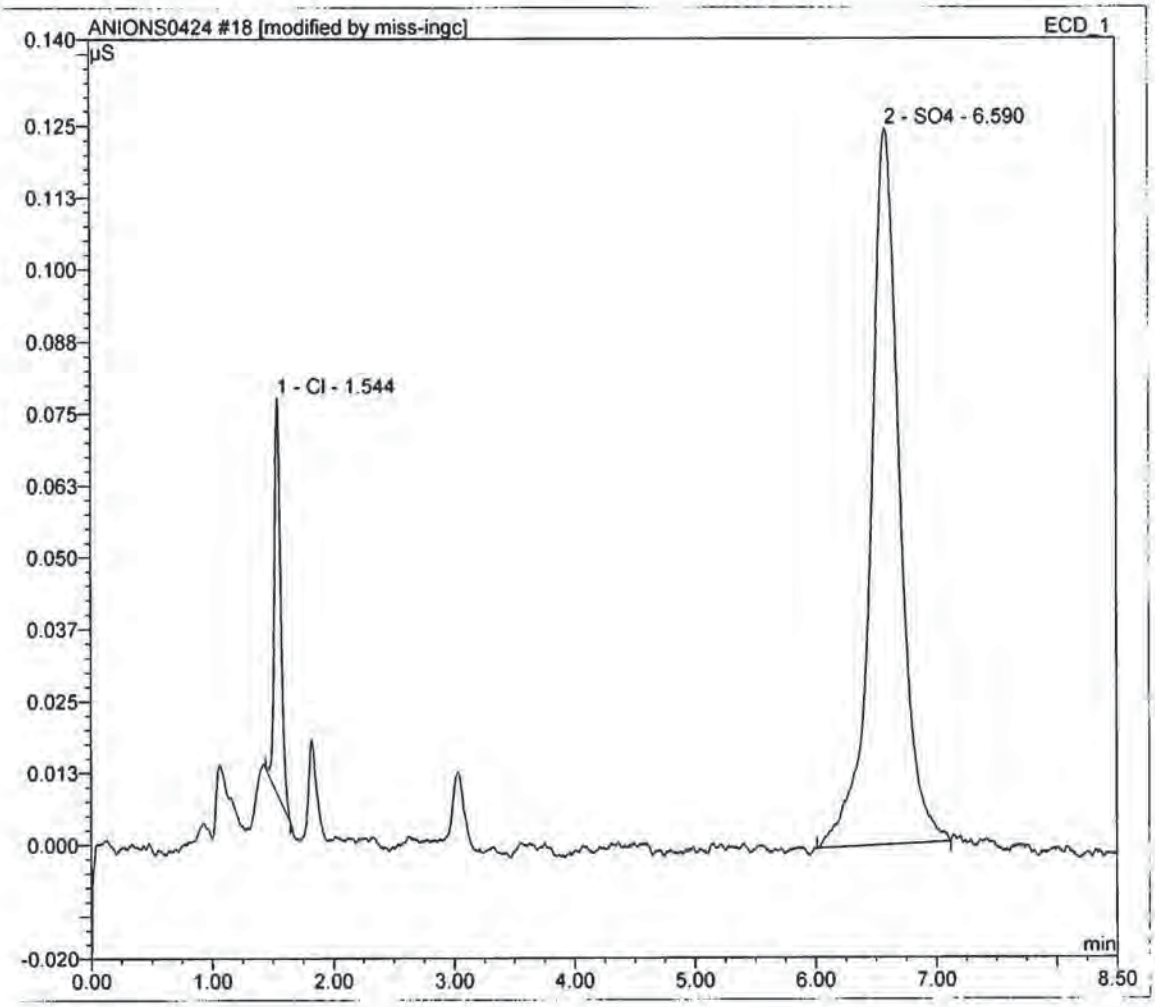
|---|---|---|---|
| *Sample Name:* | **6696051:MMC525-01:D1** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **unknown** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 14:10** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| 1 | 1.54 | Cl | BMB | 0.004 | 0.069 | -0.0022 |
| 2 | 6.59 | SO4 | BMB* | 0.034 | 0.125 | 0.5481 |
| | | TOTAL: | | 0.04 | 0.19 | 0.55 |

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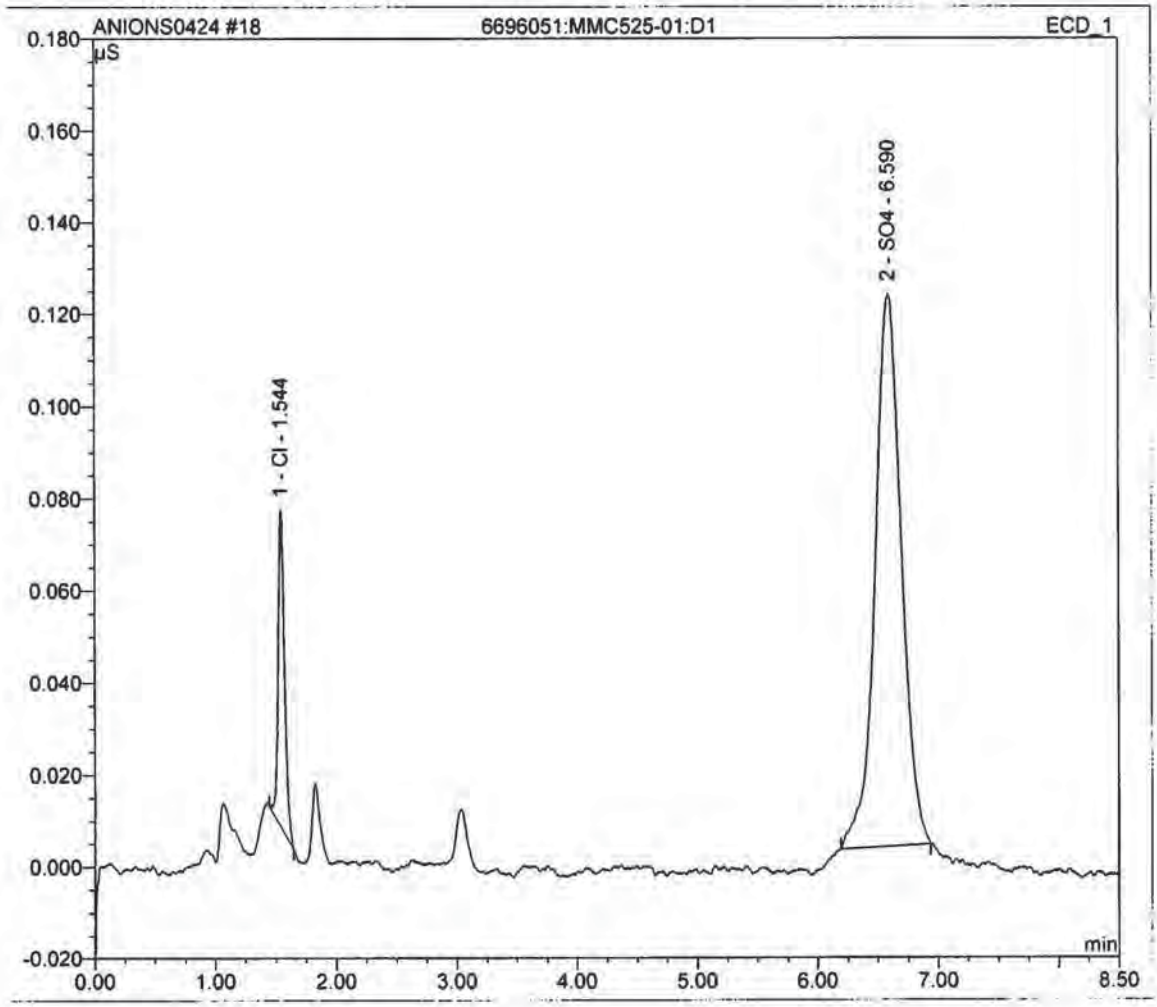
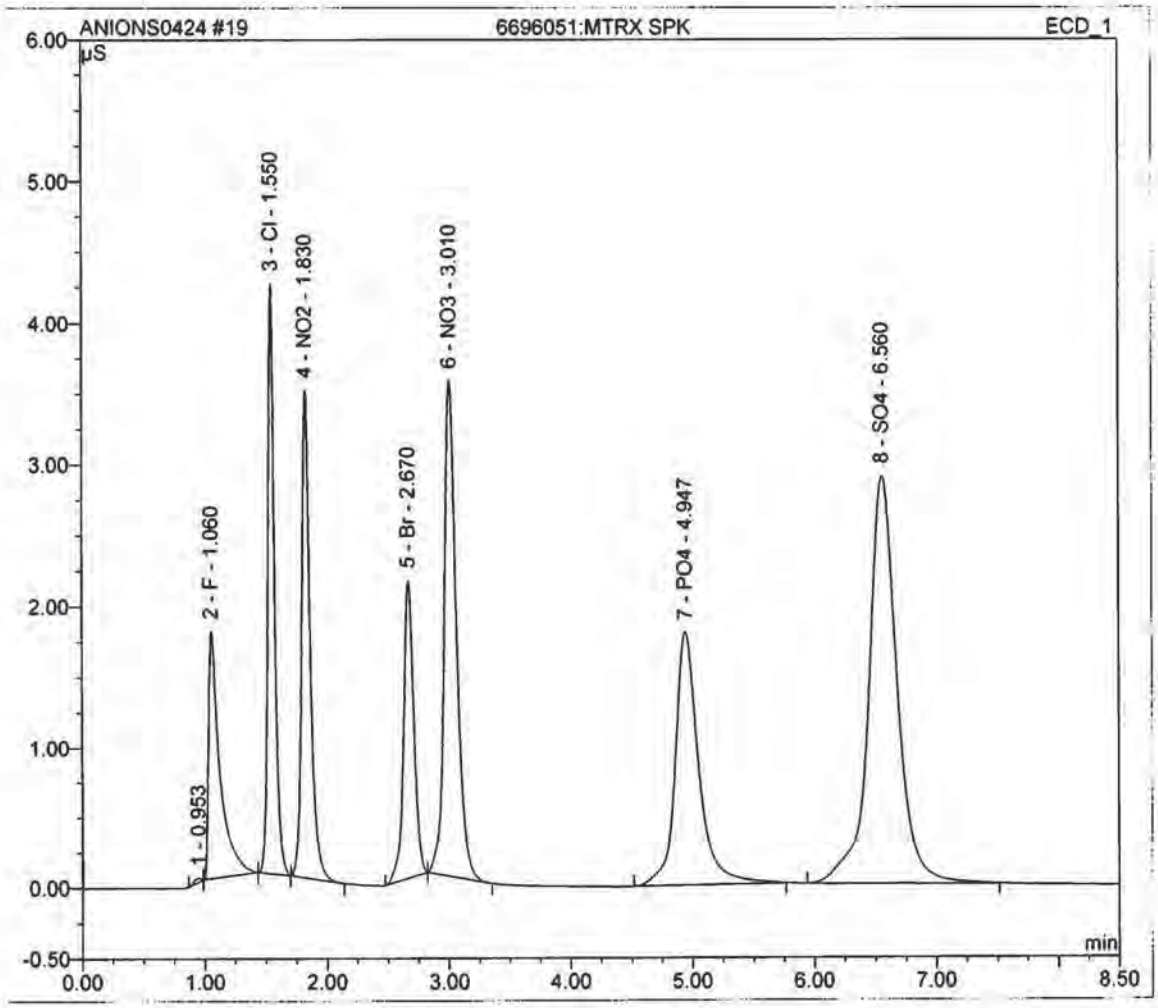
|---|---|---|---|
| *Sample Name:* | **6696051:MMC525-01:D1** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **unknown** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 14:10** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| 1 | 1.54 | Cl | BMB | 0.004 | 0.069 | -0.0022 |
| 2 | 6.59 | SO4 | BMB | 0.030 | 0.120 | 0.4842 |
| | | TOTAL: | | 0.03 | 0.19 | 0.48 |



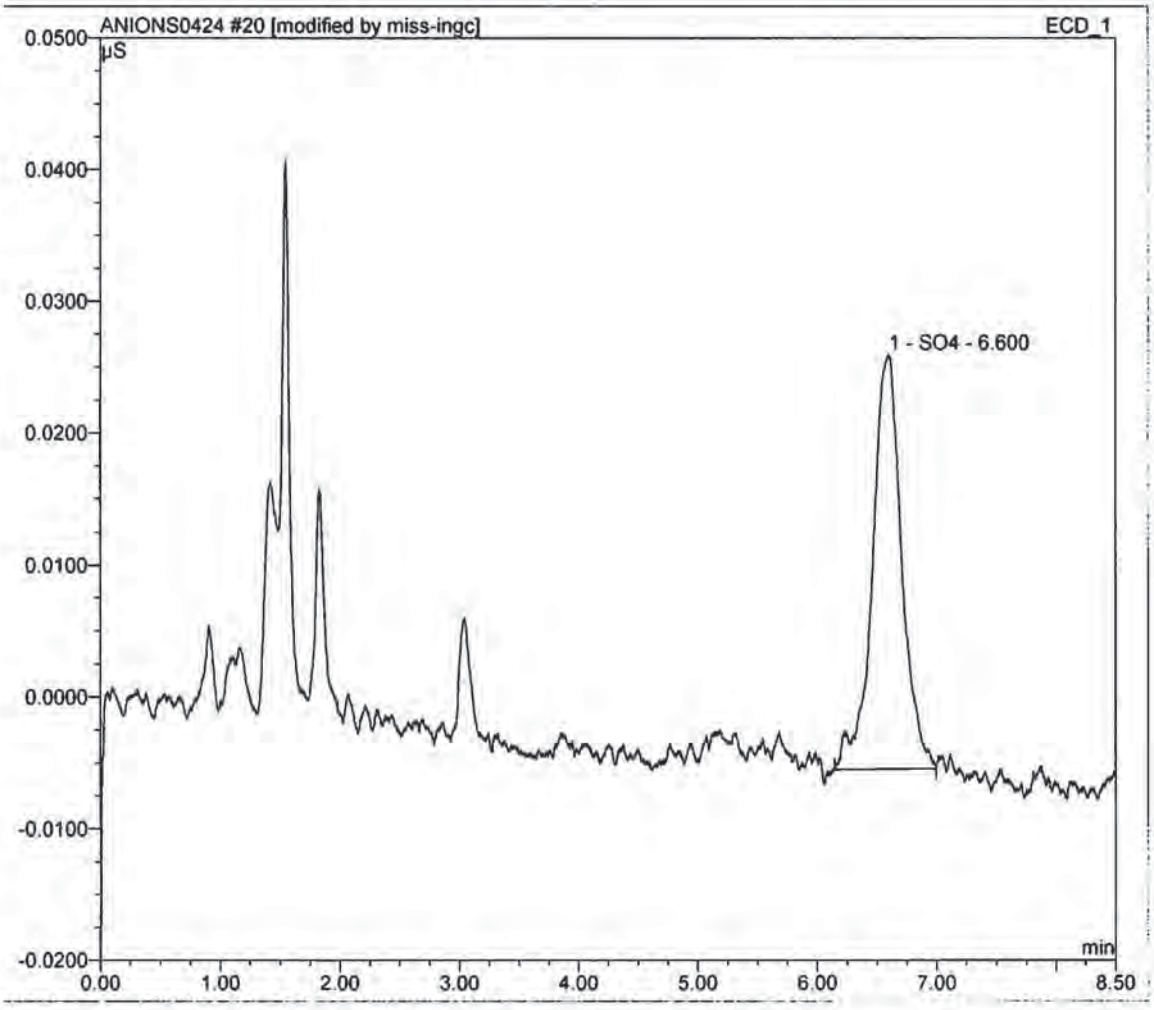
| | | | |
|---|---|---|---|
| *Sample Name:* | **6696051:MTRX SPK** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **unknown** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 14:20** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| 2 | 1.06 | F | bMb | 0.189 | 1.758 | 1.9952 |
| 3 | 1.55 | Cl | bMB | 0.263 | 4.176 | 2.8782 |
| 4 | 1.83 | NO2 | BMB | 0.280 | 3.457 | 1.4222 |
| 5 | 2.67 | Br | BMb | 0.206 | 2.114 | 5.5602 |
| 6 | 3.01 | NO3 | bMB | 0.410 | 3.515 | 1.8549 |
| 7 | 4.95 | PO4 | BMB | 0.404 | 1.801 | 5.6283 |
| 8 | 6.56 | SO4 | BMB | 0.785 | 2.892 | 11.6922 |
| | | TOTAL: | | 2.54 | 19.71 | 31.03 |



| | | | |
|---|---|---|---|
| *Sample Name:* | **6696051:MMC526-01** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **unknown** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 14:31** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| 1 | 6.60 | SO4 | BMB* | 0.009 | 0.031 | 0.1535 |
| | | TOTAL: | | 0.01 | 0.03 | 0.15 |

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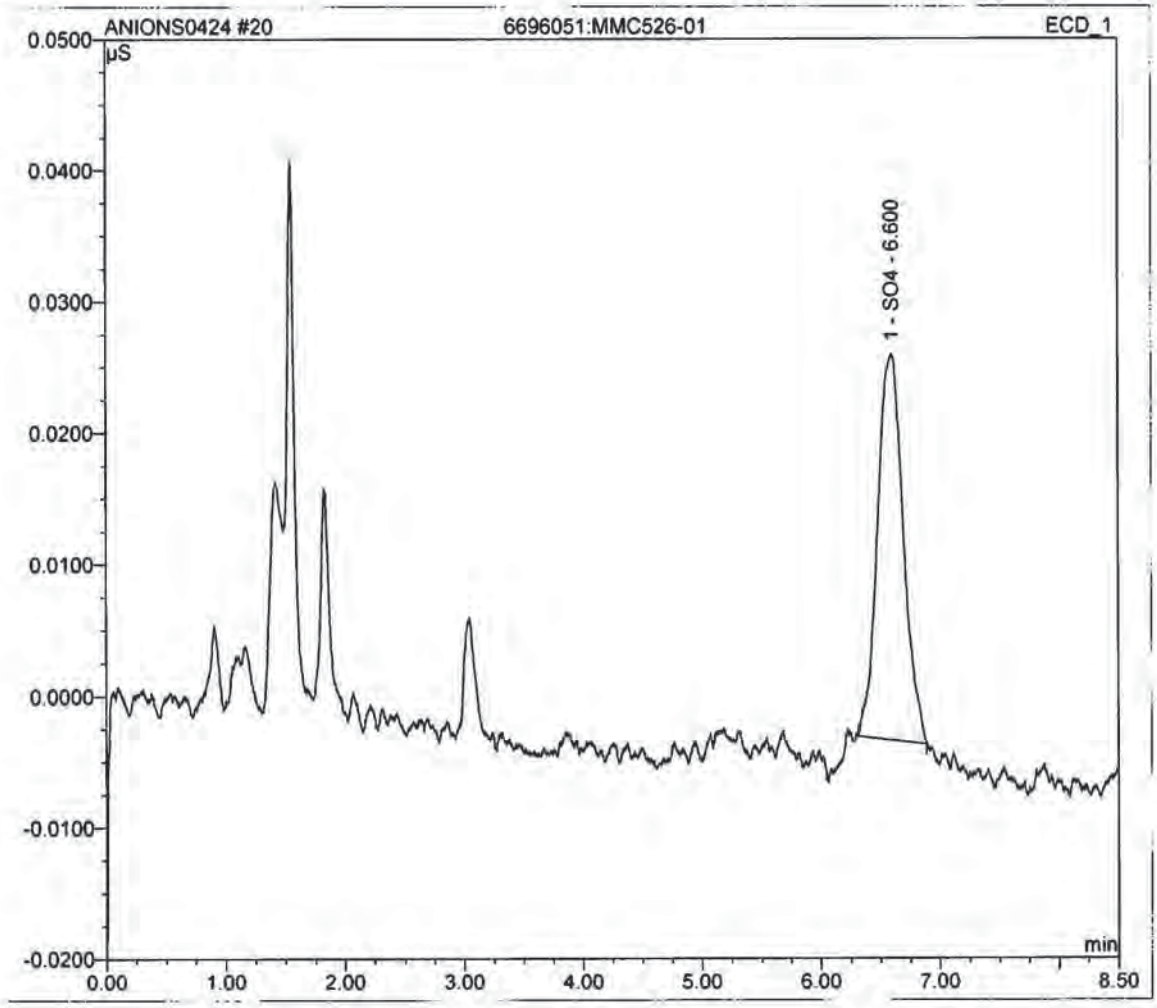
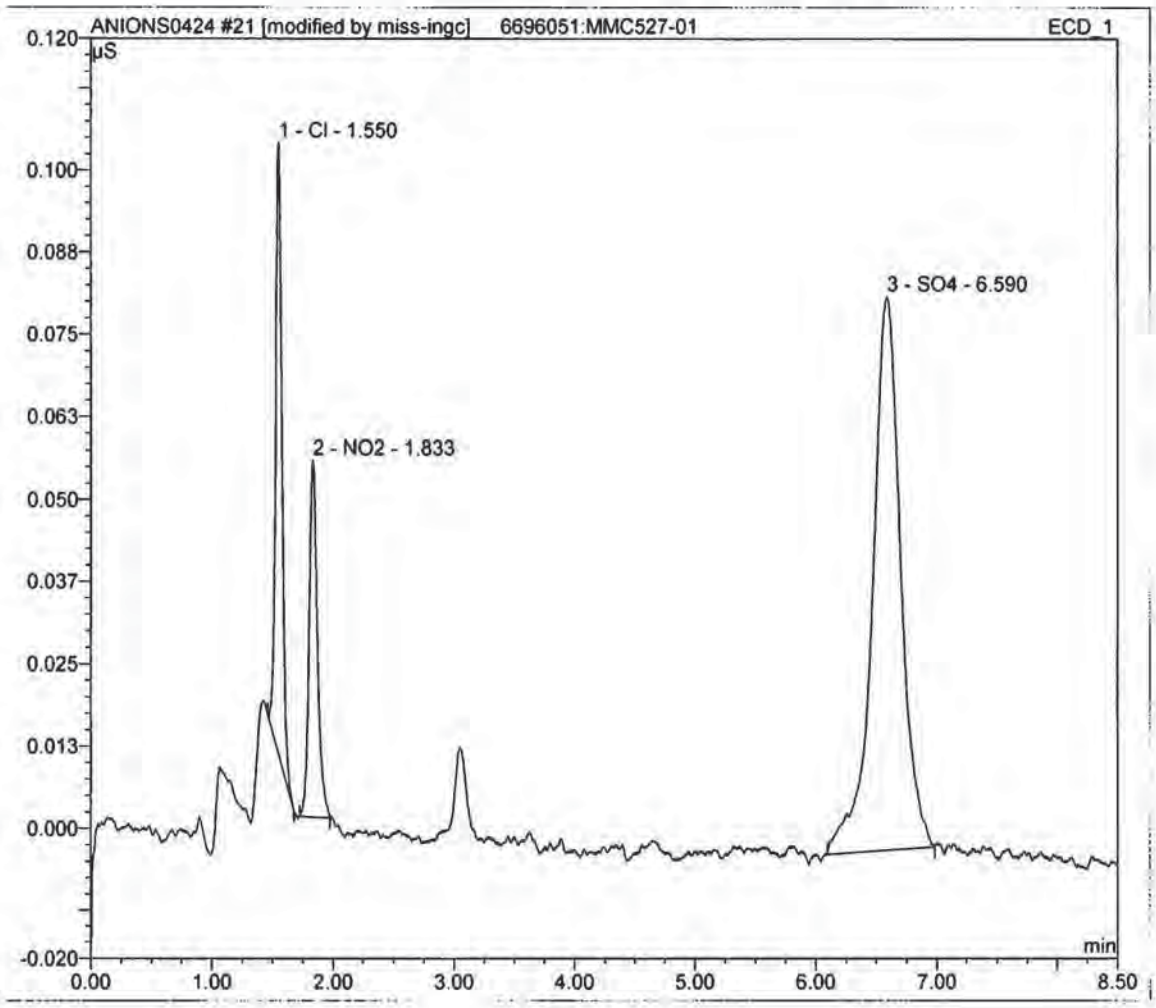
|---|---|---|---|
| *Sample Name:* | **6696051:MMC526-01** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **unknown** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 14:31** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| 1 | 6.60 | SO4 | BMB | 0.007 | 0.029 | 0.1292 |
| | | TOTAL: | | 0.01 | 0.03 | 0.13 |



| | | | |
|---|---|---|---|
| *Sample Name:* | **6696051:MMC527-01** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **unknown** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 14:42** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| 1 | 1.55 | Cl | BMB | 0.006 | 0.093 | 0.0149 |
| 2 | 1.83 | NO2 | BMB | 0.004 | 0.054 | 0.0301 |
| 3 | 6.59 | SO4 | BMB* | 0.023 | 0.084 | 0.3669 |
| | | TOTAL: | | 0.03 | 0.23 | 0.41 |

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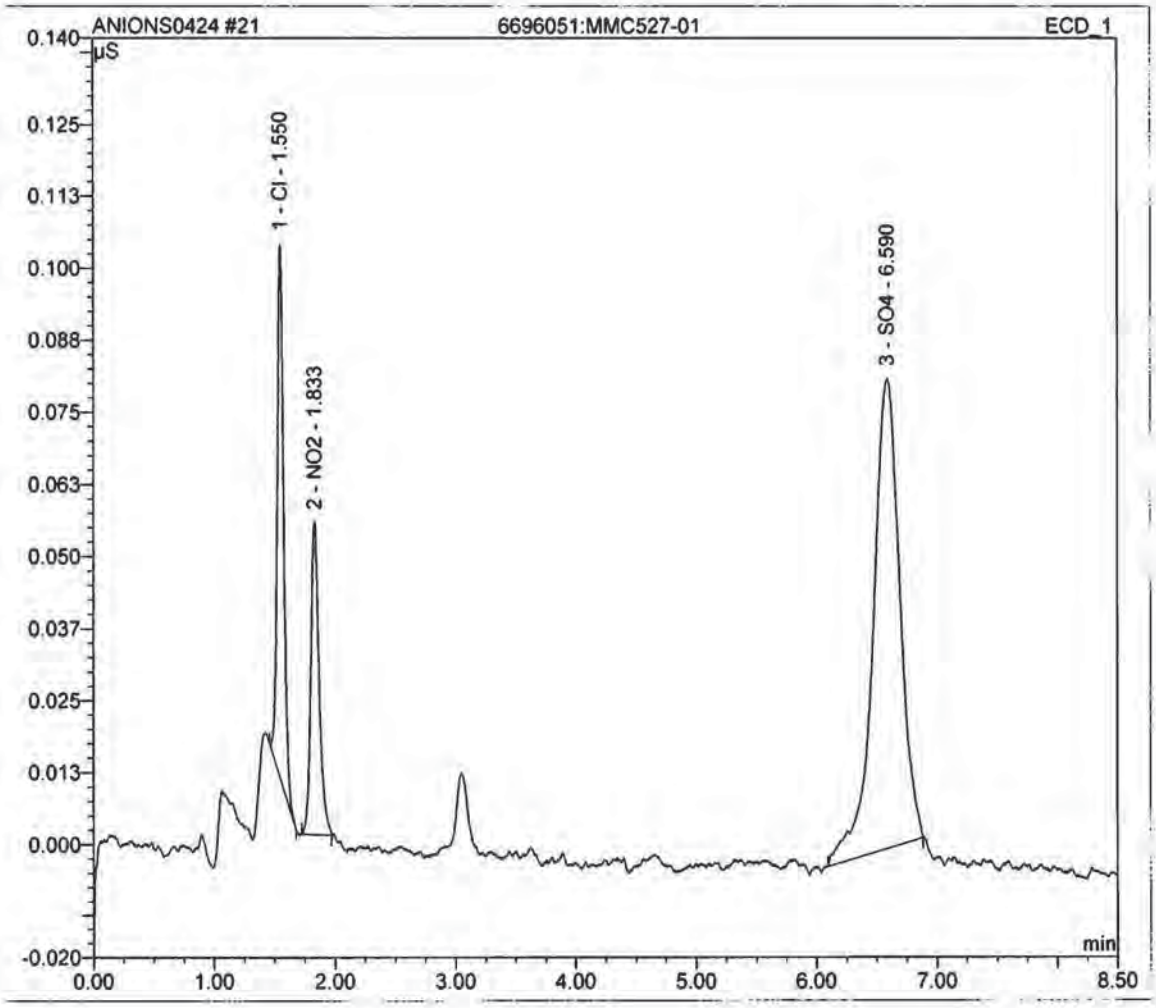
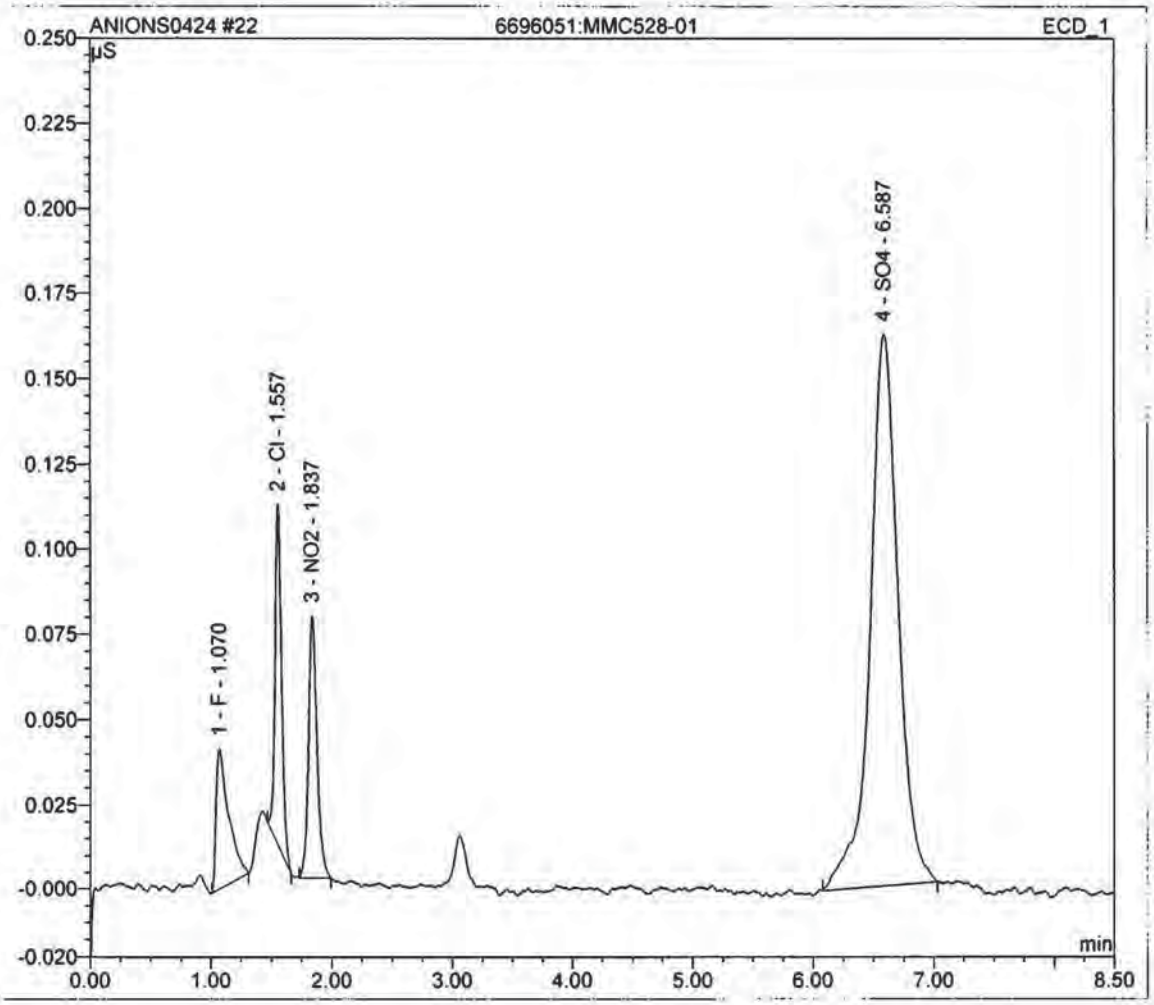
|---|---|---|---|
| *Sample Name:* | **6696051:MMC527-01** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **unknown** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 14:42** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| 1 | 1.55 | Cl | BMB | 0.006 | 0.093 | 0.0149 |
| 2 | 1.83 | NO2 | BMB | 0.004 | 0.054 | 0.0301 |
| 3 | 6.59 | SO4 | BMB | 0.021 | 0.082 | 0.3395 |
| | | TOTAL: | | 0.03 | 0.23 | 0.38 |



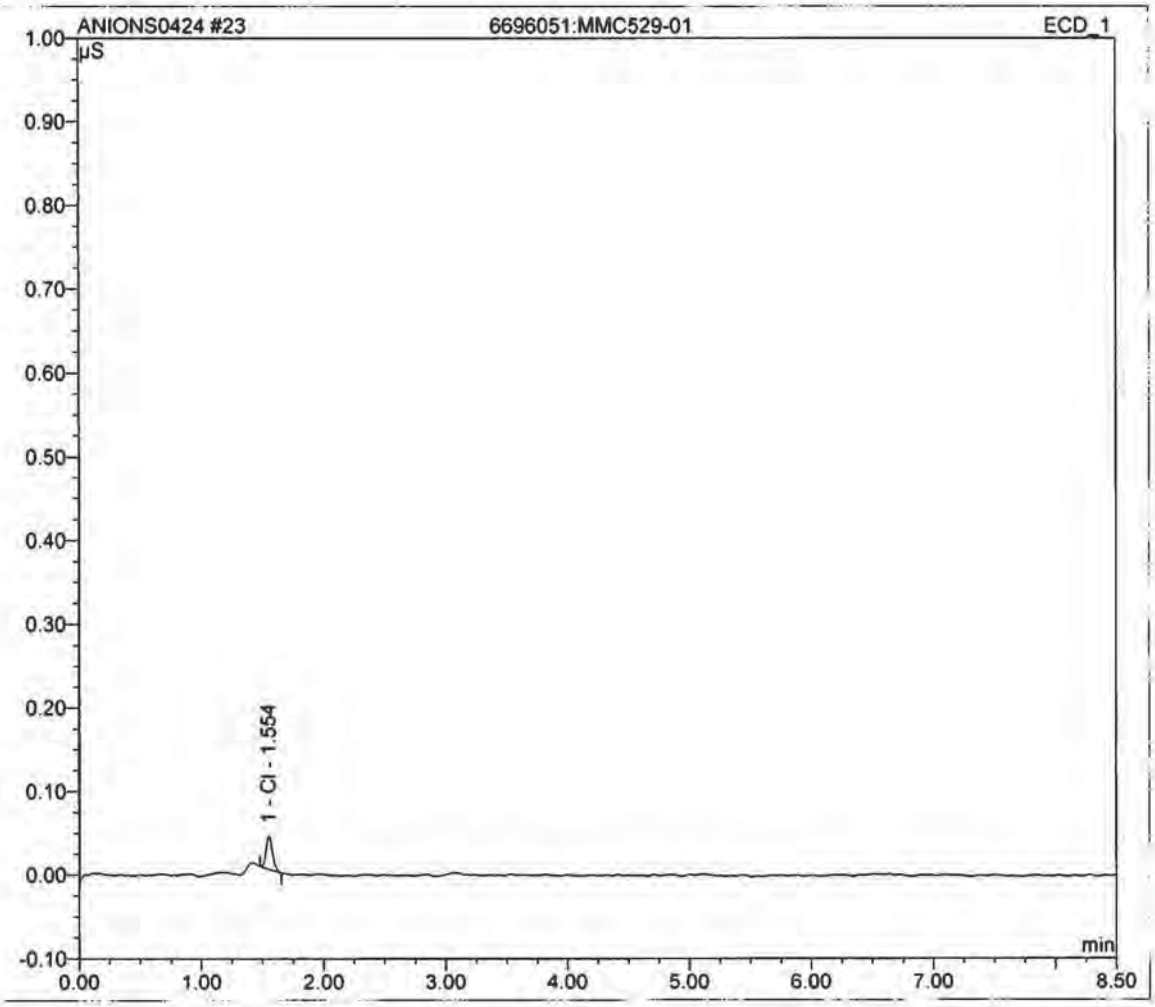
| | | | |
|---|---|---|---|
| *Sample Name:* | **6696051:MMC528-01** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **unknown** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 14:53** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| 1 | 1.07 | F | BMB | 0.005 | 0.042 | 0.0856 |
| 2 | 1.56 | Cl | BMB | 0.006 | 0.100 | 0.0218 |
| 3 | 1.84 | NO2 | BMB | 0.006 | 0.077 | 0.0403 |
| 4 | 6.59 | SO4 | BMB | 0.044 | 0.162 | 0.6950 |
| | | TOTAL: | | 0.06 | 0.38 | 0.84 |



| | | | |
|---|---|---|---|
| *Sample Name:* | **6696051:MMC529-01** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **unknown** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 15:04** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| 1 | 1.55 | Cl | BMB | 0.002 | 0.041 | -0.0230 |
| | | TOTAL: | | 0.00 | 0.04 | -0.02 |



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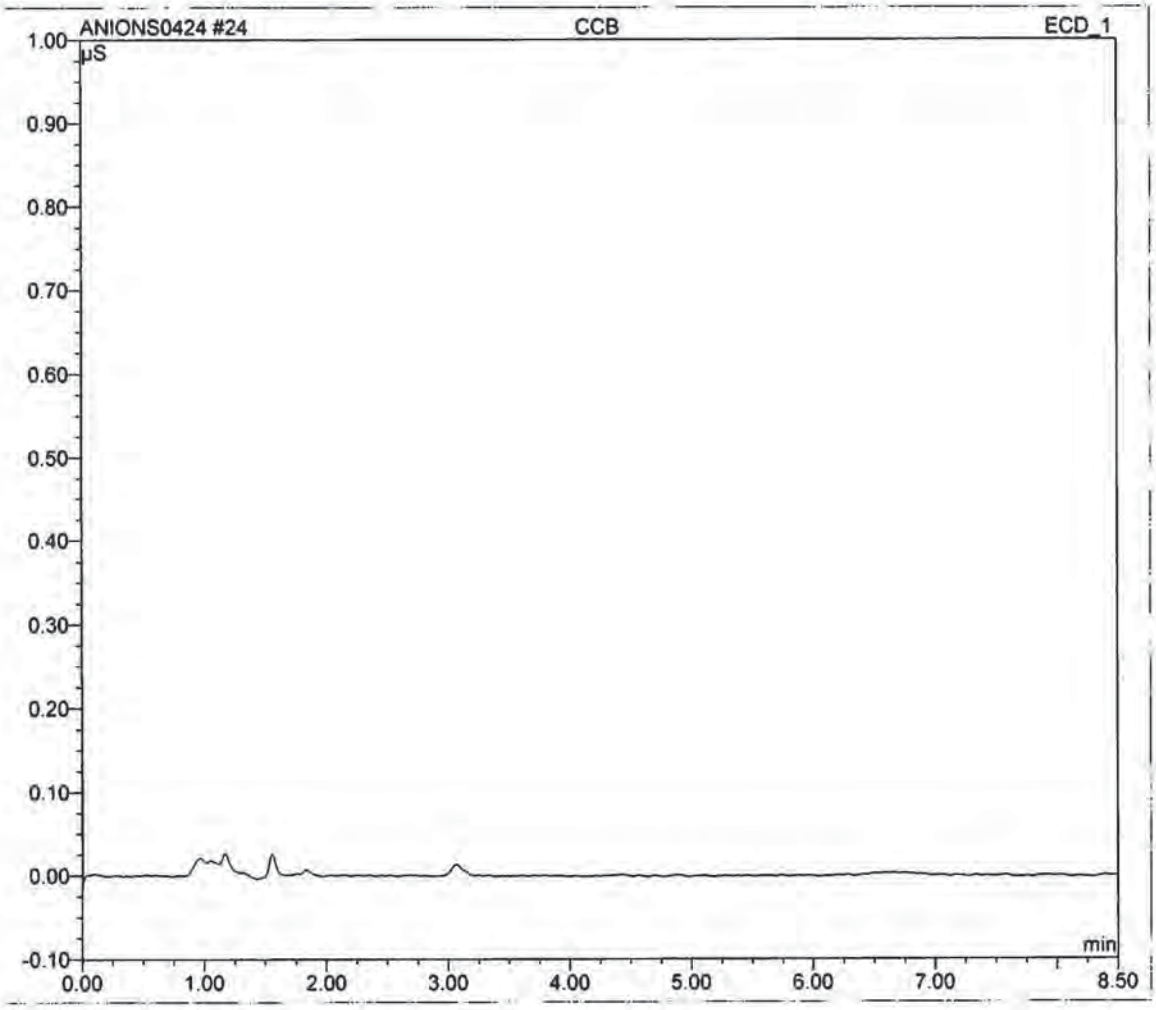
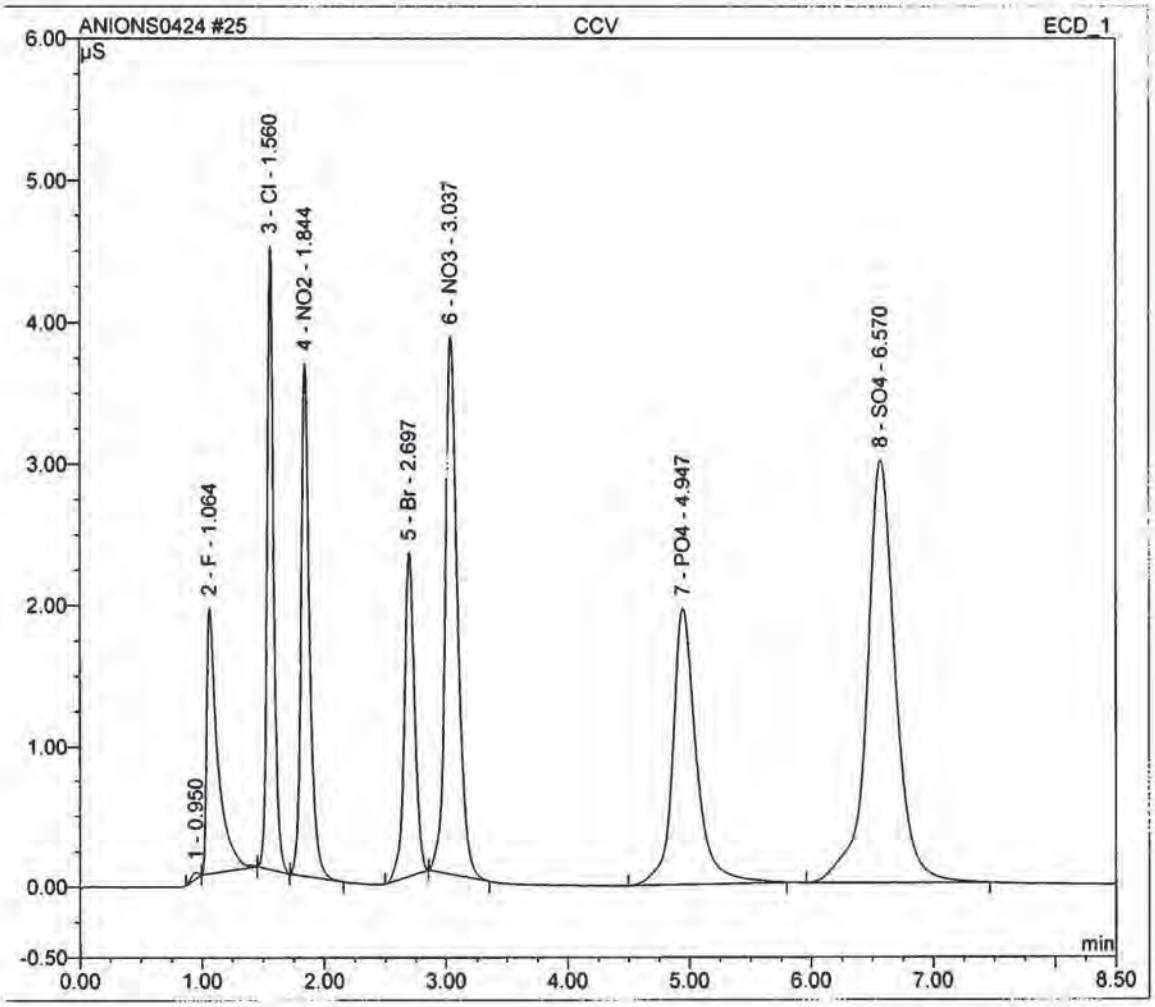
|---|---|---|---|
| *Sample Name:* | **CCB** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **unknown** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 15:15** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| | | TOTAL: | | 0.00 | 0.00 | 0.00 |



| | | | |
|---|---|---|---|
| *Sample Name:* | **CCV** | *Inj. Vol.:* | **25.0** |
| *Sample Type:* | **unknown** | *Dilution Factor:* | **1.0000** |
| *Program:* | **AS4A** | *Operator:* | **n.a.** |
| *Inj. Date/Time:* | **2020/04/24 15:26** | *Run Time:* | **8.50** |

| No. | Time min | Peak Name | Type | Area µS*min | Height µS | Amount ppm |
|---|---|---|---|---|---|---|
| 2 | 1.06 | F | bMB | 0.197 | 1.887 | 2.0767 |
| 3 | 1.56 | Cl | BMB | 0.276 | 4.411 | 3.0132 |
| 4 | 1.84 | NO2 | BMB | 0.296 | 3.640 | 1.5012 |
| 5 | 2.70 | Br | BMB | 0.226 | 2.299 | 6.0619 |
| 6 | 3.04 | NO3 | BMB | 0.448 | 3.811 | 2.0205 |
| 7 | 4.95 | PO4 | BMB | 0.441 | 1.963 | 6.0929 |
| 8 | 6.57 | SO4 | BMB | 0.813 | 2.999 | 12.0860 |
| | | TOTAL: | | 2.70 | 21.01 | 32.85 |



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L5N 2L8
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www.bvlabs.com

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

## Audit Sample Data
## (not required for this scope of work)

# APPENDIX E

# FUEL ANALYSIS RECORDS

**Client:** Cricket Valley Energy Center LLC
**Location:** Cricket Valley Energy Center
**Date:** April 15, 2020
**Project #:** bec-19-cricketvalley.ny-start#3

**Natural Gas - Fuel Analysis**

Standardized to 68 deg F and 14.696 psia - EPA Standards

| Gas Component | | Mole (%) | Molecular[1] Weight (lb/lb-mole) | Lbs Component per Lb-Mole of Gas | Wt. % of Component | Ideal Gross[1,3] Heating Value (Btu/ft$^3$) | Fuel Heat Value [HHV] (Btu/SCF) | Ideal Net[1,3] Heating Value (Btu/ft$^3$) | Fuel Heat Value [LHV] (Btu/SCF) |
|---|---|---|---|---|---|---|---|---|---|
| Methane | $CH_4$ | 96.1040 | 16.0430 | 15.42 | 92.69 | 994.85 | 956.09 | 895.75 | 860.86 |
| Ethane | $C_2H_6$ | 3.1230 | 30.0700 | 0.94 | 5.65 | 1,743.15 | 54.44 | 1,594.41 | 49.79 |
| Propane | $C_3H_8$ | 0.1380 | 44.0970 | 0.06 | 0.37 | 2,478.35 | 3.42 | 2,280.17 | 3.15 |
| iso-Butane | $iC_4H_{10}$ | 0.0040 | 58.1230 | 0.00 | 0.01 | 3,203.11 | 0.13 | 2,955.38 | 0.12 |
| n-Butane | $nC_4H_{10}$ | 0.0060 | 58.1230 | 0.00 | 0.02 | 3,213.35 | 0.19 | 2,965.62 | 0.18 |
| Iso-Pentane | $iC_5H_{12}$ | 0.0010 | 72.1500 | 0.00 | 0.00 | 3,940.87 | 0.04 | 3,643.50 | 0.04 |
| n-Pentane | $nC_5H_{12}$ | 0.0010 | 72.1500 | 0.00 | 0.00 | 3,948.75 | 0.04 | 3,648.32 | 0.04 |
| Hexanes | $C_6H_{14}$ | 0.0000 | 86.1770 | 0.00 | 0.00 | 4,684.54 | 0.00 | 4,337.82 | 0.00 |
| Heptanes | $C_7H_{16}$ | 0.0000 | 100.2040 | 0.00 | 0.00 | 5,419.94 | 0.00 | 5,023.77 | 0.00 |
| Octanes | $C_8H_{18}$ | 0.0000 | 114.2310 | 0.00 | 0.00 | 6,155.14 | 0.00 | 5,709.23 | 0.00 |
| Carbon Dioxide | $CO_2$ | 0.2480 | 44.0100 | 0.11 | 0.66 | 0.00 | 0.00 | 0.00 | 0.00 |
| Nitrogen | $N_2$ | 0.3550 | 28.0134 | 0.10 | 0.60 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hydrogen Sulfide | $H_2S$ | 0.0000 | 34.0800 | 0.00 | 0.00 | 627.54 | 0.00 | 578.00 | 0.00 |
| Oxygen | $O_2$ | 0.0000 | 31.9988 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Helium | He | 0.0000 | 4.0026 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hydrogen | $H_2$ | 0.0200 | 2.0159 | 0.00 | 0.00 | 319.34 | 0.06 | 269.82 | 0.05 |
| **Totals** | | **100.000** | | **16.63** | **100.00** | **dry** | **1,014.41** | **dry** | **914.22** |
| | | | | | | **wet[2,5]** | **991.02** | **wet[2,5]** | **893.14** |

| Characteristics of Fuel Gas | | |
|---|---|---|
| Molecular Weight of gas = | 16.634 | lb/lb-mole |
| Btu per lb. of gas[4] = | 23,492.652 | gross (HHV) |
| Btu per lb. of gas[4] = | 21,172.377 | net (LHV) |
| Density of fuel gas[2] = | 0.0432 | lb/cu. ft |
| Wt % VOC in fuel gas = | 0.41 | % |
| Specific Gravity[1] = | 0.5743 | |

| Component | Wt% |
|---|---|
| carbon | 74.42 |
| oxygen | 0.48 |
| hydrogen | 24.51 |
| nitrogen | 0.60 |
| helium | 0.00 |
| sulfur | 0.00 |
| **Total** | **100.00** |

**F-Factor (SCF dry exhaust per MMBtu [HHV]) = 8,638.02**
(Based on EPA RM-19) at 68 deg F and 14.696 psia

**F-Factor Calculation:**

F-Factor = 1,000,000*((3.64*%H)+(1.53*%C)+(0.57*%S)+(0.14*%N)-(0.46*%O))/GCV

GCV = Gross Btu per lb. of gas (HHV)

%H, %C, %S, %N, & %O are percent weight values calculated from fuel analysis and have units of (scf/lb)/%

Density of natural gas based on specific gravity multiplied by density of air at 68 deg F and 14.696 psia.

**References:**


[1] ASTM D 3588

[2] Civil Engineering Reference Manual, 7th ed. - Michael R. Lindeburg

[3] Mark's Standard Handbook for Mechanical Engineers, 10th ed. - Eugene A. Avallone, Theodore Baumeister III

[4] Introduction to Fluid Mechanics, 3rd ed. - William S. Janna

[5] GPA Reference Bulletin 181-86, revised 1986, reprinted 1995

**Client:** Cricket Valley Energy Center LLC
**Location:** Cricket Valley Energy Center
**Date:** April 15, 2020
**Project #:** bec-19-cricketvalley.ny-start#3

**Natural Gas - Fuel Analysis**

Standardized to 68 deg F and 14.696 psia - EPA Standards

| Gas Component | | Mole (%) | Molecular[1] Weight (lb/lb-mole) | Lbs Component per Lb-Mole of Gas | Wt. % of Component | Ideal Gross[1,3] Heating Value (Btu/ft$^3$) | Fuel Heat Value [HHV] (Btu/SCF) | Ideal Net[1,3] Heating Value (Btu/ft$^3$) | Fuel Heat Value [LHV] (Btu/SCF) |
|---|---|---|---|---|---|---|---|---|---|
| Methane | $CH_4$ | 89.168 | 16.0430 | 14.31 | 81.81 | 994.85 | 887.09 | 895.75 | 798.73 |
| Ethane | $C_2H_6$ | 3.164 | 30.0700 | 0.95 | 5.44 | 1,743.15 | 55.16 | 1,594.41 | 50.45 |
| Propane | $C_3H_8$ | 0.114 | 44.0970 | 0.05 | 0.29 | 2,478.35 | 2.83 | 2,280.17 | 2.60 |
| iso-Butane | $iC_4H_{10}$ | 0.006 | 58.1230 | 0.00 | 0.02 | 3,203.11 | 0.18 | 2,955.38 | 0.17 |
| n-Butane | $nC_4H_{10}$ | 0.006 | 58.1230 | 0.00 | 0.02 | 3,213.35 | 0.18 | 2,965.62 | 0.17 |
| Iso-Pentane | $iC_5H_{12}$ | 0.003 | 72.1500 | 0.00 | 0.01 | 3,940.87 | 0.12 | 3,643.50 | 0.11 |
| n-Pentane | $nC_5H_{12}$ | 0.003 | 72.1500 | 0.00 | 0.01 | 3,948.75 | 0.12 | 3,648.32 | 0.11 |
| Hexanes | $C_6H_{14}$ | 0.000 | 86.1770 | 0.00 | 0.00 | 4,684.54 | 0.00 | 4,337.82 | 0.00 |
| Heptanes | $C_7H_{16}$ | 0.000 | 100.2040 | 0.00 | 0.00 | 5,419.94 | 0.00 | 5,023.77 | 0.00 |
| Octanes | $C_8H_{18}$ | 0.000 | 114.2310 | 0.00 | 0.00 | 6,155.14 | 0.00 | 5,709.23 | 0.00 |
| Carbon Dioxide | $CO_2$ | 0.354 | 44.0100 | 0.16 | 0.89 | 0.00 | 0.00 | 0.00 | 0.00 |
| Nitrogen* | $N_2$ | **7.182** | 28.0134 | 2.01 | 11.51 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hydrogen Sulfide | $H_2S$ | 0.000 | 34.0800 | 0.00 | 0.00 | 627.54 | 0.00 | 578.00 | 0.00 |
| Oxygen | $O_2$ | 0.000 | 31.9988 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Helium | He | 0.000 | 4.0026 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hydrogen | $H_2$ | 0.000 | 2.0159 | 0.00 | 0.00 | 319.34 | 0.00 | 269.82 | 0.00 |
| **Totals** | | **100.000** | | **17.49** | **100.00** | **dry** | **945.68** | **dry** | **852.34** |
| | | | | | | **wet[2,5]** | **923.87** | **wet[2,5]** | **832.69** |

* Note: nitrogen content indicates atmospheric contamination or leak in sampling system. Subsequent sample substituted for calculations

| Characteristics of Fuel Gas | | |
|---|---|---|
| Molecular Weight of gas = | 17.486 | lb/lb-mole |
| Btu per lb. of gas[4] = | 20,834.278 | gross (HHV) |
| Btu per lb. of gas[4] = | 18,777.981 | net (LHV) |
| Density of fuel gas[2] = | 0.0454 | lb/cu. ft |
| Wt % VOC in fuel gas = | 0.35 | % |
| Specific Gravity[1] = | 0.6037 | |

| Component | Wt% |
|---|---|
| carbon | 66.13 |
| oxygen | 0.65 |
| hydrogen | 21.72 |
| nitrogen | 11.51 |
| helium | 0.00 |
| sulfur | 0.00 |
| **Total** | **100.00** |

**F-Factor (SCF dry exhaust per MMBtu [HHV]) = 8,713.75**
(Based on EPA RM-19) at 68 deg F and 14.696 psia

**F-Factor Calculation:**

F-Factor = 1,000,000*((3.64*%H)+(1.53*%C)+(0.57*%S)+(0.14*%N)-(0.46*%O))/GCV

GCV = Gross Btu per lb. of gas (HHV)

%H, %C, %S, %N, & %O are percent weight values calculated from fuel analysis and have units of (scf/lb)/%

Density of natural gas based on specific gravity multiplied by density of air at 68 deg F and 14.696 psia.

**References:**


[1] ASTM D 3588

[2] Civil Engineering Reference Manual, 7th ed. - Michael R. Lindeburg

[3] Mark's Standard Handbook for Mechanical Engineers, 10th ed. - Eugene A. Avallone, Theodore Baumeister III

[4] Introduction to Fluid Mechanics, 3rd ed. - William S. Janna

[5] GPA Reference Bulletin 181-86, revised 1986, reprinted 1995

**Client:** Cricket Valley Energy Center LLC
**Location:** Cricket Valley Energy Center
**Date:** April 16, 2020
**Project #:** bec-19-cricketvalley.ny-start#3

**Natural Gas - Fuel Analysis**

Standardized to 68 deg F and 14.696 psia - EPA Standards

| Gas Component | | Mole (%) | Molecular[1] Weight (lb/lb-mole) | Lbs Component per Lb-Mole of Gas | Wt. % of Component | Ideal Gross[1,3] Heating Value (Btu/ft$^3$) | Fuel Heat Value [HHV] (Btu/SCF) | Ideal Net[1,3] Heating Value (Btu/ft$^3$) | Fuel Heat Value [LHV] (Btu/SCF) |
|---|---|---|---|---|---|---|---|---|---|
| Methane | $CH_4$ | 93.6582 | 16.0430 | 15.03 | 88.32 | 994.85 | 931.75 | 895.75 | 838.95 |
| Ethane | $C_2H_6$ | 4.2566 | 30.0700 | 1.28 | 7.52 | 1,743.15 | 74.20 | 1,594.41 | 67.87 |
| Propane | $C_3H_8$ | 0.1339 | 44.0970 | 0.06 | 0.35 | 2,478.35 | 3.32 | 2,280.17 | 3.05 |
| iso-Butane | $iC_4H_{10}$ | 0.0051 | 58.1230 | 0.00 | 0.02 | 3,203.11 | 0.16 | 2,955.38 | 0.15 |
| n-Butane | $nC_4H_{10}$ | 0.0051 | 58.1230 | 0.00 | 0.02 | 3,213.35 | 0.16 | 2,965.62 | 0.15 |
| Iso-Pentane | $iC_5H_{12}$ | 0.0010 | 72.1500 | 0.00 | 0.00 | 3,940.87 | 0.04 | 3,643.50 | 0.04 |
| n-Pentane | $nC_5H_{12}$ | 0.0010 | 72.1500 | 0.00 | 0.00 | 3,948.75 | 0.04 | 3,648.32 | 0.04 |
| Hexanes | $C_6H_{14}$ | 0.0000 | 86.1770 | 0.00 | 0.00 | 4,684.54 | 0.00 | 4,337.82 | 0.00 |
| Heptanes | $C_7H_{16}$ | 0.0000 | 100.2040 | 0.00 | 0.00 | 5,419.94 | 0.00 | 5,023.77 | 0.00 |
| Octanes | $C_8H_{18}$ | 0.0000 | 114.2310 | 0.00 | 0.00 | 6,155.14 | 0.00 | 5,709.23 | 0.00 |
| Carbon Dioxide | $CO_2$ | 0.5510 | 44.0100 | 0.24 | 1.43 | 0.00 | 0.00 | 0.00 | 0.00 |
| Nitrogen | $N_2$ | 1.1224 | 28.0134 | 0.31 | 1.85 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hydrogen Sulfide | $H_2S$ | 0.0000 | 34.0800 | 0.00 | 0.00 | 627.54 | 0.00 | 578.00 | 0.00 |
| Oxygen | $O_2$ | 0.2596 | 31.9988 | 0.08 | 0.49 | 0.00 | 0.00 | 0.00 | 0.00 |
| Helium | He | 0.0000 | 4.0026 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hydrogen | $H_2$ | 0.0061 | 2.0159 | 0.00 | 0.00 | 319.34 | 0.02 | 269.82 | 0.02 |
| **Totals** | | **100.000** | | **17.01** | **100.00** | **dry** | **1,009.70** | **dry** | **910.26** |
| | | | | | | **wet[2,5]** | **986.42** | **wet[2,5]** | **889.27** |

| Characteristics of Fuel Gas | | |
|---|---|---|
| Molecular Weight of gas = | 17.012 | lb/lb-mole |
| Btu per lb. of gas[4] = | 22,864.088 | gross (HHV) |
| Btu per lb. of gas[4] = | 20,612.385 | net (LHV) |
| Density of fuel gas[2] = | 0.0442 | lb/cu. ft |
| Wt % VOC in fuel gas = | 0.39 | % |
| Specific Gravity[1] = | 0.5874 | |

| Component | Wt% |
|---|---|
| carbon | 72.84 |
| oxygen | 1.52 |
| hydrogen | 23.78 |
| nitrogen | 1.85 |
| helium | 0.00 |
| sulfur | 0.00 |
| **Total** | **100.00** |

**F-Factor (SCF dry exhaust per MMBtu [HHV]) = 8,641.42**
(Based on EPA RM-19) at 68 deg F and 14.696 psia

**F-Factor Calculation:**

F-Factor = 1,000,000*((3.64*%H)+(1.53*%C)+(0.57*%S)+(0.14*%N)-(0.46*%O))/GCV

GCV = Gross Btu per lb. of gas (HHV)

%H, %C, %S, %N, & %O are percent weight values calculated from fuel analysis and have units of (scf/lb)/%

Density of natural gas based on specific gravity multiplied by density of air at 68 deg F and 14.696 psia.

**References:**


[1] ASTM D 3588

[2] Civil Engineering Reference Manual, 7th ed. - Michael R. Lindeburg

[3] Mark's Standard Handbook for Mechanical Engineers, 10th ed. - Eugene A. Avallone, Theodore Baumeister III

[4] Introduction to Fluid Mechanics, 3rd ed. - William S. Janna

[5] GPA Reference Bulletin 181-86, revised 1986, reprinted 1995

**Client:** Cricket Valley Energy Center LLC
**Location:** Cricket Valley Energy Center
**Date:** April 17, 2020
**Project #:** bec-19-cricketvalley.ny-start#3

**Natural Gas - Fuel Analysis**

Standardized to 68 deg F and 14.696 psia - EPA Standards

| Gas Component | | Mole (%) | Molecular[1] Weight (lb/lb-mole) | Lbs Component per Lb-Mole of Gas | Wt. % of Component | Ideal Gross[1,3] Heating Value (Btu/ft$^3$) | Fuel Heat Value [HHV] (Btu/SCF) | Ideal Net[1,3] Heating Value (Btu/ft$^3$) | Fuel Heat Value [LHV] (Btu/SCF) |
|---|---|---|---|---|---|---|---|---|---|
| Methane | $CH_4$ | 92.7470 | 16.0430 | 14.88 | 86.77 | 994.85 | 922.69 | 895.75 | 830.79 |
| Ethane | $C_2H_6$ | 4.2076 | 30.0700 | 1.27 | 7.38 | 1,743.15 | 73.34 | 1,594.41 | 67.09 |
| Propane | $C_3H_8$ | 0.2594 | 44.0970 | 0.11 | 0.67 | 2,478.35 | 6.43 | 2,280.17 | 5.91 |
| iso-Butane | $iC_4H_{10}$ | 0.0206 | 58.1230 | 0.01 | 0.07 | 3,203.11 | 0.66 | 2,955.38 | 0.61 |
| n-Butane | $nC_4H_{10}$ | 0.0244 | 58.1230 | 0.01 | 0.08 | 3,213.35 | 0.78 | 2,965.62 | 0.72 |
| Iso-Pentane | $iC_5H_{12}$ | 0.0013 | 72.1500 | 0.00 | 0.01 | 3,940.87 | 0.05 | 3,643.50 | 0.05 |
| n-Pentane | $nC_5H_{12}$ | 0.0013 | 72.1500 | 0.00 | 0.01 | 3,948.75 | 0.05 | 3,648.32 | 0.05 |
| Hexanes | $C_6H_{14}$ | 0.0000 | 86.1770 | 0.00 | 0.00 | 4,684.54 | 0.00 | 4,337.82 | 0.00 |
| Heptanes | $C_7H_{16}$ | 0.0000 | 100.2040 | 0.00 | 0.00 | 5,419.94 | 0.00 | 5,023.77 | 0.00 |
| Octanes | $C_8H_{18}$ | 0.0000 | 114.2310 | 0.00 | 0.00 | 6,155.14 | 0.00 | 5,709.23 | 0.00 |
| Carbon Dioxide | $CO_2$ | 0.5882 | 44.0100 | 0.26 | 1.51 | 0.00 | 0.00 | 0.00 | 0.00 |
| Nitrogen | $N_2$ | 2.1477 | 28.0134 | 0.60 | 3.51 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hydrogen Sulfide | $H_2S$ | 0.0000 | 34.0800 | 0.00 | 0.00 | 627.54 | 0.00 | 578.00 | 0.00 |
| Oxygen | $O_2$ | 0.0000 | 31.9988 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Helium | He | 0.0000 | 4.0026 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hydrogen | $H_2$ | 0.0025 | 2.0159 | 0.00 | 0.00 | 319.34 | 0.01 | 269.82 | 0.01 |
| **Totals** | | **100.000** | | **17.15** | **100.00** | **dry** | **1,004.02** | **dry** | **905.22** |
| | | | | | | **wet[2,5]** | **980.87** | **wet[2,5]** | **884.35** |

| Characteristics of Fuel Gas | | |
|---|---|---|
| Molecular Weight of gas = | 17.148 | lb/lb-mole |
| Btu per lb. of gas[4] = | 22,555.765 | gross (HHV) |
| Btu per lb. of gas[4] = | 20,336.257 | net (LHV) |
| Density of fuel gas[2] = | 0.0445 | lb/cu. ft |
| Wt % VOC in fuel gas = | 0.83 | % |
| Specific Gravity[1] = | 0.5921 | |

| Component | Wt% |
|---|---|
| carbon | 71.95 |
| oxygen | 1.10 |
| hydrogen | 23.44 |
| nitrogen | 3.51 |
| helium | 0.00 |
| sulfur | 0.00 |
| **Total** | **100.00** |

**F-Factor (SCF dry exhaust per MMBtu [HHV]) = 8,663.09**
(Based on EPA RM-19) at 68 deg F and 14.696 psia

**F-Factor Calculation:**

F-Factor = 1,000,000*((3.64*%H)+(1.53*%C)+(0.57*%S)+(0.14*%N)-(0.46*%O))/GCV

GCV = Gross Btu per lb. of gas (HHV)

%H, %C, %S, %N, & %O are percent weight values calculated from fuel analysis and have units of (scf/lb)/%

Density of natural gas based on specific gravity multiplied by density of air at 68 deg F and 14.696 psia.

**References:**


[1] ASTM D 3588

[2] Civil Engineering Reference Manual, 7th ed. - Michael R. Lindeburg

[3] Mark's Standard Handbook for Mechanical Engineers, 10th ed. - Eugene A. Avallone, Theodore Baumeister III

[4] Introduction to Fluid Mechanics, 3rd ed. - William S. Janna

[5] GPA Reference Bulletin 181-86, revised 1986, reprinted 1995

| | | | |
|---|---|---|---|
| **CLIENT:** | McHale & Associates, Inc | **REQUESTED BY:** | Mr. Wilson Davis |
| **CLIENT PROJECT:** | Bechtel Cricket Valley | **PURCHASE ORDER NO:** | PENDING |
| **LABORATORY NO:** | 92357-001 | **REPORT DATE:** | April 22, 2020 |
| **SAMPLE:** | 4819 U3-Unfired 1 A (4819) 2020-04-15 13:55 | | |

***Composition of Natural Gas by Gas Chromatography. ASTM D 1945.a***

| | ***Results. Mol %*** |
|---|---|
| Hydrogen | 0.020 |
| Oxygen | 0.000 |
| Nitrogen | 0.355 |
| Carbon Dioxide | 0.248 |
| Methane | 96.104 |
| Ethane | 3.123 |
| Propane | 0.138 |
| iso-Butane | 0.004 |
| n-Butane | 0.006 |
| iso-Pentane | 0.001 |
| n-Pentane | 0.001 |
| Hexanes Plus | 0.000 |
| **TOTAL** | **100.000** |

***Calorific Value and Specific Gravity. Calculated at 14.696 psia and 60°F. ASTM D 3588.e***

| | ***Results*** |
|---|---|
| Specific Gravity at 60ºF (air=1) | 0.5743 |
| NET (Dry basis), BTU/scf | 928.2 |
| Gross (Dry basis), BTU/scf | 1,030 |
| NET (Dry basis), BTU/lb | 21,177 |
| Gross (Dry basis), BTU/lb | 23,496 |

Respectfully submitted
For Texas OilTech Laboratories, L.P.



Roland Gore
Associate Laboratory Director

# Certificate of Analysis

SINCE 1985

*Quality Controlled Through Analysis*

10630 FALLSTONE RD. HOUSTON, TEXAS 77099
P.O. BOX 741905, HOUSTON, TEXAS 77274

TEL: (281) 495-2400
FAX: (281) 495-2410

| | | | |
|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | bec-19-cricketvalley.ny-start#1 | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92376-001 Page 1 of 3 | **REPORT DATE:** | April 30, 2020 |
| **SAMPLE:** | Cricket Valley-R1-NoDuct Natural Gas Sample 2020-04-15 | | |

**TEST** **RESULT**

***Composition of Natural Gas by Gas Chromatography, ASTM D 1945.a****

| | ***Results, Mol %*** |
|---|---|
| Hydrogen | 0.0000 |
| Oxygen | 0.0000 |
| Nitrogen | 7.1817 |
| Carbon Dioxide | 0.3541 |
| Methane | 89.1684 |
| Ethane | 3.1642 |
| Propane | 0.1142 |
| iso-Butane | 0.0057 |
| n-Butane | 0.0057 |
| iso-Pentane | 0.0030 |
| n-Pentane | 0.0030 |
| Hexanes Plus | 0.0000 |
| **TOTAL** | **100.0000** |

*Data has been air corrected.

***Calorific Value and Specific Gravity, Calculated at 14.696 psia and 60°F, ASTM D 3588.e***

| | ***Results*** |
|---|---|
| NET (Dry basis), BTU/scf | 865.3 |
| Gross (Dry basis), BTU/scf | 960.0 |
| NET (Dry basis), BTU/lb | 18,782 |
| Gross (Dry basis), BTU/lb | 20,837 |

***Calorific Value and Specific Gravity, Calculated at 14.696 psia and 68°F, ASTM D 3588.e***

| | ***Results*** |
|---|---|
| NET (Dry basis), BTU/scf | 852.2 |
| Gross (Dry basis), BTU/scf | 945.4 |
| NET (Dry basis), BTU/lb | 18,782 |
| Gross (Dry basis), BTU/lb | 20,837 |

Cert. No.: 0005085, 17025
Quality Management System Certified to ISO 9001:2008, and ISO 17025:2005

These analyses, opinions or interpretations are based on material supplied by the client to whom, and for whose exclusive and confidential use this report is made. Results related only to the items tested. Texas OilTech Laboratories, L.P. and its officers assume no responsibility and make no warranty for proper operations of any petroleum, oil, gas or any other material in connection with which this report is used or relied on. This report may not be reproduced, except in full without prior written approval by Texas OilTech Laboratories, L.P.

# Certificate of Analysis

SINCE 1985

*Quality Controlled Through Analysis*

10630 FALLSTONE RD. HOUSTON, TEXAS 77099
P.O. BOX 741905, HOUSTON, TEXAS 77274

TEL: (281) 495-2400
FAX: (281) 495-2410

| | | | |
|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | bec-19-cricketvalley.ny-start#1 | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92376-001 Page 2 of 3 | **REPORT DATE:** | April 30, 2020 |
| **SAMPLE:** | Cricket Valley-R1-NoDuct Natural Gas Sample 2020-04-15 | | |

**TEST** **RESULT**

***Sulfur Compounds in Natural Gas and Gaseous Fuels by GC, ASTM D 5504***

| | ***Results, ppm/Wt*** |
|---|---|
| Hydrogen Sulfide | 1.0 |
| Carbonyl Sulfide | 0.1 |
| 2-Methyl Thiophene | <0.1 |
| 2-Pentyl Mercaptan | <0.1 |
| 3-Methyl Thiophene | <0.1 |
| Benzothiophene | <0.1 |
| Carbon Disulfide | <0.1 |
| Diethylsulfide | <0.1 |
| Dimethylsulfide | <0.1 |
| Ethyl Mercaptan | <0.1 |
| Ethylmethylsulfide | <0.1 |
| Isobutyl Mercaptan | <0.1 |
| Isopropyl Mercaptan | 0.1 |
| Methyl Mercaptan | <0.1 |
| Methyl-t-butyl Sulfide | <0.1 |
| n-Butyl Mercaptan | <0.1 |
| Propyl Mercaptan | 0.1 |
| Tert-butyl disulfide | <0.1 |
| Tert-Butyl mercaptan | 0.5 |
| Tetra-Hydro Thiophene | <0.1 |
| Thiophene | <0.1 |
| Thiophenol | <0.1 |
| Dibenzothiophene | <0.1 |
| 1,2-Ethanedithiol | <0.1 |
| Propyl Sulfide | <0.1 |
| 1-Hexanethiol | <0.1 |
| 1,5-Pentanedithiol | <0.1 |
| Bromothiophene | <0.1 |
| Propyl Disulfide | <0.1 |
| 1-Heptanethiol | <0.1 |
| 2-Methyl Benzothiophene | <0.1 |
| Phenyl Sulfide | <0.1 |
| 1-Nonanethiol | <0.1 |
| 2-Butyl Thiophene | <0.1 |
| 3-Butyl Thiophene | <0.1 |

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FAX: (281) 495-2410

| | | | |
|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | bec-19-cricketvalley.ny-start#1 | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92376-001 Page 3 of 3 | **REPORT DATE:** | April 30, 2020 |
| **SAMPLE:** | Cricket Valley-R1-NoDuct Natural Gas Sample 2020-04-15 | | |

**TEST** **RESULT**

***Sulfur Compounds in Natural Gas and Gaseous Fuels by GC, ASTM D 5504 Continued...***

| | ***Results, ppm/Wt*** |
|---|---|
| 1-Octanethiol | <0.1 |
| 2-Ethyl Thiophene | <0.1 |

| ***Parameter*** | ***Results*** |
|---|---|
| | |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 60ºF, wt% | $1.5 \times 10^{-4}$ |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 68ºF, wt% | $1.5 \times 10^{-4}$ |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 60ºF, ppmw | 1.5 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 68ºF, ppmw | 1.5 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, grains/100 scf @ 60ºF | 0.04 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, grains/100 scf @ 68ºF | 0.04 |

Respectfully submitted
For Texas OilTech Laboratories, L.P.

Roland Gore
Associate Laboratory Director



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| | | | |
|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | bec-19-cricketvalley.ny-start#1 | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92376-002 Page 1 of 3 | **REPORT DATE:** | April 30, 2020 |
| **SAMPLE:** | Cricket Valley-R1-Duct Natural Gas Sample 2020-04-16 | | |

**TEST** **RESULT**

***Composition of Natural Gas by Gas Chromatography, ASTM D 1945.a***

| | ***Results, Mol %*** |
|---|---|
| Hydrogen | 0.0061 |
| Oxygen | 0.2596 |
| Nitrogen | 1.1224 |
| Carbon Dioxide | 0.5510 |
| Methane | 93.6582 |
| Ethane | 4.2566 |
| Propane | 0.1339 |
| iso-Butane | 0.0051 |
| n-Butane | 0.0051 |
| iso-Pentane | 0.0010 |
| n-Pentane | 0.0010 |
| Hexanes Plus | 0.0000 |
| **TOTAL** | 100.0000 |

***Calorific Value and Specific Gravity, Calculated at 14.696 psia and 60°F, ASTM D 3588.e***

| | ***Results*** |
|---|---|
| NET (Dry basis), BTU/scf | 924.1 |
| Gross (Dry basis), BTU/scf | 1,026 |
| NET (Dry basis), BTU/lb | 20,617 |
| Gross (Dry basis), BTU/lb | 22,867 |

***Calorific Value and Specific Gravity, Calculated at 14.696 psia and 68°F, ASTM D 3588.e***

| | ***Results*** |
|---|---|
| NET (Dry basis), BTU/scf | 910.1 |
| Gross (Dry basis), BTU/scf | 1,010 |
| NET (Dry basis), BTU/lb | 20,617 |
| Gross (Dry basis), BTU/lb | 22,867 |



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| | | | |
|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | bec-19-cricketvalley.ny-start#1 | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92376-002 Page 2 of 3 | **REPORT DATE:** | April 30, 2020 |
| **SAMPLE:** | Cricket Valley-R1-Duct Natural Gas Sample 2020-04-16 | | |

**TEST** **RESULT**

***Sulfur Compounds in Natural Gas and Gaseous Fuels by GC, ASTM D 5504***

| | ***Results, ppm/Wt*** |
|---|---|
| Hydrogen Sulfide | 1.4 |
| Carbonyl Sulfide | 0.3 |
| 2-Methyl Thiophene | <0.1 |
| 2-Pentyl Mercaptan | <0.1 |
| 3-Methyl Thiophene | <0.1 |
| Benzothiophene | <0.1 |
| Carbon Disulfide | <0.1 |
| Diethylsulfide | <0.1 |
| Dimethylsulfide | <0.1 |
| Ethyl Mercaptan | 0.1 |
| Ethylmethylsulfide | <0.1 |
| Isobutyl Mercaptan | <0.1 |
| Isopropyl Mercaptan | 0.5 |
| Methyl Mercaptan | 0.1 |
| Methyl-t-butyl Sulfide | <0.1 |
| n-Butyl Mercaptan | <0.1 |
| Propyl Mercaptan | 0.2 |
| Tert-butyl disulfide | <0.1 |
| Tert-Butyl mercaptan | 1.8 |
| Tetra-Hydro Thiophene | <0.1 |
| Thiophene | <0.1 |
| Thiophenol | <0.1 |
| Dibenzothiophene | <0.1 |
| 1,2-Ethanedithiol | <0.1 |
| Propyl Sulfide | <0.1 |
| 1-Hexanethiol | <0.1 |
| 1,5-Pentanedithiol | <0.1 |
| Bromothiophene | <0.1 |
| Propyl Disulfide | <0.1 |
| 1-Heptanethiol | <0.1 |
| 2-Methyl Benzothiophene | <0.1 |
| Phenyl Sulfide | <0.1 |
| 1-Nonanethiol | <0.1 |
| 2-Butyl Thiophene | <0.1 |
| 3-Butyl Thiophene | <0.1 |



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| | | | |
|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | bec-19-cricketvalley.ny-start#1 | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92376-002 Page 3 of 3 | **REPORT DATE:** | April 30, 2020 |
| **SAMPLE:** | Cricket Valley-R1-Duct Natural Gas Sample 2020-04-16 | | |

**TEST** **RESULT**

***Sulfur Compounds in Natural Gas and Gaseous Fuels by GC. ASTM D 5504 Continued....***

| | ***Results, ppm/Wt*** |
|---|---|
| 1-Octanethiol | <0.1 |
| 2-Ethyl Thiophene | <0.1 |

| ***Parameter*** | ***Results*** |
|---|---|
| | |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 60ºF, wt% | $3.7 \times 10^{-4}$ |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 68ºF, wt% | $3.6 \times 10^{-4}$ |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 60ºF, ppmw | 3.7 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 68ºF, ppmw | 3.6 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, grains/100 scf @ 60ºF | 0.11 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, grains/100 scf @ 68ºF | 0.11 |

Respectfully submitted
For Texas OilTech Laboratories, L.P.

Roland Gore
Associate Laboratory Director



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| | | | |
|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | bec-19-cricketvalley.ny-start#1 | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92376-003 Page 1 of 3 | **REPORT DATE:** | April 30, 2020 |
| **SAMPLE:** | Cricket Valley-R2&3- Duct_R3 noduct Natural Gas Sample 2020-04-17 | | |

**TEST** **RESULT**

***Composition of Natural Gas by Gas Chromatography, ASTM D 1945.a****

| | ***Results, Mol %*** |
|---|---|
| Hydrogen | 0.0025 |
| Oxygen | 0.0000 |
| Nitrogen | 2.1477 |
| Carbon Dioxide | 0.5882 |
| Methane | 92.7470 |
| Ethane | 4.2076 |
| Propane | 0.2594 |
| iso-Butane | 0.0206 |
| n-Butane | 0.0244 |
| iso-Pentane | 0.0013 |
| n-Pentane | 0.0013 |
| Hexanes Plus | 0.0000 |
| **TOTAL** | **100.0000** |

*Data has been air corrected.

***Calorific Value and Specific Gravity, Calculated at 14.696 psia and 60°F, ASTM D 3588.e***

| | ***Results*** |
|---|---|
| NET (Dry basis), BTU/scf | 919.0 |
| Gross (Dry basis), BTU/scf | 1,019 |
| NET (Dry basis), BTU/lb | 20,341 |
| Gross (Dry basis), BTU/lb | 22,559 |

***Calorific Value and Specific Gravity, Calculated at 14.696 psia and 68°F, ASTM D 3588.e***

| | ***Results*** |
|---|---|
| NET (Dry basis), BTU/scf | 905.1 |
| Gross (Dry basis), BTU/scf | 991.7 |
| NET (Dry basis), BTU/lb | 20,341 |
| Gross (Dry basis), BTU/lb | 22,559 |



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| | | | |
|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | bec-19-cricketvalley.ny-start#1 | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92376-003 Page 2 of 3 | **REPORT DATE:** | April 30, 2020 |
| **SAMPLE:** | Cricket Valley-R2&3- Duct_R3 noduct Natural Gas Sample 2020-04-17 | | |

**TEST** **RESULT**

***Sulfur Compounds in Natural Gas and Gaseous Fuels by GC, ASTM D 5504***

| | ***Results, ppm/Wt*** |
|---|---|
| Hydrogen Sulfide | 0.6 |
| Carbonyl Sulfide | 0.4 |
| 2-Methyl Thiophene | <0.1 |
| 2-Pentyl Mercaptan | <0.1 |
| 3-Methyl Thiophene | <0.1 |
| Benzothiophene | <0.1 |
| Carbon Disulfide | <0.1 |
| Diethylsulfide | <0.1 |
| Dimethylsulfide | <0.1 |
| Ethyl Mercaptan | 0.1 |
| Ethylmethylsulfide | <0.1 |
| Isobutyl Mercaptan | <0.1 |
| Isopropyl Mercaptan | 0.5 |
| Methyl Mercaptan | 0.2 |
| Methyl-t-butyl Sulfide | <0.1 |
| n-Butyl Mercaptan | <0.1 |
| Propyl Mercaptan | 0.2 |
| Tert-butyl disulfide | <0.1 |
| Tert-Butyl mercaptan | 1.7 |
| Tetra-Hydro Thiophene | <0.1 |
| Thiophene | <0.1 |
| Thiophenol | <0.1 |
| Dibenzothiophene | <0.1 |
| 1,2-Ethanedithiol | <0.1 |
| Propyl Sulfide | <0.1 |
| 1-Hexanethiol | <0.1 |
| 1,5-Pentanedithiol | <0.1 |
| Bromothiophene | <0.1 |
| Propyl Disulfide | <0.1 |
| 1-Heptanethiol | <0.1 |
| 2-Methyl Benzothiophene | <0.1 |
| Phenyl Sulfide | <0.1 |
| 1-Nonanethiol | <0.1 |
| 2-Butyl Thiophene | <0.1 |
| 3-Butyl Thiophene | <0.1 |

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| | | | |
|---|---|---|---|
| **CLIENT:** | Air Hygiene International | **REQUESTED BY:** | Dr. Sean Barnes |
| **CLIENT PROJECT:** | bec-19-cricketvalley.ny-start#1 | **PURCHASE ORDER NO:** | 190827LAB |
| **LABORATORY NO:** | 92376-003 Page 3 of 3 | **REPORT DATE:** | April 30, 2020 |
| **SAMPLE:** | Cricket Valley-R2&3- Duct_R3 noduct Natural Gas Sample 2020-04-17 | | |

**TEST** **RESULT**

***Sulfur Compounds in Natural Gas and Gaseous Fuels by GC. ASTM D 5504 Continued...***

| | ***Results, ppm/Wt*** |
|---|---|
| 1-Octanethiol | <0.1 |
| 2-Ethyl Thiophene | <0.1 |

| ***Parameter*** | ***Results*** |
|---|---|
| | |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 60ºF, wt% | $1.1 \times 10^{-4}$ |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 68ºF, wt% | $1.1 \times 10^{-4}$ |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 60ºF, ppmw | 1.1 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, @ 68ºF, ppmw | 1.1 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, grains/100 scf @ 60ºF | 0.03 |
| Sulfur Total Volatile, in Gaseous Hydrocarbons and LPG, ASTM D 6667, grains/100 scf @ 68ºF | 0.03 |

Respectfully submitted
For Texas OilTech Laboratories, L.P.

Roland Gore
Associate Laboratory Director



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## Conversion Factors (Gas Analysis) to adjust BTU/ft$^3$ and Sulfur content @60ºF and 68ºF

NET (Dry Basis) BTU/scf @60ºF, factor= 1

NET (Dry Basis) BTU/scf @68ºF, factor= 0.984839

Gross (Dry Basis) BTU/scf @60ºF, factor = 1

Gross (Dry Basis) BTU/scf @68ºF, factor = 0.984839

NET (Dry Basis) BTU/lb @60ºF, factor = 1

NET (Dry Basis) BTU/lb @68ºF, factor = 1

GROSS (Dry Basis) BTU/lb @60ºF, factor= 1

GROSS (Dry Basis) BTU/lb @68ºF, factor= 1

Sulfur Total Volatile, ASTM D 6667 @60ºF, wt% or ppmwt, factor= 1

Sulfur Total Volatile, ASTM D 6667 @68ºF, wt% or ppmwt, factor= 0.984839

Sulfur Total Volatile, ASTM D 6667 @60ºF, grains/100scf = ppmwt @60ºF x 0.0300

Sulfur Total Volatile, ASTM D 6667 @68ºF, grains/100scf = ppmwt @60ºF x 0.0295

## Conversion Factors (Liquid Fuel Analysis)

Liquid Fuel BTU/lb @60ºF= Liquid fuel BTU/lb @68ºF

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Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com

# SAMPLE DESCRIPTION AND CHAIN OF CUSTODY RECORD

| Project Number: | bec-19-cricketvalley.ny-start#1 | Laboratory Analysis Requested: | |
|---|---|---|---|
| Person Taking Samples: | Swanson B., R. White | Fuel Component and Sulfur Analysis | |

| Sample Number | Location | Date | Volume | Analysis Method(s) [and target(s)] | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | GPA2261/ASTM 1945 [component analysis] | GPA 2172 Calculation @ 60 F & 68 F [HHV] | ASTM 5504 [speciated sulfur content] | | | | |
| UNIT3_41520_FUELGAS A | Cricket Valley-R1-NoDuct Natural Gas Sample [primary] | 04/15/20 | 10L | X | X | X | | | | |
| UNIT3_41520_FUELGAS B | Cricket Valley-R1-NoDuct Natural Gas Sample [backup] | 04/15/20 | 10L | as necessary | as necessary | as necessary | | | | |
| UNIT3_41620_FUELGAS A | Cricket Valley-R1-Duct Natural Gas Sample [primary] | 04/16/20 | 10L | X | X | X | | | | |
| UNIT3_41620_FUELGAS B | Cricket Valley-R1-Duct Natural Gas Sample [backup] | 04/16/20 | 10L | as necessary | as necessary | as necessary | | | | |
| UNIT3_41720_FUELGAS A | Cricket Valley-R2&3-Duct_R3 noduct Natural Gas Sample [primary] | 04/17/20 | 10L | X | X | X | | | | |
| UNIT2_41720_FUELGAS B | Cricket Valley-R2&3-Duct_R3 noduct Natural Gas Sample [backup] | 04/17/20 | 10L | as necessary | as necessary | as necessary | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Relinquished by: (Signature) | Date: 4/20/20 | Time: 12:00 | Received by: (Signature) G. Morrow | Date: 4.21.20 | Time: 11:28 |
| Relinquished by: (Signature) | Date: | Time: | Received by: (Signature) | Date: | Time: |

Please return cooler

# APPENDIX F

# STRATIFICATION TEST DATA

# STRATIFICATION TEST DATA

## Stratification Test Data Base Load

| Source Information | |
|---|---|
| **Company** | Cricket Valley Energy Center LLC |
| **Plant Name** | Cricket Valley Energy Center |
| **Equipment** | General Electric 7F.05 |
| **Location** | Dover Plains, New York |

| Test Information | |
|---|---|
| **Date** | 04/15/20 |
| **Project #** | bec-19-cricketvalley.ny-start#3 |
| **Unit Number** | U-00003 |
| **Load** | Base |
| **Number of Ports Available** | 4 |
| **Number of Ports Used** | 4 |

| Stack and Test Type | | | |
|---|---|---|---|
| ○ | Isokinetic Traverse (Wet Chemistry Testing) | | **Circular Stack** |
| ○ | Velocity Traverse (Flow and Flow RATA Test) | | |
| ○ | Stratification Traverse (Compliance Test) | ☐ RM 20 | |
| ◉ | **Stratification Traverse (RATA)** ☐ Part 60 | ☑ Part 75 | |

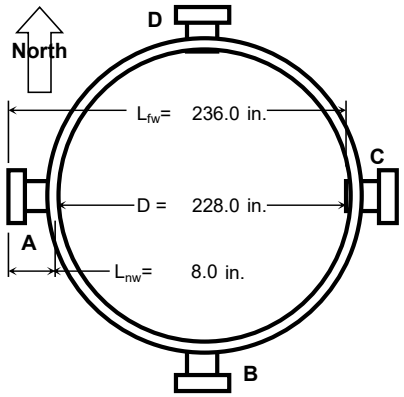
Created with Traverse-AHI v20200108

## METHOD 1 - STRATIFICATION TEST FOR A CIRCULAR SOURCE

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 04/15/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | bec-19-cricketvalley.ny-start#3 |
| **Equipment** | General Electric 7F.05 | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Circular Stack or Duct Diameter** | | | |
|---|---|---|---|
| **Distance to Far Wall of Stack** | ($L_{fw}$) | 236.00 | in. |
| **Distance to Near Wall of Stack** | ($L_{nw}$) | 8.00 | in. |
| **Diameter of Stack** | (D) | 228.00 | in. |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ |

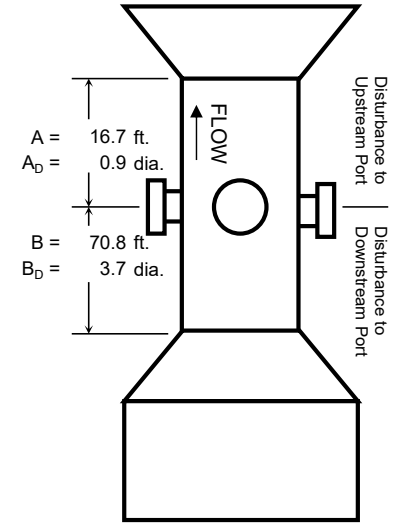
| **Distance from Disturbances to Port** | | | |
|---|---|---|---|
| **Distance Upstream** | (A) | 200.40 | in. |
| **Diameters Upstream** | ($A_D$) | 0.88 | diameters |
| **Distance Downstream** | (B) | 850.00 | in. |
| **Diameters Downstream** | ($B_D$) | 3.73 | diameters |




| **Number of Traverse Points Required** | | | | | |
|---|---|---|---|---|---|
| Diameters to Flow Disturbance | | Minimum Number of[1] Traverse Points | | Minimum Number of Traverse Points | |
| Down ($B_D$) Stream | Up ($A_D$) Stream | Particulate Points | Velocity Points | Comp Stratification Criteria | Points |
| 2.00-4.99 | 0.50-1.24 | 24 | 16 | RM 7E 8.1.2 | 12 RM1 pts |
| 5.00-5.99 | 1.25-1.49 | 20 | 16 | Alt 7E 8.1.2 | 3 points |
| 6.00-6.99 | 1.50-1.74 | 16 | 12 | | |
| 7.00-7.99 | 1.75-1.99 | 12 | 12 | | |
| >= 8.00 | >=2.00 | 8 or 12[2] | 8 or 12[2] | **Minimum Number of** | |
| Upstream Spec | | 24 | 16 | **Traverse Points** | |
| Downstream Spec | | 24 | 16 | **RATA Stratification** | |
| Traverse Pts Required | | 24 | 16 | **Criteria** | **Points** |
| | | | | Part75/60 | 12 RM1 pts |
| | | | | 75 abrv (a) | 3 points |
| | | | | 75 abrv (b) | 6 points |
| | | | | 12 points | |

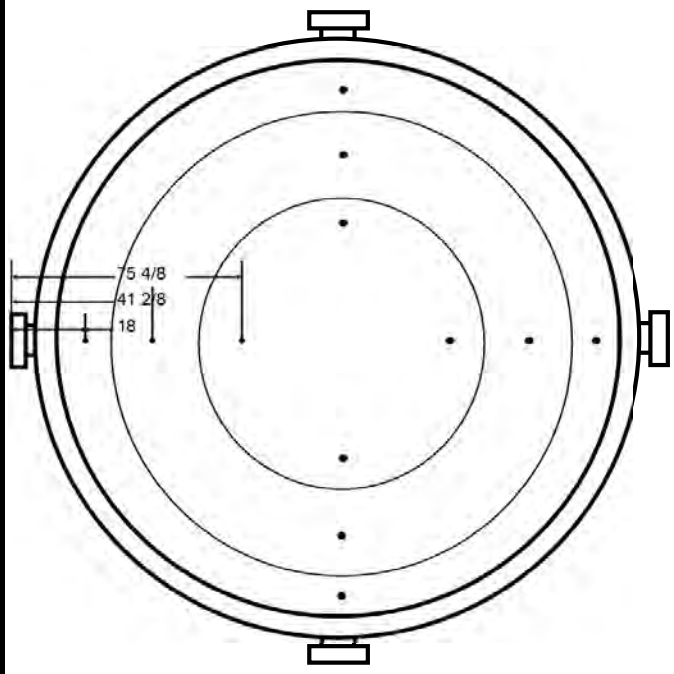
[1] Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.

[2] 8 for Circular Stacks 12 to 24 inches
12 for Circular Stacks over 24 inches




| **Number of Traverse Points Used** | | | | |
|---|---|---|---|---|
| 4 | **Ports by** | 3 | **Pts / port** | **Stratification Traverse (RATA)** |
| 12 | **Pts Used** | 12 | **Required** | |

| **Traverse Point Locations** | | | |
|---|---|---|---|
| **Traverse Point Number** | **Percent of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
| | % | in. | in. |
| **1** | 4.4% | 10 | 18 |
| **2** | 14.6% | 33 2/8 | 41 2/8 |
| **3** | 29.6% | 67 4/8 | 75 4/8 |
| **4** | | | |
| **5** | | | |
| **6** | | | |
| **7** | | | |
| **8** | | | |
| **9** | | | |
| **10** | | | |
| **11** | | | |
| **12** | | | |
| **13** | | | |
| **14** | | | |
| **15** | | | |
| **16** | | | |
| **17** | | | |
| **18** | | | |
| **19** | | | |
| **20** | | | |
| **21** | | | |
| **22** | | | |
| **23** | | | |
| **24** | | | |



## STRATIFICATION TRAVERSE (RATA) RESULTS

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 04/15/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | bec-19-cricketvalley.ny-start#3 |
| **Equipment** | General Electric 7F.05 | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Stack Dimensions** | | | | **Traverse Data** | | | |
|---|---|---|---|---|---|---|---|
| **Diameter or Length of Stack** | (D) | 228.00 | in. | 4 | **Ports by** | 3 | **Pts / port** |
| **Width of Stack** | (W) | | in. | 12 | **Pts Used** | 12 | **Required** |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ | **Run Start** | 10:33:05 | **Run End** | 11:39:05 |

| **Traverse Point** | **Time Per Point** | **Point Start Time** | **Point Stop Time (Reading)** | **$O_2$** | **Percent Difference** | **NOx** | **Percent Difference** |
|---|---|---|---|---|---|---|---|
| | min. | hh:mm:ss | hh:mm:ss | % | % | ppm | % |
| D-3 | 8.00 | 10:33:05 | 10:41:05 | 12.34 | 0.13% | 2.13 | 0.86% |
| D-2 | 5.00 | 10:41:05 | 10:46:05 | 12.34 | 0.09% | 1.95 | **7.54%** |
| D-1 | 5.00 | 10:46:05 | 10:51:05 | 12.36 | 0.07% | 2.08 | 1.37% |
| C-3 | 6.00 | 10:51:05 | 10:57:05 | 12.34 | 0.09% | 2.12 | 0.53% |
| C-2 | 5.00 | 10:57:05 | 11:02:05 | 12.35 | 0.01% | 2.07 | 1.85% |
| C-1 | 5.00 | 11:02:05 | 11:07:05 | 12.34 | 0.09% | 2.08 | 1.37% |
| B-3 | 6.00 | 11:07:05 | 11:13:05 | 12.37 | **0.15%** | 2.06 | 2.32% |
| B-2 | 5.00 | 11:13:05 | 11:18:05 | 12.34 | 0.09% | 2.24 | 6.22% |
| B-1 | 5.00 | 11:18:05 | 11:23:05 | 12.36 | 0.07% | 2.18 | 3.37% |
| A-3 | 6.00 | 11:23:05 | 11:29:05 | 12.36 | 0.07% | 2.13 | 1.00% |
| A-2 | 5.00 | 11:29:05 | 11:34:05 | 12.36 | 0.07% | 2.23 | 5.74% |
| A-1 | 5.00 | 11:34:05 | 11:39:05 | 12.36 | 0.07% | 2.04 | 3.27% |
| **Average** | | | | 12.35 | | 2.11 | |

| | | | $O_2$ | | NOx | | |
|---|---|---|---|---|---|---|---|
| | | | **Criteria** | **Results** | **Criteria** | **Results** | **AND criteria** |
| **RATA Part 75** | Non-Stratified % | ≤ | 5% | Non (%) | 5% | Non (Δ) | Under Part 75 criteria all measured pollutants and diluents demonstrate a non-stratified stack with subsequent testing from a single point located at least one meter away from the stack wall. |
| | Non-Stratified Δ | ≤ | 0.3 | | 3 | | |
| | Minimally-Stratified % | ≤ | 10% | | 10% | | |
| | Minimally-Stratified Δ | ≤ | 0.5 | | 5 | | |
| | Stratified | > | 10% | | 10% | | |
| | **Outcome** | | 1 point | | 1 point | | |
| | **Location** | | any point | | any point | | |
| | **Maximum Concentration** | | 12.37 | | 2.24 | | |
| | **Upscale Δ = Max Concentration - Average** | | 0.02 | Non | 0.13 | Non | |
| | **Upscale % Difference** | | 0.15% | Non | 6.22% | Mini | |
| | **Minimum Concentration** | | 12.34 | | 1.95 | | |
| | **Downscale Δ = Average - Min Concentration** | | 0.02 | Non | 0.16 | Non | |
| | **Downscale % Difference** | | 0.13% | Non | 7.54% | Mini | |
| | **First Point on List Closest to Average** | | C-1 | | C-2 | | |
| **Port Averages with Maximum Concentration Indicator** | **Port A Average** | | 12.36 | <max | 2.13 | | |
| | **Port B Average** | | 12.36 | | 2.16 | <max | |
| | **Port C Average** | | 12.34 | | 2.09 | | |
| | **Port D Average** | | 12.35 | | 2.05 | | |
| | **Port E Average** | | | | | | |
| | **Port F Average** | | | | | | |
| | **Port G Average** | | | | | | |

## RATA SAMPLE POINTS FOR CIRCULAR STACK

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 04/15/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | bec-19-cricketvalley.ny-start#3 |
| **Equipment** | General Electric 7F.05 | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Stack Dimensions** | | | | **Traverse Data** | | | |
|---|---|---|---|---|---|---|---|
| **Diameter or Length of Stack** | (D) | 228.00 | in. | 4 | **Ports by** | 3 | **Pts / port** |
| **Width of Stack** | (W) | | in. | 12 | **Pts Used** | 12 | **Required** |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ | **Run Start** | 10:33:05 | **Run End** | 11:39:05 |

**40 CFR 75 Criteria**

| **Stratification Results** | |
|---|---|
| **Maximum Percent Difference** | 7.54 % for NOx |
| **Maximum Pollutant Conc. Diff.** | 0.16 ppm for NOx |
| **Maximum Diluent Conc. Diff.** | 0.02 % for $O_2$ |
| **Stratification Conclusions** | |
| **Comparison** | all diluents/pollutants |
| **Stack Diameter** | D > 93.6 in. |

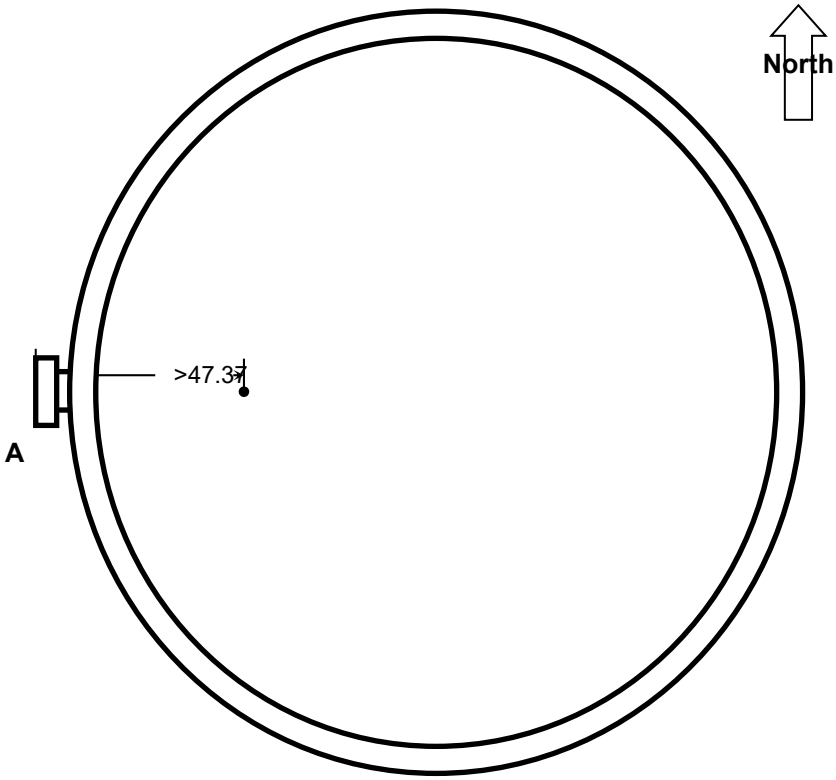
Under Part 75 criteria all measured pollutants and diluents demonstrate a non-stratified stack with subsequent testing from a single point located at least one meter away from the stack wall.

| **Traverse Point Number** | **Percent of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
|---|---|---|---|
| | % | in. | in. |
| **1** | >17.27% | >39.37 | >47.37 |
| **2** | | | |
| **3** | | | |

Test Type
- ☐ Moisture, for MW
- ☐ Moisture, for wet-to-dry
- ☑ Gas

☐ Use 6.5.6.3(a) points?

☐ 6.5.6(b)(2) alt. points could apply



# STRATIFICATION TEST DATA

## Stratification Test Data Base+DB Load

| Source Information | |
|---|---|
| **Company** | Cricket Valley Energy Center LLC |
| **Plant Name** | Cricket Valley Energy Center |
| **Equipment** | General Electric 7F.05 |
| **Location** | Dover Plains, New York |

| Test Information | |
|---|---|
| **Date** | 04/16/20 |
| **Project #** | bec-19-cricketvalley.ny-start#3 |
| **Unit Number** | U-00003 |
| **Load** | Base+DB |
| **Number of Ports Available** | 4 |
| **Number of Ports Used** | 4 |

| Stack and Test Type | | | |
|---|---|---|---|
| ○ | Isokinetic Traverse (Wet Chemistry Testing) | | **Circular Stack** |
| ○ | Velocity Traverse (Flow and Flow RATA Test) | | |
| ○ | Stratification Traverse (Compliance Test) | ☐ RM 20 | |
| ◉ | **Stratification Traverse (RATA)** ☐ Part 60 | ☑ Part 75 | |

Created with Traverse-AHI v20200108

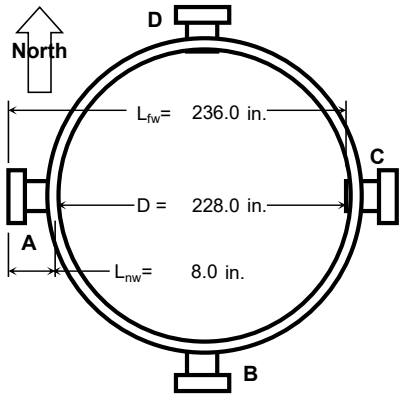
bec-19-cricketvalley.ny-start#3-U-00003-StratBaseDB

## METHOD 1 - STRATIFICATION TEST FOR A CIRCULAR SOURCE

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 04/16/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | bec-19-cricketvalley.ny-start#3 |
| **Equipment** | General Electric 7F.05 | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Circular Stack or Duct Diameter** | | | |
|---|---|---|---|
| **Distance to Far Wall of Stack** | ($L_{fw}$) | 236.00 | in. |
| **Distance to Near Wall of Stack** | ($L_{nw}$) | 8.00 | in. |
| **Diameter of Stack** | (D) | 228.00 | in. |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ |

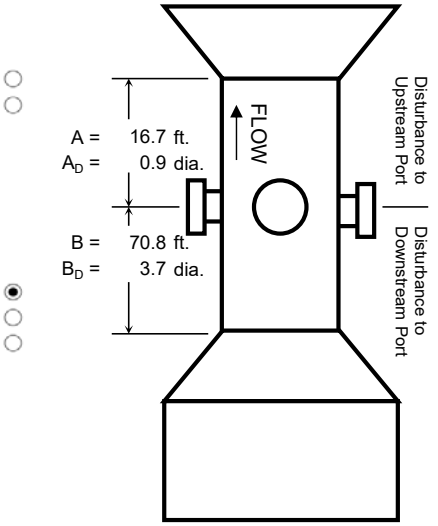
| **Distance from Disturbances to Port** | | | |
|---|---|---|---|
| **Distance Upstream** | (A) | 200.40 | in. |
| **Diameters Upstream** | ($A_D$) | 0.88 | diameters |
| **Distance Downstream** | (B) | 850.00 | in. |
| **Diameters Downstream** | ($B_D$) | 3.73 | diameters |




| **Number of Traverse Points Required** | | | | | |
|---|---|---|---|---|---|
| Diameters to Flow Disturbance | | Minimum Number of[1] Traverse Points | | Minimum Number of Traverse Points | |
| Down ($B_D$) Stream | Up ($A_D$) Stream | Particulate Points | Velocity Points | Comp Stratification Criteria | Points |
| 2.00-4.99 | 0.50-1.24 | 24 | 16 | RM 7E 8.1.2 | 12 RM1 pts |
| 5.00-5.99 | 1.25-1.49 | 20 | 16 | Alt 7E 8.1.2 | 3 points |
| 6.00-6.99 | 1.50-1.74 | 16 | 12 | | |
| 7.00-7.99 | 1.75-1.99 | 12 | 12 | | |
| >= 8.00 | >=2.00 | 8 or 12[2] | 8 or 12[2] | **Minimum Number of** | |
| Upstream Spec | | 24 | 16 | **Traverse Points** | |
| Downstream Spec | | 24 | 16 | **RATA Stratification** | |
| Traverse Pts Required | | 24 | 16 | **Criteria** | **Points** |
| | | | | Part75/60 | 12 RM1 pts |
| | | | | 75 abrv (a) | 3 points |
| | | | | 75 abrv (b) | 6 points |
| | | | | 12 points | |

[1] Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.

[2] 8 for Circular Stacks 12 to 24 inches
12 for Circular Stacks over 24 inches




| **Number of Traverse Points Used** | | | | |
|---|---|---|---|---|
| 4 | **Ports by** | 3 | **Pts / port** | **Stratification Traverse (RATA)** |
| 12 | **Pts Used** | 12 | **Required** | |

| **Traverse Point Locations** | | | |
|---|---|---|---|
| **Traverse Point Number** | **Percent of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
| | % | in. | in. |
| **1** | 4.4% | 10 | 18 |
| **2** | 14.6% | 33 2/8 | 41 2/8 |
| **3** | 29.6% | 67 4/8 | 75 4/8 |
| **4** | | | |
| **5** | | | |
| **6** | | | |
| **7** | | | |
| **8** | | | |
| **9** | | | |
| **10** | | | |
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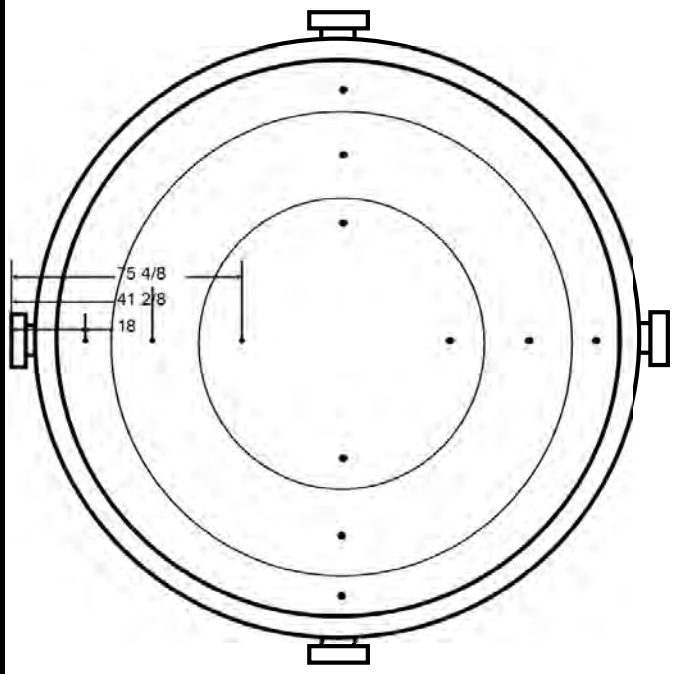
| **18** | | | |
| **19** | | | |
| **20** | | | |
| **21** | | | |
| **22** | | | |
| **23** | | | |
| **24** | | | |



## STRATIFICATION TRAVERSE (RATA) RESULTS

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 04/16/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | bec-19-cricketvalley.ny-start#3 |
| **Equipment** | General Electric 7F.05 | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Stack Dimensions** | | | | **Traverse Data** | | | |
|---|---|---|---|---|---|---|---|
| **Diameter or Length of Stack** | (D) | 228.00 | in. | 4 | **Ports by** | 3 | **Pts / port** |
| **Width of Stack** | (W) | | in. | 12 | **Pts Used** | 12 | **Required** |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ | **Run Start** | 12:29:12 | **Run End** | 13:35:12 |

| **Traverse Point** | **Time Per Point** | **Point Start Time** | **Point Stop Time (Reading)** | **$O_2$** | **Percent Difference** | **NOx** | **Percent Difference** |
|---|---|---|---|---|---|---|---|
| | min. | hh:mm:ss | hh:mm:ss | % | % | ppm | % |
| D-3 | 8.00 | 12:29:12 | 12:37:12 | 11.81 | 0.05% | 2.47 | 1.89% |
| D-2 | 5.00 | 12:37:12 | 12:42:12 | 11.81 | 0.05% | 2.32 | **4.30%** |
| D-1 | 5.00 | 12:42:12 | 12:47:12 | 11.81 | 0.05% | 2.46 | 1.48% |
| C-3 | 6.00 | 12:47:12 | 12:53:12 | 11.80 | 0.04% | 2.47 | 1.89% |
| C-2 | 5.00 | 12:53:12 | 12:58:12 | 11.81 | 0.05% | 2.48 | 2.30% |
| C-1 | 5.00 | 12:58:12 | 13:03:12 | 11.81 | 0.05% | 2.37 | 2.23% |
| B-3 | 6.00 | 13:03:12 | 13:09:12 | 11.81 | 0.05% | 2.45 | 1.07% |
| B-2 | 5.00 | 13:09:12 | 13:14:12 | 11.79 | **0.12%** | 2.45 | 1.07% |
| B-1 | 5.00 | 13:14:12 | 13:19:12 | 11.80 | 0.04% | 2.45 | 1.07% |
| A-3 | 6.00 | 13:19:12 | 13:25:12 | 11.81 | 0.05% | 2.38 | 1.82% |
| A-2 | 5.00 | 13:25:12 | 13:30:12 | 11.79 | **0.12%** | 2.34 | 3.47% |
| A-1 | 5.00 | 13:30:12 | 13:35:12 | 11.80 | 0.04% | 2.45 | 1.07% |
| **Average** | | | | 11.80 | | 2.42 | |

| | | | $O_2$ | | NOx | | |
|---|---|---|---|---|---|---|---|
| | | | **Criteria** | **Results** | **Criteria** | **Results** | **AND criteria** |
| **RATA Part 75** | Non-Stratified % | ≤ | 5% | Non (%) | 5% | Non (%) | Under Part 75 criteria all measured pollutants and diluents demonstrate a non-stratified stack with subsequent testing from a single point located at least one meter away from the stack wall. |
| | Non-Stratified Δ | ≤ | 0.3 | | 3 | | |
| | Minimally-Stratified % | ≤ | 10% | | 10% | | |
| | Minimally-Stratified Δ | ≤ | 0.5 | | 5 | | |
| | Stratified | > | 10% | | 10% | | |
| | **Outcome** | | 1 point | | 1 point | | |
| | **Location** | | any point | | any point | | |
| | **Maximum Concentration** | | 11.81 | | 2.48 | | |
| | **Upscale Δ = Max Concentration - Average** | | 0.01 | Non | 0.06 | Non | |
| | **Upscale % Difference** | | 0.05% | Non | 2.30% | Non | |
| | **Minimum Concentration** | | 11.79 | | 2.32 | | |
| | **Downscale Δ = Average - Min Concentration** | | 0.01 | Non | 0.10 | Non | |
| | **Downscale % Difference** | | 0.12% | Non | 4.30% | Non | |
| | **First Point on List Closest to Average** | | C-2 | | B-2 | | |
| **Port Averages with Maximum Concentration Indicator** | **Port A Average** | | 11.80 | | 2.39 | | |
| | **Port B Average** | | 11.80 | | 2.45 | <max | |
| | **Port C Average** | | 11.81 | | 2.44 | | |
| | **Port D Average** | | 11.81 | <max | 2.42 | | |
| | **Port E Average** | | | | | | |
| | **Port F Average** | | | | | | |
| | **Port G Average** | | | | | | |

## RATA SAMPLE POINTS FOR CIRCULAR STACK

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 04/16/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | bec-19-cricketvalley.ny-start#3 |
| **Equipment** | General Electric 7F.05 | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Stack Dimensions** | | | | **Traverse Data** | | | |
|---|---|---|---|---|---|---|---|
| **Diameter or Length of Stack** | (D) | 228.00 | in. | 4 | **Ports by** | 3 | **Pts / port** |
| **Width of Stack** | (W) | | in. | 12 | **Pts Used** | 12 | **Required** |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ | **Run Start** | 12:29:12 | **Run End** | 13:35:12 |

**40 CFR 75 Criteria**

| **Stratification Results** | |
|---|---|
| **Maximum Percent Difference** | 4.30 % for NOx |
| **Maximum Pollutant Conc. Diff.** | 0.10 ppm for NOx |
| **Maximum Diluent Conc. Diff.** | 0.01 % for $O_2$ |
| **Stratification Conclusions** | |
| **Comparison** | all diluents/pollutants |
| **Stack Diameter** | D > 93.6 in. |

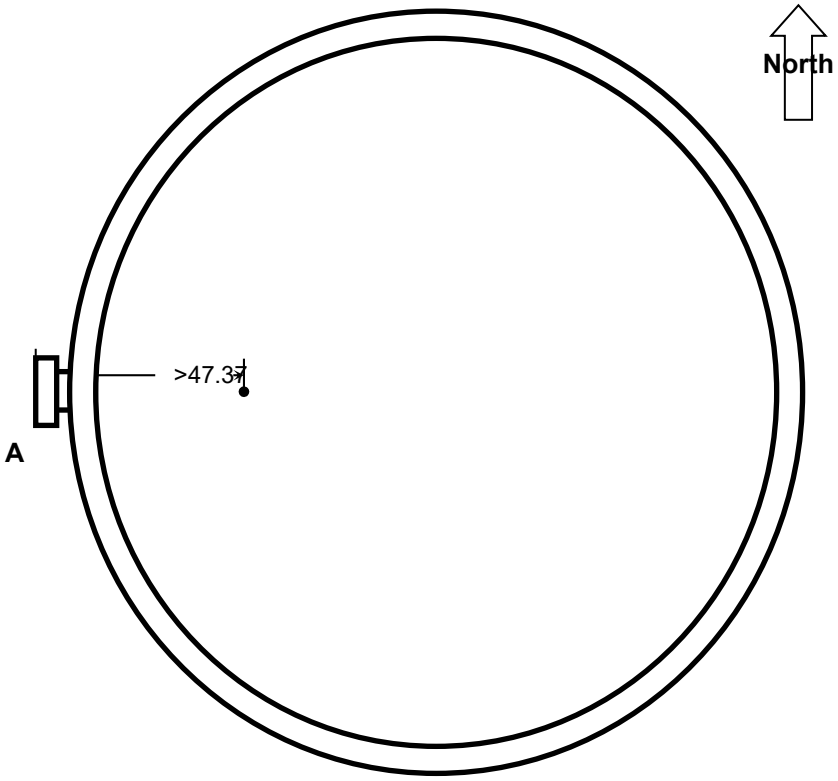
Under Part 75 criteria all measured pollutants and diluents demonstrate a non-stratified stack with subsequent testing from a single point located at least one meter away from the stack wall.

| **Traverse Point Number** | **Percent of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
|---|---|---|---|
| | % | in. | in. |
| **1** | >17.27% | >39.37 | >47.37 |
| **2** | | | |
| **3** | | | |

Test Type
- ☐ Moisture, for MW
- ☐ Moisture, for wet-to-dry
- ☑ Gas

☐ Use 6.5.6.3(a) points?

☐ 6.5.6(b)(2) alt. points could apply



# APPENDIX G

# EQUIPMENT CALIBRATION RECORDS

APEX SOURCE TESTING EQUIPMENT INSTRUMENTS

Apex Instruments, Inc.
204 Technology Park Lane
Fuquay-Varina, NC 27526

# S-TYPE PITOT TUBE CALIBRATION SHEET

***Reference USEPA Reference Method 2 (40CFR60, App. A, Meth. 2)***

| | | | |
|---|---|---|---|
| PITOT SERIAL# | 4187 | CALIBRATION DATE: | 10-Jan-13 |
| PITOT TYPE: | S-Type | BAROMETRIC PRESSURE: | 29.74 in Hg |
| STD. PITOT TYPE: | Ellipsoidal | STATIC PRESSURE | 1.4 in $H_20$ |
| Cp(std): | 0.990 | BLOCKAGE %: | N/A |
| PROBE SERIAL# | NICK | CORRECTION FACTOR: | 1.00 |

| | SIDE "A" CALIBRATION | | | |
|---|---|---|---|---|
| RUN NO. | Δ Pstd in $H_2O$ | Δ Ps in $H_2O$ | Cp(s) | DEVIATION Cp(s) - avg.Cp(s) |
| 1 | 0.560 | 0.820 | 0.818 | -0.001 |
| 2 | 0.560 | 0.815 | 0.821 | 0.002 |
| 3 | 0.560 | 0.820 | 0.818 | -0.001 |
| | | *"A" AVERAGE* | 0.819 | 0.0014 (must be ≤ 0.01) |

| | SIDE "B" CALIBRATION | | | |
|---|---|---|---|---|
| RUN NO. | Δ Pstd in $H_2O$ | Δ Ps in $H_2O$ | Cp(s) | DEVIATION Cp(s) - avg.Cp(s) |
| 1 | 0.560 | 0.815 | 0.821 | 0.000 |
| 2 | 0.560 | 0.815 | 0.821 | 0.000 |
| 3 | 0.560 | 0.815 | 0.821 | 0.000 |
| | | *"B" AVERAGE* | 0.821 | 0.0000 (must be ≤ 0.01) |

**ACCEPTANCE CRITERIA**

AVERAGE -0.0017 AVG. Cp (A) - AVG. Cp (B) must be ≤ 0.01

**If the Average and both Deviation Averages "A" & "B" are ≤ 0.01, then the OVERALL AVERAGE below may be used.**
*** If NOT, use the "A" Average OR "B" Average.**

**OVERALL AVERAGE** 0.8198




I certify that the above pitot tube was tested in accordance with the US EPA Method 2 standards.
See the Code of Federal Regulations, Title 40, Part 60, Appendix A, Method 2, Item 4.

Print Name: Nick Allen

Signature:

Date 1.11.13

# Wind Tunnel Pitot Calibration

| | | | |
|---|---|---|---|
| S-type Pitot ID: | **A5266** | Date: | **2-Mar-15** |
| Standard Pitot ID: | **001** | Personnel: | **KMR MF** |
| Cp(std): | **0.99** | Cp(actual): | **0.772** |
| Part Number: | | $P_{bar}$(in Hg): | **29.71** |
| Test Velocity (fps): | **50** | T(°F): | **55** |
| Wind Tunnel Location: | **Calera, AL** | Tunnel Size: | **20" x 40"** |
| Customer: | **Air Hygiene** | | |

A-SIDE

| $\Delta P_{std}$ (in. $H_2O$) | $\Delta P_s$ (in. $H_2O$) | Cp(s) | Deviation* |
|---|---|---|---|
| **0.5594** | **0.9193** | **0.772** | 0.002 |
| **0.5595** | **0.9195** | **0.772** | -0.001 |
| **0.5602** | **0.9203** | **0.772** | 0.000 |
| | ***AVERAGE*** | **0.772** | 0.001 |
| | | Std deviation | 0.002 |

**NOTES:**

1. **Pitot calibrated with an Environmental Supply Co. PM10 cyclone.**
2. **$C_p$ is only valid when used with PM10 cyclone.**
3. **$C_p$ is only valid with 1" spacing from PM10 cyclone.**

$$Cp(s) = Cp(std)\sqrt{\frac{\Delta P(std)}{\Delta P(s)}}$$

*Deviation = {Cp(s) - *AVG* Cp(s)} {must be <0.010}

Standard deviation of the deviations must be less than 0.02 for both sides.

**Pitot tube S/N A5266 was calibrated in accordance with the CFR 40, Part 60 Appendix A, Method 2, Section 10.**

Signature

3/2/15
Date

**METERING SYSTEM DRY GAS METER CALIBRATION SHEET**
**EPA Reference Method**
**Metering System Pre-Test Calibration**
**Air Hygiene Assett ID: samp-cp-0030**

Filename: \\AHI-FILESVR\public\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0030 Calibration 7-3-19 (.xls]Original (5 point)

Make: apex
Model #: 522
Serial #: 1706009

Date: 07/03/19
Barometric Pressure: 29.10 (in. Hg)
Theoretical Critical Vacuum: 13.73 (in. Hg)

**DRY GAS METER READINGS**

| ΔH (in. H2O) | Time (min) | Volume Initial (ft³) | Volume Final (ft³) | Volume Total (ft³) | Initial Temperature Inlet (°F) | Initial Temperature Outlet (°F) |
|---|---|---|---|---|---|---|
| 0.32 | 17.00 | 443.350 | 448.680 | 5.330 | 71.0 | 71.0 |
| 0.63 | 12.00 | 448.680 | 454.070 | 5.390 | 73.0 | 73.0 |
| 1.10 | 10.00 | 454.070 | 460.140 | 6.070 | 74.0 | 74.0 |
| 1.90 | 10.00 | 460.140 | 468.070 | 7.930 | 76.0 | 76.0 |
| 3.50 | 10.00 | 468.070 | 479.010 | 10.940 | 77.0 | 77.0 |

| Final Temperature Inlet (°F) | Final Temperature Outlet (°F) | Orifice Serial# (number) | K' Orifice Coefficient (see above) | Actual Vacuum (in. Hg) | Ambient Temperature Initial (°F) | Ambient Temperature Final (°F) | Ambient Temperature Average (°F) |
|---|---|---|---|---|---|---|---|
| 73.0 | 73.0 | 40 | 0.2341 | 16.0 | 71.3 | 72.0 | 71.7 |
| 74.0 | 74.0 | 48 | 0.3350 | 16.0 | 72.0 | 72.5 | 72.3 |
| 76.0 | 76.0 | 55 | 0.4531 | 16.0 | 72.5 | 72.7 | 72.6 |
| 77.0 | 77.0 | 63 | 0.5888 | 16.0 | 72.7 | 72.8 | 72.8 |
| 80.0 | 80.0 | 73 | 0.8077 | 16.0 | 72.8 | 73.0 | 72.9 |

**RESULTS**

| DRY GAS METER VOLUME CORRECTED Vm(std) (ft³) | DRY GAS METER VOLUME CORRECTED Vm(std) (liters) | ORIFICE VOLUME CORRECTED Vcr(std) (ft³) | ORIFICE VOLUME CORRECTED Vcr(std) (liters) | ORIFICE VOLUME NOMINAL Vcr (ft³) |
|---|---|---|---|---|
| 5.147 | 145.76 | 5.023 | 142.2 | 5.202 |
| 5.194 | 147.11 | 5.071 | 143.6 | 5.258 |
| 5.840 | 165.40 | 5.713 | 161.8 | 5.928 |
| 7.624 | 215.91 | 7.423 | 210.2 | 7.704 |
| 10.521 | 297.95 | 10.182 | 288.3 | 10.570 |

| DRY GAS METER CALIBRATION FACTOR Y Variation (number) | DRY GAS METER CALIBRATION FACTOR Y Value (number) | ORIFICE CALIBRATION FACTOR ΔH@ Value (in. H2O) | ORIFICE CALIBRATION FACTOR ΔH@ Value (mm H2O) | ORIFICE CALIBRATION FACTOR ΔH@ Variation (in. H2O) |
|---|---|---|---|---|
| 0.001 | 0.976 | 1.990 | 50.56 | 0.113 |
| 0.002 | 0.976 | 1.910 | 48.52 | 0.033 |
| 0.004 | 0.978 | 1.819 | 46.21 | -0.058 |
| -0.001 | 0.974 | 1.856 | 47.15 | -0.021 |
| -0.007 | 0.968 | 1.811 | 46.00 | -0.067 |
| **AVERAGE:** | **0.974** | **1.878** | 47.69 | **PASSED** |

Notes:

For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter,acceptable tolerance of individual values from the average is +/- 0.02. For Orifice Calibration Factor dH@, the orifice differential pressure in inches of $H_20$ that equates to 0.75 cfm of air at 68 °F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is +/- 0.2. For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above. The Critical Orifice Coefficient, K', must be entered in English units, (ft)^3*(deg R)^0.5/((in.Hg)*(min)).

SIGNATURE: Craig McCarty

DATE: 07/03/19 07/03/19

**METERING SYSTEM THERMOCOUPLE CALIBRATION SHEET**
**EPA Reference Method**
**Metering System Pre-Test Calibration**
**Air Hygiene Assett ID: samp-cp-0030**

Filename: \\AHI-FILESVR\public\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0030 Calibration 7-3-19 (.xls]Original (5 point)

Make: apex
Model #: 522
Serial #: 1706009

Date: 07/03/19
Barometric Pressure: 29.28 (in. Hg)
Temperature (ASTM cal): 75.40 (°F)

| Thermocouple | 100 (°F) | | 600 (°F) | | 1200 (°F) | |
|---|---|---|---|---|---|---|
| | Reading | % Error | Reading | % Error | Reading | % Error |
| **Stack** | 101.00 | 0.50 | 603.00 | 0.50 | 1206.00 | 0.50 |
| **Probe** | 101.00 | 0.50 | 603.00 | 0.50 | 1206.00 | 0.50 |
| **Filter** | 101.00 | 0.50 | 603.00 | 0.50 | 1206.00 | 0.50 |
| **Dryer** | 101.00 | 0.50 | 603.00 | 0.50 | 1206.00 | 0.50 |
| **Aux.** | 101.00 | 0.50 | 603.00 | 0.50 | 1206.00 | 0.50 |

Note: Calibrated against an ALTEK Thermocouple Source Series 22, ID: samp-tc-0003
Direct temperature output calibrated to ASTM and IPTS standards as outlined in ALTEK Data Sheet 22.

| Thermocouple | 75.40 (°F) | | Responded to heating/cooling with the anticipated outcome? |
|---|---|---|---|
| | Reading | (±°F) | |
| **DGM In** | 74.0 | 1.40 | yes |
| **DGM Out** | 74.0 | 1.40 | yes |

Note: Calibrated against Reference Thermometer ID: a070717

SIGNATURE: Craig McCarty DATE: 07/03/19 07/03/19

Standard for Calibration of Console Thermocouple Systems

40 CFR, Part 60
Appendix A, Method 5
10.3.2 The temperature data recorded in the field shall be considered valid. If, during calibration, the absolute temperature measured with the sensor being calibrated and the reference sensor **agree within 1.5 percent**, the temperature data taken in the field shall be considered valid.

Standard for Calibration of Individual Thermocouples

EMC, ALT-011: After each test run series, check the accuracy (and, hence, the calibration) of each thermocouple system at ambient temperature, or any other temperature, within the range specified by the manufacturer, using a reference thermometer (either ASTM reference thermometer or a thermometer that has been calibrated against an ASTM reference thermometer). The temperatures of the thermocouple and reference thermometers shall **agree to within ±2°F**.

Check the continuity of the thermocouple by subjecting it to a change in the temperature (e.g.., removing it from the stack or touching an ice cube). This step will also check for loose connections and reversed connections (noted by a wrong change in the temperature).

**PROBE (STACK), HOTBOX (FILTER), AND GOOSENECK (EXIT) THERMOCOUPLE CALIBRATION SHEET**
**EPA Reference Method**
**Metering System Pre-Test Calibration**

**Air Hygiene Assett ID(s):** **Probe:** samp-hp-0086 **Hotbox:** samp-bh-0012 **Gooseneck:** samp-ad-0028

Filename: \\AHI-FILESVR\public\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0030 Calibration 7-3-19 (.xls]Original (5 point)

Barometric Pressure: 29.10

| Thermo-couples | | Temps (°F) | Signature | | Date | |
|---|---|---|---|---|---|---|
| Stack | Ref | 73.10 | Craig McCarty | | 07/03/19 | 07/03/19 |
| | Read | 73.00 | | | | |
| | ±°F | 0.10 | | | | |
| Probe | Ref | 73.10 | Craig McCarty | | 07/03/19 | 07/03/19 |
| | Read | 73.00 | | | | |
| | ±°F | 0.10 | | | | |
| Filter | Ref | 73.10 | Craig McCarty | | 07/03/19 | 07/03/19 |
| | Read | 73.00 | | | | |
| | ±°F | 0.10 | | | | |
| Cond. | Ref | 73.10 | Craig McCarty | | 07/03/19 | 07/03/19 |
| | Read | 73.00 | | | | |
| | ±°F | 0.10 | | | | |
| CPM | Ref | 73.10 | Craig McCarty | | 07/03/19 | 07/03/19 |
| | Read | 73.00 | | | | |
| | ±°F | 0.10 | | | | |
| Exit | Ref | 73.10 | Craig McCarty | | 07/03/19 | 07/03/19 |
| | Read | 73.00 | | | | |
| | ±°F | 0.10 | | | | |

Note: Calibrated against Reference Thermometer ID: a070717

| Thermocouple | Responded to heating/cooling with the anticipated outcome? |
|---|---|
| **Stack** | yes |
| **Probe** | yes |
| **Filter** | yes |
| **Cond.** | yes |
| **CPM** | yes |
| **Exit** | yes |

Standard for Calibration of Individual Thermocouples

EMC, ALT-011: After each test run series, check the accuracy (and, hence, the calibration) of each thermocouple system at ambient temperature, or any other temperature, within the range specified by the manufacturer, using a reference thermometer (either ASTM reference thermometer or a thermometer that has been calibrated against an ASTM reference thermometer). The temperatures of the thermocouple and reference thermometers shall **agree to within ±2°F**.

Check the continuity of the thermocouple by subjecting it to a change in the temperature (e.g.., removing it from the stack or touching an ice cube). This step will also check for loose connections and reversed connections (noted by a wrong change in the temperature).

**Alternative Post-Test Metering System Calibration**

**RM 5, Section 16.3.1.3**

$$\gamma_{qa} = \frac{\theta}{V_m}\sqrt{\frac{0.0319T_m}{\Delta H@\left(P_{bar} + \frac{\Delta H_{avg}}{13.6}\right)}}\frac{29}{M_d}\left(\sqrt{\Delta H}\right)_{avg}$$

| Parameters | Variable | Run 1 | Run 2 | Run 3 | Units |
|---|---|---|---|---|---|
| Run Time | Θ | 120.00 | 120.00 | 120.00 | minutes |
| Actual Meter Volume | $V_m$ | 42.41 | 42.04 | 41.64 | dcf |
| Meter Temperature | $T_m$ | 528.54 | 526.54 | 518.38 | °R |
| Meter Pressure at 0.75 cfm | ΔH@ | 1.878 | 1.878 | 1.878 | in. $H_2O$ |
| Barometric Pressure | $P_{bar}$ | 29.91 | 30.04 | 30.06 | in. Hg |
| Average Meter Pressure | $\Delta H_{avg}$ | 0.41 | 0.41 | 0.41 | in. $H_2O$ |
| Dry Molecular Weight | $M_d$ | 29.24 | 29.24 | 29.24 | lb/lb-mol |
| Average √Meter Pressure | $(\Delta H)^{1/2}_{avg}$ | 0.64 | 0.64 | 0.64 | $(\text{in. } H_2O)^{1/2}$ |
| Run Specific Gamma | $Y_{aq}$ | 0.9881 | 0.9928 | 0.9942 | |

Constants:

0.0319 = (29.92/528) $(0.75)^2$(in. Hg/°R) $cfm^2$

29 = Dry molecular weight of air, lb/lb-mole

13.6 = conversion from inches of water to inches of mercury

| | |
|---|---|
| $Y_{aq\ (avg)}$ | 0.9917 |
| $Y_i$ | 0.9740 |
| %Diff | 1.82% |
| Criteria | %Diff <5% |
| **Result** | **PASS** |

Example Calculation (Run 1)

$$Y_{aq} = \frac{120.00}{42.41} \times \sqrt{\frac{0.0319 \times 528.54}{1.878 \times \left(29.91 + \frac{0.41}{13.6}\right)}} \times \frac{29}{29.24} \times 0.6403 = 0.9881$$

**Alternative Post-Test Metering System Calibration**

**RM 5, Section 16.3.1.3**

$$\gamma_{qa} = \frac{\theta}{V_m}\sqrt{\frac{0.0319T_m}{\Delta H@\left(P_{bar} + \frac{\Delta H_{avg}}{13.6}\right)}}\frac{29}{M_d}\left(\sqrt{\Delta H}\right)_{avg}$$

| Parameters | Variable | Run 1 | Run 2 | Run 3 | Units |
|---|---|---|---|---|---|
| Run Time | Θ | 120.00 | 120.00 | 120.00 | minutes |
| Actual Meter Volume | $V_m$ | 41.73 | 41.78 | 41.79 | dcf |
| Meter Temperature | $T_m$ | 522.79 | 542.54 | 542.17 | °R |
| Meter Pressure at 0.75 cfm | ΔH@ | 1.878 | 1.878 | 1.878 | in. $H_2O$ |
| Barometric Pressure | $P_{bar}$ | 30.07 | 30.22 | 30.27 | in. Hg |
| Average Meter Pressure | $\Delta H_{avg}$ | 0.41 | 0.41 | 0.41 | in. $H_2O$ |
| Dry Molecular Weight | $M_d$ | 29.24 | 29.24 | 29.24 | lb/lb-mol |
| Average √Meter Pressure | $(\Delta H)^{1/2}_{avg}$ | 0.64 | 0.64 | 0.64 | $(\text{in. } H_2O)^{1/2}$ |
| Run Specific Gamma | $Y_{aq}$ | 0.9961 | 1.0110 | 1.0096 | |

Constants:

0.0319 = (29.92/528) $(0.75)^2$(in. Hg/°R) $cfm^2$

29 = Dry molecular weight of air, lb/lb-mole

13.6 = conversion from inches of water to inches of mercury

| | |
|---|---|
| $Y_{aq\ (avg)}$ | 1.0055 |
| $Y_i$ | 0.9740 |
| %Diff | 3.24% |
| Criteria | %Diff <5% |
| **Result** | **PASS** |

Example Calculation (Run 1)

$$Y_{aq} = \frac{120.00}{41.73} \times \sqrt{\frac{0.0319 \times 522.79}{1.878 \times \left(30.07 + \frac{0.41}{13.6}\right)}} \times \frac{29}{29.24} \times 0.6403 = 0.9961$$

**METERING SYSTEM DRY GAS METER CALIBRATION SHEET**
**EPA Reference Method**
**Metering System Pre-Test Calibration**
**Air Hygiene Assett ID: samp-cp-0033**

Filename: \\AHI-FILESVR\public\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0033 Calibration 12-10-19.xls]Original (5 point)

Make: apex
Model #: 522
Serial #: 1804003

Date: 12/10/19
Barometric Pressure: 29.49 (in. Hg)
Theoretical Critical Vacuum: 13.91 (in. Hg)

**DRY GAS METER READINGS**

| ΔH (in. H2O) | Time (min) | Volume Initial (ft³) | Volume Final (ft³) | Volume Total (ft³) | Initial Temperature Inlet (°F) | Initial Temperature Outlet (°F) |
|---|---|---|---|---|---|---|
| 0.32 | 17.00 | 112.400 | 117.790 | 5.390 | 71.0 | 71.0 |
| 0.66 | 12.00 | 117.790 | 123.330 | 5.540 | 74.0 | 74.0 |
| 1.10 | 10.00 | 123.330 | 129.400 | 6.070 | 76.0 | 76.0 |
| 2.00 | 10.00 | 129.400 | 137.480 | 8.080 | 77.0 | 77.0 |
| 3.60 | 10.00 | 137.480 | 148.430 | 10.950 | 79.0 | 79.0 |

| Final Temperature Inlet (°F) | Final Temperature Outlet (°F) | Orifice Serial# (number) | K' Orifice Coefficient (see above) | Actual Vacuum (in. Hg) | Ambient Temperature Initial (°F) | Ambient Temperature Final (°F) | Ambient Temperature Average (°F) |
|---|---|---|---|---|---|---|---|
| 73.0 | 73.0 | 140 | 0.2395 | 16.0 | 71.3 | 71.8 | 71.6 |
| 76.0 | 76.0 | 148 | 0.3446 | 16.0 | 71.8 | 71.6 | 71.7 |
| 77.0 | 77.0 | 155 | 0.4561 | 16.0 | 71.6 | 71.6 | 71.6 |
| 79.0 | 79.0 | 163 | 0.5897 | 16.0 | 71.6 | 71.9 | 71.8 |
| 82.0 | 82.0 | 173 | 0.8096 | 16.0 | 71.9 | 72.1 | 72.0 |

**RESULTS**

| DRY GAS METER VOLUME CORRECTED Vm(std) (ft³) | DRY GAS METER VOLUME CORRECTED Vm(std) (liters) | ORIFICE VOLUME CORRECTED Vcr(std) (ft³) | ORIFICE VOLUME CORRECTED Vcr(std) (liters) | ORIFICE VOLUME NOMINAL Vcr (ft³) |
|---|---|---|---|---|
| 5.275 | 149.38 | 5.208 | 147.5 | 5.321 |
| 5.396 | 152.80 | 5.289 | 149.8 | 5.405 |
| 5.902 | 167.14 | 5.834 | 165.2 | 5.961 |
| 7.852 | 222.36 | 7.541 | 213.6 | 7.709 |
| 10.633 | 301.14 | 10.351 | 293.1 | 10.586 |

| DRY GAS METER CALIBRATION FACTOR Y Variation (number) | DRY GAS METER CALIBRATION FACTOR Y Value (number) | ORIFICE CALIBRATION FACTOR ΔH@ Value (in. H2O) | ORIFICE CALIBRATION FACTOR ΔH@ Value (mm H2O) | ORIFICE CALIBRATION FACTOR ΔH@ Variation (in. H2O) |
|---|---|---|---|---|
| 0.009 | 0.987 | 1.876 | 47.66 | 0.030 |
| 0.002 | 0.980 | 1.859 | 47.23 | 0.013 |
| 0.010 | 0.988 | 1.764 | 44.80 | -0.083 |
| -0.017 | 0.960 | 1.913 | 48.60 | 0.067 |
| -0.005 | 0.973 | 1.820 | 46.22 | -0.027 |
| **AVERAGE:** | **0.978** | **1.846** | 46.90 | **PASSED** |

Notes:

For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter,acceptable tolerance of individual values from the average is +/- 0.02. For Orifice Calibration Factor dH@, the orifice differential pressure in inches of $H_20$ that equates to 0.75 cfm of air at 68 °F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is +/- 0.2. For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above. The Critical Orifice Coefficient, K', must be entered in English units, (ft)^3*(deg R)^0.5/((in.Hg)*(min)).

SIGNATURE: Craig McCarty _____ DATE: 12/10/19 12/10/19

**METERING SYSTEM THERMOCOUPLE CALIBRATION SHEET**
**EPA Reference Method**
**Metering System Pre-Test Calibration**
**Air Hygiene Assett ID: samp-cp-0033**

Filename: \\AHI-FILESVR\public\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0033 Calibration 12-10-19.xls]Original (5 point)

Make: apex
Model #: 522
Serial #: 1804003

Date: 12/10/19
Barometric Pressure: 29.49 (in. Hg)
Temperature (ASTM cal): 69.50 (°F)

| Thermocouple | 100 (°F) | | 600 (°F) | | 1200 (°F) | |
|---|---|---|---|---|---|---|
| | Reading | % Error | Reading | % Error | Reading | % Error |
| **Stack** | 101.00 | 0.50 | 601.00 | 0.17 | 1201.00 | 0.08 |
| **Probe** | 101.00 | 0.50 | 601.00 | 0.17 | 1201.00 | 0.08 |
| **Filter** | 101.00 | 0.50 | 601.00 | 0.17 | 1201.00 | 0.08 |
| **Dryer** | 101.00 | 0.50 | 601.00 | 0.17 | 1201.00 | 0.08 |
| **Aux.** | 101.00 | 0.50 | 601.00 | 0.17 | 1201.00 | 0.08 |

Note: Calibrated against an ALTEK Thermocouple Source Series 22, ID: samp-tc-0003
Direct temperature output calibrated to ASTM and IPTS standards as outlined in ALTEK Data Sheet 22.

| Thermocouple | 69.50 (°F) | | Responded to heating/cooling with the anticipated outcome? |
|---|---|---|---|
| | Reading | (±°F) | |
| **DGM In** | 69.0 | 0.50 | yes |
| **DGM Out** | 69.0 | 0.50 | yes |

Note: Calibrated against Reference Thermometer ID: a070717

SIGNATURE: Craig McCarty DATE: 12/10/19 12/10/19

Standard for Calibration of Console Thermocouple Systems

40 CFR, Part 60
Appendix A, Method 5
10.3.2 The temperature data recorded in the field shall be considered valid. If, during calibration, the absolute temperature measured with the sensor being calibrated and the reference sensor **agree within 1.5 percent**, the temperature data taken in the field shall be considered valid.

Standard for Calibration of Individual Thermocouples

EMC, ALT-011: After each test run series, check the accuracy (and, hence, the calibration) of each thermocouple system at ambient temperature, or any other temperature, within the range specified by the manufacturer, using a reference thermometer (either ASTM reference thermometer or a thermometer that has been calibrated against an ASTM reference thermometer). The temperatures of the thermocouple and reference thermometers shall **agree to within ±2°F**.

Check the continuity of the thermocouple by subjecting it to a change in the temperature (e.g.., removing it from the stack or touching an ice cube). This step will also check for loose connections and reversed connections (noted by a wrong change in the temperature).

**PROBE (STACK), HOTBOX (FILTER), AND GOOSENECK (EXIT) THERMOCOUPLE CALIBRATION SHEET**
**EPA Reference Method**
**Metering System Pre-Test Calibration**

**Air Hygiene Assett ID(s):** **Probe:** samp-hp-0086 **Hotbox:** samp-bh-0012 **Gooseneck:** samp-ad-0046

Filename: \\AHI-FILESVR\public\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0033 Calibration 12-10-19.xls]Original (5 point)

Barometric Pressure: 29.63

| Thermo-couples | | Temps (°F) | Signature | | Date | |
|---|---|---|---|---|---|---|
| Stack | Ref | 69.50 | Craig McCarty | | 12/10/19 | 12/10/19 |
| | Read | 70.00 | | | | |
| | ±°F | 0.50 | | | | |
| Probe | Ref | 69.50 | Craig McCarty | | 12/10/19 | 12/10/19 |
| | Read | 70.00 | | | | |
| | ±°F | 0.50 | | | | |
| Filter | Ref | 69.50 | Craig McCarty | | 12/10/19 | 12/10/19 |
| | Read | 69.00 | | | | |
| | ±°F | 0.50 | | | | |
| Cond. | Ref | 69.50 | Craig McCarty | | 12/10/19 | 12/10/19 |
| | Read | 70.00 | | | | |
| | ±°F | 0.50 | | | | |
| CPM | Ref | 69.50 | Craig McCarty | | 12/10/19 | 12/10/19 |
| | Read | 70.00 | | | | |
| | ±°F | 0.50 | | | | |
| Exit | Ref | 69.50 | Craig McCarty | | 12/10/19 | 12/10/19 |
| | Read | 70.00 | | | | |
| | ±°F | 0.50 | | | | |

Note: Calibrated against Reference Thermometer ID: a070717

| Thermocouple | Responded to heating/cooling with the anticipated outcome? |
|---|---|
| **Stack** | yes |
| **Probe** | yes |
| **Filter** | yes |
| **Cond.** | yes |
| **CPM** | yes |
| **Exit** | yes |

Standard for Calibration of Individual Thermocouples

EMC, ALT-011: After each test run series, check the accuracy (and, hence, the calibration) of each thermocouple system at ambient temperature, or any other temperature, within the range specified by the manufacturer, using a reference thermometer (either ASTM reference thermometer or a thermometer that has been calibrated against an ASTM reference thermometer). The temperatures of the thermocouple and reference thermometers shall **agree to within ±2°F**.

Check the continuity of the thermocouple by subjecting it to a change in the temperature (e.g.., removing it from the stack or touching an ice cube). This step will also check for loose connections and reversed connections (noted by a wrong change in the temperature).

**Alternative Post-Test Metering System Calibration**

**RM 5, Section 16.3.1.3**

$$\gamma_{qa} = \frac{\theta}{V_m}\sqrt{\frac{0.0319T_m}{\Delta H@\left(P_{bar} + \frac{\Delta H_{avg}}{13.6}\right)}\frac{29}{M_d}}\left(\sqrt{\Delta H}\right)_{avg}$$

| Parameters | Variable | Run 1 | Run 2 | Run 3 | Units |
|---|---|---|---|---|---|
| Run Time | Θ | 245.25 | 243.00 | 240.75 | minutes |
| Actual Meter Volume | $V_m$ | 96.84 | 95.73 | 93.9 | dcf |
| Meter Temperature | $T_m$ | 540.08 | 542.33 | 529.50 | °R |
| Meter Pressure at 0.75 cfm | ΔH@ | 1.846 | 1.846 | 1.846 | in. $H_2O$ |
| Barometric Pressure | $P_{bar}$ | 29.94 | 30.11 | 29.95 | in. Hg |
| Average Meter Pressure | $\Delta H_{avg}$ | 0.46 | 0.47 | 0.46 | in. $H_2O$ |
| Dry Molecular Weight | $M_d$ | 29.29 | 29.28 | 29.28 | lb/lb-mol |
| Average √Meter Pressure | $(\Delta H)^{1/2}_{avg}$ | 0.68 | 0.69 | 0.68 | $(\text{in. } H_2O)^{1/2}$ |
| Run Specific Gamma | $Y_{aq}$ | 0.9537 | 0.9657 | 0.9557 | |

Constants:

0.0319 = (29.92/528) $(0.75)^2$(in. Hg/°R) $cfm^2$

29 = Dry molecular weight of air, lb/lb-mole

13.6 = conversion from inches of water to inches of mercury

| | |
|---|---|
| $Y_{aq\ (avg)}$ | 0.9584 |
| $Y_i$ | 0.9780 |
| %Diff | 2.01% |
| Criteria | %Diff <5% |
| **Result** | **PASS** |

Example Calculation (Run 1)

$$Y_{aq} = \frac{245.25}{96.84} \times \sqrt{\frac{0.0319 \times 540.08}{1.846 \times \left(29.94 + \frac{0.46}{13.6}\right)} \times \frac{29}{29.29}} \times 0.6782 = 0.9537$$

**Alternative Post-Test Metering System Calibration**

**RM 5, Section 16.3.1.3**

$$\gamma_{qa} = \frac{\theta}{V_m}\sqrt{\frac{0.0319T_m}{\Delta H@\left(P_{bar} + \frac{\Delta H_{avg}}{13.6}\right)}\frac{29}{M_d}}\left(\sqrt{\Delta H}\right)_{avg}$$

| Parameters | Variable | Run 1 | Run 2 | Run 3 | Units |
|---|---|---|---|---|---|
| Run Time | Θ | 244.50 | 246.00 | 246.75 | minutes |
| Actual Meter Volume | $V_m$ | 93.65 | 91.89 | 93.4 | dcf |
| Meter Temperature | $T_m$ | 540.33 | 529.75 | 534.50 | °R |
| Meter Pressure at 0.75 cfm | ΔH@ | 1.846 | 1.846 | 1.846 | in. $H_2O$ |
| Barometric Pressure | $P_{bar}$ | 30.05 | 30.21 | 30.22 | in. Hg |
| Average Meter Pressure | $\Delta H_{avg}$ | 0.45 | 0.45 | 0.45 | in. $H_2O$ |
| Dry Molecular Weight | $M_d$ | 29.29 | 29.29 | 29.29 | lb/lb-mol |
| Average √Meter Pressure | $(\Delta H)^{1/2}_{avg}$ | 0.67 | 0.67 | 0.67 | $(\text{in. } H_2O)^{1/2}$ |
| Run Specific Gamma | $Y_{aq}$ | 0.9708 | 0.9831 | 0.9743 | |

Constants:

0.0319 = (29.92/528) $(0.75)^2$(in. Hg/°R) $cfm^2$

29 = Dry molecular weight of air, lb/lb-mole

13.6 = conversion from inches of water to inches of mercury

| | |
|---|---|
| $Y_{aq\ (avg)}$ | 0.9761 |
| $Y_i$ | 0.9780 |
| %Diff | 0.20% |
| Criteria | %Diff <5% |
| **Result** | **PASS** |

Example Calculation (Run 1)

$$Y_{aq} = \frac{244.50}{93.65} \times \sqrt{\frac{0.0319 \times 540.33}{1.846 \times \left(30.05 + \frac{0.45}{13.6}\right)} \times \frac{29}{29.29}} \times 0.6708 = 0.9708$$

**Field Balance Weight Verfication**
**Annual 500g Field Balance Stock Weight vs. 500g ISO 17025 Traceable Weight**
**Air Hygiene Asset ID: samp-sc-0028**

Filename: \\AHI-FILESVR\public\Shared\QAQC\Calibrations\Field Balance Weights\2020\[samp-sc-0028-Extra.xlsm]Balance
Make: Ohaus
Model #: Scout Pro SP2001-US
Serial #: B228113219
Field Weight #: sc-0028
Trailer #: Extra

ISO 17025 Weight ID LABS-WT-0005
ISO S/N 1000128090
ISO Cal Due 7/29/2020

| ISO 17025 Certfified Weight (g) | Field Balance Weight (g) | ± g |
|---|---|---|
| 500.00 | 499.90 | 0.10 |

must be <0.5

Sean Barnes _____ 01/09/20

*(signature)* *(date)*

| ISO 17025 Certfified Weight (g) | Field Balance Weight (g) | ± g |
|---|---|---|
| 500.00 | 499.50 | 0.50 |

must be <0.5

Sean Barnes _____ 01/09/20

*(signature)* *(date)*

| ISO 17025 Certfified Weight (g) | Field Balance Weight (g) | ± g |
|---|---|---|
| 500.00 | 499.80 | 0.20 |

must be <0.5

Sean Barnes _____ 01/09/20

*(signature)* *(date)*

Note: Calibrated against ISO 17025 Certified weight LABS-WT-0005

EPA Method 4 - Section 10.3, EPA Method 5 - Section 10.7, EPA Method 202 - Section 10.3: Field Balance Calibration Check. Check the calibration of the balance used to weigh impingers with a weight that is at least 500g or within 50g of a loaded impinger. The weight must be ASTM E617-13 "Standard Specification for Laboratory Weights and Precision Mass Standards" Class 6 (or better). Daily before used, the field balance must meausure within ±0.5g of the certified mass. If the daily balance calibration check fails, perform corrective measures and repeat the check before using balance.

ISO 17025 Certified 500g Weight is certified annually. Certified weight is used to verify Class 6 or better weight that accompanies each field balance on the balance it will be used. Acceptance critieria is certified weight must be within ±0.5g of Class 6 or better weight.

**WEATHER STATION CALIBRATION SHEET**
**Temperature, Barometric Pressure, and Relative Humidity Periodic Calibration**
**Air Hygiene Asset ID: samp-we-0014**

Filename: \\AHI-FILESVR\public\Shared\QAQC\Calibrations\Weather Stations\2020\[SAMP-WE-0014_224.xlsm]112013
Make: Kestrel
Model #: 4000
Serial #: 671144
ISO 17025 Weather Station ID SAMP-WE-0033
ISO 17025 S/N A026334
ISO 17025 Cal Due 7/23/2020

| ASTM Temp (deg F) (±1.5°) | Thermo. (deg F) | ± deg F | ASTM Barometer (in. Hg) (±0.1 in Hg) | Barometric (in. Hg) | ± in. Hg | Time |
|---|---|---|---|---|---|---|
| 70.10 | 69.70 | 0.40 | 29.11 | 29.13 | 0.02 | 15:08 |
| Sean Barnes | | Sean Barnes | | | 01/27/20 | |
| *(signature)* | | | | | *(date)* | |

| ASTM Temp (deg F) (±1.5°) | Thermo. (deg F) | ± deg F | ASTM Barometer (in. Hg) (±0.1 in Hg) | Barometric (in. Hg) | ± in. Hg | Time |
|---|---|---|---|---|---|---|
| 70.50 | 70.40 | 0.10 | 29.11 | 29.12 | 0.01 | 15:26 |
| Sean Barnes | | Sean Barnes | | | 01/27/20 | |
| *(signature)* | | | | | *(date)* | |

| ASTM Temp (deg F) (±1.5°) | Thermo. (deg F) | ± deg F | ASTM Barometer (in. Hg) (±0.1 in Hg) | Barometric (in. Hg) | ± in. Hg | Time |
|---|---|---|---|---|---|---|
| 70.80 | 70.40 | 0.40 | 29.11 | 29.12 | 0.01 | 15:41 |
| Sean Barnes | | Sean Barnes | | | 01/27/20 | |
| *(signature)* | | | | | *(date)* | |

| ASTM Temp (deg F) (±1.5°) | Thermo. (deg F) | ± deg F | ASTM Barometer (in. Hg) (±0.1 in Hg) | Barometric (in. Hg) | ± in. Hg | Time |
|---|---|---|---|---|---|---|
| 70.60 | 69.00 | 1.60 | 29.10 | 29.12 | 0.02 | 16:00 |
| Sean Barnes | | Sean Barnes | | | 01/27/20 | |
| *(signature)* | | | | | *(date)* | |

Note: Verified against ISO 17025 Traceable Barometer and Thermometer (SAMP-WE-0033).

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**end of report**

**CUSTOM INSTRUMENTATION SERVICES CORPORATION**

# CRICKET VALLEY ENERGY CENTER
# DUTCHESS COUNTY, NEW YORK

## ORIS CODE: 57185
## UNIT U-00001 (U001)

## PART 75 INITIAL CEMS AND FUEL FLOWMETERS CERTIFICATION TEST REPORTS

## AND

## PART 60 INITIAL CEMS CERTIFICATION TEST REPORTS

**PREPARED FOR: GENERAL ELECTRIC**

**PREPARED BY: CUSTOM INSTRUMENTATION SERVICES, CORP. (CiSCO)**

**Date: March 12, 2020**

**Revision: 0**

COPY NO:

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## 1. INTRODUCTION

Cricket Valley Energy Center is a facility located in Dover Plains, New York. The facility consists of three natural gas-fired combined cycle electric generating units identified as U-00001 (U001), U-00002 (U002), and U-00003 (U003) . In addition to the air emitting equipment, the Facility will include three steam turbine generators (STGs), an air cooled condenser (ACC) and associated auxiliary equipment and systems. This certification report pertains to the U-00001 which consists of a General Electric (GE) Model 7FA.05 combustion turbine generators (CTGs) operating in combined-cycle mode with supplemental firing of the heat recovery steam generators (HRSGs) which has a nominal generating capacity of 333 MW. The maximum potential when incorporated with the steam turbine generator megawatts as per 40 CFR 75 is 383 MW. Natural gas will be the sole fuel fired in the CTGs and duct burners. Each combined cycle generating unit consisting of the CTG, HRSG and STG will be exhausted through its own stack. In addition, to oxidation catalyst being used to control CO emission, both dry-low $NO_X$ burners (DLNB) and Selective Catalytic Reduction (SCR) are used for $NO_X$ control on each unit. Exhaust gases from the turbines are discharged into the atmosphere through a stack approximately 282.5 feet above grade. A dedicated CEMS will monitor $NO_X$, CO, $NH_3$($NO_X$) and $O_2$ emissions and gas fuel flow from each of the three units. This report focuses on the U-00001 CEMS.

Custom Instrumentation Services Corporation of Englewood, Colorado built the Continuous Emission Monitoring System. Data from the CEMS is recorded and stored on a Data Acquisition and Handling System (DAHS).

The CEMS on the U-00001 unit was designed to meet the monitoring and reporting requirements of New York State Department of Environmental Conservation (NYSDEC) Permit No. 3-1326-00275/00009 and the regulatory requirements of 40 CFR 60 ($NO_X$, $NH_3$, CO and $O_2$ analyzers) and 40 CFR 75 ($NO_x$ and $O_2$ analyzers). This report presents the results of the initial certification tests performed on the $NO_x$, $NO_X/NH_3$, CO and $O_2$ analyzers. The testing was performed in accordance with the requirements of 40 CFR 60, Appendix B, Performance Specification 2, 3; 4a and 40 CFR 75, Appendix A.

In addition, this report provides documentation of the DAHS missing data substitution and formula verification as well as fuel flow meter transmitter accuracy tests and orifice plate primary element visual inspections performed as required by 40 CFR 75 for the initial certification.

Field certification testing on Unit U-00001 occurred between December 30, 2019 and February 6, 2020. The tests conducted under 40 CFR 75 on the $NO_x$ and $O_2$ CEMS included Relative Accuracy Test Audit (RATA), Bias Check, 7-Day Calibration Error Test, Linearity Check and Cycle Time Test. The tests conducted under 40 CFR 60 on $NO_X$, $NH_3/NO_X$, CO and $O_2$ CEMS included RATA, 7-Day Calibration Drift Test and CO Response Time Test. A summary of the tests performed on each analyzer is provided in Table 1.

Printouts of the tests results and revised monitoring plans for the 40 CFR 75 $NO_x$ and $O_2$ CEMS from EPA's Emissions Collection and Monitoring Plan System (ECMPS) Software are provided in Appendix 1.

Air Hygiene, International(AHI) of Broken Arrow, Oklahoma conducted the RATAs on the $NO_x$, $NH_3/NO_X$, CO and $O_2$ CEMS. On February 6, 2020 ten (10) 21-minute runs were completed on the unit. The results of the RATAs are summarized in Table 1. As shown, the Relative Accuracy calculations on the analyzers were within the EPA and NYSDEC specifications for all parameters. A detailed description of the RATAs conducted are provided in Section 2.1 and the AHI test reports in Appendix 6.

A bias check evaluation was made on the $NO_x$ lb/mmBtu relative accuracy results as required in 40 CFR 75. The bias adjustment factor for the $NO_x$ monitoring systems ($NO_x$ lb/mmBtu) is provided in Table 1. The bias test results are discussed in Section 2.2. Supporting data is provided in the relative accuracy tables in the AHI RA report in Appendix 6.

The 40 CFR 60 7-day Calibration Drift and 40 CFR 75 7-Day Calibration Error tests for U-00001 CEMS occurred during seven consecutive unit operating days from December 30, 2019 through February 8, 2020. The results of these tests are summarized in Table 1. As shown, the analyzers operated well within the applicable specifications. An explanation of the calibration drift and calibration error tests is provided in Section 2.3 and supporting documentation is provided in Appendix 2 of this report.

Although not required for the initial certification, Online/Offline Calibration Error Demonstration tests were performed on the 40 CFR 75 $NO_x$ and $O_2$ analyzers on January 24, 2020 to allow the use of offline calibrations to validate the Part 75 data during subsequent normal operation. Information on the Online/Offline calibration error demonstration tests is also provided in Section 2.3 and Appendix 2 of this report.

The U-00001 Linearity Checks were performed on the 40 CFR 75 $NO_x$ and $O_2$ analyzers on February 4, 2020. The $NO_x$ and $O_2$ Cycle Time Tests and the CO Response Time tests were performed February 4, 2020. The results of these tests are summarized in Table 1. As shown, the analyzers operated well within EPA specifications for all parameters. An explanation of the linearity check is provided in Section 2.4. Explanations of the cycle time and response time tests are provided in Section 2.5. Audit reports for the linearity checks and supporting documents for the cycle time/response time tests are provided in Appendices 3 and 4, respectively.

The DAHS missing data substitution verification and formula verification tests took place November 2, 2019. The DAHS passed all the tests required by EPA. The DAHS tests are described in Section 3 and supporting documents are provided in Appendix 5. Please note that although not required by 40 CFR 60, DAHS formula verifications are also provided for the CO analyzers.

In summary, based on the results of the initial certification tests performed on the CEMS installed on the U-00001 stacks at the Cricket Valley Energy Center, the CEMSs met the

requirements in 40 CFR 60, Appendix B Performance Specification 2, 3, 4a and 40 CFR 75, Appendix A and are therefore certified to provide accurate and reliable data under these regulations and under the NYSDEC air permit. These CEMS will continue to be calibrated, maintained, and operated following the requirements of 40 CFR 60, Appendix F and 40 CFR 75, Appendix B.

## TABLE 1.
## SUMMARY OF CEMS CERTIFICATION TESTS RESULTS

| | RESULTS | STANDARD | PASS / FAIL |
|---|---|---|---|
| | **RELATIVE ACCURACY** | | |
| $NO_x$ ppm @ 15% $O_2$ | 9.22% RA RM | 20% RA RM or 10% ARA | PASS |
| $NO_x$ lb/hr | 9.60% RA RM | 20% RA RM or 10% ARA | PASS |
| $NO_x$ lb/mmBtu | 0.000 lb/mmBtu MD | 7.5% RA RM or 0.015 lb/mmBtu MD[1] | PASS |
| CO ppm @ 15% $O_2$ | 0.7 ppm MD | 10% RA RM or 5% ARA or ±5 ppm MD[2] | PASS |
| CO lb/hr | 0.7 ppm MD | 10% RA RM or 5% ARA or ±5 ppm MD[2] | PASS |
| $NH_3$ ppm @ 15% $O_2$ | 9.70% RA RM | 20% RA RM or 10% ARA | PASS |
| $NH_3$ lb/hr | 10.36% RA RM | 20% RA RM or 10% ARA | PASS |
| $O_2$ % | 0.48% $O_2$ | 20% RA RM or 1% $O_2$ MD | PASS |
| | **BIAS TEST** | | |
| Adjustment Factor | 1.000 | NA | PASS |
| | **24-HOUR ZERO DRIFT[3]** | | |
| $NO_x$ low | 0.2% of span | 2.5 % of span | PASS |
| $NO_x$ high | 0.1% of span | 2.5 % of span | PASS |
| CO low | 3.90% of span | 5 % of span | PASS |
| CO high | 0.05% of span | 5 % of span | PASS |
| $NH_3/(NO_x)$ | 1.56% of span | 2.5 % of span | PASS |
| $O_2$ % | 0.02% $O_2$ | 0.5% $O_2$ | PASS |
| | **24-HOUR SPAN DRIFT[3]** | | |
| $NO_x$ low | 1.0% of span | 2.5 % of span | PASS |
| $NO_x$ high | 0.2% of span | 2.5 % of span | PASS |
| CO low | 2.60% of span | 5 % of span | PASS |
| CO high | 1.80% of span | 5 % of span | PASS |
| $NH_3/(NO_x)$ | 1.06% of span | 2.5 % of span | PASS |
| ‘$O_2$ % | 0.03% $O_2$ | 0.5% $O_2$ | PASS |
| | **LINEARITY[3]** | | |
| $NO_x$ high ppm | 1.7% LE | 5% LE | PASS |
| $O_2$ % | 0.4% LE | 5% LE | PASS |
| | **CYCLE TIME/CO RESPONSE TIME TEST(S)[iii]** | | |
| $NO_x$ lb/mmBtu | 3 Minutes | 15 Minutes | PASS |
| CO low | 140 Avg. Seconds | 240 Avg. Seconds | PASS |
| | **DAHS VERIFICATION** | | |
| DAHS Computer | Verified | Verify | PASS |
| **ANALYZER SERIAL NUMBERS** | | | |
| $NO_x$ | | 1012 | |
| $O_2$ | | 128 | |
| CO | | 518 | |
| $NH_3/NO_X$ | | 1047 | |

WHERE: [1] RATA RESULTS REQUIRED FOR ANNUAL RATA FREQUENCY FOR 40 CFR 75

[2] MD =|d| +|2.5% CC|

[3] DRIFT, LINEARITY CTT/RTT RESULTS ARE THE HIGHEST ENCOUNTERED DURING ALL TESTS

## 2. CEMS CERTIFICATION TESTS

Field tests were performed for the initial CEMS certification in accordance with the requirements of 40 CFR 60, Appendix B and 40 CFR Part 75, Appendix A. The results for all tests were determined from the data collected by the DAHS. The computer printouts for each field test are included in the Appendices.

### 2.1 RELATIVE ACCURACY TEST AUDIT

Relative accuracy testing was performed on February 6, 2020 by AHI a source testing company that meets the EPA Air Emissions Testing Body (AETB) requirements. Each test run was a minimum of 21 minutes in duration and consisted of sampling for $NO_x$, $NH_3$ ($NO_X$), CO and $O_2$. The times during which the tests were performed and additional information on stratification test, $NO_x$ converter efficiency check and reference method calibrations are provided in the AHI report in Appendix 6.

The reference methods used by AHI are outlined below:

| CONSTITUENT | METHOD |
|---|---|
| $O_2$ | EPA METHOD 3A |
| $NO_x$ | EPA METHOD 7E |
| $NH_3(NO_x)$ | EPA METHOD 7E |
| CO | EPA METHOD 10 |

As shown in the Relative Accuracy tables in the AHI reports in Appendix 6, relative accuracy is reported as an error and is the sum of the absolute mean value of the differences between the reference method tests and the instrument readings, plus the 95 percent confidence interval of the differences, expressed as a percentage of the mean reference method value or the emission standard. As an alternative, 40 CFR 75 allows low $NO_x$ emitters (less than 0.20 lb/mmBtu) to express relative accuracy as the difference between the average reference method value and the average CEMS value. Performance Specification 4a in 40 CFR 60, Appendix B also allows for CO relative accuracy results to be expressed as a mean difference between the reference method average value and CEMS average value.

The analyzer response was determined from the average of readings taken every minute for the duration of the time the relative accuracy tests were performed. The 1-Minute Data Reports from the CEMS are included in the AHI report.

The $NO_x$, $NH_3(NO_X)$, CO and $O_2$. analyzers passed the relative accuracy requirements (as stated in 40 CRF 60, Appendix B 2,3, 4a). In addition, the $NO_x$ diluent systems ($NO_x$ and $O_2$ analyzers combined) passed the relative accuracy requirements as stated in 40 CRF 75, Appendix A and based on the RATA results, these systems qualify for annual RATA frequency under 40 CFR 75.

## 2.2 BIAS CHECK

The relative accuracy result for the $NO_x$ diluent systems reported in lb/mmBtu was checked for low bias by determining if the mean difference between the test team's values and the CEMS values was greater than the absolute value of the confidence coefficient. U-00001 $NO_x$ diluent systems exhibited bias. Therefore, the bias adjustment factor (BAF) for the unit was 1.000. In general, the BAF is determined after each RATA test.

## 2.3 7 DAY CALIBRATION ERROR/DRIFT TEST & ONLINE/OFFLINE DEMONSTRATION TESTS

In general, the U-00001 7-day calibration error/drift tests required by 40 CFR 60 and 40 CFR 75 on the $NO_x$, $NH_3$ ($NO_X$), CO and $O_2$. analyzers occurred between December 30, 2019 and January 27, 2020. All tests occurred on seven consecutive unit-operating days when the unit was combusting fuel. The $NO_x$ and $O_2$ calibration gases used for the zero and span calibration error tests meet the requirements of the EPA 40 CFR 75, Appendix A, Protocol Gas Verification Program (PGVP). The certificates of analysis for the cylinders used to meet the requirements of both 40 CFR 60 and 40 CFR 75 drift/calibration error requirements are included in Appendix 8 of this report.

Although not required for the initial certification, this report includes the results of the Online/Offline Calibration Error Demonstration tests that were performed on January 24, 2020. 40 CFR 75 Appendix B §2.1.1.2 allows the use of offline calibrations for the purpose of validating online data if both offline and online calibrations are performed within 26-clock hours and meets the performance specification criteria of 40 CFR 75 Append A, §3.1.

The data from calibrations occurring over seven days and the offline determination occurring within 26-clock hours are summarized in Appendix 2 of this report. As shown, the calibration error/drift for all analyzers were well within EPA requirements as stated in 40 CFR 60, Appendix B and 40 CFR 75, Appendix A. The calibration summary reports are provided in Appendix 2.

## 2.4 LINEARITY CHECKS

The U-00001 $NO_x$ and $O_2$ linearity checks were performed on February 4, 2020. To perform the linearity check, the high ranges of the $NO_x$ analyzers and the $O_2$ analyzers were challenged three times with each of three levels of calibration gas (low, mid and high). The mean difference between the analyzer response and the calibration gas value, as a percentage of the calibration gas value, must be within 5%. Results are also acceptable if the difference between the mean response and the calibration gas value is within 0.5% $O_2$ or 5 ppm $NO_x$. The results were well within the requirements of 40 CFR 75, Appendix A.

A summary of the linearity check results are provided in Appendix 3 and the certificates of analysis for the calibration gases used during the checks are provided in Appendix 8. The calibration gases used for the linearity checks met the US EPA PGVP requirements of 40 CFR 75, Appendix A.

## 2.5 CYCLE TIME & RESPONSE TIME TESTS

The U-00001 cycle time tests were performed on February 4, 2020. To perform the test, the $NO_x$ and $O_2$ analyzers were challenged with a zero gas and a high level (80 to 100% of span) calibration gas. Both the upscale and down scale response times were determined. As stated in 40 CFR 75, Appendix A, the response time to reach 95% of the gas value must be less than 15 minutes.

40 CFR 75, Appendix A, Section 6.4 specifies that on and after January 1, 2009, the cycle time for each component analyzer of a $NO_x$ diluent system must be recorded separately. It also specifies that for monitors with dual ranges, the test results for each range must be reported separately. Cycle time test results are acceptable for monitoring system certification if none of the cycle times exceed 15 minutes. The down scale and upscale cycle times for the $NO_x$ low range, $NO_x$ high range and $O_2$ analyzers met this specification.

The U-00001 CO response time tests were performed on February 4, 2020 to meet the requirements of 40 CFR 60. To perform this test, the low range of the CO analyzer was challenged with a zero gas and a high level (50 to 100% of range) calibration gas. Both the upscale and down scale response time averages were determined. As stated in 40 CFR 60, Appendix B, Performance Specification 4A the response time to reach 95% of the gas value must be less than 240 seconds. For the upscale and downscale readings the longer of the two response times is the response time for the analyzer. The response time for the low range of the CO analyzers met this requirement. The gas cylinders used to perform the CO response time tests are provided in Appendix 8.

Audit reports that show the analyzers response in ten second increments are located in Appendix 4. The gas cylinders used to perform the $NO_X/O_2$ cycle time tests meet the US EPA PGVP requirements of 40 CFR 75, Appendix A and are provided in Appendix 8.

# 3. DAHS VERIFICATION

A letter from the 40 CFR 75 software vendor (CiSCO CEMS) stating that each of the missing data routines and calculations performed by the DAHS was verified is included in Appendix 5. A formula verification is also included. All variables included in the calculations (bias adjustment factor, fuel inputs) were used. The formula verification spreadsheet and associated printouts are also included in Appendix 5.

## 4. FUEL FLOWMETER CERTIFICATION TESTS DOCUMENTATION

Documents demonstrating that the fuel flowmeters installed in each combustion turbine and duct burner meet the 2% upper range accuracy specified in 40 CFR 75 Appendix D are provided in Appendix 7. This includes Certificate of Compliance document which references ASME NFC 9M:2006 calibration which demonstrates compliance with 40 CFR 75 Appendix D Section 2.1.5.1 certification criteria.

## 5. DISCUSSION OF RESULTS

The CEMS and DAHS on the U-00001 combustion turbine generators at the Cricket Valley Energy Center successfully met all the requirements of the EPA as outlined in 40 CFR 60 and 40 CFR 75. An electronic QA certification file in the format specified by EPA Clean Air Markets Division for 40 CFR 75 has been prepared for each unit and will be submitted via ECMPS within 45 days of test completion.

# APPENDIX 1

# EMISSIONS MONITORING AND MONITORING PLAN SYSTEM PRINTOUTS

# ECMPS Client Tool

Version 1.* 2019 Q3

## QA/Cert Events Printout Report

March 10, 2020 05:56 PM

## Facility Name: Cricket Valley Energy Center

### Facility Details

| | |
|---|---|
| Facility ID (ORISPL): | 57185 |
| State: | NY |
| County: | Dutchess County |

### QA Certification Events Details

| Unit/Stack Identifier | Event Code | Event Date/Hour | System ID / Type | Component ID / Type | Required Tests | Conditional Data Begin Date/Hour | Last Test Completed Date/Hour | Submitted? |
|---|---|---|---|---|---|---|---|---|
| U001 | 125 | 12/30/2019 05 | N10/NOX | 110/NOX | 4 | | 02/04/2020 17 | Not Yet Submitted |
| | | | | 120/O2 | 4 | | 02/04/2020 17 | Not Yet Submitted |

Event Codes: 125 - Initial Certification of Gas Monitoring System

Required Test Codes: 4 - Normal Load RATA, 7-day Calibration Error Test, Linearity Check, Cycle Time Test, DAHS Verification

# ECMPS Client Tool

Version 1.* 2019 Q3

## QA/Cert Test Detail Report

March 12, 2020 04:29 PM

## Facility Name: Cricket Valley Energy Center

**Facility Details**

Facility ID (ORISPL): 57185
State: NY
County: Dutchess County

**Unit/Stack/Pipe ID:** U001

**7-Day Calibration**

**Component ID:** 110
**Test Number:** 7DCAL-NOX_H-
**Span Scale Level:** High
**Component Type:** NOX
**Reason for Test:** INITIAL
**Span Value:** 200.000
**Test Completion:** 01/08/2020 06:05
**Reported Test Results:** PASSED
**EPA Calculated Result:** PASSED
**Evaluation Status:** No Errors
**Submission Status:** Not Submitted
**Submission Date/Time:**

| Injection Date/Hour | Gas Level | Reference Value | Reference Value % of Span | Measured Value | Reported | | Recalculated | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Results | APS | Results | APS |
| 01/01/2020 06 | ZERO | 0.000 | 0 | -0.100 | 0.10 | | 0.10 | |
| 01/01/2020 06 | HIGH | 179.200 | 89.6 | 179.600 | 0.20 | | 0.20 | |
| 01/02/2020 06 | ZERO | 0.000 | 0 | -0.100 | 0.10 | | 0.10 | |
| 01/02/2020 06 | HIGH | 179.200 | 89.6 | 178.900 | 0.20 | | 0.20 | |
| 01/06/2020 18 | ZERO | 0.000 | 0 | -0.100 | 0.10 | | 0.10 | |
| 01/06/2020 18 | HIGH | 179.200 | 89.6 | 179.300 | 0.10 | | 0.10 | |
| 01/07/2020 06 | ZERO | 0.000 | 0 | -0.100 | 0.10 | | 0.10 | |
| 01/07/2020 06 | HIGH | 179.200 | 89.6 | 179.300 | 0.10 | | 0.10 | |
| 01/08/2020 06 | ZERO | 0.000 | 0 | -0.100 | 0.10 | | 0.10 | |
| 01/08/2020 06 | HIGH | 179.200 | 89.6 | 178.800 | 0.20 | | 0.20 | |
| 12/30/2019 06 | ZERO | 0.000 | 0 | -0.100 | 0.10 | | 0.10 | |
| 12/30/2019 06 | HIGH | 179.200 | 89.6 | 179.100 | 0.10 | | 0.10 | |
| 12/31/2019 06 | ZERO | 0.000 | 0 | -0.100 | 0.10 | | 0.10 | |
| 12/31/2019 06 | HIGH | 179.200 | 89.6 | 179.300 | 0.10 | | 0.10 | |

**Additional Information:**
No comment.

*Performance Spec: CE <= 2.5% of Span  Alternate Performance Spec: |R-A| <= 5 ppm (Appendix A &3.1)

**Facility Name:** Cricket Valley Energy Center

**Facility ID (ORISPL):** 57185

# QA/Cert Test Detail Report

March 12, 2020 04:29 PM

**Unit/Stack/Pipe ID:** U001

**7-Day Calibration**

| | | | | | |
|---|---|---|---|---|---|
| **Component ID:** | 120 | **Component Type:** | O2 | **Test Completion:** | 01/08/2020 06:05 |
| **Test Number:** | 7DCAL-O2-Q12020 | **Reason for Test:** | INITIAL | **Reported Test Results:** | PASSED |
| **Span Scale Level:** | High | **Span Value:** | 25.000 | **EPA Calculated Result:** | PASSED |
| **Evaluation Status:** | No Errors | | | **Submission Status:** | Not Submitted |
| | | | | **Submission Date/Time:** | |

| Injection Date/Hour | Gas Level | Reference Value | Reference Value % of Span | Measured Value | Reported | | Recalculated | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Results | APS | Results | APS |
| 01/01/2020 06 | ZERO | 0.000 | 0 | 0.020 | 0.00 | | 0.00 | |
| 01/01/2020 06 | HIGH | 22.210 | 88.8 | 22.220 | 0.00 | | 0.00 | |
| 01/02/2020 06 | ZERO | 0.000 | 0 | 0.010 | 0.00 | | 0.00 | |
| 01/02/2020 06 | HIGH | 22.210 | 88.8 | 22.210 | 0.00 | | 0.00 | |
| 01/06/2020 18 | ZERO | 0.000 | 0 | 0.020 | 0.00 | | 0.00 | |
| 01/06/2020 18 | HIGH | 22.210 | 88.8 | 22.230 | 0.00 | | 0.00 | |
| 01/07/2020 06 | ZERO | 0.000 | 0 | 0.010 | 0.00 | | 0.00 | |
| 01/07/2020 06 | HIGH | 22.210 | 88.8 | 22.220 | 0.00 | | 0.00 | |
| 01/08/2020 06 | ZERO | 0.000 | 0 | 0.010 | 0.00 | | 0.00 | |
| 01/08/2020 06 | HIGH | 22.210 | 88.8 | 22.210 | 0.00 | | 0.00 | |
| 12/30/2019 06 | ZERO | 0.000 | 0 | 0.010 | 0.00 | | 0.00 | |
| 12/30/2019 06 | HIGH | 22.190 | 88.8 | 22.210 | 0.00 | | 0.00 | |
| 12/31/2019 06 | ZERO | 0.000 | 0 | 0.020 | 0.00 | | 0.00 | |
| 12/31/2019 06 | HIGH | 22.210 | 88.8 | 22.240 | 0.00 | | 0.00 | |

**Additional Information:**
No comment.

*Performance Spec: CE <= 2.5% of Span  Alternate Performance Spec: |R-A| <= 5 ppm (Appendix A &3.1)

**Unit/Stack/Pipe ID:** U001
**Cycle Time Test**

| | | | | | |
|---|---|---|---|---|---|
| **Component ID:** | 110 | **Component Type:** | NOX | **Test Completion:** | 02/04/2020 13:29 |
| **Test Number:** | CTT-110L-2020Q1 | **Reason for Test:** | INITIAL | **Reported Test Results:** | PASSED |
| **Span Scale Level:** | Low | **Span Value:** | 10.000 | **EPA Calculated Result:** | PASSED |
| **Total Cycle Time:** | 2 | **Calculated Total Cycle Time:** | 2 | | |
| **Evaluation Status:** | No Errors | | | **Submission Status:** | Not Submitted |
| | | | | **Submission Date/Time:** | |

| Date | Start Time | End Time | Gas Level | Reference Gas Value | Stable Values | | Injection Cycle Time | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Starting | Ending | Results | Recalculated |
| 2020/02/04 | 13:22 | 13:23 | ZERO | 0.000 | 2.277 | -0.127 | 1 | 1 |
| 2020/02/04 | 13:27 | 13:29 | HIGH | 8.930 | 2.270 | 8.850 | 2 | 2 |

**Additional Information:**
No comment.

*Performance Spec: Cycle Time <= 15 minutes (Appendix A &3.5)

**Unit/Stack/Pipe ID:** U001
**Cycle Time Test**

| | | | | | |
|---|---|---|---|---|---|
| **Component ID:** | 110 | **Component Type:** | NOX | **Test Completion:** | 02/04/2020 13:41 |
| **Test Number:** | CTT-110H-2020Q1 | **Reason for Test:** | INITIAL | **Reported Test Results:** | PASSED |
| **Span Scale Level:** | High | **Span Value:** | 200.000 | **EPA Calculated Result:** | PASSED |
| **Total Cycle Time:** | 2 | **Calculated Total Cycle Time:** | 2 | | |
| **Evaluation Status:** | No Errors | | | **Submission Status:** | Not Submitted |
| | | | | **Submission Date/Time:** | |

| Date | Start Time | End Time | Gas Level | Reference Gas Value | Stable Values | | Injection Cycle Time | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Starting | Ending | Results | Recalculated |
| 2020/02/04 | 13:33 | 13:34 | ZERO | 0.000 | 2.334 | -0.019 | 1 | 1 |
| 2020/02/04 | 13:39 | 13:41 | HIGH | 176.800 | 2.334 | 177.091 | 2 | 2 |

**Additional Information:**
No comment.

*Performance Spec: Cycle Time <= 15 minutes (Appendix A &3.5)

**Unit/Stack/Pipe ID:** U001

**Cycle Time Test**

**Component ID:** 120
**Test Number:** CTT-120-2020Q1
**Span Scale Level:** High
**Total Cycle Time:** 2
**Component Type:** O2
**Reason for Test:** INITIAL
**Span Value:** 25.000
**Calculated Total Cycle Time:** 2
**Test Completion:** 02/04/2020 13:54
**Reported Test Results:** PASSED
**EPA Calculated Result:** PASSED
**Evaluation Status:** No Errors
**Submission Status:** Not Submitted
**Submission Date/Time:**

| Date | Start Time | End Time | Gas Level | Reference Gas Value | Stable Values | | Injection Cycle Time | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Starting | Ending | Results | Recalculated |
| 2020/02/04 | 13:47 | 13:49 | ZERO | 0.000 | 12.766 | 0.016 | 2 | 2 |
| 2020/02/04 | 13:52 | 13:54 | HIGH | 22.140 | 12.740 | 22.114 | 2 | 2 |

**Additional Information:**
No comment.

*Performance Spec: Cycle Time <= 15 minutes (Appendix A &3.5)

**Unit/Stack/Pipe ID:** U001

**Fuel Flowmeter Accuracy Test**

**Component ID:** 170
**Test Number:** FFAT-170-2020Q1
**Component Type:** GFFM
**Test Completion:** 03/14/2018 10:00
**Reported Test Results:** PASSED
**EPA Calculated Result:** PASSED
**Evaluation Status:** No Errors
**Submission Status:** Not Submitted
**Submission Date/Time:**

| Accuracy Test Method | High Level Accuracy | Mid Level Accuracy | Low Level Accuracy | Reinstallation Date/Hour |
|---|---|---|---|---|
| ASME | 0.0 | 0.0 | 0.0 | 02/21/2020 00 |

**Additional Information:**
No comment.

**Unit/Stack/Pipe ID:** U001

**Linearity Check**

## Facility Name: Cricket Valley Energy Center

**QA/Cert Test Detail Report**

March 12, 2020 04:29 PM

**Facility ID (ORISPL):** 57185

| | | | | | |
|---|---|---|---|---|---|
| **Component ID:** | 110 | **Component Type:** | NOX | **Test Completion:** | 02/04/2020 15:39 |
| **Test Number:** | 110-LIN-2020Q1 | **Reason for Test:** | INITIAL | **Reported Test Results:** | PASSED |
| **Span Scale Level:** | High | **Span Value:** | 200.000 | **EPA Calculated Result:** | PASSED |
| **Evaluation Status:** | No Errors | | | **Submission Status:** | Not Submitted |
| **Grace period Tested?** | | | | **Submission Date/Time:** | |

**Protocol Gas Data:**

| Gas Level Code | Gas Type Code | Vendor Identifier | Cylinder Identifier | Expiration Date |
|---|---|---|---|---|
| High | CO,NO,NOX,BALN | B22019 | SG9160199BAL | 6/22/2027 |
| Mid | CO,NO,NOX,BALN | G12019 | CC719253 | 9/24/2026 |
| Low | CO,NO,NOX,BALN | G12019 | CC712750 | 6/27/2022 |

**Summary Statistics:**

| | High | | Mid | | Low | |
|---|---|---|---|---|---|---|
| | Reported | Recalculated | Reported | Recalculated | Reported | Recalculated |
| **Reference Value** | 176.800 | 176.800 | 109.400 | 109.400 | 49.400 | 49.400 |
| **Mass CEM Value** | 180.605 | 180.605 | 110.633 | 110.633 | 48.567 | 48.567 |
| **Alt. Perf. Indicator** | | | | | | |
| **Results** | 2.2 | 2.2 | 1.1 | 1.1 | 1.7 | 1.7 |

**Injection Statistics:**

| Date | Gas Level | Measured Value | Reference Value | Reference Value as % of Span |
|---|---|---|---|---|
| 02/04/2020 15:35 | MID | 110.700 | 109.400 | 54.7% |
| 02/04/2020 15:10 | MID | 110.600 | 109.400 | 54.7% |
| 02/04/2020 15:23 | MID | 110.600 | 109.400 | 54.7% |
| 02/04/2020 15:31 | LOW | 48.700 | 49.400 | 24.7% |
| 02/04/2020 15:06 | LOW | 48.400 | 49.400 | 24.7% |
| 02/04/2020 15:19 | LOW | 48.600 | 49.400 | 24.7% |
| 02/04/2020 15:39 | HIGH | 182.217 | 176.800 | 88.4% |
| 02/04/2020 15:14 | HIGH | 182.397 | 176.800 | 88.4% |
| 02/04/2020 15:27 | HIGH | 177.200 | 176.800 | 88.4% |

**Additional Information:**

No comment.

*Performance Spec: LE <= 5.0% of Reference Value; Alternate Performance Spec: |R-A| <= 5ppm (Appendix A &3.2)

**Unit/Stack/Pipe ID:** U001

**Linearity Check**

| | | | | | |
|---|---|---|---|---|---|
| **Component ID:** | 120 | **Component Type:** | O2 | **Test Completion:** | 02/04/2020 16:47 |
| **Test Number:** | 120-LIN-2020Q1 | **Reason for Test:** | INITIAL | **Reported Test Results:** | PASSED |
| **Span Scale Level:** | High | **Span Value:** | 25.000 | **EPA Calculated Result:** | PASSED |
| **Evaluation Status:** | No Errors | | | **Submission Status:** | Not Submitted |
| **Grace period Tested?** | | | | **Submission Date/Time:** | |

**Protocol Gas Data:**

| Gas Level Code | Gas Type Code | Vendor Identifier | Cylinder Identifier | Expiration Date |
|---|---|---|---|---|
| Low | CO2,O2,BALN | L12013 | EB0049417 | 8/13/2021 |
| High | O2,BALN | A12019 | ALM010779 | 5/9/2027 |
| Mid | O2,BALN | G12015 | EB0053431 | 6/13/2023 |

**Summary Statistics:**

| | High | | Mid | | Low | |
|---|---|---|---|---|---|---|
| | Reported | Recalculated | Reported | Recalculated | Reported | Recalculated |
| **Reference Value** | 22.150 | 22.150 | 13.460 | 13.460 | 6.030 | 6.030 |
| **Mass CEM Value** | 22.120 | 22.120 | 13.523 | 13.523 | 6.013 | 6.013 |
| **Alt. Perf. Indicator** | | | | | | |
| **Results** | 0.1 | 0.1 | 0.5 | 0.5 | 0.3 | 0.3 |

**Injection Statistics:**

| Date | Gas Level | Measured Value | Reference Value | Reference Value as % of Span |
|---|---|---|---|---|
| 02/04/2020 16:47 | HIGH | 22.130 | 22.150 | 88.6% |
| 02/04/2020 16:32 | HIGH | 22.110 | 22.150 | 88.6% |
| 02/04/2020 16:17 | HIGH | 22.120 | 22.150 | 88.6% |
| 02/04/2020 16:27 | MID | 13.510 | 13.460 | 53.8% |
| 02/04/2020 16:42 | MID | 13.530 | 13.460 | 53.8% |
| 02/04/2020 16:12 | MID | 13.530 | 13.460 | 53.8% |
| 02/04/2020 16:37 | LOW | 6.010 | 6.030 | 24.1% |
| 02/04/2020 16:07 | LOW | 6.010 | 6.030 | 24.1% |
| 02/04/2020 16:22 | LOW | 6.020 | 6.030 | 24.1% |

**Additional Information:**

No comment.

*Performance Spec: LE <= 5.0% of Reference Value; Alternate Performance Spec: |R-A| <= 5ppm (Appendix A &3.2)

**Unit/Stack/Pipe ID:** U001

**On-Line/Off-Line Calibration**

**Component ID:** 120
**Test Number:** ON_OFF-120-
**Span Scale Level:** High
**Component Type:** O2
**Reason for Test:** INITIAL
**Span Value:**
**Test Completion:** 01/24/2020 19
**Reported Test Results:** PASSED
**EPA Calculated Result:**
**Evaluation Status:** Not Evaluated
**Submission Status:** Not Submitted
**Submission Date/Time:**

| Calibration Type | Injection Date/Hour | Gas Level | Reference Value | Reference Value % of Span | Measured Value | Reported | | Recalculated | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Results | APS | Results | APS |
| Online | 01/24/2020 19 | ZERO | 0.000 | | -0.010 | 0.00 | | | |
| Online | 01/24/2020 19 | HIGH | 22.150 | | 22.160 | 0.00 | | | |
| Offline | 01/24/2020 00 | ZERO | 0.000 | | 0.010 | 0.00 | | | |
| Offline | 01/24/2020 00 | HIGH | 22.150 | | 22.180 | 0.00 | | | |

**Additional Information:**

No comment.

**Unit/Stack/Pipe ID:** U001

**On-Line/Off-Line Calibration**

**Component ID:** 110
**Test Number:** ON_OFF-110L-
**Span Scale Level:** Low
**Component Type:** NOX
**Reason for Test:** INITIAL
**Span Value:**
**Test Completion:** 01/24/2020 19
**Reported Test Results:** PASSED
**EPA Calculated Result:** PASSED
**Evaluation Status:** No Errors
**Submission Status:** Not Submitted
**Submission Date/Time:**

| Calibration Type | Injection Date/Hour | Gas Level | Reference Value | Reference Value % of Span | Measured Value | Reported | | Recalculated | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Results | APS | Results | APS |
| Online | 01/24/2020 19 | ZERO | 0.000 | | 0.240 | 2.40 | | 2.40 | |
| Online | 01/24/2020 19 | HIGH | 8.900 | | 8.920 | 0.20 | | 0 | |
| Offline | 01/24/2020 00 | ZERO | 0.000 | | 0.010 | 0.10 | | 0.10 | |
| Offline | 01/24/2020 00 | HIGH | 8.900 | | 8.760 | 1.40 | | 1.40 | |

**Additional Information:**

No comment.

**Unit/Stack/Pipe ID:** U001

**On-Line/Off-Line Calibration**

**Component ID:** 110
**Test Number:** ON_OFF-110H-
**Span Scale Level:** High
**Component Type:** NOX
**Reason for Test:** INITIAL
**Span Value:**
**Test Completion:** 01/24/2020 19
**Reported Test Results:** PASSED
**EPA Calculated Result:** PASSED
**Evaluation Status:** No Errors
**Submission Status:** Not Submitted
**Submission Date/Time:**

| Calibration Type | Injection Date/Hour | Gas Level | Reference Value | Reference Value % of Span | Measured Value | Reported | | Recalculated | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Results | APS | Results | APS |
| Online | 01/24/2020 19 | ZERO | 0.000 | | 0.200 | 0.10 | | 0.10 | |
| Online | 01/24/2020 19 | HIGH | 176.800 | | 175.200 | 0.80 | | 0 | |
| Offline | 01/24/2020 00 | ZERO | 0.000 | | 0.000 | 0.00 | | 0.00 | |
| Offline | 01/24/2020 00 | HIGH | 179.200 | | 178.700 | 0.30 | | 0.30 | |

**Additional Information:**

No comment.

**Unit/Stack/Pipe ID:** U001
**Relative Accuracy Test**

| | | | | | |
|---|---|---|---|---|---|
| **System ID:** | N10 | **System Parameter:** | NOX | **Test Completion:** | 02/06/2020 17:06 |
| **Test Number:** | N10-2020Q1 | **Reason for Test:** | INITIAL | **Reported Test Results:** | PASSAPS |
| **# of Op. Levels:** | 1 | **Grace Period Test?** | | **EPA Calculated Result:** | PASSAPS |
| **Evaluation Status:** | No Errors | | | **Reported BAF:** | 1.000 |
| **Submission Status:** | Not Submitted | | | **EPA Calculated BAF:** | 1.000 |
| **Submission Date:** | | | | **RATA Frequency:** | 4QTRS |

**Air Emissions Testing Data**

| | | | |
|---|---|---|---|
| **QI Name:** | BLUM, AARON M | **AETB Name:** | AIR HYGIENE INTERNATIONAL |
| **Exam Date:** | 1/31/2019 | **AETB Phone Number:** | 888-461-8778 |
| **Provider Name:** | SOURCE EVALUATION SOCIETY (SES) | **AETB Email:** | info@airhygiene.com |
| **Provider Email:** | QSTIPROGRAM@GMAIL.COM | | |

**Protocol Gas Data:**

| Gas Level Code | Gas Type Code | Vendor Identifier | Cylinder Identifier | Expiration Date |
|---|---|---|---|---|
| High | BALN,CO,NO,NOX | G12019 | EB0040961 | 10/30/2022 |
| Mid | BALN,CO,NO,NOX | G12019 | EB0101718 | 5/30/2022 |
| High | BALN,CO2,O2 | G12019 | EB0080940 | 6/25/2027 |
| Mid | BALN,CO2,O2 | G12019 | EB0069916 | 11/9/2026 |
| Low | ZERO | | | |

**Operating Level:** High
**Reference Method Used:** 7E,3A: NOX RM 7E and CO2/O2 RM 3A

**Summary Statistics:**

| | Reported | Recalculated | | Reported | Recalculated |
|---|---|---|---|---|---|
| **Mean of Monitoring System** | 0.00643 | 0.00643 | **Relative Accuracy** | 9.34 | 9.34 |
| **Mean of Reference Method Values** | 0.00664 | 0.00664 | **Bias Adjustment Factor** | 1.000 | 1.000 |
| **Mean of Difference** | 0.00021 | 0.00021 | **APS Indicator** | Y | Y |
| **Standard Deviation of Difference** | 0.00053 | 0.00053 | **T-Value** | 2.306 | 2.306 |
| **Confidence Coefficient** | 0.00041 | 0.00041 | **Gross Unit Load or Velocity** | 373 | 373 |

**Run Data:**

| Run | Start Date | End Date | Run Status | Monitoring System Value | Reference Method Value | Gross Load or Velocity |
|---|---|---|---|---|---|---|
| 1 | 02/06/2020 11:36 | 02/06/2020 11:56 | RUNUSED | 0.00630 | 0.00720 | 373 |
| 2 | 02/06/2020 12:10 | 02/06/2020 12:30 | RUNUSED | 0.00670 | 0.00620 | 373 |
| 3 | 02/06/2020 12:42 | 02/06/2020 13:02 | RUNUSED | 0.00630 | 0.00650 | 373 |
| 4 | 02/06/2020 13:20 | 02/06/2020 13:40 | RUNUSED | 0.00630 | 0.00650 | 373 |
| 5 | 02/06/2020 13:55 | 02/06/2020 14:15 | RUNUSED | 0.00640 | 0.00660 | 373 |
| 6 | 02/06/2020 14:27 | 02/06/2020 14:47 | RUNUSED | 0.00670 | 0.00610 | 373 |
| 7 | 02/06/2020 15:01 | 02/06/2020 15:21 | RUNUSED | 0.00630 | 0.00730 | 373 |
| 8 | 02/06/2020 15:36 | 02/06/2020 15:56 | RUNUSED | 0.00660 | 0.00680 | 373 |
| 9 | 02/06/2020 16:08 | 02/06/2020 16:28 | RUNUSED | 0.00630 | 0.00660 | 373 |
| 10 | 02/06/2020 16:46 | 02/06/2020 17:06 | NOTUSED | 0.00540 | 0.00760 | 373 |

**Additional Information:**

No comment.

*Performance Spec: RA <= 10% or Mean Difference <= +/- 2.0fps:
Reduced Frequency Spec: RA <= 7.5% or Mean Difference +/- 1.5 fps (Appendix A &3.3.4)

**Unit/Stack/Pipe ID:** U001

**Transmitter Transducer Test**

**Component ID:** 175
**Test Number:** FFTTT-175-2020Q1
**Component Type:** GFFM
**Reason for Test:** INITIAL
**Test Completion:** 02/23/2018 08:22
**Reported Test Results:** PASSED
**EPA Calculated Result:** PASSED
**Evaluation Status:** No Errors
**Submission Status:** Not Submitted
**Submission Date/Time:**

| High Level Accuracy | High Level Accuracy Specification | Mid Level Accuracy | Mid Level Accuracy Specification | Low Level Accuracy | Low Level Accuracy Specification |
|---|---|---|---|---|---|
| 0.0 | SUM | 0.0 | SUM | 0.0 | SUM |

**Additional Information:**

No comment.

**Unit/Stack/Pipe ID:** U001

**DAHS Verification**

| | | | | | |
|---|---|---|---|---|---|
| **System ID:** | | **System Type:** | | **Test Completion:** | 11/02/2019 18:00 |
| **Component ID:** | D01 | **Component Type:** | DAHS | **Reported Test Results:** | PASSED |
| **Test Number:** | DAHS_2020Q1 | **Reason for Test:** | INITIAL | **Grace Period Test?** | |
| **Evaluation Status:** | No Errors | | | **Submission Status:** | Not Submitted |

**Test Description:**

**Additional Information:**

DAHS VERIFICATION

**Unit/Stack/Pipe ID:** U001

**Primary Element Inspection**

| | | | | | |
|---|---|---|---|---|---|
| **System ID:** | | **System Type:** | | **Test Completion:** | 10/19/2019 00:00 |
| **Component ID:** | 175 | **Component Type:** | GFFM | **Reported Test Results:** | PASSED |
| **Test Number:** | 175-PEI-2020Q1 | **Reason for Test:** | INITIAL | **Grace Period Test?** | |
| **Evaluation Status:** | No Errors | | | **Submission Status:** | Not Submitted |

**Test Description:**

**Additional Information:**

ORIFICE PLATE INSPECTION

# APPENDIX 2

# 7-DAY ERROR/DRIFT TESTS
# &
# ONLINE/OFFLINE DEMONSTRATION TESTS
# DOCUMENTATION

# Cricket Valley Energy Center

## 7-Day Drift Test

Turbine 1 60-NOx ppm/H

| Time | Instrument Span | Zero Reference | Zero Measured | Zero Drift | Zero Drift Limit | Span Reference | Span Measured | Span Drift | Span Drift Limit | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 12/30/2019 06:05 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 179.10 | -0.10 | 5.00 | On-Line |
| 12/31/2019 06:05 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 179.30 | 0.10 | 5.00 | On-Line |
| 1/1/2020 06:05 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 179.60 | 0.40 | 5.00 | On-Line |
| 1/2/2020 06:05 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 178.90 | -0.30 | 5.00 | On-Line |
| 1/3/2020 06:05 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 178.90 | -0.30 | 5.00 | Off-Line |
| 1/4/2020 06:05 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 179.10 | -0.10 | 5.00 | Off-Line |
| 1/4/2020 14:21 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 179.10 | -0.10 | 5.00 | Off-Line |
| 1/5/2020 06:05 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 179.50 | 0.30 | 5.00 | Off-Line |
| 1/6/2020 06:05 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 179.70 | 0.50 | 5.00 | Off-Line |
| 1/6/2020 15:34 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 179.70 | 0.50 | 5.00 | Off-Line |
| 1/6/2020 15:59 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 179.20 | 179.50 | 0.30 | 5.00 | Off-Line |
| 1/6/2020 18:36 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 179.30 | 0.10 | 5.00 | On-Line |
| 1/7/2020 06:05 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 179.30 | 0.10 | 5.00 | On-Line |
| 1/8/2020 06:05 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 178.80 | -0.40 | 5.00 | On-Line |

The 7-Day Drift Test has been passed.

# Cricket Valley Energy Center

## 7-Day Drift Test

Turbine 1 60-NOx ppm/L

| Time | Instrument Span | Zero Reference | Zero Measured | Zero Drift | Zero Drift Limit | Span Reference | Span Measured | Span Drift | Span Drift Limit | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 12/30/2019 06:05 | 10 | 0.00 | -0.02 | -0.02 | 0.25 | 9.04 | 8.94 | -0.10 | 0.25 | On-Line |
| 12/31/2019 06:05 | 10 | 0.00 | -0.02 | -0.02 | 0.25 | 9.04 | 8.94 | -0.10 | 0.25 | On-Line |
| 12/31/2019 08:58 | 10 | 0.00 | -0.01 | -0.01 | 0.25 | 9.01 | 9.10 | 0.10 | 0.25 | On-Line |
| 1/1/2020 06:05 | 10 | 0.00 | 0.00 | 0.00 | 0.25 | 9.01 | 9.04 | 0.04 | 0.25 | On-Line |
| 1/2/2020 06:05 | 10 | 0.00 | 0.00 | 0.00 | 0.25 | 9.01 | 9.03 | 0.03 | 0.25 | On-Line |
| 1/3/2020 06:05 | 10 | 0.00 | -0.01 | -0.01 | 0.25 | 9.01 | 9.01 | 0.01 | 0.25 | Off-Line |
| 1/4/2020 06:05 | 10 | 0.00 | 0.01 | 0.01 | 0.25 | 9.01 | 9.02 | 0.02 | 0.25 | Off-Line |
| 1/4/2020 14:21 | 10 | 0.00 | -0.11 | -0.11 | 0.25 | 9.01 | 8.68 | **-0.33** | 0.25 | Off-Line |
| 1/5/2020 06:05 | 10 | 0.00 | -0.15 | -0.15 | 0.25 | 9.05 | 8.67 | **-0.38** | 0.25 | Off-Line |
| 1/6/2020 06:05 | 10 | 0.00 | -0.14 | -0.14 | 0.25 | 9.05 | 8.68 | **-0.37** | 0.25 | Off-Line |
| 1/6/2020 15:34 | 10 | 0.00 | 0.00 | 0.00 | 0.25 | 9.00 | 9.01 | 0.01 | 0.25 | Off-Line |
| 1/6/2020 15:59 | 10 | 0.00 | 0.14 | 0.14 | 0.25 | 9.00 | 9.02 | 0.02 | 0.25 | Off-Line |
| 1/6/2020 18:36 | 10 | 0.00 | 0.01 | 0.01 | 0.25 | 9.00 | 9.00 | 0.00 | 0.25 | On-Line |
| 1/7/2020 06:05 | 10 | 0.00 | -0.01 | -0.01 | 0.25 | 9.00 | 8.98 | -0.02 | 0.25 | On-Line |
| 1/8/2020 06:05 | 10 | 0.00 | -0.01 | -0.01 | 0.25 | 9.00 | 8.96 | -0.04 | 0.25 | On-Line |

The 7-Day Drift Test has been passed.

# Cricket Valley Energy Center

## 7-Day Drift Test

Turbine 1 75-NOx ppm/H

| Time | Instrument Span | Zero Reference | Zero Measured | Zero Drift | Zero Drift Limit | Span Reference | Span Measured | Span Drift | Span Drift Limit | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 12/30/2019 06:05 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 179.10 | -0.10 | 5.00 | On-Line |
| 12/31/2019 06:05 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 179.30 | 0.10 | 5.00 | On-Line |
| 1/1/2020 06:05 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 179.60 | 0.40 | 5.00 | On-Line |
| 1/2/2020 06:05 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 178.90 | -0.30 | 5.00 | On-Line |
| 1/3/2020 06:05 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 178.90 | -0.30 | 5.00 | Off-Line |
| 1/4/2020 06:05 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 179.10 | -0.10 | 5.00 | Off-Line |
| 1/4/2020 14:21 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 179.10 | -0.10 | 5.00 | Off-Line |
| 1/5/2020 06:05 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 179.50 | 0.30 | 5.00 | Off-Line |
| 1/6/2020 06:05 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 179.70 | 0.50 | 5.00 | Off-Line |
| 1/6/2020 15:34 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 179.70 | 0.50 | 5.00 | Off-Line |
| 1/6/2020 15:59 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 179.20 | 179.50 | 0.30 | 5.00 | Off-Line |
| 1/6/2020 18:36 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 179.30 | 0.10 | 5.00 | On-Line |
| 1/7/2020 06:05 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 179.30 | 0.10 | 5.00 | On-Line |
| 1/8/2020 06:05 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 179.20 | 178.80 | -0.40 | 5.00 | On-Line |

The 7-Day Drift Test has been passed.

# Cricket Valley Energy Center

## 7-Day Drift Test

Turbine 1 CO ppm/H

| Time | Instrument Span | Zero Reference | Zero Measured | Zero Drift | Zero Drift Limit | Span Reference | Span Measured | Span Drift | Span Drift Limit | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 1/7/2020 06:05 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1728.00 | 1726.00 | -2.00 | 102.50 | On-Line |
| 1/8/2020 06:05 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1728.00 | 1738.00 | 10.00 | 102.50 | On-Line |
| 1/9/2020 06:05 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1728.00 | 1719.00 | -9.00 | 102.50 | Off-Line |
| 1/10/2020 00:01 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1728.00 | 1719.00 | -9.00 | 102.50 | Off-Line |
| 1/11/2020 00:01 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1728.00 | 1726.00 | -2.00 | 102.50 | Off-Line |
| 1/12/2020 00:01 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1728.00 | 1736.00 | 8.00 | 102.50 | Off-Line |
| 1/13/2020 00:01 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1728.00 | 1725.00 | -3.00 | 102.50 | Off-Line |
| 1/14/2020 00:01 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1728.00 | 1724.00 | -4.00 | 102.50 | Off-Line |
| 1/15/2020 00:01 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1728.00 | 171.00 | **-1557.00** | 102.50 | Off-Line |
| 1/15/2020 20:46 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1731.00 | 1731.00 | 0.00 | 102.50 | Off-Line |
| 1/15/2020 22:39 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1731.00 | 1730.00 | -1.00 | 102.50 | Off-Line |
| 1/16/2020 00:01 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1731.00 | 1732.00 | 1.00 | 102.50 | Off-Line |
| 1/17/2020 00:01 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1731.00 | 1737.00 | 6.00 | 102.50 | Off-Line |
| 1/18/2020 00:01 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1731.00 | 1725.00 | -6.00 | 102.50 | Off-Line |
| 1/19/2020 00:01 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1731.00 | 1741.00 | 10.00 | 102.50 | Off-Line |
| 1/20/2020 00:01 | 2050 | 0.00 | 0.00 | 0.00 | 102.50 | 1731.00 | 1744.00 | 13.00 | 102.50 | Off-Line |
| 1/21/2020 00:01 | 2050 | 0.00 | 0.00 | 0.00 | 102.50 | 1731.00 | 1736.00 | 5.00 | 102.50 | Off-Line |
| 1/22/2020 00:01 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1731.00 | 1736.00 | 5.00 | 102.50 | Off-Line |
| 1/22/2020 16:29 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1731.00 | 1737.00 | 6.00 | 102.50 | On-Line |
| 1/23/2020 00:01 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1731.00 | 1735.00 | 4.00 | 102.50 | Off-Line |
| 1/24/2020 00:01 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1731.00 | 1733.00 | 2.00 | 102.50 | Off-Line |
| 1/24/2020 14:35 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1709.00 | 1732.00 | 23.00 | 102.50 | Off-Line |
| 1/24/2020 19:51 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1709.00 | 1732.00 | 23.00 | 102.50 | On-Line |
| 1/25/2020 00:01 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1709.00 | 1732.00 | 23.00 | 102.50 | Off-Line |
| 1/25/2020 01:49 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1709.00 | 1735.00 | 26.00 | 102.50 | On-Line |
| 1/25/2020 10:09 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1709.00 | 1736.00 | 27.00 | 102.50 | On-Line |
| 1/26/2020 00:01 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1709.00 | 1746.00 | 37.00 | 102.50 | On-Line |
| 1/27/2020 00:01 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1709.00 | 1746.00 | 37.00 | 102.50 | On-Line |

The 7-Day Drift Test has been passed.

# Cricket Valley Energy Center

## 7-Day Drift Test

Turbine 1 CO ppm/L

| Time | Instrument Span | Zero Reference | Zero Measured | Zero Drift | Zero Drift Limit | Span Reference | Span Measured | Span Drift | Span Drift Limit | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 1/7/2020 06:05 | 10 | 0.00 | -0.39 | -0.39 | 0.50 | 7.06 | 7.14 | 0.08 | 0.50 | On-Line |
| 1/8/2020 06:05 | 10 | 0.00 | -0.26 | -0.26 | 0.50 | 7.06 | 7.32 | 0.26 | 0.50 | On-Line |
| 1/9/2020 06:05 | 10 | 0.00 | -0.28 | -0.28 | 0.50 | 7.06 | 7.27 | 0.21 | 0.50 | Off-Line |
| 1/10/2020 00:01 | 10 | 0.00 | -0.24 | -0.24 | 0.50 | 7.06 | 7.36 | 0.30 | 0.50 | Off-Line |
| 1/10/2020 06:34 | 10 | 0.00 | -0.10 | -0.10 | 0.50 | 7.06 | 7.22 | 0.16 | 0.50 | Off-Line |
| 1/11/2020 00:01 | 10 | 0.00 | 0.00 | 0.00 | 0.50 | 7.06 | 7.17 | 0.11 | 0.50 | Off-Line |
| 1/12/2020 00:01 | 10 | 0.00 | -0.05 | -0.05 | 0.50 | 7.06 | 7.14 | 0.08 | 0.50 | Off-Line |
| 1/13/2020 00:01 | 10 | 0.00 | 0.13 | 0.13 | 0.50 | 7.06 | 7.24 | 0.18 | 0.50 | Off-Line |
| 1/14/2020 00:01 | 10 | 0.00 | 0.09 | 0.09 | 0.50 | 7.06 | 7.17 | 0.11 | 0.50 | Off-Line |
| 1/15/2020 00:01 | 10 | 0.00 | -0.01 | -0.01 | 0.50 | 7.06 | 3.81 | **-3.25** | 0.50 | Off-Line |
| 1/15/2020 20:46 | 10 | 0.00 | -0.03 | -0.03 | 0.50 | 7.04 | 6.34 | **-0.70** | 0.50 | Off-Line |
| 1/15/2020 22:39 | 10 | 0.00 | -0.04 | -0.04 | 0.50 | 7.04 | 6.32 | **-0.72** | 0.50 | Off-Line |
| 1/16/2020 00:01 | 10 | 0.00 | 0.01 | 0.01 | 0.50 | 7.04 | 6.30 | **-0.74** | 0.50 | Off-Line |
| 1/17/2020 00:01 | 10 | 0.00 | -0.03 | -0.03 | 0.50 | 7.04 | 6.32 | **-0.72** | 0.50 | Off-Line |
| 1/18/2020 00:01 | 10 | 0.00 | -0.06 | -0.06 | 0.50 | 7.04 | 6.26 | **-0.78** | 0.50 | Off-Line |
| 1/19/2020 00:01 | 10 | 0.00 | 0.00 | 0.00 | 0.50 | 7.04 | 6.36 | **-0.68** | 0.50 | Off-Line |
| 1/20/2020 00:01 | 10 | 0.00 | -0.10 | -0.10 | 0.50 | 7.04 | 6.27 | **-0.77** | 0.50 | Off-Line |
| 1/21/2020 00:01 | 10 | 0.00 | -0.11 | -0.11 | 0.50 | 7.04 | 6.27 | **-0.77** | 0.50 | Off-Line |
| 1/21/2020 08:58 | 10 | 0.00 | 0.01 | 0.01 | 0.50 | 7.04 | 7.05 | 0.01 | 0.50 | Off-Line |
| 1/22/2020 00:01 | 10 | 0.00 | 0.08 | 0.08 | 0.50 | 7.04 | 7.14 | 0.10 | 0.50 | Off-Line |
| 1/22/2020 16:29 | 10 | 0.00 | 0.22 | 0.22 | 0.50 | 7.04 | 7.20 | 0.16 | 0.50 | On-Line |
| 1/23/2020 00:01 | 10 | 0.00 | 0.11 | 0.11 | 0.50 | 7.07 | 7.14 | 0.07 | 0.50 | Off-Line |
| 1/24/2020 00:01 | 10 | 0.00 | 0.04 | 0.04 | 0.50 | 7.07 | 7.11 | 0.04 | 0.50 | Off-Line |
| 1/24/2020 19:51 | 10 | 0.00 | 0.18 | 0.18 | 0.50 | 7.07 | 7.13 | 0.06 | 0.50 | On-Line |
| 1/25/2020 00:01 | 10 | 0.00 | 0.06 | 0.06 | 0.50 | 7.07 | 7.08 | 0.01 | 0.50 | Off-Line |
| 1/25/2020 01:49 | 10 | 0.00 | 0.09 | 0.09 | 0.50 | 7.07 | 7.09 | 0.02 | 0.50 | On-Line |
| 1/25/2020 10:09 | 10 | 0.00 | 0.09 | 0.09 | 0.50 | 7.07 | 7.16 | 0.09 | 0.50 | On-Line |
| 1/26/2020 00:01 | 10 | 0.00 | 0.07 | 0.07 | 0.50 | 7.07 | 7.17 | 0.10 | 0.50 | On-Line |
| 1/27/2020 00:01 | 10 | 0.00 | 0.14 | 0.14 | 0.50 | 7.07 | 7.24 | 0.17 | 0.50 | On-Line |

The 7-Day Drift Test has been passed.

# Cricket Valley Energy Center

## 7-Day Drift Test

Turbine 1 NH3/NOx ppm

| Time | Instrument Span | Zero Reference | Zero Measured | Zero Drift | Zero Drift Limit | Span Reference | Span Measured | Span Drift | Span Drift Limit | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 12/30/2019 06:05 | 16 | 0.00 | -0.23 | -0.23 | 0.48 | 9.04 | 8.87 | -0.17 | 0.48 | On-Line |
| 12/31/2019 06:05 | 16 | 0.00 | -0.20 | -0.20 | 0.48 | 9.04 | 8.92 | -0.12 | 0.48 | On-Line |
| 12/31/2019 08:58 | 16 | 0.00 | -0.07 | -0.07 | 0.48 | 9.01 | 9.15 | 0.15 | 0.48 | On-Line |
| 1/1/2020 06:05 | 16 | 0.00 | -0.05 | -0.05 | 0.48 | 9.01 | 8.98 | -0.03 | 0.48 | On-Line |
| 1/2/2020 06:05 | 16 | 0.00 | -0.02 | -0.02 | 0.48 | 9.01 | 8.99 | -0.02 | 0.48 | On-Line |
| 1/3/2020 06:05 | 16 | 0.00 | -0.08 | -0.08 | 0.48 | 9.01 | 9.01 | 0.01 | 0.48 | Off-Line |
| 1/4/2020 06:05 | 16 | 0.00 | -0.08 | -0.08 | 0.48 | 9.01 | 8.97 | -0.04 | 0.48 | Off-Line |
| 1/4/2020 14:21 | 16 | 0.00 | -0.15 | -0.15 | 0.48 | 9.01 | 8.49 | **-0.52** | 0.48 | Off-Line |
| 1/5/2020 06:05 | 16 | 0.00 | -0.18 | -0.18 | 0.48 | 9.01 | 8.47 | **-0.54** | 0.48 | Off-Line |
| 1/6/2020 06:05 | 16 | 0.00 | -0.17 | -0.17 | 0.48 | 9.01 | 8.47 | **-0.54** | 0.48 | Off-Line |
| 1/6/2020 15:59 | 16 | 0.00 | 0.23 | 0.23 | 0.48 | 9.00 | 9.05 | 0.05 | 0.48 | Off-Line |
| 1/6/2020 18:36 | 16 | 0.00 | 0.25 | 0.25 | 0.48 | 9.00 | 9.05 | 0.05 | 0.48 | On-Line |
| 1/7/2020 06:05 | 16 | 0.00 | 0.04 | 0.04 | 0.48 | 9.00 | 9.00 | 0.00 | 0.48 | On-Line |
| 1/8/2020 06:05 | 16 | 0.00 | 0.05 | 0.05 | 0.48 | 9.00 | 9.00 | 0.00 | 0.48 | On-Line |

The 7-Day Drift Test has been passed.

# Cricket Valley Energy Center

## 7-Day Drift Test

Turbine 1 60-O2 %

| Time | Instrument Span | Zero Reference | Zero Measured | Zero Drift | Zero Drift Limit | Span Reference | Span Measured | Span Drift | Span Drift Limit | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 12/30/2019 06:05 | 25 | 0.00 | 0.01 | 0.01 | 0.50 | 22.19 | 22.21 | 0.02 | 0.50 | On-Line |
| 12/31/2019 06:05 | 25 | 0.00 | 0.02 | 0.02 | 0.50 | 22.21 | 22.24 | 0.03 | 0.50 | On-Line |
| 1/1/2020 06:05 | 25 | 0.00 | 0.02 | 0.02 | 0.50 | 22.21 | 22.22 | 0.01 | 0.50 | On-Line |
| 1/2/2020 06:05 | 25 | 0.00 | 0.01 | 0.01 | 0.50 | 22.21 | 22.21 | 0.00 | 0.50 | On-Line |
| 1/3/2020 06:05 | 25 | 0.00 | 0.02 | 0.02 | 0.50 | 22.21 | 22.21 | 0.00 | 0.50 | Off-Line |
| 1/4/2020 06:05 | 25 | 0.00 | 0.02 | 0.02 | 0.50 | 22.21 | 22.21 | 0.00 | 0.50 | Off-Line |
| 1/4/2020 14:21 | 25 | 0.00 | 0.02 | 0.02 | 0.50 | 22.21 | 22.22 | 0.01 | 0.50 | Off-Line |
| 1/5/2020 06:05 | 25 | 0.00 | 0.03 | 0.03 | 0.50 | 22.21 | 22.23 | 0.02 | 0.50 | Off-Line |
| 1/6/2020 06:05 | 25 | 0.00 | 0.02 | 0.02 | 0.50 | 22.21 | 22.23 | 0.02 | 0.50 | Off-Line |
| 1/6/2020 15:59 | 25 | 0.00 | 0.01 | 0.01 | 0.50 | 22.21 | 22.22 | 0.01 | 0.50 | Off-Line |
| 1/6/2020 18:36 | 25 | 0.00 | 0.02 | 0.02 | 0.50 | 22.21 | 22.23 | 0.02 | 0.50 | On-Line |
| 1/7/2020 06:05 | 25 | 0.00 | 0.01 | 0.01 | 0.50 | 22.21 | 22.22 | 0.01 | 0.50 | On-Line |
| 1/8/2020 06:05 | 25 | 0.00 | 0.01 | 0.01 | 0.50 | 22.21 | 22.21 | 0.00 | 0.50 | On-Line |

The 7-Day Drift Test has been passed.

# Cricket Valley Energy Center

## 7-Day Drift Test

Turbine 1 75-O2 %

| Time | Instrument Span | Zero Reference | Zero Measured | Zero Drift | Zero Drift Limit | Span Reference | Span Measured | Span Drift | Span Drift Limit | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 12/30/2019 06:05 | 25 | 0.00 | 0.01 | 0.01 | 0.50 | 22.19 | 22.21 | 0.02 | 0.50 | On-Line |
| 12/31/2019 06:05 | 25 | 0.00 | 0.02 | 0.02 | 0.50 | 22.21 | 22.24 | 0.03 | 0.50 | On-Line |
| 1/1/2020 06:05 | 25 | 0.00 | 0.02 | 0.02 | 0.50 | 22.21 | 22.22 | 0.01 | 0.50 | On-Line |
| 1/2/2020 06:05 | 25 | 0.00 | 0.01 | 0.01 | 0.50 | 22.21 | 22.21 | 0.00 | 0.50 | On-Line |
| 1/3/2020 06:05 | 25 | 0.00 | 0.02 | 0.02 | 0.50 | 22.21 | 22.21 | 0.00 | 0.50 | Off-Line |
| 1/4/2020 06:05 | 25 | 0.00 | 0.02 | 0.02 | 0.50 | 22.21 | 22.21 | 0.00 | 0.50 | Off-Line |
| 1/4/2020 14:21 | 25 | 0.00 | 0.02 | 0.02 | 0.50 | 22.21 | 22.22 | 0.01 | 0.50 | Off-Line |
| 1/5/2020 06:05 | 25 | 0.00 | 0.03 | 0.03 | 0.50 | 22.21 | 22.23 | 0.02 | 0.50 | Off-Line |
| 1/6/2020 06:05 | 25 | 0.00 | 0.02 | 0.02 | 0.50 | 22.21 | 22.23 | 0.02 | 0.50 | Off-Line |
| 1/6/2020 15:59 | 25 | 0.00 | 0.01 | 0.01 | 0.50 | 22.21 | 22.22 | 0.01 | 0.50 | Off-Line |
| 1/6/2020 18:36 | 25 | 0.00 | 0.02 | 0.02 | 0.50 | 22.21 | 22.23 | 0.02 | 0.50 | On-Line |
| 1/7/2020 06:05 | 25 | 0.00 | 0.01 | 0.01 | 0.50 | 22.21 | 22.22 | 0.01 | 0.50 | On-Line |
| 1/8/2020 06:05 | 25 | 0.00 | 0.01 | 0.01 | 0.50 | 22.21 | 22.21 | 0.00 | 0.50 | On-Line |

The 7-Day Drift Test has been passed.

# Turbine 1 Calibration Checks

Cricket Valley Energy Center
Cal Checks for 1/24/2020

| Date/Time | Parameter | Analyzer Scale | Test Level | Reference Value | Measured Value | Actual Drift | Allowable Drift | Instrument Span | Results |
|---|---|---|---|---|---|---|---|---|---|
| | | | *Cylinder ID* | *Expiration Date* | | *EPA Vendor ID* | *EPA Gas Type Codes* | | |
| 1/24/2020 12:01 AM | 75-NOx ppm | High | Zero | 0.0 ppm | 0.0 ppm | 0 ppm | ±10 ppm | 200 ppm | Unit offline; Passed |
| | | | *NI CZ15A* | *1/2/2028* | | *B22019* | *N2* | | |
| 1/24/2020 12:01 AM | 75-NOx ppm | High | Span | 179.2 ppm | 178.7 ppm | -0.5 ppm | ±10 ppm | 200 ppm | Unit offline; Passed |
| | | | *ALM-032192* | *6/24/2027* | | *B22019* | *CO,NO,NOX,BALN* | | |
| 1/24/2020 12:01 AM | 75-NOx ppm | Low | Zero | 0.00 ppm | 0.01 ppm | 0.01 ppm | ±0.5 ppm | 10 ppm | Unit offline; Passed |
| | | | *NI CZ15A* | *1/2/2028* | | *B22019* | *N2* | | |
| 1/24/2020 12:01 AM | 75-NOx ppm | Low | Span | 8.90 ppm | 8.76 ppm | -0.14 ppm | ±0.5 ppm | 10 ppm | Unit offline; Passed |
| | | | *CC342258* | *6/24/2022* | | *B22019* | *NO,NOX,BALN* | | |
| 1/24/2020 12:01 AM | 75-O2 % | Single | Zero | 0.00% | 0.01% | 0.01% | ±1% | 25% | Unit offline; Passed |
| | | | *NI CZ15A* | *1/2/2028* | | *B22019* | *N2* | | |
| 1/24/2020 12:01 AM | 75-O2 % | Single | Span | 22.15% | 22.18% | 0.03% | ±1% | 25% | Unit offline; Passed |
| | | | *ALM010779* | *3/4/2027* | | *B72018* | *CO2,O2,BALN* | | |
| 1/24/2020 2:35 PM | 75-NOx ppm | High | Zero | 0.0 ppm | 0.0 ppm | 0 ppm | ±10 ppm | 200 ppm | Unit offline; Passed; Manual |
| | | | *NI CZ15A* | *1/2/2028* | | *B22019* | *N2* | | |
| 1/24/2020 2:35 PM | 75-NOx ppm | High | Span | 176.8 ppm | 176.2 ppm | -0.6 ppm | ±10 ppm | 200 ppm | Unit offline; Passed; Manual |
| | | | *ALM034669* | *7/22/2027* | | *B22019* | *CO,NO,NOX,BALN* | | |
| 1/24/2020 7:51 PM | 75-NOx ppm | High | Zero | 0.0 ppm | 0.2 ppm | 0.2 ppm | ±10 ppm | 200 ppm | Unit online; Passed |
| | | | *NI CZ15A* | *1/2/2028* | | *B22019* | *N2* | | |
| 1/24/2020 7:51 PM | 75-NOx ppm | High | Span | 176.8 ppm | 175.2 ppm | -1.6 ppm | ±10 ppm | 200 ppm | Unit online; Passed |
| | | | *ALM034669* | *7/22/2027* | | *B22019* | *CO,NO,NOX,BALN* | | |
| 1/24/2020 7:51 PM | 75-NOx ppm | Low | Zero | 0.00 ppm | 0.24 ppm | 0.24 ppm | ±0.5 ppm | 10 ppm | Unit online; Passed |
| | | | *NI CZ15A* | *1/2/2028* | | *B22019* | *N2* | | |
| 1/24/2020 7:51 PM | 75-NOx ppm | Low | Span | 8.90 ppm | 8.92 ppm | 0.02 ppm | ±0.5 ppm | 10 ppm | Unit online; Passed |
| | | | *CC342258* | *6/24/2022* | | *B22019* | *NO,NOX,BALN* | | |
| 1/24/2020 7:51 PM | 75-O2 % | Single | Zero | 0.00% | -0.01% | -0.01% | ±1% | 25% | Unit online; Passed |
| | | | *NI CZ15A* | *1/2/2028* | | *B22019* | *N2* | | |

| Date/Time | Parameter | Analyzer Scale | Test Level | Reference Value | Measured Value | Actual Drift | Allowable Drift | Instrument Span | Results |
|---|---|---|---|---|---|---|---|---|---|
| | | | *Cylinder ID* | | *Expiration Date* | *EPA Vendor ID* | *EPA Gas Type Codes* | | |
| 1/24/2020 7:51 PM | 75-O2 % | Single | Span | 22.15% | 22.16% | 0.01% | ±1% | 25% | Unit online; Passed |
| | | | *ALM010779* | | *3/4/2027* | *B72018* | *CO2,O2,BALN* | | |

# APPENDIX 3

# LINEARITY CHECK DOCUMENTATION

# Turbine 1 O2 Linearity

Cricket Valley Energy Center

## Test Information

**Test Date:** **2/4/2020**
Test Reason: Initial Certification
Grace Period: No
Aborted: No
*Unit online during QA test*

## Analyzer and Monitor Information

Range: Single Scale
Instrument Span: 25 %O2
Component ID: 120
Manufacturer: TELEDYNE
Model: T802
Serial Number: 128

| Run Number | Time | Reference Gas | CEMS Response | | Cylinder Information |
|---|---|---|---|---|---|
| **Low Gas** | | | | | |
| 1 | 4:07 PM | 6.03 | 6.01 | | |
| 2 | 4:22 PM | 6.03 | 6.02 | | Allowable Reference Values: |
| 3 | 4:37 PM | 6.03 | 6.01 | | 5-7.5 %O2 (20-30% of span) |
| | Mean (%O2) | 6.03 | 6.01 | | Cylinder ID: EB0049417 |
| | Difference of means ( \|R-A\| ) (%O2) | 0.0 | *Limit 0.5* | *Passed* | Expiration Date: 8/13/2021 |
| | | | | | EPA Vendor ID: L12013 |
| | Linearity Error (%) | 0.3 | *Limit 5.0* | *Passed* | Cylinder contains: CO2,O2,BALN |
| **Mid Gas** | | | | | |
| 1 | 4:12 PM | 13.46 | 13.51 | | |
| 2 | 4:27 PM | 13.46 | 13.51 | | Allowable Reference Values: |
| 3 | 4:42 PM | 13.46 | 13.53 | | 12.5-15 %O2 (50-60% of span) |
| | Mean (%O2) | 13.46 | 13.52 | | Cylinder ID: EB0053431 |
| | Difference of means ( \|R-A\| ) (%O2) | 0.1 | *Limit 0.5* | *Passed* | Expiration Date: 6/13/2023 |
| | | | | | EPA Vendor ID: G12015 |
| | Linearity Error (%) | 0.4 | *Limit 5.0* | *Passed* | Cylinder contains: O2,BALN |
| **High Gas** | | | | | |
| 1 | 4:17 PM | 22.15 | 22.12 | | |
| 2 | 4:32 PM | 22.15 | 22.11 | | Allowable Reference Values: |
| 3 | 4:47 PM | 22.15 | 22.13 | | 20-25 %O2 (80-100% of span) |
| | Mean (%O2) | 22.15 | 22.12 | | Cylinder ID: ALM010779 |
| | Difference of means ( \|R-A\| ) (%O2) | 0.0 | *Limit 0.5* | *Passed* | Expiration Date: 5/9/2027 |
| | | | | | EPA Vendor ID: A12019 |
| | Linearity Error (%) | 0.1 | *Limit 5.0* | *Passed* | Cylinder contains: O2,BALN |

*Linearity Error (LE) Determination*

*LE (%) = (|R-A| / R) * 100*

*R = Reference gas value*

*A = Mean of actual CEMS responses*

# Turbine 1 NOx/H Linearity

Cricket Valley Energy Center

## Test Information

**Test Date:** **2/4/2020**
Test Reason: Initial Certification
Grace Period: No
Aborted: No
*Unit online during QA test*

## Analyzer and Monitor Information

Range: High
Instrument Span: 200 ppm
Component ID: 110
Manufacturer: TELEDYNE
Model: T200M
Serial Number: 1012

| Run Number | Time | Reference Gas | CEMS Response | | Cylinder Information |
|---|---|---|---|---|---|
| **Low Gas** | | | | | |
| 1 | 3:06 PM | 49.4 | 48.4 | | |
| 2 | 3:19 PM | 49.4 | 48.6 | | Allowable Reference Values: 40-60 ppm (20-30% of span) |
| 3 | 3:31 PM | 49.4 | 48.7 | | |
| | Mean (ppm) | 49.4 | 48.6 | | Cylinder ID: CC712750 |
| | Difference of means ( \|R-A\| ) (ppm) | 0.8 | *Limit 5* | *Passed* | Expiration Date: 6/27/2022 |
| | Linearity Error (%) | 1.7 | *Limit 5.0* | *Passed* | EPA Vendor ID: G12019 |
| | | | | | Cylinder contains: CO,NO,BALN |
| **Mid Gas** | | | | | |
| 1 | 3:10 PM | 109.4 | 110.6 | | |
| 2 | 3:23 PM | 109.4 | 110.6 | | Allowable Reference Values: 100-120 ppm (50-60% of span) |
| 3 | 3:35 PM | 109.4 | 110.7 | | |
| | Mean (ppm) | 109.4 | 110.6 | | Cylinder ID: CC719253 |
| | Difference of means ( \|R-A\| ) (ppm) | 1.2 | *Limit 5* | *Passed* | Expiration Date: 9/24/2026 |
| | Linearity Error (%) | 1.1 | *Limit 5.0* | *Passed* | EPA Vendor ID: G12019 |
| | | | | | Cylinder contains: CO,NO,BALN |
| **High Gas** | | | | | |
| 1 | 3:14 PM | 176.8 | 176.9 | | Allowable Reference Values: 160-200 ppm (80-100% of span) |
| 2 | 3:27 PM | 176.8 | 177.2 | | |
| 3 | 3:39 PM | 176.8 | 177.0 | | Cylinder ID: ALM034669 |
| | Mean (ppm) | 176.8 | 177.0 | | Expiration Date: 6/22/2027 |
| | Difference of means ( \|R-A\| ) (ppm) | 0.2 | *Limit 5* | *Passed* | EPA Vendor ID: B22019 |
| | Linearity Error (%) | 0.1 | *Limit 5.0* | *Passed* | Cylinder contains: CO,NO,NOX,BALN |

*Linearity Error (LE) Determination*

*LE (%) = (|R-A| / R) * 100*

*R = Reference gas value*

*A = Mean of actual CEMS responses*

# APPENDIX 4

# CYCLE TIME & RESPONSE TIME TESTS DOCUMENTATION

# I/O Audit Data

Cricket Valley Energy Center

Data for 2/4/2020 1:18:50 PM thru 2/4/2020 1:57:40 PM

| Timestamp | (Turbine 1) NOx Value | (Turbine 1) NH3/NOx Value | (Turbine 1) O2 Value | (Turbine 1) GT Megawatts Value |
|---|---|---|---|---|
| 1:18:53 PM | 2.278 | 3.807 | 12.739 | -- |
| 1:19:03 PM | 2.275 | 3.807 | 12.748 | -- |
| 1:19:13 PM | 2.275 | 3.802 | 12.739 | -- |
| 1:19:23 PM | 2.276 | 3.799 | 12.739 | -- |
| 1:19:33 PM | 2.278 | 3.795 | 12.739 | 231.082 |
| 1:19:43 PM | 2.278 | 3.790 | 12.739 | -- |
| 1:19:53 PM | 2.278 | 3.789 | 12.743 | -- |
| 1:20:03 PM | 2.281 | 3.785 | 12.739 | -- |
| 1:20:13 PM | 2.284 | -- | 12.739 | -- |
| 1:20:23 PM | 2.284 | 3.782 | 12.739 | -- |
| 1:20:33 PM | 2.283 | 3.781 | 12.739 | -- |
| 1:20:43 PM | 2.284 | 3.780 | 12.738 | -- |
| 1:20:53 PM | 2.286 | 3.775 | 12.739 | -- |
| 1:21:03 PM | 2.284 | 3.776 | 12.739 | -- |
| 1:21:13 PM | 2.283 | -- | 12.739 | -- |
| 1:21:23 PM | 2.280 | -- | 12.740 | -- |
| 1:21:33 PM | 2.280 | 3.771 | 12.737 | -- |
| 1:21:43 PM | 2.281 | 3.772 | 12.740 | -- |
| 1:21:53 PM | 2.281 | 3.771 | 12.739 | -- |
| 1:22:03 PM | 2.277 | 3.767 | 12.732 | -- |
| 1:22:13 PM | 2.277 | 3.768 | 12.732 | -- |
| 1:22:23 PM | 2.086 | 3.767 | 11.682 | -- |
| 1:22:33 PM | 2.434 | 3.771 | 2.323 | -- |
| 1:22:43 PM | 1.238 | 3.771 | 0.591 | -- |
| 1:22:53 PM | -0.029 | 2.936 | 0.221 | -- |
| 1:23:03 PM | -0.097 | 3.019 | 0.132 | -- |
| 1:23:14 PM | -0.111 | 1.131 | 0.084 | -- |
| 1:23:24 PM | -- | -- | -- | 231.433 |
| 1:23:34 PM | -- | -0.090 | -- | 231.222 |
| 1:23:48 PM | -0.127 | -0.110 | 0.038 | 231.296 |
| 1:23:58 PM | -0.128 | -0.113 | 0.030 | -- |
| 1:24:08 PM | -0.127 | -0.113 | 0.031 | 231.266 |
| 1:24:18 PM | -0.127 | -- | 0.024 | -- |
| 1:24:29 PM | -0.128 | -0.119 | 0.023 | 231.049 |
| 1:24:39 PM | -0.128 | -0.118 | 0.025 | 231.402 |
| 1:24:49 PM | -0.128 | -0.117 | 0.022 | 231.283 |
| 1:24:59 PM | -0.128 | -0.117 | 0.018 | 231.343 |
| 1:25:09 PM | -0.127 | -- | 0.023 | 231.093 |
| 1:25:19 PM | 0.460 | -0.118 | 1.323 | 230.901 |
| 1:25:29 PM | 1.867 | -0.118 | 10.284 | 231.274 |
| 1:25:39 PM | 2.217 | -0.121 | 12.129 | -- |
| 1:25:49 PM | 2.252 | 0.519 | 12.542 | -- |
| 1:25:59 PM | 2.259 | 3.079 | 12.650 | 231.045 |
| 1:26:09 PM | 2.263 | 3.517 | 12.684 | 230.844 |
| 1:26:19 PM | 2.266 | 3.613 | 12.696 | 231.113 |

| Timestamp | (Turbine 1) NOx Value | (Turbine 1) NH3/NOx Value | (Turbine 1) O2 Value | (Turbine 1) GT Megawatts Value |
|---|---|---|---|---|
| 1:26:29 PM | 2.269 | 3.670 | 12.704 | 231.289 |
| 1:26:39 PM | 2.269 | 3.670 | 12.703 | 230.881 |
| 1:26:49 PM | 2.269 | 3.732 | 12.712 | 230.591 |
| 1:26:59 PM | 2.270 | 3.772 | 12.711 | -- |
| 1:27:09 PM | 2.269 | 3.773 | 12.719 | -- |
| 1:27:19 PM | 2.269 | 3.777 | 12.717 | 231.161 |
| 1:27:29 PM | 2.269 | 3.777 | 12.717 | 231.275 |
| 1:27:39 PM | 2.270 | 3.778 | 12.717 | 230.992 |
| 1:27:49 PM | 2.269 | 3.776 | 12.717 | 231.217 |
| 1:27:59 PM | 1.392 | 3.777 | 6.839 | 231.458 |
| 1:28:09 PM | 5.756 | 3.781 | 1.274 | -- |
| 1:28:19 PM | 8.686 | 3.627 | 0.390 | 231.078 |
| 1:28:29 PM | 8.763 | 2.327 | 0.165 | 231.261 |
| 1:28:39 PM | 8.813 | 7.441 | 0.099 | 231.051 |
| 1:28:49 PM | 8.837 | 7.440 | 0.070 | 231.196 |
| 1:28:59 PM | 8.845 | 8.761 | 0.059 | 231.431 |
| 1:29:09 PM | 8.850 | 8.885 | 0.044 | 231.375 |
| 1:29:19 PM | 8.845 | 8.899 | 0.039 | 231.012 |
| 1:29:29 PM | 8.848 | 8.888 | 0.030 | 230.954 |
| 1:29:39 PM | 8.848 | 8.898 | 0.031 | 230.929 |
| 1:29:49 PM | 8.847 | 8.906 | 0.024 | 231.084 |
| 1:29:59 PM | 8.850 | 8.902 | 0.030 | 231.223 |
| 1:30:09 PM | 8.850 | 8.902 | 0.025 | 231.445 |
| 1:30:19 PM | 8.851 | 8.903 | 0.030 | -- |
| 1:30:29 PM | 8.853 | 8.901 | 0.019 | 230.557 |
| 1:30:39 PM | 8.853 | 8.902 | 0.018 | 231.192 |
| 1:30:49 PM | 8.853 | 8.901 | 0.018 | 231.182 |
| 1:30:59 PM | 7.838 | 8.903 | 1.168 | 231.295 |
| 1:31:09 PM | 4.932 | 8.903 | 10.223 | 230.840 |
| 1:31:19 PM | 3.106 | 8.902 | 12.122 | 231.112 |
| 1:31:29 PM | 2.318 | 7.821 | 12.541 | -- |
| 1:31:39 PM | 2.299 | 4.755 | 12.650 | 231.200 |
| 1:31:49 PM | 2.302 | 3.729 | 12.675 | 231.250 |
| 1:31:59 PM | 2.286 | 3.653 | 12.698 | 230.861 |
| 1:32:09 PM | 2.274 | 3.690 | 12.696 | 230.882 |
| 1:32:19 PM | 2.266 | 3.751 | 12.706 | 230.925 |
| 1:32:29 PM | 2.266 | 3.780 | 12.710 | 230.890 |
| 1:32:39 PM | 2.267 | 3.786 | 12.712 | 231.369 |
| 1:32:49 PM | 2.327 | 3.781 | 12.717 | 231.046 |
| 1:32:59 PM | 2.315 | 3.781 | 12.717 | 231.703 |
| 1:33:09 PM | 2.321 | 3.785 | 12.725 | 231.108 |
| 1:33:19 PM | 2.327 | 3.785 | 12.725 | 230.869 |
| 1:33:29 PM | 2.334 | 3.785 | 12.725 | -- |
| 1:33:39 PM | 2.327 | 3.786 | 12.724 | 231.420 |
| 1:33:49 PM | 2.959 | 3.789 | 12.718 | 231.432 |
| 1:33:59 PM | 6.444 | 3.794 | 4.214 | 231.039 |
| 1:34:09 PM | 3.591 | 3.798 | 0.913 | 230.545 |
| 1:34:19 PM | 0.144 | 4.496 | 0.289 | -- |
| 1:34:29 PM | 0.044 | 7.000 | 0.139 | -- |

| Timestamp | (Turbine 1) NOx Value | (Turbine 1) NH3/NOx Value | (Turbine 1) O2 Value | (Turbine 1) GT Megawatts Value |
|---|---|---|---|---|
| 1:34:39 PM | 0.006 | 2.084 | 0.078 | -- |
| 1:34:49 PM | -0.019 | 0.149 | 0.060 | 230.817 |
| 1:34:59 PM | -0.006 | -0.058 | 0.045 | 231.556 |
| 1:35:09 PM | -0.025 | -0.089 | 0.037 | 231.256 |
| 1:35:19 PM | 0.013 | -0.091 | 0.032 | 231.453 |
| 1:35:29 PM | -0.006 | -0.104 | 0.030 | 231.049 |
| 1:35:39 PM | -0.006 | -0.114 | 0.026 | -- |
| 1:35:49 PM | -0.120 | -0.114 | 0.023 | 231.262 |
| 1:35:59 PM | -0.122 | -0.114 | 0.018 | 231.608 |
| 1:36:09 PM | -0.121 | -0.113 | 0.016 | 230.637 |
| 1:36:19 PM | -0.121 | -0.112 | 0.018 | 230.930 |
| 1:36:29 PM | -0.123 | -0.115 | 0.016 | 230.830 |
| 1:36:39 PM | -0.124 | -0.114 | 0.019 | -- |
| 1:36:49 PM | -0.123 | -0.114 | 0.018 | 230.868 |
| 1:36:59 PM | 1.283 | -0.117 | 7.033 | 231.090 |
| 1:37:09 PM | 2.164 | -0.118 | 11.465 | 231.031 |
| 1:37:19 PM | 2.255 | -0.108 | 12.402 | 231.021 |
| 1:37:29 PM | 2.266 | 0.653 | 12.617 | 231.313 |
| 1:37:39 PM | 2.261 | 1.877 | 12.675 | -- |
| 1:37:49 PM | 2.264 | 3.617 | 12.691 | 231.182 |
| 1:37:59 PM | 2.279 | 3.675 | 12.703 | 231.186 |
| 1:38:09 PM | 2.280 | 3.730 | 12.711 | 231.038 |
| 1:38:19 PM | 2.280 | 3.760 | 12.711 | 230.900 |
| 1:38:29 PM | 2.315 | 3.785 | 12.717 | 230.913 |
| 1:38:39 PM | 2.340 | 3.790 | 12.725 | 230.902 |
| 1:38:49 PM | 2.321 | 3.790 | 12.725 | 230.963 |
| 1:38:59 PM | 2.340 | 3.791 | 12.726 | -- |
| 1:39:09 PM | 2.309 | 3.793 | 12.725 | -- |
| 1:39:19 PM | 2.334 | 3.795 | 12.727 | 230.920 |
| 1:39:29 PM | 1.789 | 3.794 | 10.990 | -- |
| 1:39:39 PM | 66.041 | 3.795 | 2.146 | 230.859 |
| 1:39:49 PM | 161.863 | 3.795 | 0.544 | 230.831 |
| 1:39:59 PM | 161.875 | 2.683 | 0.221 | -- |
| 1:40:09 PM | 175.020 | 16.400 | 0.125 | -- |
| 1:40:19 PM | 176.052 | 16.400 | 0.079 | 231.203 |
| 1:40:29 PM | 176.484 | 16.400 | 0.059 | 230.969 |
| 1:40:39 PM | 176.790 | 16.400 | 0.052 | 230.973 |
| 1:40:49 PM | 176.853 | 16.400 | 0.046 | 231.154 |
| 1:40:59 PM | 176.959 | 16.400 | 0.038 | 231.000 |
| 1:41:09 PM | 176.972 | 16.400 | 0.039 | 231.394 |
| 1:41:19 PM | 176.972 | 16.400 | 0.032 | 231.104 |
| 1:41:29 PM | 176.947 | 16.400 | 0.039 | 230.942 |
| 1:41:39 PM | 177.022 | 16.400 | 0.027 | 231.039 |
| 1:41:49 PM | 177.003 | 16.400 | 0.025 | 231.103 |
| 1:41:59 PM | 177.091 | 16.400 | 0.026 | 230.943 |
| 1:42:09 PM | 177.078 | 8.146 | 0.024 | -- |
| 1:42:19 PM | 177.066 | 5.865 | 0.026 | 230.855 |
| 1:42:29 PM | 116.624 | 4.813 | 2.984 | 231.273 |
| 1:42:39 PM | 21.346 | 2.886 | 10.674 | -- |

| Timestamp | (Turbine 1) NOx Value | (Turbine 1) NH3/NOx Value | (Turbine 1) O2 Value | (Turbine 1) GT Megawatts Value |
|---|---|---|---|---|
| 1:42:49 PM | 4.813 | 1.941 | 12.255 | 231.319 |
| 1:42:59 PM | 3.469 | 14.835 | 12.585 | 231.024 |
| 1:43:09 PM | 3.027 | 10.053 | 12.675 | -- |
| 1:43:19 PM | 2.847 | 4.595 | 12.704 | 230.917 |
| 1:43:29 PM | 2.743 | 4.048 | 12.717 | 231.203 |
| 1:43:39 PM | 2.670 | 3.960 | 12.725 | 231.132 |
| 1:43:49 PM | 2.614 | 3.998 | 12.731 | 230.767 |
| 1:43:59 PM | 2.587 | 3.995 | 12.732 | 230.403 |
| 1:44:09 PM | 2.584 | 3.990 | 12.739 | 231.225 |
| 1:44:19 PM | 2.584 | 3.978 | 12.731 | 231.061 |
| 1:44:29 PM | 2.578 | 3.972 | 12.732 | 230.698 |
| 1:44:39 PM | 2.568 | 3.972 | 12.739 | 231.233 |
| 1:44:49 PM | 2.558 | 3.972 | 12.746 | 230.900 |
| 1:44:59 PM | 2.546 | 3.973 | 12.746 | 230.915 |
| 1:45:09 PM | 2.533 | 3.973 | 12.747 | -- |
| 1:45:19 PM | 2.521 | 3.972 | 12.746 | 230.951 |
| 1:45:29 PM | 2.508 | 3.972 | 12.746 | 230.975 |
| 1:45:39 PM | 2.492 | 3.972 | 12.746 | 230.889 |
| 1:45:49 PM | 2.477 | 3.967 | 12.759 | -- |
| 1:45:59 PM | 2.462 | 3.970 | 12.753 | 231.322 |
| 1:46:09 PM | 2.447 | 3.969 | 12.751 | 230.591 |
| 1:46:19 PM | 2.435 | 3.968 | 12.760 | -- |
| 1:46:29 PM | 2.427 | 3.963 | 12.751 | 230.758 |
| 1:46:39 PM | 2.418 | 3.964 | 12.761 | 231.152 |
| 1:46:49 PM | 2.402 | 3.965 | 12.766 | 230.748 |
| 1:46:59 PM | 2.394 | 3.960 | 12.761 | 231.213 |
| 1:47:09 PM | 2.387 | 3.959 | 12.766 | -- |
| 1:47:19 PM | 2.381 | 3.955 | 12.768 | 230.855 |
| 1:47:29 PM | 10.250 | 3.955 | 12.697 | -- |
| 1:47:39 PM | 10.250 | 3.956 | 3.495 | 231.415 |
| 1:47:49 PM | 10.250 | 3.951 | 0.766 | -- |
| 1:47:59 PM | 2.241 | 14.517 | 0.268 | 230.572 |
| 1:48:09 PM | 0.789 | 16.400 | 0.139 | -- |
| 1:48:19 PM | 0.302 | 15.593 | 0.084 | 230.368 |
| 1:48:29 PM | 0.160 | 15.592 | 0.065 | 230.535 |
| 1:48:39 PM | 0.116 | 2.262 | 0.044 | 230.872 |
| 1:48:49 PM | 0.052 | 0.189 | 0.038 | 230.687 |
| 1:48:59 PM | 0.003 | 0.093 | 0.038 | 231.071 |
| 1:49:09 PM | -0.024 | 0.037 | 0.030 | -- |
| 1:49:19 PM | -0.028 | 0.015 | 0.023 | 230.715 |
| 1:49:29 PM | -0.027 | -0.001 | 0.027 | 231.032 |
| 1:49:39 PM | -0.030 | -0.019 | 0.019 | 230.439 |
| 1:49:49 PM | -0.032 | -0.019 | 0.016 | -- |
| 1:49:59 PM | -0.038 | -0.024 | 0.017 | 230.757 |
| 1:50:09 PM | -0.038 | -0.025 | 0.023 | 230.382 |
| 1:50:19 PM | 1.410 | -0.027 | 7.501 | -- |
| 1:50:29 PM | 2.219 | -0.028 | 11.587 | 230.950 |
| 1:50:39 PM | 2.308 | -0.027 | 12.444 | -- |
| 1:50:49 PM | 2.315 | 1.860 | 12.651 | 230.626 |

| Timestamp | (Turbine 1) NOx Value | (Turbine 1) NH3/NOx Value | (Turbine 1) O2 Value | (Turbine 1) GT Megawatts Value |
|---|---|---|---|---|
| 1:50:59 PM | 2.315 | 3.569 | 12.699 | 231.137 |
| 1:51:09 PM | 2.318 | 3.750 | 12.717 | -- |
| 1:51:19 PM | 2.305 | 3.799 | 12.732 | 230.552 |
| 1:51:29 PM | 2.305 | 3.846 | 12.732 | -- |
| 1:51:39 PM | 2.305 | 3.868 | 12.744 | 230.866 |
| 1:51:49 PM | 2.305 | 3.871 | 12.740 | 230.493 |
| 1:51:59 PM | 2.301 | 3.885 | 12.746 | 230.740 |
| 1:52:09 PM | 2.301 | 3.882 | 12.746 | 230.373 |
| 1:52:19 PM | 2.305 | 3.882 | 12.746 | -- |
| 1:52:29 PM | 2.305 | 3.880 | 12.740 | 230.509 |
| 1:52:39 PM | 2.301 | 3.876 | 12.753 | 230.509 |
| 1:52:49 PM | 2.301 | 3.876 | 12.752 | 230.509 |
| 1:52:59 PM | 1.735 | 3.877 | 6.683 | 230.693 |
| 1:53:09 PM | 1.256 | 3.872 | 11.825 | 230.832 |
| 1:53:19 PM | 0.242 | 3.869 | 19.946 | 230.678 |
| 1:53:29 PM | -0.095 | 1.937 | 21.531 | -- |
| 1:53:39 PM | -0.028 | 1.729 | 21.924 | 230.585 |
| 1:53:49 PM | -0.022 | 0.071 | 22.031 | -- |
| 1:53:59 PM | -0.024 | -0.061 | 22.074 | -- |
| 1:54:09 PM | -0.026 | -0.006 | 22.092 | 230.678 |
| 1:54:19 PM | -0.027 | -0.006 | 22.100 | 230.749 |
| 1:54:29 PM | -0.027 | -0.007 | 22.106 | 230.640 |
| 1:54:39 PM | -0.027 | -0.015 | 22.107 | 231.049 |
| 1:54:49 PM | -0.028 | -0.015 | 22.114 | 230.725 |
| 1:54:59 PM | -0.029 | -0.014 | 22.113 | 230.288 |
| 1:55:09 PM | -0.029 | -0.016 | 22.120 | 230.653 |
| 1:55:19 PM | -0.029 | -0.015 | 22.113 | 230.432 |
| 1:55:29 PM | -0.030 | -0.020 | 22.119 | 231.122 |
| 1:55:39 PM | 0.105 | -0.019 | 22.079 | -- |
| 1:55:49 PM | 1.758 | -0.018 | 15.532 | 230.483 |
| 1:55:59 PM | 2.241 | -0.018 | 13.388 | 230.606 |
| 1:56:09 PM | 2.293 | -0.015 | 12.966 | 230.521 |
| 1:56:19 PM | 2.306 | 2.342 | 12.850 | -- |
| 1:56:29 PM | 2.320 | 3.578 | 12.822 | 230.924 |
| 1:56:39 PM | 2.310 | 3.652 | 12.802 | -- |
| 1:56:49 PM | 2.315 | 3.708 | 12.794 | 230.552 |
| 1:56:59 PM | 2.315 | 3.781 | 12.789 | 230.674 |
| 1:57:09 PM | 2.313 | 3.793 | 12.800 | -- |
| 1:57:19 PM | 2.312 | 3.815 | 12.789 | -- |
| 1:57:29 PM | 2.313 | 3.821 | 12.793 | -- |
| 1:57:39 PM | 2.313 | 3.821 | 12.788 | 230.965 |
| Average | 15.181 | 4.158 | 8.603 | 230.974 |
| Minimum | -0.128 | -0.121 | 0.016 | 230.288 |
| Maximum | 177.091 | 16.400 | 22.120 | 231.703 |

# I/O Audit Data

Cricket Valley Energy Center

Data for 2/4/2020 2:16:30 PM thru 2/4/2020 2:36:00 PM

| Timestamp | (Turbine 1) CO Value | |
|---|---|---|
| 2:16:33 PM | 0.232 | |
| 2:16:43 PM | 0.235 | |
| 2:16:53 PM | 0.235 | |
| 2:17:03 PM | 0.230 | |
| 2:17:13 PM | 0.221 | |
| 2:17:23 PM | 0.217 | |
| 2:17:33 PM | 0.209 | |
| 2:17:43 PM | 0.201 | |
| 2:17:53 PM | 0.187 | |
| 2:18:03 PM | 0.185 | |
| 2:18:13 PM | 0.187 | |
| 2:18:23 PM | 0.179 | |
| 2:18:33 PM | 0.190 | |
| 2:18:44 PM | 0.003 | |
| 2:18:58 PM | -0.010 | |
| 2:19:09 PM | -0.001 | |
| 2:19:19 PM | 0.009 | |
| 2:19:29 PM | 0.022 | |
| 2:19:39 PM | 0.033 | |
| 2:19:49 PM | 0.066 | |
| 2:19:59 PM | 0.069 | |
| 2:20:09 PM | 0.087 | |
| 2:20:19 PM | 0.099 | |
| 2:20:29 PM | 0.066 | |
| 2:20:39 PM | 0.058 | |
| 2:20:49 PM | 0.057 | |
| 2:20:59 PM | 0.037 | Up-1 |
| 2:21:09 PM | 0.375 | |
| 2:21:19 PM | 1.302 | |
| 2:21:29 PM | 2.676 | |
| 2:21:39 PM | 4.297 | |
| 2:21:49 PM | 5.610 | |
| 2:21:59 PM | 6.397 | |
| 2:22:09 PM | 6.774 | |
| 2:22:19 PM | 6.929 | |
| 2:22:29 PM | 6.979 | |
| 2:22:39 PM | 7.014 | |
| 2:22:49 PM | 7.021 | |
| 2:22:59 PM | 7.022 | |
| 2:23:09 PM | 7.029 | |
| 2:23:19 PM | 7.043 | |
| 2:23:29 PM | 7.046 | |
| 2:23:39 PM | 6.824 | |
| 2:23:49 PM | 5.849 | |
| 2:23:59 PM | 4.341 | Down-1 |
| 2:24:09 PM | 2.644 | |

| Timestamp | (Turbine 1) CO Value | |
|---|---|---|
| 2:24:19 PM | 1.151 | |
| 2:24:29 PM | 0.313 | |
| 2:24:39 PM | 0.030 | |
| 2:24:49 PM | -0.026 | |
| 2:24:59 PM | 0.001 | |
| 2:25:09 PM | 0.044 | |
| 2:25:19 PM | 0.074 | |
| 2:25:29 PM | 0.103 | |
| 2:25:39 PM | 0.106 | |
| 2:25:49 PM | 0.111 | |
| 2:25:59 PM | 0.111 | |
| 2:26:09 PM | 0.367 | |
| 2:26:19 PM | 1.213 | Up-2 |
| 2:26:29 PM | 2.474 | |
| 2:26:39 PM | 4.046 | |
| 2:26:49 PM | 5.430 | |
| 2:26:59 PM | 6.308 | |
| 2:27:09 PM | 6.740 | |
| 2:27:19 PM | 6.900 | |
| 2:27:29 PM | 6.973 | |
| 2:27:39 PM | 6.986 | |
| 2:27:49 PM | 6.989 | |
| 2:27:59 PM | 7.014 | |
| 2:28:09 PM | 7.021 | |
| 2:28:19 PM | 7.033 | |
| 2:28:29 PM | 7.041 | |
| 2:28:39 PM | 7.046 | |
| 2:28:49 PM | 6.895 | |
| 2:28:59 PM | 6.080 | |
| 2:29:09 PM | 4.603 | Down-2 |
| 2:29:19 PM | 2.941 | |
| 2:29:29 PM | 1.337 | |
| 2:29:39 PM | 0.370 | |
| 2:29:49 PM | 0.017 | |
| 2:29:59 PM | -0.036 | |
| 2:30:09 PM | -0.042 | |
| 2:30:19 PM | -0.017 | |
| 2:30:29 PM | -0.007 | |
| 2:30:39 PM | 0.012 | |
| 2:30:49 PM | 0.028 | |
| 2:30:59 PM | 0.031 | |
| 2:31:09 PM | 0.033 | |
| 2:31:19 PM | 0.125 | |
| 2:31:29 PM | 0.766 | |
| 2:31:39 PM | 1.928 | Up-3 |
| 2:31:49 PM | 3.449 | |
| 2:31:59 PM | 4.994 | |
| 2:32:09 PM | 6.078 | |
| 2:32:19 PM | 6.656 | |
| 2:32:29 PM | 6.899 | |

| Timestamp | (Turbine 1) CO Value | |
|---|---|---|
| 2:32:39 PM | 7.000 | |
| 2:32:49 PM | 7.032 | |
| 2:32:59 PM | 7.046 | |
| 2:33:09 PM | 7.032 | |
| 2:33:19 PM | 7.022 | |
| 2:33:29 PM | 7.019 | |
| 2:33:39 PM | 7.019 | |
| 2:33:49 PM | 7.034 | |
| 2:33:59 PM | 7.051 | |
| 2:34:09 PM | 6.931 | |
| 2:34:19 PM | 6.234 | Down-3 |
| 2:34:29 PM | 4.877 | |
| 2:34:39 PM | 3.227 | |
| 2:34:49 PM | 1.599 | |
| 2:34:59 PM | 0.523 | |
| 2:35:09 PM | 0.128 | |
| 2:35:19 PM | 0.035 | |
| 2:35:29 PM | 0.033 | |
| 2:35:39 PM | 0.052 | |
| 2:35:49 PM | 0.049 | |
| 2:35:59 PM | 0.055 | |
| Average | 2.891 | |
| Minimum | -0.042 | |
| Maximum | 7.051 | |

# APPENDIX 5

# DAHS VERIFICATION DOCUMENTATION

**CUSTOM INSTRUMENTATION SERVICES CORPORATION**

Data Acquisition and Handling System (DAHS) Verification Documentation

**CeDAR and Breez75X ECMPS Reporting Software**

Developed by:
Custom Instrumentation Services Corporation

EPA Regulations

- 40CFR75 Acid Rain
- 40CFR97 CSAPR NOx and $SO_2$

This letter serves as notice that the required 40 CFR 75 DAHS (missing data and formula) verification have been conducted and passed.

The attached formula verification document which includes CeDAR printouts demonstrates that the DAHS accurately calculates regulated parameters using raw data. In addition, verification tests have been conducted and passed for all missing data substitution routines for ECMPS reporting according to all applicable regulations and specifications in 40 CFR 75 Appendix D and Subpart D. The attached checklist, as adapted from Section 15 of the Acid Rain Program Policy Manual (revised) for 40CFR75, provides the regulatory description of the data substitution criteria.
These verification tests were conducted using numerous data sets at varying loads and operating conditions as well as various missing data periods as described in each set of tests. The tests were conducted using data sets with known outcomes and criteria and were verified against those outcomes. All missing data substitution procedures have been verified to be accurate and correct. Detailed data sets and documentation and test documentation are provided below

Walt Bastron
President

# $SO_2$ Missing Data Verification Checklist [1]

## Initial $SO_2$ Data Substitution: 75.31

| Description | Regulation |
|---|---|
| Prior to 720 QA hours, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.31(b)(1) |
| Prior to 720 QA hours, non-QA data is substituted with the MPC if previous QA data does not exist. | 75.31(b)(2) |
| Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) |

## Standard $SO_2$ Data Substitution: 75.33

| Description | Regulation |
|---|---|
| For non-QA data blocks less than or equal to 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.33(b)(1)(i) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(b)(1)(ii)(A) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period. | 75.33(b)(1)(ii)(B) |
| For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.33(b)(2)(i) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the 95$^{th}$ percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(b)(2)(ii)(A) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95$^{th}$ percentile of the lookback period. | 75.33(b)(2)(ii)(B) |
| For non-QA data blocks with an availability greater than or equal to 80.0% and less than 90.0%, non-QA data is substituted with the maximum value in the lookback period. | 75.33(b)(3) |
| For non-QA data blocks with an availability below 80.0%, non-QA data is substituted with a MPC. | 75.33(b)(4) |
| Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a) |

Miscellaneous $SO_2$ Data Substitution

| Description | Regulation |
|---|---|
| For Non-QA data blocks that cross quarter boundaries, the two missing data block portions will be handled individually with respect to the quarter they end or start. | Reporting Instructions II(C)(12) |
| For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) |

1 The SO2 missing data verification mentioned here does not apply to Cricket Valley Energy Center

$O_2$ Missing Data Verification Checklist

Initial $O_2$ Data Substitution: 75.31

| Description | Regulation |
|---|---|
| Prior to 720 QA hours, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.36(b)<br>75.31(b)(1) |
| Prior to 720 QA hours, non-QA data is substituted with the MPC if previous QA data does not exist. | 75.36(b)<br>75.31(b)(2) |
| Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) |

Standard O2 Data Substitution: 75.33

| Description | Regulation |
|---|---|
| For non-QA data blocks less than or equal to 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.36(d)<br>75.33(b)(1)(i) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the 10th percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.36(d)<br>75.33(b)(1)(ii)(A) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 10th percentile of the lookback period. | 75.36(d)<br>75.33(b)(1)(ii)(B) |
| For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.36(d)<br>75.33(b)(2)(i) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the 5th percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.36(d)<br>75.33(b)(2)(ii)(A) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 5th percentile of the lookback period. | 75.36(d)<br>75.33(b)(2)(ii)(B) |
| For non-QA data blocks with an availability greater than or equal to 80.0% and less than 90.0%, non-QA data is substituted with the minimum value in the lookback period. | 75.36(d)<br>75.33(b)(3) |
| For non-QA data blocks with an availability below 80.0%, non-QA data is substituted with a MPC. | 75.36(d)<br>75.33(b)(4) |
| Substitution routines have a maximum lookback period of 26280 hours. | 75.36(d)<br>75.33(a) |

Miscellaneous $SO_2$ Data Substitution

| Description | Regulation |
|---|---|
| For Non-QA data blocks that cross quarter boundaries, the two missing data block portions will be handled individually with respect to the quarter they end or start. | Reporting Instructions II(C)(12) |
| For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) |

$NO_X$ Missing Data Verification Checklist

Initial $NO_X$ Data Substitution: 75.31

| Description | Regulation |
|---|---|
| Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.31(c)(1) |
| Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the next higher available load range if prior data does not exist in the corresponding load range. | 75.31(c)(2) |
| Prior to 2160 QA hours, non-QA data is substituted with the MPC if previous data does not exist in the corresponding or higher load ranges. | 75.31(c)(3) |
| Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) |

Standard $NO_X$ Data Substitution: 75.33

| Description | Regulation |
|---|---|
| For non-QA data blocks less than or equal to 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.33(c)(1)(i) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(c)(1)(ii)(A) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period in the corresponding load range. | 75.33(c)(1)(ii)(B) |
| For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.33(c)(2)(i) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the 95$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(c)(2)(ii)(A) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95$^{th}$ percentile of the lookback period in the corresponding load range. | 75.33(c)(2)(ii)(B) |

| | |
|---|---|
| For non-QA data blocks with an availability greater than or equal to 80.0% and less than 90.0%, non-QA data is substituted with the maximum value in the lookback period at the corresponding load range. | 75.33(c)(3) |
| For non-QA data blocks with an availability below 80.0%, non-QA data is substituted with a MPC. | 75.33(c)(4) |
| If no data in the lookback period exists for the corresponding load range, the maximum value at the next higher available load range is used. | 75.33(c)(5) |
| If no data in the corresponding or higher load ranges exists in the lookback period, the MPC is used. | 75.33(c)(6) |
| Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a) |

Miscellaneous NOx Data Substitution

| Description | Regulation |
|---|---|
| For Non-QA data blocks that cross quarter boundaries, the two missing data block portions will be handled individually with respect to the quarter they end or start. | Reporting Instructions II(C)(12) |
| For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) |

Appendix D Fuel Flow Rate Missing Data Verification Checklist

Single Fuel Hours, Load Based: Appendix D

| Description | Regulation |
|---|---|
| Non-QA data is substituted with the average of the lookback period at the corresponding load range when only the same fuel was combusted. | App. D 2.4.2.2.1 |
| Non-QA data is substituted with the average of the lookback period at the next higher available load range when only the same fuel was combusted if no data in the corresponding load range exists. | App. D 2.4.2.2.1 |
| Non-QA data is substituted with the a maximum potential flow rate if no data in the lookback period at the corresponding or higher load range when only the same fuel was combusted exists. | App. D 2.4.2.2.1 |
| Substitution routines have a maximum lookback period of 26280 hours. | App. D 2.4.3 |

Co-Fired Fuel Hours, Load Based: Appendix D

| Description | Regulation |
|---|---|
| Non-QA data is substituted with the maximum in the lookback period at the corresponding load range when the same fuel is co-fired with another fuel. | App. D 2.4.2.3.1<br>App. D 2.4.2.3.3 |
| Non-QA data is substituted with the maximum in the lookback period at the next higher available load range when the same fuel is co-fired with another fuel. | App. D 2.4.2.3.1<br>App. D 2.4.2.3.3 |
| Non-QA data is substituted with a maximum potential flow rate if no data in the lookback period at the corresponding or higher load range when the same fuel is co-fired with another fuel exists. | App. D 2.4.2.3.1<br>App. D 2.4.2.3.3 |
| Substitution routines have a maximum lookback period of 26280 hours. | App. D 2.4.3 |

Note: If Maximum Heat Rate is exceeded, manual adjustment of Fuel Flows is allowed so that reported Heat Rate equals the maximum. (App. D 2.4.2.3.4)

Fuel Specific $NO_X$ Missing Data Verification Checklist

Initial $NO_X$ Data Substitution: 75.31

| Description | Regulation |
|---|---|
| Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.31(c)(1) |
| Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the next higher available load range if prior data does not exist in the corresponding load range. | 75.31(c)(2) |
| Prior to 2160 QA hours, non-QA data is substituted with the MPC if previous data does not exist in the corresponding or higher load ranges. | 75.31(c)(3) |
| Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) |

Fuel Specific $NO_X$ Data Substitution: 75.33

| Description | Regulation |
|---|---|
| For non-QA data blocks less than or equal to 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(1)(i)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(1)(ii)(A)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period in the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(1)(ii)(B)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) |
| For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(2)(i)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) |

| | |
|---|---|
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the 95th percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(2)(ii)(A)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95th percentile of the lookback period in the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(2)(ii)(B)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) |
| For non-QA data blocks with an availability greater than or equal to 80.0% and less than 90.0%, non-QA data is substituted with the maximum value in the lookback period at the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(3)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) |
| For non-QA data blocks with an availability below 80.0%, non-QA data is substituted with a fuel specific MPC. | 75.33(c)(4)<br>75.33(c)(8)(iii) |
| If no data in the lookback period exists for the corresponding load range, the maximum value at the next higher available load range is used. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(5)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) |
| If no data in the corresponding or higher load ranges exists in the lookback period, the fuel specific MPC is used. | 75.33(c)(6)<br>75.33(c)(8)(iii) |
| Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a)<br>75.33(c)(8) |

Miscellaneous Fuel Specific $NO_X$ Data Substitution

| Description | Regulation |
|---|---|
| For Non-QA data blocks that cross quarter boundaries, the two missing data block portions will be handled individually with respect to the quarter they end or start. | Reporting Instructions II(C)(12) |
| For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) |

Season Specific $NO_X$ Missing Data Verification Checklist

Initial $NO_X$ Data Substitution: 75.31

| Description | Regulation |
|---|---|
| Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.31(c)(1)<br>75.74(c)(7) |
| Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the next higher available load range if prior data does not exist in the corresponding load range. Historical data is separated into season specific pools. | 75.31(c)(2)<br>75.74(c)(7) |
| Prior to 2160 QA hours, non-QA data is substituted with the MPC if previous data does not exist in the corresponding or higher load ranges. Historical data is separated into season specific pools. | 75.31(c)(3)<br>75.74(c)(7) |
| Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) |

Season Specific $NO_X$ Data Substitution: 75.33

| Description | Regulation |
|---|---|
| For non-QA data blocks less than or equal to 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(1)(i)<br>75.34(a)(2)<br>75.74(c)(7) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. Historical data is separated into season specific pools. | 75.33(c)(1)(ii)(A)<br>75.34(a)(2)<br>75.74(c)(7) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(1)(ii)(B)<br>75.34(a)(2)<br>75.74(c)(7) |
| For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(2)(i)<br>75.34(a)(2)<br>75.74(c)(7) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the 95$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. Historical data is separated into season specific pools. | 75.33(c)(2)(ii)(A)<br>75.34(a)(2)<br>75.74(c)(7) |

| | |
|---|---|
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95$^{th}$ percentile of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(2)(ii)(B)<br>75.34(a)(2)<br>75.74(c)(7) |
| For non-QA data blocks with an availability greater than or equal to 80.0% and less than 90.0%, non-QA data is substituted with the maximum value in the lookback period at the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(3)<br>75.34(a)(2)<br>75.74(c)(7) |
| For non-QA data blocks with an availability below 80.0%, non-QA data is substituted with an MPC. | 75.33(c)(4)<br>75.74(c)(7) |
| If no data in the lookback period exists for the corresponding load range, the maximum value at the next higher available load range is used. Historical data is separated into season specific pools. | 75.33(c)(5)<br>75.34(a)(2)<br>75.74(c)(7) |
| If no data in the corresponding or higher load ranges exists in the lookback period, the MPC is used. | 75.33(c)(6)<br>75.34(a)(2)<br>75.74(c)(7) |
| Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a)<br>75.34(a)(2)<br>75.74(c)(7) |

Miscellaneous Season Specific $NO_X$ Data Substitution

| Description | Regulation |
|---|---|
| For Non-QA data blocks that cross quarter boundaries, the two missing data block portions will be handled individually with respect to the quarter they end or start. | Reporting Instructions II(C)(12) |
| For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) |

## $CO_2$ Missing Data Verification Checklist 2

### Initial $CO_2$ Data Substitution: 75.35(b) [75.31]

| Description | Regulation |
|---|---|
| Prior to 720 QA hours, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.31(b)(1) |
| Prior to 720 QA hours, non-QA data is substituted with the MPC if previous QA data does not exist. | 75.31(b)(2) |
| Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) |

### Standard $CO_2$ Data Substitution: 75.35(d) [75.33]

| Description | Regulation |
|---|---|
| For non-QA data blocks less than or equal to 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.33(b)(1)(i) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(b)(1)(ii)(A) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period. | 75.33(b)(1)(ii)(B) |
| For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.33(b)(2)(i) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the 95$^{th}$ percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(b)(2)(ii)(A) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95$^{th}$ percentile of the lookback period. | 75.33(b)(2)(ii)(B) |
| For non-QA data blocks with an availability greater than or equal to 80.0% and less than 90.0%, non-QA data is substituted with the maximum value in the lookback period. | 75.33(b)(3) |
| For non-QA data blocks with an availability below 80.0%, non-QA data is substituted with a MPC. | 75.33(b)(4) |
| Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a) |

Miscellaneous $CO_2$ Data Substitution

| Description | Regulation |
|---|---|
| For Non-QA data blocks that cross quarter boundaries, the two missing data block portions will be handled individually with respect to the quarter they end or start. | Reporting Instructions II(C)(12) |
| For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) |

2 The CO2 missing data verification mentioned here does not apply to Cricket Valley Energy Center

Missing Data Verification Checklist [3]

Initial Stack Flow Data Substitution: 75.31

| Description | Regulation |
|---|---|
| Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.31(c)(1) |
| Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the next higher available load range if prior data does not exist in the corresponding load range. | 75.31(c)(2) |
| Prior to 2160 QA hours, non-QA data is substituted with the MPC if previous data does not exist in the corresponding or higher load ranges. | 75.31(c)(3) |
| Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) |

Standard Stack Flow Data Substitution: 75.33

| Description | Regulation |
|---|---|
| For non-QA data blocks less than or equal to 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.33(c)(1)(i) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(c)(1)(ii)(A) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period in the corresponding load range. | 75.33(c)(1)(ii)(B) |
| For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.33(c)(2)(i) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the 95$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(c)(2)(ii)(A) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95$^{th}$ percentile of the lookback period in the corresponding load range. | 75.33(c)(2)(ii)(B) |

| | |
|---|---|
| For non-QA data blocks with an availability greater than or equal to 80.0% and less than 90.0%, non-QA data is substituted with the maximum value in the lookback period at the corresponding load range. | 75.33(c)(3) |
| For non-QA data blocks with an availability below 80.0%, non-QA data is substituted with a MPC. | 75.33(c)(4) |
| If no data in the lookback period exists for the corresponding load range, the maximum value at the next higher available load range is used. | 75.33(c)(5) |
| If no data in the corresponding or higher load ranges exists in the lookback period, the MPC is used. | 75.33(c)(6) |
| Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a) |

Miscellaneous Stack Flow Data Substitution

| Description | Regulation |
|---|---|
| For Non-QA data blocks that cross quarter boundaries, the two missing data block portions will be handled individually with respect to the quarter they end or start. | Reporting Instructions II(C)(12) |
| For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) |

3 The stack flow missing data verification mentioned here does not apply to Cricket Valley Energy Center

## TECHNICAL DOCUMENT - DATA SUBSTITUTION - 1 [4]

SO2 Missing Data Verification Checklist [5]

Initial SO2 Data Substitution: 75.31

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | Prior to 720 QA hours, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.31(b)(1) | DS1 1/1/99 |
| | Prior to 720 QA hours, non-QA data is substituted with the MPC if previous QA data does not exist. | 75.31(b)(2) | DS2 1/1/99 |
| | Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) | DS3 12/30/01 |

Standard SO2 Data Substitution: 75.33

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For non-QA data blocks less than or equal to 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.33(b)(1)(i) | DS1 4/20/99 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(b)(1)(ii)(A) | DS1 3/3/99 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period. | 75.33(b)(1)(ii)(B) | DS1 5/31/99 |
| | For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.33(b)(2)(i) | DS1 6/16/99 |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the 95$^{th}$ percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(b)(2)(ii)(A) | DS1 6/14/99 |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95$^{th}$ percentile of the lookback period. | 75.33(b)(2)(ii)(B) | DS1 6/17/99 |
| | For non-QA data blocks with an availability greater than or equal to 80% and less than 90%, non-QA data is substituted with the maximum value in the lookback period. | 75.33(b)(3) | DS1 6/30/99 |



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| | | | |
|---|---|---|---|
| | For non-QA data blocks with an availability below 80%, non-QA data is substituted with a MPC. | 75.33(b)(4) | DS1 7/31/99 |
| | Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a) | DS3 3/31/02 |

Miscellaneous SO2 Data Substitution

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For Non-QA data blocks that cross quarter boundaries, the missing data block ends or starts with the quarter. | Reporting Instructions II(C)(12) | DS3 6/30/03 7/1/03 |
| | For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) | DS3 8/6/03 |

O2 Missing Data Verification Checklist

Initial O2 Data Substitution: 75.31

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | Prior to 720 QA hours, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.36(b) 75.31(b)(1) | DS1 1/1/99 |
| | Prior to 720 QA hours, non-QA data is substituted with the MPC if previous QA data does not exist. | 75.36(b) 75.31(b)(2) | DS2 1/1/99 |
| | Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) | DS3 12/30/01 |

Standard O2 Data Substitution: 75.33

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For non-QA data blocks less than or equal to 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.36(d) 75.33(b)(1)(i) | DS1 4/20/99 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the 10$^{th}$ percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.36(d) 75.33(b)(1)(ii)(A) | DS1 3/3/99 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 10$^{th}$ percentile of the lookback period. | 75.36(d) 75.33(b)(1)(ii)(B) | DS1 5/31/99 |
| | For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.36(d) 75.33(b)(2)(i) | DS1 6/16/99 |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the 5$^{th}$ percentile of the | 75.36(d) 75.33(b)(2)(ii)(A) | DS1 6/14/99 |



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| | | | |
|---|---|---|---|
| | lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | | |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 5$^{th}$ percentile of the lookback period. | 75.36(d)<br>75.33(b)(2)(ii)(B) | DS1<br>6/17/99 |
| | For non-QA data blocks with an availability greater than or equal to 80% and less than 90%, non-QA data is substituted with the minimum value in the lookback period. | 75.36(d)<br>75.33(b)(3) | DS1<br>6/30/99 |
| | For non-QA data blocks with an availability below 80%, non-QA data is substituted with a MPC. | 75.36(d)<br>75.33(b)(4) | DS1<br>7/31/99 |
| | Substitution routines have a maximum lookback period of 26280 hours. | 75.36(d)<br>75.33(a) | DS3<br>3/31/02 |

Miscellaneous SO2 Data Substitution

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For Non-QA data blocks that cross quarter boundaries, the missing data block ends or starts with the quarter. | Reporting Instructions II(C)(12) | DS3<br>6/30/03<br>7/1/03 |
| | For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) | DS3<br>8/6/03 |

NOx Missing Data Verification Checklist

Initial NOx Data Substitution: 75.31

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.31(c)(1) | DS1<br>1/1/99 |
| | Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the next higher available load range if prior data does not exist in the corresponding load range. | 75.31(c)(2) | DS2<br>4/3/99 |
| | Prior to 2160 QA hours, non-QA data is substituted with the MPC if previous data does not exist in the corresponding or higher load ranges. | 75.31(c)(3) | DS1<br>1/1/99 |
| | Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) | DS3<br>12/30/01 |

4 The dates and data sets for in-house testing of formulas, monitor code logic and general software testing is historical, but is consistent with the operations required by the most recent regulatory requirements.

5 The stack SO2 missing data verification mentioned here does not apply to Cricket Valley Energy Center



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Standard NOx Data Substitution: 75.33

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For non-QA data blocks less than or equal to 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.33(c)(1)(i) | DS1 4/20/99 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(c)(1)(ii)(A) | DS2 1/3/00 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period in the corresponding load range. | 75.33(c)(1)(ii)(B) | DS1 5/31/99 |
| | For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.33(c)(2)(i) | DS1 6/16/99 |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the 95$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(c)(2)(ii)(A) | DS1 6/17/99 |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95$^{th}$ percentile of the lookback period in the corresponding load range. | 75.33(c)(2)(ii)(B) | DS1 6/17/99 |
| | For non-QA data blocks with an availability greater than or equal to 80% and less than 90%, non-QA data is substituted with the maximum value in the lookback period at the corresponding load range. | 75.33(c)(3) | DS1 6/21/99 |
| | For non-QA data blocks with an availability below 80%, non-QA data is substituted with a MPC. | 75.33(c)(4) | DS1 8/3/99 |
| | If no data in the lookback period exists for the corresponding load range, the maximum value at the next higher available load range is used. | 75.33(c)(5) | DS2 1/3/00 |
| | If no data in the corresponding or higher load ranges exists in the lookback period, the MPC is used. | 75.33(c)(6) | DS2 1/3/00 |
| | Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a) | DS3 3/31/02 |



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Miscellaneous NOx Data Substitution

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For Non-QA data blocks that cross quarter boundaries, the missing data block ends or starts with the quarter. | Reporting Instructions II(C)(12) | DS3 6/30/03 7/1/03 |
| | For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) | DS3 8/6/03 |

Appendix D Fuel Flow Rate Missing Data Verification Checklist

Single Fuel Hours, Load Based: Appendix D

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | Non-QA data is substituted with the average of the lookback period at the corresponding load range when only the same fuel was combusted. | App. D 2.4.2.2.1 | DS1 1/24/99 |
| | Non-QA data is substituted with the average of the lookback period at the next higher available load range when only the same fuel was combusted if no data in the corresponding load range exists. | App. D 2.4.2.2.1 | DS2 1/2/00 |
| | Non-QA data is substituted with the a maximum potential flow rate if no data in the lookback period at the corresponding or higher load range when only the same fuel was combusted exists. | App. D 2.4.2.2.1 | DS2 1/1/99 |
| | Substitution routines have a maximum lookback period of 26280 hours. | App. D 2.4.3 | DS3 6/30/03 |

Co-Fired Fuel Hours, Load Based: Appendix D

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | Non-QA data is substituted with the maximum in the lookback period at the corresponding load range when the same fuel is co-fired with another fuel. | App. D 2.4.2.3.1 App. D 2.4.2.3.3 | DS1 1/1/99 |
| | Non-QA data is substituted with the maximum in the lookback period at the next higher available load range when the same fuel is co-fired with another fuel. | App. D 2.4.2.3.1 App. D 2.4.2.3.3 | DS2 1/3/00 |
| | Non-QA data is substituted with a maximum potential flow rate if no data in the lookback period at the corresponding or higher load range when the same fuel is co-fired with another fuel exists. | App. D 2.4.2.3.1 App. D 2.4.2.3.3 | DS1 1/1/99 |
| | Substitution routines have a maximum lookback period of 26280 hours. | App. D 2.4.3 | DS3 6/30/03 |

Note: If Maximum Heat Rate is exceeded, manual adjustment of Fuel Flows is allowed so that reported Heat Rate equals the maximum. (App. D 2.4.2.3.4)

Fuel Specific NOx Missing Data Verification Checklist



**7841 SOUTH WHEELING COURT • ENGLEWOOD, COLORADO 80112**
**TEL: (303) 790-1000 FAX (303) 790-7292**

Initial NOx Data Substitution: 75.31

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.31(c)(1) | DS1 1/1/99 |
| | Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the next higher available load range if prior data does not exist in the corresponding load range. | 75.31(c)(2) | DS2 4/3/99 |
| | Prior to 2160 QA hours, non-QA data is substituted with the MPC if previous data does not exist in the corresponding or higher load ranges. | 75.31(c)(3) | DS1 1/1/99 |
| | Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) | DS3 12/30/01 |

Fuel Specific NOx Data Substitution: 75.33

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For non-QA data blocks less than or equal to 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(1)(i)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) | DS1 4/20/99 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(1)(ii)(A)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) | DS1 5/31/99 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period in the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(1)(ii)(B)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) | DS1 5/31/99 |
| | For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(2)(i)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) | DS1 6/16/99 |



**7841 SOUTH WHEELING COURT • ENGLEWOOD, COLORADO 80112**
**TEL: (303) 790-1000 FAX (303) 790-7292**

| | | | |
|---|---|---|---|
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the 95$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(2)(ii)(A)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) | DS1<br>6/17/99 |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95$^{th}$ percentile of the lookback period in the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(2)(ii)(B)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) | DS1<br>6/17/99 |
| | For non-QA data blocks with an availability greater than or equal to 80% and less than 90%, non-QA data is substituted with the maximum value in the lookback period at the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(3)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) | DS1<br>6/21/99 |
| | For non-QA data blocks with an availability below 80%, non-QA data is substituted with a fuel specific MPC. | 75.33(c)(4)<br>75.33(c)(8)(iii) | DS1<br>7/31/99 |
| | If no data in the lookback period exists for the corresponding load range, the maximum value at the next higher available load range is used. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(5)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) | DS1<br>7/31/99 |
| | If no data in the corresponding or higher load ranges exists in the lookback period, the fuel specific MPC is used. | 75.33(c)(6)<br>75.33(c)(8)(iii) | DS1<br>1/30/00 |
| | Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a)<br>75.33(c)(8) | DS3<br>3/31/02 |



**7841 SOUTH WHEELING COURT • ENGLEWOOD, COLORADO 80112**
**TEL: (303) 790-1000 FAX (303) 790-7292**

Miscellaneous Fuel Specific NOx Data Substitution

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For Non-QA data blocks that cross quarter boundaries, the missing data block ends or starts with the quarter. | Reporting Instructions II(C)(12) | DS3 6/30/03 7/1/03 |
| | For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) | DS3 8/6/03 |

Season Specific NOx Missing Data Verification Checklist

Initial NOx Data Substitution: 75.31

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.31(c)(1) 75.74(c)(7) | DS1 1/1/99 |
| | Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the next higher available load range if prior data does not exist in the corresponding load range. Historical data is separated into season specific pools. | 75.31(c)(2) 75.74(c)(7) | DS2 4/3/99 |
| | Prior to 2160 QA hours, non-QA data is substituted with the MPC if previous data does not exist in the corresponding or higher load ranges. Historical data is separated into season specific pools. | 75.31(c)(3) 75.74(c)(7) | DS1 1/31/99 |
| | Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) | DS3 12/30/01 |

Season Specific NOx Data Substitution: 75.33

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For non-QA data blocks less than or equal to 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(1)(i) 75.34(a)(2) 75.74(c)(7) | DS1 4/20/99 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. Historical data is separated into season specific pools. | 75.33(c)(1)(ii)(A) 75.34(a)(2) 75.74(c)(7) | DS1 5/31/99 |



**7841 SOUTH WHEELING COURT • ENGLEWOOD, COLORADO 80112**
**TEL: (303) 790-1000 FAX (303) 790-7292**

| | | | |
|---|---|---|---|
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90th percentile of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(1)(ii)(B)<br>75.34(a)(2)<br>75.74(c)(7) | DS1<br>5/31/99 |
| | For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(2)(i)<br>75.34(a)(2)<br>75.74(c)(7) | DS1<br>6/16/99 |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the 95th percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. Historical data is separated into season specific pools. | 75.33(c)(2)(ii)(A)<br>75.34(a)(2)<br>75.74(c)(7) | DS1<br>6/17/99 |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95th percentile of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(2)(ii)(B)<br>75.34(a)(2)<br>75.74(c)(7) | DS1<br>6/17/99 |
| | For non-QA data blocks with an availability greater than or equal to 80% and less than 90%, non-QA data is substituted with the maximum value in the lookback period at the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(3)<br>75.34(a)(2)<br>75.74(c)(7) | DS1<br>6/21/99 |
| | For non-QA data blocks with an availability below 80%, non-QA data is substituted with an MPC. | 75.33(c)(4)<br>75.74(c)(7) | DS1<br>7/31/99 |
| | If no data in the lookback period exists for the corresponding load range, the maximum value at the next higher available load range is used. Historical data is separated into season specific pools. | 75.33(c)(5)<br>75.34(a)(2)<br>75.74(c)(7) | DS1<br>7/31/99 |
| | If no data in the corresponding or higher load ranges exists in the lookback period, the MPC is used. | 75.33(c)(6)<br>75.34(a)(2)<br>75.74(c)(7) | DS1<br>1/30/00 |
| | Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a)<br>75.34(a)(2)<br>75.74(c)(7) | DS3<br>3/31/02 |



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**TEL: (303) 790-1000 FAX (303) 790-7292**

Miscellaneous Season Specific NOx Data Substitution

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For Non-QA data blocks that cross quarter boundaries, the missing data block ends or starts with the quarter. | Reporting Instructions II(C)(12) | DS3 6/30/03 7/1/03 |
| | For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) | DS3 8/6/03 |



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# Cricket Valley All Settings

Cricket Valley Energy Center

| Group | Setting | Value | Last changed |
|---|---|---|---|
| **Facility- Fuel Constants** | | | |
| | Nat Gas GCV Btu/scf | 1050 | 1/25/2019 5:19 PM |
| | Fd Factor Gas dscf/mmBtu | 8710 | 1/25/2019 5:19 PM |
| | Fc Factor Gas dscf/mmBtu | 1040 | 1/25/2019 5:19 PM |
| | Gas Density lb/scf | 0.042 | 1/25/2019 5:19 PM |
| **Turbine 1 40CFR75 Settings** | | | |
| | 75-NOx ppm Scale Max | 200 | 1/25/2019 5:24 PM |
| | 75-NOx ppm Scale Exceedance Default | 400 | 1/25/2019 5:24 PM |
| | 75-NOx Bias Factor | 1 | 1/25/2019 5:24 PM |
| **Turbine 1 Emission Factor Settings**[6] | | | |
| | PM10/PM2.5 lb/mmBtu | 0.0005 | 12/24/2019 4:56 PM |
| | VOC lb/mmBtu | 0.0002 | 12/24/2019 4:56 PM |
| | H2SO4 lb/mmBtu | 0.0001 | 12/24/2019 4:56 PM |

6 Emission factors found here are only sample settings used to confirm that software is calculating correctly.

Formula Verification Examples

| | | | |
|---|---|---|---|
| **Unit Name:** | **CRICKET VALLEY ENERGY CENTER** | **Oris Code:** | **57185** |
| **Date/ Time:** | **11/02/2019 HOUR 1800** | **Unit /Stack #** | **U001** |

**Formula** **19-1**
**Parameter** **NOx lb/mmBtu for gas**

| Fd dscf/mmbtu | K units lb/dscf-ppm Nox | NOx ppmv | O2 dry % | **NOx lb/mmBtu** | BAF | **Bias adj. NOx lb/mmBtu** |
|---|---|---|---|---|---|---|
| 8710 | 1.194E-07 | 16.33 | 12.89 | **0.0443** | 1.000 | **0.0443** |

**Formula** **F-20**
**Parameter** **Heat Input - gas**

| CT Total NG hscf/hr | CT Op Time hr | DB Total NG hscf/hr | DB Op Time hr | **Total NG hscf** |
|---|---|---|---|---|
| 22885.7 | 1 | 278.0 | 1.00 | **23163.7** |

| NG GCV Btu/hscf | mmBtu/Btu | CT Heat input mmBtu | DB Heat input mmBtu | **Total Heat input mmBtu** |
|---|---|---|---|---|
| 105000 | 1.00E-06 | 2403 | 29.2 | **2432.2** |

**Formula** **F-24A**
**Parameter** **NOx lb/hr** **gas**

| NOx lb/mmBtu | CT Heat input mmBtu/hr | DB Heat input mmBtu/hr | **NOx lb/hr** | BAF | **Bias adj. NOx lb/hr** |
|---|---|---|---|---|---|
| 0.044 | 2403.0 | 29.2 | **107.8** | 1.000 | **107.8** |

**Formula** **G-4**
**Parameter** **CO2 ton/hr** **gas**

| Fc scf/mmbtu | CT HI gas mmBtu/hr | DB HI gas mmBtu/hr | M Wt CO2 g/g-mole | Conversion 1/385 scf CO2/lbmole | Convers lb/ton | **CO2 Ton/hr** |
|---|---|---|---|---|---|---|
| 1040 | 2403.0 | 29.2 | 44 | 2.60E-03 | 2000 | **144.5** |

**Formula** **D-5**
**Parameter** **SO2 lb/hr** **gas**

| CT HI gas mmBtu/hr | DB HI gas mmBtu/hr | SO2 EF lb/mmBtu | **SO2 lb/hr** |
|---|---|---|---|
| 2403.0 | 29.2 | 0.0006 | **1.46** |

# Cricket Valley Energy Center

Dover Plains, NY

## Turbine 1- Daily 40CFR75 Emissions & Operations Report

November 2, 2019

| Hour | O2 % | NOx ppm | NOx lb/mmBtu | Bias Factor | Bias Adj NOx lb/mmBtu | NOx lbs | SO2 lbs | CO2 tons | Gas Flow hscf/hr | Nat Gas GCV Btu/hscf | Heat Input mmBtu/hr | Turbine On-Time | Total Megawatts | Bin Load Range |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 00 | 12.98 | 13.81 | 0.0379 | 1.000 | 0.0379 | 91.8 | 1.45 | 143.9 | 23057.1 | 105000 | 2421.0 | 1.00 | 237.2 | 10 |
| 01 | 12.98 | 13.55 | 0.0372 | 1.000 | 0.0372 | 90.1 | 1.45 | 143.9 | 23057.1 | 105000 | 2421.0 | 1.00 | 237.2 | 10 |
| 02 | 12.99 | 13.20 | 0.0363 | 1.000 | 0.0363 | 87.9 | 1.45 | 143.9 | 23057.1 | 105000 | 2421.0 | 1.00 | 237.4 | 10 |
| 03 | 12.99 | 12.98 | 0.0357 | 1.000 | 0.0357 | 86.4 | 1.45 | 143.9 | 23057.1 | 105000 | 2421.0 | 1.00 | 237.5 | 10 |
| 04 | 12.98 | 12.80 | 0.0351 | 1.000 | 0.0351 | 85.0 | 1.45 | 143.9 | 23057.1 | 105000 | 2421.0 | 1.00 | 237.5 | 10 |
| 05 | 12.99 | 12.63 | 0.0347 | 1.000 | 0.0347 | 52.9 | 0.91 | 90.7 | 23057.1 | 105000 | 2421.0 | 0.63 | 237.6 | 10 |
| 06 | **DCal** | **DCal** | **DCal** | 1.000 | **DCal** | **DCal** | **Down** | **Down** | **Down** | 105000 | **Down** | 0.00 | **Down** | **Down** |
| 07 | 15.61 | 16.58 | 0.0681 | 1.000 | 0.0681 | 26.6 | 0.24 | 23.2 | 9771.4 | 105000 | 1026.0 | 0.38 | 58.2 | 3 |
| 08 | 13.33 | 12.09 | 0.0347 | 1.000 | 0.0347 | 64.6 | 1.12 | 110.7 | 17745.7 | 105000 | 1863.3 | 1.00 | 165.6 | 9 |
| 09 | 13.28 | 12.99 | 0.0371 | 1.000 | 0.0371 | 24.3 | 0.39 | 39.0 | 17828.6 | 105000 | 1872.0 | 0.35 | 168.6 | 9 |
| 10 | **Down** | **Down** | **Down** | 1.000 | **Down** | **Down** | **Down** | **Down** | **Down** | 105000 | **Down** | 0.00 | **Down** | **Down** |
| 11 | **Down** | **Down** | **Down** | 1.000 | **Down** | **Down** | **Down** | **Down** | **Down** | 105000 | **Down** | 0.00 | **Down** | **Down** |
| 12 | 14.30 | 13.39 | 0.0441 | 1.000 | 0.0441 | 41.6 | 0.56 | 56.0 | 14485.7 | 105000 | 1521.0 | 0.62 | 123.4 | 7 |
| 13 | 12.98 | 15.77 | 0.0433 | 1.000 | 0.0433 | 104.0 | 1.44 | 142.8 | 22885.7 | 105000 | 2403.0 | 1.00 | 234.4 | 10 |
| 14 | 13.01 | 15.03 | 0.0414 | 1.000 | 0.0414 | 97.7 | 1.41 | 140.3 | 22725.2 | 105000 | 2386.2 | 1.00 | 229.6 | 10 |
| 15 | 14.27 | 21.95 | 0.0720 | 1.000 | 0.0720 | 127.8 | 1.06 | 105.5 | 17156.7 | 105000 | 1801.5 | 1.00 | 156.5 | 8 |
| 16 | 16.27 | 42.40 | 0.1990 | 1.000 | 0.1990 | 155.8 | 0.47 | 46.5 | 7457.1 | 105000 | 783.0 | 1.00 | 32.7 | 2 |
| 17 | 12.94 | 20.77 | 0.0567 | 1.000 | 0.0567 | 135.5 | 1.44 | 142.1 | 22813.6 | 105000 | 2395.4 | 1.00 | 230.1 | 10 |
| 18 | 12.89 | 16.33 | 0.0443 | 1.000 | 0.0443 | 107.8 | 1.46 | 144.5 | 23163.7 | 105000 | 2432.2 | 1.00 | 234.8 | 10 |
| 19 | 13.22 | 13.37 | 0.0378 | 1.000 | 0.0378 | 24.8 | 0.39 | 39.0 | 18022.6 | 105000 | 1892.4 | 0.35 | 167.4 | 9 |
| 20 | **Down** | **Down** | **Down** | 1.000 | **Down** | **Down** | **Down** | **Down** | **Down** | 105000 | **Down** | 0.00 | **Down** | **Down** |
| 21 | **Down** | **Down** | **Down** | 1.000 | **Down** | **Down** | **Down** | **Down** | **Down** | 105000 | **Down** | 0.00 | **Down** | **Down** |
| 22 | **Down** | **Down** | **Down** | 1.000 | **Down** | **Down** | **Down** | **Down** | **Down** | 105000 | **Down** | 0.00 | **Down** | **Down** |
| 23 | **Down** | **Down** | **Down** | 1.000 | **Down** | **Down** | **Down** | **Down** | **Down** | 105000 | **Down** | 0.00 | **Down** | **Down** |

# CeDAR 1-Hour Data

Cricket Valley Energy Center

Data for 11/2/2019 12 AM thru 11/2/2019 11 PM

| Timestamp | (Turbine 1) CT Nat Gas Flow hscf/hr 1-Hr | (Turbine 1) DB Nat Gas Flow hscf/hr 1-Hr | (Turbine 1) 75-Total Gas Flow hscf/hr 1-Hr |
|---|---|---|---|
| 11/2/19 12 AM | 23057.1 | 0.2 <13> | 23057.1 |
| 11/2/19 1 AM | 23057.1 | 0.2 <13> | 23057.1 |
| 11/2/19 2 AM | 23057.1 | 0.2 <13> | 23057.1 |
| 11/2/19 3 AM | 23057.1 | 0.4 <13> | 23057.1 |
| 11/2/19 4 AM | 23057.1 | 0.2 <13> | 23057.1 |
| 11/2/19 5 AM | 23057.1 | 0.2 <13> | 23057.1 |
| 11/2/19 6 AM | 0.0 <13> | 0.2 <13> | 0.2 <13> |
| 11/2/19 7 AM | 9771.4 | 0.2 <13> | 9771.4 |
| 11/2/19 8 AM | 17742.9 | 2.8 | 17745.7 |
| 11/2/19 9 AM | 17828.6 | 0.2 <13> | 17828.6 |
| 11/2/19 10 AM | 0.0 <13> | 0.1 <13> | 0.1 <13> |
| 11/2/19 11 AM | 0.0 <13> | 0.1 <13> | 0.1 <13> |
| 11/2/19 12 PM | 14485.7 | 0.1 <13> | 14485.7 |
| 11/2/19 1 PM | 22885.7 | 0.1 <13> | 22885.7 |
| 11/2/19 2 PM | 22457.1 | 268.1 | 22725.2 |
| 11/2/19 3 PM | 16885.7 | 271.0 | 17156.7 |
| 11/2/19 4 PM | 7457.1 | 0.3 <13> | 7457.1 |
| 11/2/19 5 PM | 22542.9 | 270.7 | 22813.6 |
| 11/2/19 6 PM | 22885.7 | 278.0 | 23163.7 |
| 11/2/19 7 PM | 17742.9 | 279.7 | 18022.6 |
| 11/2/19 8 PM | 0.0 <13> | 0.4 <13> | 0.4 <13> |
| 11/2/19 9 PM | 0.0 <13> | 0.4 <13> | 0.4 <13> |
| 11/2/19 10 PM | 0.0 <13> | 0.4 <13> | 0.4 <13> |
| 11/2/19 11 PM | 0.0 <13> | 0.5 <13> | 0.5 <13> |
| Average (all) | 13792.9 | 57.3 | 13850.0 |
| Total (all) | -- | -- | 332400.7 |
| Minimum (all) | 0.0 | 0.1 | 0.1 |
| Maximum (all) | 23057.1 | 279.7 | 23163.7 |
| Average (valid values only) | 19472.3 | 228.4 | 19552.9 |
| Total (valid values only) | -- | -- | 332398.6 |
| Count (valid values only) | 17 | 6 | 17 |

<13> = Down

Formula Verification Examples

**Unit Name:** **CRICKET VALLEY ENERGY CENTER** **Oris Code:** **57185**
**Date/ Time:** **11/02/2019 HOUR 1800** **Unit /Stack #** **U001**

**Formula** **19-1**
**Parameter** **NOx lb/mmBtu for gas**

| Fd dscf/mmbtu | K units lb/dscf-ppm Nox | NOx ppmv | O2 dry % | **NOx lb/mmBtu** |
|---|---|---|---|---|
| 8710 | 1.194E-07 | 16.33 | 12.89 | **0.0443** |

**Formula** **F-20**
**Parameter** **Heat Input - gas**

| CT Total NG hscf/hr | CT Op Time hr | DB Total NG hscf/hr | DB Op Time hr | Total PNG hscf | PNG GCV Btu/hscf | mmBtu/Btu | **Total Heat input mmBtu** |
|---|---|---|---|---|---|---|---|
| 22885.7 | 1 | 278.0 | 1.00 | 23163.7 | 105000 | 1.00E-06 | **2432.2** |

| CT Total PNG hscf/hr | CT Op Time hr | Total CT PNG hscf | PNG GCV Btu/hscf | mmBtu/Btu | **CT Heat input mmBtu** |
|---|---|---|---|---|---|
| 22885.7 | 1 | 22886 | 105000 | 1.00E-06 | **2403.0** |

| DB Total PNG hscf/hr | DB Op Time hr | Total DB PNG hscf | PNG GCV Btu/hscf | mmBtu/Btu | **DB Heat input mmBtu** |
|---|---|---|---|---|---|
| 278.0 | 1 | 278 | 105000 | 1.00E-06 | **29.2** |

**Parameter** **NOx ppm@15% O2**

| NOx ppm | O2 dry % | **NOx ppm corr** |
|---|---|---|
| 16.33 | 12.89 | **12.03** |

**Parameter** **NOx lb/hr** **gas**

| NOx lb/mmBtu | CT Heat input mmBtu/hr | DB Heat input mmBtu/hr | **NOx lb/hr** |
|---|---|---|---|
| 0.0443 | 2403.0 | 29.2 | **107.74** |

**Parameter** **CO ppm@15% O2**

**Formula** **19-1**
**Parameter** **CO lb/mmBtu for gas**

| Fc scf CO2/mmbtu | K (lb-mol /dscf-ppmvd) | CO MW lb/lb-mol | CO ppmv | O2 dry % | **CO lb/mmBtu** |
|---|---|---|---|---|---|
| 8710 | 2.59E-09 | 28 | 0.82 | 12.89 | **0.0014** |

| CO ppm | O2 dry % | **CO ppm corr** |
|---|---|---|
| 0.82 | 12.89 | **0.60** |

**Parameter** **CO lb/hr** **gas**

| CO lb/mmBtu | CT Heat input mmBtu/hr | DB Heat input mmBtu/hr | **CO lb/hr** |
|---|---|---|---|
| 0.0014 | 2403.0 | 29.2 | **3.40** |

**Formula** **19-1**
**Parameter** **NH3 lb/mmBtu for gas**

| Fc scf CO2/mmbtu | K ppmvd) | NH3 MW lb/lb-mol | NH3 ppmv | O2 dry % | **NH3 lb/mmBtu** |
|---|---|---|---|---|---|
| 8710 | 2.59E-09 | 17.03 | 0.05 | 12.89 | **0.0001** |

| NH3 ppm | O2 dry % | **NH3 ppm corr** |
|---|---|---|
| 0.05 | 12.89 | **0.04** |

**Parameter** **CO lb/hr** **gas**

| NH3 lb/mmBtu | CT Heat input mmBtu/hr | DB Heat input mmBtu/hr | **NH3 lb/hr** |
|---|---|---|---|
| 0.0001 | 2403.0 | 29.2 | **0.24** |

**Parameter** **PM10/PM2.5 lb/hr** **gas**

| CT HI gas mmBtu/hr | CT PM10/PM2.5 EF lb/mmBtu | **CT PM10/PM2.5 lb/hr** | DB HI gas mmBtu/hr | DB PM10/PM2.5 EF lb/mmBtu | **DB PM10/PM2.5 lb/hr** | **Total PM10/PM2.5 lb/hr** |
|---|---|---|---|---|---|---|
| 2403.0 | 0.0005 | **1.20** | 29.2 | 0.0005 | **0.01** | **1.21** |

**Parameter** **VOC lb/hr** **gas**

| CT HI gas mmBtu/hr | VOC EF lb/mmBtu | **CT VOC lb/hr** | DB HI gas mmBtu/hr | VOC EF lb/mmBtu | **DB VOC lb/hr** | **Total VOC lb/hr** |
|---|---|---|---|---|---|---|
| 2403.0 | 0.0002 | **0.48** | 29.2 | 0.0002 | **0.01** | **0.49** |

**Parameter** **H2SO4 lb/hr** **gas**

| CT HI gas mmBtu/hr | H2SO4 EF lb/mmBtu | **CT H2SO4 lb/hr** | DB HI gas mmBtu/hr | H2SO4 EF lb/mmBtu | **DB H2SO4 lb/hr** | **Total H2SO4 lb/hr** |
|---|---|---|---|---|---|---|
| 2403.0 | 0.0001 | **0.24** | 29.2 | 0.0001 | **0.00** | **0.24** |

# Cricket Valley Energy Center

Dover Plains, NY

## Turbine 1- Daily Emissions Report

November 2, 2019

**Hourly Emission Limits**

Normal Ops NOx ppm @15% O2 - 2 | Normal Ops CO ppm @15% O2 - 2 | NH3 Slip ppm @15% O2 - 5

**30-Day Rolling Emission Limits**

**NOx ppm @15% O2 - <Null>**

| Hour | O2 % | NOx ppm | NOx ppm @15% O2 | NOx lb/mmBtu | NOx lbs | CO ppm | CO ppm @15% O2 | CO lb/mmBtu | CO lbs | NH3 Slip ppm | NH3 Slip ppm @15% O2 | NH3 Slip lb/mmBtu | NH3 Slip lbs | Process Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 00 | 12.98 | 13.81 | 10.29 | 0.0379 | 91.76 | 0.73 | 0.54 | 0.0012 | 2.91 | 0.20 | 0.15 | 0.0002 | 0.48 | Hot SU |
| 01 | 12.98 | 13.55 | 10.09 | 0.0372 | 90.06 | 0.70 | 0.52 | 0.0012 | 2.91 | 0.24 | 0.18 | 0.0002 | 0.48 | Hot SU |
| 02 | 12.99 | 13.20 | 9.85 | 0.0363 | 87.88 | 0.69 | 0.51 | 0.0012 | 2.91 | 0.12 | 0.09 | 0.0001 | 0.24 | Hot SU |
| 03 | 12.99 | 12.98 | 9.68 | 0.0357 | 86.43 | 0.67 | 0.50 | 0.0011 | 2.66 | 0.11 | 0.08 | 0.0001 | 0.24 | Hot SU |
| 04 | 12.98 | 12.80 | 9.54 | 0.0351 | 84.98 | 0.69 | 0.51 | 0.0012 | 2.91 | 0.16 | 0.12 | 0.0002 | 0.48 | Hot SU |
| 05 | 12.99 | 12.63 | 9.42 | 0.0347 | 52.93 | 0.68 | 0.51 | 0.0011 | 1.68 | 0.16 | 0.12 | 0.0002 | 0.30 | Hot SU |
| 06 | **DCal** | **DCal** | **DCal** | **DCal** | **DCal** | **DCal** | **DCal** | **DCal** | **DCal** | **DCal** | **DCal** | **DCal** | **DCal** | Down |
| 07 | 15.61 | 16.58 | 18.49 | 0.0681 | 26.55 | 275.48 | 307.25 | 0.6875 | 268.04 | 0.99 | 1.10 | 0.0015 | 0.59 | Hot SU |
| 08 | 13.33 | 12.09 | 9.42 | 0.0347 | 64.65 | 6.14 | 4.79 | 0.0107 | 19.93 | 0.59 | 0.46 | 0.0006 | 1.12 | Hot SU |
| 09 | 13.28 | 12.99 | 10.06 | 0.0371 | 24.31 | 52.45 | 40.61 | 0.0909 | 59.56 | 0.51 | 0.39 | 0.0005 | 0.33 | Hot SU |
| 10 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 11 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 12 | 14.30 | 13.39 | 11.97 | 0.0441 | 41.59 | 143.31 | 128.11 | 0.2867 | 270.36 | 0.24 | 0.21 | 0.0003 | 0.29 | Hot SU |
| 13 | 12.98 | 15.77 | 11.75 | 0.0433 | 104.05 | 0.53 | 0.39 | 0.0009 | 2.16 | 0.03 | 0.02 | 0.0000 | 0.00 | Hot SU |
| 14 | 13.01 | 15.03 | 11.24 | 0.0414 | 97.76 | 0.56 | 0.42 | 0.0009 | 2.12 | 0.03 | 0.02 | 0.0000 | 0.00 | Hot SU |
| 15 | 14.27 | 21.95 | 19.53 | 0.0720 | 127.76 | 73.62 | 65.51 | 0.1466 | 260.13 | **OOR** | **OOR** | **OOR** | **OOR** | Hot SU |
| 16 | 16.27 | 42.40 | 54.03 | 0.1990 | 155.82 | 485.83 | 619.09 | 1.3852 | 1084.61 | **OOR** | **OOR** | **OOR** | **OOR** | Hot SU |
| 17 | 12.94 | 20.77 | 15.39 | 0.0567 | 135.53 | 1.45 | 1.07 | 0.0024 | 5.74 | 0.00 | 0.00 | 0.0000 | 0.00 | Hot SU |
| 18 | 12.89 | 16.33 | 12.03 | 0.0443 | 107.74 | 0.82 | 0.60 | 0.0014 | 3.40 | 0.05 | 0.04 | 0.0001 | 0.24 | Hot SU |
| 19 | 13.22 | 13.37 | 10.27 | 0.0378 | 24.84 | 44.08 | 33.86 | 0.0758 | 49.81 | 0.61 | 0.47 | 0.0006 | 0.39 | Hot SU |
| 20 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 21 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 22 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 23 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| Average | 13.53 | 16.45 | 14.30 | 0.0527 | 82.63 | 64.03 | 70.87 | 0.1586 | 120.11 | 0.27 | 0.23 | 0.0003 | 0.35 | |
| Total | | | | | 1404.64 | | | | 2041.84 | | | | 5.18 | |
| 30-Day | | | **NSD** | | | | | | | | | | | |

# Cricket Valley Energy Center

Dover Plains, NY

## Turbine 1- Daily Mass Emissions Report

November 2, 2019

| Hour | NOx lbs | CO lbs | PM10/PM2.5 lbs | NH3 Slip lbs | VOC lbs | H2SO4 lbs | Turbine On-Time |
|---|---|---|---|---|---|---|---|
| 00 | 91.76 | 2.91 | 1.21 | 0.48 | 0.48 | 0.24 | 1.00 |
| 01 | 90.06 | 2.91 | 1.21 | 0.48 | 0.48 | 0.24 | 1.00 |
| 02 | 87.88 | 2.91 | 1.21 | 0.24 | 0.48 | 0.24 | 1.00 |
| 03 | 86.43 | 2.66 | 1.21 | 0.24 | 0.48 | 0.24 | 1.00 |
| 04 | 84.98 | 2.91 | 1.21 | 0.48 | 0.48 | 0.24 | 1.00 |
| 05 | 52.93 | 1.68 | 0.76 | 0.30 | 0.30 | 0.15 | 0.63 |
| 06 | **DCal** | **DCal** | **Down** | **DCal** | **Down** | **Down** | 0.00 |
| 07 | 26.55 | 268.04 | 0.19 | 0.59 | 0.08 | 0.04 | 0.38 |
| 08 | 64.65 | 19.93 | 0.93 | 1.12 | 0.37 | 0.19 | 1.00 |
| 09 | 24.31 | 59.56 | 0.33 | 0.33 | 0.13 | 0.07 | 0.35 |
| 10 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| 11 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| 12 | 41.59 | 270.36 | 0.47 | 0.29 | 0.19 | 0.09 | 0.62 |
| 13 | 104.05 | 2.16 | 1.20 | 0.00 | 0.48 | 0.24 | 1.00 |
| 14 | 97.76 | 2.12 | 1.18 | 0.00 | 0.47 | 0.24 | 1.00 |
| 15 | 127.76 | 260.13 | 0.89 | **OOR** | 0.35 | 0.18 | 1.00 |
| 16 | 155.82 | 1084.61 | 0.39 | **OOR** | 0.16 | 0.08 | 1.00 |
| 17 | 135.53 | 5.74 | 1.19 | 0.00 | 0.48 | 0.24 | 1.00 |
| 18 | 107.74 | 3.40 | 1.21 | 0.24 | 0.49 | 0.24 | 1.00 |
| 19 | 24.84 | 49.81 | 0.33 | 0.39 | 0.13 | 0.07 | 0.35 |
| 20 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| 21 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| 22 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| 23 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| Average | 82.63 | 120.11 | 0.89 | 0.35 | 0.35 | 0.18 | |
| Total | 1404.64 | 2041.84 | 15.12 | 5.18 | 6.03 | 3.03 | 14.33 |

# Cricket Valley Energy Center

Dover Plains, NY

## Turbine 1- Daily Operations & EMS Inlet Emissions Report

November 2, 2019

| Hour | SCR NOx ppm | SCR O2 % | CO Cat CO ppm | CT Nat Gas Flow klb | CT Heat Input mmBtu | DB Nat Gas Flow kscf | DB Heat Input mmBtu | Total Heat Input mmBtu | GT Megawatt Hours | ST Megawatt Hours | Process Status |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 00 | 14.09 | 12.97 | 0.55 | 96.8 | 2421.0 | **Down** | **Down** | 2421.0 | 237.2 | **Down** | Hot SU |
| 01 | 13.85 | 12.97 | 0.59 | 96.8 | 2421.0 | **Down** | **Down** | 2421.0 | 237.2 | **Down** | Hot SU |
| 02 | 13.57 | 12.97 | 0.56 | 96.8 | 2421.0 | **Down** | **Down** | 2421.0 | 237.4 | **Down** | Hot SU |
| 03 | 13.45 | 12.97 | 0.52 | 96.8 | 2421.0 | **Down** | **Down** | 2421.0 | 237.5 | **Down** | Hot SU |
| 04 | 13.29 | 12.97 | 0.54 | 96.8 | 2421.0 | **Down** | **Down** | 2421.0 | 237.5 | **Down** | Hot SU |
| 05 | 13.07 | 12.97 | 0.53 | 61.0 | 1525.2 | **Down** | **Down** | 1525.2 | 149.7 | **Down** | Hot SU |
| 06 | **Down** | **Down** | **DCal** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 07 | 26.94 | 15.12 | 222.01 | 15.6 | 389.9 | **Down** | **Down** | 389.9 | 22.1 | **Down** | Hot SU |
| 08 | 12.70 | 13.31 | 6.11 | 74.5 | 1863.0 | 0.0 | 0.0 | 1863.0 | 165.6 | **Down** | Hot SU |
| 09 | 16.38 | 13.51 | 100.23 | 26.2 | 655.2 | **Down** | **Down** | 655.2 | 59.0 | **Down** | Hot SU |
| 10 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 11 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 12 | 17.54 | 14.10 | 109.28 | 37.7 | 943.0 | **Down** | **Down** | 943.0 | 76.5 | **Down** | Hot SU |
| 13 | 16.34 | 12.95 | 0.50 | 96.1 | 2403.0 | **Down** | **Down** | 2403.0 | 234.4 | **Down** | Hot SU |
| 14 | 14.95 | 12.99 | 0.53 | 94.3 | 2358.0 | 3.2 | 3.4 | 2361.4 | 229.6 | **Down** | Hot SU |
| 15 | 31.67 | 14.36 | 77.60 | 70.9 | 1773.0 | 1.4 | 1.4 | 1774.4 | 156.5 | **Down** | Hot SU |
| 16 | 61.05 | 16.22 | 487.63 | 31.3 | 783.0 | **Down** | **Down** | 783.0 | 32.7 | **Down** | Hot SU |
| 17 | 15.09 | 12.94 | 0.90 | 94.7 | 2367.0 | 22.2 | 23.3 | 2390.3 | 230.1 | **Down** | Hot SU |
| 18 | 14.78 | 12.93 | 0.61 | 96.1 | 2403.0 | 27.8 | 29.2 | 2432.2 | 234.8 | **Down** | Hot SU |
| 19 | 15.93 | 13.50 | 104.08 | 26.1 | 652.1 | 4.8 | 5.0 | 657.1 | 58.6 | **Down** | Hot SU |
| 20 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 21 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 22 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 23 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| Average | 19.10 | 13.51 | 65.46 | 71.1 | 1777.7 | 9.9 | 10.4 | 1781.3 | 166.8 | **Down** | |
| Total | | | | 1208.5 | 30220.4 | 59.4 | 62.3 | 30282.7 | 2836.4 | **Down** | |

Formula Verification Examples

| | | | |
|---|---|---|---|
| **Unit Name:** | **144.5CRICKET VALLEY ENERGY CENTER** | **Oris Code:** | **57185** |
| **Date/ Time:** | **11/02/2019 HOUR 1800** | **Unit /Stack #** | **U001** |

**Formula** **Conversion**
**Parameter** **CO2 metric tons-PNG**

| CO2 (Eq. G-4) tons | conversion factor tons/metric ton | **CO2 metric tons** | GWP Factor | **CO2e (CO2) metric tons** |
|---|---|---|---|---|
| 144.5 | 1.1023 | **131.09** | 1 | **131.09** |

**Formula** **C-10**
**Parameter** **CH4 metric tons-PNG**

| Total CT HI mmBtu | Total DB HI mmBtu | CH4 EF kgCH4/mmBtu | Conversion metric ton/kg | **CH4 metric tons** | GWP Factor | **CO2e (CH4) metric tons** |
|---|---|---|---|---|---|---|
| 2403.0 | 29.2 | 0.001 | 0.001 | **0.00243** | 25 | **0.06075** |

**Formula** **C-10**
**Parameter** **N2O metric tons-PNG**

| Total CT HI mmBtu | Total DB HI mmBtu | N2O EF kgN2O/mmBtu | Conversion metric ton/kg | **N2O metric tons** | GWP Factor | **CO2e (N2O) metric tons** |
|---|---|---|---|---|---|---|
| 2403.0 | 29.2 | 0.0001 | 0.001 | **0.00024** | 298 | **0.07152** |

**Parameter** **CO2e metric tons-PNG**

| CO2e (CO2) metric tons | CO2e (CH4) metric tons | CO2e(N2O) metric tons | **CO2e (total) metric tons** |
|---|---|---|---|
| 131.1 | 0.06075 | 0.07152 | **131.22227** |

# Cricket Valley Energy Center

Dover Plains, NY

## Turbine 1- Daily GHG Emissions Report

November 2, 2019

| Hour | Nat Gas GCV Btu/scf | Heat Input mmBtu | CO2 tons | CO2 Metric Tons | N2O Metric Tons | CH4 Metric Tons | N2O (CO2e) Metric Tons | CH4 (CO2e) Metric Tons | Total CO2e Metric Tons | Turbine On-Time |
|---|---|---|---|---|---|---|---|---|---|---|
| 00 | 1050.0 | 2421.0 | 143.9 | 130.55 | 0.00024 | 0.00242 | 0.07152 | 0.06050 | 130.68202 | 1.00 |
| 01 | 1050.0 | 2421.0 | 143.9 | 130.55 | 0.00024 | 0.00242 | 0.07152 | 0.06050 | 130.68202 | 1.00 |
| 02 | 1050.0 | 2421.0 | 143.9 | 130.55 | 0.00024 | 0.00242 | 0.07152 | 0.06050 | 130.68202 | 1.00 |
| 03 | 1050.0 | 2421.0 | 143.9 | 130.55 | 0.00024 | 0.00242 | 0.07152 | 0.06050 | 130.68202 | 1.00 |
| 04 | 1050.0 | 2421.0 | 143.9 | 130.55 | 0.00024 | 0.00242 | 0.07152 | 0.06050 | 130.68202 | 1.00 |
| 05 | 1050.0 | 1525.2 | 90.7 | 82.28 | 0.00015 | 0.00153 | 0.04470 | 0.03825 | 82.36295 | 0.63 |
| 06 | 1050.0 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| 07 | 1050.0 | 389.9 | 23.2 | 21.05 | 0.00004 | 0.00039 | 0.01192 | 0.00975 | 21.07167 | 0.38 |
| 08 | 1050.0 | 1863.0 | 110.7 | 100.43 | 0.00019 | 0.00186 | 0.05662 | 0.04650 | 100.53312 | 1.00 |
| 09 | 1050.0 | 655.2 | 39.0 | 35.38 | 0.00007 | 0.00066 | 0.02086 | 0.01650 | 35.41736 | 0.35 |
| 10 | 1050.0 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| 11 | 1050.0 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| 12 | 1050.0 | 943.0 | 56.0 | 50.80 | 0.00009 | 0.00094 | 0.02682 | 0.02350 | 50.85032 | 0.62 |
| 13 | 1050.0 | 2403.0 | 142.8 | 129.55 | 0.00024 | 0.00240 | 0.07152 | 0.06000 | 129.68152 | 1.00 |
| 14 | 1050.0 | 2361.4 | 140.3 | 127.28 | 0.00024 | 0.00236 | 0.07152 | 0.05900 | 127.41052 | 1.00 |
| 15 | 1050.0 | 1774.4 | 105.5 | 95.71 | 0.00018 | 0.00177 | 0.05364 | 0.04425 | 95.80789 | 1.00 |
| 16 | 1050.0 | 783.0 | 46.5 | 42.18 | 0.00008 | 0.00078 | 0.02384 | 0.01950 | 42.22334 | 1.00 |
| 17 | 1050.0 | 2390.3 | 142.1 | 128.91 | 0.00024 | 0.00239 | 0.07152 | 0.05975 | 129.04127 | 1.00 |
| 18 | 1050.0 | 2432.2 | 144.5 | 131.09 | 0.00024 | 0.00243 | 0.07152 | 0.06075 | 131.22227 | 1.00 |
| 19 | 1050.0 | 657.1 | 39.0 | 35.38 | 0.00007 | 0.00066 | 0.02086 | 0.01650 | 35.41736 | 0.35 |
| 20 | 1050.0 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| 21 | 1050.0 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| 22 | 1050.0 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| 23 | 1050.0 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| Average Total | 1050.0 | 30282.7 | 1799.8 | 1632.79 | 0.00303 | 0.03027 | 0.90294 | 0.75675 | 1634.44969 | 14.33 |

# APPENDIX 6

# RELATIVE ACCURACY TEST AUDIT REPORT

# RELATIVE ACCURACY TEST AUDIT
# FOR THE
# GENERAL ELECTRIC, 7F.05,
# UNIT #U-00001 CEMS
# PREPARED FOR
# CRICKET VALLEY ENERGY CENTER LLC
# AT THE
# CRICKET VALLEY ENERGY CENTER
# DOVER PLAINS, NEW YORK
# FEBRUARY 6, 2020

## Report Date: March 11, 2020



**Corporate Headquarters**
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012

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Pittsburgh, PA 15205

# RELATIVE ACCURACY TEST AUDIT
# FOR THE
# GENERAL ELECTRIC, 7F.05,
# UNIT #U-00001 CEMS
# PREPARED FOR
# CRICKET VALLEY ENERGY CENTER LLC
# AT THE
# CRICKET VALLEY ENERGY CENTER
# DOVER PLAINS, NEW YORK
# FEBRUARY 6, 2020

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I, Aaron Blum

Aaron Blum, QSTI
Sr. Test Manager
certify that this testing was conducted and
this report was created in conformance
with the requirements of ASTM D7036

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**Relative Accuracy Test Audit**
**General Electric, 7F.05, Unit #U-00001 CEMS**
**Cricket Valley Energy Center LLC**
**Cricket Valley Energy Center**
**Dover Plains, New York**
**February 6, 2020**

## 1.0 INTRODUCTION

Air Hygiene International, Inc. (Air Hygiene) has completed the Relative Accuracy Test Audit (RATA) for nitrogen oxides (NOx), carbon monoxide (CO), ammonia ($NH_3$), and oxygen ($O_2$) from the exhaust of the General Electric, 7F.05, Unit #U-00001 for Cricket Valley Energy Center LLC at the Cricket Valley Energy Center in Dover Plains, New York. This report details the background, results, process description, and the sampling/analysis methodology of the stack sampling survey conducted on February 6, 2020.

The accumulated data from the RATA provides the figures for evaluating the acceptability of the operation of the on-site continuous emission monitoring system (CEMS) for the monitoring of NOx, CO, $NH_3$, and $O_2$ from the General Electric, 7F.05, Unit #U-00001 for Cricket Valley Energy Center LLC at the Cricket Valley Energy Center in Dover Plains, New York.

## 1.1 TEST PURPOSE AND OBJECTIVES

The purpose of the test was to perform the initial certification RATA on the CEMS that serves the General Electric, 7F.05, Unit #U-00001 for Cricket Valley Energy Center LLC at the Cricket Valley Energy Center in Dover Plains, New York. Reference method (RM) testing followed the Code of Federal Regulations (CFR), Title 40 (40 CFR), Part 60 (40 CFR 60), Appendix A, Methods 1, 3A, 7E, 10, 19; and 40 CFR 63, Appendix A, Method 320. RM values are compared with the on-site CEMS to document performance as required in the 40 CFR 60, Appendix B, Performance Specifications (PS) and 40 CFR 75 Appendix A and B. All relative accuracies were established on-site and were governed by the following sets of rules:

In accordance with 40 CFR 60, Appendix B, PS 2, Section 13.2, the NOx and $NH_3$ RATA results are acceptable if the relative accuracy (RA) does not exceed 20.0 percent when average emissions during the test are greater than 50 percent of the emission standard or alternative relative accuracy (ARA) does not exceed 10.0 percent when the average emissions during the test are less than 50 percent of the emission standard. Part 60 further requires that the unit be operating at greater than 50 percent of normal load.

In accordance with 40 CFR 75, Appendix A, Section 3.3.2(a) and (b), the NOx RATA results are acceptable if the relative accuracy (RA) does not exceed 10.0 percent or if during the RATA the average NOx emission rate is less than or equal to 0.200 lb/MMBtu and the average difference between the CEMS and reference method (RM) values does not exceed 0.020 lb/MMBtu. Passing this set of criteria requires the CEMS to be retested after no more than two operating quarters. Alternatively, in accordance with 40 CFR 75, Appendix B, Section 2.3.1.2(a) and (f), and Appendix B, Figure 2, the NOx RATA results are acceptable if the RA does not exceed 7.5 percent or if during the RATA the average NOx emission rate is less than or equal to 0.200 lb/MMBtu and the average difference between the CEMS and RM values does not exceed 0.015 lb/MMBtu. Passing this set of criteria allows the CEMS to be retested after four operating quarters or at least within eight calendar quarters.

In accordance with 40 CFR 60, Appendix B, PS 3, Section 13.2, the $O_2$ RATA results are acceptable if the relative accuracy (RA) does not exceed 20.0 percent or if the average difference between the CEMS and reference method (RM) values does not exceed plus or minus 1.0 percent of the measured value.

In accordance with 40 CFR 60, Appendix B, PS 4 and 4A, Sections 13.2 of each, the CO relative accuracy (RA) test results are acceptable if the RA does not exceed 10.0 percent, if the average difference between the CEMS and reference method (RM) values plus the 2.5 percent confidence coefficient (2.5%CC) does not exceed 5.0 parts per million (ppm), or if the alternative relative accuracy (ARA) does not exceed 5.0 percent. Part 60 further requires that the unit be operating at greater than 50 percent of normal load.

## 1.2 SUMMARY OF TEST PROGRAM

The following list details pertinent information related to this specific project:

1.2.1 Participating Organizations
- New York State Department of Environmental Conservation (NYSDEC)
- Cricket Valley Energy Center LLC
- Custom Instrumentation Services Corporation (CiSCO)
- Bechtel
- Air Hygiene

1.2.2 Industry
- Electric Utility / Electric Services

1.2.3 Air Permit and Federal Requirements
- Permit Number: 3-1326-00275/00009
- DEC ID: 3132600275
- 40 CFR 60, Appendix B, Performance Specifications (PS)
- 40 CFR 75, Appendix A and B

1.2.4 Plant Location
- Cricket Valley Energy Center in Dover Plains, New York
  - GPS Coordinates [Latitude 41.67616, Longitude -73.576914]
  - 2241 Route NY 22, Dover Plains, New York 12522
  - Federal Registry System / Facility Registry Service (FRS) No. – 110043333372
  - Source Classification Code (SCC) – 20100209

1.2.5 Equipment Tested
- General Electric, 7F.05, Unit #U-00001
  - NOx Analyzer (TAPI T200M, Serial No. 1012)
  - $NH_3$ Analyzer (TAPI T200M, Serial No. 1047)
  - CO Analyzer (TAPI T300M, Serial No. 518)
  - $O_2$ Analyzer (TAPI T803, Serial No. 128)

1.2.6 Emission Points
- Exhaust from the General Electric, 7F.05, Unit #U-00001
- For all gases, one sample point in the exhaust duct from the General Electric, 7F.05, Unit #U-00001, determined after conducting a stratification test

1.2.7 Emission Parameters Measured
- NOx
- CO
- $NH_3$
- $O_2$

1.2.8 Date of Emission Test
- February 6, 2020

1.2.9 Federal Certifications

- Stack Testing Accreditation Council AETB Certificate No. 3796.02
- International Standard ISO/IEC 17025:2005 Certificate No. 3796.01

## 1.3 KEY PERSONNEL

| | | |
|---|---|---|
| Cricket Valley Energy Center LLC: | Marc Duquette (mduquette@cricketvalley.com) | 617-320-5219 |
| Bechtel: | Ron Swanson (reswanson@bechtel.com) | 571-262-0198 |
| CiSCO: | Reginald Williams (rwilliams@ciscocems.com) | 720-419-0177 |
| Air Hygiene: | Aaron Blum (ablum@airhygiene.com) | 918-307-8865 |
| Air Hygiene: | Swanson Bierman | 918-307-8865 |
| Air Hygiene: | Matt Jones | 918-307-8865 |
| Air Hygiene: | Rob White | 918-307-8865 |

## 2.0 SUMMARY OF TEST RESULTS

Results from the sampling conducted on Cricket Valley Energy Center LLC's General Electric, 7F.05, Unit #U-00001 located at the Cricket Valley Energy Center on February 6, 2020 are summarized in the following table and relate only to the items tested.

**TABLE 2.1**
**SUMMARY OF GENERAL ELECTRIC, 7F.05, UNIT #U-00001 RATA RESULTS**

| Pollutant | Units | Criteria | | | Results | Passed / Test Frequency |
|---|---|---|---|---|---|---|
| | | CFR | Specification / Section | Standard | | |
| NOx | ppmvd@15%$O_2$ | Part 60 | Appendix B, Performance Specification 2, Section 13.2 | RA ≤ 20%, or ARA ≤ 10% | RA = 9.22% | YES / ANNUAL |
| NOx | lb/hr | Part 60 | Appendix B, Performance Specification 2, Section 13.2 | RA ≤ 20%, or ARA ≤ 10% | RA = 9.60% | YES / ANNUAL |
| NOx | lb/MMBtu | Part 75 | Appendix A, Section 3.3.2(a),(b)<br><br>Appendix B, Section 2.3.1.2(a),(f), Figure 2 | RA ≤ 10%, or if lb/MMBtu ≤ 0.200, d ≤ ±0.020 lb/MMBtu<br><br>Annual Incentive RA ≤ 7.5%, or if lb/MMBtu ≤ 0.2, d ≤ ±0.015 lb/MMBtu | RA = 9.34%<br>RM = 0.01 lb/MMBtu<br>d = 0.000 lb/MMBtu<br>BAF=1.000 | YES / ANNUAL |
| $O_2$ | %vd | Part 60 | Appendix B, Performance Specification 3, Section 13.2 | RA ≤ 20%, or d ≤ ±1.0% | RA = 0.48%<br>d = 0.0 % | YES / ANNUAL |
| CO | ppmvd@15%$O_2$ | Part 60 | Appendix B, Performance Specification 4, 4A, from all Section 13.2 | RA ≤ 10%, or d + 2.5% CC ≤ ±5 ppmv, or ARA ≤ 5% | RA = 137.85%<br>\|d\|+2.5%CC = 0.7 ppm | YES / ANNUAL |
| CO | lb/hr | Part 60 | Appendix B, Performance Specification 4, 4A Section 13.2 | RA ≤ 10%, or d + 2.5% CC ≤ ±5 lb/hr, or ARA ≤ 5% | RA = 137.82%<br>\|d\|+2.5%CC = 0.7 ppm (\|d\|+2.5%CC = 4.3 lb/hr) | YES / ANNUAL |
| $NH_3$ | ppmvd@15%$O_2$ | Assumed Part 60 | Appendix B, Performance Specification 2, Section 13.2 | RA ≤ 20%, or ARA ≤ 10% | RA = 9.70% | YES / ANNUAL |
| $NH_3$ | lb/hr | Part 60 | Appendix B, Performance Specification 2, Section 13.2 | RA ≤ 20%, or ARA ≤ 10% | RA = 10.36% | YES / ANNUAL |
| Load | MW | Part 60 | Appendix B, Performance Specifications | > 50% max load | 372.8 | WITHIN TOLERANCE |
| Load | MW | Part 75 | Appendix A and B | normal load range | 372.8 | WITHIN TOLERANCE |

Notes: RA = relative accuracy, ARA = alternative relative accuracy, RM = reference method value, d = difference between RM and CEMS value, CC = confidence coefficient, v = velocity, BAF = bias adjustment factor

The RATA passed for all pollutants (NOx, CO, $NH_3$, and $O_2$) in all units (ppm@15%$O_2$, lb/hr, lb/MMBtu, and %) under all 40 CFR 60 and 40 CFR 75 criteria.

Specifically, NOx in units of ppm@15%$O_2$ and lb/hr, passed 40 CFR 60 criteria with an RA less than 20 percent. NOx in units of lb/MMBtu passed the 40 CFR 75 alternative annual incentive criteria with an emissions rate of less than 0.200 lb/MMBtu and a difference between the RM and CEMS analyzers of less than 0.015 lb/MMBtu. Also the Bias Adjustment Factor test resulted in an adjustment factor equal to 1.0 (no adjustment required). $O_2$ in units of % passed the 40 CFR 60 criteria with an RA less than 20 percent. CO in units of ppm@15%$O_2$ and lb/hr passed the 40 CFR 60 alternative criteria with a concentration difference between the RM and CEMS analyzers plus the confidence coefficient of less than 5 ppm and 5 lb/hr respectively. $NH_3$ in units of ppm@15%$O_2$ and lb/hr passed the 40 CFR 60 criteria with an RA less than 20 percent.

Unit load was within the 40 CFR 60 required criteria of greater than 50 percent of the maximum load and also fell within the normal load criteria as defined by the plants Quality Control and Monitoring Plan which defined the upper and lower boundary on the unit and the normal and secondary normal load ranges.

The results of all measured pollutant emissions were below the required limits. All testing was performed without any real or apparent errors. All testing was conducted according to the approved testing protocol.

## 3.0 SOURCE OPERATION

## 3.1 PROCESS DESCRIPTION

Cricket Valley Energy Center LLC (CVEC) owns and operates the Cricket Valley Energy Center located at 2241 ST RTE 22 in Dover Plains, New York. Located on the Cricket Valley Energy Center are three General Electric (GE) 7F.05 Combustion Turbine Generators (CTGs), designated as U-00001, U-00002, and U-0003, and each unit is equipped with one heat recovery steam generator (HRSG) with supplemental duct firing. Each unit is rated at 381 megawatts (MW). The nominal MW per unit as per the NYSDEC Permit ID 3-1326-00275/00009 is identified as 333 MW.

A single, dedicated dry extraction based continuous emissions monitoring system (CEMS) is installed on each the unit. The CEMS configurations include nitrogen oxide (NOx) analyzers, ammonia ($NH_3$) analyzers, carbon monoxide (CO) analyzers, diluent gas oxygen ($O_2$) analyzers, and data acquisition and handling systems (DAHS).

## 3.2 SAMPLING LOCATION

The CTG stack is vertical, circular, and measures 19 feet (ft) (228 inches) in diameter at the test ports which are approximately 265.8 ft above grade level with an exit elevation of approximately 282.5 ft above grade level. The test ports are located approximately 70.8 ft (850 inches) downstream and approximately 16.7 ft (200.4 inches) upstream from the nearest disturbances. Air Hygiene has field verified the measurable dimensions. Non-field verified dimensions are provided by Cricket Valley Energy Center LLC. All exhaust samples for gaseous emissions were continuously drawn from the exhaust system at the sample ports from a single point determined after conducting a stratification test. During the stratification test three points were traversed from each of the four ports. The probe was allowed to remain at a point for two times the system response time.

## 4.0 SAMPLING AND ANALYTICAL PROCEDURES

## 4.1 TEST METHODS

The emission test on the General Electric, 7F.05, Unit #U-00001 at the Cricket Valley Energy Center was performed following United States Environmental Protection Agency (EPA) methods described by the Code of Federal Regulations (CFR). Table 4.1 outlines the specific methods performed on February 6, 2020.

**TABLE 4.1**
**SUMMARY OF SAMPLING METHODS**

| Pollutant or Parameter | Sampling Method | Analysis Method |
|---|---|---|
| Sample Point Location | EPA Method 1 | Equal Area Method |
| Oxygen | EPA Method 3A | Paramagnetic Cell |
| Nitrogen Oxides | EPA Method 7E | Chemiluminescent Analyzer |
| Carbon Monoxide | EPA Method 10 | Nondispersive Infrared Analyzer |
| Stack Flow Rate | EPA Method 19 | Dry Oxygen F Factor |
| Ammonia and Moisture | EPA Method 320 | Fourier Transform Infrared |

## 4.2 INSTRUMENT CONFIGURATION AND OPERATIONS FOR GAS ANALYSIS

The sampling and analysis procedures used during these tests conform with the methods outlined in the Code of Federal Regulations (CFR), Title 40, Part 60, Appendix A, Methods 1, 3A, 7E, 10, 19; and 40 CFR 63, Appendix A, Method 320.

Figure 4.1 depicts the sample system used for the real-time gas analyzer tests. The gas sample was continuously pulled through the probe and transported, via heat-traced Teflon® tubing, to a heated head pump and into the FTIR then to a stainless steel minimum-contact condenser designed to dry the sample. Transportation of the sample, through Teflon® tubing, continued into the sample manifold within the mobile laboratory / portable analyzer via a stainless steel/Teflon® diaphragm pump. From the manifold, the sample was partitioned to the real-time analyzers through rotameters that controlled the flow rate of the sample.

Figure 4.1 shows that the sample system was also equipped with a separate path through which a calibration gas could be delivered to the probe and back through the entire sampling system. This allowed for convenient performance of system bias checks as required by the testing methods.

All instruments were housed in a climate controlled, trailer-mounted mobile laboratory. Gaseous calibration standards were provided in aluminum cylinders with the concentrations certified by the vendor. EPA Protocol No. 1 was used to determine the cylinder concentrations where applicable (i.e. NOx calibration gases).

Table 4.2 provides a description of the analyzers used for the instrument portion of the tests. All data from the continuous monitoring instruments were recorded on a Logic Beach Portable Data Logging System which retrieves calibrated electronic data from each instrument every one second and reports an average of the collected data every 30 seconds. For target compounds measured with the Fourier transform infrared (FTIR) spectrometer,

interferograms consisting of 28 co-added scans were recorded continuously during the test periods, and provided approximately 30-second average concentrations. Spectral data was analyzed by the MKS MG2000 software.

Ten test runs of approximately 21 minutes each were conducted on the General Electric, 7F.05, Unit #U-00001 for NOx, CO, $NH_3$, and $O_2$.

The stack gas analysis for $O_2$ concentrations was performed in accordance with procedures set forth in EPA Method 3A. The $O_2$ analyzer uses a paramagnetic cell detector.

EPA Method 7E was used to determine concentrations of NOx. A chemiluminescent analyzer was used to determine the nitrogen oxides concentration in the gas stream. A $NO_2$ in nitrogen certified gas cylinder was used to verify at least a 90 percent $NO_2$ conversion on the day of the test.

CO emission concentrations were quantified in accordance with procedures set forth in EPA Method 10. A continuous nondispersive infrared (NDIR) analyzer was used for this purpose.

An MKS Instruments - MultiGas™ Fourier Transform Infrared (FTIR) spectrometer, or equivalent, was used for $NH_3$ and $H_2O$ analysis per EPA Method 320. The FTIR spectrometer spectral resolution was 0.5 $cm^{-1}$. The system employed a silicon carbide infrared source at 1200ºC, a helium neon reference laser, beam splitters, potassium bromide (KBr) cell window, front-surface optical transfer mirrors, and multi-pass absorption cells. MCT detectors were used and cooled with liquid nitrogen in order to maintain a constant temperature of 77 Kelvin. The approximately 5.11-meter multi-pass path cells incorporated aspheric, aberration-correcting mirrors to increase the optical throughput and the detection sensitivity. Transducers and thermocouples were connected directly to the insulated sample cells that provide the pressure and temperatures of the sample streams. During testing, the temperature of the absorption cells was set at 191ºC. Elevated temperature prevented gas condensation within the cell and minimized compound adhesion to the cell walls and mirrors. The volume of the absorption cell was 0.5 liters, so at a sample gas flow rate of 4.0 liters per minute, the sample gas in the cell is refreshed approximately four times each minute. Interferograms consisting of 28 co-added scans were recorded continuously during the test periods, and provided approximately 30-second average concentrations.

**TABLE 4.2**
**ANALYTICAL INSTRUMENTATION**

| Parameter | Manufacturer and Model | Range | Sensitivity | Detection Principle |
|---|---|---|---|---|
| NOx | THERMO 42 series | User may select up to 5,000 ppm | 0.1 ppm | Thermal reduction of $NO_2$ to NO. Chemiluminescence of reaction of NO with $O_3$. Detection by PMT. Inherently linear for listed ranges. |
| CO | THERMO 48 series | User may select up to 10,000 ppm | 0.1 ppm | Infrared absorption, gas filter correlation detector, microprocessor based linearization. |
| $NH_3$ and $H_2O$ | MKS 2030 | User may select from multiple ranges | 0.1 ppm | Fourier Transform Infrared – FTIR |
| $O_2$ | SERVOMEX 1440 | 0-25% | 0.1% | Paramagnetic cell, inherently linear. |

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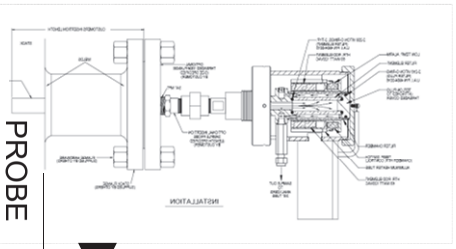
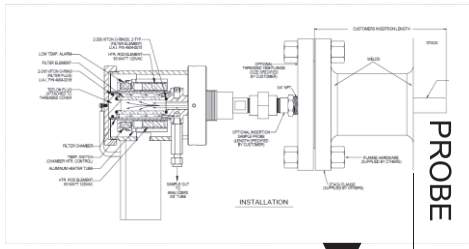


PROBE

HEATED PROBE FILTER

LEGEND

- Heated Teflon Tubing (pre-conditioned sample)
- Unheated Teflon Tubing (conditioned sample)
- Diluted Calibration Gas
- Calibration Gas
- Electronic Input/Output



HEATED PROBE FILTER

PROBE

STACK EXHAUST

PROCESS INLET OR 2ND STACK

dual line heated sample umbilical

TEST TRAILER EXTERIOR

TEST TRAILER INTERIOR

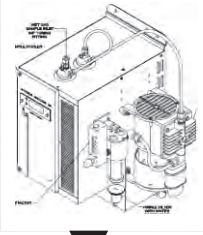
DATA RECORDER



COMPUTER



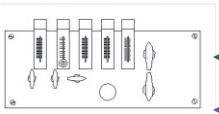
GAS CONDITIONER



dual line heated sample umbilical

MOBILE SECONDARY ANALYZERS

MANIFOLD





GAS DILUTER

THC, VOC



$O_2$, $CO_2$, NOx, CO, $SO_2$



HOT/WET ANALYZERS

COLD/DRY ANALYZERS

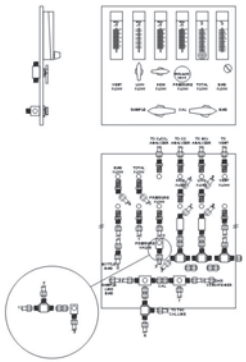


COLD/DRY ANALYZERS HOT/WET



$O_2$, $CO_2$, NOx, CO, $SO_2$

FLOW CONTROL MANIFOLD





FTIR

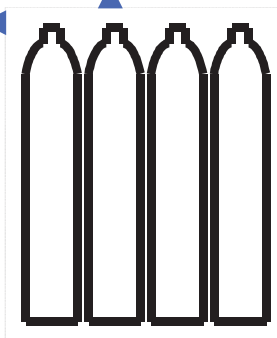
THC, VOC



CONDITIONER

VENT

CALIBRATION/ BIAS GAS BOTTLES



VENT

FIXED PRIMARY ANALYZERS

Shown fully equipped. Some labs may not contain these features and others may contain additional features specific to certain scopes.

AIR HYGIENE

Figure 4.1
EMISSIONS TESTING LAB

1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
www.airhygiene.com
(888) 461-8778

# APPENDIX A

# TEST RESULTS AND CALCULATIONS

**TABLE A.1:**
**EMISSIONS TESTING SCHEDULE**

| Unit | Load | Test Type | Run | Date | Start | Stop | Time Sync |
|---|---|---|---|---|---|---|---|
| U-00001 | Base Load | Stratification Test | 1 | 02/05/20 | 14:35:00 | 16:30:00 | DAHS |
| U-00001 | Base Load | Gas RATA | 1 | 02/06/20 | 11:36:10 | 11:56:40 | DAHS |
| U-00001 | Base Load | Gas RATA | 2 | 02/06/20 | 12:10:10 | 12:30:40 | DAHS |
| U-00001 | Base Load | Gas RATA | 3 | 02/06/20 | 12:42:10 | 13:02:40 | DAHS |
| U-00001 | Base Load | Gas RATA | 4 | 02/06/20 | 13:20:10 | 13:40:40 | DAHS |
| U-00001 | Base Load | Gas RATA | 5 | 02/06/20 | 13:55:10 | 14:15:40 | DAHS |
| U-00001 | Base Load | Gas RATA | 6 | 02/06/20 | 14:27:10 | 14:47:40 | DAHS |
| U-00001 | Base Load | Gas RATA | 7 | 02/06/20 | 15:01:10 | 15:21:40 | DAHS |
| U-00001 | Base Load | Gas RATA | 8 | 02/06/20 | 15:36:10 | 15:56:40 | DAHS |
| U-00001 | Base Load | Gas RATA | 9 | 02/06/20 | 16:08:10 | 16:28:40 | DAHS |
| U-00001 | Base Load | Gas RATA | 10 | 02/06/20 | 16:46:10 | 17:06:40 | DAHS |

**Cricket Valley Energy Center LLC**
**February 6, 2020**
**General Electric, 7F.05, Unit #U-00001**
**$O_2$ RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (%vd) | (%vd) | (diff) | ($diff^2$) |
| 1 | 11:36 - 11:56 | YES | 373.4 | 11.86 | 11.99 | -0.13 | 0.02 |
| 2 | 12:10 - 12:30 | NO | 373.2 | 11.68 | 12.00 | | |
| 3 | 12:42 - 13:02 | YES | 373.3 | 11.97 | 11.99 | -0.02 | 0.00 |
| 4 | 13:20 - 13:40 | YES | 372.6 | 12.02 | 12.00 | 0.02 | 0.00 |
| 5 | 13:55 - 14:15 | YES | 372.8 | 12.02 | 11.98 | 0.04 | 0.00 |
| 6 | 14:27 - 14:47 | YES | 372.7 | 12.04 | 11.99 | 0.05 | 0.00 |
| 7 | 15:01 - 15:21 | YES | 372.7 | 12.06 | 11.99 | 0.07 | 0.00 |
| 8 | 15:36 - 15:56 | YES | 372.8 | 12.07 | 12.00 | 0.07 | 0.01 |
| 9 | 16:08 - 16:28 | YES | 372.6 | 12.02 | 12.00 | 0.02 | 0.00 |
| 10 | 16:46 - 17:06 | YES | 372.2 | 11.97 | 12.01 | -0.04 | 0.00 |
| 11 | | NO | | | | | |
| 12 | | NO | | | | | |
| | **Total** | | **3355.1** | **108.03** | **107.95** | **0.085** | **0.032** |
| | **Average** | | **372.8** | **12.00** | **11.99** | **0.009** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.06 |
| T-value | 2.306 |
| Confidence Coefficient | 0.05 |

| | |
|---|---|
| **Average Difference =** | **0.0** |
| **Relative Accuracy =** | **0.5%** |

Part 60, Appendix B, Performance Specification 3,
13.2 CEMS Relative Accuracy Performance Specification. The RA of the CEMS must be no greater than 20 percent of the mean value of the reference method (RM) data. The results are also acceptable if the absolute value of the difference between the mean RM value and the mean CEMS value is less than or equal to 1.0 percent O2 (or CO2).

**Cricket Valley Energy Center LLC**
**February 6, 2020**
**General Electric, 7F.05, Unit #U-00001**
**NOx RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (ppmvd@15%$O_2$) | (ppmvd@15%$O_2$) | (diff) | (diff$^2$) |
| 1 | 11:36 - 11:56 | YES | 373.4 | 1.96 | 1.70 | 0.26 | 0.07 |
| 2 | 12:10 - 12:30 | YES | 373.2 | 1.68 | 1.82 | -0.14 | 0.02 |
| 3 | 12:42 - 13:02 | YES | 373.3 | 1.77 | 1.71 | 0.06 | 0.00 |
| 4 | 13:20 - 13:40 | YES | 372.6 | 1.75 | 1.70 | 0.05 | 0.00 |
| 5 | 13:55 - 14:15 | YES | 372.8 | 1.78 | 1.75 | 0.03 | 0.00 |
| 6 | 14:27 - 14:47 | YES | 372.7 | 1.64 | 1.81 | -0.17 | 0.03 |
| 7 | 15:01 - 15:21 | YES | 372.7 | 1.97 | 1.72 | 0.25 | 0.06 |
| 8 | 15:36 - 15:56 | YES | 372.8 | 1.86 | 1.79 | 0.07 | 0.00 |
| 9 | 16:08 - 16:28 | YES | 372.6 | 1.78 | 1.70 | 0.08 | 0.01 |
| 10 | 16:46 - 17:06 | NO | 372.2 | 2.06 | 1.47 | | |
| 11 | | NO | | | | | |
| 12 | | NO | | | | | |
| | **Total** | | **3356.1** | **16.19** | **15.70** | **0.49** | **0.19** |
| | **Average** | | **372.9** | **1.80** | **1.74** | **0.05** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.14 |
| T-value | 2.306 |
| Confidence Coefficient | 0.11 |

**Relative Accuracy = 9.2%**

Part 60, Appendix B, Performance Specification 2,
8.4.1 RA Test Period. Conduct the RA test according to the procedure given in Sections 8.4.2 through 8.4.6 while the affected facility is operating at more than 50 percent of normal load, or as specified in an applicable subpart.
13.2 Relative Accuracy Performance Specification. The RA of the CEMS must be no greater than 20 percent when RM is used in the denominator of Eq. 2-6 (average emissions during test are greater than 50 percent of the emission standard) or 10 percent when the applicable emission standard (permit limit) is used in the denominator of Eq. 2-6 (average emissions during test are less than 50 percent of the emission standard).
Eq. 2.6 RA=([|d|+|CC|]*100)/RM

**Cricket Valley Energy Center LLC**
**February 6, 2020**
**General Electric, 7F.05, Unit #U-00001**
**CO RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (ppmvd@15%$O_2$) | (ppmvd@15%$O_2$) | (diff) | (diff$^2$) |
| 1 | 11:36 - 11:56 | YES | 373.4 | 0.01 | 0.00 | 0.01 | 0.00 |
| 2 | 12:10 - 12:30 | YES | 373.2 | 0.28 | 0.00 | 0.28 | 0.08 |
| 3 | 12:42 - 13:02 | YES | 373.3 | 0.34 | 0.00 | 0.34 | 0.11 |
| 4 | 13:20 - 13:40 | YES | 372.6 | 0.51 | 0.00 | 0.51 | 0.26 |
| 5 | 13:55 - 14:15 | YES | 372.8 | 0.62 | 0.00 | 0.62 | 0.39 |
| 6 | 14:27 - 14:47 | YES | 372.7 | 0.67 | 0.00 | 0.67 | 0.45 |
| 7 | 15:01 - 15:21 | YES | 372.7 | 0.79 | 0.00 | 0.79 | 0.62 |
| 8 | 15:36 - 15:56 | YES | 372.8 | 0.67 | 0.00 | 0.67 | 0.45 |
| 9 | 16:08 - 16:28 | YES | 372.6 | 0.67 | 0.00 | 0.67 | 0.46 |
| 10 | 16:46 - 17:06 | NO | 372.2 | 1.51 | 0.00 | | |
| 11 | | NO | | | | | |
| 12 | | NO | | | | | |
| | **Total** | | **3356.1** | **4.56** | **0.00** | **4.56** | **2.81** |
| | **Average** | | **372.9** | **0.51** | **0.00** | **0.51** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.25 |
| T-value | 2.306 |
| Confidence Coefficient | 0.19 |

| | |
|---|---|
| **Relative Accuracy =** | **137.8%** |
| **\|d (difference in ppm)\| + CC =** | **0.7** |

Part 60, Appendix B, Performance Specification 4,
1.2.1 This specification is for evaluating the acceptability of carbon monoxide (CO) continuous emission monitoring systems (CEMS) at the time of installation or soon after and whenever specified in an applicable subpart of the regulations. This specification was developed primarily for CEMS having span values of 1,000 ppmv CO.
13.2 Relative Accuracy. The RA of the CEMS must be no greater than 10 percent when the average RM value is used to calculate RA or 5 percent when the applicable emission standard (permit limit) is used to calculate RA.

Part 60, Appendix B, Performance Specification 4A,
1.2.1 This specification is for evaluating the acceptability of carbon monoxide (CO) continuous emission monitoring systems (CEMS) at the time of installation or soon after and whenever specified in an applicable subpart of the regulations. This specification was developed primarily for CEMS that comply with low emission standards (less than 200 ppmv).
13.2 Relative Accuracy. The RA of the CEMS must be no greater than 10 percent when the average RM value is used to calculate RA, 5 percent when the applicable emission standard (permit limit) is used to calculate RA, or within 5 ppmv when the RA is calculated as the absolute average difference between the RM and CEMS plus the 2.5 percent confidence coefficient.

**Cricket Valley Energy Center LLC**
**February 6, 2020**
**General Electric, 7F.05, Unit #U-00001**
**$NH_3$ RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (ppmvd@15%$O_2$) | (ppmvd@15%$O_2$) | (diff) | (diff$^2$) |
| 1 | 11:36 - 11:56 | YES | 373.4 | 1.44 | 1.46 | -0.02 | 0.00 |
| 2 | 12:10 - 12:30 | YES | 373.2 | 1.47 | 1.30 | 0.17 | 0.03 |
| 3 | 12:42 - 13:02 | YES | 373.3 | 1.56 | 1.44 | 0.12 | 0.01 |
| 4 | 13:20 - 13:40 | YES | 372.6 | 1.53 | 1.47 | 0.06 | 0.00 |
| 5 | 13:55 - 14:15 | YES | 372.8 | 1.56 | 1.45 | 0.11 | 0.01 |
| 6 | 14:27 - 14:47 | YES | 372.7 | 1.40 | 1.26 | 0.14 | 0.02 |
| 7 | 15:01 - 15:21 | YES | 372.7 | 1.41 | 1.38 | 0.03 | 0.00 |
| 8 | 15:36 - 15:56 | YES | 372.8 | 1.47 | 1.29 | 0.18 | 0.03 |
| 9 | 16:08 - 16:28 | YES | 372.6 | 1.44 | 1.44 | 0.00 | 0.00 |
| 10 | 16:46 - 17:06 | NO | 372.2 | 1.72 | 1.81 | | |
| 11 | | NO | | | | | |
| 12 | | NO | | | | | |
| | **Total** | | **3356.1** | **13.27** | **12.49** | **0.78** | **0.11** |
| | **Average** | | **372.9** | **1.47** | **1.39** | **0.09** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.07 |
| T-value | 2.306 |
| Confidence Coefficient | 0.06 |

**Relative Accuracy = 9.7%**

Part 60, Appendix B, Performance Specification 2,
8.4.1 RA Test Period. Conduct the RA test according to the procedure given in Sections 8.4.2 through 8.4.6 while the affected facility is operating at more than 50 percent of normal load, or as specified in an applicable subpart.
13.2 Relative Accuracy Performance Specification. The RA of the CEMS must be no greater than 20 percent when RM is used in the denominator of Eq. 2-6 (average emissions during test are greater than 50 percent of the emission standard) or 10 percent when the applicable emission standard (permit limit) is used in the denominator of Eq. 2-6 (average emissions during test are less than 50 percent of the emission standard).
Eq. 2.6 RA=([|d|+|CC|]*100)/RM

**Cricket Valley Energy Center LLC**
**February 6, 2020**
**General Electric, 7F.05, Unit #U-00001**
**NOx RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (lb/hr) | (lb/hr) | (diff) | ($diff^2$) |
| 1 | 11:36 - 11:56 | YES | 373.4 | 19.70 | 17.00 | 2.70 | 7.27 |
| 2 | 12:10 - 12:30 | YES | 373.2 | 16.88 | 18.18 | -1.30 | 1.70 |
| 3 | 12:42 - 13:02 | YES | 373.3 | 17.72 | 17.09 | 0.63 | 0.40 |
| 4 | 13:20 - 13:40 | YES | 372.6 | 17.55 | 16.95 | 0.60 | 0.36 |
| 5 | 13:55 - 14:15 | YES | 372.8 | 17.84 | 17.41 | 0.43 | 0.19 |
| 6 | 14:27 - 14:47 | YES | 372.7 | 16.47 | 18.04 | -1.57 | 2.48 |
| 7 | 15:01 - 15:21 | YES | 372.7 | 19.70 | 17.15 | 2.55 | 6.51 |
| 8 | 15:36 - 15:56 | YES | 372.8 | 18.61 | 17.85 | 0.76 | 0.57 |
| 9 | 16:08 - 16:28 | YES | 372.6 | 17.80 | 16.98 | 0.82 | 0.67 |
| 10 | 16:46 - 17:06 | NO | 372.2 | 20.59 | 14.60 | | |
| 11 | | NO | | | | | |
| 12 | | NO | | | | | |
| | **Total** | | **3356.1** | **162.26** | **156.65** | **5.61** | **20.13** |
| | **Average** | | **372.9** | **18.03** | **17.41** | **0.62** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 1.44 |
| T-value | 2.306 |
| Confidence Coefficient | 1.11 |

**Relative Accuracy = 9.6%**

Part 60, Appendix B, Performance Specification 2,
8.4.1 RA Test Period. Conduct the RA test according to the procedure given in Sections 8.4.2 through 8.4.6 while the affected facility is operating at more than 50 percent of normal load, or as specified in an applicable subpart.
13.2 Relative Accuracy Performance Specification. The RA of the CEMS must be no greater than 20 percent when RM is used in the denominator of Eq. 2-6 (average emissions during test are greater than 50 percent of the emission standard) or 10 percent when the applicable emission standard (permit limit) is used in the denominator of Eq. 2-6 (average emissions during test are less than 50 percent of the emission standard).
Eq. 2.6 RA=([|d|+|CC|]*100)/RM

**Cricket Valley Energy Center LLC**
**February 6, 2020**
**General Electric, 7F.05, Unit #U-00001**
**CO RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (lb/hr) | (lb/hr) | (diff) | ($diff^2$) |
| 1 | 11:36 - 11:56 | YES | 373.4 | 0.07 | 0.00 | 0.07 | 0.01 |
| 2 | 12:10 - 12:30 | YES | 373.2 | 1.72 | 0.00 | 1.72 | 2.97 |
| 3 | 12:42 - 13:02 | YES | 373.3 | 2.05 | 0.00 | 2.05 | 4.19 |
| 4 | 13:20 - 13:40 | YES | 372.6 | 3.10 | 0.00 | 3.10 | 9.60 |
| 5 | 13:55 - 14:15 | YES | 372.8 | 3.78 | 0.00 | 3.78 | 14.32 |
| 6 | 14:27 - 14:47 | YES | 372.7 | 4.08 | 0.00 | 4.08 | 16.63 |
| 7 | 15:01 - 15:21 | YES | 372.7 | 4.80 | 0.00 | 4.80 | 23.02 |
| 8 | 15:36 - 15:56 | YES | 372.8 | 4.11 | 0.00 | 4.11 | 16.86 |
| 9 | 16:08 - 16:28 | YES | 372.6 | 4.11 | 0.00 | 4.11 | 16.89 |
| 10 | 16:46 - 17:06 | NO | 372.2 | 9.16 | 0.00 | | |
| 11 | | NO | | | | | |
| 12 | | NO | | | | | |
| | **Total** | | **3356.1** | **27.82** | **0.00** | **27.82** | **104.49** |
| | **Average** | | **372.9** | **3.09** | **0.00** | **3.09** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 1.52 |
| T-value | 2.306 |
| Confidence Coefficient | 1.17 |

| | |
|---|---|
| **Relative Accuracy =** | **137.8%** |
| **\|d (difference in lb/hr)\| + CC =** | **4.3** |

Part 60, Appendix B, Performance Specification 4,
1.2.1 This specification is for evaluating the acceptability of carbon monoxide (CO) continuous emission monitoring systems (CEMS) at the time of installation or soon after and whenever specified in an applicable subpart of the regulations. This specification was developed primarily for CEMS having span values of 1,000 ppmv CO.
13.2 Relative Accuracy. The RA of the CEMS must be no greater than 10 percent when the average RM value is used to calculate RA or 5 percent when the applicable emission standard (permit limit) is used to calculate RA.

Part 60, Appendix B, Performance Specification 4A,
1.2.1 This specification is for evaluating the acceptability of carbon monoxide (CO) continuous emission monitoring systems (CEMS) at the time of installation or soon after and whenever specified in an applicable subpart of the regulations. This specification was developed primarily for CEMS that comply with low emission standards (less than 200 ppmv).
13.2 Relative Accuracy. The RA of the CEMS must be no greater than 10 percent when the average RM value is used to calculate RA, 5 percent when the applicable emission standard (permit limit) is used to calculate RA, or within 5 ppmv when the RA is calculated as the absolute average difference between the RM and CEMS plus the 2.5 percent confidence coefficient.

**Cricket Valley Energy Center LLC**
**February 6, 2020**
**General Electric, 7F.05, Unit #U-00001**
**$NH_3$ RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (lb/hr) | (lb/hr) | (diff) | ($diff^2$) |
| 1 | 11:36 - 11:56 | YES | 373.4 | 5.34 | 5.42 | -0.08 | 0.01 |
| 2 | 12:10 - 12:30 | YES | 373.2 | 5.46 | 4.80 | 0.66 | 0.43 |
| 3 | 12:42 - 13:02 | YES | 373.3 | 5.78 | 5.35 | 0.43 | 0.19 |
| 4 | 13:20 - 13:40 | YES | 372.6 | 5.68 | 5.41 | 0.27 | 0.07 |
| 5 | 13:55 - 14:15 | YES | 372.8 | 5.78 | 5.35 | 0.43 | 0.19 |
| 6 | 14:27 - 14:47 | YES | 372.7 | 5.17 | 4.62 | 0.55 | 0.31 |
| 7 | 15:01 - 15:21 | YES | 372.7 | 5.22 | 5.06 | 0.16 | 0.02 |
| 8 | 15:36 - 15:56 | YES | 372.8 | 5.45 | 4.73 | 0.72 | 0.51 |
| 9 | 16:08 - 16:28 | YES | 372.6 | 5.33 | 5.41 | -0.08 | 0.01 |
| 10 | 16:46 - 17:06 | NO | 372.2 | 6.35 | 6.62 | | |
| 11 | | NO | | | | | |
| 12 | | NO | | | | | |
| | **Total** | | **3356.1** | **49.20** | **46.15** | **3.05** | **1.73** |
| | **Average** | | **372.9** | **5.47** | **5.13** | **0.34** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.30 |
| T-value | 2.306 |
| Confidence Coefficient | 0.23 |

**Relative Accuracy = 10.4%**

Part 60, Appendix B, Performance Specification 2,
8.4.1 RA Test Period. Conduct the RA test according to the procedure given in Sections 8.4.2 through 8.4.6 while the affected facility is operating at more than 50 percent of normal load, or as specified in an applicable subpart.
13.2 Relative Accuracy Performance Specification. The RA of the CEMS must be no greater than 20 percent when RM is used in the denominator of Eq. 2-6 (average emissions during test are greater than 50 percent of the emission standard) or 10 percent when the applicable emission standard (permit limit) is used in the denominator of Eq. 2-6 (average emissions during test are less than 50 percent of the emission standard).
Eq. 2.6 RA=([|d|+|CC|]*100)/RM

**Cricket Valley Energy Center LLC**
**February 6, 2020**
**General Electric, 7F.05, Unit #U-00001**
**NOx RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (lb/MMBtu) | (lb/MMBtu) | (diff) | ($diff^2$) |
| 1 | 11:36 - 11:56 | YES | 373.4 | 0.0072 | 0.0063 | 0.0009 | 0.0000 |
| 2 | 12:10 - 12:30 | YES | 373.2 | 0.0062 | 0.0067 | -0.0005 | 0.0000 |
| 3 | 12:42 - 13:02 | YES | 373.3 | 0.0065 | 0.0063 | 0.0002 | 0.0000 |
| 4 | 13:20 - 13:40 | YES | 372.6 | 0.0065 | 0.0063 | 0.0002 | 0.0000 |
| 5 | 13:55 - 14:15 | YES | 372.8 | 0.0066 | 0.0064 | 0.0002 | 0.0000 |
| 6 | 14:27 - 14:47 | YES | 372.7 | 0.0061 | 0.0067 | -0.0006 | 0.0000 |
| 7 | 15:01 - 15:21 | YES | 372.7 | 0.0073 | 0.0063 | 0.0010 | 0.0000 |
| 8 | 15:36 - 15:56 | YES | 372.8 | 0.0068 | 0.0066 | 0.0002 | 0.0000 |
| 9 | 16:08 - 16:28 | YES | 372.6 | 0.0066 | 0.0063 | 0.0003 | 0.0000 |
| 10 | 16:46 - 17:06 | NO | 372.2 | 0.0076 | 0.0054 | | |
| 11 | | NO | | | | | |
| 12 | | NO | | | | | |
| | **Total** | | **3356.1** | **0.0598** | **0.0579** | **0.0019** | **0.0000** |
| | **Average** | | **372.9** | **0.0066** | **0.0064** | **0.0002** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.0005 |
| T-value | 2.306 |
| Confidence Coefficient | 0.0004 |

**Relative Accuracy = 9.34%**

If the mean difference is less than or equal to the absolute value of the confidence coefficient, then the Bias Test passes and the bias adjustment factor is not applicable.

| | |
|---|---|
| Mean Difference = | 0.0002 |
| Confidence Coefficient = | 0.0004 |

BAF = 1 + (abs. value mean difference/avg. CEMS reading)

| | |
|---|---|
| Average CEMS Reading = | 0.0064 |
| **BAF =** | **1.000** |

Part 75, Appendix A,
3.3.2 Relative Accuracy for NOX-Diluent Continuous Emission Monitoring Systems
(a) The relative accuracy for NOX-diluent continuous emission monitoring systems shall not exceed 10.0 percent.
(b) For affected units where the average of the reference method measurements of NOX emission rate (this means lb/MMBtu) during the relative accuracy test audit is less than or equal to 0.200 lb/mmBtu, the difference between the mean value of the continuous emission monitoring system measurements and the reference method mean value shall not exceed ±0.020 lb/mmBtu, wherever the relative accuracy specification of 10.0 percent is not achieved.

7.6.5 Bias Adjustment
(b) For single-load RATAs of SO2 pollutant concentration monitors, NOX concentration monitoring systems, and NOX-diluent monitoring systems and for the single-load flow RATAs required or allowed under section 6.5.2 of this appendix and sections 2.3.1.3(b) and 2.3.1.3(c) of Appendix B to this part, the appropriate BAF is determined directly from the RATA results at normal load, using Equation A-12. Notwithstanding, when a NOX concentration CEMS or an SO2 CEMS or a NOX-diluent CEMS installed on a low-emitting affected unit (i.e., average SO2 or NOX concentration during the RATA ≦ 250 ppm or average NOX emission rate ≦ 0.200 lb/mmBtu) meets the normal 10.0 percent relative accuracy specification (as calculated using Equation A-10) or the alternate relative accuracy specification in section 3.3 of this appendix for low-emitters, but fails the bias test, the BAF may either be determined using Equation A-12, or a default BAF of 1.111 may be used.

Part 75, Appendix B,
2.3.1.2 Reduced RATA Frequencies. Relative accuracy test audits of primary and redundant backup SO2 pollutant concentration monitors, CO2 pollutant concentration monitors (including O2 monitors used to determine CO2 emissions), CO2 or O2 diluent monitors used to determine heat input, moisture monitoring systems, NOX concentration monitoring systems, flow monitors, NOX-diluent monitoring systems or SO2-diluent monitoring systems may be performed annually (i.e., once every four successive QA operating quarters, rather than once every two successive QA operating quarters) if any of the following conditions are met for the specific monitoring system involved:
(a) The relative accuracy during the audit of an SO2 or CO2 pollutant concentration monitor (including an O2 pollutant monitor used to measure CO2 using the procedures in appendix F to this part), or of a CO2 or O2 diluent monitor used to determine heat input, or of a NOX concentration monitoring system, or of a NOX-diluent monitoring system, or of an SO2-diluent continuous emissions monitoring system is ≤ 7.5 percent;

(f) For units with low NOX emission rates (average NOX emission rate measured by the reference method during the RATA ≤ 0.200 lb/mmBtu), when a NOX-diluent continuous emission monitoring system fails to achieve a relative accuracy ≤ 7.5 percent, but the monitoring system mean value from the RATA, calculated using Equation A-7 in appendix A to this part, is within ± 0.015 lb/mmBtu of the reference method mean value;

Figure 2 to Appendix B of Part 75_Relative Accuracy Test Frequency Incentive System.

| RATA | Semiannual(percent)(1) | Annual(1) |
|---|---|---|
| SO2 or NOX(3) | 7.5% < RA ≤ 10.0% or ± 15.0 ppm(2) | RA ≤ 7.5% or ± 12.0 ppm(2) |
| SO2-diluent | 7.5% < RA ≤ 10.0% or ± 0.030 lb/mmBtu(2) | RA ≤ 7.5% or ± 0.025 lb/mmBtu(2) |
| NOX-diluent | 7.5% < RA ≤ 10.0% or ± 0.020 lb/mmBtu(2) | RA ≤ 7.5% or ± 0.015 lb/mmBtu(2) |
| Flow | 7.5% < RA ≤ 10.0% or ± 2.0 fps(2) | RA ≤ 7.5% or ± 1.5 fps |
| CO2 or O2 | 7.5% < RA ≤ 10.0% or ± 1.0% CO2/O2(2) | RA ≤ 7.5% or ± 0.7% CO2/O2(2) |
| Moisture | 7.5% < RA ≤ 10.0% or ± 1.5% H2O(2) | RA ≤ 7.5% or ± 1.0% H2O(2) |

(1) The deadline for the next RATA is the end of the second (if semiannual) or fourth (if annual) successive QA operating quarter following the quarter in which the CEMS was last tested. Exclude calendar quarters with fewer than 168 unit operating hours (or, for common stacks and bypass stacks, exclude quarters with fewer than 168 stack operating hours) in determining the RATA deadline. For SO2 monitors, QA operating quarters in which only very low sulfur fuel as defined in § 72.2, is combusted may also be excluded. However, the exclusion of calendar quarters is limited as follows: the deadline for the next RATA shall be no more than 8 calendar quarters after the quarter in which a RATA was last performed.
(2) The difference between monitor and reference method mean values applies to moisture monitors, CO2, and O2 monitors, low emitters, or low flow, only.
(3) A NOX concentration monitoring system used to determine NOX mass emissions under § 75.71.

# Calculations, Formulas, and Constants

The following information supports the spreadsheets for this testing project.

**Given Data:**

Ideal Gas Conversion Factor = 385.23 SCF/lb-mol at 68 deg F & 14.696 psia

Fuel Heating Value is based upon Air Hygiene's fuel gas calculation sheet. All calculations are based upon a correction to 68 deg F & 14.696 psia

High Heating Values (HHV) are used for the Fuel Heating Value, F-Factor, and Fuel Flow Data per EPA requirements.

**ASTM D 3588**

| | |
|---|---|
| Molecular Weight of NOx (lb/lb-mole) = | 46.01 |
| Molecular Weight of CO (lb/lb-mole) = | 28.00 |
| Molecular Weight of $SO_2$ (lb/lb-mole) = | 64.00 |
| Molecular Weight of THC (propane) (lb/lb-mole) = | 44.00 |
| Molecular Weight of VOC (methane) (lb/lb-mole) = | 16.00 |
| Molecular Weight of $NH_3$ (lb/lb-mole) = | 17.03 |
| Molecular Weight of HCHO (lb/lb-mole) = | 30.03 |
| Molecular Weight of $CO_2$ (lb/lb-mole) = | 44.01 |

**40CFR60, App. A., RM 19, Table 19-1**

| | |
|---|---|
| Conversion Constant for NOx = | 0.0000001194351 |
| Conversion Constant for CO = | 0.0000000726839 |
| Conversion Constant for $SO_2$ = | 0.0000001661345 |
| Conversion Constant for THC = | 0.0000001142175 |
| Conversion Constant for VOC (methane) = | 0.0000000415336 |
| Conversion Constant for $NH_3$ = | 0.0000000442074 |
| Conversion Constant for HCHO = | 0.0000000779534 |
| Conversion Constant for $CO_2$ = | 0.0000001142434 |

NOTE: units are lb/ppm*ft$^3$

**Formulas:**

1. Corrected Raw Average ($C_{Gas}$), 40CFR60, App. A, RM 7E, Eq. 7E-5 (08/15/06)

$$C_{Gas} = (C_{Avg} - C_O) \times \left( \frac{C_{MA}}{C_M - C_O} \right)$$

2. Correction to % $O_2$, 40CFR60, App. A, RM 20, Eq. 20-5 (11/26/02)

$$C_{adj} = C_{Gas(Target)} \times \left( \frac{20.9\% - AdjFactor}{20.9\% - C_{Gas(O2)}} \right)$$

3. Correction to % $O_2$ and ISO Conditions

$$C_{ISO} = C_{Adj} \times \sqrt{\frac{P_r}{P_o}} \times e^{(19 \times (H_O - 0.00633))} \times \left( \frac{288}{T_a} \right)^{1.53}$$

4. Method 19 stack exhaust flow (scfh) [ref. EPA EMC FAQ Method 19]

$$Q_S = \left( \frac{FFactor \times Q_f \times HHV}{1{,}000{,}000} \right) \times \left( \frac{20.9\%}{20.9\% - C_{Gas(O2)}} \right)$$

5. Emission Rate in lb/hr

$$E_{lb/hr} = \frac{C_{Gas}}{10^6} \times \frac{Q_S \times MW}{G}$$

6. Emission Rate in tons per year

$$E_{ton/yr} = \frac{E_{lb/hr} \times hr_{year}}{2000}$$

7. Emission Concentration in lb/MMBtu ($O_2$ based)

$$E_{lb/MMBtu} = \frac{C_{Gas} \times F_d Factor \times Conv_C \times 20.9\%}{20.9\% - C_{Gas(O2)}}$$

8. Emission Concentration in g/hp*hr

$$E_{g/hp \cdot hr} = \frac{E_{lb/hr} \times 453.6}{mw \times 1341.022} or \frac{E_{lb/hr} \times 453.6}{hp}$$

**RATA SHEET CALCULATIONS**

d = Reference Method Data - CEMS Data

$S_d$ = Standard Deviation

CC = Confident Coefficient

n = number of runs

$t_{0.025}$ = 2.5 percent confidence coefficient T-values

RA = relative accuracy

ARA = alternative relative accuracy

BAF = Bias adjustment factor

| n | t | n | t | n | t |
|---|---|---|---|---|---|
| 2 | 12.706 | 7 | 2.447 | 12 | 2.201 |
| 3 | 4.303 | 8 | 2.365 | 13 | 2.179 |
| 4 | 3.182 | 9 | 2.306 | 14 | 2.160 |
| 5 | 2.776 | 10 | 2.262 | 15 | 2.145 |
| 6 | 2.571 | 11 | 2.228 | 16 | 2.131 |

1. Difference

$$d = \sum_{i=1}^{n} d_i$$

2. Standard Deviation

$$S_d = \sqrt{\frac{\sum_{i=1}^{n} d_i^2 - \left[ \frac{\left( \sum_{i=1}^{n} d_i \right)^2}{n} \right]}{n-1}}$$

3. Confident Coefficient

$$CC = t_{0.025} \times \frac{S_d}{\sqrt{n}}$$

4. Relative Accuracy

$$RA = \frac{|d_{AVG}| + |CC|}{RM_{AVG}} \times 100$$

5. Alternative Relative Accuracy

$$ARA = \frac{|d_{AVG}| + |CC|}{AS} \times 100$$

5. Bias Adjustment Factor

$$BAF = 1 + \left( \frac{|d_{AVG}|}{CEM_{AVG}} \right)$$

**RM 7E, (08-15-06), 12.1 Nomenclature. The terms used in the equations are defined as follows:**

ACE = Analyzer calibration error, percent of calibration span.
$B_{WS}$ = Moisture content of sample gas as measured by Method 4 or other approved method, percent/100.
$C_{Avg}$ = Average unadjusted gas concentration indicated by data recorder for the test run.
$C_D$ = Pollutant concentration adjusted to dry conditions.
$C_{Dir}$ = Measured concentration of a calibration gas (low, mid, or high) when introduced in direct calibration mode.
$C_{Gas}$ = Average effluent gas concentration adjusted for bias.
$C_M$ = Average of initial and final system calibration bias (or 2-point system calibration error) check responses for the upscale calibration gas.
$C_{MA}$ = Actual concentration of the upscale calibration gas, ppmv.
$C_O$ = Average of the initial and final system calibration bias (or 2-point system calibration error) check responses from the low-level (or zero) calibration gas.
$C_S$ = Measured concentration of a calibration gas (low, mid, or high) when introduced in system calibration mode.
$C_{SS}$ = Concentration of NOx measured in the spiked sample.
$C_{Spike}$ = Concentration of NOx in the undiluted spike gas.
$C_{Calc}$ = Calculated concentration of NOx in the spike gas diluted in the sample.
$C_V$ = Manufacturer certified concentration of a calibration gas (low, mid, or high).
$C_W$ = Pollutant concentration measured under moist sample conditions, wet basis.
CS = Calibration span.
D = Drift assessment, percent of calibration span.
$E_p$ = The predicted response for the low-level and mid-level gases based on a linear response line between the zero and high-level response.
$Eff_{NO2}$ = $NO_2$ to NO converter efficiency, percent.
H = High calibration gas, designator.
L = Low calibration gas, designator.
M = Mid calibration gas, designator.
NOFinal = The average NO concentration observed with the analyzer in the NO mode during the converter efficiency test in Section 16.2.2.
NOxCorr = The NOx concentration corrected for the converter efficiency.
NOxFinal = The final NOx concentration observed during the converter efficiency test in Section 16.2.2.
NOxPeak = The highest NOx concentration observed during the converter efficiency test in Section 16.2.2.
$Q_{Spike}$ = Flow rate of spike gas introduced in system calibration mode, L/min.
$Q_{Total}$ = Total sample flow rate during the spike test, L/min.
R = Spike recovery, percent.
SB = System bias, percent of calibration span.
$SB_i$ = Pre-run system bias, percent of calibration span.
$SB_f$ = Post-run system bias, percent of calibration span.
SB / $D_{Alt}$ = Alternative absolute difference criteria to pass bias and/or drift checks.
SCE = System calibration error, percent of calibration span.
$SCE_i$ = Pre-run system calibration error, percent of calibration span.
$SCE_{final}$ = Post-run system calibration error, percent of calibration span.
Z = Zero calibration gas, designator.

**40CFR60.355(b)(1), (09-20-06), Nomenclature. The terms used in the equations are defined as follows:**

$P_r$ = reference combustor inlet absolute pressure at 101.3 kilopascals ambient pressure, mm Hg
$P_o$ = observed combustor inlet absolute pressure at test, mm Hg
$H_o$ = observed humidity of ambient air, g $H_2O$/g air
e = transcendental constant, 2.718
$T_a$ = ambient temperature, K

**Small Engine and FTIR Nomenclature. The terms used in the equations are defined as follows:**

bhp = brake horsepower
hp = horsepower
$Q_{sys}$ = system flow (lpm)
$Q_m$ = matrix spike flow (lpm)

**RM 19, (07-29-06), 12.1 Nomenclature. The terms used in the equations are defined as follows:**

AdjFactor = Percent oxygen or carbon dioxide adjustment applied to a target pollutant
$B_{wa}$ = Moisture fraction of ambient air, percent.
Btu = British thermal unit
$\%_C$ = Concentration of carbon from an ultimate analysis of fuel, weight percent.
$\%_{CO2d}$,$\%_{CO2w}$ = Concentration of carbon dioxide on a dry and wet basis, respectively, percent.
CIP / CDP = Combustor inlet pressure / compressor discharge pressure (mm Hg); note, some manufactures reference as PCD.
E = Pollutant emission rate, ng/J (lb/million Btu).
$E_a$ = Average pollutant rate for the specified performance test period, ng/J (lb/million Btu).
$E_{ao}$, $E_{ai}$ = Average pollutant rate of the control device, outlet and inlet, respectively, for the performance test period, ng/J (lb/million Btu).
$E_{bi}$ = Pollutant rate from the steam generating unit, ng/J (lb/million Btu).
$E_{bo}$ = Pollutant emission rate from the steam generating unit, ng/J (lb/million Btu).
$E_{ci}$ = Pollutant rate in combined effluent, ng/J (lb/million Btu).
$E_{co}$ = Pollutant emission rate in combined effluent, ng/J (lb/million Btu).
$E_d$ = Average pollutant rate for each sampling period (e.g.,24-hr Method 6B sample or 24-hr fuel sample) or for each fuel lot (e.g., amount of fuel bunkered), ng/J (lb/million Btu).
$E_{di}$ = Average inlet $SO_2$ rate for each sampling period d, ng/J (lb/million Btu).
$E_g$ = Pollutant rate from gas turbine, ng/J (lb/million Btu).
$E_{ga}$ = Daily geometric average pollutant rate, ng/J (lbs/million Btu) or ppm corrected to 7 percent $O_2$.
$E_{jo}$,$E_{ji}$ = Matched pair hourly arithmetic average pollutant rate, outlet and inlet, respectively, ng/J (lb/million Btu) or ppm corrected to 7 percent $O_2$.
$E_h$ = Hourly average pollutant, ng/J (lb/million Btu).
$E_{hj}$ = Hourly arithmetic average pollutant rate for hour "j," ng/J (lb/million Btu) or ppm corrected to 7 percent $O_2$.
EXP = Natural logarithmic base (2.718) raised to the value enclosed by brackets.
Fc = Ratio of the volume of carbon dioxide produced to the gross calorific value of the fuel from Method 19
$F_d$, $F_w$, $F_c$ = Volumes of combustion components per unit of heat content, scm/J (scf/million Btu).
$ft^3$ = cubic feet
G = ideal gas conversion factor
(385.23 SCF/lb-mol at 68 deg F & 14.696 psia)
GCM = gross Btu per SCF (constant, compound based)
GCV = Gross calorific value of the fuel consistent with the ultimate analysis, kJ/kg (Btu/lb).
$GCV_p$, $GCV_r$ = Gross calorific value for the product and raw fuel lots, respectively, dry basis, kJ/kg (Btu/lb).
$\%_H$ = Concentration of hydrogen from an ultimate analysis of fuel, weight percent.
$H_b$ = Heat input rate to the steam generating unit from fuels fired in the steam generating unit, J/hr (million Btu/hr).
$H_g$ = Heat input rate to gas turbine from all fuels fired in the gas turbine, J/hr (million Btu/hr).
$\%_{H2O}$ = Concentration of water from an ultimate analysis of fuel, weight percent.
$H_r$ = Total numbers of hours in the performance test period (e.g., 720 hours for 30-day performance test period).
K = volume of combustion component per pound of component (constant)
K = Conversion factor, $10^{-5}$ (kJ/J)/(%) [$10^6$ Btu/million Btu].
$K_c$ = (9.57 scm/kg)/% [(1.53 scf/lb)/%].
$K_{cc}$ = (2.0 scm/kg)/% [(0.321 scf/lb)/%].
$K_{hd}$ = (22.7 scm/kg)/% [(3.64 scf/lb)/%].
$K_{hw}$ = (34.74 scm/kg)/% [(5.57 scf/lb)/%].
$K_n$ = (0.86 scm/kg)/% [(0.14 scf/lb)/%].
$K_o$ = (2.85 scm/kg)/% [(0.46 scf/lb)/%].
$K_s$ = (3.54 scm/kg)/% [(0.57 scf/lb)/%].
$K_{sulfur}$ = $2x10^4$ Btu/wt%-MMBtu
$K_w$ = (1.30 scm/kg)/% [(0.21 scf/lb)/%].
lb = pound
ln = Natural log of indicated value.
$L_p$,$L_r$ = Weight of the product and raw fuel lots, respectively, metric ton (ton).
$\%_N$ = Concentration of nitrogen from an ultimate analysis of fuel, weight percent.
$M_{\%}$ = mole percent
mol = mole
MW = molecular weight (lb/lb-mol)
$MW_{AIR}$ = molecular weight of air ( 28.9625 lb/lb-mole)[1]
NCM = net Btu per SCF (constant based on compound)
$\%_O$ = Concentration of oxygen from an ultimate analysis of fuel, weight percent.
$\%_{O2d}$, $\%_{O2w}$ = Concentration of oxygen on a dry and wet basis, respectively, percent.
$P_B$ = barometric pressure, in Hg
$P_s$ = Potential SO2 emissions, percent.
$\%_S$ = Sulfur content of as-fired fuel lot, dry basis, weight percent.
$S_e$ = Standard deviation of the hourly average pollutant rates for each performance test period, ng/J (lb/million Btu).
$\%_{Sf}$ = Concentration of sulfur from an ultimate analysis of fuel, weight percent.
S(wt%) = weight percent of sulfur, per lab analysis by appropriate ASTM standard
$S_i$ = Standard deviation of the hourly average inlet pollutant rates for each performance test period, ng/J (lb/million Btu).
$S_o$ = Standard deviation of the hourly average emission rates for each performance test period, ng/J (lb/million Btu).
$\%S_p$, $\%S_r$ = Sulfur content of the product and raw fuel lots respectively, dry basis, weight percent.
SCF = standard cubic feet
SH = specific humidity, pounds of water per pound of air
$t_{0.95}$ = Values shown in Table 19-3 for the indicated number of data points n.
$T_{amb}$ = ambient temperature, °F
W/D Factor = 1.0236 = conv. at 14.696 psia and
68 deg F (ref. Civil Eng. Ref. Manual, 7th Ed.)
$X_{CO2}$=$CO_2$ Correction factor, percent.
$X_k$ = Fraction of total heat input from each type of fuel k.

**EXAMPLE CALCULATIONS (INFORMATION)**

**Specific Humidity ($RH_{sp}$)**

Note: RHsp (gr/lb) calculated using temperature, relative humidity, and barometric pressure with psychrometric chart, psychrometric calculator, or built in psychrometric algorithm.

$$RH_{sp}(lb/lb) = \left[\left(\frac{gr}{lb}\right) \times \frac{lb}{7000\ gr}\right]$$

$RH_{sp}$= 26.63 gr / lb x 1 lb / 7000 gr = 0.003805 lb $H_2O$ / lb Air

**EXAMPLE CALCULATIONS (CALIBRATION)**

**Analyzer Calibration Error**

RM 7E, (02-27-14), 12.2 Analyzer Calibration Error. For non-dilution systems, use Equation 7E-1 to calculate the analyzer calibration error for the low-, mid-, and high-level calibration gases. (calc for NOx analyzer mid gas, if applicable)

$$ACE = \left(\frac{C_{Dir} - C_V}{CS}\right) \times 100$$ Eq. 7E-1

ACE = (4.90 ppm - 4.99 ppm) / 8.90 ppm x 100 = -1.01 %

**EXAMPLE CALCULATIONS (BIAS, DRIFT, AND CORRECTED RAW AVERAGE)**

**System Bias**

RM 7E, (02-27-14), 12.3 System Bias. For non-dilution systems, use Equation 7E-2 to calculate the system bias separately for the low-level and upscale calibration gases. (calc for NOx analyzer upscale gas, Run 1 initial bias, if applicable)

$$SB = \left(\frac{C_S - C_{Dir}}{CS}\right) \times 100$$ Eq. 7E-2

SB = (4.82 ppm - 4.90 ppm) / 8.90 ppm x 100 = -0.90 %

**Drift Assessment**

RM 7E, (02-27-14), 12.5 Drift Assessment. Use Equation 7E-4 to separately calculate the low-level and upscale drift over each test run. (calc for NOx analyzer upscale drift, Run 1, if applicable)

$$D = \left|SB_{final} - SB_t\right|$$ Eq. 7E-4

D = | -1.01 % - -0.90 % | = 0.11 %

**Alternative Drift and Bias**

RM 7E, (02-27-14), 13.2 / 13.3 System Bias and Drift. Alternatively, the results are acceptable if |Cs – Cdir| is ≤ 0.5 ppmv or if |Cs – Cv| is ≤ 0.5 ppmv (as applicable). (calc for NOx analyzer initial upscale, Run 1, if applicable)

$$SB / D_{Alt} = \left|C_S - C_{Dir}\right|$$ Eq. Section 13.2 and 13.3

$SB / D_{Alt}$ = | 4.82 ppm - 4.90 ppm | = 0.08 ppm

**Bias Adjusted Average**

RM 7E, (02-27-14), 12.6 Effluent Gas Concentration. For each test run, calculate Cavg, the arithmetic average of all valid NOx concentration values (e.g., 1-minute averages). Then adjust the value of Cavg for bias, using Equation 7E-5b. (calc for NOx analyzer, Run 1, if applicable)

$$C_{Gas} = \left(C_{Avg} - C_O\right) \times \left(\frac{C_{MA}}{C_M - C_O}\right)$$ Eq. 7E-5b

$C_{Gas}$ = (2.90 ppm - 0.01 ppm) (4.99 ppm / (4.82 ppm - 0.01 ppm)) = 3.01 ppm

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (RUNS)**

**Stack Exhaust Flow ($Q_S$) - RM19**

$$Q_S = \left(\frac{FFactor \times Q_f \times HHV}{1{,}000{,}000}\right) \times \left(\frac{20.9\%}{20.9\% - C_{Gas(O2)}}\right)$$

Note: Equation presented in EPA Emission Measurement Center (EMC), Frequently Asked Questions (FAQ) for Method 19

$$Q_S = \frac{8{,}710.00\ SCF}{MMBtu} \times \frac{2{,}593{,}600.00\ SCF}{hr} \times \frac{1{,}050.00\ Btu}{SCF} \times \frac{MMBtu}{10^6\ Btu} \times \left[\frac{20.90\%}{20.9\% - 11.9\ \%}\right] = 54{,}863{,}375.38\ SCFH$$

**Moisture Correction**

RM 7E, (02-27-14), 12.10 Moisture Correction. Use Equation 7E-10 if your measurements need to be corrected to a dry basis. (calc for NOx analyzer, Run 1, if applicable) Note: Calculations may not match as Run 1 results are typically also bias adjusted

$$C_W = C_D \times (1 - B_{WS})$$

$$C_D = \frac{C_W}{1 - B_{WS}}$$ Eq. 7E-10 $C_D = \frac{2.80\ ppmvw}{1 - 0.07} = 3.01\ ppmvd$ or inversely, $C_W = 3.01\ ppmvd \times \left[1 - 0.07\right] = 2.80\ ppmvw$

**Diluent-Corrected Pollutant Concentration, $O_2$ Based**

RM 20, (11-26-02), 7.3.1 Correction of Pollutant Concentration Using $O_2$ Concentration. Calculate the $O_2$ corrected pollutant concentration, as follows: (calc for NOx gas, Run 1, if applicable) [now contained in applicable Subpart]

$$C_{adj} = C_{Gas(Target)} \times \left(\frac{20.9\% - AdjFactor}{20.9\% - C_{Gas(O2)}}\right)$$ Eq. 20-4 $C_{adj} = 3.01\ ppm \times \left[\frac{20.9\% - 15.00\ \%}{20.9\% - 11.86\ \%}\right] = 1.96\ ppm@15\%O_2$

**Emissions Rate (lb/hr)**

Calculation for pound per hour emission rate. Calculate, as follows: (calc for NOx gas Run 1, if applicable)

$$E_{lb/hr} = \frac{C_{Gas}}{10^6} \times \frac{Q_S \times MW}{G}$$ $E_{lb/hr} = \frac{3.01\ ppmvd}{10^6\ ppm/part} \times \frac{54{,}863{,}375\ DSCFH \times 46.01\ lb/lb\text{-}mol}{385.23\ SCF/lb\text{-}mol} = \frac{19.70\ lb}{hr}$

**Emissions Rate (lb/MMBtu)**

RM 19, (02-27-14), 12.2 Emission Rates of PM, $SO_2$, and NOx. Select from the following sections the applicable procedure to compute the PM, $SO_2$, or NOx emission rate (E) in ng/J (lb/million Btu). (calc for NOx gas Run 1, if applicable)

**Oxygen Based**

12.2.1 Oxygen-Based F Factor, Dry Basis. When measurements are on a dry basis for both $O_2$ ($\%O_2d$) and pollutant (Cd) concentrations, use the following equation:

$$E_{lb/MMBtu} = \frac{C_{Gas} \times F_d Factor \times Conv_C \times 20.9\%}{20.9\% - C_{Gas(O2)}}$$ Eq. 19-1

$$E_{lb/MMBtu} = \frac{3.01\ ppm \times 8{,}710.00\ SCF/MMBtu \times 0.0000001194\ lb/ppm*ft^3 \times 20.9\%}{20.9\% - 11.86\ \%} = \frac{0.007\ lb}{MMBtu}$$

**Conversion Constant**

Convc for NOx

$$Conv_c(lb/ppm \cdot ft^3) = \frac{\frac{MW}{G}}{10^6}$$

$$Conv_c = \frac{\frac{46.01\ lb}{lb\text{•}mole} \times \frac{lb\text{•}mole}{385.23\ SCF}}{10^6} = \frac{0.0000001194\ lb}{ppm\text{-}ft^3}$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (RATA RESULTS)**

**Difference (d)**

40 CFR 75, App A, (12-17-09), 7.3.1 Arithmetic Mean. Calculate the arithmetic mean of the differences, d , of a data set as follows. (calc for NOx lb/MMBtu data, if applicable. Note: This is an example calculation which may not have any bearing on the actual test requirements.)

$$d = \sum_{i=1}^{n} d_i$$ Eq. A-7

d = 0.007 lb/MMBtu - 0.006 lb/MMBtu = 0.000 lb/MMBtu

**Standard Deviation**

40 CFR 75, App A, (12-17-09), 7.3.2 Standard Deviation. Calculate the standard deviation, Sd, of a data set as follows:
(calc for NOx lb/MMBtu data, if applicable. Note: This is an example calculation which may not have any bearing on the actual test requirements.)

$$S_d = \sqrt{\frac{\sum_{i=1}^{n} d_i^2 - \frac{\left[\left(\sum_{i=1}^{n} d_i\right)^2\right]}{n}}{n-1}}$$ Eq. A-8

$$S_d = \sqrt{\frac{0.000 \text{ lb/MMBtu}^2 - \frac{\left[0.003 \text{ lb/MMBtu}\right]^2}{9}}{9 - 1}} = 0.001 \text{ lb/MMBtu}$$

**Confidence Coefficient**

40 CFR 75, App A, (12-17-09), 7.3.3 Confidence Coefficient. Calculate the confidence coefficient (one-tailed), cc, of a data set as follows. (calc for NOx lb/MMBtu data, if applicable. Note: This is an example calculation which may not have any bearing on the actual test requirements.)

$$CC = t_{0.025} \times \frac{S_d}{\sqrt{n}}$$ Eq. A-9

CC = 2.306 x $\frac{0.001 \text{ lb/MMBtu}}{\sqrt{9}}$ = 0.001 lb/MMBtu

| T-Values | n | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| | $t_{0.025}$ | 12.706 | 4.303 | 3.182 | 2.776 | 2.571 | 2.447 | 2.365 | 2.306 |

2.5 percent confidence coefficients

**Relative Accuracy**

40 CFR 75, App A, (12-17-09), 7.3.4 Relative Accuracy. Calculate the relative accuracy of a data set using the following equation. (calc for NOx lb/MMBtu data, if applicable. Note: This is an example calculation which may not have any bearing on the actual test requirements.)

$$RA = \frac{|d_{AVG}| + |CC|}{RM_{AVG}} \times 100$$ Eq. A-10

RA = $\frac{|0.000 \text{ lb/MMBtu}| + |0.001 \text{ lb/MMBtu}|}{0.007 \text{ lb/MMBtu}}$ x 100 = 14.99 %

**Bias Adjustment Factor (BAF)**

40 CFR 75, App A, (12-17-09), 7.6.5 Bias Adjustment. (a) If the monitor or monitoring system fails to meet the bias test requirement, adjust the value obtained from the monitor using the following equation: (calc for NOx lb/MMBtu data, if applicable. Note: This is an example calculation which may not have any bearing on the actual test requirements.)

$$BAF = 1 + \left(\frac{|d_{AVG}|}{CEM_{AVG}}\right)$$ Eq. A-12

$d_{AVG}$= 0.000 < |CC| = 0.001 ⇨ BAF = 1 + $\frac{|\quad| \text{ lb/MMBtu}}{\text{lb/MMBtu}}$ = 1.000 lb/MMBtu

Note: BAF only applies if the mean difference (d) is greater than the absolute value of the confidence coefficient.

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

# APPENDIX B

# CEMS AND REFERENCE METHOD DATA

# Cricket Valley Energy Center LLC

| | |
|---|---|
| **Air Permit Number:** | 3-1326-00275/00009 |
| **Plant Name or Location:** | Cricket Valley Energy Center |
| **Date:** | February 6, 2020 |
| **Project Number:** | cis-19-cricketvalley.ny-start#1 |
| **Manufacturer & Equipment:** | General Electric |
| **Model:** | 7F.05 |
| **Unit Number:** | U-00001 |
| **Test Load:** | Base Load |
| **Tester(s) / Test Unit(s):** | RW/220 |

| | | RUN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **UNITS** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
| **Start Time** | hh:mm:ss | 11:36:10 | 12:10:10 | 12:42:10 | 13:20:10 | 13:55:10 | 14:27:10 | 15:01:10 | 15:36:10 | 16:08:10 | 16:46:10 |
| **End Time** | hh:mm:ss | 11:56:40 | 12:30:40 | 13:02:40 | 13:40:40 | 14:15:40 | 14:47:40 | 15:21:40 | 15:56:40 | 16:28:40 | 17:06:40 |
| **Bar. Pressure** | in. Hg | 29.67 | 29.65 | 29.67 | 29.58 | 29.57 | 29.54 | 29.54 | 29.53 | 29.51 | 29.53 |
| **Amb. Temp.** | °F | 33 | 34 | 35 | 37 | 38 | 38 | 35 | 36 | 36 | 35 |
| **Rel. Humidity** | % | 96 | 92 | 90 | 84 | 80 | 79 | 87 | 86 | 87 | 88 |
| **Spec. Humidity** | lb water / lb air | 0.003805 | 0.003798 | 0.003864 | 0.003916 | 0.003881 | 0.003836 | 0.003751 | 0.003860 | 0.003908 | 0.003796 |
| **Turbine Fuel Flow** | SCFH | 2,593,600 | 2,591,200 | 2,592,160 | 2,589,920 | 2,588,170 | 2,587,280 | 2,587,680 | 2,587,770 | 2,587,110 | 2,582,950 |
| **Duct Burner Fuel Flow** | SCFH | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total Fuel Flow** | SCFH | 2,593,600 | 2,591,200 | 2,592,160 | 2,589,920 | 2,588,170 | 2,587,280 | 2,587,680 | 2,587,770 | 2,587,110 | 2,582,950 |
| **Power Output** | megawatts | 373.4 | 373.2 | 373.3 | 372.6 | 372.8 | 372.7 | 372.7 | 372.8 | 372.6 | 372.2 |
| **$O_2$ CEMS Data** | %vd | 11.99 | 12.00 | 11.99 | 12.00 | 11.98 | 11.99 | 11.99 | 12.00 | 12.00 | 12.01 |
| **NOx CEMS Data** | ppmvd@15%$O_2$ | 1.70 | 1.82 | 1.71 | 1.70 | 1.75 | 1.81 | 1.72 | 1.79 | 1.70 | 1.47 |
| | lb/hr | 17.00 | 18.18 | 17.09 | 16.95 | 17.41 | 18.04 | 17.15 | 17.85 | 16.98 | 14.60 |
| | lb/MMBtu | 0.0063 | 0.0067 | 0.0063 | 0.0063 | 0.0064 | 0.0067 | 0.0063 | 0.0066 | 0.0063 | 0.0054 |
| **CO CEMS Data** | ppmvd@15%$O_2$ | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | lb/hr | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **$NH_3$ CEMS Data** | ppmvd@15%$O_2$ | 1.46 | 1.30 | 1.44 | 1.47 | 1.45 | 1.26 | 1.38 | 1.29 | 1.44 | 1.81 |
| | lb/hr | 5.42 | 4.80 | 5.35 | 5.41 | 5.35 | 4.62 | 5.06 | 4.73 | 5.41 | 6.62 |
| **$NH_3$ RM Data** | ppmvd@15%$O_2$ | 1.44 | 1.47 | 1.56 | 1.53 | 1.56 | 1.40 | 1.41 | 1.47 | 1.44 | 1.72 |
| | lb/hr | 5.34 | 5.46 | 5.78 | 5.68 | 5.78 | 5.17 | 5.22 | 5.45 | 5.33 | 6.35 |

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# CEMS AND REFERENCE METHOD DATA

## CEMS Data
## (provided by Cricket Valley Energy Center LLC)

**Relative Accuracy Test Data**
**CEMS Results (NOx)**
**General Electric, 7F.05, Unit #U-00001**

| | |
|---|---|
| Parameter: | Oxides of Nitrogen |
| Date of Test: | February 6, 2020 |
| Reference Method: | EPA Method 7E |
| CEMS Analyzer Type: | Chemiluminescence |
| Manufacturer: | TAPI |
| Model #: | T200M |
| Serial #: | 1012 |

| RUN # | RUN TIME | UNIT LOAD | CONCENTRATIONS | | RATES | |
|---|---|---|---|---|---|---|
| | | (MW) | (ppmvd) | (ppmvd@15%$O_2$) | (lb/hr) | (lb/MMBtu) |
| 1 | 11:36 - 11:56 | 373.4 | | 1.70 | 17.00 | 0.0063 |
| 2 | 12:10 - 12:30 | 373.2 | | 1.82 | 18.18 | 0.0067 |
| 3 | 12:42 - 13:02 | 373.3 | | 1.71 | 17.09 | 0.0063 |
| 4 | 13:20 - 13:40 | 372.6 | | 1.70 | 16.95 | 0.0063 |
| 5 | 13:55 - 14:15 | 372.8 | | 1.75 | 17.41 | 0.0064 |
| 6 | 14:27 - 14:47 | 372.7 | | 1.81 | 18.04 | 0.0067 |
| 7 | 15:01 - 15:21 | 372.7 | | 1.72 | 17.15 | 0.0063 |
| 8 | 15:36 - 15:56 | 372.8 | | 1.79 | 17.85 | 0.0066 |
| 9 | 16:08 - 16:28 | 372.6 | | 1.70 | 16.98 | 0.0063 |
| 10 | 16:46 - 17:06 | 372.2 | | 1.47 | 14.60 | 0.0054 |
| 11 | | | | | | |
| 12 | | | | | | |

**Relative Accuracy Test Data**
**CEMS Results (CO)**
**General Electric, 7F.05, Unit #U-00001**

| | |
|---|---|
| Parameter: | Carbon Monoxide |
| Date of Test: | February 6, 2020 |
| Reference Method: | EPA Method 10 |
| CEMS Analyzer Type: | Infrared Absorption |
| Manufacturer: | TAPI |
| Model #: | T300M |
| Serial #: | 518 |

| RUN # | RUN TIME | UNIT LOAD | CONCENTRATIONS | | RATES | |
|---|---|---|---|---|---|---|
| | | (MW) | (ppmvd) | (ppmvd@15%$O_2$) | (lb/hr) | (lb/MMBtu) |
| 1 | 11:36 - 11:56 | 373.4 | | 0.00 | 0.00 | |
| 2 | 12:10 - 12:30 | 373.2 | | 0.00 | 0.00 | |
| 3 | 12:42 - 13:02 | 373.3 | | 0.00 | 0.00 | |
| 4 | 13:20 - 13:40 | 372.6 | | 0.00 | 0.00 | |
| 5 | 13:55 - 14:15 | 372.8 | | 0.00 | 0.00 | |
| 6 | 14:27 - 14:47 | 372.7 | | 0.00 | 0.00 | |
| 7 | 15:01 - 15:21 | 372.7 | | 0.00 | 0.00 | |
| 8 | 15:36 - 15:56 | 372.8 | | 0.00 | 0.00 | |
| 9 | 16:08 - 16:28 | 372.6 | | 0.00 | 0.00 | |
| 10 | 16:46 - 17:06 | 372.2 | | 0.00 | 0.00 | |
| 11 | | | | | | |
| 12 | | | | | | |

**Relative Accuracy Test Data**
**CEMS Results ($NH_3$)**
**General Electric, 7F.05, Unit #U-00001**

| | |
|---|---|
| Parameter: | Ammonia |
| Date of Test: | February 6, 2020 |
| Reference Method: | EPA Method 7E |
| CEMS Analyzer Type: | Dual NOx w/ NH3 conversion |
| Manufacturer: | TAPI |
| Model #: | T200M |
| Serial #: | 1047 |

| RUN # | RUN TIME | UNIT LOAD | CONCENTRATIONS | | RATES | |
|---|---|---|---|---|---|---|
| | | (MW) | (ppmvd) | (ppmvd@15%$O_2$) | (lb/hr) | (lb/MMBtu) |
| 1 | 11:36 - 11:56 | 373.4 | | 1.46 | 5.42 | |
| 2 | 12:10 - 12:30 | 373.2 | | 1.30 | 4.80 | |
| 3 | 12:42 - 13:02 | 373.3 | | 1.44 | 5.35 | |
| 4 | 13:20 - 13:40 | 372.6 | | 1.47 | 5.41 | |
| 5 | 13:55 - 14:15 | 372.8 | | 1.45 | 5.35 | |
| 6 | 14:27 - 14:47 | 372.7 | | 1.26 | 4.62 | |
| 7 | 15:01 - 15:21 | 372.7 | | 1.38 | 5.06 | |
| 8 | 15:36 - 15:56 | 372.8 | | 1.29 | 4.73 | |
| 9 | 16:08 - 16:28 | 372.6 | | 1.44 | 5.41 | |
| 10 | 16:46 - 17:06 | 372.2 | | 1.81 | 6.62 | |
| 11 | | | | | | |
| 12 | | | | | | |

**Relative Accuracy Test Data**
**CEMS Results ($O_2$)**
**General Electric, 7F.05, Unit #U-00001**

| | |
|---|---|
| Parameter: | Oxygen |
| Date of Test: | February 6, 2020 |
| Reference Method: | EPA Method 3A |
| CEMS Analyzer Type: | Paramagnetic Cell |
| Manufacturer: | TAPI |
| Model #: | T803 |
| Serial #: | 128 |

| RUN # | RUN TIME | UNIT LOAD (MW) | CONC. (%vd) |
|---|---|---|---|
| 1 | 11:36 - 11:56 | 373.4 | 11.99 |
| 2 | 12:10 - 12:30 | 373.2 | 12.00 |
| 3 | 12:42 - 13:02 | 373.3 | 11.99 |
| 4 | 13:20 - 13:40 | 372.6 | 12.00 |
| 5 | 13:55 - 14:15 | 372.8 | 11.98 |
| 6 | 14:27 - 14:47 | 372.7 | 11.99 |
| 7 | 15:01 - 15:21 | 372.7 | 11.99 |
| 8 | 15:36 - 15:56 | 372.8 | 12.00 |
| 9 | 16:08 - 16:28 | 372.6 | 12.00 |
| 10 | 16:46 - 17:06 | 372.2 | 12.01 |
| 11 | | | |
| 12 | | | |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/6/2020 11:36 AM thru 2/6/2020 11:56 AM

| Timestamp | (Turbine 1) 75-NOx ppm 1-Min | (Turbine 1) NOx ppm @15% O2 1-Min | (Turbine 1) 75-NOx lb/mmBtu 1-Min | (Turbine 1) NOx lb/hr 1-Min | (Turbine 1) CO ppm Crnt-Hr | (Turbine 1) CO ppm @15% O2 1-Min | (Turbine 1) CO lb/hr 1-Min | (Turbine 1) NH3 Slip ppm @15% O2 1-Min | (Turbine 1) NH3 Slip lb/hr 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/6 11:36 | 2.60 | 1.72 | 0.0063 | 17.05 | 0.00 | 0.00 | 0.00 | 1.45 | 5.41 |
| 2/6 11:37 | 2.58 | 1.71 | 0.0063 | 17.15 | 0.00 | 0.00 | 0.00 | 1.45 | 5.44 |
| 2/6 11:38 | 2.57 | 1.70 | 0.0063 | 17.03 | 0.00 | 0.00 | 0.00 | 1.45 | 5.41 |
| 2/6 11:39 | 2.58 | 1.71 | 0.0063 | 17.09 | 0.00 | 0.00 | 0.00 | 1.45 | 5.43 |
| 2/6 11:40 | 2.58 | 1.71 | 0.0063 | 17.10 | 0.00 | 0.00 | 0.00 | 1.46 | 5.43 |
| 2/6 11:41 | 2.57 | 1.70 | 0.0063 | 17.06 | 0.00 | 0.00 | 0.00 | 1.47 | 5.42 |
| 2/6 11:42 | 2.56 | 1.69 | 0.0062 | 16.84 | 0.00 | 0.00 | 0.00 | 1.46 | 5.44 |
| 2/6 11:43 | 2.56 | 1.69 | 0.0062 | 16.90 | 0.00 | 0.00 | 0.00 | 1.45 | 5.45 |
| 2/6 11:44 | 2.57 | 1.70 | 0.0063 | 17.10 | 0.00 | 0.00 | 0.00 | 1.45 | 5.43 |
| 2/6 11:45 | 2.58 | 1.71 | 0.0063 | 17.09 | 0.00 | 0.00 | 0.00 | 1.45 | 5.43 |
| 2/6 11:46 | 2.58 | 1.71 | 0.0063 | 17.03 | 0.00 | 0.00 | 0.00 | 1.45 | 5.41 |
| 2/6 11:47 | 2.58 | 1.71 | 0.0063 | 17.09 | 0.00 | 0.00 | 0.00 | 1.47 | 5.43 |
| 2/6 11:48 | 2.56 | 1.70 | 0.0063 | 17.08 | 0.00 | 0.00 | 0.00 | 1.47 | 5.43 |
| 2/6 11:49 | 2.53 | 1.68 | 0.0062 | 16.76 | 0.00 | 0.00 | 0.00 | 1.47 | 5.41 |
| 2/6 11:50 | 2.52 | 1.67 | 0.0062 | 16.78 | 0.00 | 0.00 | 0.00 | 1.47 | 5.41 |
| 2/6 11:51 | 2.54 | 1.68 | 0.0062 | 16.86 | 0.00 | 0.00 | 0.00 | 1.47 | 5.44 |
| 2/6 11:52 | 2.56 | 1.69 | 0.0062 | 16.85 | 0.00 | 0.00 | 0.00 | 1.46 | 5.44 |
| 2/6 11:53 | 2.58 | 1.71 | 0.0063 | 17.00 | 0.00 | 0.00 | 0.00 | 1.46 | 5.40 |
| 2/6 11:54 | 2.59 | 1.71 | 0.0063 | 17.05 | 0.00 | 0.00 | 0.00 | 1.46 | 5.41 |
| 2/6 11:55 | 2.59 | 1.72 | 0.0063 | 17.04 | 0.00 | 0.00 | 0.00 | 1.47 | 5.41 |
| 2/6 11:56 | 2.59 | 1.72 | 0.0063 | 17.03 | 0.00 | 0.00 | 0.00 | 1.47 | 5.41 |
| Average (all) | 2.57 | 1.70 | 0.0063 | 17.00 | 0.00 | 0.00 | 0.00 | 1.46 | 5.42 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 2.52 | 1.67 | 0.0062 | 16.76 | 0.00 | 0.00 | 0.00 | 1.45 | 5.40 |
| Maximum (all) | 2.60 | 1.72 | 0.0063 | 17.15 | 0.00 | 0.00 | 0.00 | 1.47 | 5.45 |
| Average (valid values only) | 2.57 | 1.70 | 0.0063 | 17.00 | 0.00 | 0.00 | 0.00 | 1.46 | 5.42 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/6/2020 11:36 AM thru 2/6/2020 11:56 AM

| Timestamp | (Turbine 1) 75-O2 % 1-Min | (Turbine 1) CT Nat Gas Flow lb/sec 1-Min | (Turbine 1) DB Nat Gas Flow scf/min 1-Min | (Turbine 1) Total Gas Flow hscf/hr 1-Min | (Turbine 1) GT Megawatts 1-Min | (Turbine 1) ST Megawatts 1-Min | (Turbine 1) Total Megawatts 1-Min |
|---|---|---|---|---|---|---|---|
| 2/6 11:36 | 11.97 | 27.4 | 4017.2 | 25896.0 | 233.5 | 140.5 | 374.0 |
| 2/6 11:37 | 11.98 | 27.6 | 3987.5 | 26049.6 | 233.4 | 140.3 | 373.7 |
| 2/6 11:38 | 11.99 | 27.4 | 3970.8 | 25868.2 | 233.5 | 140.1 | 373.6 |
| 2/6 11:39 | 12.00 | 27.5 | 3962.6 | 25949.0 | 233.5 | 140.0 | 373.5 |
| 2/6 11:40 | 12.00 | 27.5 | 3987.9 | 25964.1 | 233.4 | 140.0 | 373.4 |
| 2/6 11:41 | 12.00 | 27.4 | 4063.0 | 25923.5 | 233.5 | 139.9 | 373.4 |
| 2/6 11:42 | 11.98 | 27.5 | 4050.6 | 26001.8 | 233.4 | 140.0 | 373.4 |
| 2/6 11:43 | 11.98 | 27.6 | 4028.2 | 26074.0 | 233.5 | 140.0 | 373.5 |
| 2/6 11:44 | 11.99 | 27.5 | 4006.0 | 25975.0 | 233.4 | 140.1 | 373.5 |
| 2/6 11:45 | 12.00 | 27.5 | 3984.5 | 25962.1 | 233.2 | 139.8 | 373.0 |
| 2/6 11:46 | 12.00 | 27.4 | 3969.8 | 25867.6 | 233.2 | 139.4 | 372.6 |
| 2/6 11:47 | 12.01 | 27.5 | 3968.2 | 25952.3 | 233.2 | 139.8 | 373.0 |
| 2/6 11:48 | 12.01 | 27.5 | 3959.6 | 25947.2 | 233.5 | 139.8 | 373.3 |
| 2/6 11:49 | 12.01 | 27.4 | 3956.3 | 25859.5 | 233.3 | 139.8 | 373.1 |
| 2/6 11:50 | 12.01 | 27.4 | 4001.8 | 25886.8 | 233.3 | 139.7 | 373.0 |
| 2/6 11:51 | 12.00 | 27.5 | 4087.0 | 26023.6 | 233.1 | 139.8 | 372.9 |
| 2/6 11:52 | 11.98 | 27.5 | 4062.8 | 26009.1 | 233.3 | 140.1 | 373.4 |
| 2/6 11:53 | 11.98 | 27.3 | 4030.6 | 25818.4 | 233.1 | 140.3 | 373.4 |
| 2/6 11:54 | 11.98 | 27.4 | 4015.4 | 25894.9 | 233.3 | 140.5 | 373.8 |
| 2/6 11:55 | 11.99 | 27.4 | 3994.3 | 25882.3 | 233.4 | 140.3 | 373.7 |
| 2/6 11:56 | 12.00 | 27.4 | 3964.0 | 25864.1 | 233.1 | 140.1 | 373.2 |
| Average (all) | 11.99 | 27.5 | 4003.2 | 25936.6 | 233.3 | 140.0 | 373.4 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 11.97 | 27.3 | 3956.3 | 25818.4 | 233.1 | 139.4 | 372.6 |
| Maximum (all) | 12.01 | 27.6 | 4087.0 | 26074.0 | 233.5 | 140.5 | 374.0 |
| Average (valid values only) | 11.99 | 27.5 | 4003.2 | 25936.6 | 233.3 | 140.0 | 373.4 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/6/2020 12:10 PM thru 2/6/2020 12:30 PM

| Timestamp | (Turbine 1) 75-NOx ppm 1-Min | (Turbine 1) NOx ppm @15% O2 1-Min | (Turbine 1) 75-NOx lb/mmBtu 1-Min | (Turbine 1) NOx lb/hr 1-Min | (Turbine 1) CO ppm Crnt-Hr | (Turbine 1) CO ppm @15% O2 1-Min | (Turbine 1) CO lb/hr 1-Min | (Turbine 1) NH3 Slip ppm @15% O2 1-Min | (Turbine 1) NH3 Slip lb/hr 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/6 12:10 | 2.75 | 1.83 | 0.0067 | 18.14 | 0.00 | 0.00 | 0.00 | 1.41 | 5.15 |
| 2/6 12:11 | 2.87 | 1.91 | 0.0070 | 18.92 | 0.00 | 0.00 | 0.00 | 1.40 | 5.13 |
| 2/6 12:12 | 2.93 | 1.94 | 0.0072 | 19.60 | 0.00 | 0.00 | 0.00 | 1.38 | 5.17 |
| 2/6 12:13 | 2.95 | 1.95 | 0.0072 | 19.56 | 0.00 | 0.00 | 0.00 | 1.34 | 4.89 |
| 2/6 12:14 | 2.93 | 1.93 | 0.0071 | 19.28 | 0.00 | 0.00 | 0.00 | 1.30 | 4.89 |
| 2/6 12:15 | 2.90 | 1.91 | 0.0070 | 19.05 | 0.00 | 0.00 | 0.00 | 1.27 | 4.63 |
| 2/6 12:16 | 2.87 | 1.89 | 0.0070 | 18.97 | 0.00 | 0.00 | 0.00 | 1.24 | 4.60 |
| 2/6 12:17 | 2.82 | 1.86 | 0.0069 | 18.62 | 0.00 | 0.00 | 0.00 | 1.23 | 4.59 |
| 2/6 12:18 | 2.79 | 1.85 | 0.0068 | 18.40 | 0.00 | 0.00 | 0.00 | 1.23 | 4.60 |
| 2/6 12:19 | 2.76 | 1.83 | 0.0067 | 18.11 | 0.00 | 0.00 | 0.00 | 1.23 | 4.59 |
| 2/6 12:20 | 2.72 | 1.81 | 0.0067 | 18.16 | 0.00 | 0.00 | 0.00 | 1.25 | 4.61 |
| 2/6 12:21 | 2.69 | 1.78 | 0.0066 | 17.89 | 0.00 | 0.00 | 0.00 | 1.25 | 4.61 |
| 2/6 12:22 | 2.68 | 1.78 | 0.0066 | 17.77 | 0.00 | 0.00 | 0.00 | 1.25 | 4.58 |
| 2/6 12:23 | 2.66 | 1.77 | 0.0065 | 17.61 | 0.00 | 0.00 | 0.00 | 1.27 | 4.61 |
| 2/6 12:24 | 2.63 | 1.75 | 0.0064 | 17.28 | 0.00 | 0.00 | 0.00 | 1.30 | 4.86 |
| 2/6 12:25 | 2.62 | 1.74 | 0.0064 | 17.28 | 0.00 | 0.00 | 0.00 | 1.30 | 4.86 |
| 2/6 12:26 | 2.63 | 1.75 | 0.0064 | 17.31 | 0.00 | 0.00 | 0.00 | 1.31 | 4.87 |
| 2/6 12:27 | 2.64 | 1.75 | 0.0065 | 17.60 | 0.00 | 0.00 | 0.00 | 1.32 | 4.88 |
| 2/6 12:28 | 2.64 | 1.75 | 0.0064 | 17.38 | 0.00 | 0.00 | 0.00 | 1.33 | 4.88 |
| 2/6 12:29 | 2.64 | 1.75 | 0.0064 | 17.32 | 0.00 | 0.00 | 0.00 | 1.34 | 4.87 |
| 2/6 12:30 | 2.65 | 1.76 | 0.0065 | 17.58 | 0.00 | 0.00 | 0.00 | 1.35 | 4.87 |
| Average (all) | 2.75 | 1.82 | 0.0067 | 18.18 | 0.00 | 0.00 | 0.00 | 1.30 | 4.80 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 2.62 | 1.74 | 0.0064 | 17.28 | 0.00 | 0.00 | 0.00 | 1.23 | 4.58 |
| Maximum (all) | 2.95 | 1.95 | 0.0072 | 19.60 | 0.00 | 0.00 | 0.00 | 1.41 | 5.17 |
| Average (valid values only) | 2.75 | 1.82 | 0.0067 | 18.18 | 0.00 | 0.00 | 0.00 | 1.30 | 4.80 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/6/2020 12:10 PM thru 2/6/2020 12:30 PM

| Timestamp | (Turbine 1) 75-O2 % 1-Min | (Turbine 1) CT Nat Gas Flow lb/sec 1-Min | (Turbine 1) DB Nat Gas Flow scf/min 1-Min | (Turbine 1) Total Gas Flow hscf/hr 1-Min | (Turbine 1) GT Megawatts 1-Min | (Turbine 1) ST Megawatts 1-Min | (Turbine 1) Total Megawatts 1-Min |
|---|---|---|---|---|---|---|---|
| 2/6 12:10 | 12.01 | 27.5 | 3903.4 | 25913.4 | 233.4 | 139.8 | 373.2 |
| 2/6 12:11 | 12.02 | 27.4 | 3971.7 | 25868.7 | 233.4 | 139.8 | 373.2 |
| 2/6 12:12 | 12.00 | 27.5 | 4113.4 | 26039.4 | 233.4 | 139.8 | 373.2 |
| 2/6 12:13 | 11.97 | 27.4 | 4189.3 | 25999.3 | 233.2 | 140.0 | 373.2 |
| 2/6 12:14 | 11.95 | 27.4 | 4166.8 | 25985.8 | 233.4 | 140.4 | 373.8 |
| 2/6 12:15 | 11.95 | 27.5 | 4122.3 | 26044.8 | 233.2 | 140.8 | 374.0 |
| 2/6 12:16 | 11.96 | 27.4 | 4080.4 | 25933.9 | 233.2 | 140.3 | 373.5 |
| 2/6 12:17 | 11.97 | 27.3 | 4039.6 | 25823.8 | 232.9 | 140.8 | 373.7 |
| 2/6 12:18 | 11.99 | 27.4 | 4007.9 | 25890.4 | 233.0 | 140.6 | 373.6 |
| 2/6 12:19 | 12.00 | 27.4 | 3976.2 | 25871.4 | 233.0 | 140.4 | 373.4 |
| 2/6 12:20 | 12.01 | 27.5 | 3955.5 | 25944.7 | 233.0 | 140.2 | 373.2 |
| 2/6 12:21 | 12.00 | 27.5 | 3945.2 | 25938.5 | 233.3 | 140.1 | 373.4 |
| 2/6 12:22 | 12.01 | 27.3 | 3936.6 | 25762.0 | 233.1 | 140.0 | 373.1 |
| 2/6 12:23 | 12.01 | 27.5 | 3921.5 | 25924.3 | 233.1 | 139.9 | 373.0 |
| 2/6 12:24 | 12.02 | 27.4 | 3914.6 | 25834.5 | 233.2 | 139.9 | 373.1 |
| 2/6 12:25 | 12.02 | 27.4 | 3912.0 | 25832.9 | 233.1 | 139.7 | 372.8 |
| 2/6 12:26 | 12.02 | 27.4 | 3990.8 | 25880.2 | 233.1 | 139.3 | 372.4 |
| 2/6 12:27 | 12.01 | 27.4 | 4042.6 | 25911.3 | 232.9 | 139.7 | 372.6 |
| 2/6 12:28 | 11.99 | 27.5 | 4026.0 | 25987.0 | 232.8 | 139.9 | 372.7 |
| 2/6 12:29 | 11.99 | 27.4 | 4013.7 | 25893.9 | 232.9 | 140.0 | 372.9 |
| 2/6 12:30 | 12.00 | 27.4 | 3988.8 | 25879.0 | 232.9 | 140.2 | 373.1 |
| Average (all) | 12.00 | 27.4 | 4010.4 | 25912.4 | 233.1 | 140.1 | 373.2 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 11.95 | 27.3 | 3903.4 | 25762.0 | 232.8 | 139.3 | 372.4 |
| Maximum (all) | 12.02 | 27.5 | 4189.3 | 26044.8 | 233.4 | 140.8 | 374.0 |
| Average (valid values only) | 12.00 | 27.4 | 4010.4 | 25912.4 | 233.1 | 140.1 | 373.2 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/6/2020 12:42 PM thru 2/6/2020 1:02 PM

| Timestamp | (Turbine 1) 75-NOx ppm 1-Min | (Turbine 1) NOx ppm @15% O2 1-Min | (Turbine 1) 75-NOx lb/mmBtu 1-Min | (Turbine 1) NOx lb/hr 1-Min | (Turbine 1) CO ppm Crnt-Hr | (Turbine 1) CO ppm @15% O2 1-Min | (Turbine 1) CO lb/hr 1-Min | (Turbine 1) NH3 Slip ppm @15% O2 1-Min | (Turbine 1) NH3 Slip lb/hr 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/6 12:42 | 2.59 | 1.72 | 0.0063 | 17.08 | 0.00 | 0.00 | 0.00 | 1.42 | 5.15 |
| 2/6 12:43 | 2.58 | 1.71 | 0.0063 | 17.13 | 0.00 | 0.00 | 0.00 | 1.43 | 5.17 |
| 2/6 12:44 | 2.58 | 1.71 | 0.0063 | 17.02 | 0.00 | 0.00 | 0.00 | 1.44 | 5.41 |
| 2/6 12:45 | 2.58 | 1.71 | 0.0063 | 16.97 | 0.00 | 0.00 | 0.00 | 1.44 | 5.38 |
| 2/6 12:46 | 2.58 | 1.71 | 0.0063 | 17.02 | 0.00 | 0.00 | 0.00 | 1.44 | 5.40 |
| 2/6 12:47 | 2.57 | 1.71 | 0.0063 | 17.06 | 0.00 | 0.00 | 0.00 | 1.44 | 5.42 |
| 2/6 12:48 | 2.58 | 1.71 | 0.0063 | 17.11 | 0.00 | 0.00 | 0.00 | 1.44 | 5.43 |
| 2/6 12:49 | 2.59 | 1.71 | 0.0063 | 17.17 | 0.00 | 0.00 | 0.00 | 1.42 | 5.18 |
| 2/6 12:50 | 2.62 | 1.73 | 0.0064 | 17.37 | 0.00 | 0.00 | 0.00 | 1.42 | 5.15 |
| 2/6 12:51 | 2.64 | 1.74 | 0.0064 | 17.36 | 0.00 | 0.00 | 0.00 | 1.43 | 5.15 |
| 2/6 12:52 | 2.65 | 1.75 | 0.0065 | 17.61 | 0.00 | 0.00 | 0.00 | 1.44 | 5.42 |
| 2/6 12:53 | 2.63 | 1.74 | 0.0064 | 17.34 | 0.00 | 0.00 | 0.00 | 1.44 | 5.42 |
| 2/6 12:54 | 2.60 | 1.72 | 0.0063 | 17.00 | 0.00 | 0.00 | 0.00 | 1.45 | 5.39 |
| 2/6 12:55 | 2.56 | 1.70 | 0.0062 | 16.83 | 0.00 | 0.00 | 0.00 | 1.46 | 5.43 |
| 2/6 12:56 | 2.54 | 1.68 | 0.0062 | 16.77 | 0.00 | 0.00 | 0.00 | 1.45 | 5.41 |
| 2/6 12:57 | 2.54 | 1.68 | 0.0062 | 16.77 | 0.00 | 0.00 | 0.00 | 1.45 | 5.41 |
| 2/6 12:58 | 2.56 | 1.70 | 0.0063 | 17.09 | 0.00 | 0.00 | 0.00 | 1.46 | 5.43 |
| 2/6 12:59 | 2.56 | 1.70 | 0.0063 | 16.98 | 0.00 | 0.00 | 0.00 | 1.47 | 5.39 |
| 2/6 13:00 | 2.57 | 1.71 | 0.0063 | 17.06 | 0.00 | 0.00 | 0.00 | 1.47 | 5.42 |
| 2/6 13:01 | 2.58 | 1.71 | 0.0063 | 17.14 | 0.00 | 0.00 | 0.00 | 1.46 | 5.44 |
| 2/6 13:02 | 2.58 | 1.71 | 0.0063 | 17.07 | 0.00 | 0.00 | 0.00 | 1.46 | 5.42 |
| Average (all) | 2.58 | 1.71 | 0.0063 | 17.09 | 0.00 | 0.00 | 0.00 | 1.44 | 5.35 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 2.54 | 1.68 | 0.0062 | 16.77 | 0.00 | 0.00 | 0.00 | 1.42 | 5.15 |
| Maximum (all) | 2.65 | 1.75 | 0.0065 | 17.61 | 0.00 | 0.00 | 0.00 | 1.47 | 5.44 |
| Average (valid values only) | 2.58 | 1.71 | 0.0063 | 17.09 | 0.00 | 0.00 | 0.00 | 1.44 | 5.35 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/6/2020 12:42 PM thru 2/6/2020 1:02 PM

| Timestamp | (Turbine 1) 75-O2 % 1-Min | (Turbine 1) CT Nat Gas Flow lb/sec 1-Min | (Turbine 1) DB Nat Gas Flow scf/min 1-Min | (Turbine 1) Total Gas Flow hscf/hr 1-Min | (Turbine 1) GT Megawatts 1-Min | (Turbine 1) ST Megawatts 1-Min | (Turbine 1) Total Megawatts 1-Min |
|---|---|---|---|---|---|---|---|
| 2/6 12:42 | 12.01 | 27.5 | 3956.7 | 25945.4 | 233.1 | 139.9 | 373.0 |
| 2/6 12:43 | 12.01 | 27.6 | 3959.4 | 26032.7 | 233.0 | 140.0 | 373.0 |
| 2/6 12:44 | 12.01 | 27.4 | 3960.6 | 25862.1 | 233.1 | 140.0 | 373.1 |
| 2/6 12:45 | 12.01 | 27.3 | 3945.2 | 25767.1 | 233.2 | 140.0 | 373.2 |
| 2/6 12:46 | 12.01 | 27.4 | 3946.0 | 25853.3 | 233.0 | 139.8 | 372.8 |
| 2/6 12:47 | 12.01 | 27.4 | 4052.0 | 25916.9 | 233.0 | 139.7 | 372.7 |
| 2/6 12:48 | 11.99 | 27.4 | 4166.3 | 25985.5 | 233.2 | 140.0 | 373.2 |
| 2/6 12:49 | 11.96 | 27.5 | 4166.3 | 26071.2 | 233.0 | 139.9 | 372.9 |
| 2/6 12:50 | 11.96 | 27.4 | 4135.6 | 25967.1 | 232.9 | 140.7 | 373.6 |
| 2/6 12:51 | 11.96 | 27.4 | 4104.8 | 25948.6 | 233.2 | 141.0 | 374.2 |
| 2/6 12:52 | 11.97 | 27.4 | 4074.4 | 25930.3 | 233.1 | 141.0 | 374.1 |
| 2/6 12:53 | 11.98 | 27.4 | 4051.3 | 25916.5 | 233.0 | 140.8 | 373.8 |
| 2/6 12:54 | 11.98 | 27.3 | 4018.9 | 25811.3 | 233.0 | 140.6 | 373.6 |
| 2/6 12:55 | 11.99 | 27.5 | 4000.1 | 25971.5 | 233.0 | 140.6 | 373.6 |
| 2/6 12:56 | 11.99 | 27.4 | 3993.8 | 25882.0 | 232.8 | 140.5 | 373.3 |
| 2/6 12:57 | 12.00 | 27.4 | 3983.9 | 25876.0 | 233.1 | 140.5 | 373.6 |
| 2/6 12:58 | 12.00 | 27.5 | 3970.8 | 25953.9 | 233.0 | 140.3 | 373.3 |
| 2/6 12:59 | 12.01 | 27.3 | 3965.2 | 25779.1 | 233.1 | 140.1 | 373.2 |
| 2/6 13:00 | 12.01 | 27.4 | 4049.9 | 25915.6 | 233.0 | 140.0 | 373.0 |
| 2/6 13:01 | 11.99 | 27.5 | 4097.6 | 26030.0 | 233.1 | 140.0 | 373.1 |
| 2/6 13:02 | 11.98 | 27.4 | 4086.9 | 25937.8 | 233.0 | 140.3 | 373.3 |
| Average (all) | 11.99 | 27.4 | 4032.7 | 25921.6 | 233.0 | 140.3 | 373.3 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 11.96 | 27.3 | 3945.2 | 25767.1 | 232.8 | 139.7 | 372.7 |
| Maximum (all) | 12.01 | 27.6 | 4166.3 | 26071.2 | 233.2 | 141.0 | 374.2 |
| Average (valid values only) | 11.99 | 27.4 | 4032.7 | 25921.6 | 233.0 | 140.3 | 373.3 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/6/2020 1:20 PM thru 2/6/2020 1:40 PM

| Timestamp | (Turbine 1) 75-NOx ppm 1-Min | (Turbine 1) NOx ppm @15% O2 1-Min | (Turbine 1) 75-NOx lb/mmBtu 1-Min | (Turbine 1) NOx lb/hr 1-Min | (Turbine 1) CO ppm Crnt-Hr | (Turbine 1) CO ppm @15% O2 1-Min | (Turbine 1) CO lb/hr 1-Min | (Turbine 1) NH3 Slip ppm @15% O2 1-Min | (Turbine 1) NH3 Slip lb/hr 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/6 13:20 | 2.56 | 1.70 | 0.0063 | 17.04 | 0.00 | 0.00 | 0.00 | 1.47 | 5.41 |
| 2/6 13:21 | 2.56 | 1.70 | 0.0063 | 17.09 | 0.00 | 0.00 | 0.00 | 1.47 | 5.43 |
| 2/6 13:22 | 2.56 | 1.69 | 0.0062 | 16.82 | 0.00 | 0.00 | 0.00 | 1.46 | 5.43 |
| 2/6 13:23 | 2.57 | 1.70 | 0.0063 | 17.07 | 0.00 | 0.00 | 0.00 | 1.46 | 5.42 |
| 2/6 13:24 | 2.57 | 1.70 | 0.0063 | 17.12 | 0.00 | 0.00 | 0.00 | 1.46 | 5.44 |
| 2/6 13:25 | 2.58 | 1.71 | 0.0063 | 17.06 | 0.00 | 0.00 | 0.00 | 1.47 | 5.42 |
| 2/6 13:26 | 2.58 | 1.71 | 0.0063 | 17.05 | 0.00 | 0.00 | 0.00 | 1.47 | 5.42 |
| 2/6 13:27 | 2.58 | 1.71 | 0.0063 | 17.11 | 0.00 | 0.00 | 0.00 | 1.47 | 5.43 |
| 2/6 13:28 | 2.58 | 1.71 | 0.0063 | 17.10 | 0.00 | 0.00 | 0.00 | 1.47 | 5.43 |
| 2/6 13:29 | 2.58 | 1.71 | 0.0063 | 17.04 | 0.00 | 0.00 | 0.00 | 1.48 | 5.41 |
| 2/6 13:30 | 2.58 | 1.71 | 0.0063 | 17.09 | 0.00 | 0.00 | 0.00 | 1.48 | 5.43 |
| 2/6 13:31 | 2.56 | 1.70 | 0.0063 | 17.03 | 0.00 | 0.00 | 0.00 | 1.48 | 5.41 |
| 2/6 13:32 | 2.54 | 1.68 | 0.0062 | 16.70 | 0.00 | 0.00 | 0.00 | 1.48 | 5.39 |
| 2/6 13:33 | 2.53 | 1.68 | 0.0062 | 16.75 | 0.00 | 0.00 | 0.00 | 1.48 | 5.40 |
| 2/6 13:34 | 2.52 | 1.67 | 0.0062 | 16.79 | 0.00 | 0.00 | 0.00 | 1.48 | 5.42 |
| 2/6 13:35 | 2.54 | 1.69 | 0.0062 | 16.74 | 0.00 | 0.00 | 0.00 | 1.48 | 5.40 |
| 2/6 13:36 | 2.55 | 1.69 | 0.0062 | 16.68 | 0.00 | 0.00 | 0.00 | 1.48 | 5.38 |
| 2/6 13:37 | 2.56 | 1.70 | 0.0063 | 16.99 | 0.00 | 0.00 | 0.00 | 1.49 | 5.39 |
| 2/6 13:38 | 2.55 | 1.69 | 0.0062 | 16.75 | 0.00 | 0.00 | 0.00 | 1.49 | 5.40 |
| 2/6 13:39 | 2.56 | 1.69 | 0.0062 | 16.81 | 0.00 | 0.00 | 0.00 | 1.48 | 5.42 |
| 2/6 13:40 | 2.58 | 1.70 | 0.0063 | 17.07 | 0.00 | 0.00 | 0.00 | 1.47 | 5.42 |
| Average (all) | 2.56 | 1.70 | 0.0063 | 16.95 | 0.00 | 0.00 | 0.00 | 1.47 | 5.41 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 2.52 | 1.67 | 0.0062 | 16.68 | 0.00 | 0.00 | 0.00 | 1.46 | 5.38 |
| Maximum (all) | 2.58 | 1.71 | 0.0063 | 17.12 | 0.00 | 0.00 | 0.00 | 1.49 | 5.44 |
| Average (valid values only) | 2.56 | 1.70 | 0.0063 | 16.95 | 0.00 | 0.00 | 0.00 | 1.47 | 5.41 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/6/2020 1:20 PM thru 2/6/2020 1:40 PM

| Timestamp | (Turbine 1) 75-O2 % 1-Min | (Turbine 1) CT Nat Gas Flow lb/sec 1-Min | (Turbine 1) DB Nat Gas Flow scf/min 1-Min | (Turbine 1) Total Gas Flow hscf/hr 1-Min | (Turbine 1) GT Megawatts 1-Min | (Turbine 1) ST Megawatts 1-Min | (Turbine 1) Total Megawatts 1-Min |
|---|---|---|---|---|---|---|---|
| 2/6 13:20 | 12.01 | 27.4 | 4010.2 | 25891.8 | 232.8 | 139.8 | 372.6 |
| 2/6 13:21 | 12.00 | 27.4 | 4122.8 | 25959.4 | 232.6 | 139.8 | 372.4 |
| 2/6 13:22 | 11.98 | 27.4 | 4109.4 | 25951.3 | 233.0 | 139.6 | 372.6 |
| 2/6 13:23 | 11.97 | 27.4 | 4082.8 | 25935.4 | 232.8 | 140.2 | 373.0 |
| 2/6 13:24 | 11.98 | 27.5 | 4061.1 | 26008.1 | 232.7 | 140.4 | 373.1 |
| 2/6 13:25 | 11.98 | 27.4 | 4044.2 | 25912.2 | 232.8 | 140.4 | 373.2 |
| 2/6 13:26 | 11.99 | 27.4 | 4034.1 | 25906.2 | 232.7 | 140.3 | 373.0 |
| 2/6 13:27 | 11.99 | 27.5 | 4023.5 | 25985.5 | 232.8 | 140.3 | 373.1 |
| 2/6 13:28 | 11.99 | 27.5 | 4009.7 | 25977.2 | 232.8 | 140.3 | 373.1 |
| 2/6 13:29 | 12.00 | 27.4 | 3995.3 | 25882.9 | 232.8 | 140.3 | 373.1 |
| 2/6 13:30 | 12.00 | 27.5 | 3981.2 | 25960.1 | 232.7 | 140.1 | 372.8 |
| 2/6 13:31 | 12.00 | 27.4 | 3970.9 | 25868.2 | 232.7 | 139.9 | 372.6 |
| 2/6 13:32 | 12.00 | 27.3 | 3958.6 | 25775.2 | 232.8 | 139.8 | 372.6 |
| 2/6 13:33 | 12.01 | 27.4 | 3931.8 | 25844.8 | 232.7 | 139.7 | 372.4 |
| 2/6 13:34 | 12.01 | 27.5 | 3913.7 | 25919.6 | 232.6 | 139.6 | 372.2 |
| 2/6 13:35 | 12.02 | 27.4 | 3904.6 | 25828.5 | 232.8 | 139.4 | 372.2 |
| 2/6 13:36 | 12.02 | 27.3 | 3904.8 | 25742.9 | 232.9 | 139.3 | 372.2 |
| 2/6 13:37 | 12.02 | 27.3 | 3994.7 | 25796.8 | 232.7 | 139.3 | 372.0 |
| 2/6 13:38 | 12.00 | 27.3 | 4099.2 | 25859.5 | 232.6 | 139.5 | 372.1 |
| 2/6 13:39 | 11.98 | 27.4 | 4098.1 | 25944.6 | 232.7 | 139.8 | 372.5 |
| 2/6 13:40 | 11.97 | 27.4 | 4079.9 | 25933.6 | 232.6 | 140.1 | 372.7 |
| Average (all) | 12.00 | 27.4 | 4015.7 | 25899.2 | 232.7 | 139.9 | 372.6 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 11.97 | 27.3 | 3904.6 | 25742.9 | 232.6 | 139.3 | 372.0 |
| Maximum (all) | 12.02 | 27.5 | 4122.8 | 26008.1 | 233.0 | 140.4 | 373.2 |
| Average (valid values only) | 12.00 | 27.4 | 4015.7 | 25899.2 | 232.7 | 139.9 | 372.6 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/6/2020 1:55 PM thru 2/6/2020 2:15 PM

| Timestamp | (Turbine 1) 75-NOx ppm 1-Min | (Turbine 1) NOx ppm @15% O2 1-Min | (Turbine 1) 75-NOx lb/mmBtu 1-Min | (Turbine 1) NOx lb/hr 1-Min | (Turbine 1) CO ppm Crnt-Hr | (Turbine 1) CO ppm @15% O2 1-Min | (Turbine 1) CO lb/hr 1-Min | (Turbine 1) NH3 Slip ppm @15% O2 1-Min | (Turbine 1) NH3 Slip lb/hr 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/6 13:55 | 2.53 | 1.68 | 0.0062 | 16.76 | 0.00 | 0.00 | 0.00 | 1.47 | 5.41 |
| 2/6 13:56 | 2.54 | 1.68 | 0.0062 | 16.69 | 0.00 | 0.00 | 0.00 | 1.48 | 5.38 |
| 2/6 13:57 | 2.56 | 1.69 | 0.0062 | 16.84 | 0.00 | 0.00 | 0.00 | 1.48 | 5.43 |
| 2/6 13:58 | 2.58 | 1.70 | 0.0063 | 17.10 | 0.00 | 0.00 | 0.00 | 1.46 | 5.43 |
| 2/6 13:59 | 2.60 | 1.72 | 0.0063 | 17.03 | 0.00 | 0.00 | 0.00 | 1.47 | 5.41 |
| 2/6 14:00 | 2.61 | 1.72 | 0.0064 | 17.34 | 0.00 | 0.00 | 0.00 | 1.47 | 5.42 |
| 2/6 14:01 | 2.61 | 1.72 | 0.0064 | 17.33 | 0.00 | 0.00 | 0.00 | 1.47 | 5.42 |
| 2/6 14:02 | 2.60 | 1.72 | 0.0063 | 16.99 | 0.00 | 0.00 | 0.00 | 1.47 | 5.39 |
| 2/6 14:03 | 2.58 | 1.71 | 0.0063 | 17.03 | 0.00 | 0.00 | 0.00 | 1.47 | 5.41 |
| 2/6 14:04 | 2.56 | 1.70 | 0.0063 | 17.02 | 0.00 | 0.00 | 0.00 | 1.47 | 5.41 |
| 2/6 14:05 | 2.54 | 1.69 | 0.0062 | 16.75 | 0.00 | 0.00 | 0.00 | 1.48 | 5.40 |
| 2/6 14:06 | 2.53 | 1.68 | 0.0062 | 16.76 | 0.00 | 0.00 | 0.00 | 1.47 | 5.41 |
| 2/6 14:07 | 2.52 | 1.67 | 0.0062 | 16.75 | 0.00 | 0.00 | 0.00 | 1.48 | 5.40 |
| 2/6 14:08 | 2.54 | 1.68 | 0.0062 | 16.82 | 0.00 | 0.00 | 0.00 | 1.47 | 5.43 |
| 2/6 14:09 | 2.56 | 1.69 | 0.0062 | 16.81 | 0.00 | 0.00 | 0.00 | 1.47 | 5.42 |
| 2/6 14:10 | 2.62 | 1.73 | 0.0064 | 17.28 | 0.00 | 0.00 | 0.00 | 1.45 | 5.40 |
| 2/6 14:11 | 2.71 | 1.79 | 0.0066 | 17.88 | 0.00 | 0.00 | 0.00 | 1.42 | 5.14 |
| 2/6 14:12 | 2.84 | 1.88 | 0.0069 | 18.67 | 0.00 | 0.00 | 0.00 | 1.40 | 5.14 |
| 2/6 14:13 | 2.92 | 1.93 | 0.0071 | 19.21 | 0.00 | 0.00 | 0.00 | 1.40 | 5.14 |
| 2/6 14:14 | 2.94 | 1.95 | 0.0072 | 19.47 | 0.00 | 0.00 | 0.00 | 1.38 | 5.14 |
| 2/6 14:15 | 2.90 | 1.92 | 0.0071 | 19.13 | 0.00 | 0.00 | 0.00 | 1.36 | 5.12 |
| Average (all) | 2.64 | 1.75 | 0.0064 | 17.41 | 0.00 | 0.00 | 0.00 | 1.45 | 5.35 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 2.52 | 1.67 | 0.0062 | 16.69 | 0.00 | 0.00 | 0.00 | 1.36 | 5.12 |
| Maximum (all) | 2.94 | 1.95 | 0.0072 | 19.47 | 0.00 | 0.00 | 0.00 | 1.48 | 5.43 |
| Average (valid values only) | 2.64 | 1.75 | 0.0064 | 17.41 | 0.00 | 0.00 | 0.00 | 1.45 | 5.35 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/6/2020 1:55 PM thru 2/6/2020 2:15 PM

| Timestamp | (Turbine 1) 75-O2 % 1-Min | (Turbine 1) CT Nat Gas Flow lb/sec 1-Min | (Turbine 1) DB Nat Gas Flow scf/min 1-Min | (Turbine 1) Total Gas Flow hscf/hr 1-Min | (Turbine 1) GT Megawatts 1-Min | (Turbine 1) ST Megawatts 1-Min | (Turbine 1) Total Megawatts 1-Min |
|---|---|---|---|---|---|---|---|
| 2/6 13:55 | 12.01 | 27.4 | 3953.1 | 25857.6 | 232.8 | 139.6 | 372.4 |
| 2/6 13:56 | 12.00 | 27.2 | 4072.9 | 25758.0 | 232.6 | 139.6 | 372.2 |
| 2/6 13:57 | 11.98 | 27.4 | 4173.2 | 25989.6 | 232.7 | 139.8 | 372.5 |
| 2/6 13:58 | 11.95 | 27.4 | 4155.3 | 25978.9 | 232.5 | 140.2 | 372.7 |
| 2/6 13:59 | 11.96 | 27.3 | 4112.3 | 25867.4 | 232.6 | 140.6 | 373.2 |
| 2/6 14:00 | 11.97 | 27.4 | 4073.7 | 25929.9 | 232.5 | 140.5 | 373.0 |
| 2/6 14:01 | 11.97 | 27.4 | 4039.2 | 25909.2 | 232.7 | 140.4 | 373.1 |
| 2/6 14:02 | 11.98 | 27.3 | 4007.0 | 25804.2 | 232.7 | 140.3 | 373.0 |
| 2/6 14:03 | 11.99 | 27.4 | 3980.2 | 25873.8 | 232.6 | 140.2 | 372.8 |
| 2/6 14:04 | 12.00 | 27.4 | 3952.7 | 25857.3 | 232.6 | 140.1 | 372.7 |
| 2/6 14:05 | 12.01 | 27.4 | 3941.6 | 25850.7 | 232.7 | 139.9 | 372.6 |
| 2/6 14:06 | 12.01 | 27.4 | 3969.0 | 25867.1 | 232.7 | 139.8 | 372.5 |
| 2/6 14:07 | 12.00 | 27.3 | 4093.9 | 25856.3 | 232.7 | 139.8 | 372.5 |
| 2/6 14:08 | 11.97 | 27.4 | 4114.8 | 25954.6 | 232.7 | 140.0 | 372.7 |
| 2/6 14:09 | 11.96 | 27.4 | 4090.7 | 25940.1 | 232.7 | 140.3 | 373.0 |
| 2/6 14:10 | 11.97 | 27.3 | 4067.6 | 25840.6 | 232.8 | 140.5 | 373.3 |
| 2/6 14:11 | 11.98 | 27.4 | 4049.7 | 25915.5 | 232.7 | 140.4 | 373.1 |
| 2/6 14:12 | 11.98 | 27.4 | 4026.6 | 25901.7 | 232.7 | 140.3 | 373.0 |
| 2/6 14:13 | 11.98 | 27.4 | 4008.9 | 25891.0 | 232.8 | 140.2 | 373.0 |
| 2/6 14:14 | 11.99 | 27.4 | 3992.4 | 25881.1 | 232.6 | 140.2 | 372.8 |
| 2/6 14:15 | 11.99 | 27.3 | 3983.5 | 25790.1 | 232.5 | 140.2 | 372.7 |
| Average (all) | 11.98 | 27.4 | 4040.9 | 25881.7 | 232.7 | 140.1 | 372.8 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 11.95 | 27.2 | 3941.6 | 25758.0 | 232.5 | 139.6 | 372.2 |
| Maximum (all) | 12.01 | 27.4 | 4173.2 | 25989.6 | 232.8 | 140.6 | 373.3 |
| Average (valid values only) | 11.98 | 27.4 | 4040.9 | 25881.7 | 232.7 | 140.1 | 372.8 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/6/2020 2:27 PM thru 2/6/2020 2:47 PM

| Timestamp | (Turbine 1) 75-NOx ppm 1-Min | (Turbine 1) NOx ppm @15% O2 1-Min | (Turbine 1) 75-NOx lb/mmBtu 1-Min | (Turbine 1) NOx lb/hr 1-Min | (Turbine 1) CO ppm Crnt-Hr | (Turbine 1) CO ppm @15% O2 1-Min | (Turbine 1) CO lb/hr 1-Min | (Turbine 1) NH3 Slip ppm @15% O2 1-Min | (Turbine 1) NH3 Slip lb/hr 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/6 14:27 | 2.75 | 1.82 | 0.0067 | 18.11 | 0.00 | 0.00 | 0.00 | 1.15 | 4.33 |
| 2/6 14:28 | 2.73 | 1.81 | 0.0067 | 18.11 | 0.00 | 0.00 | 0.00 | 1.17 | 4.33 |
| 2/6 14:29 | 2.71 | 1.80 | 0.0066 | 17.78 | 0.00 | 0.00 | 0.00 | 1.19 | 4.31 |
| 2/6 14:30 | 2.68 | 1.78 | 0.0066 | 17.85 | 0.00 | 0.00 | 0.00 | 1.20 | 4.33 |
| 2/6 14:31 | 2.66 | 1.76 | 0.0065 | 17.57 | 0.00 | 0.00 | 0.00 | 1.21 | 4.32 |
| 2/6 14:32 | 2.66 | 1.76 | 0.0065 | 17.65 | 0.00 | 0.00 | 0.00 | 1.23 | 4.61 |
| 2/6 14:33 | 2.67 | 1.76 | 0.0065 | 17.58 | 0.00 | 0.00 | 0.00 | 1.23 | 4.60 |
| 2/6 14:34 | 2.68 | 1.77 | 0.0065 | 17.57 | 0.00 | 0.00 | 0.00 | 1.26 | 4.60 |
| 2/6 14:35 | 2.68 | 1.77 | 0.0065 | 17.62 | 0.00 | 0.00 | 0.00 | 1.28 | 4.61 |
| 2/6 14:36 | 2.67 | 1.77 | 0.0065 | 17.48 | 0.00 | 0.00 | 0.00 | 1.28 | 4.57 |
| 2/6 14:37 | 2.66 | 1.76 | 0.0065 | 17.52 | 0.00 | 0.00 | 0.00 | 1.30 | 4.85 |
| 2/6 14:38 | 2.64 | 1.75 | 0.0064 | 17.29 | 0.00 | 0.00 | 0.00 | 1.31 | 4.87 |
| 2/6 14:39 | 2.62 | 1.74 | 0.0064 | 17.40 | 0.00 | 0.00 | 0.00 | 1.32 | 4.89 |
| 2/6 14:40 | 2.62 | 1.74 | 0.0064 | 17.22 | 0.00 | 0.00 | 0.00 | 1.33 | 4.84 |
| 2/6 14:41 | 2.68 | 1.78 | 0.0066 | 17.76 | 0.00 | 0.00 | 0.00 | 1.31 | 4.84 |
| 2/6 14:42 | 2.78 | 1.84 | 0.0068 | 18.37 | 0.00 | 0.00 | 0.00 | 1.30 | 4.87 |
| 2/6 14:43 | 2.87 | 1.90 | 0.0070 | 18.95 | 0.00 | 0.00 | 0.00 | 1.30 | 4.88 |
| 2/6 14:44 | 2.92 | 1.93 | 0.0071 | 19.23 | 0.00 | 0.00 | 0.00 | 1.28 | 4.60 |
| 2/6 14:45 | 2.94 | 1.94 | 0.0072 | 19.57 | 0.00 | 0.00 | 0.00 | 1.26 | 4.62 |
| 2/6 14:46 | 2.91 | 1.92 | 0.0071 | 19.23 | 0.00 | 0.00 | 0.00 | 1.24 | 4.60 |
| 2/6 14:47 | 2.86 | 1.89 | 0.0070 | 18.94 | 0.00 | 0.00 | 0.00 | 1.22 | 4.60 |
| Average (all) | 2.73 | 1.81 | 0.0067 | 18.04 | 0.00 | 0.00 | 0.00 | 1.26 | 4.62 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 2.62 | 1.74 | 0.0064 | 17.22 | 0.00 | 0.00 | 0.00 | 1.15 | 4.31 |
| Maximum (all) | 2.94 | 1.94 | 0.0072 | 19.57 | 0.00 | 0.00 | 0.00 | 1.33 | 4.89 |
| Average (valid values only) | 2.73 | 1.81 | 0.0067 | 18.04 | 0.00 | 0.00 | 0.00 | 1.26 | 4.62 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/6/2020 2:27 PM thru 2/6/2020 2:47 PM

| Timestamp | (Turbine 1) 75-O2 % 1-Min | (Turbine 1) CT Nat Gas Flow lb/sec 1-Min | (Turbine 1) DB Nat Gas Flow scf/min 1-Min | (Turbine 1) Total Gas Flow hscf/hr 1-Min | (Turbine 1) GT Megawatts 1-Min | (Turbine 1) ST Megawatts 1-Min | (Turbine 1) Total Megawatts 1-Min |
|---|---|---|---|---|---|---|---|
| 2/6 14:27 | 12.00 | 27.4 | 3981.9 | 25874.8 | 232.6 | 140.1 | 372.7 |
| 2/6 14:28 | 12.00 | 27.4 | 3970.9 | 25868.2 | 232.7 | 139.9 | 372.6 |
| 2/6 14:29 | 12.01 | 27.3 | 3959.6 | 25775.8 | 232.6 | 140.0 | 372.6 |
| 2/6 14:30 | 12.01 | 27.4 | 3993.8 | 25882.0 | 232.6 | 139.9 | 372.5 |
| 2/6 14:31 | 12.00 | 27.3 | 4123.8 | 25874.3 | 232.6 | 140.2 | 372.8 |
| 2/6 14:32 | 11.97 | 27.4 | 4160.5 | 25982.0 | 232.4 | 140.3 | 372.7 |
| 2/6 14:33 | 11.96 | 27.3 | 4145.6 | 25887.4 | 232.6 | 140.7 | 373.3 |
| 2/6 14:34 | 11.96 | 27.3 | 4120.9 | 25872.5 | 232.7 | 140.8 | 373.5 |
| 2/6 14:35 | 11.97 | 27.4 | 4085.6 | 25937.1 | 232.7 | 140.7 | 373.4 |
| 2/6 14:36 | 11.98 | 27.2 | 4035.6 | 25735.7 | 232.5 | 140.7 | 373.2 |
| 2/6 14:37 | 11.99 | 27.3 | 3987.6 | 25792.6 | 232.5 | 140.4 | 372.9 |
| 2/6 14:38 | 12.00 | 27.4 | 3943.6 | 25851.9 | 232.6 | 140.2 | 372.8 |
| 2/6 14:39 | 12.01 | 27.6 | 3927.9 | 26013.8 | 232.6 | 140.0 | 372.6 |
| 2/6 14:40 | 12.01 | 27.3 | 3911.5 | 25746.9 | 232.4 | 139.7 | 372.1 |
| 2/6 14:41 | 12.02 | 27.3 | 3905.3 | 25743.2 | 232.6 | 139.5 | 372.1 |
| 2/6 14:42 | 12.01 | 27.4 | 3944.0 | 25852.1 | 232.5 | 139.4 | 371.9 |
| 2/6 14:43 | 12.01 | 27.4 | 4040.5 | 25910.0 | 232.5 | 139.5 | 372.0 |
| 2/6 14:44 | 11.99 | 27.4 | 4049.0 | 25915.1 | 232.6 | 139.7 | 372.3 |
| 2/6 14:45 | 11.98 | 27.5 | 4063.2 | 26009.3 | 232.7 | 140.0 | 372.7 |
| 2/6 14:46 | 11.98 | 27.4 | 4041.4 | 25910.5 | 232.5 | 140.3 | 372.8 |
| 2/6 14:47 | 11.99 | 27.4 | 4014.0 | 25894.1 | 232.4 | 140.3 | 372.7 |
| Average (all) | 11.99 | 27.4 | 4019.3 | 25872.8 | 232.6 | 140.1 | 372.7 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 11.96 | 27.2 | 3905.3 | 25735.7 | 232.4 | 139.4 | 371.9 |
| Maximum (all) | 12.02 | 27.6 | 4160.5 | 26013.8 | 232.7 | 140.8 | 373.5 |
| Average (valid values only) | 11.99 | 27.4 | 4019.3 | 25872.8 | 232.6 | 140.1 | 372.7 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/6/2020 3:01 PM thru 2/6/2020 3:21 PM

| Timestamp | (Turbine 1) 75-NOx ppm 1-Min | (Turbine 1) NOx ppm @15% O2 1-Min | (Turbine 1) 75-NOx lb/mmBtu 1-Min | (Turbine 1) NOx lb/hr 1-Min | (Turbine 1) CO ppm Crnt-Hr | (Turbine 1) CO ppm @15% O2 1-Min | (Turbine 1) CO lb/hr 1-Min | (Turbine 1) NH3 Slip ppm @15% O2 1-Min | (Turbine 1) NH3 Slip lb/hr 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/6 15:01 | 2.63 | 1.75 | 0.0064 | 17.30 | 0.00 | 0.00 | 0.00 | 1.32 | 4.87 |
| 2/6 15:02 | 2.61 | 1.73 | 0.0064 | 17.24 | 0.00 | 0.00 | 0.00 | 1.33 | 4.85 |
| 2/6 15:03 | 2.60 | 1.73 | 0.0064 | 17.29 | 0.00 | 0.00 | 0.00 | 1.33 | 4.86 |
| 2/6 15:04 | 2.60 | 1.72 | 0.0063 | 17.10 | 0.00 | 0.00 | 0.00 | 1.33 | 4.89 |
| 2/6 15:05 | 2.64 | 1.74 | 0.0064 | 17.37 | 0.00 | 0.00 | 0.00 | 1.33 | 4.89 |
| 2/6 15:06 | 2.66 | 1.76 | 0.0065 | 17.62 | 0.00 | 0.00 | 0.00 | 1.35 | 4.88 |
| 2/6 15:07 | 2.65 | 1.75 | 0.0065 | 17.60 | 0.00 | 0.00 | 0.00 | 1.37 | 5.14 |
| 2/6 15:08 | 2.62 | 1.73 | 0.0064 | 17.20 | 0.00 | 0.00 | 0.00 | 1.38 | 5.11 |
| 2/6 15:09 | 2.60 | 1.72 | 0.0063 | 17.03 | 0.00 | 0.00 | 0.00 | 1.37 | 5.13 |
| 2/6 15:10 | 2.60 | 1.72 | 0.0063 | 17.02 | 0.00 | 0.00 | 0.00 | 1.38 | 5.13 |
| 2/6 15:11 | 2.58 | 1.71 | 0.0063 | 17.02 | 0.00 | 0.00 | 0.00 | 1.39 | 5.13 |
| 2/6 15:12 | 2.56 | 1.70 | 0.0063 | 17.03 | 0.00 | 0.00 | 0.00 | 1.40 | 5.13 |
| 2/6 15:13 | 2.56 | 1.70 | 0.0063 | 17.03 | 0.00 | 0.00 | 0.00 | 1.41 | 5.14 |
| 2/6 15:14 | 2.56 | 1.69 | 0.0062 | 16.79 | 0.00 | 0.00 | 0.00 | 1.41 | 5.15 |
| 2/6 15:15 | 2.58 | 1.70 | 0.0063 | 17.10 | 0.00 | 0.00 | 0.00 | 1.41 | 5.16 |
| 2/6 15:16 | 2.60 | 1.72 | 0.0063 | 17.09 | 0.00 | 0.00 | 0.00 | 1.40 | 5.15 |
| 2/6 15:17 | 2.61 | 1.72 | 0.0064 | 17.40 | 0.00 | 0.00 | 0.00 | 1.41 | 5.17 |
| 2/6 15:18 | 2.61 | 1.73 | 0.0064 | 17.33 | 0.00 | 0.00 | 0.00 | 1.41 | 5.14 |
| 2/6 15:19 | 2.59 | 1.72 | 0.0063 | 16.93 | 0.00 | 0.00 | 0.00 | 1.42 | 5.11 |
| 2/6 15:20 | 2.57 | 1.70 | 0.0063 | 17.03 | 0.00 | 0.00 | 0.00 | 1.43 | 5.13 |
| 2/6 15:21 | 2.55 | 1.69 | 0.0062 | 16.65 | 0.00 | 0.00 | 0.00 | 1.43 | 5.10 |
| Average (all) | 2.60 | 1.72 | 0.0063 | 17.15 | 0.00 | 0.00 | 0.00 | 1.38 | 5.06 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 2.55 | 1.69 | 0.0062 | 16.65 | 0.00 | 0.00 | 0.00 | 1.32 | 4.85 |
| Maximum (all) | 2.66 | 1.76 | 0.0065 | 17.62 | 0.00 | 0.00 | 0.00 | 1.43 | 5.17 |
| Average (valid values only) | 2.60 | 1.72 | 0.0063 | 17.15 | 0.00 | 0.00 | 0.00 | 1.38 | 5.06 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/6/2020 3:01 PM thru 2/6/2020 3:21 PM

| Timestamp | (Turbine 1) 75-O2 % 1-Min | (Turbine 1) CT Nat Gas Flow lb/sec 1-Min | (Turbine 1) DB Nat Gas Flow scf/min 1-Min | (Turbine 1) Total Gas Flow hscf/hr 1-Min | (Turbine 1) GT Megawatts 1-Min | (Turbine 1) ST Megawatts 1-Min | (Turbine 1) Total Megawatts 1-Min |
|---|---|---|---|---|---|---|---|
| 2/6 15:01 | 12.01 | 27.4 | 3960.3 | 25861.9 | 232.5 | 139.7 | 372.2 |
| 2/6 15:02 | 12.01 | 27.3 | 3968.9 | 25781.3 | 232.3 | 139.8 | 372.1 |
| 2/6 15:03 | 12.01 | 27.3 | 4087.0 | 25852.2 | 232.5 | 139.7 | 372.2 |
| 2/6 15:04 | 11.98 | 27.4 | 4157.4 | 25980.1 | 232.4 | 139.9 | 372.3 |
| 2/6 15:05 | 11.96 | 27.4 | 4133.4 | 25965.7 | 232.5 | 140.3 | 372.8 |
| 2/6 15:06 | 11.96 | 27.4 | 4094.7 | 25942.5 | 232.6 | 140.6 | 373.2 |
| 2/6 15:07 | 11.97 | 27.4 | 4056.7 | 25919.7 | 232.3 | 140.5 | 372.8 |
| 2/6 15:08 | 11.98 | 27.2 | 4016.8 | 25724.4 | 232.4 | 140.4 | 372.8 |
| 2/6 15:09 | 11.99 | 27.4 | 3983.9 | 25876.0 | 232.7 | 140.2 | 372.9 |
| 2/6 15:10 | 12.00 | 27.4 | 3954.4 | 25858.3 | 232.5 | 140.1 | 372.6 |
| 2/6 15:11 | 12.01 | 27.4 | 3945.9 | 25853.2 | 232.6 | 139.9 | 372.5 |
| 2/6 15:12 | 12.01 | 27.4 | 3973.5 | 25869.8 | 232.6 | 139.9 | 372.5 |
| 2/6 15:13 | 12.01 | 27.3 | 4112.3 | 25867.4 | 232.4 | 139.8 | 372.2 |
| 2/6 15:14 | 11.98 | 27.3 | 4183.7 | 25910.2 | 232.6 | 140.1 | 372.7 |
| 2/6 15:15 | 11.96 | 27.4 | 4155.2 | 25978.8 | 232.5 | 140.5 | 373.0 |
| 2/6 15:16 | 11.96 | 27.4 | 4119.8 | 25957.6 | 232.5 | 140.7 | 373.2 |
| 2/6 15:17 | 11.97 | 27.5 | 4079.6 | 26019.2 | 232.5 | 140.7 | 373.2 |
| 2/6 15:18 | 11.98 | 27.4 | 4047.0 | 25913.9 | 232.5 | 140.6 | 373.1 |
| 2/6 15:19 | 11.99 | 27.2 | 4008.1 | 25719.2 | 232.4 | 140.6 | 373.0 |
| 2/6 15:20 | 12.00 | 27.4 | 3976.1 | 25871.4 | 232.5 | 140.4 | 372.9 |
| 2/6 15:21 | 12.00 | 27.2 | 3960.0 | 25690.3 | 232.4 | 140.3 | 372.7 |
| Average (all) | 11.99 | 27.4 | 4046.4 | 25876.8 | 232.5 | 140.2 | 372.7 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 11.96 | 27.2 | 3945.9 | 25690.3 | 232.3 | 139.7 | 372.1 |
| Maximum (all) | 12.01 | 27.5 | 4183.7 | 26019.2 | 232.7 | 140.7 | 373.2 |
| Average (valid values only) | 11.99 | 27.4 | 4046.4 | 25876.8 | 232.5 | 140.2 | 372.7 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/6/2020 3:36 PM thru 2/6/2020 3:56 PM

| Timestamp | (Turbine 1) 75-NOx ppm 1-Min | (Turbine 1) NOx ppm @15% O2 1-Min | (Turbine 1) 75-NOx lb/mmBtu 1-Min | (Turbine 1) NOx lb/hr 1-Min | (Turbine 1) CO ppm Crnt-Hr | (Turbine 1) CO ppm @15% O2 1-Min | (Turbine 1) CO lb/hr 1-Min | (Turbine 1) NH3 Slip ppm @15% O2 1-Min | (Turbine 1) NH3 Slip lb/hr 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/6 15:36 | 2.93 | 1.94 | 0.0072 | 19.45 | 0.00 | 0.00 | 0.00 | 1.35 | 4.87 |
| 2/6 15:37 | 2.87 | 1.90 | 0.0070 | 18.91 | 0.00 | 0.00 | 0.00 | 1.33 | 4.86 |
| 2/6 15:38 | 2.81 | 1.86 | 0.0069 | 18.70 | 0.00 | 0.00 | 0.00 | 1.29 | 4.61 |
| 2/6 15:39 | 2.77 | 1.84 | 0.0068 | 18.45 | 0.00 | 0.00 | 0.00 | 1.26 | 4.62 |
| 2/6 15:40 | 2.73 | 1.81 | 0.0067 | 18.15 | 0.00 | 0.00 | 0.00 | 1.25 | 4.60 |
| 2/6 15:41 | 2.72 | 1.80 | 0.0066 | 17.82 | 0.00 | 0.00 | 0.00 | 1.23 | 4.59 |
| 2/6 15:42 | 2.72 | 1.80 | 0.0066 | 17.87 | 0.00 | 0.00 | 0.00 | 1.22 | 4.60 |
| 2/6 15:43 | 2.73 | 1.81 | 0.0067 | 18.12 | 0.00 | 0.00 | 0.00 | 1.22 | 4.60 |
| 2/6 15:44 | 2.72 | 1.80 | 0.0066 | 17.86 | 0.00 | 0.00 | 0.00 | 1.23 | 4.60 |
| 2/6 15:45 | 2.72 | 1.80 | 0.0066 | 17.87 | 0.00 | 0.00 | 0.00 | 1.24 | 4.60 |
| 2/6 15:46 | 2.70 | 1.79 | 0.0066 | 17.91 | 0.00 | 0.00 | 0.00 | 1.26 | 4.61 |
| 2/6 15:47 | 2.67 | 1.76 | 0.0065 | 17.64 | 0.00 | 0.00 | 0.00 | 1.28 | 4.61 |
| 2/6 15:48 | 2.66 | 1.76 | 0.0065 | 17.56 | 0.00 | 0.00 | 0.00 | 1.28 | 4.60 |
| 2/6 15:49 | 2.65 | 1.75 | 0.0065 | 17.61 | 0.00 | 0.00 | 0.00 | 1.29 | 4.88 |
| 2/6 15:50 | 2.65 | 1.75 | 0.0065 | 17.59 | 0.00 | 0.00 | 0.00 | 1.30 | 4.87 |
| 2/6 15:51 | 2.64 | 1.75 | 0.0064 | 17.25 | 0.00 | 0.00 | 0.00 | 1.32 | 4.85 |
| 2/6 15:52 | 2.64 | 1.75 | 0.0065 | 17.55 | 0.00 | 0.00 | 0.00 | 1.32 | 4.86 |
| 2/6 15:53 | 2.63 | 1.75 | 0.0064 | 17.28 | 0.00 | 0.00 | 0.00 | 1.34 | 4.86 |
| 2/6 15:54 | 2.61 | 1.73 | 0.0064 | 17.21 | 0.00 | 0.00 | 0.00 | 1.34 | 4.84 |
| 2/6 15:55 | 2.59 | 1.72 | 0.0063 | 16.99 | 0.00 | 0.00 | 0.00 | 1.35 | 4.86 |
| 2/6 15:56 | 2.59 | 1.72 | 0.0063 | 17.02 | 0.00 | 0.00 | 0.00 | 1.35 | 4.87 |
| Average (all) | 2.70 | 1.79 | 0.0066 | 17.85 | 0.00 | 0.00 | 0.00 | 1.29 | 4.73 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 2.59 | 1.72 | 0.0063 | 16.99 | 0.00 | 0.00 | 0.00 | 1.22 | 4.59 |
| Maximum (all) | 2.93 | 1.94 | 0.0072 | 19.45 | 0.00 | 0.00 | 0.00 | 1.35 | 4.88 |
| Average (valid values only) | 2.70 | 1.79 | 0.0066 | 17.85 | 0.00 | 0.00 | 0.00 | 1.29 | 4.73 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/6/2020 3:36 PM thru 2/6/2020 3:56 PM

| Timestamp | (Turbine 1) 75-O2 % 1-Min | (Turbine 1) CT Nat Gas Flow lb/sec 1-Min | (Turbine 1) DB Nat Gas Flow scf/min 1-Min | (Turbine 1) Total Gas Flow hscf/hr 1-Min | (Turbine 1) GT Megawatts 1-Min | (Turbine 1) ST Megawatts 1-Min | (Turbine 1) Total Megawatts 1-Min |
|---|---|---|---|---|---|---|---|
| 2/6 15:36 | 12.00 | 27.4 | 3948.0 | 25854.5 | 232.7 | 140.0 | 372.7 |
| 2/6 15:37 | 12.01 | 27.4 | 3932.2 | 25845.0 | 232.7 | 139.9 | 372.6 |
| 2/6 15:38 | 12.01 | 27.5 | 3922.5 | 25924.9 | 232.6 | 139.8 | 372.4 |
| 2/6 15:39 | 12.01 | 27.5 | 3994.7 | 25968.2 | 232.6 | 139.8 | 372.4 |
| 2/6 15:40 | 12.00 | 27.4 | 4073.5 | 25929.8 | 232.6 | 139.8 | 372.4 |
| 2/6 15:41 | 11.97 | 27.3 | 4058.4 | 25835.0 | 232.7 | 140.1 | 372.8 |
| 2/6 15:42 | 11.98 | 27.4 | 4032.5 | 25905.2 | 232.5 | 140.3 | 372.8 |
| 2/6 15:43 | 11.98 | 27.4 | 4008.6 | 25890.9 | 232.7 | 140.4 | 373.1 |
| 2/6 15:44 | 11.99 | 27.4 | 4002.7 | 25887.3 | 232.7 | 140.2 | 372.9 |
| 2/6 15:45 | 11.99 | 27.4 | 4024.9 | 25900.6 | 232.6 | 140.2 | 372.8 |
| 2/6 15:46 | 11.99 | 27.4 | 4139.3 | 25969.3 | 232.5 | 140.3 | 372.8 |
| 2/6 15:47 | 11.97 | 27.4 | 4144.2 | 25972.2 | 232.7 | 140.5 | 373.2 |
| 2/6 15:48 | 11.96 | 27.3 | 4103.5 | 25862.1 | 232.5 | 140.8 | 373.3 |
| 2/6 15:49 | 11.98 | 27.4 | 4063.3 | 25923.7 | 232.5 | 141.0 | 373.5 |
| 2/6 15:50 | 11.98 | 27.4 | 4019.4 | 25897.3 | 232.6 | 141.0 | 373.6 |
| 2/6 15:51 | 11.99 | 27.3 | 3977.6 | 25786.6 | 232.7 | 140.6 | 373.3 |
| 2/6 15:52 | 12.01 | 27.4 | 3936.8 | 25847.8 | 232.6 | 140.3 | 372.9 |
| 2/6 15:53 | 12.02 | 27.4 | 3906.2 | 25829.4 | 232.7 | 140.1 | 372.8 |
| 2/6 15:54 | 12.02 | 27.3 | 3885.2 | 25731.1 | 232.4 | 139.8 | 372.2 |
| 2/6 15:55 | 12.02 | 27.4 | 3882.6 | 25815.3 | 232.6 | 139.7 | 372.3 |
| 2/6 15:56 | 12.03 | 27.4 | 3948.0 | 25854.5 | 232.7 | 139.7 | 372.4 |
| Average (all) | 12.00 | 27.4 | 4000.2 | 25877.7 | 232.6 | 140.2 | 372.8 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 11.96 | 27.3 | 3882.6 | 25731.1 | 232.4 | 139.7 | 372.2 |
| Maximum (all) | 12.03 | 27.5 | 4144.2 | 25972.2 | 232.7 | 141.0 | 373.6 |
| Average (valid values only) | 12.00 | 27.4 | 4000.2 | 25877.7 | 232.6 | 140.2 | 372.8 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/6/2020 4:08 PM thru 2/6/2020 4:28 PM

| Timestamp | (Turbine 1) 75-NOx ppm 1-Min | (Turbine 1) NOx ppm @15% O2 1-Min | (Turbine 1) 75-NOx lb/mmBtu 1-Min | (Turbine 1) NOx lb/hr 1-Min | (Turbine 1) CO ppm Crnt-Hr | (Turbine 1) CO ppm @15% O2 1-Min | (Turbine 1) CO lb/hr 1-Min | (Turbine 1) NH3 Slip ppm @15% O2 1-Min | (Turbine 1) NH3 Slip lb/hr 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/6 16:08 | 2.54 | 1.69 | 0.0062 | 16.73 | 0.00 | 0.00 | 0.00 | 1.43 | 5.12 |
| 2/6 16:09 | 2.54 | 1.69 | 0.0062 | 16.73 | 0.00 | 0.00 | 0.00 | 1.43 | 5.12 |
| 2/6 16:10 | 2.54 | 1.69 | 0.0062 | 16.73 | 0.00 | 0.00 | 0.00 | 1.42 | 5.12 |
| 2/6 16:11 | 2.54 | 1.69 | 0.0062 | 16.78 | 0.00 | 0.00 | 0.00 | 1.42 | 5.14 |
| 2/6 16:12 | 2.56 | 1.70 | 0.0063 | 17.05 | 0.00 | 0.00 | 0.00 | 1.42 | 5.14 |
| 2/6 16:13 | 2.61 | 1.72 | 0.0064 | 17.41 | 0.00 | 0.00 | 0.00 | 1.40 | 5.16 |
| 2/6 16:14 | 2.65 | 1.74 | 0.0064 | 17.34 | 0.00 | 0.00 | 0.00 | 1.40 | 5.15 |
| 2/6 16:15 | 2.67 | 1.76 | 0.0065 | 17.58 | 0.00 | 0.00 | 0.00 | 1.42 | 5.14 |
| 2/6 16:16 | 2.66 | 1.76 | 0.0065 | 17.57 | 0.00 | 0.00 | 0.00 | 1.43 | 5.14 |
| 2/6 16:17 | 2.64 | 1.74 | 0.0064 | 17.34 | 0.00 | 0.00 | 0.00 | 1.42 | 5.14 |
| 2/6 16:18 | 2.62 | 1.73 | 0.0064 | 17.32 | 0.00 | 0.00 | 0.00 | 1.42 | 5.14 |
| 2/6 16:19 | 2.59 | 1.72 | 0.0063 | 17.03 | 0.00 | 0.00 | 0.00 | 1.43 | 5.13 |
| 2/6 16:20 | 2.56 | 1.70 | 0.0063 | 17.02 | 0.00 | 0.00 | 0.00 | 1.43 | 5.13 |
| 2/6 16:21 | 2.55 | 1.69 | 0.0062 | 16.75 | 0.00 | 0.00 | 0.00 | 1.43 | 5.13 |
| 2/6 16:22 | 2.55 | 1.69 | 0.0062 | 16.74 | 0.00 | 0.00 | 0.00 | 1.43 | 5.13 |
| 2/6 16:23 | 2.55 | 1.69 | 0.0062 | 16.68 | 0.00 | 0.00 | 0.00 | 1.44 | 5.38 |
| 2/6 16:24 | 2.53 | 1.68 | 0.0062 | 16.72 | 0.00 | 0.00 | 0.00 | 1.45 | 5.39 |
| 2/6 16:25 | 2.51 | 1.66 | 0.0061 | 16.46 | 0.00 | 0.00 | 0.00 | 1.45 | 5.39 |
| 2/6 16:26 | 2.52 | 1.67 | 0.0062 | 16.78 | 0.00 | 0.00 | 0.00 | 1.44 | 5.41 |
| 2/6 16:27 | 2.54 | 1.68 | 0.0062 | 16.83 | 0.00 | 0.00 | 0.00 | 1.43 | 5.16 |
| 2/6 16:28 | 2.58 | 1.71 | 0.0063 | 17.04 | 0.00 | 0.00 | 0.00 | 1.44 | 5.41 |
| Average (all) | 2.57 | 1.70 | 0.0063 | 16.98 | 0.00 | 0.00 | 0.00 | 1.43 | 5.20 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 2.51 | 1.66 | 0.0061 | 16.46 | 0.00 | 0.00 | 0.00 | 1.40 | 5.12 |
| Maximum (all) | 2.67 | 1.76 | 0.0065 | 17.58 | 0.00 | 0.00 | 0.00 | 1.45 | 5.41 |
| Average (valid values only) | 2.57 | 1.70 | 0.0063 | 16.98 | 0.00 | 0.00 | 0.00 | 1.43 | 5.20 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/6/2020 4:08 PM thru 2/6/2020 4:28 PM

| Timestamp | (Turbine 1) 75-O2 % 1-Min | (Turbine 1) CT Nat Gas Flow lb/sec 1-Min | (Turbine 1) DB Nat Gas Flow scf/min 1-Min | (Turbine 1) Total Gas Flow hscf/hr 1-Min | (Turbine 1) GT Megawatts 1-Min | (Turbine 1) ST Megawatts 1-Min | (Turbine 1) Total Megawatts 1-Min |
|---|---|---|---|---|---|---|---|
| 2/6 16:08 | 12.02 | 27.4 | 3888.3 | 25818.7 | 232.6 | 139.8 | 372.4 |
| 2/6 16:09 | 12.03 | 27.4 | 3874.2 | 25810.2 | 232.5 | 139.6 | 372.1 |
| 2/6 16:10 | 12.03 | 27.4 | 3882.1 | 25815.0 | 232.5 | 139.5 | 372.0 |
| 2/6 16:11 | 12.03 | 27.4 | 4009.0 | 25891.1 | 232.4 | 139.4 | 371.8 |
| 2/6 16:12 | 12.00 | 27.3 | 4151.0 | 25890.6 | 232.4 | 139.6 | 372.0 |
| 2/6 16:13 | 11.97 | 27.4 | 4232.4 | 26025.1 | 232.6 | 140.1 | 372.7 |
| 2/6 16:14 | 11.94 | 27.3 | 4202.8 | 25921.7 | 232.5 | 140.7 | 373.2 |
| 2/6 16:15 | 11.95 | 27.3 | 4154.5 | 25892.7 | 232.6 | 141.1 | 373.7 |
| 2/6 16:16 | 11.96 | 27.3 | 4111.4 | 25866.8 | 232.5 | 141.0 | 373.5 |
| 2/6 16:17 | 11.97 | 27.4 | 4064.4 | 25924.3 | 232.7 | 140.9 | 373.6 |
| 2/6 16:18 | 11.98 | 27.4 | 4022.6 | 25899.3 | 232.5 | 140.7 | 373.2 |
| 2/6 16:19 | 11.99 | 27.4 | 3978.3 | 25872.7 | 232.6 | 140.4 | 373.0 |
| 2/6 16:20 | 12.00 | 27.4 | 3953.3 | 25857.7 | 232.6 | 140.4 | 373.0 |
| 2/6 16:21 | 12.01 | 27.4 | 3930.5 | 25844.0 | 232.4 | 140.3 | 372.7 |
| 2/6 16:22 | 12.01 | 27.4 | 3917.5 | 25836.2 | 232.4 | 140.1 | 372.5 |
| 2/6 16:23 | 12.02 | 27.3 | 3921.6 | 25753.0 | 232.3 | 139.9 | 372.2 |
| 2/6 16:24 | 12.02 | 27.3 | 4001.1 | 25800.7 | 232.5 | 139.7 | 372.2 |
| 2/6 16:25 | 12.00 | 27.3 | 4018.2 | 25810.9 | 232.6 | 139.7 | 372.3 |
| 2/6 16:26 | 12.00 | 27.4 | 4013.6 | 25893.9 | 232.6 | 139.8 | 372.4 |
| 2/6 16:27 | 11.99 | 27.5 | 4011.9 | 25978.5 | 232.7 | 140.0 | 372.7 |
| 2/6 16:28 | 11.99 | 27.4 | 4006.3 | 25889.5 | 232.5 | 139.9 | 372.4 |
| Average (all) | 12.00 | 27.4 | 4016.4 | 25871.1 | 232.5 | 140.1 | 372.6 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 11.94 | 27.3 | 3874.2 | 25753.0 | 232.3 | 139.4 | 371.8 |
| Maximum (all) | 12.03 | 27.5 | 4232.4 | 26025.1 | 232.7 | 141.1 | 373.7 |
| Average (valid values only) | 12.00 | 27.4 | 4016.4 | 25871.1 | 232.5 | 140.1 | 372.6 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/6/2020 4:46 PM thru 2/6/2020 5:06 PM

| Timestamp | (Turbine 1) 75-NOx ppm 1-Min | (Turbine 1) NOx ppm @15% O2 1-Min | (Turbine 1) 75-NOx lb/mmBtu 1-Min | (Turbine 1) NOx lb/hr 1-Min | (Turbine 1) CO ppm Crnt-Hr | (Turbine 1) CO ppm @15% O2 1-Min | (Turbine 1) CO lb/hr 1-Min | (Turbine 1) NH3 Slip ppm @15% O2 1-Min | (Turbine 1) NH3 Slip lb/hr 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/6 16:46 | 2.39 | 1.58 | 0.0058 | 15.68 | 0.00 | 0.00 | 0.00 | 1.50 | 5.41 |
| 2/6 16:47 | 2.32 | 1.54 | 0.0057 | 15.42 | 0.00 | 0.00 | 0.00 | 1.50 | 5.41 |
| 2/6 16:48 | 2.28 | 1.51 | 0.0056 | 15.14 | 0.00 | 0.00 | 0.00 | 1.52 | 5.67 |
| 2/6 16:49 | 2.26 | 1.50 | 0.0055 | 14.87 | 0.00 | 0.00 | 0.00 | 1.58 | 5.67 |
| 2/6 16:50 | 2.25 | 1.49 | 0.0055 | 14.92 | 0.00 | 0.00 | 0.00 | 1.64 | 5.97 |
| 2/6 16:51 | 2.25 | 1.49 | 0.0055 | 14.81 | 0.00 | 0.00 | 0.00 | 1.69 | 6.19 |
| 2/6 16:52 | 2.25 | 1.49 | 0.0055 | 14.86 | 0.00 | 0.00 | 0.00 | 1.74 | 6.48 |
| 2/6 16:53 | 2.23 | 1.48 | 0.0055 | 14.86 | 0.00 | 0.00 | 0.00 | 1.78 | 6.48 |
| 2/6 16:54 | 2.21 | 1.47 | 0.0054 | 14.53 | 0.00 | 0.00 | 0.00 | 1.81 | 6.73 |
| 2/6 16:55 | 2.20 | 1.46 | 0.0054 | 14.53 | 0.00 | 0.00 | 0.00 | 1.82 | 6.73 |
| 2/6 16:56 | 2.19 | 1.46 | 0.0054 | 14.61 | 0.00 | 0.00 | 0.00 | 1.84 | 6.77 |
| 2/6 16:57 | 2.18 | 1.45 | 0.0053 | 14.30 | 0.00 | 0.00 | 0.00 | 1.86 | 6.74 |
| 2/6 16:58 | 2.17 | 1.44 | 0.0053 | 14.30 | 0.00 | 0.00 | 0.00 | 1.89 | 7.02 |
| 2/6 16:59 | 2.17 | 1.44 | 0.0053 | 14.29 | 0.00 | 0.00 | 0.00 | 1.93 | 7.01 |
| 2/6 17:00 | 2.18 | 1.45 | 0.0053 | 14.34 | 0.00 | 0.00 | 0.00 | 1.95 | 7.03 |
| 2/6 17:01 | 2.18 | 1.45 | 0.0053 | 14.28 | 0.00 | 0.00 | 0.00 | 1.96 | 7.27 |
| 2/6 17:02 | 2.18 | 1.45 | 0.0053 | 14.28 | 0.00 | 0.00 | 0.00 | 1.98 | 7.27 |
| 2/6 17:03 | 2.16 | 1.43 | 0.0053 | 14.27 | 0.00 | 0.00 | 0.00 | 1.99 | 7.27 |
| 2/6 17:04 | 2.15 | 1.43 | 0.0053 | 14.27 | 0.00 | 0.00 | 0.00 | 2.00 | 7.27 |
| 2/6 17:05 | 2.13 | 1.41 | 0.0052 | 14.00 | 0.00 | 0.00 | 0.00 | 2.01 | 7.27 |
| 2/6 17:06 | 2.14 | 1.42 | 0.0052 | 14.09 | 0.00 | 0.00 | 0.00 | 2.01 | 7.31 |
| Average (all) | 2.21 | 1.47 | 0.0054 | 14.60 | 0.00 | 0.00 | 0.00 | 1.81 | 6.62 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 2.13 | 1.41 | 0.0052 | 14.00 | 0.00 | 0.00 | 0.00 | 1.50 | 5.41 |
| Maximum (all) | 2.39 | 1.58 | 0.0058 | 15.68 | 0.00 | 0.00 | 0.00 | 2.01 | 7.31 |
| Average (valid values only) | 2.21 | 1.47 | 0.0054 | 14.60 | 0.00 | 0.00 | 0.00 | 1.81 | 6.62 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/6/2020 4:46 PM thru 2/6/2020 5:06 PM

| Timestamp | (Turbine 1) 75-O2 % 1-Min | (Turbine 1) CT Nat Gas Flow lb/sec 1-Min | (Turbine 1) DB Nat Gas Flow scf/min 1-Min | (Turbine 1) Total Gas Flow hscf/hr 1-Min | (Turbine 1) GT Megawatts 1-Min | (Turbine 1) ST Megawatts 1-Min | (Turbine 1) Total Megawatts 1-Min |
|---|---|---|---|---|---|---|---|
| 2/6 16:46 | 11.99 | 27.4 | 3999.4 | 25885.3 | 232.4 | 140.3 | 372.7 |
| 2/6 16:47 | 12.00 | 27.4 | 3988.2 | 25878.6 | 232.3 | 140.1 | 372.4 |
| 2/6 16:48 | 12.00 | 27.4 | 3985.0 | 25876.7 | 232.5 | 140.1 | 372.6 |
| 2/6 16:49 | 12.01 | 27.4 | 3980.0 | 25873.7 | 232.5 | 140.1 | 372.6 |
| 2/6 16:50 | 12.00 | 27.5 | 3961.7 | 25948.4 | 232.2 | 140.1 | 372.3 |
| 2/6 16:51 | 12.01 | 27.3 | 3949.3 | 25769.6 | 232.5 | 140.0 | 372.5 |
| 2/6 16:52 | 12.01 | 27.4 | 3938.6 | 25848.9 | 232.5 | 140.1 | 372.6 |
| 2/6 16:53 | 12.01 | 27.4 | 3929.7 | 25843.5 | 232.3 | 139.9 | 372.2 |
| 2/6 16:54 | 12.02 | 27.3 | 3924.6 | 25754.8 | 232.4 | 139.6 | 372.0 |
| 2/6 16:55 | 12.02 | 27.3 | 3930.4 | 25758.2 | 232.2 | 139.5 | 371.7 |
| 2/6 16:56 | 12.02 | 27.4 | 4022.6 | 25899.3 | 232.3 | 139.4 | 371.7 |
| 2/6 16:57 | 12.00 | 27.3 | 4036.4 | 25821.8 | 232.4 | 139.6 | 372.0 |
| 2/6 16:58 | 11.99 | 27.3 | 4022.2 | 25813.3 | 232.4 | 139.8 | 372.2 |
| 2/6 16:59 | 12.00 | 27.3 | 3996.2 | 25797.7 | 232.3 | 140.1 | 372.4 |
| 2/6 17:00 | 12.00 | 27.4 | 3988.9 | 25879.0 | 232.6 | 140.1 | 372.7 |
| 2/6 17:01 | 12.00 | 27.3 | 3972.5 | 25783.5 | 232.5 | 139.9 | 372.4 |
| 2/6 17:02 | 12.00 | 27.3 | 3961.2 | 25776.7 | 232.5 | 139.8 | 372.3 |
| 2/6 17:03 | 12.01 | 27.3 | 3941.6 | 25765.0 | 232.4 | 139.6 | 372.0 |
| 2/6 17:04 | 12.01 | 27.3 | 3934.0 | 25760.4 | 232.3 | 139.3 | 371.6 |
| 2/6 17:05 | 12.01 | 27.3 | 3930.0 | 25758.0 | 232.4 | 139.6 | 372.0 |
| 2/6 17:06 | 12.01 | 27.5 | 3926.8 | 25927.5 | 232.6 | 139.5 | 372.1 |
| Average (all) | 12.01 | 27.4 | 3967.6 | 25829.5 | 232.4 | 139.8 | 372.2 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 11.99 | 27.3 | 3924.6 | 25754.8 | 232.2 | 139.3 | 371.6 |
| Maximum (all) | 12.02 | 27.5 | 4036.4 | 25948.4 | 232.6 | 140.3 | 372.7 |
| Average (valid values only) | 12.01 | 27.4 | 3967.6 | 25829.5 | 232.4 | 139.8 | 372.2 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CEMS AND REFERENCE METHOD DATA

## Reference Method Data

**Relative Accuracy Test Data**
**Reference Method Results (NOx)**
**General Electric, 7F.05, Unit #U-00001**

| | |
|---|---|
| Parameter: | Oxides of Nitrogen |
| Date of Test: | February 6, 2020 |
| Reference Method: | EPA Method 7E |
| RM Analyzer Type: | Chemiluminescence |
| Manufacturer: | THERMO 42 series |
| Model #: | |
| Serial #: | INST-NX-0020 |

| RUN # | RUN TIME | UNIT LOAD | CONCENTRATIONS | | RATES | |
|---|---|---|---|---|---|---|
| | | (MW) | (ppmvd) | (ppmvd@15%$O_2$) | (lb/hr) | (lb/MMBtu) |
| 1 | 11:36 - 11:56 | 373.4 | | 1.96 | 19.70 | 0.0072 |
| 2 | 12:10 - 12:30 | 373.2 | | 1.68 | 16.88 | 0.0062 |
| 3 | 12:42 - 13:02 | 373.3 | | 1.77 | 17.72 | 0.0065 |
| 4 | 13:20 - 13:40 | 372.6 | | 1.75 | 17.55 | 0.0065 |
| 5 | 13:55 - 14:15 | 372.8 | | 1.78 | 17.84 | 0.0066 |
| 6 | 14:27 - 14:47 | 372.7 | | 1.64 | 16.47 | 0.0061 |
| 7 | 15:01 - 15:21 | 372.7 | | 1.97 | 19.70 | 0.0073 |
| 8 | 15:36 - 15:56 | 372.8 | | 1.86 | 18.61 | 0.0068 |
| 9 | 16:08 - 16:28 | 372.6 | | 1.78 | 17.80 | 0.0066 |
| 10 | 16:46 - 17:06 | 372.2 | | 2.06 | 20.59 | 0.0076 |
| 11 | | | | | | |
| 12 | | | | | | |

**Relative Accuracy Test Data**
**Reference Method Results (CO)**
**General Electric, 7F.05, Unit #U-00001**

| | |
|---|---|
| Parameter: | Carbon Monoxide |
| Date of Test: | February 6, 2020 |
| Reference Method: | EPA Method 10 |
| RM Analyzer Type: | Infrared Absorption |
| Manufacturer: | |
| Model #: | THERMO 48 series |
| Serial #: | INST-CO-0045 |

| RUN # | RUN TIME | UNIT LOAD | CONCENTRATIONS | | RATES | |
|---|---|---|---|---|---|---|
| | | (MW) | (ppmvd) | (ppmvd@15%$O_2$) | (lb/hr) | (lb/MMBtu) |
| 1 | 11:36 - 11:56 | 373.4 | | 0.01 | 0.07 | |
| 2 | 12:10 - 12:30 | 373.2 | | 0.28 | 1.72 | |
| 3 | 12:42 - 13:02 | 373.3 | | 0.34 | 2.05 | |
| 4 | 13:20 - 13:40 | 372.6 | | 0.51 | 3.10 | |
| 5 | 13:55 - 14:15 | 372.8 | | 0.62 | 3.78 | |
| 6 | 14:27 - 14:47 | 372.7 | | 0.67 | 4.08 | |
| 7 | 15:01 - 15:21 | 372.7 | | 0.79 | 4.80 | |
| 8 | 15:36 - 15:56 | 372.8 | | 0.67 | 4.11 | |
| 9 | 16:08 - 16:28 | 372.6 | | 0.67 | 4.11 | |
| 10 | 16:46 - 17:06 | 372.2 | | 1.51 | 9.16 | |
| 11 | | | | | | |
| 12 | | | | | | |

**Relative Accuracy Test Data**
**Reference Method Results ($NH_3$)**
**General Electric, 7F.05, Unit #U-00001**

| | |
|---|---|
| Parameter: | Ammonia |
| Date of Test: | February 6, 2020 |
| Reference Method: | EPA Method 027 |
| RM Analyzer Type: | Fourier Transform infared |
| Manufacturer: | MKS |
| Model #: | 2030 |
| Serial #: | INST-IR-0004 |

| RUN # | RUN TIME | UNIT LOAD | CONCENTRATIONS | | RATES | |
|---|---|---|---|---|---|---|
| | | (MW) | (ppmvd) | (ppmvd@15%$O_2$) | (lb/hr) | (lb/MMBtu) |
| 1 | 11:36 - 11:56 | 373.4 | | 1.44 | 5.34 | |
| 2 | 12:10 - 12:30 | 373.2 | | 1.47 | 5.46 | |
| 3 | 12:42 - 13:02 | 373.3 | | 1.56 | 5.78 | |
| 4 | 13:20 - 13:40 | 372.6 | | 1.53 | 5.68 | |
| 5 | 13:55 - 14:15 | 372.8 | | 1.56 | 5.78 | |
| 6 | 14:27 - 14:47 | 372.7 | | 1.40 | 5.17 | |
| 7 | 15:01 - 15:21 | 372.7 | | 1.41 | 5.22 | |
| 8 | 15:36 - 15:56 | 372.8 | | 1.47 | 5.45 | |
| 9 | 16:08 - 16:28 | 372.6 | | 1.44 | 5.33 | |
| 10 | 16:46 - 17:06 | 372.2 | | 1.72 | 6.35 | |
| 11 | | | | | | |
| 12 | | | | | | |

**Relative Accuracy Test Data**
**Reference Method Results ($O_2$)**
**General Electric, 7F.05, Unit #U-00001**

| | |
|---|---|
| Parameter: | Oxygen |
| Date of Test: | February 6, 2020 |
| Reference Method: | EPA Method 3A |
| RM Analyzer Type: | Paramagnetic Cell |
| Manufacturer: | SERVOMEX 1440 |
| Model #: | |
| Serial #: | INST-O2-OO14 |

| RUN # | RUN TIME | UNIT LOAD (MW) | CONC. (%vd) |
|---|---|---|---|
| 1 | 11:36 - 11:56 | 373.4 | 11.86 |
| 2 | 12:10 - 12:30 | 373.2 | 11.68 |
| 3 | 12:42 - 13:02 | 373.3 | 11.97 |
| 4 | 13:20 - 13:40 | 372.6 | 12.02 |
| 5 | 13:55 - 14:15 | 372.8 | 12.02 |
| 6 | 14:27 - 14:47 | 372.7 | 12.04 |
| 7 | 15:01 - 15:21 | 372.7 | 12.06 |
| 8 | 15:36 - 15:56 | 372.8 | 12.07 |
| 9 | 16:08 - 16:28 | 372.6 | 12.02 |
| 10 | 16:46 - 17:06 | 372.2 | 11.97 |
| 11 | | | |
| 12 | | | |

**Cricket Valley Energy Center LLC**
**February 6, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,593,600 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,593,600 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.67 | in. Hg |
| Relative Humidity | 96 | % |
| Ambient Temperature | 33 | °F |
| Specific Humidity | 0.003805 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 373.4 | megawatts |
| Stack Exhaust Flow (M19) | 54,863,375 | SCFH |

Base Load Load, Run - 1

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/06/20 11:36:10 | 22670 | 11.13 | 2.73 | 0.00 | 2.01 | 3.07 |
| 02/06/20 11:36:40 | 22700 | 11.12 | 2.71 | 0.03 | 1.99 | 3.22 |
| 02/06/20 11:37:10 | 22730 | 11.11 | 2.69 | 0.00 | 2.12 | 3.38 |
| 02/06/20 11:37:40 | 22760 | 11.11 | 2.69 | 0.00 | 2.01 | 3.50 |
| 02/06/20 11:38:10 | 22790 | 11.10 | 2.72 | 0.01 | 2.05 | 3.86 |
| 02/06/20 11:38:40 | 22820 | 11.09 | 2.72 | 0.00 | 2.10 | 4.18 |
| 02/06/20 11:39:10 | 22850 | 11.15 | 2.75 | 0.00 | 2.18 | 4.55 |
| 02/06/20 11:39:40 | 22880 | 12.11 | 2.72 | 0.01 | 2.19 | 4.71 |
| 02/06/20 11:40:10 | 22910 | 12.14 | 2.84 | 0.00 | 2.14 | 4.93 |
| 02/06/20 11:40:40 | 22940 | 12.15 | 2.86 | 0.00 | 2.11 | 5.12 |
| 02/06/20 11:41:10 | 22970 | 12.14 | 2.87 | 0.00 | 2.24 | 5.69 |
| 02/06/20 11:41:40 | 23000 | 12.14 | 2.88 | 0.02 | 2.13 | 5.63 |
| 02/06/20 11:42:10 | 23030 | 12.13 | 2.88 | 0.02 | 2.24 | 5.62 |
| 02/06/20 11:42:40 | 23060 | 12.16 | 2.87 | 0.01 | 2.29 | 6.02 |
| 02/06/20 11:43:10 | 23090 | 12.13 | 2.85 | 0.09 | 2.18 | 6.08 |
| 02/06/20 11:43:40 | 23120 | 12.11 | 2.88 | 0.17 | 2.26 | 6.49 |
| 02/06/20 11:44:10 | 23150 | 12.10 | 2.91 | 0.15 | 2.19 | 6.46 |
| 02/06/20 11:44:40 | 23180 | 12.09 | 2.93 | 0.18 | 2.05 | 7.18 |
| 02/06/20 11:45:10 | 23210 | 12.09 | 2.97 | 0.17 | 1.92 | 7.98 |
| 02/06/20 11:45:40 | 23240 | 12.09 | 2.98 | 0.19 | 1.87 | 7.81 |
| 02/06/20 11:46:10 | 23270 | 12.10 | 2.98 | 0.08 | 2.04 | 7.44 |
| 02/06/20 11:46:40 | 23300 | 12.09 | 2.98 | 0.05 | 2.26 | 7.23 |
| 02/06/20 11:47:10 | 23330 | 12.09 | 2.99 | 0.01 | 2.07 | 7.85 |
| 02/06/20 11:47:40 | 23360 | 12.10 | 3.01 | 0.00 | 1.66 | 8.08 |
| 02/06/20 11:48:10 | 23390 | 12.11 | 3.03 | 0.00 | 1.84 | 8.27 |
| 02/06/20 11:48:40 | 23420 | 12.12 | 3.03 | 0.00 | 1.79 | 8.23 |
| 02/06/20 11:49:10 | 23450 | 12.12 | 2.97 | 0.00 | 1.84 | 7.91 |
| 02/06/20 11:49:40 | 23480 | 12.13 | 2.96 | 0.00 | 1.90 | 8.12 |
| 02/06/20 11:50:10 | 23510 | 12.13 | 2.96 | 0.00 | 1.91 | 7.98 |
| 02/06/20 11:50:40 | 23540 | 12.15 | 2.92 | 0.00 | 1.88 | 7.85 |
| 02/06/20 11:51:10 | 23570 | 12.15 | 2.94 | 0.00 | 1.94 | 8.14 |
| 02/06/20 11:51:40 | 23600 | 12.16 | 2.99 | 0.01 | 1.85 | 7.93 |
| 02/06/20 11:52:10 | 23630 | 12.14 | 2.91 | 0.02 | 1.99 | 7.96 |
| 02/06/20 11:52:40 | 23660 | 12.13 | 2.86 | 0.01 | 2.04 | 8.01 |
| 02/06/20 11:53:10 | 23690 | 12.15 | 2.89 | 0.00 | 1.93 | 8.70 |
| 02/06/20 11:53:40 | 23720 | 12.15 | 2.92 | 0.00 | 2.07 | 10.00 |
| 02/06/20 11:54:10 | 23750 | 12.14 | 2.96 | 0.03 | 2.30 | 9.14 |
| 02/06/20 11:54:40 | 23780 | 12.14 | 3.02 | 0.00 | 2.18 | 8.52 |
| 02/06/20 11:55:10 | 23810 | 12.15 | 3.05 | 0.03 | 2.20 | 8.43 |
| 02/06/20 11:55:40 | 23840 | 12.15 | 3.01 | 0.00 | 2.32 | 8.40 |
| 02/06/20 11:56:10 | 23870 | 12.15 | 3.00 | 0.02 | 1.99 | 8.45 |
| 02/06/20 11:56:40 | 23900 | 12.15 | 3.03 | 0.06 | 1.89 | 8.48 |
| **RAW AVERAGE** | | **11.96** | **2.90** | **0.03** | **2.05** | **6.82** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-OO14 | INST-NX-0020 | INST-CO-0045 | INST-IR-0004 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | 0.04 | -0.13 | 0.03 | |
| | **Final Zero** | 0.12 | 0.14 | 0.00 | |
| | **Avg. Zero** | 0.08 | 0.01 | 0.02 | |
| | **Initial UpScale** | 12.05 | 4.82 | 5.02 | |
| | **Final UpScale** | 12.06 | 4.81 | 4.97 | |
| | **Avg. UpScale** | 12.06 | 4.82 | 5.00 | |
| **Upscale Cal Gas** | | 11.96 | 4.99 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 11.86 | 3.01 | 0.02 | 2.20 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.96 | 0.01 | 1.44 |
| Emission Rate (lb/hr) | N/A | 19.70 | 0.07 | 5.34 |
| Emission Rate (lb/MMBtu) | N/A | 0.0072 | 0.000 | 0.002 |

**Cricket Valley Energy Center LLC**
**February 6, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,591,200 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,591,200 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.65 | in. Hg |
| Relative Humidity | 92 | % |
| Ambient Temperature | 34 | °F |
| Specific Humidity | 0.003798 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 373.2 | megawatts |
| Stack Exhaust Flow (M19) | 53,713,011 | SCFH |

Base Load Load, Run - 2

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/06/20 12:10:10 | 24710 | 11.68 | 2.57 | 0.27 | 2.05 | 3.45 |
| 02/06/20 12:10:40 | 24740 | 11.69 | 2.67 | 0.25 | 2.08 | 3.63 |
| 02/06/20 12:11:10 | 24770 | 11.70 | 2.72 | 0.26 | 2.11 | 3.83 |
| 02/06/20 12:11:40 | 24800 | 11.69 | 2.71 | 0.28 | 2.09 | 4.04 |
| 02/06/20 12:12:10 | 24830 | 11.67 | 2.60 | 0.27 | 2.22 | 4.88 |
| 02/06/20 12:12:40 | 24860 | 11.67 | 2.58 | 0.21 | 2.11 | 5.35 |
| 02/06/20 12:13:10 | 24890 | 11.68 | 2.60 | 0.19 | 2.15 | 5.07 |
| 02/06/20 12:13:40 | 24920 | 11.68 | 2.61 | 0.10 | 2.20 | 4.91 |
| 02/06/20 12:14:10 | 24950 | 11.69 | 2.61 | 0.22 | 2.28 | 4.87 |
| 02/06/20 12:14:40 | 24980 | 11.69 | 2.61 | 0.26 | 2.29 | 4.99 |
| 02/06/20 12:15:10 | 25010 | 11.69 | 2.63 | 0.32 | 2.24 | 5.11 |
| 02/06/20 12:15:40 | 25040 | 11.70 | 2.60 | 0.26 | 2.21 | 5.85 |
| 02/06/20 12:16:10 | 25070 | 11.71 | 2.59 | 0.24 | 2.34 | 5.77 |
| 02/06/20 12:16:40 | 25100 | 11.72 | 2.55 | 0.26 | 2.23 | 5.81 |
| 02/06/20 12:17:10 | 25130 | 11.72 | 2.53 | 0.23 | 2.34 | 5.98 |
| 02/06/20 12:17:40 | 25160 | 11.72 | 2.51 | 0.24 | 2.39 | 6.01 |
| 02/06/20 12:18:10 | 25190 | 11.72 | 2.50 | 0.26 | 2.28 | 6.46 |
| 02/06/20 12:18:40 | 25220 | 11.72 | 2.50 | 0.43 | 2.36 | 6.35 |
| 02/06/20 12:19:10 | 25250 | 11.71 | 2.51 | 0.52 | 2.29 | 6.29 |
| 02/06/20 12:19:40 | 25280 | 11.70 | 2.53 | 0.65 | 2.15 | 6.16 |
| 02/06/20 12:20:10 | 25310 | 11.68 | 2.54 | 0.60 | 2.02 | 6.09 |
| 02/06/20 12:20:40 | 25340 | 11.67 | 2.54 | 0.78 | 1.97 | 6.04 |
| 02/06/20 12:21:10 | 25370 | 11.66 | 2.55 | 0.83 | 2.14 | 6.07 |
| 02/06/20 12:21:40 | 25400 | 11.67 | 2.59 | 0.90 | 2.36 | 6.46 |
| 02/06/20 12:22:10 | 25430 | 11.69 | 2.59 | 1.09 | 2.17 | 7.48 |
| 02/06/20 12:22:40 | 25460 | 11.69 | 2.60 | 1.09 | 1.76 | 7.48 |
| 02/06/20 12:23:10 | 25490 | 11.70 | 2.56 | 0.93 | 1.94 | 6.86 |
| 02/06/20 12:23:40 | 25520 | 11.70 | 2.58 | 0.72 | 1.89 | 6.96 |
| 02/06/20 12:24:10 | 25550 | 11.69 | 2.57 | 0.59 | 1.94 | 7.70 |
| 02/06/20 12:24:40 | 25580 | 11.67 | 2.53 | 0.57 | 2.00 | 7.65 |
| 02/06/20 12:25:10 | 25610 | 11.79 | 2.54 | 0.31 | 2.01 | 7.68 |
| 02/06/20 12:25:40 | 25640 | 11.66 | 2.55 | 0.21 | 1.98 | 7.24 |
| 02/06/20 12:26:10 | 25670 | 11.68 | 2.38 | 0.19 | 2.04 | 7.15 |
| 02/06/20 12:26:40 | 25700 | 11.68 | 2.40 | 0.10 | 1.95 | 6.91 |
| 02/06/20 12:27:10 | 25730 | 11.69 | 2.41 | 0.22 | 2.09 | 7.19 |
| 02/06/20 12:27:40 | 25760 | 11.69 | 2.41 | 0.26 | 2.14 | 6.87 |
| 02/06/20 12:28:10 | 25790 | 11.69 | 2.42 | 0.32 | 2.03 | 7.19 |
| 02/06/20 12:28:40 | 25820 | 11.66 | 2.46 | 0.26 | 2.17 | 7.12 |
| 02/06/20 12:29:10 | 25850 | 11.69 | 2.46 | 0.24 | 2.40 | 8.06 |
| 02/06/20 12:29:40 | 25880 | 11.69 | 2.47 | 0.26 | 2.28 | 9.10 |
| 02/06/20 12:30:10 | 25910 | 11.68 | 2.43 | 0.23 | 2.30 | 8.68 |
| 02/06/20 12:30:40 | 25940 | 11.68 | 2.45 | 0.24 | 2.42 | 9.50 |
| **RAW AVERAGE** | | **11.69** | **2.54** | **0.43** | **2.15** | **6.34** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-OO14 | INST-NX-0020 | INST-CO-0045 | INST-IR-0004 |
| | | (%) | (ppmvd) | (ppmvd) | |
| Bias | **Initial Zero** | 0.12 | 0.14 | 0.00 | |
| Bias | **Final Zero** | 0.09 | -0.09 | 0.00 | |
| Bias | **Avg. Zero** | 0.11 | 0.03 | 0.00 | |
| Bias | **Initial UpScale** | 12.06 | 4.81 | 4.97 | |
| Bias | **Final UpScale** | 11.88 | 4.79 | 4.85 | |
| Bias | **Avg. UpScale** | 11.97 | 4.80 | 4.91 | |
| **Upscale Cal Gas** | | 11.96 | 4.99 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 11.68 | 2.63 | 0.44 | 2.30 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.68 | 0.28 | 1.47 |
| **Emission Rate (lb/hr)** | N/A | 16.88 | 1.72 | 5.46 |
| **Emission Rate (lb/MMBtu)** | N/A | 0.0062 | 0.001 | 0.002 |

**Cricket Valley Energy Center LLC**
**February 6, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,592,160 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,592,160 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.67 | in. Hg |
| Relative Humidity | 90 | % |
| Ambient Temperature | 35 | °F |
| Specific Humidity | 0.003864 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 373.3 | megawatts |
| Stack Exhaust Flow (M19) | 55,506,291 | SCFH |

Base Load Load, Run - 3

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/06/20 12:42:10 | 26630 | 11.86 | 2.51 | 0.13 | 2.00 | 7.81 |
| 02/06/20 12:42:40 | 26660 | 11.87 | 2.48 | 0.18 | 2.03 | 7.83 |
| 02/06/20 12:43:10 | 26690 | 11.87 | 2.48 | 0.20 | 2.11 | 7.76 |
| 02/06/20 12:43:40 | 26720 | 11.88 | 2.48 | 0.17 | 2.07 | 7.88 |
| 02/06/20 12:44:10 | 26750 | 11.89 | 2.49 | 0.22 | 2.20 | 8.14 |
| 02/06/20 12:44:40 | 26780 | 11.90 | 2.50 | 0.17 | 2.37 | 8.22 |
| 02/06/20 12:45:10 | 26810 | 11.90 | 2.52 | 0.24 | 2.17 | 8.76 |
| 02/06/20 12:45:40 | 26840 | 11.89 | 2.51 | 0.27 | 2.20 | 9.22 |
| 02/06/20 12:46:10 | 26870 | 11.87 | 2.48 | 0.29 | 2.08 | 9.44 |
| 02/06/20 12:46:40 | 26900 | 11.86 | 2.48 | 0.33 | 2.13 | 10.49 |
| 02/06/20 12:47:10 | 26930 | 11.86 | 2.51 | 0.36 | 2.08 | 10.00 |
| 02/06/20 12:47:40 | 26960 | 11.87 | 2.54 | 0.38 | 2.28 | 9.66 |
| 02/06/20 12:48:10 | 26990 | 11.87 | 2.54 | 0.39 | 2.27 | 9.19 |
| 02/06/20 12:48:40 | 27020 | 11.87 | 2.54 | 0.38 | 2.19 | 9.07 |
| 02/06/20 12:49:10 | 27050 | 11.88 | 2.56 | 0.35 | 2.25 | 9.20 |
| 02/06/20 12:49:40 | 27080 | 11.88 | 2.55 | 0.35 | 2.23 | 9.29 |
| 02/06/20 12:50:10 | 27110 | 11.87 | 2.57 | 0.24 | 2.30 | 9.76 |
| 02/06/20 12:50:40 | 27140 | 11.88 | 2.57 | 0.26 | 2.26 | 9.87 |
| 02/06/20 12:51:10 | 27170 | 11.89 | 2.54 | 0.38 | 2.15 | 9.43 |
| 02/06/20 12:51:40 | 27200 | 11.89 | 2.54 | 0.58 | 2.12 | 9.21 |
| 02/06/20 12:52:10 | 27230 | 11.89 | 2.51 | 0.56 | 2.13 | 8.91 |
| 02/06/20 12:52:40 | 27260 | 11.89 | 2.52 | 0.65 | 2.09 | 9.03 |
| 02/06/20 12:53:10 | 27290 | 11.89 | 2.54 | 0.75 | 2.04 | 8.86 |
| 02/06/20 12:53:40 | 27320 | 11.89 | 2.54 | 0.94 | 1.98 | 8.89 |
| 02/06/20 12:54:10 | 27350 | 11.89 | 2.53 | 0.85 | 1.91 | 8.96 |
| 02/06/20 12:54:40 | 27380 | 11.89 | 2.55 | 0.84 | 1.84 | 9.20 |
| 02/06/20 12:55:10 | 27410 | 11.89 | 2.57 | 0.92 | 2.09 | 8.92 |
| 02/06/20 12:55:40 | 27440 | 11.88 | 2.55 | 0.90 | 2.00 | 9.93 |
| 02/06/20 12:56:10 | 27470 | 11.87 | 2.53 | 0.76 | 2.25 | 10.77 |
| 02/06/20 12:56:40 | 27500 | 11.85 | 2.55 | 0.69 | 2.14 | 9.50 |
| 02/06/20 12:57:10 | 27530 | 11.86 | 2.57 | 0.62 | 2.13 | 9.84 |
| 02/06/20 12:57:40 | 27560 | 11.86 | 2.57 | 0.53 | 2.32 | 9.36 |
| 02/06/20 12:58:10 | 27590 | 11.87 | 2.57 | 0.49 | 2.33 | 9.20 |
| 02/06/20 12:58:40 | 27620 | 11.87 | 2.56 | 0.50 | 2.29 | 8.73 |
| 02/06/20 12:59:10 | 27650 | 11.88 | 2.57 | 0.42 | 2.27 | 8.77 |
| 02/06/20 12:59:40 | 27680 | 11.88 | 2.53 | 0.45 | 2.25 | 8.61 |
| 02/06/20 13:00:10 | 27710 | 11.88 | 2.53 | 0.63 | 2.19 | 8.41 |
| 02/06/20 13:00:40 | 27740 | 11.88 | 2.51 | 0.63 | 2.32 | 8.35 |
| 02/06/20 13:01:10 | 27770 | 11.89 | 2.48 | 0.62 | 2.20 | 8.36 |
| 02/06/20 13:01:40 | 27800 | 11.89 | 2.51 | 0.62 | 1.88 | 8.54 |
| 02/06/20 13:02:10 | 27830 | 11.89 | 2.51 | 0.57 | 1.89 | 8.62 |
| 02/06/20 13:02:40 | 27860 | 11.89 | 2.51 | 0.56 | 2.00 | 8.50 |
| **RAW AVERAGE** | | **11.88** | **2.53** | **0.48** | **2.14** | **9.01** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-OO14 | INST-NX-0020 | INST-CO-0045 | INST-IR-0004 |
| | | (%) | (ppmvd) | (ppmvd) | |
| Bias | **Initial Zero** | 0.09 | -0.09 | 0.00 | |
| Bias | **Final Zero** | 0.07 | -0.13 | 0.00 | |
| Bias | **Avg. Zero** | 0.08 | -0.11 | 0.00 | |
| Bias | **Initial UpScale** | 11.88 | 4.79 | 4.85 | |
| Bias | **Final UpScale** | 11.85 | 4.84 | 4.87 | |
| Bias | **Avg. UpScale** | 11.87 | 4.82 | 4.86 | |
| **Upscale Cal Gas** | | 11.96 | 4.99 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 11.97 | 2.67 | 0.51 | 2.36 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.77 | 0.34 | 1.56 |
| Emission Rate (lb/hr) | N/A | 17.72 | 2.05 | 5.78 |
| Emission Rate (lb/MMBtu) | N/A | 0.0065 | 0.001 | 0.002 |

**Cricket Valley Energy Center LLC**
**February 6, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,589,920 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,589,920 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.58 | in. Hg |
| Relative Humidity | 84 | % |
| Ambient Temperature | 37 | °F |
| Specific Humidity | 0.003916 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 372.6 | megawatts |
| Stack Exhaust Flow (M19) | 55,729,872 | SCFH |

Base Load Load, Run - 4

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/06/20 13:20:10 | 20 | 11.90 | 2.55 | 0.48 | 2.01 | 5.63 |
| 02/06/20 13:20:40 | 50 | 11.90 | 2.54 | 0.53 | 2.03 | 5.73 |
| 02/06/20 13:21:10 | 80 | 11.89 | 2.51 | 0.52 | 2.09 | 5.80 |
| 02/06/20 13:21:40 | 110 | 11.90 | 2.50 | 0.56 | 2.06 | 5.96 |
| 02/06/20 13:22:10 | 140 | 11.90 | 2.50 | 0.55 | 2.19 | 6.51 |
| 02/06/20 13:22:40 | 170 | 11.90 | 2.48 | 0.72 | 2.22 | 6.78 |
| 02/06/20 13:23:10 | 200 | 11.90 | 2.49 | 0.73 | 2.14 | 6.91 |
| 02/06/20 13:23:40 | 230 | 11.90 | 2.48 | 0.78 | 2.18 | 7.07 |
| 02/06/20 13:24:10 | 260 | 11.91 | 2.53 | 0.92 | 2.16 | 7.15 |
| 02/06/20 13:24:40 | 290 | 11.90 | 2.54 | 0.87 | 2.19 | 7.74 |
| 02/06/20 13:25:10 | 320 | 11.91 | 2.51 | 0.66 | 2.14 | 7.55 |
| 02/06/20 13:25:40 | 350 | 11.91 | 2.51 | 0.39 | 2.22 | 7.76 |
| 02/06/20 13:26:10 | 380 | 11.92 | 2.52 | 0.35 | 2.28 | 7.48 |
| 02/06/20 13:26:40 | 410 | 11.92 | 2.50 | 0.28 | 2.19 | 7.44 |
| 02/06/20 13:27:10 | 440 | 11.90 | 2.51 | 0.36 | 2.27 | 7.59 |
| 02/06/20 13:27:40 | 470 | 11.90 | 2.51 | 0.31 | 2.29 | 7.65 |
| 02/06/20 13:28:10 | 500 | 11.88 | 2.48 | 0.41 | 2.27 | 8.11 |
| 02/06/20 13:28:40 | 530 | 11.88 | 2.49 | 0.60 | 2.29 | 8.11 |
| 02/06/20 13:29:10 | 560 | 11.88 | 2.54 | 0.85 | 2.20 | 7.86 |
| 02/06/20 13:29:40 | 590 | 11.88 | 2.52 | 1.09 | 2.12 | 7.68 |
| 02/06/20 13:30:10 | 620 | 11.89 | 2.51 | 1.37 | 2.05 | 7.50 |
| 02/06/20 13:30:40 | 650 | 11.89 | 2.53 | 1.27 | 2.01 | 7.53 |
| 02/06/20 13:31:10 | 680 | 11.89 | 2.52 | 1.38 | 2.07 | 7.47 |
| 02/06/20 13:31:40 | 710 | 11.89 | 2.51 | 1.20 | 2.15 | 7.68 |
| 02/06/20 13:32:10 | 740 | 11.89 | 2.49 | 1.02 | 2.02 | 8.22 |
| 02/06/20 13:32:40 | 770 | 11.89 | 2.51 | 0.95 | 1.78 | 8.34 |
| 02/06/20 13:33:10 | 800 | 11.91 | 2.49 | 0.93 | 2.00 | 7.89 |
| 02/06/20 13:33:40 | 830 | 11.92 | 2.45 | 1.42 | 1.93 | 8.44 |
| 02/06/20 13:34:10 | 860 | 11.92 | 2.48 | 0.81 | 2.07 | 9.23 |
| 02/06/20 13:34:40 | 890 | 11.93 | 2.55 | 0.57 | 2.05 | 8.57 |
| 02/06/20 13:35:10 | 920 | 11.93 | 2.65 | 0.42 | 2.05 | 8.76 |
| 02/06/20 13:35:40 | 950 | 11.93 | 2.63 | 0.39 | 2.13 | 8.30 |
| 02/06/20 13:36:10 | 980 | 11.93 | 2.68 | 0.43 | 2.16 | 8.17 |
| 02/06/20 13:36:40 | 1010 | 11.93 | 2.67 | 0.49 | 2.10 | 7.82 |
| 02/06/20 13:37:10 | 1040 | 11.93 | 2.48 | 0.47 | 2.16 | 7.98 |
| 02/06/20 13:37:40 | 1070 | 11.93 | 2.47 | 0.49 | 2.18 | 7.74 |
| 02/06/20 13:38:10 | 1100 | 11.93 | 2.46 | 0.60 | 2.09 | 7.80 |
| 02/06/20 13:38:40 | 1130 | 11.93 | 2.45 | 0.57 | 2.23 | 7.73 |
| 02/06/20 13:39:10 | 1160 | 11.92 | 2.45 | 0.53 | 2.28 | 8.21 |
| 02/06/20 13:39:40 | 1190 | 11.92 | 2.47 | 0.53 | 2.06 | 8.82 |
| 02/06/20 13:40:10 | 1220 | 11.92 | 2.46 | 0.45 | 2.07 | 8.65 |
| 02/06/20 13:40:40 | 1250 | 11.92 | 2.45 | 0.57 | 2.19 | 9.00 |
| **RAW AVERAGE** | | **11.91** | **2.44** | **0.74** | **2.13** | **7.68** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-OO14 | INST-NX-0020 | INST-CO-0045 | INST-IR-0004 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | 0.07 | -0.13 | 0.00 | |
| | **Final Zero** | 0.11 | -0.14 | 0.00 | |
| | **Avg. Zero** | 0.09 | -0.14 | 0.00 | |
| | **Initial UpScale** | 11.85 | 4.84 | 4.87 | |
| | **Final UpScale** | 11.85 | 4.65 | 4.95 | |
| | **Avg. UpScale** | 11.85 | 4.75 | 4.91 | |
| **Upscale Cal Gas** | | 11.96 | 4.99 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 12.02 | 2.64 | 0.76 | 2.31 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.75 | 0.51 | 1.53 |
| Emission Rate (lb/hr) | N/A | 17.55 | 3.10 | 5.68 |
| Emission Rate (lb/MMBtu) | N/A | 0.0065 | 0.001 | 0.002 |

**Cricket Valley Energy Center LLC**
**February 6, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,588,170 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,588,170 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.57 | in. Hg |
| Relative Humidity | 80 | % |
| Ambient Temperature | 38 | °F |
| Specific Humidity | 0.003881 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 372.8 | megawatts |
| Stack Exhaust Flow (M19) | 55,694,575 | SCFH |

Base Load Load, Run - 5

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/06/20 13:55:10 | 30350 | 11.92 | 2.48 | 0.81 | 2.05 | 5.63 |
| 02/06/20 13:55:40 | 30380 | 11.93 | 2.55 | 0.57 | 2.07 | 5.73 |
| 02/06/20 13:56:10 | 30410 | 11.93 | 2.65 | 0.42 | 2.13 | 5.80 |
| 02/06/20 13:56:40 | 30440 | 11.93 | 2.63 | 0.39 | 2.10 | 5.96 |
| 02/06/20 13:57:10 | 30470 | 11.93 | 2.68 | 0.43 | 2.23 | 6.51 |
| 02/06/20 13:57:40 | 30500 | 11.93 | 2.67 | 0.49 | 2.26 | 6.78 |
| 02/06/20 13:58:10 | 30530 | 11.93 | 2.48 | 0.47 | 2.18 | 6.91 |
| 02/06/20 13:58:40 | 30560 | 11.93 | 2.47 | 0.49 | 2.22 | 7.07 |
| 02/06/20 13:59:10 | 30590 | 11.93 | 2.46 | 0.60 | 2.20 | 7.15 |
| 02/06/20 13:59:40 | 30620 | 11.93 | 2.45 | 0.57 | 2.23 | 7.74 |
| 02/06/20 14:00:10 | 30650 | 11.92 | 2.45 | 0.53 | 2.18 | 7.55 |
| 02/06/20 14:00:40 | 30680 | 11.92 | 2.47 | 0.53 | 2.26 | 7.76 |
| 02/06/20 14:01:10 | 30710 | 11.92 | 2.46 | 0.45 | 2.32 | 7.48 |
| 02/06/20 14:01:40 | 30740 | 11.92 | 2.45 | 0.57 | 2.23 | 7.44 |
| 02/06/20 14:02:10 | 30770 | 11.91 | 2.45 | 0.66 | 2.31 | 7.59 |
| 02/06/20 14:02:40 | 30800 | 11.91 | 2.44 | 0.74 | 2.33 | 7.65 |
| 02/06/20 14:03:10 | 30830 | 11.91 | 2.42 | 0.79 | 2.31 | 8.11 |
| 02/06/20 14:03:40 | 30860 | 11.91 | 2.42 | 1.03 | 2.33 | 8.11 |
| 02/06/20 14:04:10 | 30890 | 11.90 | 2.42 | 1.26 | 2.24 | 7.86 |
| 02/06/20 14:04:40 | 30920 | 11.91 | 2.42 | 1.39 | 2.16 | 7.68 |
| 02/06/20 14:05:10 | 30950 | 11.90 | 2.42 | 1.39 | 2.09 | 7.50 |
| 02/06/20 14:05:40 | 30980 | 11.91 | 2.44 | 1.47 | 2.05 | 7.53 |
| 02/06/20 14:06:10 | 31010 | 11.91 | 2.45 | 1.42 | 2.11 | 7.47 |
| 02/06/20 14:06:40 | 31040 | 11.92 | 2.48 | 1.36 | 2.19 | 7.68 |
| 02/06/20 14:07:10 | 31070 | 11.91 | 2.45 | 1.20 | 2.06 | 8.22 |
| 02/06/20 14:07:40 | 31100 | 11.91 | 2.44 | 1.04 | 1.82 | 8.34 |
| 02/06/20 14:08:10 | 31130 | 11.92 | 2.43 | 0.99 | 2.04 | 7.89 |
| 02/06/20 14:08:40 | 31160 | 11.92 | 2.42 | 0.96 | 1.97 | 8.44 |
| 02/06/20 14:09:10 | 31190 | 11.91 | 2.42 | 0.93 | 2.11 | 9.23 |
| 02/06/20 14:09:40 | 31220 | 11.91 | 2.42 | 0.87 | 2.09 | 8.57 |
| 02/06/20 14:10:10 | 31250 | 11.91 | 2.45 | 0.91 | 2.09 | 8.76 |
| 02/06/20 14:10:40 | 31280 | 11.91 | 2.43 | 0.93 | 2.17 | 8.30 |
| 02/06/20 14:11:10 | 31310 | 11.92 | 2.42 | 0.90 | 2.20 | 8.17 |
| 02/06/20 14:11:40 | 31340 | 11.89 | 2.42 | 1.06 | 2.14 | 7.82 |
| 02/06/20 14:12:10 | 31370 | 11.89 | 2.45 | 1.26 | 2.20 | 7.98 |
| 02/06/20 14:12:40 | 31400 | 11.89 | 2.47 | 1.49 | 2.22 | 7.74 |
| 02/06/20 14:13:10 | 31430 | 11.88 | 2.48 | 1.44 | 2.13 | 7.80 |
| 02/06/20 14:13:40 | 31460 | 11.88 | 2.48 | 1.42 | 2.27 | 7.73 |
| 02/06/20 14:14:10 | 31490 | 11.89 | 2.48 | 1.16 | 2.32 | 8.21 |
| 02/06/20 14:14:40 | 31520 | 11.89 | 2.48 | 0.85 | 2.10 | 8.82 |
| 02/06/20 14:15:10 | 31550 | 11.89 | 2.51 | 0.88 | 2.11 | 8.65 |
| 02/06/20 14:15:40 | 31580 | 11.90 | 2.48 | 0.90 | 2.23 | 9.00 |
| **RAW AVERAGE** | | **11.91** | **2.47** | **0.91** | **2.17** | **7.68** |

| | | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-OO14 | INST-NX-0020 | INST-CO-0045 | INST-IR-0004 |
| **Bias** | **Initial Zero** | 0.11 | -0.14 | 0.00 | |
| | **Final Zero** | 0.09 | -0.15 | 0.00 | |
| | **Avg. Zero** | 0.10 | -0.15 | 0.00 | |
| | **Initial UpScale** | 11.85 | 4.65 | 4.95 | |
| | **Final UpScale** | 11.86 | 4.80 | 4.91 | |
| | **Avg. UpScale** | 11.86 | 4.73 | 4.93 | |
| **Upscale Cal Gas** | | 11.96 | 4.99 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 12.02 | 2.68 | 0.93 | 2.35 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.78 | 0.62 | 1.56 |
| Emission Rate (lb/hr) | N/A | 17.84 | 3.78 | 5.78 |
| Emission Rate (lb/MMBtu) | N/A | 0.0066 | 0.001 | 0.002 |

**Cricket Valley Energy Center LLC**
**February 6, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,587,280 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,587,280 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.54 | in. Hg |
| Relative Humidity | 79 | % |
| Ambient Temperature | 38 | °F |
| Specific Humidity | 0.003836 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 372.7 | megawatts |
| Stack Exhaust Flow (M19) | 55,811,118 | SCFH |

Base Load Load, Run - 6

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/06/20 14:27:10 | 32420 | 11.94 | 2.43 | 1.03 | 1.73 | 8.51 |
| 02/06/20 14:27:40 | 32450 | 11.94 | 2.47 | 0.69 | 1.83 | 9.63 |
| 02/06/20 14:28:10 | 32480 | 11.93 | 2.55 | 0.66 | 1.84 | 10.38 |
| 02/06/20 14:28:40 | 32510 | 11.94 | 2.49 | 0.54 | 1.89 | 9.16 |
| 02/06/20 14:29:10 | 32540 | 11.94 | 2.32 | 0.51 | 1.92 | 8.99 |
| 02/06/20 14:29:40 | 32570 | 11.94 | 2.31 | 0.47 | 1.88 | 8.83 |
| 02/06/20 14:30:10 | 32600 | 11.94 | 2.29 | 0.42 | 1.91 | 9.28 |
| 02/06/20 14:30:40 | 32630 | 11.95 | 2.30 | 0.46 | 1.89 | 8.90 |
| 02/06/20 14:31:10 | 32660 | 11.94 | 2.33 | 0.59 | 1.90 | 8.94 |
| 02/06/20 14:31:40 | 32690 | 11.95 | 2.33 | 0.54 | 1.90 | 9.49 |
| 02/06/20 14:32:10 | 32720 | 11.94 | 2.35 | 0.52 | 1.96 | 3.97 |
| 02/06/20 14:32:40 | 32750 | 11.94 | 2.34 | 0.54 | 1.99 | 4.08 |
| 02/06/20 14:33:10 | 32780 | 11.94 | 2.35 | 0.73 | 1.97 | 4.11 |
| 02/06/20 14:33:40 | 32810 | 11.94 | 2.36 | 0.77 | 2.16 | 6.15 |
| 02/06/20 14:34:10 | 32840 | 11.94 | 2.34 | 0.76 | 2.35 | 6.36 |
| 02/06/20 14:34:40 | 32870 | 11.93 | 2.33 | 0.85 | 2.39 | 6.00 |
| 02/06/20 14:35:10 | 32900 | 11.91 | 2.34 | 0.84 | 2.35 | 6.95 |
| 02/06/20 14:35:40 | 32930 | 11.90 | 2.36 | 0.95 | 2.27 | 6.28 |
| 02/06/20 14:36:10 | 32960 | 11.89 | 2.36 | 0.96 | 2.26 | 7.03 |
| 02/06/20 14:36:40 | 32990 | 11.90 | 2.36 | 1.07 | 2.20 | 6.57 |
| 02/06/20 14:37:10 | 33020 | 11.89 | 2.36 | 1.08 | 2.18 | 6.85 |
| 02/06/20 14:37:40 | 33050 | 11.90 | 2.39 | 1.21 | 2.17 | 6.83 |
| 02/06/20 14:38:10 | 33080 | 11.90 | 2.37 | 1.16 | 2.10 | 6.88 |
| 02/06/20 14:38:40 | 33110 | 11.90 | 2.37 | 1.25 | 2.03 | 6.95 |
| 02/06/20 14:39:10 | 33140 | 11.91 | 2.36 | 1.24 | 2.00 | 7.03 |
| 02/06/20 14:39:40 | 33170 | 11.91 | 2.37 | 1.28 | 1.67 | 8.55 |
| 02/06/20 14:40:10 | 33200 | 11.91 | 2.36 | 1.26 | 1.66 | 7.99 |
| 02/06/20 14:40:40 | 33230 | 11.92 | 2.37 | 1.30 | 1.83 | 7.75 |
| 02/06/20 14:41:10 | 33260 | 11.92 | 2.35 | 1.33 | 1.82 | 7.97 |
| 02/06/20 14:41:40 | 33290 | 11.93 | 2.32 | 1.28 | 1.78 | 7.80 |
| 02/06/20 14:42:10 | 33320 | 11.93 | 2.29 | 1.34 | 1.77 | 7.98 |
| 02/06/20 14:42:40 | 33350 | 11.93 | 2.27 | 1.35 | 1.80 | 7.80 |
| 02/06/20 14:43:10 | 33380 | 11.93 | 2.29 | 1.34 | 1.72 | 7.77 |
| 02/06/20 14:43:40 | 33410 | 11.93 | 2.27 | 1.35 | 1.74 | 7.94 |
| 02/06/20 14:44:10 | 33440 | 11.93 | 2.30 | 1.26 | 1.73 | 7.80 |
| 02/06/20 14:44:40 | 33470 | 11.92 | 2.30 | 1.32 | 1.67 | 7.84 |
| 02/06/20 14:45:10 | 33500 | 11.91 | 2.31 | 1.31 | 1.67 | 7.89 |
| 02/06/20 14:45:40 | 33530 | 11.91 | 2.33 | 1.21 | 1.70 | 8.96 |
| 02/06/20 14:46:10 | 33560 | 11.90 | 2.36 | 1.09 | 1.69 | 8.40 |
| 02/06/20 14:46:40 | 33590 | 11.91 | 2.37 | 0.99 | 2.04 | 8.93 |
| 02/06/20 14:47:10 | 33620 | 11.91 | 2.37 | 0.91 | 2.10 | 8.29 |
| 02/06/20 14:47:40 | 33650 | 11.91 | 2.37 | 0.88 | 1.83 | 8.16 |
| **RAW AVERAGE** | | **11.92** | **2.35** | **0.97** | **1.94** | **7.67** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-OO14 | INST-NX-0020 | INST-CO-0045 | INST-IR-0004 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | 0.09 | -0.15 | 0.00 | |
| | **Final Zero** | 0.07 | 0.08 | 0.00 | |
| | **Avg. Zero** | 0.08 | -0.04 | 0.00 | |
| | **Initial UpScale** | 11.86 | 4.80 | 4.91 | |
| | **Final UpScale** | 11.83 | 4.77 | 4.89 | |
| | **Avg. UpScale** | 11.85 | 4.79 | 4.90 | |
| **Upscale Cal Gas** | | 11.96 | 4.99 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 12.04 | 2.47 | 1.01 | 2.10 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.64 | 0.67 | 1.40 |
| Emission Rate (lb/hr) | N/A | 16.47 | 4.08 | 5.17 |
| Emission Rate (lb/MMBtu) | N/A | 0.0061 | 0.002 | 0.002 |

**Cricket Valley Energy Center LLC**
**February 6, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,587,680 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,587,680 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.54 | in. Hg |
| Relative Humidity | 87 | % |
| Ambient Temperature | 35 | °F |
| Specific Humidity | 0.003751 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 372.7 | megawatts |
| Stack Exhaust Flow (M19) | 55,925,314 | SCFH |

Base Load Load, Run - 7

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/06/20 15:01:10 | 34460 | 11.96 | 2.69 | 2.77 | 1.83 | 3.97 |
| 02/06/20 15:01:40 | 34490 | 11.96 | 2.82 | 2.56 | 1.85 | 4.08 |
| 02/06/20 15:02:10 | 34520 | 11.96 | 2.83 | 2.06 | 1.91 | 4.11 |
| 02/06/20 15:02:40 | 34550 | 11.96 | 2.62 | 1.66 | 1.88 | 6.15 |
| 02/06/20 15:03:10 | 34580 | 11.96 | 2.57 | 1.35 | 2.01 | 6.36 |
| 02/06/20 15:03:40 | 34610 | 11.96 | 2.57 | 1.27 | 2.04 | 6.00 |
| 02/06/20 15:04:10 | 34640 | 11.95 | 2.61 | 1.09 | 1.96 | 6.95 |
| 02/06/20 15:04:40 | 34670 | 11.93 | 2.62 | 1.04 | 2.00 | 6.28 |
| 02/06/20 15:05:10 | 34700 | 11.92 | 2.60 | 1.11 | 1.98 | 7.03 |
| 02/06/20 15:05:40 | 34730 | 11.92 | 2.60 | 1.07 | 2.01 | 6.57 |
| 02/06/20 15:06:10 | 34760 | 11.92 | 2.62 | 1.02 | 1.96 | 6.85 |
| 02/06/20 15:06:40 | 34790 | 11.92 | 2.63 | 0.95 | 2.04 | 6.83 |
| 02/06/20 15:07:10 | 34820 | 11.92 | 2.71 | 0.78 | 2.10 | 6.88 |
| 02/06/20 15:07:40 | 34850 | 11.92 | 2.80 | 0.76 | 2.01 | 6.95 |
| 02/06/20 15:08:10 | 34880 | 11.93 | 2.87 | 0.77 | 2.09 | 7.03 |
| 02/06/20 15:08:40 | 34910 | 11.92 | 2.92 | 0.81 | 2.11 | 8.55 |
| 02/06/20 15:09:10 | 34940 | 11.93 | 2.97 | 0.82 | 2.09 | 7.99 |
| 02/06/20 15:09:40 | 34970 | 11.93 | 2.99 | 0.92 | 2.11 | 7.75 |
| 02/06/20 15:10:10 | 35000 | 11.93 | 2.97 | 0.92 | 2.02 | 7.97 |
| 02/06/20 15:10:40 | 35030 | 11.93 | 2.98 | 0.98 | 1.94 | 7.80 |
| 02/06/20 15:11:10 | 35060 | 11.94 | 2.95 | 0.84 | 1.87 | 7.98 |
| 02/06/20 15:11:40 | 35090 | 11.94 | 2.91 | 0.87 | 1.83 | 7.80 |
| 02/06/20 15:12:10 | 35120 | 11.94 | 2.86 | 0.95 | 1.89 | 7.77 |
| 02/06/20 15:12:40 | 35150 | 11.95 | 2.90 | 0.95 | 1.97 | 7.94 |
| 02/06/20 15:13:10 | 35180 | 11.94 | 2.92 | 1.01 | 1.84 | 7.80 |
| 02/06/20 15:13:40 | 35210 | 11.95 | 2.95 | 0.95 | 1.60 | 7.84 |
| 02/06/20 15:14:10 | 35240 | 11.95 | 2.98 | 0.85 | 1.82 | 7.89 |
| 02/06/20 15:14:40 | 35270 | 11.96 | 2.99 | 0.93 | 1.75 | 8.96 |
| 02/06/20 15:15:10 | 35300 | 11.96 | 3.01 | 0.93 | 1.89 | 8.40 |
| 02/06/20 15:15:40 | 35330 | 11.95 | 2.98 | 1.01 | 1.87 | 8.93 |
| 02/06/20 15:16:10 | 35360 | 11.96 | 2.98 | 0.93 | 1.87 | 8.29 |
| 02/06/20 15:16:40 | 35390 | 11.96 | 2.98 | 1.04 | 1.95 | 8.16 |
| 02/06/20 15:17:10 | 35420 | 11.96 | 2.94 | 1.04 | 1.98 | 8.51 |
| 02/06/20 15:17:40 | 35450 | 11.95 | 2.92 | 1.03 | 1.92 | 9.63 |
| 02/06/20 15:18:10 | 35480 | 11.95 | 2.92 | 1.13 | 1.98 | 10.38 |
| 02/06/20 15:18:40 | 35510 | 11.92 | 2.91 | 0.96 | 2.00 | 9.16 |
| 02/06/20 15:19:10 | 35540 | 11.91 | 2.89 | 1.08 | 1.91 | 8.99 |
| 02/06/20 15:19:40 | 35570 | 11.90 | 2.89 | 1.03 | 2.05 | 8.83 |
| 02/06/20 15:20:10 | 35600 | 11.89 | 2.88 | 1.02 | 2.10 | 9.28 |
| 02/06/20 15:20:40 | 35630 | 11.90 | 2.87 | 1.10 | 1.88 | 8.90 |
| 02/06/20 15:21:10 | 35660 | 11.82 | 2.85 | 1.15 | 1.89 | 8.94 |
| 02/06/20 15:21:40 | 35690 | 11.89 | 2.90 | 1.89 | 2.01 | 9.49 |
| **RAW AVERAGE** | | **11.93** | **2.84** | **1.13** | **1.95** | **7.67** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-OO14 | INST-NX-0020 | INST-CO-0045 | INST-IR-0004 |
| | | (%) | (ppmvd) | (ppmvd) | |
| Bias | **Initial Zero** | 0.07 | 0.08 | 0.00 | |
| Bias | **Final Zero** | 0.11 | -0.07 | 0.00 | |
| Bias | **Avg. Zero** | 0.09 | 0.01 | 0.00 | |
| Bias | **Initial UpScale** | 11.83 | 4.77 | 4.89 | |
| Bias | **Final UpScale** | 11.85 | 4.84 | 4.84 | |
| Bias | **Avg. UpScale** | 11.84 | 4.81 | 4.87 | |
| **Upscale Cal Gas** | | 11.96 | 4.99 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 12.06 | 2.95 | 1.18 | 2.11 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.97 | 0.79 | 1.41 |
| **Emission Rate (lb/hr)** | N/A | 19.70 | 4.80 | 5.22 |
| **Emission Rate (lb/MMBtu)** | N/A | 0.0073 | 0.002 | 0.002 |

**Cricket Valley Energy Center LLC**
**February 6, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,587,770 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,587,770 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.53 | in. Hg |
| Relative Humidity | 86 | % |
| Ambient Temperature | 36 | °F |
| Specific Humidity | 0.003860 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 372.8 | megawatts |
| Stack Exhaust Flow (M19) | 56,023,514 | SCFH |

Base Load Load, Run - 8

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/06/20 15:36:10 | 36530 | 11.96 | 2.65 | 1.94 | 1.90 | 8.55 |
| 02/06/20 15:36:40 | 36560 | 11.96 | 2.60 | 1.56 | 1.89 | 7.99 |
| 02/06/20 15:37:10 | 36590 | 11.97 | 2.62 | 1.11 | 2.06 | 7.75 |
| 02/06/20 15:37:40 | 36620 | 11.97 | 2.73 | 0.99 | 2.05 | 7.97 |
| 02/06/20 15:38:10 | 36650 | 11.97 | 2.77 | 0.76 | 2.01 | 7.80 |
| 02/06/20 15:38:40 | 36680 | 11.98 | 2.76 | 0.60 | 2.00 | 7.98 |
| 02/06/20 15:39:10 | 36710 | 11.98 | 2.80 | 0.56 | 2.03 | 7.80 |
| 02/06/20 15:39:40 | 36740 | 11.99 | 2.81 | 0.46 | 1.95 | 7.77 |
| 02/06/20 15:40:10 | 36770 | 11.97 | 2.83 | 0.57 | 1.97 | 7.94 |
| 02/06/20 15:40:40 | 36800 | 11.96 | 2.88 | 0.51 | 1.96 | 7.80 |
| 02/06/20 15:41:10 | 36830 | 11.95 | 2.89 | 0.43 | 1.90 | 7.84 |
| 02/06/20 15:41:40 | 36860 | 11.95 | 2.89 | 0.57 | 1.90 | 7.89 |
| 02/06/20 15:42:10 | 36890 | 11.94 | 2.89 | 0.64 | 1.93 | 8.96 |
| 02/06/20 15:42:40 | 36920 | 11.94 | 2.87 | 0.60 | 1.92 | 8.40 |
| 02/06/20 15:43:10 | 36950 | 11.94 | 2.82 | 0.71 | 2.27 | 8.93 |
| 02/06/20 15:43:40 | 36980 | 11.93 | 2.82 | 0.80 | 2.33 | 8.29 |
| 02/06/20 15:44:10 | 37010 | 11.94 | 2.79 | 0.87 | 2.06 | 8.16 |
| 02/06/20 15:44:40 | 37040 | 11.94 | 2.76 | 0.90 | 1.99 | 8.51 |
| 02/06/20 15:45:10 | 37070 | 11.95 | 2.72 | 0.88 | 2.06 | 9.63 |
| 02/06/20 15:45:40 | 37100 | 11.94 | 2.73 | 0.85 | 2.50 | 10.38 |
| 02/06/20 15:46:10 | 37130 | 11.94 | 2.72 | 0.75 | 1.96 | 9.16 |
| 02/06/20 15:46:40 | 37160 | 11.94 | 2.72 | 0.80 | 1.90 | 8.99 |
| 02/06/20 15:47:10 | 37190 | 11.94 | 2.70 | 0.72 | 1.98 | 8.83 |
| 02/06/20 15:47:40 | 37220 | 11.94 | 2.69 | 0.74 | 2.07 | 9.28 |
| 02/06/20 15:48:10 | 37250 | 11.94 | 2.69 | 0.80 | 2.16 | 8.90 |
| 02/06/20 15:48:40 | 37280 | 11.94 | 2.68 | 0.71 | 2.05 | 8.94 |
| 02/06/20 15:49:10 | 37310 | 11.94 | 2.65 | 0.93 | 2.18 | 9.49 |
| 02/06/20 15:49:40 | 37340 | 11.95 | 2.63 | 0.90 | 1.77 | 9.32 |
| 02/06/20 15:50:10 | 37370 | 11.95 | 2.62 | 1.09 | 1.56 | 9.96 |
| 02/06/20 15:50:40 | 37400 | 11.95 | 2.60 | 1.35 | 2.77 | 11.18 |
| 02/06/20 15:51:10 | 37430 | 11.95 | 2.63 | 1.35 | 1.80 | 8.75 |
| 02/06/20 15:51:40 | 37460 | 11.95 | 2.60 | 1.59 | 1.88 | 8.11 |
| 02/06/20 15:52:10 | 37490 | 11.94 | 2.59 | 1.50 | 1.88 | 7.77 |
| 02/06/20 15:52:40 | 37520 | 11.94 | 2.60 | 1.44 | 2.05 | 7.32 |
| 02/06/20 15:53:10 | 37550 | 11.92 | 2.59 | 1.41 | 2.01 | 6.91 |
| 02/06/20 15:53:40 | 37580 | 11.92 | 2.60 | 1.28 | 2.02 | 6.46 |
| 02/06/20 15:54:10 | 37610 | 11.92 | 2.62 | 1.20 | 2.06 | 6.05 |
| 02/06/20 15:54:40 | 37640 | 11.91 | 2.60 | 1.16 | 2.20 | 5.55 |
| 02/06/20 15:55:10 | 37670 | 11.91 | 2.58 | 1.02 | 2.12 | 5.06 |
| 02/06/20 15:55:40 | 37700 | 11.91 | 2.60 | 1.09 | 1.97 | 4.61 |
| 02/06/20 15:56:10 | 37730 | 11.92 | 2.64 | 1.09 | 1.91 | 5.03 |
| 02/06/20 15:56:40 | 37760 | 11.93 | 2.62 | 1.06 | 1.92 | 6.69 |
| **RAW AVERAGE** | | **11.94** | **2.70** | **0.96** | **2.02** | **8.06** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-OO14 | INST-NX-0020 | INST-CO-0045 | INST-IR-0004 |
| | | (%) | (ppmvd) | (ppmvd) | |
| Bias | **Initial Zero** | 0.11 | -0.07 | 0.00 | |
| | **Final Zero** | 0.10 | 0.04 | 0.00 | |
| | **Avg. Zero** | 0.11 | -0.02 | 0.00 | |
| | **Initial UpScale** | 11.85 | 4.84 | 4.84 | |
| | **Final UpScale** | 11.82 | 4.89 | 4.84 | |
| | **Avg. UpScale** | 11.84 | 4.87 | 4.84 | |
| **Upscale Cal Gas** | | 11.96 | 4.99 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 12.07 | 2.78 | 1.01 | 2.20 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.86 | 0.67 | 1.47 |
| Emission Rate (lb/hr) | N/A | 18.61 | 4.11 | 5.45 |
| Emission Rate (lb/MMBtu) | N/A | 0.0068 | 0.002 | 0.002 |

**Cricket Valley Energy Center LLC**
**February 6, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,587,110 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,587,110 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.51 | in. Hg |
| Relative Humidity | 87 | % |
| Ambient Temperature | 36 | °F |
| Specific Humidity | 0.003908 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 372.6 | megawatts |
| Stack Exhaust Flow (M19) | 55,712,705 | SCFH |

Base Load Load, Run - 9

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/06/20 16:08:10 | 38600 | 11.90 | 2.77 | 1.83 | 2.13 | 9.54 |
| 02/06/20 16:08:40 | 38630 | 11.89 | 2.70 | 1.53 | 2.33 | 9.16 |
| 02/06/20 16:09:10 | 38660 | 11.88 | 2.69 | 1.44 | 2.40 | 8.76 |
| 02/06/20 16:09:40 | 38690 | 11.87 | 2.69 | 1.24 | 2.32 | 8.43 |
| 02/06/20 16:10:10 | 38720 | 11.87 | 2.69 | 0.98 | 2.44 | 7.97 |
| 02/06/20 16:10:40 | 38750 | 11.88 | 2.71 | 0.85 | 2.46 | 7.63 |
| 02/06/20 16:11:10 | 38780 | 11.87 | 2.69 | 0.76 | 2.73 | 7.45 |
| 02/06/20 16:11:40 | 38810 | 11.88 | 2.73 | 0.64 | 2.24 | 8.82 |
| 02/06/20 16:12:10 | 38840 | 11.88 | 2.72 | 0.54 | 2.39 | 8.29 |
| 02/06/20 16:12:40 | 38870 | 11.89 | 2.69 | 0.67 | 2.23 | 7.95 |
| 02/06/20 16:13:10 | 38900 | 11.89 | 2.68 | 0.52 | 1.84 | 8.07 |
| 02/06/20 16:13:40 | 38930 | 11.89 | 2.66 | 0.48 | 1.70 | 8.23 |
| 02/06/20 16:14:10 | 38960 | 11.90 | 2.65 | 0.48 | 1.56 | 8.66 |
| 02/06/20 16:14:40 | 38990 | 11.91 | 2.66 | 0.56 | 1.67 | 9.17 |
| 02/06/20 16:15:10 | 39020 | 11.91 | 2.63 | 0.60 | 1.98 | 10.47 |
| 02/06/20 16:15:40 | 39050 | 11.91 | 2.60 | 0.60 | 1.85 | 9.47 |
| 02/06/20 16:16:10 | 39080 | 11.92 | 2.60 | 0.61 | 1.89 | 9.27 |
| 02/06/20 16:16:40 | 39110 | 11.93 | 2.60 | 0.66 | 1.87 | 9.08 |
| 02/06/20 16:17:10 | 39140 | 11.94 | 2.60 | 0.59 | 1.88 | 8.96 |
| 02/06/20 16:17:40 | 39170 | 11.93 | 2.60 | 0.68 | 1.97 | 9.14 |
| 02/06/20 16:18:10 | 39200 | 11.93 | 2.61 | 0.64 | 1.95 | 8.86 |
| 02/06/20 16:18:40 | 39230 | 11.93 | 2.60 | 0.65 | 1.84 | 9.12 |
| 02/06/20 16:19:10 | 39260 | 11.93 | 2.59 | 0.67 | 2.02 | 9.23 |
| 02/06/20 16:19:40 | 39290 | 11.94 | 2.59 | 0.73 | 2.08 | 8.96 |
| 02/06/20 16:20:10 | 39320 | 11.94 | 2.60 | 0.92 | 1.95 | 9.53 |
| 02/06/20 16:20:40 | 39350 | 11.94 | 2.60 | 0.82 | 1.90 | 5.94 |
| 02/06/20 16:21:10 | 39380 | 11.94 | 2.60 | 0.87 | 1.84 | 6.23 |
| 02/06/20 16:21:40 | 39410 | 11.94 | 2.60 | 0.84 | 1.99 | 7.11 |
| 02/06/20 16:22:10 | 39440 | 11.94 | 2.60 | 0.93 | 1.87 | 6.92 |
| 02/06/20 16:22:40 | 39470 | 11.94 | 2.63 | 0.99 | 1.86 | 7.31 |
| 02/06/20 16:23:10 | 39500 | 11.93 | 2.62 | 1.03 | 1.74 | 7.16 |
| 02/06/20 16:23:40 | 39530 | 11.94 | 2.63 | 1.20 | 1.76 | 7.27 |
| 02/06/20 16:24:10 | 39560 | 11.94 | 2.65 | 1.24 | 1.75 | 7.52 |
| 02/06/20 16:24:40 | 39590 | 11.94 | 2.71 | 1.27 | 1.55 | 7.40 |
| 02/06/20 16:25:10 | 39620 | 11.92 | 2.76 | 1.38 | 1.59 | 7.36 |
| 02/06/20 16:25:40 | 39650 | 11.91 | 2.71 | 1.47 | 2.08 | 7.97 |
| 02/06/20 16:26:10 | 39680 | 11.90 | 2.69 | 1.47 | 1.79 | 8.50 |
| 02/06/20 16:26:40 | 39710 | 11.90 | 2.60 | 1.56 | 1.89 | 8.02 |
| 02/06/20 16:27:10 | 39740 | 11.90 | 2.60 | 1.48 | 1.95 | 7.77 |
| 02/06/20 16:27:40 | 39770 | 11.91 | 2.60 | 1.38 | 2.02 | 7.62 |
| 02/06/20 16:28:10 | 39800 | 11.92 | 2.60 | 1.31 | 2.07 | 7.57 |
| 02/06/20 16:28:40 | 39830 | 11.92 | 2.61 | 1.45 | 1.97 | 8.18 |
| **RAW AVERAGE** | | **11.91** | **2.65** | **0.97** | **1.98** | **8.24** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-OO14 | INST-NX-0020 | INST-CO-0045 | INST-IR-0004 |
| | | (%) | (ppmvd) | (ppmvd) | |
| Bias | **Initial Zero** | 0.10 | 0.04 | 0.00 | |
| Bias | **Final Zero** | 0.08 | 0.08 | 0.00 | |
| Bias | **Avg. Zero** | 0.09 | 0.06 | 0.00 | |
| Bias | **Initial UpScale** | 11.82 | 4.89 | 4.84 | |
| Bias | **Final UpScale** | 11.88 | 4.88 | 4.84 | |
| Bias | **Avg. UpScale** | 11.85 | 4.89 | 4.84 | |
| **Upscale Cal Gas** | | 11.96 | 4.99 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 12.02 | 2.67 | 1.01 | 2.16 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.78 | 0.67 | 1.44 |
| Emission Rate (lb/hr) | N/A | 17.80 | 4.11 | 5.33 |
| Emission Rate (lb/MMBtu) | N/A | 0.0066 | 0.002 | 0.002 |

**Cricket Valley Energy Center LLC**
**February 6, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,582,950 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,582,950 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.53 | in. Hg |
| Relative Humidity | 88 | % |
| Ambient Temperature | 35 | °F |
| Specific Humidity | 0.003796 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 372.2 | megawatts |
| Stack Exhaust Flow (M19) | 55,301,432 | SCFH |

Base Load Load, Run - 10

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/06/20 16:46:10 | 41270 | 11.90 | 2.69 | 1.94 | 2.35 | 9.27 |
| 02/06/20 16:46:40 | 41300 | 11.89 | 2.72 | 1.89 | 2.42 | 8.89 |
| 02/06/20 16:47:10 | 41330 | 11.88 | 2.73 | 1.70 | 2.37 | 8.49 |
| 02/06/20 16:47:40 | 41360 | 11.87 | 2.73 | 1.58 | 2.26 | 8.16 |
| 02/06/20 16:48:10 | 41390 | 11.87 | 2.69 | 1.43 | 2.25 | 7.70 |
| 02/06/20 16:48:40 | 41420 | 11.88 | 2.70 | 1.47 | 2.28 | 7.36 |
| 02/06/20 16:49:10 | 41450 | 11.88 | 2.72 | 1.58 | 2.47 | 7.17 |
| 02/06/20 16:49:40 | 41480 | 11.88 | 2.72 | 1.59 | 2.23 | 8.54 |
| 02/06/20 16:50:10 | 41510 | 11.89 | 2.70 | 1.60 | 2.31 | 8.02 |
| 02/06/20 16:50:40 | 41540 | 11.89 | 2.69 | 1.71 | 2.28 | 7.67 |
| 02/06/20 16:51:10 | 41570 | 11.88 | 2.69 | 1.76 | 2.11 | 7.80 |
| 02/06/20 16:51:40 | 41600 | 11.89 | 2.69 | 1.70 | 2.01 | 7.96 |
| 02/06/20 16:52:10 | 41630 | 11.89 | 2.69 | 1.70 | 1.94 | 8.39 |
| 02/06/20 16:52:40 | 41660 | 11.90 | 2.71 | 1.73 | 2.01 | 8.90 |
| 02/06/20 16:53:10 | 41690 | 11.88 | 2.73 | 1.49 | 2.04 | 10.19 |
| 02/06/20 16:53:40 | 41720 | 11.90 | 2.72 | 1.43 | 1.95 | 9.20 |
| 02/06/20 16:54:10 | 41750 | 11.90 | 2.75 | 1.33 | 1.92 | 9.00 |
| 02/06/20 16:54:40 | 41780 | 11.90 | 2.80 | 1.25 | 1.87 | 8.81 |
| 02/06/20 16:55:10 | 41810 | 11.92 | 2.81 | 1.22 | 1.86 | 8.69 |
| 02/06/20 16:55:40 | 41840 | 11.92 | 2.74 | 1.24 | 1.92 | 8.86 |
| 02/06/20 16:56:10 | 41870 | 11.92 | 2.69 | 1.33 | 1.96 | 8.59 |
| 02/06/20 16:56:40 | 41900 | 11.93 | 2.69 | 1.52 | 1.99 | 8.85 |
| 02/06/20 16:57:10 | 41930 | 11.93 | 2.68 | 1.58 | 2.11 | 8.95 |
| 02/06/20 16:57:40 | 41960 | 11.94 | 2.66 | 1.76 | 2.23 | 8.69 |
| 02/06/20 16:58:10 | 41990 | 11.94 | 2.66 | 1.69 | 2.13 | 9.26 |
| 02/06/20 16:58:40 | 42020 | 11.89 | 2.66 | 1.79 | 2.16 | 5.67 |
| 02/06/20 16:59:10 | 42050 | 11.89 | 3.55 | 3.57 | 3.02 | 5.96 |
| 02/06/20 16:59:40 | 42080 | 11.90 | 4.76 | 4.32 | 3.47 | 6.83 |
| 02/06/20 17:00:10 | 42110 | 11.88 | 4.90 | 4.64 | 3.57 | 6.64 |
| 02/06/20 17:00:40 | 42140 | 11.90 | 4.90 | 4.87 | 3.67 | 7.04 |
| 02/06/20 17:01:10 | 42170 | 11.90 | 4.90 | 4.84 | 3.60 | 6.89 |
| 02/06/20 17:01:40 | 42200 | 11.90 | 4.92 | 4.90 | 3.64 | 7.00 |
| 02/06/20 17:02:10 | 42230 | 11.92 | 4.99 | 4.87 | 3.62 | 7.24 |
| 02/06/20 17:02:40 | 42260 | 11.89 | 2.73 | 4.85 | 3.51 | 7.12 |
| 02/06/20 17:03:10 | 42290 | 11.50 | 2.73 | 1.58 | 1.89 | 7.08 |
| 02/06/20 17:03:40 | 42320 | 11.77 | 2.72 | 1.59 | 2.15 | 7.70 |
| 02/06/20 17:04:10 | 42350 | 11.80 | 2.75 | 1.60 | 2.01 | 8.22 |
| 02/06/20 17:04:40 | 42380 | 11.82 | 2.80 | 1.71 | 2.11 | 7.75 |
| 02/06/20 17:05:10 | 42410 | 11.83 | 2.81 | 1.76 | 2.16 | 7.50 |
| 02/06/20 17:05:40 | 42440 | 11.84 | 2.74 | 1.70 | 2.17 | 7.35 |
| 02/06/20 17:06:10 | 42470 | 11.86 | 2.69 | 1.70 | 2.19 | 7.30 |
| 02/06/20 17:06:40 | 42500 | 11.88 | 2.69 | 1.73 | 2.16 | 7.91 |
| **RAW AVERAGE** | | **11.88** | **3.05** | **2.17** | **2.39** | **7.97** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-OO14 | INST-NX-0020 | INST-CO-0045 | INST-IR-0004 |
| | | (%) | (ppmvd) | (ppmvd) | |
| Bias | **Initial Zero** | 0.08 | 0.08 | 0.00 | |
| Bias | **Final Zero** | 0.10 | 0.05 | 0.00 | |
| Bias | **Avg. Zero** | 0.09 | 0.07 | 0.00 | |
| Bias | **Initial UpScale** | 11.88 | 4.88 | 4.84 | |
| Bias | **Final UpScale** | 11.85 | 4.80 | 4.86 | |
| Bias | **Avg. UpScale** | 11.87 | 4.84 | 4.85 | |
| **Upscale Cal Gas** | | 11.96 | 4.99 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 11.97 | 3.12 | 2.28 | 2.60 |
| Concentration (ppm@ 15%$O_2$) | N/A | 2.06 | 1.51 | 1.72 |
| Emission Rate (lb/hr) | N/A | 20.59 | 9.16 | 6.35 |
| Emission Rate (lb/MMBtu) | N/A | 0.0076 | 0.003 | 0.002 |

# APPENDIX C

# CALIBRATION GAS CERTIFICATIONS

**Cricket Valley Energy Center LLC**
**February 6, 2020**
**General Electric, 7F.05, Unit #U-00001**
**AETB/QI and PGVP RATA Data Sheet**
**Cricket Valley Energy Center**

**AirEmissionTestingData - Level 3**

| QILastName | QIFirstName | QIMiddleInitial | AETBName | AETBPhoneNumber | AETBEmail | ExamDate | ProviderName | ProviderEmail |
|---|---|---|---|---|---|---|---|---|
| Blum | Aaron | M | Air Hygiene International Inc | 888-461-8778 | info@airhygiene.com | 01/31/2019 | Source Evaluation Society | qstiprogram@gmail.com |

**ProtocolGasData - Level 3**

| GasLevelCode | GasTypeCode | CylinderIdentifier | VendorIdentifier | ExpirationDate |
|---|---|---|---|---|
| LOW | ZERO | | | |
| HIGH | BALN,CO2,O2 | EB0080940 | G12019 | 6/25/2027 |
| MID | BALN,CO2,O2 | EB0069916 | G12019 | 6/30/2027 |
| HIGH | BALN,CO,NO,NOX | EB0040961 | G12019 | 10/30/2022 |
| MID | BALN,CO,NO,NOX | EB0101718 | G12019 | 7/25/2022 |
| | | | | |

Assay Laboratory: Red Ball TGS
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150

# CERTIFICATE OF ANALYSIS
## (Zero Ambient Nitrogen)

| | | | |
|---|---|---|---|
| **Cylinder Number:** | CC731563 | **Certification Date:** | 12/12/2019 |
| **Product ID Number:** | 121026 | **Expiration Date:** | 12/10/2027 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | RBTGS-Shreveport-LA |
| **COA #** | CC731563.20191212-0 | **Lot Number:** | CC731563.20191212 |
| **Customer PO. NO.:** | | **Tracking Number:** | 098934324 |
| **Customer:** | | **Previous Certification Dates:** | |

This mixture is for laboratory use only, not for drug, household or other use.
This mixture is certified in Mole % to be within ±2% of the actual number reported with a confidence of 95%.
This mixture was manufactured by scale; weights traceable to N.I.S.T. Certificate #822/266926-02.
Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).

**Composing Material: Zero Ambient Nitrogen, Cert., Sz152**

| Component | Specification | Concentration |
|---|---|---|
| Nitrogen | Balance | Balance |
| Oxygen as Impurity | <1.0 PPM | <1.0 PPM |
| Carbon Dioxide as Impurity | <0.5 PPM | <0.5 PPM |
| Carbon Monoxide as Impurity | <0.5 PPM | <0.5 PPM |
| Total Oxides of Nitrogen as Impurity | <0.1 PPM | <0.1 PPM |
| Sulfur Dioxide as Impurity | <0.1 PPM | <0.1 PPM |
| Total Hydrocarbons as Impurity | <0.1 PPM | <0.1 PPM |

Red Ball Technical Gas Service
PGVP Vendor ID # G12019
Information and Ordering
800-551-8150
Fax (318-425-6309)

Accreditation #62754

Anthony Cyr
Assistant Operations Manager

Version 02-B, Revised on 2015-05-27

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12019

PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0051299 | **Certification Date:** | 03/29/2019 |
| **Product ID Number:** | 124731 | **Expiration Date:** | 03/28/2022 |
| **Cylinder Pressure:** | 1700 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0051299.20190304-0 | **Lot Number:** | EB0051299.20190304 |
| **Customer PO. NO.:** | | **Tracking Number:** | 073563600 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Nitrogen Dioxide** | **49.7 PPM** | ±0.6 PPM | FTIR | 03/08/2019, 03/22/2019, 03/29/2019 |

Air Balance

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| D685060 | D685060 | 11/16/2019 | PRM | N2 | NO2 | 98.8 PPM | 1.01 | C1579010.01 |
| EB0090081 | EB0090081.20161201 | 02/04/2021 | GMIS | N2 | NO2 | 96 PPM | 1.055 | 5605008 |
| EB0090101 | EB0090101.20161201 | 08/26/2021 | GMIS | AIR | NO2 | 63.6 PPM | 1.031 | 5605008 |
| EB0096848 | EB0096848.20190102 | 03/21/2022 | GMIS | AIR | NO2 | 61.1 PPM | 1.072 | C1579010.01 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NO2 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 03/01/2019 |
| NO2 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 03/21/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Anthony Cyr**
**Assistant Operations Manager**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12019

PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0101718 | **Certification Date:** | 07/26/2019 |
| **Product ID Number:** | 125564 | **Expiration Date:** | 07/25/2022 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0101718.20190710-0 | **Lot Number:** | EB0101718.20190710 |
| **Customer PO. NO.:** | | **Tracking Number:** | 095705907 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Monoxide** | **5.09 PPM** | ±0.07 PPM | FTIR | 07/25/2019 |
| **Nitric Oxide** | **4.98 PPM** | ±0.06 PPM | Chemiluminescence | 07/16/2019, 07/26/2019 |
| Total Oxides of Nitrogen | 4.99 PPM | | | |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0032297 | EB0032297.20160725 | 09/06/2025 | GMIS | N2 | CO | 6.15 PPM | 1.067 | 091002 |
| EB0060662 | EB0060662.20151012 | 01/02/2022 | GMIS | N2 | NO | 2.97 PPM | 1.062 | 12100115 |
| EB0076031 | EB0076031.20190205 | 05/27/2027 | GMIS | N2 | CO | 18.7 PPM | 1.036 | 091002 |
| EB0078555 | EB0078555.20171116 | 11/09/2022 | GMIS | N2 | NO | 9.8 PPM | 1.113 | 12100115 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NO | Chemiluminescence | Thermo | T42C | 42C-68400-360 | 07/08/2019 |
| CO | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 07/08/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Anthony Cyr**
**Assistant Operations Manager**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12019

PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0040961 | **Certification Date:** | 10/31/2019 |
| **Product ID Number:** | 124737 | **Expiration Date:** | 10/30/2022 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0040961.20191017-0 | **Lot Number:** | EB0040961.20191017 |
| **Customer PO. NO.:** | | **Tracking Number:** | 065159907 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Monoxide** | **9.1 PPM** | ±0.12 PPM | FTIR | 10/30/2019 |
| **Nitric Oxide** | **8.8 PPM** | ±0.10 PPM | Chemiluminescence | 10/23/2019, 10/31/2019 |
| Total Oxides of Nitrogen | 8.9 PPM | | | |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| ALM005307 | ALM0053007.20181025 | 10/09/2022 | GMIS | N2 | NO | 34.2 PPM | 1.062 | 1684B |
| CC202290 | CC202290.20160721 | 01/11/2025 | GMIS | N2 | CO | 12.14 PPM | 1.033 | 091002 |
| EB0076031 | EB0076031.20190205 | 05/27/2027 | GMIS | N2 | CO | 18.7 PPM | 1.036 | 091002 |
| EB0089797 | EB0089797.20171116 | 11/09/2022 | GMIS | N2 | NO | 9.8 PPM | 1.085 | 12100115 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NO | Chemiluminescence | Thermo | T42C | 42C-68400-360 | 10/18/2019 |
| CO | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 09/30/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Amisha Jewitt**
**Analytical Chemist**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12018

PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0018282 | **Certification Date:** | 02/27/2018 |
| **Product ID Number:** | 124606 | **Expiration Date:** | 02/25/2026 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0018282.20180219-0 | **Lot Number:** | EB0018282.20180219 |
| **Customer PO. NO.:** | | **Tracking Number:** | 040342887 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Dioxide** | **8.94 %** | ±0.06 % | NDIR | 02/27/2018 |
| **Oxygen** | **11.96 %** | ±0.06 % | MPA | 02/23/2018 |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0019964 | EB0019964.20170209 | 08/05/2025 | GMIS | N2 | O2 | 24 % | 0.502 | 071001 |
| EB0097755 | EB0097755.20171018-0 | 12/26/2025 | GMIS | N2 | CO2 | 24.86 % | 0.212 | C1309410.01 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| O2 | MPA | Thermo | 410i | 1162980025 | 02/23/2018 |
| CO2 | NDIR | Thermo | 410i | 1162980025 | 02/26/2018 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Brandon Theus**
**Analytical Chemist**
Assay Laboratory: Red Ball TGS
Version 02-I, Revised on 2017-09-07

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12018

PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0096307 | **Certification Date:** | 09/13/2018 |
| **Product ID Number:** | 124605 | **Expiration Date:** | 09/11/2026 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0096307.20180830-0 | **Lot Number:** | EB0096307.20180830 |
| **Customer PO. NO.:** | | **Tracking Number:** | 095690632 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Dioxide** | **18.7 %** | ±0.14 % | NDIR | 09/13/2018 |
| **Oxygen** | **21.1 %** | ±0.11 % | MPA | 09/04/2018 |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0004987 | EB0004987.20180323 | 07/15/2026 | GMIS | N2 | CO2 | 19.5 % | 0.767 | 101001 |
| EB0032246 | EB0032246.20170209 | 08/05/2025 | GMIS | N2 | O2 | 24 % | 0.502 | 071001 |
| EB0097755 | EB0097755.20171018-0 | 12/26/2025 | GMIS | N2 | CO2 | 24.86 % | 0.212 | C1309410.01 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| O2 | MPA | Thermo | 410i | 1162980025 | 09/04/2018 |
| CO2 | NDIR | Thermo | 410i | 1162980025 | 08/14/2018 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Amisha Jewitt**
**Analytical Chemist**
Assay Laboratory: Red Ball TGS
Version 02-I, Revised on 2017-09-07

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12019

Accreditation #62754

# CERTIFIED GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0100161 | **Certification Date:** | 12/30/2019 |
| **Product ID Number:** | 125123 | **Expiration Date:** | 12/29/2020 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0100161.20191230-0 | **Lot Number:** | EB0100161.20191230 |
| **Customer PO. NO.:** | | **Tracking Number:** | 095703088 |
| **Customer:** | | **Previous Certification Dates:** | |

**This mixture is for laboratory use only, not for drug, household or other use.**
**This mixture is certified in Mole % to be within ±2% of the actual number reported with a confidence of 95%.**
**This mixture was manufactured by scale; weights traceable to N.I.S.T. Certificate #822/266926-02.**
**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle |
|---|---|---|---|
| **Ammonia** | **50.4 PPM** | ± 2% NIST | FTIR |
| **Sulfur Hexafluoride** | **9.02 PPM** | ± 2% NIST | FTIR |
| Nitrogen | Balance | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| SA18481 | 70086910005 | 04/12/2020 | PS | N2 | NH3 | 21.1 PPM | 1.2 | 73248226 |
| EB0079029 | EB0079029 | 06/27/2020 | PS | N2 | SF6 | 10.1 PPM | 5 | 191064 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NH3 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | |
| SF6 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | |

## SMART-CERT

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LaMeka Dennis
**Operations Manager**
Assay Laboratory: Red Ball TGS
Version 02-G, Revised on 2017-07-02

# APPENDIX D

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

# QA/QC PROGRAM

AIR HYGIENE ensures the quality and validity of its emission measurement and reporting procedures through a rigorous quality assurance (QA) program. The program is developed and administered by an internal QA team and encompasses six major areas:

1. Field Qualifications
2. QA reviews of reports, laboratory work, and field testing;
3. Equipment calibration and maintenance;
4. Chain-of-custody;
5. Training; and
6. Knowledge of current test methods

## Field Qualifications

Air Hygiene personnel are required to gain and maintain competence with testing methods and techniques according to their job titles and the roles they play during field testing events. Qualifications for each job description include:

Staff Technician - An entry level position with responsibility to test on the stack by performing duties that include: keep trucks and trailers stocked and clean, travel to and from job site, be the "hands of the test" on the stack; stay on a stack during the sample test, set up and tear down equipment on-site, perform maintenance on equipment in the shop and on-site.

Test Technician or Specialist - Acts as the "hands of the test" on the stack by performing duties that include: stay on a stack during the sample test, migrate to the testing trailer and learn the different analyzers and testing methods used on site, set up and tear down testing equipment on site, learn the system for testing from Testing Managers and Project Managers, travel to and from job site; including driving responsibilities under DOT requirements, follow directions of Testing Managers and Project Managers, learn the proper way to conduct on-site test of stationary stacks

Test Manager or Engineer - Directs and coordinates all aspects of a successful test by performing the following duties personally or through subordinate supervisors including: operating analyzers and consoles during testing along with QA/QC procedures, supervise set up and tear down of equipment on site, writing, reviewing, and revising final test reports, working with the client or state personnel while on the job site, managing pre-test checklists and onsite testing procedures, diagnose and repair any problems that may arise with the equipment, safely operate a man lift and drive a truck with or without a trailer, act as crew leader in the field, write protocols and reports, maintain project log of services performed on the job, verify all equipment needed for a job was loaded on the trailer. Test Managers must hold at least one QSTI certificate.

Project Manager - Directs and coordinates all aspects of a successful test by performing the following duties personally or through subordinate supervisors including: operating analyzers and consoles during testing along with QA/QC procedures, supervise set up and tear down of equipment on site, writing, reviewing, and revising final test reports, working with the client or state personnel while on the job site, managing pre-test checklists and onsite testing procedures, diagnose and repair any problems that may arise with the equipment, safely operate a man lift and drive a truck with or without a trailer, act as crew leader in the field, write protocols and reports, maintain project log of services performed on the job, verify all equipment needed for a job was loaded on the trailer. Project Managers typically hold QSTI certificates in Groups 1 through 4.

## QA Reviews

Air Hygiene's review procedure includes review of each source test report, along with laboratory and fieldwork, by the QA Team. The most important review is the one that takes place before a test program begins. The QA Team works closely with technical division personnel to prepare and review test protocols. Test protocol review includes selection of appropriate test procedures, evaluation of interferences or other restrictions that might preclude use of standard test procedures, and evaluation and/or development of alternate procedures.

## Equipment Calibration and Maintenance

The equipment used to conduct the emission measurements is maintained according to the manufacturer's instructions to ensure proper operation. In addition to the maintenance program, calibrations are carried out on each measurement device according to the schedule outlined by the Environmental Protection Agency. Quality control checks are also conducted in the field for each test program. In conformance with ASTM D7036 Section 15.3.15, all metering and monitoring equipment meets or exceeds the uncertainty criteria contained in the method language that pertains to that equipment.

### Chain-of-Custody

Air Hygiene maintains full chain-of-custody documentation on all samples and data sheets. In addition to normal documentation of changes between field sample custodians, laboratory personnel, and field test personnel, Air Hygiene documents every individual who handles any test component in the field (e.g., probe wash, impinger loading and recovery, filter loading and recovery, etc.). Samples are stored in a locked area to which only Air Hygiene personnel have access. Field data sheets are secured at Air Hygiene's offices upon return from the field.

### Training

Personnel's training is essential to ensure quality testing. Air Hygiene has formal and informal training programs, which include:

1. Attendance at EPA-sponsored training courses
2. Enrollment in EPA correspondence courses
3 A requirement for all technicians to read and understand Air Hygiene's QA manual
4. In-house training and QA meetings on a regular basis
5. Maintenance of training records

### Knowledge of Current Test Methods

With the constant updating of standard test methods and the wide variety of emerging test procedures, it is essential that any qualified source tester keep abreast of new developments. Air Hygiene subscribes to services, which provide updates on EPA reference methods, rules, and regulations. Additionally, source test personnel regularly attend and present papers at testing and emission-related seminars and conferences. Air Hygiene personnel maintain membership in the Air and Waste Management Association and the American Industrial Hygiene Association.

### Reproduction and Distribution Policy

Reproducing portions of this test report may omit critical or substantial documentation or be taken out of context and due care must be exercised in this regard. Furthermore, this test report and its associated data shall not be reproduced in full or in part without the written consent of the customer.

### Data Provided by Client

Data provided by the Client is clearly identified in the report. Air Hygiene accepts data provided by the Client as accurate.

# COMBUSTION TESTING QUALITY ASSURANCE ACTIVITIES

In conformance with ASTM D7036 Section 15.3.11 and 13, all testing was performed without any real or apparent errors, with the exception of those that would be listed in Section 2.0 of this report. In addition, all testing was conducted according to the approved testing protocol, test methods, Air Hygiene Quality Manual, or ASTM D7036, with the exception of specifics noted in Section 2.0 of this report. A number of quality assurance activities were undertaken before, during, and after this testing project. This section of the report combined with the documentation in Appendix C describes each of those activities.

Each instrument's response was checked and adjusted in the field prior to the collection of data via multi-point calibration. The instrument's linearity was checked by adjusting its zero and span responses to zero nitrogen and an upscale calibration gas in the range of the expected concentrations. The instrument response was then challenged with other calibration gases of known concentration and accepted as being linear if the response of the other calibration gases agreed within plus or minus two percent of the range of predicted values. $NO_2$ to NO conversion was checked via direct connect with an EPA Protocol certified concentration of $NO_2$ in a balance of air or nitrogen. Conversion was verified to be between 90 and 110 percent.

After each test run, the analyzers were checked for zero and span drift. This allowed each test run to be bracketed by calibrations and documents the precision of the data just collected. The criterion for acceptable data is that the instrument drift is no more than three percent of the full-scale response. The quality assurance worksheets in the following pages summarize all multipoint calibration checks and zero to span checks performed during the tests. These worksheets (as prepared from the data records of Appendix A) show that no drifts in excess of three percent occurred in the zero to span checks following each test run.

The sampling systems were leak checked by demonstrating that a vacuum greater than 10 in Hg could be held for at least one minute with a decline of less than one inch of Hg. A leak test was conducted after the sample system was set up and before the system was dismantled. This test was conducted to ensure that ambient air had not diluted the sample. Any leakage detected prior to the tests would be repaired and another leak check conducted before testing commenced. No leaks were found during the pre or post-test leak checks.

The absence of leaks in the sampling system was also verified by a sampling system bias check. The sampling system's integrity was tested by comparing the responses of the analyzers to the calibration gases introduced via two paths. The first path was directly into the analyzer and the second path via the sample system at the sample probe. Any difference in the instrument responses by these two methods was attributed to sampling system bias or leakage. The criterion for acceptance is agreement within five percent of the span of the analyzer.

The control gases used to calibrate the instruments were analyzed and certified by the compressed gas vendors to plus or minus one percent accuracy for all gases. EPA Protocol No. 1 was used, where applicable to assign the concentration values traceable to the National Institute of Standards and Technology (NIST), Standard Reference Materials (SRM's). The gas calibration sheets as prepared by the vendor are contained in Appendix C.

Air Hygiene collected and reported the enclosed test data in accordance with the procedures and quality assurance activities described in this test report. Air Hygiene makes no warranty as to the suitability of the test methods. Air Hygiene also assumes no liability relating to the interpretation and use of the test data.

## INSTRUMENTAL ANALYSIS
## QUALITY ASSURANCE DATA

Date: February 6, 2020
Company: Cricket Valley Energy Center LLC
Location: Dover Plains, New York
Techs: AB / SB / MJ / RW

### Sample System Leak Check

| Date | Sample System | Leak Rate (l/min) |
|---|---|---|
| February 6, 2020 | 1 | 0 |

# Accredited Laboratory

A2LA has accredited

## AIR HYGIENE INTERNATIONAL, INC.

*Broken Arrow, OK*

for technical competence in the field of

## Environmental Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets the A2LA *R219 – Specific Requirements – TNI Field Sampling and Measurement Organization Accreditation Program*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 18th day of December 2019

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3796.01
Valid to August 31, 2021

*For the tests to which this accreditation applies, please refer to the laboratory's Envrionmental Scope of Accreditation.*

STAC STACK TESTING ACCREDITATION COUNCIL

A2LA American Association for Laboratory Accreditation

# *Accredited Air Emission Testing Body*

A2LA has accredited

## AIR HYGIENE INTERNATIONAL, INC.

In recognition of the successful completion of the joint A2LA and Stack Testing Accreditation Council (STAC) evaluation process, this laboratory is accredited to perform testing activities in compliance with ASTM D7036:2004 - Standard Practice for Competence of Air Emission Testing Bodies.

Presented this 18th day of December 2019.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3796.02
Valid to August 31, 2021

*This accreditation program is not included under the A2LA ILAC Mutual Recognition Arrangement.*

# SOURCE EVALUATION SOCIETY

## Qualified Source Testing Individual

LET IT BE KNOWN THAT

## AARON M. BLUM

HAS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED EXPERIENCE REQUIREMENTS IN ACCORDANCE WITH THE GUIDELINES ISSUED BY THE SES QUALIFIED SOURCE TEST INDIVIDUAL REVIEW BOARD FOR

***GASEOUS POLLUTANTS INSTRUMENTAL SAMPLING METHODS***

ISSUED THIS 31ST DAY OF JANUARY 2019 AND EFFECTIVE UNTIL JANUARY 30TH, 2024

Peter R. Westlin, QSTI/QSTO Review Board

Peter S. Pakalnis, QSTI/QSTO Review Board

Tina Sanderson, QSTI/QSTO Review Board

J. Wade Bice, QSTI/QSTO Review Board

Karen D. Kajiya-Mills , QSTI/QSTO Review Board

Bruce Randall QSTI/QSTO Review Board

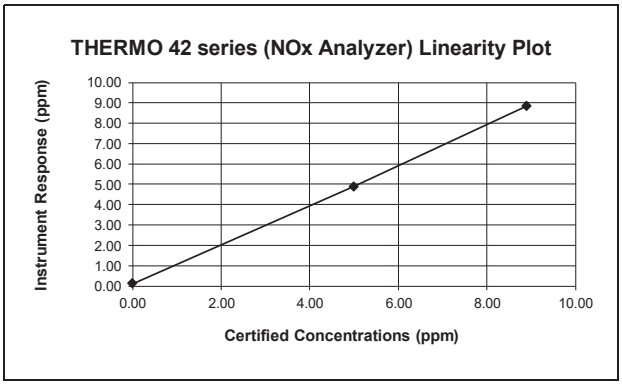
CERTIFICATE NO. 2019-1042

**Calibration Date:** February 6, 2020 **Location:** Cricket Valley Energy Center - Unit U-00001

**Client:** Cricket Valley Energy Center LLC

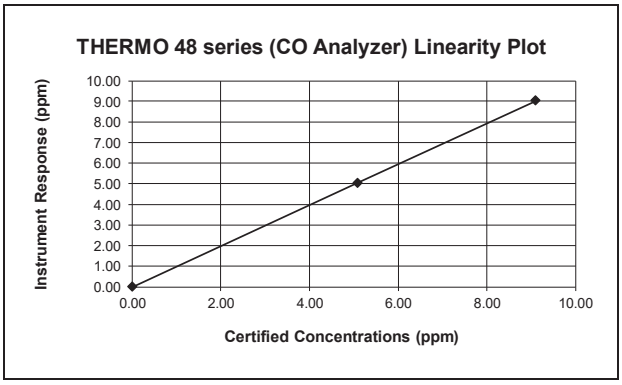
NOx Span (ppm) = 8.90

| THERMO 42 series (NOx Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Absolute Conc. (ppm) | Pass (±2%, ≤0.5ppm) |
| 0.00 | 0.13 | 1.46 | 0.13 | YES (%) |
| 4.99 | 4.90 | -1.01 | 0.09 | YES (%) |
| 8.90 | 8.85 | -0.56 | 0.05 | YES (%) |
| Linearity = 1.022 | | | | |



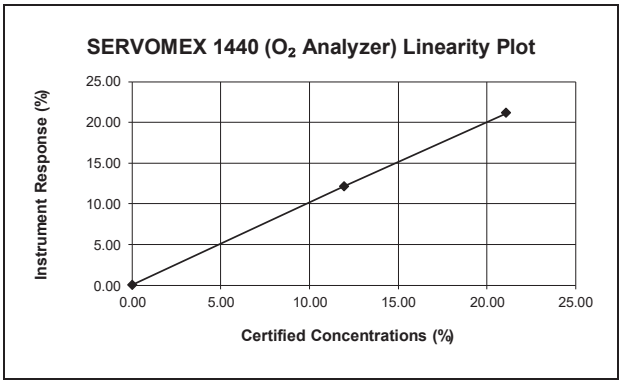

CO Span (ppm) = 9.10

| THERMO 48 series (CO Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Absolute Conc. (ppm) | Pass (±2%, ≤0.5ppm) |
| 0.00 | 0.00 | 0.00 | 0.00 | YES (%) |
| 5.09 | 5.04 | -0.55 | 0.05 | YES (%) |
| 9.10 | 9.04 | -0.66 | 0.06 | YES (%) |
| Linearity = 1.007 | | | | |




$O_2$ Span (%) = 21.10

| SERVOMEX 1440 ($O_2$ Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (%) | Instrument Response (%) | Calibration Error (%) | Absolute Conc. (%) | Pass (±2%, ≤0.5%) |
| 0.00 | 0.03 | 0.14 | 0.03 | YES (%) |
| 11.96 | 12.13 | 0.81 | 0.17 | YES (%) |
| 21.10 | 21.15 | 0.24 | 0.05 | YES (%) |
| Linearity = 0.998 | | | | |



**NOx Converter Efficiency**

**Date:** February 6, 2020

**Analyzer:** INST-NX-0020

RM 7E, (02-27-14), Sections 7.1.4; 8.2.4.1; 12.7; and 13.5 Introduce $NO_2$ to the analyzer and record the NOx concentration displayed. ... Calculate the converter efficiency using Equation 7E-7. The specification for converter efficiency must be met. ... Air Hygiene also references ALT-0013 for specific $NO_2$ concentration (40-60 ppm) and EPA Traceability Protocol requirements (±2%).

| | | |
|---|---|---|
| **Audit Gas:** | $NO_2$ Concentration ($C_v$), ppmvd | **49.10** |
| **Converter Efficiency Calculations:** | | |
| | Analyzer Reading, NO Channel, ppmvd | **1.98** |
| | Analyzer Reading, NOx Channel, ppmvd | **46.20** |
| | Analyzer Reading, $NO_2$ Channel ($C_{Dir(NO2)}$), ppmvd | **44.22** |
| | Converter Efficiency, % | **90.06** |

RM 7E, (02-27-14), 13.5 $NO_2$ to NO Conversion Efficiency Test (as applicable). The $NO_2$ to NO conversion efficiency, calculated according to Equation 7E-7, must be greater than or equal to 90 percent.

$$Eff_{NO2} = \left(\frac{C_{Dir}}{C_V}\right) \times 100$$

Eq. 7E-7 = $\frac{44.22 \text{ ppmvd}}{49.10 \text{ ppmvd}}$ x 100 = 90.06%

| Date/Time | Elapsed Time | NOx | NO |
|---|---|---|---|
| mm/dd/yy hh:mm:ss | Seconds | ppmvd | ppmvd |
| 02/06/20 04:08:41 | 10 | 43.70 | 1.31 |
| 02/06/20 04:09:11 | 20 | 45.78 | 1.44 |
| 02/06/20 04:09:41 | 30 | 46.13 | 1.98 |
| 02/06/20 04:10:11 | 40 | 46.16 | 1.87 |
| 02/06/20 04:10:41 | 50 | 46.09 | 1.59 |
| 02/06/20 04:11:11 | 60 | 46.08 | 1.53 |
| ***02/06/20 04:11:41*** | ***70*** | ***46.20*** | ***1.98*** |
| 02/06/20 04:12:11 | 80 | 46.16 | 1.29 |
| 02/06/20 04:12:41 | 90 | 46.11 | 1.59 |
| 02/06/20 04:13:11 | 100 | 46.04 | 1.98 |
| 02/06/20 04:13:41 | 110 | 46.02 | 1.89 |

**Cricket Valley Energy Center LLC**
**February 6, 2020**
**General Electric, 7F.05, Unit #U-00001**
**Cricket Valley Energy Center**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - PRE TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ (%) |
|---|---|---|---|
| 02/06/20 | 4:02:10 | UNIT 1 CTS_0016.LAB | 9.1499 |
| 02/06/20 | 4:02:40 | UNIT 1 CTS_0017.LAB | 9.1572 |
| 02/06/20 | 4:03:10 | UNIT 1 CTS_0018.LAB | 9.1676 |
| 02/06/20 | 4:03:40 | UNIT 1 CTS_0019.LAB | 9.1188 |
| 02/06/20 | 4:04:10 | UNIT 1 CTS_0020.LAB | 9.0882 |

**PRE TEST AVERAGE** **9.14**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - POST TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ (%) |
|---|---|---|---|
| 02/06/20 | 17:06:23 | UNIT 1 RUN 1_1554.LAB | 8.8657 |
| 02/06/20 | 17:06:53 | UNIT 1 RUN 1_1555.LAB | 8.9168 |
| 02/06/20 | 17:07:23 | UNIT 1 RUN 1_1556.LAB | 8.9420 |
| 02/06/20 | 17:07:53 | UNIT 1 RUN 1_1557.LAB | 8.9551 |
| 02/06/20 | 17:08:23 | UNIT 1 RUN 1_1558.LAB | 8.9652 |

**POST TEST AVERAGE** **8.93**

**Analyzer Make:** MKS **Analyzer Model:** 2030

$CO_2$ Cylinder Conc. % = 8.94

| Run ID | Instrument Response (%) | Error (%) | Pass / Fail ±5% |
|---|---|---|---|
| Pre Test | 9.14 | 2.20 | PASS |
| Post Test | 8.93 | -0.12 | PASS |

**Cricket Valley Energy Center LLC**
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**Cricket Valley Energy Center**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - PRE TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ (ppm) |
|---|---|---|---|
| 02/06/20 | 4:12:11 | UNIT 1 CTS_0036.LAB | 48.1623 |
| 02/06/20 | 4:12:41 | UNIT 1 CTS_0037.LAB | 48.3070 |
| 02/06/20 | 4:13:11 | UNIT 1 CTS_0038.LAB | 48.2363 |
| 02/06/20 | 4:13:41 | UNIT 1 CTS_0039.LAB | 48.3171 |
| 02/06/20 | 4:14:11 | UNIT 1 CTS_0040.LAB | 52.5737 |

**PRE TEST AVERAGE** **49.12**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - POST TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ (ppm) |
|---|---|---|---|
| 02/06/20 | 17:11:23 | UNIT 1 RUN 1_1564.LAB | 48.6648 |
| 02/06/20 | 17:11:53 | UNIT 1 RUN 1_1565.LAB | 48.5126 |
| 02/06/20 | 17:12:23 | UNIT 1 RUN 1_1566.LAB | 48.6104 |
| 02/06/20 | 17:12:53 | UNIT 1 RUN 1_1567.LAB | 48.6856 |
| 02/06/20 | 17:13:24 | UNIT 1 RUN 1_1568.LAB | 48.6479 |

**POST TEST AVERAGE** **48.62**

**Analyzer Make:** MKS **Analyzer Model:** 2030

$NH_3$ Cylinder Conc. ppm = 50.40

| Run ID | Instrument Response (%) | Error (%) | Pass / Fail ±5% |
|---|---|---|---|
| Pre Test | 49.12 | -2.54 | PASS |
| Post Test | 48.62 | -3.52 | PASS |

**Cricket Valley Energy Center LLC**
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## Calibration Gas #1

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ ppmvd |
|---|---|---|---|
| 02/06/20 | 10:01:12 | UNIT 1 MKS_0715.LAB | 49.8937 |
| 02/06/20 | 10:01:42 | UNIT 1 MKS_0716.LAB | 50.5868 |
| 02/06/20 | 10:02:12 | UNIT 1 MKS_0717.LAB | 50.7773 |
| 02/06/20 | 10:02:42 | UNIT 1 MKS_0718.LAB | 51.1750 |
| 02/06/20 | 10:03:12 | UNIT 1 MKS_0719.LAB | 50.8340 |
| 02/06/20 | 10:03:42 | UNIT 1 MKS_0720.LAB | 50.1201 |
| 02/06/20 | 10:04:12 | UNIT 1 MKS_0721.LAB | 50.4008 |
| 02/06/20 | 10:04:42 | UNIT 1 MKS_0722.LAB | 51.3256 |
| **RAW AVERAGE** | | | **50.639** |

## Calibration Gas #2

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $SF_6$ ppmvd |
|---|---|---|---|
| 02/06/20 | 10:01:12 | UNIT 1 MKS_0715.LAB | 8.5800 |
| 02/06/20 | 10:01:42 | UNIT 1 MKS_0716.LAB | 9.2505 |
| 02/06/20 | 10:02:12 | UNIT 1 MKS_0717.LAB | 9.2269 |
| 02/06/20 | 10:02:42 | UNIT 1 MKS_0718.LAB | 8.3160 |
| 02/06/20 | 10:03:12 | UNIT 1 MKS_0719.LAB | 9.0714 |
| 02/06/20 | 10:03:42 | UNIT 1 MKS_0720.LAB | 8.9049 |
| 02/06/20 | 10:04:12 | UNIT 1 MKS_0721.LAB | 8.6702 |
| 02/06/20 | 10:04:42 | UNIT 1 MKS_0722.LAB | 9.0300 |
| **RAW AVERAGE** | | | **8.881** |

## Run #1: Pre-Spike - Native

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vw | $H_2O$ (%) | $NH_3$ ppmvd | $SF_6$ ppmvd |
|---|---|---|---|---|---|---|
| 02/06/20 | 10:13:44 | UNIT 1 MKS_0740.LAB | 4.9045 | 8.0644 | 2.6119 | 0.0023 |
| 02/06/20 | 10:14:13 | UNIT 1 MKS_0741.LAB | 4.8966 | 7.8960 | 2.7031 | 0.0007 |
| 02/06/20 | 10:14:43 | UNIT 1 MKS_0742.LAB | 4.8539 | 7.9603 | 2.7059 | 0.0040 |
| 02/06/20 | 10:15:14 | UNIT 1 MKS_0743.LAB | 4.9116 | 7.7106 | 2.6900 | 0.0011 |
| 02/06/20 | 10:15:44 | UNIT 1 MKS_0744.LAB | 4.9059 | 7.3395 | 2.7702 | 0.0034 |
| 02/06/20 | 10:16:14 | UNIT 1 MKS_0745.LAB | 4.9138 | 7.8191 | 2.7365 | 0.0027 |
| 02/06/20 | 10:16:44 | UNIT 1 MKS_0746.LAB | 4.9122 | 7.7627 | 2.8926 | 0.0016 |
| 02/06/20 | 10:17:14 | UNIT 1 MKS_0747.LAB | 4.9006 | 8.0150 | 2.8940 | 0.0012 |
| **RAW AVERAGE** | | | **4.900** | **7.821** | **2.751** | **0.002** |

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**Cricket Valley Energy Center**

**Run #1: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vw | $H_2O$ (%) | $SF_6$ ppmvd | $NH_3$ ppmvd |
|---|---|---|---|---|---|---|
| 02/06/20 | 10:22:14 | UNIT 1 MKS_0757.LAB | 4.4336 | 7.9904 | 0.6463 | 6.0694 |
| 02/06/20 | 10:22:45 | UNIT 1 MKS_0758.LAB | 4.6351 | 8.3572 | 0.4799 | 6.0142 |
| 02/06/20 | 10:23:15 | UNIT 1 MKS_0759.LAB | 4.4550 | 7.9387 | 0.6058 | 5.7743 |
| 02/06/20 | 10:23:45 | UNIT 1 MKS_0760.LAB | 4.5580 | 8.1196 | 0.5835 | 5.8970 |
| 02/06/20 | 10:24:15 | UNIT 1 MKS_0761.LAB | 4.7423 | 7.8069 | 0.6630 | 5.9287 |
| 02/06/20 | 10:24:45 | UNIT 1 MKS_0762.LAB | 4.7522 | 8.2259 | 0.5950 | 6.0521 |
| 02/06/20 | 10:25:15 | UNIT 1 MKS_0763.LAB | 4.7665 | 8.5664 | 0.8921 | 5.9248 |
| 02/06/20 | 10:25:45 | UNIT 1 MKS_0764.LAB | 4.5803 | 7.2462 | 0.8888 | 6.4658 |
| **RAW AVERAGE** | | | **4.615** | **8.031** | **0.669** | **6.016** |

**Run #2: Pre-Spike - Native**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vw | $H_2O$ (%) | $NH_3$ ppmvd | $SF_6$ ppmvd |
|---|---|---|---|---|---|---|
| 02/06/20 | 10:30:46 | UNIT 1 MKS_0774.LAB | 4.7072 | 7.7407 | 2.4026 | 0.0042 |
| 02/06/20 | 10:31:16 | UNIT 1 MKS_0775.LAB | 4.6366 | 7.4983 | 2.5836 | 0.0007 |
| 02/06/20 | 10:31:46 | UNIT 1 MKS_0776.LAB | 4.9443 | 7.3680 | 2.4952 | 0.0001 |
| 02/06/20 | 10:32:16 | UNIT 1 MKS_0777.LAB | 4.9212 | 7.8898 | 2.5232 | -0.0011 |
| 02/06/20 | 10:32:46 | UNIT 1 MKS_0778.LAB | 4.9885 | 7.3362 | 2.9571 | 0.0023 |
| 02/06/20 | 10:33:16 | UNIT 1 MKS_0779.LAB | 4.9604 | 7.9213 | 2.3678 | 0.0041 |
| 02/06/20 | 10:33:46 | UNIT 1 MKS_0780.LAB | 4.8099 | 6.9881 | 2.3014 | 0.0048 |
| 02/06/20 | 10:34:16 | UNIT 1 MKS_0781.LAB | 4.7276 | 5.9417 | 3.2364 | 0.0042 |
| **RAW AVERAGE** | | | **4.837** | **7.336** | **2.608** | **0.002** |

**Run #2: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vw | $H_2O$ (%) | $SF_6$ ppmvd | $NH_3$ ppmvd |
|---|---|---|---|---|---|---|
| 02/06/20 | 10:39:17 | UNIT 1 MKS_0791.LAB | 4.1330 | 8.1989 | 0.6653 | 6.2547 |
| 02/06/20 | 10:39:47 | UNIT 1 MKS_0792.LAB | 4.1392 | 8.1999 | 0.6304 | 6.0938 |
| 02/06/20 | 10:40:17 | UNIT 1 MKS_0793.LAB | 4.2215 | 8.2067 | 0.9029 | 6.7659 |
| 02/06/20 | 10:40:47 | UNIT 1 MKS_0794.LAB | 4.0741 | 8.2021 | 0.6562 | 6.2427 |
| 02/06/20 | 10:41:17 | UNIT 1 MKS_0795.LAB | 4.1539 | 8.2087 | 0.6616 | 5.9554 |
| 02/06/20 | 10:41:47 | UNIT 1 MKS_0796.LAB | 4.1656 | 8.2019 | 0.8568 | 5.9122 |
| 02/06/20 | 10:42:17 | UNIT 1 MKS_0797.LAB | 4.0611 | 8.2057 | 0.6001 | 5.8259 |
| 02/06/20 | 10:42:47 | UNIT 1 MKS_0798.LAB | 4.0528 | 8.2077 | 0.6741 | 5.8395 |
| **RAW AVERAGE** | | | **4.125** | **8.204** | **0.706** | **6.111** |

**Cricket Valley Energy Center LLC**
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**Cricket Valley Energy Center**

**Run #3: Pre-Spike - Native**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vw | $H_2O$ (%) | $NH_3$ ppmvd | $SF_6$ ppmvd |
|---|---|---|---|---|---|---|
| 02/06/20 | 10:47:48 | UNIT 1 MKS_0808.LAB | 5.0644 | 9.7160 | 3.1750 | 0.0049 |
| 02/06/20 | 10:48:18 | UNIT 1 MKS_0809.LAB | 4.8960 | 10.4714 | 3.1842 | 0.0044 |
| 02/06/20 | 10:48:48 | UNIT 1 MKS_0810.LAB | 4.9603 | 10.3049 | 3.1884 | 0.0015 |
| 02/06/20 | 10:49:18 | UNIT 1 MKS_0811.LAB | 4.7106 | 10.0702 | 3.1852 | 0.0008 |
| 02/06/20 | 10:49:48 | UNIT 1 MKS_0812.LAB | 4.3395 | 10.4300 | 3.1926 | 0.0021 |
| 02/06/20 | 10:50:18 | UNIT 1 MKS_0813.LAB | 4.8191 | 11.0380 | 3.1948 | 0.0028 |
| 02/06/20 | 10:50:48 | UNIT 1 MKS_0814.LAB | 4.7627 | 10.6346 | 3.2010 | 0.0046 |
| 02/06/20 | 10:51:18 | UNIT 1 MKS_0815.LAB | 5.0150 | 10.5166 | 3.1974 | 0.0035 |
| **RAW AVERAGE** | | | **4.821** | **10.398** | **3.190** | **0.003** |

**Run #3: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vw | $H_2O$ (%) | $SF_6$ ppmvd | $NH_3$ ppmvd |
|---|---|---|---|---|---|---|
| 02/06/20 | 10:56:19 | UNIT 1 MKS_0825.LAB | 4.2569 | 9.0291 | 0.7228 | 6.8281 |
| 02/06/20 | 10:56:49 | UNIT 1 MKS_0826.LAB | 4.2440 | 9.2053 | 0.8092 | 6.9286 |
| 02/06/20 | 10:57:19 | UNIT 1 MKS_0827.LAB | 4.2897 | 9.2605 | 0.6978 | 6.8757 |
| 02/06/20 | 10:57:49 | UNIT 1 MKS_0828.LAB | 4.3125 | 9.2440 | 0.6540 | 6.6419 |
| 02/06/20 | 10:58:19 | UNIT 1 MKS_0829.LAB | 4.2672 | 9.3134 | 0.7552 | 6.8622 |
| 02/06/20 | 10:58:49 | UNIT 1 MKS_0830.LAB | 4.2659 | 9.3660 | 0.6105 | 6.7587 |
| 02/06/20 | 10:59:19 | UNIT 1 MKS_0831.LAB | 4.2967 | 9.3788 | 0.7112 | 6.9752 |
| 02/06/20 | 10:59:50 | UNIT 1 MKS_0832.LAB | 4.2763 | 9.4653 | 0.8302 | 6.8134 |
| **RAW AVERAGE** | | | **4.276** | **9.283** | **0.724** | **6.835** |

**Cricket Valley Energy Center LLC**
**February 6, 2020**
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**Cricket Valley Energy Center**

| Parameter | Unit | Run 1 | Run 2 | Run 3 |
|---|---|---|---|---|
| Concentration of $NH_3$ Cylinder | ppmvd | 50.64 | 50.64 | 50.64 |
| Concentration of $SF_6$ Cylinder | ppmvd | 8.88 | 8.88 | 8.88 |

Spike A

| | | | | |
|---|---|---|---|---|
| Stack $CO_2$ Concentration | %vw | 4.900 | 4.837 | 4.821 |
| Stack $H_2O$ Concentration | % | 7.821 | 7.336 | 10.398 |
| Stack $NH_3$ Concentration | ppmvd | 2.751 | 2.608 | 3.190 |
| Stack $SF_6$ Concentration | ppmvd | 0.002 | 0.002 | 0.003 |
| Stack + Spike $CO_2$ Concentration | %vw | 4.615 | 4.125 | 4.276 |
| Stack + Spike $H_2O$ Concentration | % | 8.031 | 8.204 | 9.283 |
| Stack + Spike $NH_3$ Concentration | ppmvd | 6.016 | 6.111 | 6.835 |
| Stack + Spike $SF_6$ Concentration | ppmvd | 0.669 | 0.706 | 0.724 |
| Dilution Ratio | | 0.075 | 0.079 | 0.082 |
| Ideal $NH_3$ Spike Yield | ppmvd | 6.360 | 6.426 | 7.057 |
| Percent Recovery $NH_3$ | % | 90.99% | 92.18% | 94.63% |

| DRIFT AND BIAS CHECK AND RESPONSE TIME CALCULATOR | | |
|---|---|---|
| **Strat Test Pre and Post QA/QC Check** | **$O_2$** | **NOx** |
| **Initial Zero** | 0.07 | 0.13 |
| **Final Zero** | 0.07 | 0.35 |
| **Avg. Zero** | 0.07 | 0.24 |
| **Initial UpScale** | 11.99 | 4.87 |
| **Final UpScale** | 11.86 | 4.71 |
| **Avg. UpScale** | 11.93 | 4.79 |
| **Sys Resp (Zero)** | 0.04 | 0.00 |
| **Sys Resp (Upscale)** | 11.99 | 4.98 |
| **Upscale Cal Gas** | 11.96 | 4.99 |
| **Initial Zero Bias** | 0.14% | 1.46% |
| **Final Zero Bias** | 0.14% | 3.93% |
| **Zero Drift** | 0.00% | 2.47% |
| **Initial Upscale Bias** | 0.00% | -1.24% |
| **Final Upscale Bias** | -0.62% | -3.03% |
| **Upscale Drift** | 0.62% | 1.80% |
| Alternative Specification Abs Diff **Initial Zero** | 0.03 | 0.13 |
| Alternative Specification Abs Diff **Final Zero** | 0.03 | 0.35 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.00 | 0.11 |
| Alternative Specification Abs Diff **Final Upscale** | 0.13 | 0.27 |
| **Calibration Span** | 21.10 | 8.90 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 |
| **5% of Cal. Span (bias)** | 1.06 | 0.45 |

| | | |
|---|---|---|
| **Respone Time (min)** | 1.7 | 4.0 |
| **Sys. Response (min)** | 4.0 | |

| Date/Time mm/dd/yy hh:mm:ss | z | $O_2$ %-10 | s | z | NOx ppm-10 | s | INJECTIONS |
|---|---|---|---|---|---|---|---|
| 02/05/20 14:15:10 | | **12.14** | | | 3.02 | | x |
| 02/05/20 14:15:20 | | **11.60** | | | 3.02 | | |
| 02/05/20 14:15:30 | | 11.06 | | | 3.02 | | |
| 02/05/20 14:15:40 | | 10.52 | | | 3.02 | | |
| 02/05/20 14:15:50 | | 11.03 | | | 2.55 | | |
| 02/05/20 14:16:00 | | **11.55** | x | | 2.08 | | |
| 02/05/20 14:16:10 | | **12.07** | | | 1.60 | | |
| 02/05/20 14:16:20 | | **12.07** | | | 1.27 | | |
| 02/05/20 14:16:30 | | **12.07** | | | 0.93 | | |
| 02/05/20 14:16:40 | | **12.08** | | | 0.60 | | |
| 02/05/20 14:16:50 | | **12.08** | | | 0.59 | | |
| 02/05/20 14:17:00 | | **12.08** | | | 0.58 | | |
| 02/05/20 14:17:10 | | **12.08** | | | 0.57 | | |
| 02/05/20 14:17:20 | | **12.08** | | x | **0.39** | | |
| 02/05/20 14:17:30 | | **12.08** | | | **0.21** | | |
| 02/05/20 14:17:40 | | **12.08** | | | **0.03** | | |
| 02/05/20 14:17:50 | | **12.08** | | | **-0.02** | | |
| 02/05/20 14:18:00 | | **12.08** | | | **-0.07** | | |
| 02/05/20 14:18:10 | | **12.08** | | | **-0.12** | | |
| 02/05/20 14:18:20 | | **12.08** | | | **-0.11** | | |
| 02/05/20 14:18:30 | | **12.09** | | | **-0.09** | | x |
| 02/05/20 14:18:40 | | **12.09** | | | **-0.07** | | |
| 02/05/20 14:18:50 | | **12.09** | | | **-0.07** | | |
| 02/05/20 14:19:00 | | **12.09** | | | **-0.07** | | |
| 02/05/20 14:19:10 | | **12.10** | | | **-0.07** | | |
| 02/05/20 14:19:20 | | 9.77 | | | **-0.05** | | |
| 02/05/20 14:19:30 | | 7.44 | | | **-0.03** | | |
| 02/05/20 14:19:40 | | 5.11 | | | **0.00** | | |
| 02/05/20 14:19:50 | | 3.59 | | | 0.79 | | |
| 02/05/20 14:20:00 | | 2.08 | | | 1.58 | | |
| 02/05/20 14:20:10 | x | **0.56** | | | 2.38 | | |
| 02/05/20 14:20:20 | | **0.43** | | | 3.11 | | |
| 02/05/20 14:20:30 | | **0.30** | | | 3.84 | | |
| 02/05/20 14:20:40 | | **0.16** | | | 4.57 | | |
| 02/05/20 14:20:50 | | **0.14** | | | 4.57 | | |
| 02/05/20 14:21:00 | | **0.11** | | | 4.58 | | |
| 02/05/20 14:21:10 | | **0.09** | | | 4.58 | | |
| 02/05/20 14:21:20 | | **0.08** | | | 4.57 | | |
| 02/05/20 14:21:30 | | **0.08** | | | 4.55 | | |
| 02/05/20 14:21:40 | | **0.07** | | | 4.54 | | |
| 02/05/20 14:21:50 | | **0.07** | | | 4.54 | | |
| 02/05/20 14:22:00 | | **0.06** | | | 4.55 | | |
| 02/05/20 14:22:10 | | **0.06** | | | 4.55 | | |
| 02/05/20 14:22:20 | | **0.05** | | | 4.62 | | |
| 02/05/20 14:22:30 | | **0.05** | | | **4.68** | | x |
| 02/05/20 14:22:40 | | **0.05** | | | **4.75** | | |
| 02/05/20 14:22:50 | | **0.05** | | | **4.77** | | |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 1** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 11.96 | 2.90 | 0.03 |
| **Corrected Average** | 11.86 | 3.01 | 0.02 |
| **Initial Zero** | 0.04 | -0.13 | 0.03 |
| **Final Zero** | 0.12 | 0.14 | 0.00 |
| **Avg. Zero** | 0.08 | 0.01 | 0.02 |
| **Initial UpScale** | 12.05 | 4.82 | 5.02 |
| **Final UpScale** | 12.06 | 4.81 | 4.97 |
| **Avg. UpScale** | 12.06 | 4.82 | 5.00 |
| **Sys Resp (Zero)** | 0.03 | 0.13 | 0.00 |
| **Sys Resp (Upscale)** | 12.13 | 4.90 | 5.04 |
| **Upscale Cal Gas** | 11.96 | 4.99 | 5.09 |
| **Initial Zero Bias** | 0.05% | -2.92% | 0.33% |
| **Final Zero Bias** | 0.43% | 0.11% | 0.00% |
| **Zero Drift** | 0.38% | 3.03% | 0.33% |
| **Initial Upscale Bias** | -0.38% | -0.90% | -0.22% |
| **Final Upscale Bias** | -0.33% | -1.01% | -0.77% |
| **Upscale Drift** | 0.05% | 0.11% | 0.55% |
| Alternative Specification Abs Diff **Initial Zero** | 0.01 | 0.26 | 0.03 |
| Alternative Specification Abs Diff **Final Zero** | 0.09 | 0.01 | 0.00 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.08 | 0.08 | 0.02 |
| Alternative Specification Abs Diff **Final Upscale** | 0.07 | 0.09 | 0.07 |
| **Calibration Span** | 21.10 | 8.90 | 9.10 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 |
| **5% of Cal. Span (bias)** | 1.06 | 0.45 | 0.46 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 2** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 11.69 | 2.54 | 0.43 |
| **Corrected Average** | 11.68 | 2.63 | 0.44 |
| **Initial Zero** | 0.12 | 0.14 | 0.00 |
| **Final Zero** | 0.09 | -0.09 | 0.00 |
| **Avg. Zero** | 0.11 | 0.03 | 0.00 |
| **Initial UpScale** | 12.06 | 4.81 | 4.97 |
| **Final UpScale** | 11.88 | 4.79 | 4.85 |
| **Avg. UpScale** | 11.97 | 4.80 | 4.91 |
| **Sys Resp (Zero)** | 0.03 | 0.13 | 0.00 |
| **Sys Resp (Upscale)** | 12.13 | 4.90 | 5.04 |
| **Upscale Cal Gas** | 11.96 | 4.99 | 5.09 |
| **Initial Zero Bias** | 0.43% | 0.11% | 0.00% |
| **Final Zero Bias** | 0.28% | -2.47% | 0.00% |
| **Zero Drift** | 0.14% | 2.58% | 0.00% |
| **Initial Upscale Bias** | -0.33% | -1.01% | -0.77% |
| **Final Upscale Bias** | -1.18% | -1.24% | -2.09% |
| **Upscale Drift** | 0.85% | 0.22% | 1.32% |
| Alternative Specification Abs Diff **Initial Zero** | 0.09 | 0.01 | 0.00 |
| Alternative Specification Abs Diff **Final Zero** | 0.06 | 0.22 | 0.00 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.07 | 0.09 | 0.07 |
| Alternative Specification Abs Diff **Final Upscale** | 0.25 | 0.11 | 0.19 |
| **Calibration Span** | 21.10 | 8.90 | 9.10 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 |
| **5% of Cal. Span (bias)** | 1.06 | 0.45 | 0.46 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 3** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 11.88 | 2.53 | 0.48 |
| **Corrected Average** | 11.97 | 2.67 | 0.51 |
| **Initial Zero** | 0.09 | -0.09 | 0.00 |
| **Final Zero** | 0.07 | -0.13 | 0.00 |
| **Avg. Zero** | 0.08 | -0.11 | 0.00 |
| **Initial UpScale** | 11.88 | 4.79 | 4.85 |
| **Final UpScale** | 11.85 | 4.84 | 4.87 |
| **Avg. UpScale** | 11.87 | 4.82 | 4.86 |
| **Sys Resp (Zero)** | 0.03 | 0.13 | 0.00 |
| **Sys Resp (Upscale)** | 12.13 | 4.90 | 5.04 |
| **Upscale Cal Gas** | 11.96 | 4.99 | 5.09 |
| **Initial Zero Bias** | 0.28% | -2.47% | 0.00% |
| **Final Zero Bias** | 0.19% | -2.92% | 0.00% |
| **Zero Drift** | 0.09% | 0.45% | 0.00% |
| **Initial Upscale Bias** | -1.18% | -1.24% | -2.09% |
| **Final Upscale Bias** | -1.33% | -0.67% | -1.87% |
| **Upscale Drift** | 0.14% | 0.56% | 0.22% |
| Alternative Specification Abs Diff **Initial Zero** | 0.06 | 0.22 | 0.00 |
| Alternative Specification Abs Diff **Final Zero** | 0.04 | 0.26 | 0.00 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.25 | 0.11 | 0.19 |
| Alternative Specification Abs Diff **Final Upscale** | 0.28 | 0.06 | 0.17 |
| **Calibration Span** | 21.10 | 8.90 | 9.10 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 |
| **5% of Cal. Span (bias)** | 1.06 | 0.45 | 0.46 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 4** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 11.91 | 2.44 | 0.74 |
| **Corrected Average** | 12.02 | 2.64 | 0.76 |
| **Initial Zero** | 0.07 | -0.13 | 0.00 |
| **Final Zero** | 0.11 | -0.14 | 0.00 |
| **Avg. Zero** | 0.09 | -0.14 | 0.00 |
| **Initial UpScale** | 11.85 | 4.84 | 4.87 |
| **Final UpScale** | 11.85 | 4.65 | 4.95 |
| **Avg. UpScale** | 11.85 | 4.75 | 4.91 |
| **Sys Resp (Zero)** | 0.03 | 0.13 | 0.00 |
| **Sys Resp (Upscale)** | 12.13 | 4.90 | 5.04 |
| **Upscale Cal Gas** | 11.96 | 4.99 | 5.09 |
| **Initial Zero Bias** | 0.19% | -2.92% | 0.00% |
| **Final Zero Bias** | 0.38% | -3.03% | 0.00% |
| **Zero Drift** | 0.19% | 0.11% | 0.00% |
| **Initial Upscale Bias** | -1.33% | -0.67% | -1.87% |
| **Final Upscale Bias** | -1.33% | -2.81% | -0.99% |
| **Upscale Drift** | 0.00% | 2.13% | 0.88% |
| Alternative Specification Abs Diff **Initial Zero** | 0.04 | 0.26 | 0.00 |
| Alternative Specification Abs Diff **Final Zero** | 0.08 | 0.27 | 0.00 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.28 | 0.06 | 0.17 |
| Alternative Specification Abs Diff **Final Upscale** | 0.28 | 0.25 | 0.09 |
| **Calibration Span** | 21.10 | 8.90 | 9.10 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 |
| **5% of Cal. Span (bias)** | 1.06 | 0.45 | 0.46 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 5** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 11.91 | 2.47 | 0.91 |
| **Corrected Average** | 12.02 | 2.68 | 0.93 |
| **Initial Zero** | 0.11 | -0.14 | 0.00 |
| **Final Zero** | 0.09 | -0.15 | 0.00 |
| **Avg. Zero** | 0.10 | -0.15 | 0.00 |
| **Initial UpScale** | 11.85 | 4.65 | 4.95 |
| **Final UpScale** | 11.86 | 4.80 | 4.91 |
| **Avg. UpScale** | 11.86 | 4.73 | 4.93 |
| **Sys Resp (Zero)** | 0.03 | 0.13 | 0.00 |
| **Sys Resp (Upscale)** | 12.13 | 4.90 | 5.04 |
| **Upscale Cal Gas** | 11.96 | 4.99 | 5.09 |
| **Initial Zero Bias** | 0.38% | -3.03% | 0.00% |
| **Final Zero Bias** | 0.28% | -3.15% | 0.00% |
| **Zero Drift** | 0.09% | 0.11% | 0.00% |
| **Initial Upscale Bias** | -1.33% | -2.81% | -0.99% |
| **Final Upscale Bias** | -1.28% | -1.12% | -1.43% |
| **Upscale Drift** | 0.05% | 1.69% | 0.44% |
| Alternative Specification Abs Diff **Initial Zero** | 0.08 | 0.27 | 0.00 |
| Alternative Specification Abs Diff **Final Zero** | 0.06 | 0.28 | 0.00 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.28 | 0.25 | 0.09 |
| Alternative Specification Abs Diff **Final Upscale** | 0.27 | 0.10 | 0.13 |
| **Calibration Span** | 21.10 | 8.90 | 9.10 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 |
| **5% of Cal. Span (bias)** | 1.06 | 0.45 | 0.46 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 6** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 11.92 | 2.35 | 0.97 |
| **Corrected Average** | 12.04 | 2.47 | 1.01 |
| **Initial Zero** | 0.09 | -0.15 | 0.00 |
| **Final Zero** | 0.07 | 0.08 | 0.00 |
| **Avg. Zero** | 0.08 | -0.04 | 0.00 |
| **Initial UpScale** | 11.86 | 4.80 | 4.91 |
| **Final UpScale** | 11.83 | 4.77 | 4.89 |
| **Avg. UpScale** | 11.85 | 4.79 | 4.90 |
| **Sys Resp (Zero)** | 0.03 | 0.13 | 0.00 |
| **Sys Resp (Upscale)** | 12.13 | 4.90 | 5.04 |
| **Upscale Cal Gas** | 11.96 | 4.99 | 5.09 |
| **Initial Zero Bias** | 0.28% | -3.15% | 0.00% |
| **Final Zero Bias** | 0.19% | -0.56% | 0.00% |
| **Zero Drift** | 0.09% | 2.58% | 0.00% |
| **Initial Upscale Bias** | -1.28% | -1.12% | -1.43% |
| **Final Upscale Bias** | -1.42% | -1.46% | -1.65% |
| **Upscale Drift** | 0.14% | 0.34% | 0.22% |
| Alternative Specification Abs Diff **Initial Zero** | 0.06 | 0.28 | 0.00 |
| Alternative Specification Abs Diff **Final Zero** | 0.04 | 0.05 | 0.00 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.27 | 0.10 | 0.13 |
| Alternative Specification Abs Diff **Final Upscale** | 0.30 | 0.13 | 0.15 |
| **Calibration Span** | 21.10 | 8.90 | 9.10 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 |
| **5% of Cal. Span (bias)** | 1.06 | 0.45 | 0.46 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| Base Load Load, Run - 7 | $O_2$ | NOx | CO |
| Raw Average | 11.93 | 2.84 | 1.13 |
| Corrected Average | 12.06 | 2.95 | 1.18 |
| Initial Zero | 0.07 | 0.08 | 0.00 |
| Final Zero | 0.11 | -0.07 | 0.00 |
| Avg. Zero | 0.09 | 0.01 | 0.00 |
| Initial UpScale | 11.83 | 4.77 | 4.89 |
| Final UpScale | 11.85 | 4.84 | 4.84 |
| Avg. UpScale | 11.84 | 4.81 | 4.87 |
| Sys Resp (Zero) | 0.03 | 0.13 | 0.00 |
| Sys Resp (Upscale) | 12.13 | 4.90 | 5.04 |
| Upscale Cal Gas | 11.96 | 4.99 | 5.09 |
| Initial Zero Bias | 0.19% | -0.56% | 0.00% |
| Final Zero Bias | 0.38% | -2.25% | 0.00% |
| Zero Drift | 0.19% | 1.69% | 0.00% |
| Initial Upscale Bias | -1.42% | -1.46% | -1.65% |
| Final Upscale Bias | -1.33% | -0.67% | -2.20% |
| Upscale Drift | 0.09% | 0.79% | 0.55% |
| Alternative Specification Abs Diff: Initial Zero | 0.04 | 0.05 | 0.00 |
| Alternative Specification Abs Diff: Final Zero | 0.08 | 0.20 | 0.00 |
| Alternative Specification Abs Diff: Initial Upscale | 0.30 | 0.13 | 0.15 |
| Alternative Specification Abs Diff: Final Upscale | 0.28 | 0.06 | 0.20 |
| Calibration Span | 21.10 | 8.90 | 9.10 |
| 3% of Cal. Span (drift) | 0.63 | 0.27 | 0.27 |
| 5% of Cal. Span (bias) | 1.06 | 0.45 | 0.46 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| Base Load Load, Run - 8 | $O_2$ | NOx | CO |
| Raw Average | 11.94 | 2.70 | 0.96 |
| Corrected Average | 12.07 | 2.78 | 1.01 |
| Initial Zero | 0.11 | -0.07 | 0.00 |
| Final Zero | 0.10 | 0.04 | 0.00 |
| Avg. Zero | 0.11 | -0.02 | 0.00 |
| Initial UpScale | 11.85 | 4.84 | 4.84 |
| Final UpScale | 11.82 | 4.89 | 4.84 |
| Avg. UpScale | 11.84 | 4.87 | 4.84 |
| Sys Resp (Zero) | 0.03 | 0.13 | 0.00 |
| Sys Resp (Upscale) | 12.13 | 4.90 | 5.04 |
| Upscale Cal Gas | 11.96 | 4.99 | 5.09 |
| Initial Zero Bias | 0.38% | -2.25% | 0.00% |
| Final Zero Bias | 0.33% | -1.01% | 0.00% |
| Zero Drift | 0.05% | 1.24% | 0.00% |
| Initial Upscale Bias | -1.33% | -0.67% | -2.20% |
| Final Upscale Bias | -1.47% | -0.11% | -2.20% |
| Upscale Drift | 0.14% | 0.56% | 0.00% |
| Alternative Specification Abs Diff: Initial Zero | 0.08 | 0.20 | 0.00 |
| Alternative Specification Abs Diff: Final Zero | 0.07 | 0.09 | 0.00 |
| Alternative Specification Abs Diff: Initial Upscale | 0.28 | 0.06 | 0.20 |
| Alternative Specification Abs Diff: Final Upscale | 0.31 | 0.01 | 0.20 |
| Calibration Span | 21.10 | 8.90 | 9.10 |
| 3% of Cal. Span (drift) | 0.63 | 0.27 | 0.27 |
| 5% of Cal. Span (bias) | 1.06 | 0.45 | 0.46 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 9** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 11.91 | 2.65 | 0.97 |
| **Corrected Average** | 12.02 | 2.67 | 1.01 |
| **Initial Zero** | 0.10 | 0.04 | 0.00 |
| **Final Zero** | 0.08 | 0.08 | 0.00 |
| **Avg. Zero** | 0.09 | 0.06 | 0.00 |
| **Initial UpScale** | 11.82 | 4.89 | 4.84 |
| **Final UpScale** | 11.88 | 4.88 | 4.84 |
| **Avg. UpScale** | 11.85 | 4.89 | 4.84 |
| **Sys Resp (Zero)** | 0.03 | 0.13 | 0.00 |
| **Sys Resp (Upscale)** | 12.13 | 4.90 | 5.04 |
| **Upscale Cal Gas** | 11.96 | 4.99 | 5.09 |
| **Initial Zero Bias** | 0.33% | -1.01% | 0.00% |
| **Final Zero Bias** | 0.24% | -0.56% | 0.00% |
| **Zero Drift** | 0.09% | 0.45% | 0.00% |
| **Initial Upscale Bias** | -1.47% | -0.11% | -2.20% |
| **Final Upscale Bias** | -1.18% | -0.22% | -2.20% |
| **Upscale Drift** | 0.28% | 0.11% | 0.00% |
| Alternative Specification Abs Diff **Initial Zero** | 0.07 | 0.09 | 0.00 |
| Alternative Specification Abs Diff **Final Zero** | 0.05 | 0.05 | 0.00 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.31 | 0.01 | 0.20 |
| Alternative Specification Abs Diff **Final Upscale** | 0.25 | 0.02 | 0.20 |
| **Calibration Span** | 21.10 | 8.90 | 9.10 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 |
| **5% of Cal. Span (bias)** | 1.06 | 0.45 | 0.46 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 10** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 11.88 | 3.05 | 2.17 |
| **Corrected Average** | 11.97 | 3.12 | 2.28 |
| **Initial Zero** | 0.08 | 0.08 | 0.00 |
| **Final Zero** | 0.10 | 0.05 | 0.00 |
| **Avg. Zero** | 0.09 | 0.07 | 0.00 |
| **Initial UpScale** | 11.88 | 4.88 | 4.84 |
| **Final UpScale** | 11.85 | 4.80 | 4.86 |
| **Avg. UpScale** | 11.87 | 4.84 | 4.85 |
| **Sys Resp (Zero)** | 0.03 | 0.13 | 0.00 |
| **Sys Resp (Upscale)** | 12.13 | 4.90 | 5.04 |
| **Upscale Cal Gas** | 11.96 | 4.99 | 5.09 |
| **Initial Zero Bias** | 0.24% | -0.56% | 0.00% |
| **Final Zero Bias** | 0.33% | -0.90% | 0.00% |
| **Zero Drift** | 0.09% | 0.34% | 0.00% |
| **Initial Upscale Bias** | -1.18% | -0.22% | -2.20% |
| **Final Upscale Bias** | -1.33% | -1.12% | -1.98% |
| **Upscale Drift** | 0.14% | 0.90% | 0.22% |
| Alternative Specification Abs Diff **Initial Zero** | 0.05 | 0.05 | 0.00 |
| Alternative Specification Abs Diff **Final Zero** | 0.07 | 0.08 | 0.00 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.25 | 0.02 | 0.20 |
| Alternative Specification Abs Diff **Final Upscale** | 0.28 | 0.10 | 0.18 |
| **Calibration Span** | 21.10 | 8.90 | 9.10 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 |
| **5% of Cal. Span (bias)** | 1.06 | 0.45 | 0.46 |

# APPENDIX E

# STRATIFICATION TEST DATA

| Source Information | |
|---|---|
| **Company** | Cricket Valley Energy Center LLC |
| **Plant Name** | Cricket Valley Energy Center |
| **Equipment** | General Electric (GE) 7F.05 Combustion Turbine |
| **Location** | Dover Plains, New York |

| Test Information | |
|---|---|
| **Date** | 02/05/20 |
| **Project #** | cis-19-cricketvalley.ny-start#1 |
| **Unit Number** | U-00001 |
| **Load** | normal |
| **Number of Ports Available** | 4 |
| **Number of Ports Used** | 4 |

| Stack and Test Type | | | |
|---|---|---|---|
| ○ | Isokinetic Traverse (Wet Chemistry Testing) | | **Circular Stack** |
| ○ | Velocity Traverse (Flow and Flow RATA Test) | | |
| ○ | Stratification Traverse (Compliance Test) | ☐ RM 20 | |
| ◉ | **Stratification Traverse (RATA)** | ☐ Part 60 ☑ Part 75 | |

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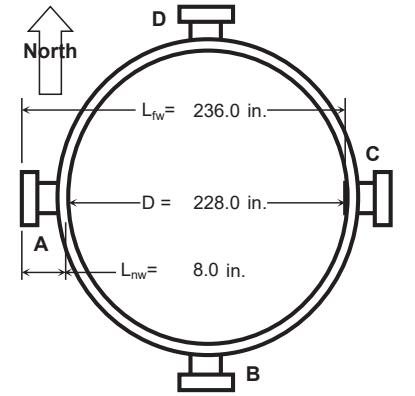
## METHOD 1 - STRATIFICATION TEST FOR A CIRCULAR SOURCE

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 02/05/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | cis-19-cricketvalley.ny-start#1 |
| **Equipment** | General Electric (GE) 7F.05 Combustion Turbine | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Circular Stack or Duct Diameter** | | | |
|---|---|---|---|
| **Distance to Far Wall of Stack** | ($L_{fw}$) | 236.00 | in. |
| **Distance to Near Wall of Stack** | ($L_{nw}$) | 8.00 | in.* |
| **Diameter of Stack** | (D) | 228.00 | in. |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ |

*assume 8 in. reference (must be measured and verified in field)

| **Distance from Disturbances to Port** | | | |
|---|---|---|---|
| **Distance Upstream** | (A) | 200.40 | in. |
| **Diameters Upstream** | ($A_D$) | 0.88 | diameters |
| **Distance Downstream** | (B) | 850.00 | in. |
| **Diameters Downstream** | ($B_D$) | 3.73 | diameters |

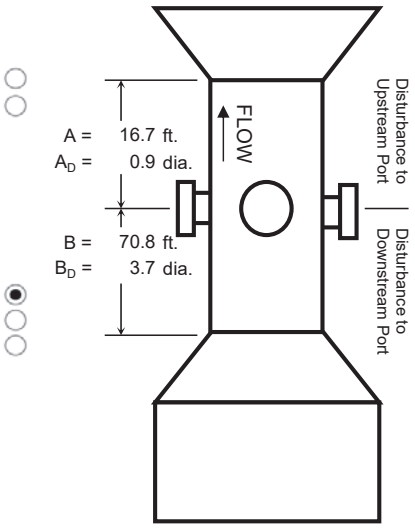



**Number of Traverse Points Required**

| Diameters to Flow Disturbance | | Minimum Number of[1] Traverse Points | | Minimum Number of Traverse Points Comp Stratification | |
|---|---|---|---|---|---|
| Down ($B_D$) | Up ($A_D$) | Particulate | Velocity | Criteria | Points |
| Stream | Stream | Points | Points | | |
| 2.00-4.99 | 0.50-1.24 | 24 | 16 | RM 7E 8.1.2 | 12 RM1 pts |
| 5.00-5.99 | 1.25-1.49 | 20 | 16 | Alt 7E 8.1.2 | 3 points |
| 6.00-6.99 | 1.50-1.74 | 16 | 12 | | |
| 7.00-7.99 | 1.75-1.99 | 12 | 12 | | |
| >= 8.00 | >=2.00 | 8 or 12[2] | 8 or 12[2] | **Minimum Number of** | |
| Upstream Spec | | 24 | 16 | **Traverse Points** | |
| Downstream Spec | | 24 | 16 | **RATA Stratification** | |
| Traverse Pts Required | | 24 | 16 | **Criteria** | **Points** |
| | | | | Part75/60 | 12 RM1 pts |
| | | | | 75 abrv (a) | 3 points |
| | | | | 75 abrv (b) | 6 points |
| | | | | | points |

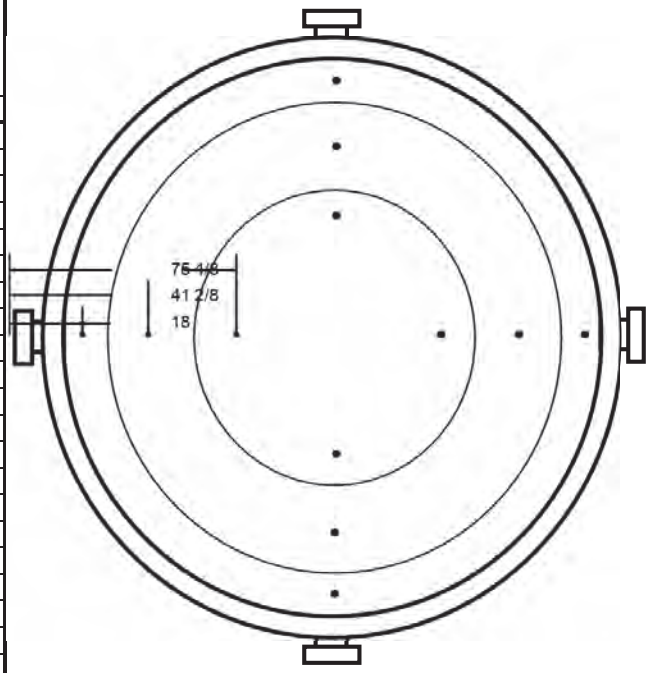
[1] Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.

[2] 8 for Circular Stacks 12 to 24 inches
12 for Circular Stacks over 24 inches




| **Number of Traverse Points Used** | | | | |
|---|---|---|---|---|
| 4 | **Ports by** | 3 | **Pts / port** | **Stratification Traverse (RATA)** |
| 12 | **Pts Used** | 12 | **Required** | |

| **Traverse Point Number** | **Percent of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
|---|---|---|---|
| | % | in. | in. |
| **1** | 4.4% | 10 | 18 |
| **2** | 14.6% | 33 2/8 | 41 2/8 |
| **3** | 29.6% | 67 4/8 | 75 4/8 |
| **4** | | | |
| **5** | | | |
| **6** | | | |
| **7** | | | |
| **8** | | | |
| **9** | | | |
| **10** | | | |
| **11** | | | |
| **12** | | | |
| **13** | | | |
| **14** | | | |
| **15** | | | |
| **16** | | | |
| **17** | | | |
| **18** | | | |
| **19** | | | |
| **20** | | | |
| **21** | | | |
| **22** | | | |
| **23** | | | |
| **24** | | | |



## STRATIFICATION TRAVERSE (RATA) RESULTS

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 02/05/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | cis-19-cricketvalley.ny-start#1 |
| **Equipment** | General Electric (GE) 7F.05 Combustion Turbine | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Stack Dimensions** | | | | **Traverse Data** | | | |
|---|---|---|---|---|---|---|---|
| **Diameter or Length of Stack** | (D) | 228.00 | in. | 4 | **Ports by** | 3 | **Pts / port** |
| **Width of Stack** | (W) | | in. | 12 | **Pts Used** | 12 | **Required** |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ | **Run Start** | 14:35:09 | **Run End** | 16:38:09 |

| **Traverse Point** | **Time Per Point** | **Point Start Time** | **Point Stop Time (Reading)** | **$O_2$** | **Percent Difference** | **NOx** | **Percent Difference** |
|---|---|---|---|---|---|---|---|
| | min. | hh:mm:ss | hh:mm:ss | % | % | ppm | % |
| D-3 | 8.00 | 14:35:09 | 14:43:09 | 12.15 | 0.50% | 2.57 | 7.47% |
| D-2 | 8.00 | 14:43:09 | 14:51:09 | 12.24 | 0.24% | 2.62 | 5.67% |
| D-1 | 8.00 | 14:51:09 | 14:59:09 | 12.24 | 0.24% | 2.56 | **7.83%** |
| C-3 | 9.00 | 14:59:09 | 15:07:09 | 12.18 | 0.25% | 2.70 | 2.79% |
| C-2 | 8.00 | 15:03:09 | 15:11:09 | 12.16 | 0.42% | 2.77 | 0.27% |
| C-1 | 8.00 | 15:11:09 | 15:19:09 | 12.15 | 0.50% | 2.87 | 3.33% |
| B-3 | 9.00 | 15:45:09 | 15:54:09 | 12.30 | 0.73% | 2.90 | 4.41% |
| B-2 | 8.00 | 15:54:09 | 16:02:09 | 12.30 | 0.73% | 2.76 | 0.63% |
| B-1 | 8.00 | 16:02:09 | 16:10:09 | 12.32 | **0.89%** | 2.93 | 5.49% |
| A-3 | 9.00 | 16:13:09 | 16:22:09 | 12.12 | 0.74% | 2.97 | 6.93% |
| A-2 | 8.00 | 16:22:09 | 16:30:09 | 12.16 | 0.42% | 2.88 | 3.69% |
| A-1 | 8.00 | 16:30:09 | 16:38:09 | 12.21 | 0.01% | 2.80 | 0.81% |
| **Average** | | | | 12.21 | | 2.78 | |

# RATA SAMPLE POINTS FOR CIRCULAR STACK

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 02/05/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | cis-19-cricketvalley.ny-start#1 |
| **Equipment** | General Electric (GE) 7F.05 Combustion Turbine | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Stack Dimensions** | | | | **Traverse Data** | | | |
|---|---|---|---|---|---|---|---|
| **Diameter or Length of Stack** | (D) | 228.00 | in. | 4 | **Ports by** | 3 | **Pts / port** |
| **Width of Stack** | (W) | | in. | 12 | **Pts Used** | 12 | **Required** |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ | **Run Start** | 14:35:09 | **Run End** | 16:38:09 |

**40 CFR 75 Criteria**

| **Stratification Results** | |
|---|---|
| **Maximum Percent Difference** | 0.89 % for $O_2$ |
| **Maximum Pollutant Conc. Diff.** | 0.22 ppm for NOx |
| **Maximum Diluent Conc. Diff.** | 0.11 % for $O_2$ |

| **Stratification Conclusions** | |
|---|---|
| **Comparison** | at least one diluent/pollutant |
| **Stack Diameter** | D > 93.6 in. |

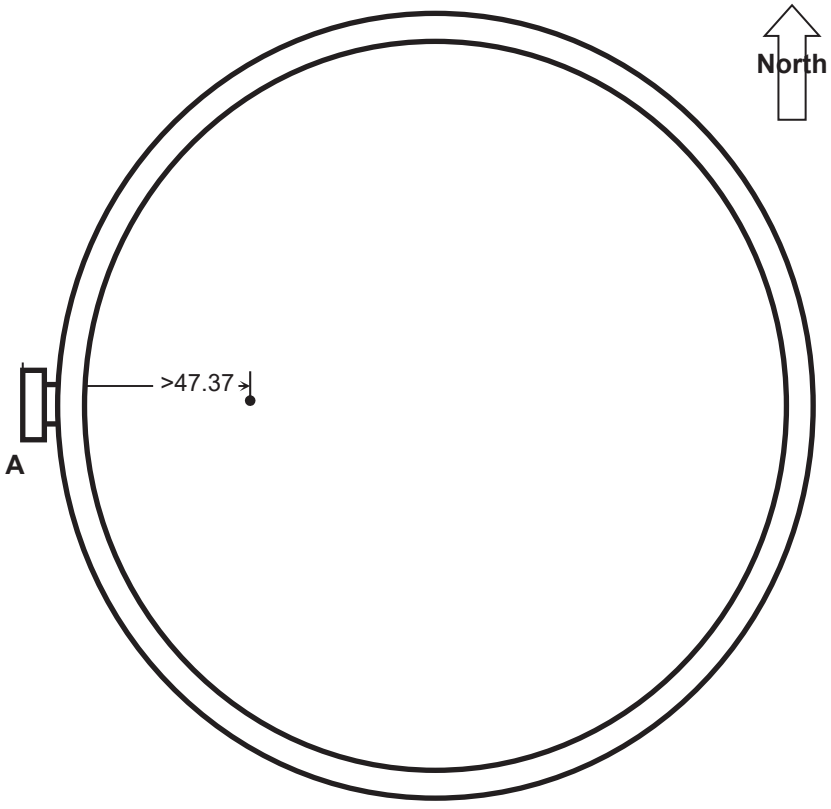
Under Part 75 criteria at least one measured pollutant or diluent demonstrates a non-stratified stack with subsequent testing from a single point located at least one meter away from the stack wall.

| **Traverse Point Number** | **Percent of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
|---|---|---|---|
| | % | in. | in. |
| **1** | >17.27% | >39.37 | >47.37 |
| **2** | | | |
| **3** | | | |

Test Type

- ☐ Moisture, for MW
- ☐ Moisture, for wet-to-dry
- ☑ Gas

- ☐ Use 6.5.6.3(a) points?
- ☐ 6.5.6(b)(2) alt. points could apply



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**end of report**

# APPENDIX 7

# FUEL FLOWMETER ACCURACY TEST/PRIMARY ELEMENT VISUAL INSPECTION DOCUMENTATION

Endress+Hauser

People for Process Automation

# Standard Density Calibration with Adjustment

31128647-4374500-5130590

PROMASS 83 F 6"
Transmitter/Sensor

N301CF16000
Serial N°

FCP-7.1.F
Calibration rig

C0 = -2138.5 C1 = 1.8178E+8
Density coefficient

C2 = -87071 C3 = 8543.6
Density coefficient

| Medium | Temp. [°F] | ρ target [kg/m³] | ρ meas. [kg/m³] | Δρ [kg/m³] | Freq. [Hz] |
|---|---|---|---|---|---|
| Air | 70.1 | 1.20 | 1.20 | 0.00 | 290.1 |
| Water | 67.3 | 999.07 | 999.07 | 0.00 | 239.7 |
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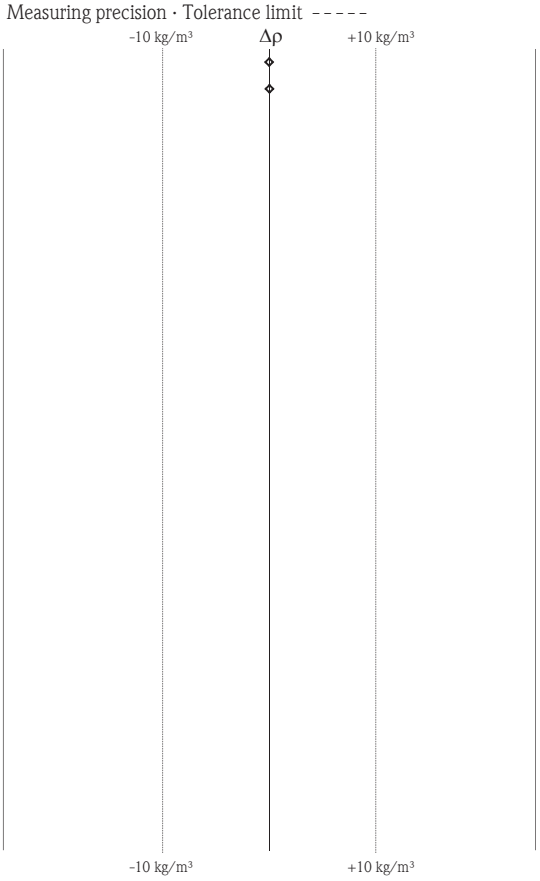


Endress+Hauser Flowtec operates ISO/IEC 17025 accredited calibration facilities in Reinach (CH), Cernay (FR), Greenwood (USA), Aurangabad (IN), Suzhou (CN) and Itatiba (BR).

Scott Newcomer

03-14-2018
Date of calibration

S. Newcomer
Operator

Endress+Hauser Flowtec, Division USA
2330 Endress Place
Greenwood, IN 46143

Certified acc. to
ISO 9001, Reg.-N° 030502.2
ISO 14001, Reg.-N° EMS561046

Endress+Hauser
People for Process Automation

# Certificate

Flow Calibration with Adjustment

30427954

American Association for Laboratory Accreditation, Cert. No 1897.01

Calibration laboratory accredited according to ISO/IEC 17025:2005

| | |
|---|---|
| 3800368764<br>Purchase order number | FCP-7.1.F / gravimetric<br>Calibration rig/Method |
| CORETECH INDUSTRIAL CORPORATION<br>Customer | 4776.682 lb/min ( ≙ 100%)<br>Calibrated full scale |
| US-3005947899-10 / Endress+Hauser Flowtec<br>Order N°/Manufacturer | Service interface<br>Calibrated output |
| PROMASS 83 F 6"<br>Transmitter/Sensor | 0.90972<br>Calibration factor |
| N301CF16000 / N301CF16000<br>Serial N° | -35<br>Zero point |
| Manufacture for GE, Supplier:Core Tech<br>Tag N° | 66.9 °F ±0.12 °F<br>Water temperature |
| New<br>Condition | 0.048 %<br>Expanded uncertainty of measurement |

| Flow [%] | Flow [lb/min] | Duration [s] | m target [lb] | m meas. [lb] | Δ o.r.* [%] | Outp.** [mA] |
|---|---|---|---|---|---|---|
| 20.0 | 956.801 | 60.3 | 961.151 | 961.091 | -0.006 | 7.20 |
| 35.5 | 1696.51 | 35.3 | 997.569 | 997.711 | 0.014 | 9.68 |
| 49.6 | 2367.42 | 30.3 | 1194.72 | 1194.68 | -0.003 | 11.93 |
| 75.2 | 3592.07 | 30.3 | 1813.13 | 1812.86 | -0.015 | 16.03 |
| 99.0 | 4727.02 | 30.3 | 2385.52 | 2385.44 | -0.003 | 19.83 |
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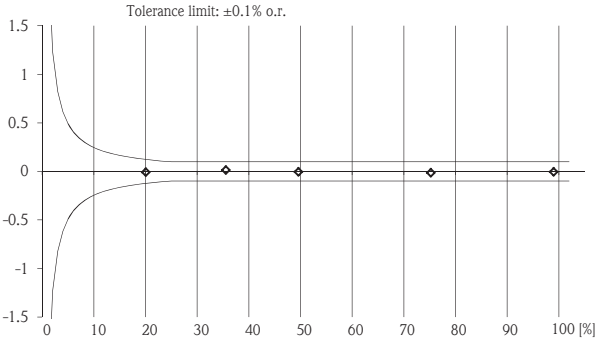
*o.r.: of reading

**Calculated value (4 - 20 mA)

Measured error % o.r.




For detailed data concerning output specifications of the unit under test, see Technical Information (TI), chapter Performance characteristics.

Calibration, traceable to NIST, has been completed on the instruments used in the equipment calibration process (see attached listing).

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approx. 95%. The expanded uncertainty of measurement includes uncertainty components of the reference, the calibration method, the environment and of the device under test. A typical value is used for the uncertainty component of the device

Scott Newcomer

03-14-2018
Date of calibration

S. Newcomer
Operator

This certificate shall not be published or reproduced other than in full, except with the prior written approval of the issuing laboratory.

Endress+Hauser Flowtec, Division USA
2330 Endress Place
Greenwood, IN 46143

# Certificate Addendum

Endress+Hauser
People for Process Automation

| | |
|---|---|
| CORETECH INDUSTRIAL CORPORATION | 12020 - BALLSTON SPA |
| Customer name | Customer address |
| Endress+Hauser Flowtec, Div. USA | 6" |
| Manufacturer | Nominal diameter |
| US-3005947899-10 / 83F1F-CP77/0 | FCP-7.1.F |
| Customer order N°/Order code | Calibration rig |
| N301CF16000 / N301CF16000 | 30427954 |
| Serial N° | Record N° |
| New | 03-14-2018 |
| Condition | Calibration date |
| - | 0.048 % |
| Customer specified calibration due date | Uncertainty of measurement (o.r.%) |
| PRD-TI-024 | |
| Calibration work procedure | |

## Instruments used in the calibration rig:

| Asset N° | Manufacturer | Model | Description | NIST/Cert N° | Cal. date | Cal. due date |
|---|---|---|---|---|---|---|
| F10795 | Endress+Hauser | PMC71-AAA1P1 | Pressure Gauge (Measure Inlet) | 008066 | 05-19-2017 | 06-01-2018 |
| F10796 | Endress+Hauser | PMC71-AAA1P1 | Pressure Gauge (Measure Inlet) | 008067 | 05-19-2017 | 06-01-2018 |
| F10797 | Endress+Hauser | PMC71-AAA1P1 | Pressure Gauge (Measure Outlet) | 008068 | 05-19-2017 | 06-01-2018 |
| F10798 | Endress+Hauser | TST434-K1B3A0 | RTD - Ambient | 008078 | 05-19-2017 | 06-01-2018 |
| F10799 | Endress+Hauser | TST310-A3A1A3 | RTD - Measuring Section | 008069 | 05-19-2017 | 06-01-2018 |
| F10800 | Endress+Hauser | TST310-A3A1A3 | RTD - Measuring Section | 008070 | 05-19-2017 | 06-01-2018 |
| F10801 | Endress+Hauser | TST310-A3A1A3 | RTD - 4000 kg Tank | 008072 | 05-19-2017 | 06-01-2018 |
| F10802 | Endress+Hauser | TST310-A3A1A3 | RTD - 4000 kg Tank | 008073 | 05-19-2017 | 06-01-2018 |
| F10803 | Endress+Hauser | TST310-A3A1A3 | RTD - Master Tower | 008075 | 05-19-2017 | 06-01-2018 |
| F10804 | Endress+Hauser | TST310-A3A1A3 | RTD - Master Tower | 008074 | 05-19-2017 | 06-01-2018 |
| F10806 | Endress+Hauser | TST310-A3A1A3 | RTD - 400 kg Tank | 008076 | 05-19-2017 | 06-01-2018 |
| F10807 | Endress+Hauser | TST310-A3A1A3 | RTD - 400 kg Tank | 008077 | 05-19-2017 | 06-01-2018 |
| F10808 | Endress+Hauser | - | Large Scale Diverter | 008062 | 05-19-2017 | 06-01-2018 |
| F10809 | Beckhoff | KL1501 | Counter/Timer | 008064 | 05-19-2017 | 06-01-2018 |
| F10810 | Beckhoff | KL1501 | Counter/Timer | 008063 | 05-19-2017 | 06-01-2018 |
| F10811 | Endress+Hauser | - | Small Scale Diverter | 008061 | 05-19-2017 | 06-01-2018 |
| F10813 | HBM | DMP 40 | Digital Scale Amplifier and scales | 008060 | 05-19-2017 | 06-01-2018 |
| - | - | - | - | - | - | - |

Calibration traceable to NIST has been completed on the instrument listed above by using known working procedures and standards certified by the manufacturers and/or secondary testing laboratories to traceable to NIST. This calibration has been completed using standards having a minimum accuracy of at least four times greater than the instrument listed above. This calibration was conducted in accordance with ISO 17025:2005 and ANSI/NCSL Z540-1. Reported uncertainties represent expanded uncertainties expressed at approximately 95% confidence level using a coverage factor of k=2.

Debbie Carver

ilac-MRA A2LA ACCREDITED

Certified according to ISO 17025:2005
Certification N° 1897.01

Debbie Carver
Calibration supervisor

Endress+Hauser Flowtec, Division USA
2330 Endress Place
Greenwood, IN 46143

Endress+Hauser

People for Process Automation

# Abnahmeprüfzeugnis nach EN 10204 – 3.1
# Inspection certificate acc. to EN 10204 – 3.1

Zeugnis-Nr./Certificate No. US – 3005947899



Es wird bescheinigt, dass die gelieferten Erzeugnisse den Vereinbarungen bei der Bestellung entsprechen. Darüber hinaus wird bescheinigt, dass bei der Herstellung der nachstehend aufgeführten Erzeugnisse die vorgeschriebenen Prüfungen und/oder die zusätzlich aufgeführten Prüfungen nach den bestehenden Prüfvorgaben durchgeführt und die erforderlichen Freigaben erteilt wurden. Die unten aufgeführten Prüfungen wurden durch eine dazu autorisierte Person durchgeführt.

It is certified that the products supplied are in compliance with the requirements of the order. Furthermore, it is confirmed that during the manufacturing of the subsequently listed products the specified inspections and/or the additionally ordered tests have been performed according to the valid procedures and the necessary releases have been given. The subsequently listed inspections have been performed by especially authorized personnel.

| | | |
|---|---|---|
| Kunde/Customer | : | CORETECH INDUSTRIAL CORPORATION<br>US – 12020 – BALLSTON SPA |
| Kunden Bestell-Nr./Customer Order No. | : | 111063 |
| E+H-Auftrags-Nr./E+H Order No. | : | 3800368764 |

| Pos./Item | Menge/Qty. | Produktbezeichnung/Description |
|---|---|---|
| 10 | 1 | 83F1F-CP77/0<br>PROMASS 83 F 6"<br>S/N.: N301CF16000<br>Tag-Nr.: Manufacture for GE, Supplier:Core Tech |

**Abnahmeprüfzeugnisse nach EN 10204 – 3.1/Inspection Certificates acc. to EN 10204 – 3.1:**
Messrohr/Measuring tube: 51588, Franz Iten AG
Verteilerstück/Flow splitter: 270138, Bächler Feintech AG
Prozessanschluss/Process connection: 16CT12819, Jiangyin Unique Flange Manufacturing Co., Ltd.

Datum/Date 03-15-2018

Endress+Hauser Flowtec, Division USA
Greenwood, IN 46143 USA

Chris Brown

Abnahmebeauftragter
Inspector

Dieses Dokument wurde elektronisch nach EN 10204 erstellt und ist ohne Unterschrift gültig.
This document was generated electronically acc. to EN 10204 and is valid without signature.

Endress+Hauser
People for Process Automation

# Parameter Setting

30409322-4374500

| | |
|---|---|
| 3800368764 | PROMASS 83 F |
| Purchase order number | Transmitter/Sensor |
| 3005947899-10 / Endress+Hauser Flowtec | 6" |
| Order N°/Manufacturer | Nominal diameter |
| 83F1F-CP77/0 | Manufacture for GE, Supplier:Core Tech |
| Order code | Tag N° |
| N301CF16000 | |
| Serial N° | |

The below parameters are set according to your order.
Please refer to the Operating Manual for any parameters not mentioned.

| | |
|---|---|
| Communication type | MODBUS RS485 |
| Device software | V3.06.10 |
| Device address | 247 |
| <u>Current output 1</u> | |
| Current span | 4-20 mA US |
| Value 0/4 mA | 0 lb/min |
| Value 20 mA | 4800 lb/min |
| Time constant | 1 s |
| Failsafe mode | Minimum current |
| <u>Pulse output 1</u> | |
| Pulse value | 200 lb |
| Pulse width | 100 ms |
| Output signal | passive/positive |
| Failsafe mode | Fallback value |

03-13-2018
Date

Endress+Hauser Flowtec, Division USA
2330 Endress Place
Greenwood, IN 46143

ENDRESS + HAUSER INC.
2350 Endress Place
Greenwood, IN 46143
Phone: (888)ENDRESS

Endress+Hauser
People for Process Automation

# CERTIFICATE OF COMPLIANCE

CUSTOMER NAME : CORETECH INDUSTRIAL CORPORATION

CUSTOMER P.O.#: 112245

ALL ITEMS FURNISHED WITH THIS SHIPMENT ARE IN COMPLIANCE WITH THE MODEL NUMBERS ORDERED ON THE REFERENCED PURCHASE ORDER, AND PUBLISHED ENDRESS+HAUSER SPECIFICATION REQUIREMENTS.
THE INSTRUMENT(S) PROVIDED ARE MANUFACTURED, TESTED, AND INSPECTED IN ACCORDANCE WITH ACCEPTED INDUSTRY MANUFACTURING PRACTICES, ISO9001 GUIDELINES, THE GRAVIMETRIC METHOD USED IN ACCORDANCE WITH ASME MFC 9M:2006, AND ENDRESS+HAUSER SPECIFICATIONS.

ENDRESS+HAUSER SALES ORDER NUMBER: 3003821102

Signed and Dated By: Gregg Miller 02/12/2020
(Dispatching Manager)

| S.O. LINE | MODEL NUMBER | QTY | EXT. MODEL NUMBER | TAG NUMBER | SERIAL NUMBER |
|---|---|---|---|---|---|
| 10 | 83F1F-CP77/0 | 1 | 83F1F-CABSBGR4BABN+Z1 | 125T3664G001 GE PO# 610575460/3 | N600E816000 |

EMERSON

**24 February, 2018**

**Emerson Automation Solutions**
8200 Market Blvd
Chanhassen, MN U.S. 55317-9786

**Calibration Data Sheet Consistent with ISO 10474 3.1 or EN 10204 3.1**

## Customer Information

**Name:** FORNEY CORP
**PO:** 790542

## Manufacturer Information

**Sales Order:** 5116125
**Line:** 1

## Device Information

**Device Type:** Pressure Transmitter
**Customer Ref/ID:** N/A
**Serial No:** 0011949

**Model No:** 3051SMV5M13G3R2A11A1AC12C2E5M5Q4

**Module Serial No:** 18019960
**Output:** Linear
**Device ID:** 33194

## Calibration Information

**Factory:** Chanhassen, MN, USA
**Station Name:** CHAN_DPFLOW_CALIBRATION_01
**Operator ID:** 59869
**Calibration Date:** 02/23/2018 08:22:01 AM

Internal Ref #: 30073090

## Permanent Tag Information

DUCT BURNER
FLOW TRANSMITTER

## Wire-On Tag Information

### Attached Models

0305RC92B21B4

### Equipment Used

| EqNumber: | EqName: | CalDueDate: |
|---|---|---|
| E3-58610 | Load Box | 7/20/2018 2:17:00PM |
| E3-60655 | Multimeter | 9/20/2018 3:07:00PM |
| E3-60786 | Precision Resistance Decade | 7/9/2018 10:38:00AM |
| P3-54917 | Pressure Controller | 4/12/2018 1:13:00PM |
| P3-55113 | Pressure Controller | 5/2/2018 10:27:00AM |

**Calibration Data**

**DP**

Reference of Calibration: Differential

Range: 0.000 TO 150.000 InH2O@68degF

Damping: 0.40 seconds

| % of Range | Applied Pressure | Requested Applied Pressure | Digital Output (InH2O@68degF) | % Span Error | Pass/Fail |
|---|---|---|---|---|---|
| 99.994 | 5.409 PSI | 149.99050 InH2O@68degF | 149.98700 | -0.00233 | PASS |
| 79.991 | 4.327 PSI | 119.98680 InH2O@68degF | 119.98820 | 0.00093 | PASS |
| 59.989 | 3.245 PSI | 89.98320 InH2O@68degF | 89.97474 | -0.00564 | PASS |
| 39.986 | 2.163 PSI | 59.97956 InH2O@68degF | 59.97218 | -0.00492 | PASS |
| 19.984 | 1.081 PSI | 29.97591 InH2O@68degF | 29.97556 | -0.00023 | PASS |
| 0.000 | 0.000 PSI | 0.00000 InH2O@68degF | -0.00493 | -0.00329 | PASS |

**SP**

Reference of Calibration: Gauge

Range: 0.000 TO 100.000 PSI

Damping: 0.40 seconds

| % of Range | Applied Pressure | Requested Applied Pressure | Digital Output (PSI) | % Span Error | Pass/Fail |
|---|---|---|---|---|---|
| 100.000 | 100.000 PSI | 100.00000 PSI | 100.00050 | 0.00050 | PASS |
| 80.000 | 80.000 PSI | 80.00000 PSI | 80.00269 | 0.00269 | PASS |
| 60.000 | 60.000 PSI | 60.00000 PSI | 60.00123 | 0.00123 | PASS |
| 40.000 | 40.000 PSI | 40.00000 PSI | 40.00577 | 0.00577 | PASS |
| 20.000 | 20.000 PSI | 20.00000 PSI | 20.00554 | 0.00554 | PASS |
| 0.000 | 0.000 PSI | 0.00000 PSI | 0.00476 | 0.00476 | PASS |

**PT**

Range: 0.000 TO 150.000 DEG F

Damping: 0.40 seconds

| % of Range | Applied Resistence | Applied Resistence | Digital Output (DEG F) | Error (DEG F) | Pass/Fail |
|---|---|---|---|---|---|
| 100.000 | 125.373 Ohms | 150.00000 DEG F | 149.98980 | -0.01020 | PASS |
| 80.000 | 118.969 Ohms | 120.00000 DEG F | 119.97740 | -0.02260 | PASS |
| 60.000 | 112.533 Ohms | 90.00000 DEG F | 90.00949 | 0.00949 | PASS |
| 40.000 | 106.066 Ohms | 60.00000 DEG F | 59.98681 | -0.01319 | PASS |
| 20.000 | 99.566 Ohms | 30.00000 DEG F | 29.95533 | -0.04467 | PASS |
| 0.000 | 93.033 Ohms | 0.00000 DEG F | -0.03553 | -0.03553 | PASS |

This is to certify that the listed product meets the applicable Rosemount Specifications. Measuring and test equipment used in the manufacture and inspection of the listed product are traceable to the National Institute of Standards and Technology. The calibration system was designed to meet the intent of ANSI Z540-1-1994.



Heather Matthiesen
Quality Manager

## Reginald Williams

**From:** Carr, Peter <pcarr@bechtel.com>
**Sent:** Saturday, March 07, 2020 3:22 PM
**To:** Reginald Williams
**Cc:** Cricket Valley RES; Kenner, Bruce; Putman, Christopher
**Subject:** Duct Burner Flow Gas Meter - Statement for CEMS Certification Report
**Attachments:** RE: CVEC Unit 1 CEMS Certification Report - Bechtel and Owner Comments [*EXTERNAL*]

Reggie:

This statement below from Evan Keiper hopefully satisfies your request regarding the duct burner gas flow meter orifice plate.

This statement and the other email from Evan (attached) regarding the calibration drift matters should satisfy most of your Unit 1 CEMS concerns.

The questions (7 and 8) regarding calibration gases for the linearity tests were not in Evan's purview. I would recommend contacting the CISCO specialist performing the linearity test regarding this information.

Please let me know, if you any additional concerns regarding completion of the Unit 1 CEMS Certification Report.

Regards,

**Peter Carr**
Principal Environmental Scientist
Reston Office (RO1, 5th floor, C090)
571-392-6737 (Work)
240-344-0897 (Cell)

---

**From:** Keiper, Evan <edkeiper@bechtel.com>
**Sent:** Saturday, March 7, 2020 4:33 PM
**To:** Carr, Peter <pcarr@bechtel.com>
**Cc:** Gaydon, Matthew <magaydon@bechtel.com>; Putman, Christopher <csputman@bechtel.com>; Kenner, Bruce <bkenner@bechtel.com>; Curran, John <jdcurran@bechtel.com>
**Subject:** RE: Duct Burner Flow Gas Meter - Statement for CEMS Certification Report

Peter,

As the responsible I&C Startup lead on the project, I can attest that the Unit 1 duct burner fuel flow meter including the orifice run was installed correctly onsite and no nonconformances or defects were noted during its initial checkout and placement into operation. Similarly, the orifice plate and transmitter taps were installed per design and are correctly orientated for proper fuel flow measurement. I have also reviewed the AGA calibration records related to the Unit 1 fuel flow meter and noted no issues.

Regards,

Evan Keiper
Bechtel Infrastructure and Power Corp.

Cricket Valley Energy Center
Startup Instrumentation & Controls
D: 571-392-6330
M: 234-207-0424

# APPENDIX 8

# GAS CYLINDER CERTIFICATION SHEETS

RED BALL TECHNICAL GAS SERVICES

PJLA Calibration and Testing
Accreditation #62754

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12019

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | CC712750 | **Certification Date:** | 06/28/2019 |
| **Product ID Number:** | 125597 | **Expiration Date:** | 06/27/2022 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | CC712750.20190613-0 | **Lot Number:** | CC712750.20190613 |
| **Customer PO. NO.:** | | **Tracking Number:** | 097026895 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Monoxide** | **48.8 PPM** | ±0.13 PPM | FTIR | 06/19/2019 |
| **Nitric Oxide** | **49.4 PPM** | ±0.5 PPM | Chemiluminescence | 06/19/2019, 06/28/2019 |
| Total Oxides of Nitrogen | 49.7 PPM | | | |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| FF18347 | 04-L-68 | 04/04/2021 | SRM | N2 | CO | 49.136 PPM | 0.132 | 1678c |
| CC238430 | CC238430.20181025 | 02/03/2027 | GMIS | N2 | NO | 92 PPM | 1.06 | 12100115 |
| CC726153 | CC726153.20190328 | 06/04/2027 | GMIS | N2 | CO | 48.6 PPM | 0.239 | 1678c |
| EB0049172 | EB0049172.20181025 | 02/05/2022 | GMIS | N2 | NO | 34 PPM | 1.104 | 12100115 |
| EB0078547 | EB0078547.20171228 | 07/17/2026 | GMIS | N2 | NO | 62.4 PPM | 1.064 | 12100115 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NO | Chemiluminescence | Thermo | 42i-HL | 1152610017 | 06/05/2019 |
| CO | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 06/06/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

Jasmine Godfrey

**Jasmine Godfrey**
**Analytical Chemist**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

RED BALL TECHNICAL GAS SERVICES

PJLA Calibration and Testing
Accreditation #62754

**Red Ball Technical Gas Service**
**555 Craig Kennedy Way**
**Shreveport, LA 71107**
**800-551-8150**
**PGVP Vendor ID # G12018**

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | CC719253 | **Certification Date:** | 09/26/2018 |
| **Product ID Number:** | 124122 | **Expiration Date:** | 09/24/2026 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | CC719253.20180910-0 | **Lot Number:** | CC719253.20180910 |
| **Customer PO. NO.:** | | **Tracking Number:** | 098490608 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Monoxide** | **113.0 PPM** | ±0.9 PPM | FTIR | 09/24/2018 |
| **Nitric Oxide** | **109.4 PPM** | ±0.8 PPM | Chemiluminescence | 09/17/2018, 09/26/2018 |
| Total Oxides of Nitrogen | 110.8 PPM | | | |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| CC349590 | CC349590.20170821 | 12/03/2025 | GMIS | N2 | NO | 294 PPM | 0.451 | 2735 |
| EB0024184 | EB0024184.20171228 | 05/22/2026 | GMIS | N2 | NO | 91 PPM | 1.061 | 12100115 |
| EB0059475 | EB0059475.20180102 | 09/18/2026 | GMIS | N2 | CO | 710 PPM | 0.635 | 1681B |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NO | Chemiluminescence | Thermo | 42i-HL | 1152610017 | 08/31/2018 |
| CO | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 09/24/2018 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Anthony Cyr**
**Assistant Operations Manager**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

Airgas
an Air Liquide company

02/15/20

**Airgas Specialty Gases**
Airgas USA, LLC
6141 Easton Road
Bldg 1
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Airgas.com

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI78E15A0124 | Reference Number: | 160-401495594-1 |
| Cylinder Number: | ALM010779 | Cylinder Volume: | 146.3 CF |
| Laboratory: | 124 - Plumsteadville - PA | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | A12019 | Valve Outlet: | 590 |
| Gas Code: | O2,BALN | Certification Date: | May 09, 2019 |

**Expiration Date: May 09, 2027**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| OXYGEN | 22.00 % | 22.15 % | G1 | +/- 0.3% NIST Traceable | 05/09/2019 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 120620 | CC367413 | 22.883 % OXYGEN/NITROGEN | 0.22% | May 14, 2026 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| SIEMENS OXYMAT 6 - W5951 - O2 | PARAMAGNETIC | Apr 25, 2019 |

**Triad Data Available Upon Request**

Approved for Release

Airgas
an Air Liquide company

01/24/20 NO/NOX-CO/N

**Airgas Specialty Gases**
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Airgas.com

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E03NI99E15A09J6 | Reference Number: | 122-401543888-1 |
| Cylinder Number: | ALM034669 | Cylinder Volume: | 144.4 CF |
| Laboratory: | 124 - Durham (SAP) - NC | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | B22019 | Valve Outlet: | 660 |
| Gas Code: | CO,NO,NOX,BALN | Certification Date: | Jul 22, 2019 |

**Expiration Date: Jul 22, 2027**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| NOX | 180.0 PPM | 176.8 PPM | G1 | +/- 0.5% NIST Traceable | 07/15/2019, 07/22/2019 |
| NITRIC OXIDE | 180.0 PPM | 176.8 PPM | G1 | +/- 0.5% NIST Traceable | 07/15/2019, 07/22/2019 |
| CARBON MONOXIDE | 1700 PPM | 1709 PPM | G1 | +/- 0.5% NIST Traceable | 07/15/2019 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 18060130 | KAL004288 | 249.9 PPM NITRIC OXIDE/NITROGEN | +/- 0.4% | Nov 08, 2023 |
| PRM | PRM | D562879 | 10.01 PPM NITROGEN DIOXIDE/AIR | +/- 1.9% | Aug 17, 2018 |
| GMIS | 124206889114 | CC322698 | 4.432 PPM NITROGEN DIOXIDE/NITROGEN | +/- 2.0% | Aug 15, 2021 |
| NTRM | 09010339 | KAL004580 | 970.0 PPM CARBON MONOXIDE/NITROGEN | +/- 0.4% | May 14, 2021 |

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| Nicolet 6700 AHR0801549 CO | FTIR | Jun 27, 2019 |
| Nicolet 6700 AHR0801549 NO | FTIR | Jun 27, 2019 |
| Nicolet 6700 AHR0801549 NO | FTIR | Jun 27, 2019 |

**Triad Data Available Upon Request**

**Approved for Release**

Airgas
an Air Liquide company

01/25/20

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# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E03NI99E15A09J6 | Reference Number: | 122-401524134-1 |
| Cylinder Number: | ALM-032192 | Cylinder Volume: | 144.4 CF |
| Laboratory: | 124 - Durham (SAP) - NC | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | B22019 | Valve Outlet: | 660 |
| Gas Code: | CO,NO,NOX,BALN | Certification Date: | Jun 24, 2019 |

**Expiration Date: Jun 24, 2027**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| NOX | 180.0 PPM | 179.2 PPM | G1 | +/- 0.6% NIST Traceable | 06/17/2019, 06/24/2019 |
| NITRIC OXIDE | 180.0 PPM | 179.2 PPM | G1 | +/- 0.6% NIST Traceable | 06/17/2019, 06/24/2019 |
| CARBON MONOXIDE | 1700 PPM | 1731 PPM | G1 | +/- 0.6% NIST Traceable | 06/17/2019 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 18060130 | KAL004288 | 249.9 PPM NITRIC OXIDE/NITROGEN | +/- 0.4% | Nov 08, 2023 |
| PRM | PRM | D562879 | 10.01 PPM NITROGEN DIOXIDE/AIR | +/- 1.9% | Aug 17, 2018 |
| GMIS | 124206889114 | CC322698 | 4.432 PPM NITROGEN DIOXIDE/NITROGEN | +/- 2.0% | Aug 15, 2021 |
| NTRM | 09010339 | KAL004580 | 970.0 PPM CARBON MONOXIDE/NITROGEN | +/- 0.4% | May 14, 2021 |

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| Nicolet 6700 AHR0801549 CO | FTIR | Jun 06, 2019 |
| Nicolet 6700 AHR0801549 NO | FTIR | Jun 06, 2019 |
| Nicolet 6700 AHR0801549 NO | FTIR | Jun 06, 2019 |

**Triad Data Available Upon Request**

**Approved for Release**

Airgas
an Air Liquide company

12/29/19

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# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI99E15A2039 | Reference Number: | 160-401523613-1 |
| Cylinder Number: | CC103280 | Cylinder Volume: | 144.3 CF |
| Laboratory: | 124 - Plumsteadville - PA | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | A12019 | Valve Outlet: | 350 |
| Gas Code: | CO,BALN | Certification Date: | Jun 20, 2019 |

**Expiration Date: Jun 20, 2027**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| CARBON MONOXIDE | 7.000 PPM | 7.064 PPM | G1 | +/- 0.6% NIST Traceable | 06/20/2019 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 061207 | KAL003958 | 9.855 PPM CARBON MONOXIDE/NITROGEN | 0.51% | Jun 05, 2024 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| MKS FTIR - CO - 000928781 | FTIR | Jun 07, 2019 |

**Triad Data Available Upon Request**

Approved for Release

Airgas
an Air Liquide company

**Airgas Specialty Gases**
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Airgas.com

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI99E15A2039 | Reference Number: | 160-401523613-1 |
| Cylinder Number: | CC152351 | Cylinder Volume: | 144.3 CF |
| Laboratory: | 124 - Plumsteadville - PA | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | A12019 | Valve Outlet: | 350 |
| Gas Code: | CO,BALN | Certification Date: | Jun 20, 2019 |

**Expiration Date: Jun 20, 2027**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| CARBON MONOXIDE | 7.000 PPM | 7.044 PPM | G1 | +/- 0.6% NIST Traceable | 06/20/2019 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 061207 | KAL003958 | 9.855 PPM CARBON MONOXIDE/NITROGEN | 0.51% | Jun 05, 2024 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| MKS FTIR - CO - 000928781 | FTIR | Jun 07, 2019 |

**Triad Data Available Upon Request**

Approved for Release

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# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI99E15A0131 | Reference Number: | 82-401326179-1 |
| Cylinder Number: | CC477737 | Cylinder Volume: | 144.3 CF |
| Laboratory: | 124 - Riverton (SAP) - NJ | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | B52018 | Valve Outlet: | 660 |
| Gas Code: | NO,NOX,BALN | Certification Date: | Oct 25, 2018 |

**Expiration Date: Oct 25, 2021**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| NOX | 9.000 PPM | 9.037 PPM | G1 | +/- 1.4% NIST Traceable | 10/17/2018, 10/25/2018 |
| NITRIC OXIDE | 9.000 PPM | 9.037 PPM | G1 | +/- 1.1% NIST Traceable | 10/17/2018, 10/25/2018 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRMplus | 13061101 | CC403855 | 10.14 PPM NITRIC OXIDE/NITROGEN | +/- 1.0% | Jan 02, 2021 |
| NTRMplus | 13061101 | CC403855-NOX | 10.14 PPM NOx/NITROGEN | +/- 1.0% | Jan 02, 2021 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| Thermo 42i-LS-NO-1123749326 | Chemiluminescence | Oct 05, 2018 |
| Thermo 42i-LS-NOx-1123749326 | Chemiluminescence | Oct 05, 2018 |

**Triad Data Available Upon Request**

**Approved for Release**

Airgas
an Air Liquide company

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# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI78E15A0124 | Reference Number: | 160-401525182-1 |
| Cylinder Number: | ALM047631 | Cylinder Volume: | 146.3 CF |
| Laboratory: | 124 - Plumsteadville - PA | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | A12019 | Valve Outlet: | 590 |
| Gas Code: | O2,BALN | Certification Date: | Jun 18, 2019 |

**Expiration Date: Jun 18, 2027**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| OXYGEN | 22.00 % | 22.21 % | G1 | +/- 0.7% NIST Traceable | 06/18/2019 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 120620 | CC367413 | 22.883 % OXYGEN/NITROGEN | 0.22% | May 14, 2026 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| SIEMENS OXYMAT 6 - W5951 - O2 | PARAMAGNETIC | May 23, 2019 |

**Triad Data Available Upon Request**

**Approved for Release**

Airgas
an Air Liquide company

**Airgas Specialty Gases**
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Airgas.com

01/15/20

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI99E15A0131 | Reference Number: | 122-401524346-1 |
| Cylinder Number: | CC342258 | Cylinder Volume: | 144.3 CF |
| Laboratory: | 124 - Durham (SAP) - NC | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | B22019 | Valve Outlet: | 660 |
| Gas Code: | NO,NOX,BALN | Certification Date: | Jun 24, 2019 |

**Expiration Date: Jun 24, 2022**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| NOX | 9.000 PPM | 8.895 PPM | G1 | +/- 0.9% NIST Traceable | 06/17/2019, 06/24/2019 |
| NITRIC OXIDE | 9.000 PPM | 8.865 PPM | G1 | +/- 0.9% NIST Traceable | 06/17/2019, 06/24/2019 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 16060622 | CC442581 | 50.42 PPM NITRIC OXIDE/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060612 | CC442569 | 50.42 PPM NITRIC OXIDE/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060622 | CC442581 NOx | 50.49 PPM NOx/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060612 | CC442569 NOx | 50.49 PPM NOx/NITROGEN | +/- 0.8% | Jun 27, 2020 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| THERMO NO 42I-1308857345 | Chemiluminescence | Jun 20, 2019 |
| THERMO NOX 42I-1308857345 | Chemiluminescence | Jun 20, 2019 |

**Triad Data Available Upon Request**

**Approved for Release**

Airgas
an Air Liquide company

12/16/19
NOX/L

**Airgas Specialty Gases**
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI99E15A0131 | Reference Number: | 122-401515527-1 |
| Cylinder Number: | CC259107 | Cylinder Volume: | 144.3 CF |
| Laboratory: | 124 - Durham (SAP) - NC | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | B22019 | Valve Outlet: | 660 |
| Gas Code: | NO,NOX,BALN | Certification Date: | Jun 19, 2019 |

**Expiration Date: Jun 19, 2022**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| NOX | 9.000 PPM | 8.816 PPM | G1 | +/- 1.0% NIST Traceable | 06/12/2019, 06/19/2019 |
| NITRIC OXIDE | 9.000 PPM | 8.761 PPM | G1 | +/- 0.9% NIST Traceable | 06/12/2019, 06/19/2019 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 16060622 | CC442581 | 50.42 PPM NITRIC OXIDE/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060622 | CC442581 NOx | 50.49 PPM NOx/NITROGEN | +/- 0.8% | Jun 27, 2020 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| THERMO NO 42I-1308857345 | Chemiluminescence | May 22, 2019 |
| THERMO NOX 42I-1308857345 | Chemiluminescence | May 22, 2019 |

**Triad Data Available Upon Request**

**Approved for Release**

Airgas
an Air Liquide company

12/26/19
NOX/H-CO/H

Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E03NI99E15A09J6 | Reference Number: | 122-401524134-1 |
| Cylinder Number: | SG9164791BAL | Cylinder Volume: | 144.4 CF |
| Laboratory: | 124 - Durham (SAP) - NC | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | B22019 | Valve Outlet: | 660 |
| Gas Code: | CO,NO,NOX,BALN | Certification Date: | Jun 24, 2019 |

**Expiration Date: Jun 24, 2027**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| NOX | 180.0 PPM | 179.2 PPM | G1 | +/- 0.5% NIST Traceable | 06/17/2019, 06/24/2019 |
| NITRIC OXIDE | 180.0 PPM | 179.1 PPM | G1 | +/- 0.5% NIST Traceable | 06/17/2019, 06/24/2019 |
| CARBON MONOXIDE | 1700 PPM | 1728 PPM | G1 | +/- 0.7% NIST Traceable | 06/17/2019 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 18060130 | KAL004288 | 249.9 PPM NITRIC OXIDE/NITROGEN | +/- 0.4% | Nov 08, 2023 |
| PRM | PRM | D562879 | 10.01 PPM NITROGEN DIOXIDE/AIR | +/- 1.9% | Aug 17, 2018 |
| GMIS | 124206889114 | CC322698 | 4.432 PPM NITROGEN DIOXIDE/NITROGEN | +/- 2.0% | Aug 15, 2021 |
| NTRM | 09010339 | KAL004580 | 970.0 PPM CARBON MONOXIDE/NITROGEN | +/- 0.4% | May 14, 2021 |

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| Nicolet 6700 AHR0801549 CO | FTIR | Jun 06, 2019 |
| Nicolet 6700 AHR0801549 NO | FTIR | Jun 06, 2019 |
| Nicolet 6700 AHR0801549 NO | FTIR | Jun 06, 2019 |

**Triad Data Available Upon Request**

**Approved for Release**

Airgas
an Air Liquide company

C/L
02/22/20

**Airgas Specialty Gases**
Airgas USA, LLC
6141 Easton Road
Bldg 1
Plumsteadville, PA 18949
Airgas.com

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI99E15A2039 | Reference Number: | 160-401523613-1 |
| Cylinder Number: | SG910481 | Cylinder Volume: | 144.3 CF |
| Laboratory: | 124 - Plumsteadville - PA | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | A12019 | Valve Outlet: | 350 |
| Gas Code: | CO,BALN | Certification Date: | Jun 20, 2019 |

**Expiration Date: Jun 20, 2027**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| CARBON MONOXIDE | 7.000 PPM | 7.067 PPM | G1 | +/- 0.6% NIST Traceable | 06/20/2019 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 061207 | KAL003958 | 9.855 PPM CARBON MONOXIDE/NITROGEN | 0.51% | Jun 05, 2024 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| MKS FTIR - CO - 000928781 | FTIR | Jun 07, 2019 |

**Triad Data Available Upon Request**

Approved for Release

Airgas
an Air Liquide company

**Airgas Specialty Gases**
Airgas USA, LLC
6141 Easton Road
Bldg 1
Plumsteadville, PA 18949
Airgas.com

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI99E15A2039 | Reference Number: | 160-401523613-1 |
| Cylinder Number: | ALM050865 | Cylinder Volume: | 144.3 CF |
| Laboratory: | 124 - Plumsteadville - PA | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | A12019 | Valve Outlet: | 350 |
| Gas Code: | CO,BALN | Certification Date: | Jun 20, 2019 |

**Expiration Date: Jun 20, 2027**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| CARBON MONOXIDE | 7.000 PPM | 7.060 PPM | G1 | +/- 0.6% NIST Traceable | 06/20/2019 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 061207 | KAL003958 | 9.855 PPM CARBON MONOXIDE/NITROGEN | 0.51% | Jun 05, 2024 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| MKS FTIR - CO - 000928781 | FTIR | Jun 07, 2019 |

**Triad Data Available Upon Request**

Approved for Release

Airgas
an Air Liquide company

10/L 12/04/19

**Airgas Specialty Gases**
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI99E15A0131 | Reference Number: | 122-401524346-1 |
| Cylinder Number: | CC327876 | Cylinder Volume: | 144.3 CF |
| Laboratory: | 124 - Durham (SAP) - NC | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | B22019 | Valve Outlet: | 660 |
| Gas Code: | NO,NOX,BALN | Certification Date: | Jun 24, 2019 |

**Expiration Date: Jun 24, 2022**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| NOX | 9.000 PPM | 8.903 PPM | G1 | +/- 0.9% NIST Traceable | 06/17/2019, 06/24/2019 |
| NITRIC OXIDE | 9.000 PPM | 8.855 PPM | G1 | +/- 0.8% NIST Traceable | 06/17/2019, 06/24/2019 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 16060622 | CC442581 | 50.42 PPM NITRIC OXIDE/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060612 | CC442569 | 50.42 PPM NITRIC OXIDE/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060622 | CC442581 NOx | 50.49 PPM NOx/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060612 | CC442569 NOx | 50.49 PPM NOx/NITROGEN | +/- 0.8% | Jun 27, 2020 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| THERMO NO 42I-1308857345 | Chemiluminescence | Jun 20, 2019 |
| THERMO NOX 42I-1308857345 | Chemiluminescence | Jun 20, 2019 |

**Triad Data Available Upon Request**

Approved for Release

Airgas
an Air Liquide company

12/13/19 O2

**Airgas Specialty Gases**
Airgas USA, LLC
6141 Easton Road
Bldg 1
Plumsteadville, PA 18949
Airgas.com

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI78E15A0124 | Reference Number: | 160-401525182-1 |
| Cylinder Number: | CC362148 | Cylinder Volume: | 146.3 CF |
| Laboratory: | 124 - Plumsteadville - PA | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | A12019 | Valve Outlet: | 590 |
| Gas Code: | O2,BALN | Certification Date: | Jun 18, 2019 |

**Expiration Date: Jun 18, 2027**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| OXYGEN | 22.00 % | 22.19 % | G1 | +/- 0.4% NIST Traceable | 06/18/2019 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 120620 | CC367413 | 22.883 % OXYGEN/NITROGEN | 0.22% | May 14, 2026 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| SIEMENS OXYMAT 6 - W5951 - O2 | PARAMAGNETIC | May 23, 2019 |

**Triad Data Available Upon Request**

Approved for Release

Airgas
an Air Liquide company

**Airgas Specialty Gases**
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

0920 02/04/20 no/L

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI99E15A0131 | Reference Number: | 122-401524346-1 |
| Cylinder Number: | EB0108627 | Cylinder Volume: | 144.3 CF |
| Laboratory: | 124 - Durham (SAP) - NC | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | B22019 | Valve Outlet: | 660 |
| Gas Code: | NO,NOX,BALN | Certification Date: | Jun 24, 2019 |

**Expiration Date: Jun 24, 2022**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| NOX | 9.000 PPM | 8.926 PPM | G1 | +/- 1.2% NIST Traceable | 06/17/2019, 06/24/2019 |
| NITRIC OXIDE | 9.000 PPM | 8.893 PPM | G1 | +/- 1.2% NIST Traceable | 06/17/2019, 06/24/2019 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 16060622 | CC442581 | 50.42 PPM NITRIC OXIDE/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060612 | CC442569 | 50.42 PPM NITRIC OXIDE/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060622 | CC442581 NOx | 50.49 PPM NOx/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060612 | CC442569 NOx | 50.49 PPM NOx/NITROGEN | +/- 0.8% | Jun 27, 2020 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| THERMO NO 42I-1308857345 | Chemiluminescence | Jun 20, 2019 |
| THERMO NOX 42I-1308857345 | Chemiluminescence | Jun 20, 2019 |

**Triad Data Available Upon Request**

Approved for Release

Airgas
an Air Liquide company

✓ 11/8/19 JLB

**Airgas Specialty Gases**
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI99E15A0131 | Reference Number: | 122-401524346-1 |
| Cylinder Number: | CC485366 | Cylinder Volume: | 144.3 CF |
| Laboratory: | 124 - Durham (SAP) - NC | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | B22019 | Valve Outlet: | 660 |
| Gas Code: | NO,NOX,BALN | Certification Date: | Jun 24, 2019 |

**Expiration Date: Jun 24, 2022**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| NOX | 9.000 PPM | 8.878 PPM | G1 | +/- 0.9% NIST Traceable | 06/17/2019, 06/24/2019 |
| NITRIC OXIDE | 9.000 PPM | 8.849 PPM | G1 | +/- 0.9% NIST Traceable | 06/17/2019, 06/24/2019 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 16060622 | CC442581 | 50.42 PPM NITRIC OXIDE/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060612 | CC442569 | 50.42 PPM NITRIC OXIDE/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060622 | CC442581 NOx | 50.49 PPM NOx/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060612 | CC442569 NOx | 50.49 PPM NOx/NITROGEN | +/- 0.8% | Jun 27, 2020 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| THERMO NO 42I-1308857345 | Chemiluminescence | Jun 20, 2019 |
| THERMO NOX 42I-1308857345 | Chemiluminescence | Jun 20, 2019 |

**Triad Data Available Upon Request**

Approved for Release

Airgas
an Air Liquide company

**Airgas Specialty Gases**
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI99E15A0131 | Reference Number: | 122-401524346-1 |
| Cylinder Number: | CC220526 | Cylinder Volume: | 144.3 CF |
| Laboratory: | 124 - Durham (SAP) - NC | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | B22019 | Valve Outlet: | 660 |
| Gas Code: | NO,NOX,BALN | Certification Date: | Jun 24, 2019 |

**Expiration Date: Jun 24, 2022**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| NOX | 9.000 PPM | 8.791 PPM | G1 | +/- 0.9% NIST Traceable | 06/17/2019, 06/24/2019 |
| NITRIC OXIDE | 9.000 PPM | 8.758 PPM | G1 | +/- 0.9% NIST Traceable | 06/17/2019, 06/24/2019 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 16060622 | CC442581 | 50.42 PPM NITRIC OXIDE/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060612 | CC442569 | 50.42 PPM NITRIC OXIDE/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060622 | CC442581 NOx | 50.49 PPM NOx/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060612 | CC442569 NOx | 50.49 PPM NOx/NITROGEN | +/- 0.8% | Jun 27, 2020 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| THERMO NO 42I-1308857345 | Chemiluminescence | Jun 20, 2019 |
| THERMO NOX 42I-1308857345 | Chemiluminescence | Jun 20, 2019 |

**Triad Data Available Upon Request**

CHANGED 10/19
-EDH

Approved for Release

Airgas
an Air Liquide company

**Airgas Specialty Gases**
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI99E15A0131 | Reference Number: | 122-401524346-1 |
| Cylinder Number: | CC 700357 | Cylinder Volume: | 144.3 CF |
| Laboratory: | 124 - Durham (SAP) - NC | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | B22019 | Valve Outlet: | 660 |
| Gas Code: | NO,NOX,BALN | Certification Date: | Jun 24, 2019 |

**Expiration Date: Jun 24, 2022**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| NOX | 9.000 PPM | 9.005 PPM | G1 | +/- 1.0% NIST Traceable | 06/17/2019, 06/24/2019 |
| NITRIC OXIDE | 9.000 PPM | 8.979 PPM | G1 | +/- 0.9% NIST Traceable | 06/17/2019, 06/24/2019 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 16060622 | CC442581 | 50.42 PPM NITRIC OXIDE/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060612 | CC442569 | 50.42 PPM NITRIC OXIDE/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060622 | CC442581 NOx | 50.49 PPM NOx/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060612 | CC442569 NOx | 50.49 PPM NOx/NITROGEN | +/- 0.8% | Jun 27, 2020 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| THERMO NO 42I-1308857345 | Chemiluminescence | Jun 20, 2019 |
| THERMO NOX 42I-1308857345 | Chemiluminescence | Jun 20, 2019 |

**Triad Data Available Upon Request**

Approved for Release

HiQ® Certificate / Certificat HiQ®

**LINDE CANADA LIMITED**
530 Watson St. East
Whitby, ON, Canada L1N 5R9

# CERTIFICATE OF ANALYSIS — EPA PROTOCOL MIXTURE

Purchase order # 110585036
Lot # 1263941
Cylinder Number: EB 0049417

PGVP ID # L12013
Procedure: G1
Gas Type Code: OC2
Cylinder pressure: 2000 psig

**Certification date**
August 12, 2013

**Expiration Date**
August 13, 2021

## ANALYTICAL RESULTS

| Component | Requested Concentration ± blending tolerance | Date of Assay | Mean Concentration | Certified Concentration Uncertainty expressed at 95% confidence |
|---|---|---|---|---|
| Carbon Dioxide | 5 % ± 5% | August 12, 2013 | 5.01 % | 5.01 ± 0.02 % |
| Oxygen | 6 % ± 5% | August 9, 2013 | 6.03 % | 6.03 ± 0.01 % |

BALANCE GAS: Nitrogen

## REFERENCE STANDARDS

| Component | Type | Serial Number | Reference Number | Concentration | Expiration Date |
|---|---|---|---|---|---|
| Carbon Dioxide | GMIS<br>NTRM | SX 21992<br>SG 9916842 | 1187915<br>101001 | 10 ± 0.02 %<br>19.98 ± 0.14 % | August 20, 2013<br>April 15, 2016 |
| Oxygen | GMIS<br>NTRM | SX 31579<br>CC 237234 | 1107503<br>071001 | 9.975 ± 0.06 %<br>24.12 ± 0.12 % | August 18, 2013<br>March 27, 2017 |

## CERTIFICATION INSTRUMENTS

| Component | Make/Model | Measurement Principle | Serial Number | Last Calibration |
|---|---|---|---|---|
| Carbon Dioxide | SICK MCS 100E | Infrared Photometer | 04310670 | August 1, 2013 |
| Oxygen | Servomex 04100 C1 | Paramagnetic Sensor | 392350 | August 9, 2013 |

THIS STANDARD IS NIST TRACEABLE. IT WAS CERTIFIED ACCORDING TO THE 2012 EPA PROTOCOL PROCEDURE

DO NOT USE THIS CYLINDER WHEN THE PRESSURE FALLS BELOW 100 PSIG

Analyst: Keith Cybulski Signature _____ Date 08/12/13

Notes:

Tel: 1-(866) 385-5349 Fax:1-(866) 385-5347 service@lindecanada.com

Assay Laboratory: Red Ball TGS
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0053431 | **Certification Date:** | 06/15/2015 |
| **Product ID Number:** | 124822 | **Expiration Date:** | 06/13/2023 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | RBTGS-Shreveport-LA |
| **COA #** | EB0053431.20150611-0 | **Lot Number:** | EB0053431.20150611 |
| **Customer PO. NO.:** | | **Tracking Number:** | 074201901 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle |
|---|---|---|---|
| **Oxygen** | **13.46 %** | ±0.06 % | MPA |
| Nitrogen | Balance | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|
| EB0055414.20140228-1C | 10/07/2022 | GMIS | N2 | O2 | 23.8 % | 0.505 | 071001 |
| LD131022.115903.1G | 10/07/2022 | GMIS | N2 | O2 | 11.97 % | 0.527 | 071001 |

## Analytical Instrumentation

| Component | Analytical Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| O2 | MPA | Horiba | VA-3013 | H0000P11 | 5/22/2015 12:35:56 PM |

Red Ball Technical Gas Service
PGVP Vendor ID # G12015
Information and Ordering
800-551-8150
Fax (318-425-6309)

Accreditation #62754

LaMeka Dennis
Assistant Operations Manager

Airgas
an Air Liquide company

02/15/20

**Airgas Specialty Gases**
Airgas USA, LLC
6141 Easton Road
Bldg 1
Plumsteadville, PA 18949
Airgas.com

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI78E15A0124 | Reference Number: | 160-401495594-1 |
| Cylinder Number: | ALM010779 | Cylinder Volume: | 146.3 CF |
| Laboratory: | 124 - Plumsteadville - PA | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | A12019 | Valve Outlet: | 590 |
| Gas Code: | O2,BALN | Certification Date: | May 09, 2019 |

**Expiration Date: May 09, 2027**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| OXYGEN | 22.00 % | 22.15 % | G1 | +/- 0.3% NIST Traceable | 05/09/2019 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 120620 | CC367413 | 22.883 % OXYGEN/NITROGEN | 0.22% | May 14, 2026 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| SIEMENS OXYMAT 6 - W5951 - O2 | PARAMAGNETIC | Apr 25, 2019 |

**Triad Data Available Upon Request**

Approved for Release

# <<<<END OF DOCUMENT>>>>

**CUSTOM INSTRUMENTATION SERVICES CORPORATION**

# CRICKET VALLEY ENERGY CENTER
# DUTCHESS COUNTY, NEW YORK

## ORIS CODE: 57185
## UNIT U-00002 (U002)

# PART 75 INITIAL CEMS AND FUEL FLOWMETERS CERTIFICATION TEST REPORTS

# AND

# PART 60 INITIAL CEMS CERTIFICATION TEST REPORTS

**PREPARED FOR: GENERAL ELECTRIC**

**PREPARED BY: CUSTOM INSTRUMENTATION SERVICES, CORP. (CiSCO)**

**Date: March 29, 2020**

**Revision: 0a** COPY NO:

**7841 SOUTH WHEELING COURT • ENGLEWOOD, COLORADO 80112**
**TEL: (303) 790-1000 FAX: (303) 790-7292**

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## 1. INTRODUCTION

Cricket Valley Energy Center is a facility located in Dover Plains, New York. The facility consists of three natural gas-fired combined cycle electric generating units identified as U-00001 (U001), U-00002 (U002), and U-00003 (U003) . In addition to the air emitting equipment, the Facility will include three steam turbine generators (STGs), an air cooled condenser (ACC) and associated auxiliary equipment and systems. This certification report pertains to the U-00002 (U002) which consists of a General Electric (GE) Model 7FA.05 combustion turbine generators (CTGs) operating in combined-cycle mode with supplemental firing of the heat recovery steam generators (HRSGs) which has a nominal generating capacity of 333 MW. The maximum potential when incorporated with the steam turbine generator megawatts as per 40 CFR 75 is 383 MW. Natural gas will be the sole fuel fired in the CTGs and duct burners. Each combined cycle generating unit consisting of the CTG, HRSG and STG will be exhausted through its own stack. In addition, to oxidation catalyst being used to control CO emission, both dry-low $NO_X$ burners (DLNB) and Selective Catalytic Reduction (SCR) are used for $NO_X$ control on each unit. Exhaust gases from the turbines are discharged into the atmosphere through a stack approximately 282.5 feet above grade. A dedicated CEMS will monitor $NO_X$, CO, $NH_3$($NO_X$) and $O_2$ emissions and gas fuel flow from each of the three units. This report focuses on the U-00002 CEMS.

Custom Instrumentation Services Corporation of Englewood, Colorado built the Continuous Emission Monitoring System. Data from the CEMS is recorded and stored on a Data Acquisition and Handling System (DAHS).

The CEMS on the U-00002 unit was designed to meet the monitoring and reporting requirements of New York State Department of Environmental Conservation (NYSDEC) Permit No. 3-1326-00275/00009 and the regulatory requirements of 40 CFR 60 ($NO_X$, $NH_3$, CO and $O_2$ analyzers) and 40 CFR 75 ($NO_x$ and $O_2$ analyzers). This report presents the results of the initial certification tests performed on the $NO_x$, $NO_X/NH_3$, CO and $O_2$ analyzers. The testing was performed in accordance with the requirements of 40 CFR 60, Appendix B, Performance Specification 2, 3; 4a and 40 CFR 75, Appendix A.

In addition, this report provides documentation of the DAHS missing data substitution and formula verification as well as fuel flow meter transmitter accuracy tests and orifice plate primary element visual inspections performed as required by 40 CFR 75 for the initial certification.

Field certification testing on Unit U-00002 occurred between January 29, 2020 and February 25, 2020. The tests conducted under 40 CFR 75 on the $NO_x$ and $O_2$ CEMS included Relative Accuracy Test Audit (RATA), Bias Check, 7-Day Calibration Error Test, Linearity Check and Cycle Time Test. The tests conducted under 40 CFR 60 on $NO_X$, $NH_3/NO_X$, CO and $O_2$ CEMS included RATA, 7-Day Calibration Drift Test and CO Response Time Test. A summary of the tests performed on each analyzer is provided in Table 1.

Printouts of the tests results and revised monitoring plans for the 40 CFR 75 $NO_x$ and $O_2$ CEMS from EPA's Emissions Collection and Monitoring Plan System (ECMPS) Software are provided in Appendix 1.

Air Hygiene, International(AHI) of Broken Arrow, Oklahoma conducted the RATAs on the $NO_x$, $NH_3/NO_X$, CO and $O_2$ CEMS. On February 25, 2020 eleven (11) 21-minute runs were completed on the unit. The results of the RATAs are summarized in Table 1. As shown, the Relative Accuracy calculations on the analyzers were within the EPA and NYSDEC specifications for all parameters. A detailed description of the RATAs conducted are provided in Section 2.1 and the AHI test report in Appendix 6.

A bias check evaluation was made on the $NO_x$ lb/mmBtu relative accuracy results as required in 40 CFR 75. The bias adjustment factor for the $NO_x$ monitoring systems ($NO_x$ lb/mmBtu) is provided in Table 1. The bias test results are discussed in Section 2.2. Supporting data is provided in the relative accuracy tables in the AHI RA report in Appendix 6.

The 40 CFR 60 7-day Calibration Drift and 40 CFR 75 7-Day Calibration Error tests for U-00002 CEMS occurred during seven consecutive unit operating days from January 29, 2020 through February 6, 2020. The results of these tests are summarized in Table 1. As shown, the analyzers operated well within the applicable specifications. An explanation of the calibration drift and calibration error tests is provided in Section 2.3 and supporting documentation is provided in Appendix 2 of this report.

Although not required for the initial certification, Online/Offline Calibration Error Demonstration tests were performed on the 40 CFR 75 $NO_x$ and $O_2$ analyzers on February 1, 2020 to allow the use of offline calibrations to validate the Part 75 data during subsequent normal operation. Information on the Online/Offline calibration error demonstration tests is also provided in Section 2.3 and Appendix 2 of this report.

The U-00002 Linearity Checks were performed on the 40 CFR 75 $NO_x$ and $O_2$ analyzers on February 6, 2020. The $NO_x$ and $O_2$ Cycle Time Tests and the CO Response Time tests were performed February 6, 2020. The results of these tests are summarized in Table 1. As shown, the analyzers operated well within EPA specifications for all parameters. An explanation of the linearity check is provided in Section 2.4. Explanations of the cycle time and response time tests are provided in Section 2.5. Audit reports for the linearity checks and supporting documents for the cycle time/response time tests are provided in Appendices 3 and 4, respectively.

The DAHS missing data substitution verification and formula verification tests took place January 6, 2020. The DAHS passed all the tests required by EPA. The DAHS tests are described in Section 3 and supporting documents are provided in Appendix 5. Please note that although not required by 40 CFR 60, DAHS formula verifications are also provided for the CO analyzers.

In summary, based on the results of the initial certification tests performed on the CEMS installed on the U-00002 stacks at the Cricket Valley Energy Center, the CEMSs met the

requirements in 40 CFR 60, Appendix B Performance Specification 2, 3, 4a and 40 CFR 75, Appendix A and are therefore certified to provide accurate and reliable data under these regulations and under the NYSDEC air permit. These CEMS will continue to be calibrated, maintained, and operated following the requirements of 40 CFR 60, Appendix F and 40 CFR 75, Appendix B.

## TABLE 1.

## SUMMARY OF CEMS CERTIFICATION TESTS RESULTS

| | RESULTS | STANDARD | PASS / FAIL |
|---|---|---|---|
| | **RELATIVE ACCURACY** | | |
| $NO_x$ ppm @ 15% $O_2$ | 7.84% RA RM | 20% RA RM or 10% ARA[1] | PASS |
| $NO_x$ lb/hr | 7.32% RA RM | 20% RA RM or 10% ARA | PASS |
| $NO_x$ lb/mmBtu | 0.000 lb/mmBtu MD | 7.5% RA RM or 0.015 lb/mmBtu MD[2] | PASS |
| CO ppm @ 15% $O_2$ | 0.1 ppm MD | 10% RA RM or 5% ARA or ±5 ppm MD[3] | PASS |
| CO lb/hr | 0.1 ppm MD | 10% RA RM or 5% ARA or ±5 ppm MD | PASS |
| $NH_3$ ppm @ 15% $O_2$ | 4.38% RA RM | 20% RA RM or 10% ARA | PASS |
| $NH_3$ lb/hr | 6.50% RA ARA[4] | 20% RA RM or 10% ARA | PASS |
| $O_2$ % | 1.70% RA RM | 20% RA RM or 1% $O_2$ MD | PASS |
| | **BIAS TEST** | | |
| Adjustment Factor | 1.000 | NA | PASS |
| | **24-HOUR ZERO DRIFT[5]** | | |
| $NO_x$ low | 1.8% of span | 2.5 % of span | PASS |
| $NO_x$ high | 0.1% of span | 2.5 % of span | PASS |
| CO low | 4.00% of span | 5 % of span | PASS |
| CO high | 0.05% of span | 5 % of span | PASS |
| $NH_3/(NO_x)$ | 1.19% of span | 2.5 % of span | PASS |
| $O_2$ % | 0.02% $O_2$ | 0.5% $O_2$ | PASS |
| | **24-HOUR SPAN DRIFT[5]** | | |
| $NO_x$ low | 0.5% of span | 2.5 % of span | PASS |
| $NO_x$ high | 0.7% of span | 2.5 % of span | PASS |
| CO low | 4.20% of span | 5 % of span | PASS |
| CO high | 0.34% of span | 5 % of span | PASS |
| $NH_3/(NO_x)$ | 1.56% of span | 2.5 % of span | PASS |
| ‘$O_2$ % | 0.03% $O_2$ | 0.5% $O_2$ | PASS |
| | **LINEARITY[5]** | | |
| $NO_x$ high ppm | 1.6% LE | 5% LE | PASS |
| $O_2$ % | 0.4% LE | 5% LE | PASS |
| | **CYCLE TIME/CO RESPONSE TIME TEST(S) [5]** | | |
| $NO_x$ lb/mmBtu | 2 Minutes | 15 Minutes | PASS |
| CO low | 127 Avg. Seconds | 240 Avg. Seconds | PASS |
| | **DAHS VERIFICATION** | | |
| DAHS Computer | Verified (01/06/2020) | Verify | PASS |
| **ANALYZER SERIAL NUMBERS** | | | |
| $NO_x$ | | 1013 | |
| $O_2$ | | 129 | |
| CO | | 519 | |
| $NH_3/NO_X$ | | 1048 | |

[1] ARA = alternative relative accuracy determined from the permit applicable standard.

[2] RATA RESULTS REQUIRED FOR ANNUAL RATA FREQUENCY FOR 40 CFR 75

[3] MD =|d| +|2.5% CC

[4] NYSDEC permit ID 3-1326-00275/00009 does not have a current NH3 lb/hr limit, so a conservative value (16.55 lb/hr) was back-calculated from the existing 5 ppm corrected limit. Calculation is provided in AiR Hygiene RATA report in Appendix 6.

[5] DRIFT, LINEARITY CTT/RTT RESULTS ARE THE HIGHEST ENCOUNTERED DURING ALL TESTS

## 2. CEMS CERTIFICATION TESTS

Field tests were performed for the initial CEMS certification in accordance with the requirements of 40 CFR 60, Appendix B and 40 CFR Part 75, Appendix A. The results for all tests were determined from the data collected by the DAHS. The computer printouts for each field test are included in the Appendices.

### 2.1 RELATIVE ACCURACY TEST AUDIT

Relative accuracy testing was performed on February 25, 2020 by AHI a source testing company that meets the EPA Air Emissions Testing Body (AETB) requirements. Each test run was a minimum of 21 minutes in duration and consisted of sampling for $NO_x$, $NH_3$ ($NO_X$), CO and $O_2$. The times during which the tests were performed and additional information on stratification test, $NO_x$ converter efficiency check and reference method calibrations are provided in the AHI report in Appendix 6.

The reference methods used by AHI are outlined below:

| CONSTITUENT | METHOD |
|---|---|
| $O_2$ | EPA METHOD 3A |
| $NO_x$ | EPA METHOD 7E |
| $NH_3(NO_x)$ | EPA METHOD 7E |
| CO | EPA METHOD 10 |

As shown in the Relative Accuracy tables in the AHI report in Appendix 6, relative accuracy is reported as an error and is the sum of the absolute mean value of the differences between the reference method tests and the instrument readings, plus the 95 percent confidence interval of the differences, expressed as a percentage of the mean reference method value or the emission standard. As an alternative, 40 CFR 75 allows low $NO_x$ emitters (less than 0.20 lb/mmBtu) to express relative accuracy as the difference between the average reference method value and the average CEMS value. Performance Specification 4a in 40 CFR 60, Appendix B also allows for CO relative accuracy results to be expressed as a mean difference between the reference method average value and CEMS average value.

The analyzer response was determined from the average of readings taken every minute for the duration of the time the relative accuracy tests were performed. The 1-Minute Data Reports from the CEMS are included in the AHI report.

The $NO_x$, $NH_3(NO_X)$, CO and $O_2$. analyzers passed the relative accuracy requirements (as stated in 40 CRF 60, Appendix B 2,3, 4a). In addition, the $NO_x$ diluent systems ($NO_x$ and $O_2$ analyzers combined) passed the relative accuracy requirements as stated in 40 CRF 75, Appendix A and based on the RATA results, these systems qualify for annual RATA frequency under 40 CFR 75.

## 2.2 BIAS CHECK

The relative accuracy result for the $NO_x$ diluent systems reported in lb/mmBtu was checked for low bias by determining if the mean difference between the test team's values and the CEMS values was greater than the absolute value of the confidence coefficient. U-00002 $NO_x$ diluent systems exhibited bias. Therefore, the bias adjustment factor (BAF) for the unit was 1.000. In general, the BAF is determined after each RATA test.

Should have been better stated as "diluent systems met the bias test requirement."

## 2.3 7 DAY CALIBRATION ERROR/DRIFT TEST & ONLINE/OFFLINE DEMONSTRATION TESTS

In general, the U-00002 7-day calibration error/drift tests required by 40 CFR 60 and 40 CFR 75 on the $NO_x$, $NH_3$ ($NO_X$), CO and $O_2$. analyzers occurred between January 29, 2020 and February 6, 2020. All tests occurred on seven consecutive unit-operating days when the unit was combusting fuel. The $NO_x$ and $O_2$ calibration gases used for the zero and span calibration error tests meet the requirements of the EPA 40 CFR 75, Appendix A, Protocol Gas Verification Program (PGVP). The certificates of analysis for the cylinders used to meet the requirements of both 40 CFR 60 and 40 CFR 75 drift/calibration error requirements are included in Appendix 8 of this report.

Although not required for the initial certification, this report includes the results of the Online/Offline Calibration Error Demonstration tests that were performed on February 1, 2020. 40 CFR 75 Appendix B §2.1.1.2 allows the use of offline calibrations for the purpose of validating online data if both offline and online calibrations are performed within 26-clock hours and meets the performance specification criteria of 40 CFR 75 Append A, §3.1.

The data from calibrations occurring over seven days and the offline determination occurring within 26-clock hours are summarized in Appendix 2 of this report. As shown, the calibration error/drift for all analyzers were well within EPA requirements as stated in 40 CFR 60, Appendix B and 40 CFR 75, Appendix A. The calibration summary reports are provided in Appendix 2.

## 2.4 LINEARITY CHECKS

The U-00002 $NO_x$ and $O_2$ linearity checks were performed on February 6, 2020. To perform the linearity check, the high ranges of the $NO_x$ analyzers and the $O_2$ analyzers were challenged three times with each of three levels of calibration gas (low, mid and high). The mean difference between the analyzer response and the calibration gas value, as a percentage of the calibration gas value, must be within 5%. Results are also acceptable if the difference between the mean response and the calibration gas value is within 0.5% $O_2$ or 5 ppm $NO_x$. The results were well within the requirements of 40 CFR 75, Appendix A.

A summary of the linearity check results are provided in Appendix 3 and the certificates of analysis for the calibration gases used during the checks are provided in Appendix 8. The calibration gases used for the linearity checks met the US EPA PGVP requirements of 40 CFR 75, Appendix A.

## 2.5 CYCLE TIME & RESPONSE TIME TESTS

The U-00002 cycle time tests were performed on February 6, 2020. To perform the test, the $NO_x$ and $O_2$ analyzers were challenged with a zero gas and a high level (80 to 100% of span) calibration gas. Both the upscale and down scale response times were determined. As stated in 40 CFR 75, Appendix A, the response time to reach 95% of the gas value must be less than 15 minutes.

40 CFR 75, Appendix A, Section 6.4 specifies that on and after January 1, 2009, the cycle time for each component analyzer of a $NO_x$ diluent system must be recorded separately. It also specifies that for monitors with dual ranges, the test results for each range must be reported separately. Cycle time test results are acceptable for monitoring system certification if none of the cycle times exceed 15 minutes. The down scale and upscale cycle times for the $NO_x$ low range, $NO_x$ high range and $O_2$ analyzers met this specification.

The U-00002 CO response time tests were performed on February 6, 2020 to meet the requirements of 40 CFR 60. To perform this test, the low range of the CO analyzer was challenged with a zero gas and a high level (50 to 100% of range) calibration gas. Both the upscale and down scale response time averages were determined. As stated in 40 CFR 60, Appendix B, Performance Specification 4A the response time to reach 95% of the gas value must be less than 240 seconds. For the upscale and downscale readings the longer of the two response times is the response time for the analyzer. The response time for the low range of the CO analyzers met this requirement. The gas cylinders used to perform the CO response time tests are provided in Appendix 8.

Audit reports that show the analyzers response in ten second increments are located in Appendix 4. The gas cylinders used to perform the $NO_X/O_2$ cycle time tests meet the US EPA PGVP requirements of 40 CFR 75, Appendix A and are provided in Appendix 8.

# 3. DAHS VERIFICATION

A letter from the 40 CFR 75 software vendor (CiSCO CEMS) stating that each of the missing data routines and calculations performed by the DAHS was verified is included in Appendix 5. A formula verification is also included. All variables included in the calculations (bias adjustment factor, fuel inputs) were used. The formula verification spreadsheet and associated printouts are also included in Appendix 5.

## 4. FUEL FLOWMETER CERTIFICATION TESTS DOCUMENTATION

Documents demonstrating that the fuel flowmeters installed in each combustion turbine and duct burner meet the 2% upper range accuracy specified in 40 CFR 75 Appendix D are provided in Appendix 7. This includes Certificate of Compliance document which references ASME NFC 9M:2006 calibration which demonstrates compliance with 40 CFR 75 Appendix D Section 2.1.5.1 certification criteria.

Should be: ASME MFC 9M:2006

## 5. DISCUSSION OF RESULTS

The CEMS and DAHS on the U-00002 combustion turbine generators at the Cricket Valley Energy Center successfully met all the requirements of the EPA as outlined in 40 CFR 60 and 40 CFR 75. An electronic QA certification file in the format specified by EPA Clean Air Markets Division for 40 CFR 75 has been prepared for each unit and will be submitted via ECMPS within 45 days of test completion.

# APPENDIX 1

# EMISSIONS MONITORING AND MONITORING PLAN SYSTEM PRINTOUTS

# ECMPS Client Tool

Version 1.* 2019 Q3

## QA/Cert Events Printout Report

March 10, 2020 05:56 PM

## Facility Name: Cricket Valley Energy Center

### Facility Details

| | |
|---|---|
| Facility ID (ORISPL): | 57185 |
| State: | NY |
| County: | Dutchess County |

### QA Certification Events Details

| Unit/Stack Identifier | Event Code | Event Date/Hour | System ID / Type | Component ID / Type | Required Tests | Conditional Data Begin Date/Hour | Last Test Completed Date/Hour | Submitted? |
|---|---|---|---|---|---|---|---|---|
| U002 | 125 | 01/28/2020 23 | N20/NOX | 210/NOX | 4 | | 02/25/2020 18 | Not Yet Submitted |
| | | | | 220/O2 | 4 | | 02/25/2020 18 | Not Yet Submitted |

Event Codes: 125 - Initial Certification of Gas Monitoring System

Required Test Codes: 4 - Normal Load RATA, 7-day Calibration Error Test, Linearity Check, Cycle Time Test, DAHS Verification

## Facility Name: Cricket Valley Energy Center

**Facility Details**

Facility ID (ORISPL): 57185
State: NY
County: Dutchess County

**Unit/Stack/Pipe ID:** U002

**7-Day Calibration**

**Component ID:** 210
**Component Type:** NOX
**Test Completion:** 02/06/2020 00:01
**Test Number:** 7DCAL-NOX_H-
**Reason for Test:** INITIAL
**Reported Test Results:** PASSED
**Span Scale Level:** High
**Span Value:** 200.000
**EPA Calculated Result:** PASSED

**Evaluation Status:** No Errors
**Submission Status:** Not Submitted
**Submission Date/Time:**

| Injection Date/Hour | Gas Level | Reference Value | Reference Value % of Span | Measured Value | Reported | | Recalculated | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Results | APS | Results | APS |
| 01/29/2020 00 | ZERO | 0.000 | 0 | 0.000 | 0.00 | | 0.00 | |
| 01/29/2020 00 | HIGH | 176.800 | 88.4 | 177.600 | 0.40 | | 0.40 | |
| 02/01/2020 12 | ZERO | 0.000 | 0 | 0.000 | 0.00 | | 0.00 | |
| 02/01/2020 12 | HIGH | 176.800 | 88.4 | 176.900 | 0.10 | | 0.10 | |
| 02/02/2020 00 | ZERO | 0.000 | 0 | 0.010 | 0.00 | | 0.00 | |
| 02/02/2020 00 | HIGH | 176.800 | 88.4 | 178.200 | 0.70 | | 0.70 | |
| 02/03/2020 00 | ZERO | 0.000 | 0 | 0.000 | 0.00 | | 0.00 | |
| 02/03/2020 00 | HIGH | 177.200 | 88.6 | 176.800 | 0.20 | | 0.20 | |
| 02/04/2020 00 | ZERO | 0.000 | 0 | 0.100 | 0.10 | | 0.10 | |
| 02/04/2020 00 | HIGH | 177.200 | 88.6 | 177.100 | 0.10 | | 0.10 | |
| 02/05/2020 00 | ZERO | 0.000 | 0 | 0.000 | 0.00 | | 0.00 | |
| 02/05/2020 00 | HIGH | 177.200 | 88.6 | 177.400 | 0.10 | | 0.10 | |
| 02/06/2020 00 | ZERO | 0.000 | 0 | 0.000 | 0.00 | | 0.00 | |
| 02/06/2020 00 | HIGH | 177.200 | 88.6 | 177.800 | 0.30 | | 0.30 | |

**Additional Information:**
No comment.

*Performance Spec: CE <= 2.5% of Span  Alternate Performance Spec: |R-A| <= 5 ppm (Appendix A &3.1)

**Unit/Stack/Pipe ID:** U002

**7-Day Calibration**

**Component ID:** 220
**Test Number:** 7DCAL-O2_H-
**Span Scale Level:** High
**Component Type:** O2
**Reason for Test:** INITIAL
**Span Value:** 25.000
**Test Completion:** 02/06/2020 00:01
**Reported Test Results:** PASSED
**EPA Calculated Result:** PASSED
**Evaluation Status:** No Errors
**Submission Status:** Not Submitted
**Submission Date/Time:**

| Injection Date/Hour | Gas Level | Reference Value | Reference Value % of Span | Measured Value | Reported | | Recalculated | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Results | APS | Results | APS |
| 01/29/2020 00 | ZERO | 0.000 | 0 | 0.010 | 0.00 | | 0.00 | |
| 01/29/2020 00 | HIGH | 22.140 | 88.6 | 22.130 | 0.00 | | 0.00 | |
| 02/01/2020 12 | ZERO | 0.000 | 0 | 0.020 | 0.00 | | 0.00 | |
| 02/01/2020 12 | HIGH | 22.140 | 88.6 | 22.150 | 0.00 | | 0.00 | |
| 02/02/2020 00 | ZERO | 0.000 | 0 | 0.000 | 0.00 | | 0.00 | |
| 02/02/2020 00 | HIGH | 22.140 | 88.6 | 22.160 | 0.00 | | 0.00 | |
| 02/03/2020 00 | ZERO | 0.000 | 0 | 0.010 | 0.00 | | 0.00 | |
| 02/03/2020 00 | HIGH | 22.140 | 88.6 | 22.170 | 0.00 | | 0.00 | |
| 02/04/2020 00 | ZERO | 0.000 | 0 | 0.000 | 0.00 | | 0.00 | |
| 02/04/2020 00 | HIGH | 22.140 | 88.6 | 22.140 | 0.00 | | 0.00 | |
| 02/05/2020 00 | ZERO | 0.000 | 0 | 0.000 | 0.00 | | 0.00 | |
| 02/05/2020 00 | HIGH | 22.140 | 88.6 | 22.120 | 0.00 | | 0.00 | |
| 02/06/2020 00 | ZERO | 0.000 | 0 | 0.000 | 0.00 | | 0.00 | |
| 02/06/2020 00 | HIGH | 22.140 | 88.6 | 22.130 | 0.00 | | 0.00 | |

**Additional Information:**
No comment.

*Performance Spec: CE <= 2.5% of Span  Alternate Performance Spec: |R-A| <= 5 ppm (Appendix A &3.1)

**Unit/Stack/Pipe ID:** U002
**Cycle Time Test**

| | | | | | |
|---|---|---|---|---|---|
| **Component ID:** | 220 | **Component Type:** | O2 | **Test Completion:** | 02/06/2020 19:00 |
| **Test Number:** | CTT-220-2020Q1 | **Reason for Test:** | INITIAL | **Reported Test Results:** | PASSED |
| **Span Scale Level:** | High | **Span Value:** | 25.000 | **EPA Calculated Result:** | PASSED |
| **Total Cycle Time:** | 2 | **Calculated Total Cycle Time:** | 2 | | |
| **Evaluation Status:** | No Errors | | | **Submission Status:** | Not Submitted |
| | | | | **Submission Date/Time:** | |

| Date | Start Time | End Time | Gas Level | Reference Gas Value | Stable Values | | Injection Cycle Time | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Starting | Ending | Results | Recalculated |
| 2020/02/06 | 18:54 | 18:56 | ZERO | 0.000 | 12.857 | 0.001 | 2 | 2 |
| 2020/02/06 | 18:58 | 19:00 | HIGH | 22.140 | 12.850 | 22.081 | 2 | 2 |

**Additional Information:**
No comment.

*Performance Spec: Cycle Time <= 15 minutes (Appendix A &3.5)

**Unit/Stack/Pipe ID:** U002
**Cycle Time Test**

| | | | | | |
|---|---|---|---|---|---|
| **Component ID:** | 210 | **Component Type:** | NOX | **Test Completion:** | 02/06/2020 18:39 |
| **Test Number:** | CTT-210L-2020Q1 | **Reason for Test:** | INITIAL | **Reported Test Results:** | PASSED |
| **Span Scale Level:** | Low | **Span Value:** | 10.000 | **EPA Calculated Result:** | PASSED |
| **Total Cycle Time:** | 3 | **Calculated Total Cycle Time:** | 3 | | |
| **Evaluation Status:** | No Errors | | | **Submission Status:** | Not Submitted |
| | | | | **Submission Date/Time:** | |

| Date | Start Time | End Time | Gas Level | Reference Gas Value | Stable Values | | Injection Cycle Time | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Starting | Ending | Results | Recalculated |
| 2020/02/06 | 18:32 | 18:35 | ZERO | 0.000 | 2.169 | -0.144 | 3 | 3 |
| 2020/02/06 | 18:38 | 18:39 | HIGH | 8.930 | 2.164 | 8.771 | 1 | 1 |

**Additional Information:**
No comment.

*Performance Spec: Cycle Time <= 15 minutes (Appendix A &3.5)

**Unit/Stack/Pipe ID:** U002

**Cycle Time Test**

**Component ID:** 210
**Component Type:** NOX
**Test Completion:** 02/06/2020 18:50
**Test Number:** CTT-210H-2020Q1
**Reason for Test:** INITIAL
**Reported Test Results:** PASSED
**Span Scale Level:** High
**Span Value:** 200.000
**EPA Calculated Result:** PASSED
**Total Cycle Time:** 2
**Calculated Total Cycle Time:** 2

**Evaluation Status:** No Errors
**Submission Status:** Not Submitted
**Submission Date/Time:**

| Date | Start Time | End Time | Gas Level | Reference Gas Value | Stable Values | | Injection Cycle Time | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Starting | Ending | Results | Recalculated |
| 2020/02/06 | 18:43 | 18:44 | ZERO | 0.000 | 2.284 | 0.019 | 1 | 1 |
| 2020/02/06 | 18:48 | 18:50 | HIGH | 176.800 | 2.246 | 175.483 | 2 | 2 |

**Additional Information:**
No comment.

*Performance Spec: Cycle Time <= 15 minutes (Appendix A &3.5)

**Unit/Stack/Pipe ID:** U002

**Fuel Flowmeter Accuracy Test**

**Component ID:** 270
**Component Type:** GFFM
**Test Completion:** 04/09/2018 10:00
**Test Number:** FFAT-270-2020Q1
**Reported Test Results:** PASSED
**EPA Calculated Result:** PASSED

**Evaluation Status:** No Errors
**Submission Status:** Not Submitted
**Submission Date/Time:**

| Accuracy Test Method | High Level Accuracy | Mid Level Accuracy | Low Level Accuracy | Reinstallation Date/Hour |
|---|---|---|---|---|
| ASME | 0.0 | 0.0 | 0.0 | 11/21/2019 00 |

**Additional Information:**
No comment.

**Unit/Stack/Pipe ID:** U002

**Linearity Check**

## Facility Name: Cricket Valley Energy Center

**QA/Cert Test Detail Report**

March 28, 2020 11:58 AM

**Facility ID (ORISPL):** 57185

| | | | | | |
|---|---|---|---|---|---|
| **Component ID:** | 210 | **Component Type:** | NOX | **Test Completion:** | 02/06/2020 11:25 |
| **Test Number:** | 210-LIN-2020Q1 | **Reason for Test:** | INITIAL | **Reported Test Results:** | PASSED |
| **Span Scale Level:** | High | **Span Value:** | 200.000 | **EPA Calculated Result:** | PASSED |
| **Evaluation Status:** | No Errors | | | **Submission Status:** | Not Submitted |
| **Grace period Tested?** | | | | **Submission Date/Time:** | |

**Protocol Gas Data:**

| Gas Level Code | Gas Type Code | Vendor Identifier | Cylinder Identifier | Expiration Date |
|---|---|---|---|---|
| High | CO,NO,NOX,BALN | B22019 | SG9160199BAL | 07/22/2027 |
| Mid | CO,NO,NOX,BALN | B22019 | EB0070742 | 12/13/2027 |
| Low | CO,NO,NOX,BALN | G12019 | AAL073505 | 07/19/2027 |

**Summary Statistics:**

| | High | | Mid | | Low | |
|---|---|---|---|---|---|---|
| | Reported | Recalculated | Reported | Recalculated | Reported | Recalculated |
| **Reference Value** | 177.200 | 177.200 | 112.400 | 112.400 | 51.200 | 51.200 |
| **Mass CEM Value** | 176.067 | 176.067 | 112.100 | 112.100 | 50.400 | 50.400 |
| **Alt. Perf. Indicator** | | | | | | |
| **Results** | 0.6 | 0.6 | 0.3 | 0.3 | 1.6 | 1.6 |

**Injection Statistics:**

| Date | Gas Level | Measured Value | Reference Value | Reference Value as % of Span |
|---|---|---|---|---|
| 02/06/2020 11:04 | LOW | 50.500 | 51.200 | 25.6% |
| 02/06/2020 10:51 | LOW | 50.200 | 51.200 | 25.6% |
| 02/06/2020 11:16 | LOW | 50.500 | 51.200 | 25.6% |
| 02/06/2020 11:00 | HIGH | 176.100 | 177.200 | 88.6% |
| 02/06/2020 11:12 | HIGH | 176.200 | 177.200 | 88.6% |
| 02/06/2020 11:25 | HIGH | 175.900 | 177.200 | 88.6% |
| 02/06/2020 10:56 | MID | 112.100 | 112.400 | 56.2% |
| 02/06/2020 11:08 | MID | 112.100 | 112.400 | 56.2% |
| 02/06/2020 11:21 | MID | 112.100 | 112.400 | 56.2% |

**Additional Information:**

No comment.

*Performance Spec: LE <= 5.0% of Reference Value; Alternate Performance Spec: |R-A| <= 5ppm (Appendix A &3.2)

**Unit/Stack/Pipe ID:** U002

**Linearity Check**

| | | | | | |
|---|---|---|---|---|---|
| **Component ID:** | 220 | **Component Type:** | O2 | **Test Completion:** | 02/06/2020 13:12 |
| **Test Number:** | 220-LIN-2020Q1 | **Reason for Test:** | INITIAL | **Reported Test Results:** | PASSED |
| **Span Scale Level:** | High | **Span Value:** | 25.000 | **EPA Calculated Result:** | PASSED |
| **Evaluation Status:** | No Errors | | | **Submission Status:** | Not Submitted |
| **Grace period Tested?** | | | | **Submission Date/Time:** | |

**Protocol Gas Data:**

| Gas Level Code | Gas Type Code | Vendor Identifier | Cylinder Identifier | Expiration Date |
|---|---|---|---|---|
| High | CO2,O2,BALN | B72018 | ALM064777 | 05/09/2027 |
| Low | CO2,O2,BALN | L12013 | EB0049417 | 08/13/2021 |
| Mid | O2,BALN | G12015 | EB0053431 | 06/13/2023 |

**Summary Statistics:**

| | High | | Mid | | Low | |
|---|---|---|---|---|---|---|
| | Reported | Recalculated | Reported | Recalculated | Reported | Recalculated |
| **Reference Value** | 22.140 | 22.140 | 13.460 | 13.460 | 6.030 | 6.030 |
| **Mass CEM Value** | 22.083 | 22.083 | 13.520 | 13.520 | 6.027 | 6.027 |
| **Alt. Perf. Indicator** | | | | | | |
| **Results** | 0.3 | 0.3 | 0.4 | 0.4 | 0.1 | 0.1 |

**Injection Statistics:**

| Date | Gas Level | Measured Value | Reference Value | Reference Value as % of Span |
|---|---|---|---|---|
| 02/06/2020 12:42 | HIGH | 22.080 | 22.140 | 88.6% |
| 02/06/2020 12:57 | HIGH | 22.080 | 22.140 | 88.6% |
| 02/06/2020 13:12 | HIGH | 22.090 | 22.140 | 88.6% |
| 02/06/2020 13:07 | MID | 13.520 | 13.460 | 53.8% |
| 02/06/2020 12:37 | MID | 13.520 | 13.460 | 53.8% |
| 02/06/2020 12:52 | MID | 13.520 | 13.460 | 53.8% |
| 02/06/2020 12:47 | LOW | 6.030 | 6.030 | 24.1% |
| 02/06/2020 12:32 | LOW | 6.020 | 6.030 | 24.1% |
| 02/06/2020 13:02 | LOW | 6.030 | 6.030 | 24.1% |

**Additional Information:**

No comment.

*Performance Spec: LE <= 5.0% of Reference Value; Alternate Performance Spec: |R-A| <= 5ppm (Appendix A &3.2)

**Unit/Stack/Pipe ID:** U002

**On-Line/Off-Line Calibration**

**Component ID:** 210
**Component Type:** NOX
**Test Completion:** 02/01/2020 12
**Test Number:** ON_OFF-210L-
**Reason for Test:** INITIAL
**Reported Test Results:** PASSED
**Span Scale Level:** Low
**Span Value:**
**EPA Calculated Result:** PASSED

**Evaluation Status:** No Errors
**Submission Status:** Not Submitted
**Submission Date/Time:**

| Calibration Type | Injection Date/Hour | Gas Level | Reference Value | Reference Value % of Span | Measured Value | Reported | | Recalculated | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Results | APS | Results | APS |
| Online | 02/01/2020 12 | ZERO | 0.000 | | -0.020 | 0.20 | | 0.20 | |
| Online | 02/01/2020 12 | HIGH | 8.935 | | 8.930 | 0.10 | | 0 | |
| Offline | 02/01/2020 00 | ZERO | 0.000 | | -0.040 | 0.40 | | 0.40 | |
| Offline | 02/01/2020 00 | HIGH | 8.935 | | 8.860 | 0.80 | | 0.80 | |

**Additional Information:**

No comment.

**Unit/Stack/Pipe ID:** U002

**On-Line/Off-Line Calibration**

**Component ID:** 220
**Component Type:** O2
**Test Completion:** 02/01/2020 12
**Test Number:** ON_OFF-220-
**Reason for Test:** INITIAL
**Reported Test Results:** PASSED
**Span Scale Level:** High
**Span Value:**
**EPA Calculated Result:** PASSED

**Evaluation Status:** No Errors
**Submission Status:** Not Submitted
**Submission Date/Time:**

| Calibration Type | Injection Date/Hour | Gas Level | Reference Value | Reference Value % of Span | Measured Value | Reported | | Recalculated | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Results | APS | Results | APS |
| Online | 02/01/2020 12 | ZERO | 0.000 | | 0.020 | 0.00 | | 0.00 | |
| Online | 02/01/2020 12 | HIGH | 22.140 | | 22.150 | 0.00 | | 0 | |
| Offline | 02/01/2020 00 | ZERO | 0.000 | | 0.020 | 0.00 | | 0.00 | |
| Offline | 02/01/2020 00 | HIGH | 22.140 | | 22.140 | 0.00 | | 0.00 | |

**Additional Information:**

No comment.

**Unit/Stack/Pipe ID:** U002

**On-Line/Off-Line Calibration**

**Component ID:** 210
**Component Type:** NOX
**Test Completion:** 02/01/2020 12
**Test Number:** ON_OFF-210H-
**Reason for Test:** INITIAL
**Reported Test Results:** PASSED
**Span Scale Level:** High
**Span Value:**
**EPA Calculated Result:** PASSED

**Evaluation Status:** No Errors
**Submission Status:** Not Submitted
**Submission Date/Time:**

| Calibration Type | Injection Date/Hour | Gas Level | Reference Value | Reference Value % of Span | Measured Value | Reported | | Recalculated | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Results | APS | Results | APS |
| Online | 02/01/2020 12 | ZERO | 0.000 | | 0.000 | 0.00 | | 0.00 | |
| Online | 02/01/2020 12 | HIGH | 176.800 | | 178.200 | 0.70 | | 0 | |
| Offline | 02/01/2020 00 | ZERO | 0.000 | | 0.000 | 0.00 | | 0.00 | |
| Offline | 02/01/2020 00 | HIGH | 176.800 | | 177.600 | 0.40 | | 0.40 | |

**Additional Information:**

No comment.

**Unit/Stack/Pipe ID:** U002

**Relative Accuracy Test**

| | | | | | |
|---|---|---|---|---|---|
| **System ID:** | N20 | **System Parameter:** | NOX | **Test Completion:** | 02/25/2020 18:17 |
| **Test Number:** | N20-2020Q1 | **Reason for Test:** | INITIAL | **Reported Test Results:** | PASSAPS |
| **# of Op. Levels:** | 1 | **Grace Period Test?** | | **EPA Calculated Result:** | PASSAPS |
| **Evaluation Status:** | No Errors | | | **Reported BAF:** | 1.000 |
| **Submission Status:** | Not Submitted | | | **EPA Calculated BAF:** | 1.000 |
| **Submission Date:** | | | | **RATA Frequency:** | 4QTRS |

**Air Emissions Testing Data**

| | | | |
|---|---|---|---|
| **QI Name:** | McBRIDE, MICHAEL S | **AETB Name:** | AIR HYGIENE INTERNATIONAL |
| **Exam Date:** | 01/27/2019 | **AETB Phone Number:** | 888-461-8778 |
| **Provider Name:** | SOURCE EVALUATION SOCIETY (SES) | **AETB Email:** | info@airhygiene.com |
| **Provider Email:** | QSTIPROGRAM@GMAIL.COM | | |

**Protocol Gas Data:**

| Gas Level Code | Gas Type Code | Vendor Identifier | Cylinder Identifier | Expiration Date |
|---|---|---|---|---|
| High | BALN,CO,NO,NOX | G12019 | EB0018492 | 05/02/2022 |
| Mid | BALN,CO,NO,NOX | G12019 | EB0065964 | 07/22/2022 |
| High | BALN,CO2,O2 | G12019 | CC721614 | 11/01/2026 |
| Mid | BALN,CO2,O2 | G12019 | CC722590 | 06/08/2027 |
| Low | ZERO | | | |

**Operating Level:** High
**Reference Method Used:** 7E,3A: NOX RM 7E and CO2/O2 RM 3A

**Summary Statistics:**

| | Reported | Recalculated | | Reported | Recalculated |
|---|---|---|---|---|---|
| **Mean of Monitoring System** | 0.00617 | 0.00617 | **Relative Accuracy** | 7.88 | 7.88 |
| **Mean of Reference Method Values** | 0.00577 | 0.00577 | **Bias Adjustment Factor** | 1.000 | 1.000 |
| **Mean of Difference** | -0.00040 | -0.00040 | **APS Indicator** | Y | Y |
| **Standard Deviation of Difference** | 0.00007 | 0.00007 | **T-Value** | 2.306 | 2.306 |
| **Confidence Coefficient** | 0.00005 | 0.00005 | **Gross Unit Load or Velocity** | 356 | 356 |

**Facility Name:** Cricket Valley Energy Center

**Facility ID (ORISPL):** 57185

**Run Data:**

| Run | Start Date | End Date | Run Status | Monitoring System Value | Reference Method Value | Gross Load or Velocity |
|---|---|---|---|---|---|---|
| 1 | 02/25/2020 11:53 | 02/25/2020 12:13 | RUNUSED | 0.00620 | 0.00580 | 347 |
| 2 | 02/25/2020 12:32 | 02/25/2020 12:52 | RUNUSED | 0.00610 | 0.00570 | 346 |
| 3 | 02/25/2020 13:07 | 02/25/2020 13:27 | NOTUSED | 0.00530 | 0.00570 | 345 |
| 4 | 02/25/2020 13:36 | 02/25/2020 13:56 | RUNUSED | 0.00620 | 0.00580 | 346 |
| 5 | 02/25/2020 14:15 | 02/25/2020 14:35 | RUNUSED | 0.00580 | 0.00550 | 345 |
| 6 | 02/25/2020 14:46 | 02/25/2020 15:06 | NOTUSED | 0.00550 | 0.00520 | 3346 mistake |
| 7 | 02/25/2020 15:17 | 02/25/2020 15:37 | RUNUSED | 0.00590 | 0.00560 | 345 |
| 8 | 02/25/2020 15:47 | 02/25/2020 16:07 | RUNUSED | 0.00630 | 0.00580 | 346 |
| 9 | 02/25/2020 16:20 | 02/25/2020 16:40 | RUNUSED | 0.00650 | 0.00610 | 373 |
| 10 | 02/25/2020 16:51 | 02/25/2020 17:11 | RUNUSED | 0.00630 | 0.00580 | 378 |
| 11 | 02/25/2020 17:57 | 02/25/2020 18:17 | RUNUSED | 0.00620 | 0.00580 | 380 |

**Additional Information:**

No comment.

*Performance Spec: RA <= 10% or Mean Difference <= +/- 2.0fps:
Reduced Frequency Spec: RA <= 7.5% or Mean Difference +/- 1.5 fps (Appendix A &3.3.4)

**Unit/Stack/Pipe ID:** U002

**Transmitter Transducer Test**

**Component ID:** 275
**Test Number:** FFTTT-275-2020Q1
**Component Type:** GFFM
**Reason for Test:** INITIAL
**Test Completion:** 02/24/2018 04:39
**Reported Test Results:** PASSED
**EPA Calculated Result:** PASSED
**Evaluation Status:** No Errors
**Submission Status:** Not Submitted
**Submission Date/Time:**

| High Level Accuracy | High Level Accuracy Specification | Mid Level Accuracy | Mid Level Accuracy Specification | Low Level Accuracy | Low Level Accuracy Specification |
|---|---|---|---|---|---|
| 0.0 | SUM | 0.0 | SUM | 0.0 | SUM |

**Additional Information:**

No comment.

**Unit/Stack/Pipe ID:** U002

**DAHS Verification**

| | | | | | |
|---|---|---|---|---|---|
| **System ID:** | | **System Type:** | | **Test Completion:** | 01/06/2020 15:00 |
| **Component ID:** | D01 | **Component Type:** | DAHS | **Reported Test Results:** | PASSED |
| **Test Number:** | DAHS_2020Q1 | **Reason for Test:** | INITIAL | **Grace Period Test?** | |
| **Evaluation Status:** | No Errors | | | **Submission Status:** | Not Submitted |

**Test Description:**

**Additional Information:**

DAHS VERIFICATION

**Unit/Stack/Pipe ID:** U002

**Primary Element Inspection**

| | | | | | |
|---|---|---|---|---|---|
| **System ID:** | | **System Type:** | | **Test Completion:** | 11/21/2019 00:00 |
| **Component ID:** | 275 | **Component Type:** | GFFM | **Reported Test Results:** | PASSED |
| **Test Number:** | 275-PEI-2020Q1 | **Reason for Test:** | INITIAL | **Grace Period Test?** | |
| **Evaluation Status:** | No Errors | | | **Submission Status:** | Not Submitted |

**Test Description:**

**Additional Information:**

ORIFICE PLATE INSPECTION

# APPENDIX 2

# 7-DAY ERROR/DRIFT TESTS
# &
# ONLINE/OFFLINE DEMONSTRATION TESTS
# DOCUMENTATION

# Cricket Valley Energy Center

## 7-Day Drift Test

Turbine 2 75-NOx ppm/H

| Time | Instrument Span | Zero Reference | Zero Measured | Zero Drift | Zero Drift Limit | Span Reference | Span Measured | Span Drift | Span Drift Limit | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 1/29/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 176.80 | 177.60 | 0.80 | 5.00 | On-Line |
| 1/30/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 176.80 | 177.90 | 1.10 | 5.00 | Off-Line |
| 1/31/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 176.80 | 177.90 | 1.10 | 5.00 | Off-Line |
| 2/1/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 176.80 | 177.60 | 0.80 | 5.00 | Off-Line |
| 2/1/2020 12:45 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 176.80 | 178.20 | 1.40 | 5.00 | On-Line |
| 2/1/2020 15:03 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 176.80 | 176.70 | -0.10 | 5.00 | On-Line |
| 2/2/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 176.80 | 176.90 | 0.10 | 5.00 | On-Line |
| 2/3/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 176.80 | 176.80 | 0.00 | 5.00 | On-Line |
| 2/3/2020 11:42 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 177.20 | 177.30 | 0.10 | 5.00 | On-Line |
| 2/4/2020 00:01 | 200 | 0.00 | 0.10 | 0.10 | 5.00 | 177.20 | 177.10 | -0.10 | 5.00 | On-Line |
| 2/5/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 177.20 | 177.40 | 0.20 | 5.00 | On-Line |
| 2/6/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 177.20 | 177.80 | 0.60 | 5.00 | On-Line |

The 7-Day Drift Test has been passed.

# Cricket Valley Energy Center

## 7-Day Drift Test

Turbine 2 60-NOx ppm/H

| Time | Instrument Span | Zero Reference | Zero Measured | Zero Drift | Zero Drift Limit | Span Reference | Span Measured | Span Drift | Span Drift Limit | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 1/29/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 176.80 | 177.60 | 0.80 | 5.00 | On-Line |
| 1/30/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 176.80 | 177.90 | 1.10 | 5.00 | Off-Line |
| 1/31/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 176.80 | 177.90 | 1.10 | 5.00 | Off-Line |
| 2/1/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 176.80 | 177.60 | 0.80 | 5.00 | Off-Line |
| 2/1/2020 12:45 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 176.80 | 178.20 | 1.40 | 5.00 | On-Line |
| 2/1/2020 15:03 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 176.80 | 176.70 | -0.10 | 5.00 | On-Line |
| 2/2/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 176.80 | 176.90 | 0.10 | 5.00 | On-Line |
| 2/3/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 176.80 | 176.80 | 0.00 | 5.00 | On-Line |
| 2/3/2020 11:42 | 200 | 0.00 | -0.10 | -0.10 | 5.00 | 176.80 | 177.30 | 0.50 | 5.00 | On-Line |
| 2/4/2020 00:01 | 200 | 0.00 | 0.10 | 0.10 | 5.00 | 176.80 | 177.10 | 0.30 | 5.00 | On-Line |
| 2/5/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 176.80 | 177.40 | 0.60 | 5.00 | On-Line |
| 2/6/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 176.80 | 177.80 | 1.00 | 5.00 | On-Line |

The 7-Day Drift Test has been passed.

# Cricket Valley Energy Center

## 7-Day Drift Test

Turbine 2 60-NOx ppm/L

| Time | Instrument Span | Zero Reference | Zero Measured | Zero Drift | Zero Drift Limit | Span Reference | Span Measured | Span Drift | Span Drift Limit | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 1/29/2020 00:01 | 10 | 0.00 | -0.03 | -0.03 | 0.25 | 8.94 | 8.90 | -0.04 | 0.25 | On-Line |
| 1/30/2020 00:01 | 10 | 0.00 | -0.04 | -0.04 | 0.25 | 8.94 | 8.88 | -0.06 | 0.25 | Off-Line |
| 1/31/2020 00:01 | 10 | 0.00 | -0.04 | -0.04 | 0.25 | 8.94 | 8.89 | -0.05 | 0.25 | Off-Line |
| 2/1/2020 00:01 | 10 | 0.00 | -0.04 | -0.04 | 0.25 | 8.94 | 8.86 | -0.08 | 0.25 | Off-Line |
| 2/1/2020 12:45 | 10 | 0.00 | -0.02 | -0.02 | 0.25 | 8.94 | 8.93 | -0.01 | 0.25 | On-Line |
| 2/1/2020 15:03 | 10 | 0.00 | 0.04 | 0.04 | 0.25 | 8.94 | 8.91 | -0.03 | 0.25 | On-Line |
| 2/2/2020 00:01 | 10 | 0.00 | -0.01 | -0.01 | 0.25 | 8.94 | 8.91 | -0.03 | 0.25 | On-Line |
| 2/3/2020 00:01 | 10 | 0.00 | 0.00 | 0.00 | 0.25 | 8.94 | 8.90 | -0.04 | 0.25 | On-Line |
| 2/4/2020 00:01 | 10 | 0.00 | 0.11 | 0.11 | 0.25 | 8.94 | 8.98 | 0.05 | 0.25 | On-Line |
| 2/4/2020 10:20 | 10 | 0.00 | -0.07 | -0.07 | 0.25 | 8.93 | 8.92 | -0.01 | 0.25 | On-Line |
| 2/5/2020 00:01 | 10 | 0.00 | -0.09 | -0.09 | 0.25 | 8.93 | 8.97 | 0.04 | 0.25 | On-Line |
| 2/6/2020 00:01 | 10 | 0.00 | -0.18 | -0.18 | 0.25 | 8.93 | 8.93 | 0.00 | 0.25 | On-Line |

The 7-Day Drift Test has been passed.

# Cricket Valley Energy Center

## 7-Day Drift Test

Turbine 2 CO ppm/H

| Time | Instrument Span | Zero Reference | Zero Measured | Zero Drift | Zero Drift Limit | Span Reference | Span Measured | Span Drift | Span Drift Limit | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 2/1/2020 00:01 | 2050 | 0.00 | 0.00 | 0.00 | 102.50 | 1709.00 | 1695.00 | -14.00 | 102.50 | Off-Line |
| 2/1/2020 12:45 | 2050 | 0.00 | 0.00 | 0.00 | 102.50 | 1709.00 | 1705.00 | -4.00 | 102.50 | On-Line |
| 2/1/2020 15:03 | 2050 | 0.00 | 0.00 | 0.00 | 102.50 | 1709.00 | 1706.00 | -3.00 | 102.50 | On-Line |
| 2/2/2020 00:01 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1709.00 | 1710.00 | 1.00 | 102.50 | On-Line |
| 2/3/2020 00:01 | 2050 | 0.00 | 0.00 | 0.00 | 102.50 | 1709.00 | 1715.00 | 6.00 | 102.50 | On-Line |
| 2/3/2020 11:42 | 2050 | 0.00 | -1.00 | -1.00 | 102.50 | 1712.00 | 1713.00 | 1.00 | 102.50 | On-Line |
| 2/4/2020 00:01 | 2050 | 0.00 | 1.00 | 1.00 | 102.50 | 1712.00 | 1713.00 | 1.00 | 102.50 | On-Line |
| 2/5/2020 00:01 | 2050 | 0.00 | 1.00 | 1.00 | 102.50 | 1712.00 | 1713.00 | 1.00 | 102.50 | On-Line |
| 2/6/2020 00:01 | 2050 | 0.00 | 0.00 | 0.00 | 102.50 | 1712.00 | 1715.00 | 3.00 | 102.50 | On-Line |
| 2/7/2020 00:01 | 2050 | 0.00 | 0.00 | 0.00 | 102.50 | 1712.00 | 1719.00 | 7.00 | 102.50 | On-Line |

The 7-Day Drift Test has been passed.

# Cricket Valley Energy Center

## 7-Day Drift Test

Turbine 2 CO ppm/L

| Time | Instrument Span | Zero Reference | Zero Measured | Zero Drift | Zero Drift Limit | Span Reference | Span Measured | Span Drift | Span Drift Limit | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 2/1/2020 00:01 | 10 | 0.00 | 0.03 | 0.03 | 0.50 | 7.07 | 6.27 | **-0.80** | 0.50 | Off-Line |
| 2/1/2020 12:45 | 10 | 0.00 | 0.35 | 0.35 | 0.50 | 7.05 | 6.63 | -0.42 | 0.50 | On-Line |
| 2/1/2020 15:03 | 10 | 0.00 | 0.14 | 0.14 | 0.50 | 7.05 | 7.10 | 0.05 | 0.50 | On-Line |
| 2/2/2020 00:01 | 10 | 0.00 | -0.15 | -0.15 | 0.50 | 7.05 | 7.17 | 0.12 | 0.50 | On-Line |
| 2/3/2020 00:01 | 10 | 0.00 | -0.01 | -0.01 | 0.50 | 7.05 | 7.29 | 0.24 | 0.50 | On-Line |
| 2/4/2020 00:01 | 10 | 0.00 | 1.91 | **1.91** | 0.50 | 7.05 | 7.93 | **0.88** | 0.50 | On-Line |
| 2/4/2020 10:20 | 10 | 0.00 | -0.40 | -0.40 | 0.50 | 7.05 | 6.91 | -0.14 | 0.50 | On-Line |
| 2/5/2020 00:01 | 10 | 0.00 | -0.40 | -0.40 | 0.50 | 7.05 | 6.77 | -0.28 | 0.50 | On-Line |
| 2/6/2020 00:01 | 10 | 0.00 | -0.40 | -0.40 | 0.50 | 7.05 | 7.01 | -0.04 | 0.50 | On-Line |
| 2/7/2020 00:01 | 10 | 0.00 | 0.05 | 0.05 | 0.50 | 7.05 | 7.43 | 0.38 | 0.50 | On-Line |

The 7-Day Drift Test has been passed.

# Cricket Valley Energy Center

## 7-Day Drift Test

Turbine 2 NH3/NOx ppm

| Time | Instrument Span | Zero Reference | Zero Measured | Zero Drift | Zero Drift Limit | Span Reference | Span Measured | Span Drift | Span Drift Limit | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 1/29/2020 00:01 | 16 | 0.00 | -0.18 | -0.18 | 0.48 | 8.94 | 8.69 | -0.25 | 0.48 | On-Line |
| 1/30/2020 00:01 | 16 | 0.00 | -0.22 | -0.22 | 0.48 | 8.94 | 8.67 | -0.27 | 0.48 | Off-Line |
| 1/31/2020 00:01 | 16 | 0.00 | -0.21 | -0.21 | 0.48 | 8.94 | 8.65 | -0.29 | 0.48 | Off-Line |
| 2/1/2020 00:01 | 16 | 0.00 | -0.22 | -0.22 | 0.48 | 8.94 | 8.66 | -0.28 | 0.48 | Off-Line |
| 2/1/2020 12:45 | 16 | 0.00 | -0.11 | -0.11 | 0.48 | 8.94 | 8.73 | -0.21 | 0.48 | On-Line |
| 2/1/2020 15:03 | 16 | 0.00 | -0.03 | -0.03 | 0.48 | 8.94 | 8.92 | -0.02 | 0.48 | On-Line |
| 2/2/2020 00:01 | 16 | 0.00 | -0.03 | -0.03 | 0.48 | 8.94 | 8.92 | -0.02 | 0.48 | On-Line |
| 2/3/2020 00:01 | 16 | 0.00 | -0.03 | -0.03 | 0.48 | 8.94 | 8.91 | -0.03 | 0.48 | On-Line |
| 2/4/2020 00:01 | 16 | 0.00 | 0.19 | 0.19 | 0.48 | 8.94 | 8.98 | 0.05 | 0.48 | On-Line |
| 2/4/2020 10:20 | 16 | 0.00 | -0.08 | -0.08 | 0.48 | 8.93 | 8.93 | 0.00 | 0.48 | On-Line |
| 2/5/2020 00:01 | 16 | 0.00 | -0.10 | -0.10 | 0.48 | 8.93 | 8.97 | 0.04 | 0.48 | On-Line |
| 2/6/2020 00:01 | 16 | 0.00 | -0.17 | -0.17 | 0.48 | 8.93 | 8.95 | 0.02 | 0.48 | On-Line |

The 7-Day Drift Test has been passed.

# Cricket Valley Energy Center

## 7-Day Drift Test

Turbine 2 75-O2 %

| Time | Instrument Span | Zero Reference | Zero Measured | Zero Drift | Zero Drift Limit | Span Reference | Span Measured | Span Drift | Span Drift Limit | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 1/29/2020 00:01 | 25 | 0.00 | 0.01 | 0.01 | 0.50 | 22.14 | 22.13 | -0.01 | 0.50 | On-Line |
| 1/30/2020 00:01 | 25 | 0.00 | 0.02 | 0.02 | 0.50 | 22.14 | 22.14 | 0.00 | 0.50 | Off-Line |
| 1/31/2020 00:01 | 25 | 0.00 | 0.02 | 0.02 | 0.50 | 22.14 | 22.15 | 0.01 | 0.50 | Off-Line |
| 2/1/2020 00:01 | 25 | 0.00 | 0.02 | 0.02 | 0.50 | 22.14 | 22.14 | 0.00 | 0.50 | Off-Line |
| 2/1/2020 12:45 | 25 | 0.00 | 0.02 | 0.02 | 0.50 | 22.14 | 22.15 | 0.01 | 0.50 | On-Line |
| 2/1/2020 15:03 | 25 | 0.00 | 0.00 | 0.00 | 0.50 | 22.14 | 22.16 | 0.02 | 0.50 | On-Line |
| 2/2/2020 00:01 | 25 | 0.00 | 0.00 | 0.00 | 0.50 | 22.14 | 22.16 | 0.02 | 0.50 | On-Line |
| 2/3/2020 00:01 | 25 | 0.00 | 0.01 | 0.01 | 0.50 | 22.14 | 22.17 | 0.03 | 0.50 | On-Line |
| 2/4/2020 00:01 | 25 | 0.00 | 0.00 | 0.00 | 0.50 | 22.14 | 22.14 | 0.00 | 0.50 | On-Line |
| 2/5/2020 00:01 | 25 | 0.00 | 0.00 | 0.00 | 0.50 | 22.14 | 22.12 | -0.02 | 0.50 | On-Line |
| 2/6/2020 00:01 | 25 | 0.00 | 0.00 | 0.00 | 0.50 | 22.14 | 22.13 | -0.01 | 0.50 | On-Line |

The 7-Day Drift Test has been passed.

# Cricket Valley Energy Center

## 7-Day Drift Test

Turbine 2 60-O2 %

| Time | Instrument Span | Zero Reference | Zero Measured | Zero Drift | Zero Drift Limit | Span Reference | Span Measured | Span Drift | Span Drift Limit | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 1/29/2020 00:01 | 25 | 0.00 | 0.01 | 0.01 | 0.50 | 22.14 | 22.13 | -0.01 | 0.50 | On-Line |
| 1/30/2020 00:01 | 25 | 0.00 | 0.02 | 0.02 | 0.50 | 22.14 | 22.14 | 0.00 | 0.50 | Off-Line |
| 1/31/2020 00:01 | 25 | 0.00 | 0.02 | 0.02 | 0.50 | 22.14 | 22.15 | 0.01 | 0.50 | Off-Line |
| 2/1/2020 00:01 | 25 | 0.00 | 0.02 | 0.02 | 0.50 | 22.14 | 22.14 | 0.00 | 0.50 | Off-Line |
| 2/1/2020 12:45 | 25 | 0.00 | 0.02 | 0.02 | 0.50 | 22.14 | 22.15 | 0.01 | 0.50 | On-Line |
| 2/1/2020 15:03 | 25 | 0.00 | 0.00 | 0.00 | 0.50 | 22.14 | 22.16 | 0.02 | 0.50 | On-Line |
| 2/2/2020 00:01 | 25 | 0.00 | 0.00 | 0.00 | 0.50 | 22.14 | 22.16 | 0.02 | 0.50 | On-Line |
| 2/3/2020 00:01 | 25 | 0.00 | 0.01 | 0.01 | 0.50 | 22.14 | 22.17 | 0.03 | 0.50 | On-Line |
| 2/4/2020 00:01 | 25 | 0.00 | 0.00 | 0.00 | 0.50 | 22.14 | 22.14 | 0.00 | 0.50 | On-Line |
| 2/5/2020 00:01 | 25 | 0.00 | 0.00 | 0.00 | 0.50 | 22.14 | 22.12 | -0.02 | 0.50 | On-Line |
| 2/6/2020 00:01 | 25 | 0.00 | 0.00 | 0.00 | 0.50 | 22.14 | 22.13 | -0.01 | 0.50 | On-Line |

The 7-Day Drift Test has been passed.

# Turbine 2 Calibration Checks

Cricket Valley Energy Center
Cal Checks for 2/1/2020

| Date/Time | Parameter | Analyzer Scale | Test Level | Reference Value | Measured Value | Actual Drift | Allowable Drift | Instrument Span | Results |
|---|---|---|---|---|---|---|---|---|---|
| | | | *Cylinder ID* | *Expiration Date* | | *EPA Vendor ID* | *EPA Gas Type Codes* | | |
| 2/1/2020 12:01 AM | 75-NOx ppm | High | Zero | 0.0 ppm | 0.0 ppm | 0 ppm | ±10 ppm | 200 ppm | Unit offline; Passed |
| | | | *NI CZ15A* | *1/2/2028* | | *B22019* | *N2* | | |
| 2/1/2020 12:01 AM | 75-NOx ppm | High | Span | 176.8 ppm | 177.6 ppm | 0.8 ppm | ±10 ppm | 200 ppm | Unit offline; Passed |
| | | | *ALM034669* | *7/22/2027* | | *B22019* | *CO,NO,NOX,BALN* | | |
| 2/1/2020 12:01 AM | 75-NOx ppm | Low | Zero | 0.00 ppm | -0.04 ppm | -0.04 ppm | ±0.5 ppm | 10 ppm | Unit offline; Passed |
| | | | *NI CZ15A* | *1/2/2028* | | *B22019* | *N2* | | |
| 2/1/2020 12:01 AM | 75-NOx ppm | Low | Span | 8.94 ppm | 8.86 ppm | -0.08 ppm | ±0.5 ppm | 10 ppm | Unit offline; Passed |
| | | | *CC722081* | *6/24/2022* | | *B22019* | *NO,NOX,BALN* | | |
| 2/1/2020 12:01 AM | 75-O2 % | Single | Zero | 0.00% | 0.02% | 0.02% | ±1% | 25% | Unit offline; Passed |
| | | | *NI CZ15A* | *1/2/2028* | | *B22019* | *N2* | | |
| 2/1/2020 12:01 AM | 75-O2 % | Single | Span | 22.14% | 22.14% | 0% | ±1% | 25% | Unit offline; Passed |
| | | | *ALM064777* | *5/9/2027* | | *B72018* | *CO2,O2,BALN* | | |
| 2/1/2020 12:45 PM | 75-NOx ppm | High | Zero | 0.0 ppm | 0.0 ppm | 0 ppm | ±10 ppm | 200 ppm | Unit online; Passed |
| | | | *NI CZ15A* | *1/2/2028* | | *B22019* | *N2* | | |
| 2/1/2020 12:45 PM | 75-NOx ppm | High | Span | 176.8 ppm | 178.2 ppm | 1.4 ppm | ±10 ppm | 200 ppm | Unit online; Passed |
| | | | *ALM034669* | *7/22/2027* | | *B22019* | *CO,NO,NOX,BALN* | | |
| 2/1/2020 12:45 PM | 75-NOx ppm | Low | Zero | 0.00 ppm | -0.02 ppm | -0.02 ppm | ±0.5 ppm | 10 ppm | Unit online; Passed |
| | | | *NI CZ15A* | *1/2/2028* | | *B22019* | *N2* | | |
| 2/1/2020 12:45 PM | 75-NOx ppm | Low | Span | 8.94 ppm | 8.93 ppm | -0.01 ppm | ±0.5 ppm | 10 ppm | Unit online; Passed |
| | | | *CC722081* | *6/24/2022* | | *B22019* | *NO,NOX,BALN* | | |
| 2/1/2020 12:45 PM | 75-O2 % | Single | Zero | 0.00% | 0.02% | 0.02% | ±1% | 25% | Unit online; Passed |
| | | | *NI CZ15A* | *1/2/2028* | | *B22019* | *N2* | | |
| 2/1/2020 12:45 PM | 75-O2 % | Single | Span | 22.14% | 22.15% | 0.01% | ±1% | 25% | Unit online; Passed |
| | | | *ALM064777* | *5/9/2027* | | *B72018* | *CO2,O2,BALN* | | |
| 2/1/2020 3:03 PM | 75-NOx ppm | High | Zero | 0.0 ppm | 0.0 ppm | 0 ppm | ±10 ppm | 200 ppm | Unit online; Passed; Manual |
| | | | *NI CZ15A* | *1/2/2028* | | *B22019* | *N2* | | |

| Date/Time | Parameter | Analyzer Scale | Test Level | Reference Value | Measured Value | Actual Drift | Allowable Drift | Instrument Span | Results |
|---|---|---|---|---|---|---|---|---|---|
| | | | *Cylinder ID* | *Expiration Date* | | *EPA Vendor ID* | *EPA Gas Type Codes* | | |
| 2/1/2020 3:03 PM | 75-NOx ppm | High | Span | 176.8 ppm | 176.7 ppm | -0.1 ppm | ±10 ppm | 200 ppm | Unit online; Passed; Manual |
| | | | *ALM034669* | *7/22/2027* | | *B22019* | *CO,NO,NOX,BALN* | | |
| 2/1/2020 3:03 PM | 75-NOx ppm | Low | Zero | 0.00 ppm | 0.04 ppm | 0.04 ppm | ±0.5 ppm | 10 ppm | Unit online; Passed; Manual |
| | | | *NI CZ15A* | *1/2/2028* | | *B22019* | *N2* | | |
| 2/1/2020 3:03 PM | 75-NOx ppm | Low | Span | 8.94 ppm | 8.91 ppm | -0.03 ppm | ±0.5 ppm | 10 ppm | Unit online; Passed; Manual |
| | | | *CC722081* | *6/24/2022* | | *B22019* | *NO,NOX,BALN* | | |
| 2/1/2020 3:03 PM | 75-O2 % | Single | Zero | 0.00% | 0.00% | 0% | ±1% | 25% | Unit online; Passed; Manual |
| | | | *NI CZ15A* | *1/2/2028* | | *B22019* | *N2* | | |
| 2/1/2020 3:03 PM | 75-O2 % | Single | Span | 22.14% | 22.16% | 0.02% | ±1% | 25% | Unit online; Passed; Manual |
| | | | *ALM064777* | *5/9/2027* | | *B72018* | *CO2,O2,BALN* | | |

# APPENDIX 3

# LINEARITY CHECK DOCUMENTATION

# Turbine 2 NOx/H Linearity

Cricket Valley Energy Center

## Test Information

**Test Date:** **2/6/2020**
Test Reason:
Grace Period: No
Aborted: No
*Unit online during QA test*

## Analyzer and Monitor Information

Range: High
Instrument Span: 200 ppm
Component ID: 210
Manufacturer: TELEDYNE
Model: T200M
Serial Number: 1013

| Run Number | Time | Reference Gas | CEMS Response | | | Cylinder Information |
|---|---|---|---|---|---|---|
| **Low Gas** | | | | | | |
| 1 | 10:51 AM | 51.2 | 50.2 | | | Allowable Reference Values: 40-60 ppm (20-30% of span) |
| 2 | 11:04 AM | 51.2 | 50.5 | | | |
| 3 | 11:16 AM | 51.2 | 50.5 | | | Cylinder ID: AAL073505 |
| | Mean (ppm) | 51.2 | 50.4 | | | Expiration Date: 7/19/2027 |
| | Difference of means ( \|R-A\| ) (ppm) | 0.8 | *Limit 5* | *Passed* | | EPA Vendor ID: G12019 |
| | Linearity Error (%) | 1.6 | *Limit 5.0* | *Passed* | | Cylinder contains: CO,NO,NOX,BALN |
| **Mid Gas** | | | | | | |
| 1 | 10:56 AM | 112.4 | 111.8 | | | Allowable Reference Values: 100-120 ppm (50-60% of span) |
| 2 | 11:08 AM | 112.4 | 112.1 | | | |
| 3 | 11:21 AM | 112.4 | 112.1 | | | Cylinder ID: EB0070742 |
| | Mean (ppm) | 112.4 | 112.0 | | | Expiration Date: 12/13/2027 |
| | Difference of means ( \|R-A\| ) (ppm) | 0.4 | *Limit 5* | *Passed* | | EPA Vendor ID: B22019 |
| | Linearity Error (%) | 0.4 | *Limit 5.0* | *Passed* | | Cylinder contains: CO,NO,NOX,BALN |
| **High Gas** | | | | | | |
| 1 | 11:00 AM | 177.2 | 176.1 | | | Allowable Reference Values: 160-200 ppm (80-100% of span) |
| 2 | 11:12 AM | 177.2 | 176.2 | | | |
| 3 | 11:25 AM | 177.2 | 175.9 | | | Cylinder ID: SG9160199BAL |
| | Mean (ppm) | 177.2 | 176.1 | | | Expiration Date: 7/22/2027 |
| | Difference of means ( \|R-A\| ) (ppm) | 1.1 | *Limit 5* | *Passed* | | EPA Vendor ID: B22019 |
| | Linearity Error (%) | 0.6 | *Limit 5.0* | *Passed* | | Cylinder contains: CO,NO,NOX,BALN |

*Linearity Error (LE) Determination*

*LE (%) = (|R-A| / R) * 100*

*R = Reference gas value*

*A = Mean of actual CEMS responses*

# Turbine 2 O2 Linearity

Cricket Valley Energy Center

**Test Information**

| | |
|---|---|
| **Test Date:** | **2/6/2020** |
| Test Reason: | |
| Grace Period: | No |
| Aborted: | No |

*Unit online during QA test*

**Analyzer and Monitor Information**

| | |
|---|---|
| Range: | Single Scale |
| Instrument Span: | 25 %O2 |
| Component ID: | 220 |
| Manufacturer: | TELEDYNE |
| Model: | T802 |
| Serial Number: | 129 |

| Run Number | Time | Reference Gas | CEMS Response | | Cylinder Information |
|---|---|---|---|---|---|
| **Low Gas** | | | | | |
| 1 | 12:32 PM | 6.03 | 6.02 | | |
| 2 | 12:47 PM | 6.03 | 6.03 | | Allowable Reference Values: |
| 3 | 1:02 PM | 6.03 | 6.03 | | 5-7.5 %O2 (20-30% of span) |
| | Mean (%O2) | 6.03 | 6.03 | | Cylinder ID: EB0049417 |
| | Difference of means ( \|R-A\| ) (%O2) | 0.0 | *Limit 0.5* | *Passed* | Expiration Date: 8/13/2021 |
| | Linearity Error (%) | 0.1 | *Limit 5.0* | *Passed* | EPA Vendor ID: L12013 |
| | | | | | Cylinder contains: CO2,O2,BALN |
| **Mid Gas** | | | | | |
| 1 | 12:37 PM | 13.46 | 13.52 | | |
| 2 | 12:52 PM | 13.46 | 13.52 | | Allowable Reference Values: |
| 3 | 1:07 PM | 13.46 | 13.52 | | 12.5-15 %O2 (50-60% of span) |
| | Mean (%O2) | 13.46 | 13.52 | | Cylinder ID: EB0053431 |
| | Difference of means ( \|R-A\| ) (%O2) | 0.1 | *Limit 0.5* | *Passed* | Expiration Date: 6/13/2023 |
| | Linearity Error (%) | 0.4 | *Limit 5.0* | *Passed* | EPA Vendor ID: G12015 |
| | | | | | Cylinder contains: O2,BALN |
| **High Gas** | | | | | |
| 1 | 12:42 PM | 22.14 | 22.08 | | |
| 2 | 12:57 PM | 22.14 | 22.08 | | Allowable Reference Values: |
| 3 | 1:12 PM | 22.14 | 22.09 | | 20-25 %O2 (80-100% of span) |
| | Mean (%O2) | 22.14 | 22.08 | | Cylinder ID: ALM064777 |
| | Difference of means ( \|R-A\| ) (%O2) | 0.1 | *Limit 0.5* | *Passed* | Expiration Date: 5/9/2027 |
| | Linearity Error (%) | 0.3 | *Limit 5.0* | *Passed* | EPA Vendor ID: B72018 |
| | | | | | Cylinder contains: CO2,O2,BALN |

*Linearity Error (LE) Determination*

*LE (%) = (|R-A| / R) * 100*

*R = Reference gas value*

*A = Mean of actual CEMS responses*

# APPENDIX 4

# CYCLE TIME & RESPONSE TIME TESTS DOCUMENTATION

# I/O Audit Data

Cricket Valley Energy Center

Data for 2/6/2020 7:05:10 PM thru 2/6/2020 7:24:50 PM

| Timestamp | (Turbine 2) CO Value | | (Turbine 2) O2 Value | (Turbine 2) GT Megawatts Value |
|---|---|---|---|---|
| 7:05:13 PM | -0.138 | | 12.877 | -- |
| 7:05:23 PM | -0.140 | | 12.871 | -- |
| 7:05:33 PM | -0.140 | | 12.875 | -- |
| 7:05:43 PM | -0.144 | | 12.878 | -- |
| 7:05:53 PM | -0.138 | | 12.871 | -- |
| 7:06:03 PM | -0.104 | | 12.870 | -- |
| 7:06:13 PM | -0.084 | | 12.871 | -- |
| 7:06:23 PM | -0.067 | | 12.871 | -- |
| 7:06:33 PM | -0.033 | | 12.871 | -- |
| 7:06:43 PM | -0.024 | | 12.869 | -- |
| 7:06:53 PM | -0.035 | | 12.872 | -- |
| 7:07:03 PM | -- | | 12.872 | -- |
| 7:07:13 PM | -0.046 | | 12.871 | -- |
| 7:07:23 PM | -0.069 | | 12.871 | -- |
| 7:07:33 PM | -0.045 | U1 | 12.877 | -- |
| 7:07:43 PM | -0.043 | | 12.872 | -- |
| 7:07:53 PM | 0.179 | | 18.588 | -- |
| 7:08:03 PM | 1.087 | | 6.141 | -- |
| 7:08:13 PM | 2.554 | | 0.777 | -- |
| 7:08:23 PM | 4.242 | | 0.190 | -- |
| 7:08:33 PM | 5.737 | | 0.081 | -- |
| 7:08:43 PM | 6.651 | | 0.049 | -- |
| 7:08:54 PM | 7.063 | | 0.034 | 234.465 |
| 7:09:04 PM | -- | | -- | 234.718 |
| 7:09:14 PM | -- | | -- | 234.543 |
| 7:09:28 PM | 7.261 | | 0.013 | 234.716 |
| 7:09:38 PM | 7.262 | | 0.008 | -- |
| 7:09:48 PM | 7.279 | | 0.007 | 234.494 |
| 7:09:58 PM | 7.257 | | 0.008 | -- |
| 7:10:08 PM | 7.245 | D1 | 0.007 | 234.443 |
| 7:10:18 PM | 7.257 | | 0.001 | 234.673 |
| 7:10:28 PM | 6.925 | | 0.095 | -- |
| 7:10:38 PM | 6.011 | | 0.014 | 234.769 |
| 7:10:48 PM | 4.607 | | 0.009 | -- |
| 7:10:59 PM | 2.746 | | 0.003 | 234.399 |
| 7:11:09 PM | 1.359 | | 0.000 | 234.186 |
| 7:11:19 PM | 0.556 | | 0.003 | 234.554 |
| 7:11:29 PM | 0.141 | | 0.000 | -- |
| 7:11:39 PM | 0.007 | | 0.002 | 234.467 |
| 7:11:49 PM | -0.035 | | -0.006 | 234.475 |
| 7:11:59 PM | -0.048 | | -0.005 | -- |
| 7:12:09 PM | -0.038 | | 0.002 | 234.337 |
| 7:12:19 PM | -0.062 | U2 | -0.006 | 234.804 |
| 7:12:29 PM | -0.049 | | 0.001 | 234.570 |
| 7:12:39 PM | -0.013 | | -0.007 | 234.270 |

| Timestamp | (Turbine 2) CO Value | (Turbine 2) O2 Value | (Turbine 2) GT Megawatts Value |
|---|---|---|---|
| 7:12:49 PM | 0.054 | -0.005 | 234.493 |
| 7:12:59 PM | 0.650 | -0.006 | 234.511 |
| 7:13:09 PM | 1.815 | -0.006 | -- |
| 7:13:19 PM | 3.290 | -0.007 | -- |
| 7:13:29 PM | 4.967 | -0.006 | -- |
| 7:13:39 PM | 6.175 | -0.006 | 234.471 |
| 7:13:49 PM | 6.861 | -0.007 | -- |
| 7:13:59 PM | 7.200 | -0.013 | 234.554 |
| 7:14:09 PM | 7.336 | -0.008 | 234.390 |
| 7:14:19 PM | 7.427 | -0.005 | 234.638 |
| 7:14:29 PM | 7.432 | -0.008 | 234.601 |
| 7:14:39 PM | 7.432 | -0.013 | 234.495 |
| 7:14:49 PM | 7.456 | -0.008 | -- |
| 7:14:59 PM | 7.440 | -0.012 | -- |
| 7:15:09 PM | 7.440 | -0.005 | 234.386 |
| 7:15:19 PM | 7.429 | -0.006 | -- |
| 7:15:29 PM | 7.015 | 0.008 | 234.433 |
| 7:15:39 PM | 5.986 | -0.006 | -- |
| 7:15:49 PM | 4.558 | -0.005 | -- |
| 7:15:59 PM | 2.889 | -0.013 | 234.235 |
| 7:16:09 PM | 1.514 | -0.006 | -- |
| 7:16:19 PM | 0.694 | -0.012 | 234.365 |
| 7:16:29 PM | 0.303 | -0.005 | 234.477 |
| 7:16:39 PM | 0.091 | -0.013 | 234.838 |
| 7:16:49 PM | 0.005 | -0.013 | 234.451 |
| 7:16:59 PM | -0.003 | -0.013 | 234.053 |
| 7:17:09 PM | -0.019 | -0.007 | 234.382 |
| 7:17:19 PM | -0.005 | -0.012 | 234.518 |
| 7:17:29 PM | 0.010 | -0.013 | -- |
| 7:17:39 PM | 0.000 | -0.012 | 234.239 |
| 7:17:49 PM | 0.103 | -0.013 | 234.519 |
| 7:17:59 PM | 0.763 | -0.012 | 234.637 |
| 7:18:09 PM | 2.010 | -0.013 | 234.438 |
| 7:18:19 PM | 3.555 | -0.012 | -- |
| 7:18:29 PM | 5.208 | -0.013 | -- |
| 7:18:39 PM | 6.345 | -0.013 | 234.615 |
| 7:18:49 PM | 6.920 | -0.006 | 234.633 |
| 7:18:59 PM | 7.203 | -0.013 | 234.020 |
| 7:19:09 PM | 7.292 | -0.012 | -- |
| 7:19:19 PM | 7.308 | -0.013 | 234.607 |
| 7:19:29 PM | 7.324 | -0.012 | 234.368 |
| 7:19:39 PM | 7.316 | -0.013 | 234.321 |
| 7:19:49 PM | 7.335 | -0.013 | 234.705 |
| 7:19:59 PM | 7.349 | -0.015 | -- |
| 7:20:09 PM | 7.364 | -0.013 | -- |
| 7:20:19 PM | 7.376 | -0.013 | -- |
| 7:20:29 PM | 7.289 | -0.005 | 234.580 |
| 7:20:39 PM | 6.651 | -0.005 | 235.035 |
| 7:20:49 PM | 5.432 | -0.013 | -- |

D2

U3

D3

| Timestamp | (Turbine 2) CO Value | (Turbine 2) O2 Value | (Turbine 2) GT Megawatts Value |
|---|---|---|---|
| 7:20:59 PM | 3.895 | -0.005 | 234.657 |
| 7:21:09 PM | 2.242 | -0.013 | -- |
| 7:21:19 PM | 1.083 | -0.011 | 234.568 |
| 7:21:29 PM | 0.469 | -0.013 | 234.466 |
| 7:21:39 PM | 0.210 | -0.012 | -- |
| 7:21:49 PM | 0.095 | -0.013 | 234.589 |
| 7:21:59 PM | 0.044 | -0.012 | -- |
| 7:22:09 PM | 0.030 | -0.005 | 234.813 |
| 7:22:19 PM | 0.036 | -0.013 | 234.684 |
| 7:22:29 PM | 0.008 | -0.012 | 234.480 |
| 7:22:39 PM | 0.014 | -0.013 | 234.851 |
| 7:22:49 PM | 0.008 | -0.005 | 234.563 |
| 7:22:59 PM | 0.033 | 0.895 | 234.706 |
| 7:23:09 PM | 0.087 | 10.963 | 234.649 |
| 7:23:19 PM | 0.136 | 12.529 | -- |
| 7:23:29 PM | 0.195 | 12.753 | 234.423 |
| 7:23:39 PM | 0.222 | 12.796 | 234.501 |
| 7:23:49 PM | 0.238 | 12.822 | -- |
| 7:23:59 PM | 0.236 | 12.823 | 234.640 |
| 7:24:09 PM | 0.220 | 12.829 | -- |
| 7:24:19 PM | 0.225 | 12.837 | 234.482 |
| 7:24:29 PM | 0.230 | 12.842 | 234.309 |
| 7:24:39 PM | 0.255 | 12.843 | 234.461 |
| 7:24:49 PM | 0.262 | 12.849 | -- |
| Average | 2.835 | 3.200 | 234.519 |
| Minimum | -0.144 | -0.015 | 234.020 |
| Maximum | 7.456 | 18.588 | 235.035 |

# I/O Audit Data

Cricket Valley Energy Center

Data for 2/6/2020 6:31:50 PM thru 2/6/2020 7:03:20 PM

| Timestamp | (Turbine 2) NOx Value | (Turbine 2) O2 Value | (Turbine 2) GT Megawatts Value |
|---|---|---|---|
| 6:31:53 PM | 2.166 | 12.864 | -- |
| 6:32:03 PM | 2.166 | 12.872 | -- |
| 6:32:13 PM | 2.166 | 12.870 | -- |
| 6:32:23 PM | 2.167 | 12.872 | -- |
| 6:32:34 PM | 2.167 | 12.871 | 234.522 |
| 6:32:44 PM | -- | -- | 234.950 |
| 6:32:54 PM | 2.169 | 12.863 | 234.581 |
| 6:33:04 PM | -- | -- | 234.975 |
| 6:33:14 PM | -- | -- | 234.670 |
| 6:33:24 PM | -- | 12.863 | 234.696 |
| 6:33:34 PM | -- | -- | 234.884 |
| 6:33:44 PM | -- | -- | 234.377 |
| 6:33:54 PM | -- | -- | 234.740 |
| 6:34:04 PM | -- | -- | 234.507 |
| 6:34:14 PM | -- | -- | 234.647 |
| 6:34:24 PM | -- | -- | 235.160 |
| 6:34:34 PM | -- | -- | 234.911 |
| 6:34:44 PM | -- | -- | 234.581 |
| 6:34:54 PM | -- | -- | 234.583 |
| 6:35:04 PM | -- | -- | 234.708 |
| 6:35:14 PM | -- | -- | 235.084 |
| 6:35:24 PM | -- | -- | 234.532 |
| 6:35:38 PM | -0.144 | 0.002 | 234.911 |
| 6:35:48 PM | -0.144 | -0.001 | 235.070 |
| 6:35:58 PM | -0.142 | 0.002 | -- |
| 6:36:08 PM | -0.143 | -- | -- |
| 6:36:18 PM | -0.144 | 0.002 | 234.931 |
| 6:36:28 PM | -0.142 | 0.020 | 234.878 |
| 6:36:38 PM | 1.339 | 10.050 | -- |
| 6:36:48 PM | 2.123 | 12.391 | 234.520 |
| 6:36:58 PM | 2.153 | 12.726 | 234.861 |
| 6:37:08 PM | 2.158 | 12.800 | -- |
| 6:37:18 PM | 2.152 | 12.821 | 234.754 |
| 6:37:28 PM | 2.168 | 12.828 | 234.478 |
| 6:37:38 PM | 2.169 | 12.834 | -- |
| 6:37:48 PM | 2.169 | 12.842 | -- |
| 6:37:58 PM | 2.167 | -- | -- |
| 6:38:08 PM | 2.166 | 12.850 | -- |
| 6:38:18 PM | 2.167 | 12.842 | -- |
| 6:38:28 PM | 2.163 | 12.853 | 234.690 |
| 6:38:38 PM | 2.164 | 12.847 | 234.257 |
| 6:38:48 PM | 1.996 | 12.828 | 234.310 |
| 6:38:58 PM | 1.582 | 2.742 | 234.747 |
| 6:39:08 PM | 6.398 | 0.434 | -- |
| 6:39:18 PM | 8.629 | 0.102 | 234.640 |

| Timestamp | (Turbine 2) NOx Value | (Turbine 2) O2 Value | (Turbine 2) GT Megawatts Value |
|---|---|---|---|
| 6:39:28 PM | 8.689 | 0.045 | -- |
| 6:39:38 PM | 8.771 | 0.021 | 234.803 |
| 6:39:48 PM | 8.772 | 0.020 | 234.652 |
| 6:39:58 PM | 8.784 | 0.008 | 234.673 |
| 6:40:08 PM | 8.783 | 0.008 | 234.346 |
| 6:40:18 PM | 8.785 | 0.001 | -- |
| 6:40:28 PM | 8.784 | 0.001 | -- |
| 6:40:38 PM | 8.784 | -0.007 | -- |
| 6:40:48 PM | 8.784 | 0.001 | -- |
| 6:40:59 PM | 8.784 | 0.002 | 234.562 |
| 6:41:09 PM | 8.784 | -0.008 | -- |
| 6:41:19 PM | 8.784 | -0.005 | 234.606 |
| 6:41:29 PM | 8.383 | 0.066 | 234.837 |
| 6:41:39 PM | 4.633 | 10.336 | 234.672 |
| 6:41:49 PM | 2.303 | 12.432 | -- |
| 6:41:59 PM | 2.230 | 12.741 | -- |
| 6:42:09 PM | 2.223 | 12.801 | 234.839 |
| 6:42:19 PM | 2.205 | 12.821 | 234.935 |
| 6:42:29 PM | 2.189 | 12.835 | 234.298 |
| 6:42:39 PM | 2.186 | 12.842 | 234.366 |
| 6:42:49 PM | 2.183 | 12.849 | 234.552 |
| 6:42:59 PM | 2.182 | 12.856 | 234.705 |
| 6:43:09 PM | 2.296 | 12.849 | 234.553 |
| 6:43:19 PM | 2.290 | 12.849 | 234.794 |
| 6:43:29 PM | 2.284 | 12.849 | 234.769 |
| 6:43:39 PM | 2.284 | 12.849 | -- |
| 6:43:49 PM | 4.292 | 9.074 | 235.006 |
| 6:43:59 PM | 7.545 | 1.150 | 234.489 |
| 6:44:09 PM | 1.064 | 0.207 | -- |
| 6:44:19 PM | 0.088 | 0.063 | 234.934 |
| 6:44:29 PM | 0.019 | 0.026 | 234.886 |
| 6:44:39 PM | 0.038 | 0.015 | 234.860 |
| 6:44:49 PM | 0.038 | 0.013 | 234.637 |
| 6:44:59 PM | 0.050 | 0.008 | 234.778 |
| 6:45:09 PM | 0.025 | 0.002 | 234.768 |
| 6:45:19 PM | -0.013 | 0.002 | 234.720 |
| 6:45:29 PM | -0.031 | 0.001 | -- |
| 6:45:39 PM | -0.134 | 0.001 | 234.692 |
| 6:45:49 PM | -0.134 | -0.005 | 234.336 |
| 6:45:59 PM | -0.135 | -0.006 | 234.627 |
| 6:46:09 PM | -0.135 | 0.000 | 234.501 |
| 6:46:19 PM | -0.138 | -0.006 | 234.678 |
| 6:46:29 PM | 0.255 | 0.975 | 234.618 |
| 6:46:39 PM | 1.659 | 11.002 | 234.414 |
| 6:46:49 PM | 2.127 | 12.543 | -- |
| 6:46:59 PM | 2.156 | 12.753 | 234.797 |
| 6:47:09 PM | 2.164 | 12.807 | 234.522 |
| 6:47:19 PM | 2.162 | 12.822 | 234.639 |
| 6:47:29 PM | 2.164 | 12.835 | 234.565 |

| Timestamp | (Turbine 2) NOx Value | (Turbine 2) O2 Value | (Turbine 2) GT Megawatts Value |
|---|---|---|---|
| 6:47:39 PM | 2.162 | 12.843 | 234.689 |
| 6:47:49 PM | 2.162 | 12.842 | 234.586 |
| 6:47:59 PM | 2.161 | 12.850 | -- |
| 6:48:09 PM | 2.221 | 12.849 | -- |
| 6:48:19 PM | 2.240 | 12.850 | -- |
| 6:48:29 PM | 2.246 | 12.857 | 234.495 |
| 6:48:39 PM | 2.246 | 12.849 | 234.404 |
| 6:48:49 PM | 1.464 | 8.876 | 234.590 |
| 6:48:59 PM | 53.166 | 1.197 | -- |
| 6:49:09 PM | 136.894 | 0.207 | 234.897 |
| 6:49:19 PM | 167.312 | 0.073 | 234.960 |
| 6:49:29 PM | 174.770 | 0.041 | -- |
| 6:49:39 PM | 175.139 | 0.026 | 234.475 |
| 6:49:49 PM | 175.358 | 0.020 | -- |
| 6:49:59 PM | 175.308 | 0.013 | -- |
| 6:50:09 PM | 175.408 | 0.013 | -- |
| 6:50:19 PM | 175.483 | 0.013 | 234.724 |
| 6:50:29 PM | 175.477 | 0.005 | -- |
| 6:50:39 PM | 175.477 | 0.006 | 234.504 |
| 6:50:49 PM | 175.520 | 0.004 | 235.065 |
| 6:50:59 PM | 175.533 | 0.006 | 234.722 |
| 6:51:09 PM | 175.539 | 0.005 | -- |
| 6:51:19 PM | 175.558 | 0.007 | 235.077 |
| 6:51:29 PM | 169.139 | 0.248 | 234.409 |
| 6:51:39 PM | 47.129 | 10.383 | 234.602 |
| 6:51:49 PM | 5.869 | 12.463 | 234.813 |
| 6:51:59 PM | 3.159 | 12.753 | 234.480 |
| 6:52:09 PM | 2.846 | 12.808 | 234.636 |
| 6:52:19 PM | 2.633 | 12.821 | 234.482 |
| 6:52:29 PM | 2.546 | 12.829 | 234.582 |
| 6:52:39 PM | 2.476 | 12.841 | 234.618 |
| 6:52:49 PM | 2.420 | 12.842 | 234.798 |
| 6:52:59 PM | 2.380 | 12.849 | 234.664 |
| 6:53:09 PM | 2.376 | 12.849 | 234.336 |
| 6:53:19 PM | 2.374 | 12.849 | 234.504 |
| 6:53:29 PM | 2.369 | 12.849 | 234.941 |
| 6:53:39 PM | 2.366 | 12.850 | 234.813 |
| 6:53:49 PM | 2.361 | 12.848 | 234.656 |
| 6:53:59 PM | 2.350 | 12.849 | 234.108 |
| 6:54:09 PM | 2.343 | 12.848 | -- |
| 6:54:19 PM | 2.333 | 12.857 | 234.539 |
| 6:54:29 PM | 2.324 | 12.847 | 234.834 |
| 6:54:39 PM | 10.250 | 12.378 | 234.641 |
| 6:54:49 PM | 10.250 | 2.176 | 234.567 |
| 6:54:59 PM | 10.250 | 0.349 | -- |
| 6:55:09 PM | 1.381 | 0.088 | 234.384 |
| 6:55:19 PM | 0.223 | 0.040 | 234.244 |
| 6:55:29 PM | -0.007 | 0.020 | -- |
| 6:55:39 PM | -0.065 | 0.013 | -- |

| Timestamp | (Turbine 2) NOx Value | (Turbine 2) O2 Value | (Turbine 2) GT Megawatts Value |
|---|---|---|---|
| 6:55:49 PM | -0.067 | 0.007 | 234.286 |
| 6:55:59 PM | -0.134 | 0.006 | 234.727 |
| 6:56:09 PM | -0.157 | 0.001 | 234.464 |
| 6:56:19 PM | -0.164 | 0.000 | 234.572 |
| 6:56:29 PM | -0.167 | 0.002 | 234.538 |
| 6:56:39 PM | -0.170 | -0.006 | -- |
| 6:56:49 PM | -0.170 | -0.006 | 234.687 |
| 6:56:59 PM | -0.173 | -0.005 | -- |
| 6:57:09 PM | -0.178 | -0.007 | 234.666 |
| 6:57:19 PM | -0.044 | 0.469 | -- |
| 6:57:29 PM | 1.712 | 10.606 | 234.533 |
| 6:57:39 PM | 2.158 | 12.509 | 234.595 |
| 6:57:49 PM | 2.183 | 12.760 | 234.432 |
| 6:57:59 PM | 2.183 | 12.810 | 234.731 |
| 6:58:09 PM | 2.198 | 12.827 | -- |
| 6:58:19 PM | 2.201 | 12.830 | 234.279 |
| 6:58:29 PM | 2.205 | 12.841 | 234.702 |
| 6:58:39 PM | 2.205 | 12.850 | 234.484 |
| 6:58:49 PM | 2.006 | 12.398 | 234.984 |
| 6:58:59 PM | 0.305 | 2.273 | 234.419 |
| 6:59:09 PM | -0.099 | 18.536 | -- |
| 6:59:19 PM | -0.218 | 21.560 | 234.907 |
| 6:59:29 PM | -0.232 | 21.946 | 234.343 |
| 6:59:39 PM | -0.235 | 22.019 | 234.447 |
| 6:59:49 PM | -0.237 | 22.047 | 234.557 |
| 6:59:59 PM | -0.239 | 22.060 | 234.704 |
| 7:00:09 PM | -0.240 | 22.067 | 234.516 |
| 7:00:19 PM | -0.240 | 22.075 | -- |
| 7:00:29 PM | -0.240 | 22.081 | 234.797 |
| 7:00:39 PM | -0.240 | 22.083 | -- |
| 7:00:49 PM | -0.240 | 22.080 | -- |
| 7:00:59 PM | -0.239 | 22.082 | 234.556 |
| 7:01:09 PM | -0.243 | 22.086 | -- |
| 7:01:19 PM | -0.242 | 22.089 | 234.645 |
| 7:01:29 PM | -0.127 | 22.055 | -- |
| 7:01:39 PM | 1.231 | 15.025 | 234.482 |
| 7:01:49 PM | 2.159 | 13.205 | 234.492 |
| 7:01:59 PM | 2.211 | 12.951 | 234.423 |
| 7:02:09 PM | 2.213 | 12.911 | -- |
| 7:02:19 PM | 2.217 | 12.891 | 234.784 |
| 7:02:29 PM | 2.224 | 12.884 | 234.493 |
| 7:02:39 PM | 2.222 | 12.877 | -- |
| 7:02:49 PM | 2.224 | 12.878 | 234.689 |
| 7:02:59 PM | 2.225 | 12.870 | 234.526 |
| 7:03:09 PM | 2.224 | 12.871 | -- |
| 7:03:19 PM | 2.225 | 12.871 | -- |
| Average | 17.568 | 8.358 | 234.644 |
| Minimum | -0.243 | -0.008 | 234.108 |
| Maximum | 175.558 | 22.089 | 235.160 |

# APPENDIX 5

# DAHS VERIFICATION DOCUMENTATION

**CUSTOM INSTRUMENTATION SERVICES CORPORATION**

Data Acquisition and Handling System (DAHS) Verification Documentation

**CeDAR and Breez75X ECMPS Reporting Software**

Developed by:
Custom Instrumentation Services Corporation

EPA Regulations

- 40CFR75 Acid Rain
- 40CFR97 CSAPR NOx and $SO_2$

This letter serves as notice that the required 40 CFR 75 DAHS (missing data and formula) verification have been conducted and passed.

The attached formula verification document which includes CeDAR printouts demonstrates that the DAHS accurately calculates regulated parameters using raw data. In addition, verification tests have been conducted and passed for all missing data substitution routines for ECMPS reporting according to all applicable regulations and specifications in 40 CFR 75 Appendix D and Subpart D. The attached checklist, as adapted from Section 15 of the Acid Rain Program Policy Manual (revised) for 40CFR75, provides the regulatory description of the data substitution criteria.
These verification tests were conducted using numerous data sets at varying loads and operating conditions as well as various missing data periods as described in each set of tests. The tests were conducted using data sets with known outcomes and criteria and were verified against those outcomes. All missing data substitution procedures have been verified to be accurate and correct. Detailed data sets and documentation and test documentation are provided below

Walt Bastron
President

# $SO_2$ Missing Data Verification Checklist [1]

## Initial $SO_2$ Data Substitution: 75.31

| Description | Regulation |
|---|---|
| Prior to 720 QA hours, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.31(b)(1) |
| Prior to 720 QA hours, non-QA data is substituted with the MPC if previous QA data does not exist. | 75.31(b)(2) |
| Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) |

## Standard $SO_2$ Data Substitution: 75.33

| Description | Regulation |
|---|---|
| For non-QA data blocks less than or equal to 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.33(b)(1)(i) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(b)(1)(ii)(A) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period. | 75.33(b)(1)(ii)(B) |
| For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.33(b)(2)(i) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the 95$^{th}$ percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(b)(2)(ii)(A) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95$^{th}$ percentile of the lookback period. | 75.33(b)(2)(ii)(B) |
| For non-QA data blocks with an availability greater than or equal to 80.0% and less than 90.0%, non-QA data is substituted with the maximum value in the lookback period. | 75.33(b)(3) |
| For non-QA data blocks with an availability below 80.0%, non-QA data is substituted with a MPC. | 75.33(b)(4) |
| Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a) |

Miscellaneous $SO_2$ Data Substitution

| Description | Regulation |
|---|---|
| For Non-QA data blocks that cross quarter boundaries, the two missing data block portions will be handled individually with respect to the quarter they end or start. | Reporting Instructions II(C)(12) |
| For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) |

1 The SO2 missing data verification mentioned here does not apply to Cricket Valley Energy Center

$O_2$ Missing Data Verification Checklist

Initial $O_2$ Data Substitution: 75.31

| Description | Regulation |
|---|---|
| Prior to 720 QA hours, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.36(b)<br>75.31(b)(1) |
| Prior to 720 QA hours, non-QA data is substituted with the MPC if previous QA data does not exist. | 75.36(b)<br>75.31(b)(2) |
| Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) |

Standard O2 Data Substitution: 75.33

| Description | Regulation |
|---|---|
| For non-QA data blocks less than or equal to 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.36(d)<br>75.33(b)(1)(i) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the 10th percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.36(d)<br>75.33(b)(1)(ii)(A) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 10th percentile of the lookback period. | 75.36(d)<br>75.33(b)(1)(ii)(B) |
| For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.36(d)<br>75.33(b)(2)(i) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the 5th percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.36(d)<br>75.33(b)(2)(ii)(A) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 5th percentile of the lookback period. | 75.36(d)<br>75.33(b)(2)(ii)(B) |
| For non-QA data blocks with an availability greater than or equal to 80.0% and less than 90.0%, non-QA data is substituted with the minimum value in the lookback period. | 75.36(d)<br>75.33(b)(3) |
| For non-QA data blocks with an availability below 80.0%, non-QA data is substituted with a MPC. | 75.36(d)<br>75.33(b)(4) |
| Substitution routines have a maximum lookback period of 26280 hours. | 75.36(d)<br>75.33(a) |

Miscellaneous $SO_2$ Data Substitution

| Description | Regulation |
|---|---|
| For Non-QA data blocks that cross quarter boundaries, the two missing data block portions will be handled individually with respect to the quarter they end or start. | Reporting Instructions II(C)(12) |
| For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) |

$NO_X$ Missing Data Verification Checklist

Initial $NO_X$ Data Substitution: 75.31

| Description | Regulation |
|---|---|
| Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.31(c)(1) |
| Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the next higher available load range if prior data does not exist in the corresponding load range. | 75.31(c)(2) |
| Prior to 2160 QA hours, non-QA data is substituted with the MPC if previous data does not exist in the corresponding or higher load ranges. | 75.31(c)(3) |
| Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) |

Standard $NO_X$ Data Substitution: 75.33

| Description | Regulation |
|---|---|
| For non-QA data blocks less than or equal to 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.33(c)(1)(i) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(c)(1)(ii)(A) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period in the corresponding load range. | 75.33(c)(1)(ii)(B) |
| For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.33(c)(2)(i) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the 95$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(c)(2)(ii)(A) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95$^{th}$ percentile of the lookback period in the corresponding load range. | 75.33(c)(2)(ii)(B) |

| | |
|---|---|
| For non-QA data blocks with an availability greater than or equal to 80.0% and less than 90.0%, non-QA data is substituted with the maximum value in the lookback period at the corresponding load range. | 75.33(c)(3) |
| For non-QA data blocks with an availability below 80.0%, non-QA data is substituted with a MPC. | 75.33(c)(4) |
| If no data in the lookback period exists for the corresponding load range, the maximum value at the next higher available load range is used. | 75.33(c)(5) |
| If no data in the corresponding or higher load ranges exists in the lookback period, the MPC is used. | 75.33(c)(6) |
| Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a) |

Miscellaneous NOx Data Substitution

| Description | Regulation |
|---|---|
| For Non-QA data blocks that cross quarter boundaries, the two missing data block portions will be handled individually with respect to the quarter they end or start. | Reporting Instructions II(C)(12) |
| For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) |

Appendix D Fuel Flow Rate Missing Data Verification Checklist

Single Fuel Hours, Load Based: Appendix D

| Description | Regulation |
|---|---|
| Non-QA data is substituted with the average of the lookback period at the corresponding load range when only the same fuel was combusted. | App. D 2.4.2.2.1 |
| Non-QA data is substituted with the average of the lookback period at the next higher available load range when only the same fuel was combusted if no data in the corresponding load range exists. | App. D 2.4.2.2.1 |
| Non-QA data is substituted with the a maximum potential flow rate if no data in the lookback period at the corresponding or higher load range when only the same fuel was combusted exists. | App. D 2.4.2.2.1 |
| Substitution routines have a maximum lookback period of 26280 hours. | App. D 2.4.3 |

Co-Fired Fuel Hours, Load Based: Appendix D

| Description | Regulation |
|---|---|
| Non-QA data is substituted with the maximum in the lookback period at the corresponding load range when the same fuel is co-fired with another fuel. | App. D 2.4.2.3.1<br>App. D 2.4.2.3.3 |
| Non-QA data is substituted with the maximum in the lookback period at the next higher available load range when the same fuel is co-fired with another fuel. | App. D 2.4.2.3.1<br>App. D 2.4.2.3.3 |
| Non-QA data is substituted with a maximum potential flow rate if no data in the lookback period at the corresponding or higher load range when the same fuel is co-fired with another fuel exists. | App. D 2.4.2.3.1<br>App. D 2.4.2.3.3 |
| Substitution routines have a maximum lookback period of 26280 hours. | App. D 2.4.3 |

Note: If Maximum Heat Rate is exceeded, manual adjustment of Fuel Flows is allowed so that reported Heat Rate equals the maximum. (App. D 2.4.2.3.4)

Fuel Specific $NO_X$ Missing Data Verification Checklist

Initial $NO_X$ Data Substitution: 75.31

| Description | Regulation |
|---|---|
| Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.31(c)(1) |
| Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the next higher available load range if prior data does not exist in the corresponding load range. | 75.31(c)(2) |
| Prior to 2160 QA hours, non-QA data is substituted with the MPC if previous data does not exist in the corresponding or higher load ranges. | 75.31(c)(3) |
| Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) |

Fuel Specific $NO_X$ Data Substitution: 75.33

| Description | Regulation |
|---|---|
| For non-QA data blocks less than or equal to 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(1)(i)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(1)(ii)(A)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period in the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(1)(ii)(B)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) |
| For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(2)(i)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) |

| | |
|---|---|
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the 95th percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(2)(ii)(A)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95th percentile of the lookback period in the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(2)(ii)(B)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) |
| For non-QA data blocks with an availability greater than or equal to 80.0% and less than 90.0%, non-QA data is substituted with the maximum value in the lookback period at the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(3)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) |
| For non-QA data blocks with an availability below 80.0%, non-QA data is substituted with a fuel specific MPC. | 75.33(c)(4)<br>75.33(c)(8)(iii) |
| If no data in the lookback period exists for the corresponding load range, the maximum value at the next higher available load range is used. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(5)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) |
| If no data in the corresponding or higher load ranges exists in the lookback period, the fuel specific MPC is used. | 75.33(c)(6)<br>75.33(c)(8)(iii) |
| Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a)<br>75.33(c)(8) |

Miscellaneous Fuel Specific $NO_X$ Data Substitution

| Description | Regulation |
|---|---|
| For Non-QA data blocks that cross quarter boundaries, the two missing data block portions will be handled individually with respect to the quarter they end or start. | Reporting Instructions II(C)(12) |
| For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) |

Season Specific $NO_X$ Missing Data Verification Checklist

Initial $NO_X$ Data Substitution: 75.31

| Description | Regulation |
|---|---|
| Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.31(c)(1)<br>75.74(c)(7) |
| Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the next higher available load range if prior data does not exist in the corresponding load range. Historical data is separated into season specific pools. | 75.31(c)(2)<br>75.74(c)(7) |
| Prior to 2160 QA hours, non-QA data is substituted with the MPC if previous data does not exist in the corresponding or higher load ranges. Historical data is separated into season specific pools. | 75.31(c)(3)<br>75.74(c)(7) |
| Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) |

Season Specific $NO_X$ Data Substitution: 75.33

| Description | Regulation |
|---|---|
| For non-QA data blocks less than or equal to 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(1)(i)<br>75.34(a)(2)<br>75.74(c)(7) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. Historical data is separated into season specific pools. | 75.33(c)(1)(ii)(A)<br>75.34(a)(2)<br>75.74(c)(7) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(1)(ii)(B)<br>75.34(a)(2)<br>75.74(c)(7) |
| For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(2)(i)<br>75.34(a)(2)<br>75.74(c)(7) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the 95$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. Historical data is separated into season specific pools. | 75.33(c)(2)(ii)(A)<br>75.34(a)(2)<br>75.74(c)(7) |

| | |
|---|---|
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95$^{th}$ percentile of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(2)(ii)(B)<br>75.34(a)(2)<br>75.74(c)(7) |
| For non-QA data blocks with an availability greater than or equal to 80.0% and less than 90.0%, non-QA data is substituted with the maximum value in the lookback period at the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(3)<br>75.34(a)(2)<br>75.74(c)(7) |
| For non-QA data blocks with an availability below 80.0%, non-QA data is substituted with an MPC. | 75.33(c)(4)<br>75.74(c)(7) |
| If no data in the lookback period exists for the corresponding load range, the maximum value at the next higher available load range is used. Historical data is separated into season specific pools. | 75.33(c)(5)<br>75.34(a)(2)<br>75.74(c)(7) |
| If no data in the corresponding or higher load ranges exists in the lookback period, the MPC is used. | 75.33(c)(6)<br>75.34(a)(2)<br>75.74(c)(7) |
| Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a)<br>75.34(a)(2)<br>75.74(c)(7) |

Miscellaneous Season Specific $NO_X$ Data Substitution

| Description | Regulation |
|---|---|
| For Non-QA data blocks that cross quarter boundaries, the two missing data block portions will be handled individually with respect to the quarter they end or start. | Reporting Instructions II(C)(12) |
| For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) |

## $CO_2$ Missing Data Verification Checklist [2]

### Initial $CO_2$ Data Substitution: 75.35(b) [75.31]

| Description | Regulation |
|---|---|
| Prior to 720 QA hours, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.31(b)(1) |
| Prior to 720 QA hours, non-QA data is substituted with the MPC if previous QA data does not exist. | 75.31(b)(2) |
| Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) |

### Standard $CO_2$ Data Substitution: 75.35(d) [75.33]

| Description | Regulation |
|---|---|
| For non-QA data blocks less than or equal to 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.33(b)(1)(i) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(b)(1)(ii)(A) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period. | 75.33(b)(1)(ii)(B) |
| For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.33(b)(2)(i) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the 95$^{th}$ percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(b)(2)(ii)(A) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95$^{th}$ percentile of the lookback period. | 75.33(b)(2)(ii)(B) |
| For non-QA data blocks with an availability greater than or equal to 80.0% and less than 90.0%, non-QA data is substituted with the maximum value in the lookback period. | 75.33(b)(3) |
| For non-QA data blocks with an availability below 80.0%, non-QA data is substituted with a MPC. | 75.33(b)(4) |
| Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a) |

Miscellaneous $CO_2$ Data Substitution

| Description | Regulation |
|---|---|
| For Non-QA data blocks that cross quarter boundaries, the two missing data block portions will be handled individually with respect to the quarter they end or start. | Reporting Instructions II(C)(12) |
| For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) |

2 The CO2 missing data verification mentioned here does not apply to Cricket Valley Energy Center

Missing Data Verification Checklist [3]

Initial Stack Flow Data Substitution: 75.31

| Description | Regulation |
|---|---|
| Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.31(c)(1) |
| Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the next higher available load range if prior data does not exist in the corresponding load range. | 75.31(c)(2) |
| Prior to 2160 QA hours, non-QA data is substituted with the MPC if previous data does not exist in the corresponding or higher load ranges. | 75.31(c)(3) |
| Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) |

Standard Stack Flow Data Substitution: 75.33

| Description | Regulation |
|---|---|
| For non-QA data blocks less than or equal to 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.33(c)(1)(i) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(c)(1)(ii)(A) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period in the corresponding load range. | 75.33(c)(1)(ii)(B) |
| For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.33(c)(2)(i) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the 95$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(c)(2)(ii)(A) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95$^{th}$ percentile of the lookback period in the corresponding load range. | 75.33(c)(2)(ii)(B) |

| | |
|---|---|
| For non-QA data blocks with an availability greater than or equal to 80.0% and less than 90.0%, non-QA data is substituted with the maximum value in the lookback period at the corresponding load range. | 75.33(c)(3) |
| For non-QA data blocks with an availability below 80.0%, non-QA data is substituted with a MPC. | 75.33(c)(4) |
| If no data in the lookback period exists for the corresponding load range, the maximum value at the next higher available load range is used. | 75.33(c)(5) |
| If no data in the corresponding or higher load ranges exists in the lookback period, the MPC is used. | 75.33(c)(6) |
| Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a) |

Miscellaneous Stack Flow Data Substitution

| Description | Regulation |
|---|---|
| For Non-QA data blocks that cross quarter boundaries, the two missing data block portions will be handled individually with respect to the quarter they end or start. | Reporting Instructions II(C)(12) |
| For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) |

3 The stack flow missing data verification mentioned here does not apply to Cricket Valley Energy Center

## TECHNICAL DOCUMENT - DATA SUBSTITUTION - 1 [4]

SO2 Missing Data Verification Checklist [5]

Initial SO2 Data Substitution: 75.31

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | Prior to 720 QA hours, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.31(b)(1) | DS1 1/1/99 |
| | Prior to 720 QA hours, non-QA data is substituted with the MPC if previous QA data does not exist. | 75.31(b)(2) | DS2 1/1/99 |
| | Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) | DS3 12/30/01 |

Standard SO2 Data Substitution: 75.33

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For non-QA data blocks less than or equal to 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.33(b)(1)(i) | DS1 4/20/99 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(b)(1)(ii)(A) | DS1 3/3/99 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period. | 75.33(b)(1)(ii)(B) | DS1 5/31/99 |
| | For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.33(b)(2)(i) | DS1 6/16/99 |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the 95$^{th}$ percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(b)(2)(ii)(A) | DS1 6/14/99 |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95$^{th}$ percentile of the lookback period. | 75.33(b)(2)(ii)(B) | DS1 6/17/99 |
| | For non-QA data blocks with an availability greater than or equal to 80% and less than 90%, non-QA data is substituted with the maximum value in the lookback period. | 75.33(b)(3) | DS1 6/30/99 |



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| | | | |
|---|---|---|---|
| | For non-QA data blocks with an availability below 80%, non-QA data is substituted with a MPC. | 75.33(b)(4) | DS1 7/31/99 |
| | Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a) | DS3 3/31/02 |

Miscellaneous SO2 Data Substitution

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For Non-QA data blocks that cross quarter boundaries, the missing data block ends or starts with the quarter. | Reporting Instructions II(C)(12) | DS3 6/30/03 7/1/03 |
| | For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) | DS3 8/6/03 |

O2 Missing Data Verification Checklist

Initial O2 Data Substitution: 75.31

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | Prior to 720 QA hours, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.36(b) 75.31(b)(1) | DS1 1/1/99 |
| | Prior to 720 QA hours, non-QA data is substituted with the MPC if previous QA data does not exist. | 75.36(b) 75.31(b)(2) | DS2 1/1/99 |
| | Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) | DS3 12/30/01 |

Standard O2 Data Substitution: 75.33

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For non-QA data blocks less than or equal to 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.36(d) 75.33(b)(1)(i) | DS1 4/20/99 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the $10^{th}$ percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.36(d) 75.33(b)(1)(ii)(A) | DS1 3/3/99 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the $10^{th}$ percentile of the lookback period. | 75.36(d) 75.33(b)(1)(ii)(B) | DS1 5/31/99 |
| | For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.36(d) 75.33(b)(2)(i) | DS1 6/16/99 |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the $5^{th}$ percentile of the | 75.36(d) 75.33(b)(2)(ii)(A) | DS1 6/14/99 |



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| | | | |
|---|---|---|---|
| | lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | | |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 5$^{th}$ percentile of the lookback period. | 75.36(d)<br>75.33(b)(2)(ii)(B) | DS1<br>6/17/99 |
| | For non-QA data blocks with an availability greater than or equal to 80% and less than 90%, non-QA data is substituted with the minimum value in the lookback period. | 75.36(d)<br>75.33(b)(3) | DS1<br>6/30/99 |
| | For non-QA data blocks with an availability below 80%, non-QA data is substituted with a MPC. | 75.36(d)<br>75.33(b)(4) | DS1<br>7/31/99 |
| | Substitution routines have a maximum lookback period of 26280 hours. | 75.36(d)<br>75.33(a) | DS3<br>3/31/02 |

Miscellaneous SO2 Data Substitution

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For Non-QA data blocks that cross quarter boundaries, the missing data block ends or starts with the quarter. | Reporting Instructions II(C)(12) | DS3<br>6/30/03<br>7/1/03 |
| | For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) | DS3<br>8/6/03 |

NOx Missing Data Verification Checklist

Initial NOx Data Substitution: 75.31

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.31(c)(1) | DS1<br>1/1/99 |
| | Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the next higher available load range if prior data does not exist in the corresponding load range. | 75.31(c)(2) | DS2<br>4/3/99 |
| | Prior to 2160 QA hours, non-QA data is substituted with the MPC if previous data does not exist in the corresponding or higher load ranges. | 75.31(c)(3) | DS1<br>1/1/99 |
| | Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) | DS3<br>12/30/01 |

4 The dates and data sets for in-house testing of formulas, monitor code logic and general software testing is historical, but is consistent with the operations required by the most recent regulatory requirements.

5 The stack SO2 missing data verification mentioned here does not apply to Cricket Valley Energy Center



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Standard NOx Data Substitution: 75.33

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For non-QA data blocks less than or equal to 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.33(c)(1)(i) | DS1 4/20/99 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(c)(1)(ii)(A) | DS2 1/3/00 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period in the corresponding load range. | 75.33(c)(1)(ii)(B) | DS1 5/31/99 |
| | For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.33(c)(2)(i) | DS1 6/16/99 |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the 95$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(c)(2)(ii)(A) | DS1 6/17/99 |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95$^{th}$ percentile of the lookback period in the corresponding load range. | 75.33(c)(2)(ii)(B) | DS1 6/17/99 |
| | For non-QA data blocks with an availability greater than or equal to 80% and less than 90%, non-QA data is substituted with the maximum value in the lookback period at the corresponding load range. | 75.33(c)(3) | DS1 6/21/99 |
| | For non-QA data blocks with an availability below 80%, non-QA data is substituted with a MPC. | 75.33(c)(4) | DS1 8/3/99 |
| | If no data in the lookback period exists for the corresponding load range, the maximum value at the next higher available load range is used. | 75.33(c)(5) | DS2 1/3/00 |
| | If no data in the corresponding or higher load ranges exists in the lookback period, the MPC is used. | 75.33(c)(6) | DS2 1/3/00 |
| | Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a) | DS3 3/31/02 |



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Miscellaneous NOx Data Substitution

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For Non-QA data blocks that cross quarter boundaries, the missing data block ends or starts with the quarter. | Reporting Instructions II(C)(12) | DS3 6/30/03 7/1/03 |
| | For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) | DS3 8/6/03 |

Appendix D Fuel Flow Rate Missing Data Verification Checklist

Single Fuel Hours, Load Based: Appendix D

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | Non-QA data is substituted with the average of the lookback period at the corresponding load range when only the same fuel was combusted. | App. D 2.4.2.2.1 | DS1 1/24/99 |
| | Non-QA data is substituted with the average of the lookback period at the next higher available load range when only the same fuel was combusted if no data in the corresponding load range exists. | App. D 2.4.2.2.1 | DS2 1/2/00 |
| | Non-QA data is substituted with the a maximum potential flow rate if no data in the lookback period at the corresponding or higher load range when only the same fuel was combusted exists. | App. D 2.4.2.2.1 | DS2 1/1/99 |
| | Substitution routines have a maximum lookback period of 26280 hours. | App. D 2.4.3 | DS3 6/30/03 |

Co-Fired Fuel Hours, Load Based: Appendix D

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | Non-QA data is substituted with the maximum in the lookback period at the corresponding load range when the same fuel is co-fired with another fuel. | App. D 2.4.2.3.1 App. D 2.4.2.3.3 | DS1 1/1/99 |
| | Non-QA data is substituted with the maximum in the lookback period at the next higher available load range when the same fuel is co-fired with another fuel. | App. D 2.4.2.3.1 App. D 2.4.2.3.3 | DS2 1/3/00 |
| | Non-QA data is substituted with a maximum potential flow rate if no data in the lookback period at the corresponding or higher load range when the same fuel is co-fired with another fuel exists. | App. D 2.4.2.3.1 App. D 2.4.2.3.3 | DS1 1/1/99 |
| | Substitution routines have a maximum lookback period of 26280 hours. | App. D 2.4.3 | DS3 6/30/03 |

Note: If Maximum Heat Rate is exceeded, manual adjustment of Fuel Flows is allowed so that reported Heat Rate equals the maximum. (App. D 2.4.2.3.4)

Fuel Specific NOx Missing Data Verification Checklist



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Initial NOx Data Substitution: 75.31

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.31(c)(1) | DS1 1/1/99 |
| | Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the next higher available load range if prior data does not exist in the corresponding load range. | 75.31(c)(2) | DS2 4/3/99 |
| | Prior to 2160 QA hours, non-QA data is substituted with the MPC if previous data does not exist in the corresponding or higher load ranges. | 75.31(c)(3) | DS1 1/1/99 |
| | Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) | DS3 12/30/01 |

Fuel Specific NOx Data Substitution: 75.33

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For non-QA data blocks less than or equal to 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(1)(i)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) | DS1 4/20/99 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(1)(ii)(A)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) | DS1 5/31/99 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period in the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(1)(ii)(B)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) | DS1 5/31/99 |
| | For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(2)(i)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) | DS1 6/16/99 |



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| | | | |
|---|---|---|---|
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the 95$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(2)(ii)(A)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) | DS1<br>6/17/99 |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95$^{th}$ percentile of the lookback period in the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(2)(ii)(B)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) | DS1<br>6/17/99 |
| | For non-QA data blocks with an availability greater than or equal to 80% and less than 90%, non-QA data is substituted with the maximum value in the lookback period at the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(3)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) | DS1<br>6/21/99 |
| | For non-QA data blocks with an availability below 80%, non-QA data is substituted with a fuel specific MPC. | 75.33(c)(4)<br>75.33(c)(8)(iii) | DS1<br>7/31/99 |
| | If no data in the lookback period exists for the corresponding load range, the maximum value at the next higher available load range is used. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(5)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) | DS1<br>7/31/99 |
| | If no data in the corresponding or higher load ranges exists in the lookback period, the fuel specific MPC is used. | 75.33(c)(6)<br>75.33(c)(8)(iii) | DS1<br>1/30/00 |
| | Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a)<br>75.33(c)(8) | DS3<br>3/31/02 |



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Miscellaneous Fuel Specific NOx Data Substitution

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For Non-QA data blocks that cross quarter boundaries, the missing data block ends or starts with the quarter. | Reporting Instructions II(C)(12) | DS3 6/30/03 7/1/03 |
| | For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) | DS3 8/6/03 |

Season Specific NOx Missing Data Verification Checklist

Initial NOx Data Substitution: 75.31

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.31(c)(1) 75.74(c)(7) | DS1 1/1/99 |
| | Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the next higher available load range if prior data does not exist in the corresponding load range. Historical data is separated into season specific pools. | 75.31(c)(2) 75.74(c)(7) | DS2 4/3/99 |
| | Prior to 2160 QA hours, non-QA data is substituted with the MPC if previous data does not exist in the corresponding or higher load ranges. Historical data is separated into season specific pools. | 75.31(c)(3) 75.74(c)(7) | DS1 1/31/99 |
| | Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) | DS3 12/30/01 |

Season Specific NOx Data Substitution: 75.33

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For non-QA data blocks less than or equal to 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(1)(i) 75.34(a)(2) 75.74(c)(7) | DS1 4/20/99 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. Historical data is separated into season specific pools. | 75.33(c)(1)(ii)(A) 75.34(a)(2) 75.74(c)(7) | DS1 5/31/99 |



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| | | | |
|---|---|---|---|
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(1)(ii)(B)<br>75.34(a)(2)<br>75.74(c)(7) | DS1<br>5/31/99 |
| | For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(2)(i)<br>75.34(a)(2)<br>75.74(c)(7) | DS1<br>6/16/99 |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the 95$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. Historical data is separated into season specific pools. | 75.33(c)(2)(ii)(A)<br>75.34(a)(2)<br>75.74(c)(7) | DS1<br>6/17/99 |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95$^{th}$ percentile of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(2)(ii)(B)<br>75.34(a)(2)<br>75.74(c)(7) | DS1<br>6/17/99 |
| | For non-QA data blocks with an availability greater than or equal to 80% and less than 90%, non-QA data is substituted with the maximum value in the lookback period at the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(3)<br>75.34(a)(2)<br>75.74(c)(7) | DS1<br>6/21/99 |
| | For non-QA data blocks with an availability below 80%, non-QA data is substituted with an MPC. | 75.33(c)(4)<br>75.74(c)(7) | DS1<br>7/31/99 |
| | If no data in the lookback period exists for the corresponding load range, the maximum value at the next higher available load range is used. Historical data is separated into season specific pools. | 75.33(c)(5)<br>75.34(a)(2)<br>75.74(c)(7) | DS1<br>7/31/99 |
| | If no data in the corresponding or higher load ranges exists in the lookback period, the MPC is used. | 75.33(c)(6)<br>75.34(a)(2)<br>75.74(c)(7) | DS1<br>1/30/00 |
| | Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a)<br>75.34(a)(2)<br>75.74(c)(7) | DS3<br>3/31/02 |



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Miscellaneous Season Specific NOx Data Substitution

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For Non-QA data blocks that cross quarter boundaries, the missing data block ends or starts with the quarter. | Reporting Instructions II(C)(12) | DS3 6/30/03 7/1/03 |
| | For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) | DS3 8/6/03 |



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# Cricket Valley All Settings

Cricket Valley Energy Center

| Group | Setting | Value | Last changed |
|---|---|---|---|
| **Facility- Fuel Constants** | | | |
| | Nat Gas GCV Btu/scf | 1050 | 1/25/2019 5:19 PM |
| | Fd Factor Gas dscf/mmBtu | 8710 | 1/25/2019 5:19 PM |
| | Fc Factor Gas dscf/mmBtu | 1040 | 1/25/2019 5:19 PM |
| | Gas Density lb/scf | 0.042 | 1/25/2019 5:19 PM |
| **Turbine 2 40CFR75 Settings** | | | |
| | 75-NOx ppm Scale Max | 200 | 1/28/2020 7:27 PM |
| | 75-NOx ppm Scale Exceedance Default | 400 | 1/28/2020 7:27 PM |
| | 75-NOx Bias Factor | 1 | 1/28/2020 7:27 PM |
| **Turbine 2 Emission Factor Settings** [6] | | | |
| | PM10/PM2.5 lb/mmBtu | 0.0005 | 1/28/2020 7:21 PM |
| | VOC lb/mmBtu | 0.0002 | 1/28/2020 7:21 PM |
| | H2SO4 lb/mmBtu | 0.0001 | 1/28/2020 7:21 PM |

6 Emission factors found here are only sample settings used to confirm that software is calculating correctly.

Formula Verification Examples

| | | | |
|---|---|---|---|
| **Unit Name:** | **CRICKET VALLEY ENERGY CENTER** | **Oris Code:** | **57185** |
| **Date/ Time:** | **1/6/2020 HOUR 1500** | **Unit /Stack #** | **U002** |

**Formula** **19-1**
**Parameter** **NOx lb/mmBtu for gas**

| Fd dscf/mmbtu | K units lb/dscf-ppm Nox | NOx ppmv | O2 dry % | **NOx lb/mmBtu** | BAF | **Bias adj. NOx lb/mmBtu** |
|---|---|---|---|---|---|---|
| 8710 | 1.194E-07 | 11.30 | 14.12 | **0.0362** | 1.000 | **0.0362** |

**Formula** **F-20**
**Parameter** **Heat Input - gas**

| CT Total NG hscf/hr | CT Op Time hr | DB Total NG hscf/hr | DB Op Time hr | **Total NG hscf** |
|---|---|---|---|---|
| 12171.4 | 1 | 90.8 | 1.00 | **12262.2** |

| NG GCV Btu/hscf | mmBtu/Btu | CT Heat input mmBtu | DB Heat input mmBtu | **Total Heat input mmBtu** |
|---|---|---|---|---|
| 105000 | 1.00E-06 | 1278.0 | 9.6 | **1287.5** |

**Formula** **F-24A**
**Parameter** **NOx lb/hr** **gas**

| NOx lb/mmBtu | CT Heat input mmBtu/hr | DB Heat input mmBtu/hr | **NOx lb/hr** | BAF | **Bias adj. NOx lb/hr** |
|---|---|---|---|---|---|
| 0.036 | 1278.0 | 9.6 | **46.6** | 1.000 | **46.6** |

**Formula** **G-4**
**Parameter** **CO2 ton/hr** **gas**

| Fc scf/mmbtu | CT HI gas mmBtu/hr | DB HI gas mmBtu/hr | M Wt CO2 g/g-mole | Conversion 1/385 scf CO2/lbmole | Convers lb/ton | **CO2 Ton/hr** |
|---|---|---|---|---|---|---|
| 1040 | 1278.0 | 9.6 | 44 | 2.60E-03 | 2000 | **76.5** |

**Formula** **D-5**
**Parameter** **SO2 lb/hr** **gas**

| CT HI gas mmBtu/hr | DB HI gas mmBtu/hr | SO2 EF lb/mmBtu | **SO2 lb/hr** |
|---|---|---|---|
| 1278.0 | 9.6 | 0.0006 | **0.78** |

# Cricket Valley Energy Center

Dover Plains, NY

## Turbine 2- Daily 40CFR75 Emissions & Operations Report

January 6, 2020

| Hour | O2 % | NOx ppm | NOx lb/mmBtu | Bias Factor | Bias Adj NOx lb/mmBtu | NOx lbs | SO2 lbs | CO2 tons | Gas Flow hscf/hr | Nat Gas GCV Btu/hscf | Heat Input mmBtu/hr | Turbine On-Time | Total Megawatts | Bin Load Range |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 00 | **Down** | **Down** | **Down** | 1.000 | **Down** | **Down** | **Down** | **Down** | **Down** | 105000 | **Down** | 0.00 | **Down** | **Down** |
| 01 | **Down** | **Down** | **Down** | 1.000 | **Down** | **Down** | **Down** | **Down** | **Down** | 105000 | **Down** | 0.00 | **Down** | **Down** |
| 02 | **Down** | **Down** | **Down** | 1.000 | **Down** | **Down** | **Down** | **Down** | **Down** | 105000 | **Down** | 0.00 | **Down** | **Down** |
| 03 | **Down** | **Down** | **Down** | 1.000 | **Down** | **Down** | **Down** | **Down** | **Down** | 105000 | **Down** | 0.00 | **Down** | **Down** |
| 04 | **Down** | **Down** | **Down** | 1.000 | **Down** | **Down** | **Down** | **Down** | **Down** | 105000 | **Down** | 0.00 | **Down** | **Down** |
| 05 | **Down** | **Down** | **Down** | 1.000 | **Down** | **Down** | **Down** | **Down** | **Down** | 105000 | **Down** | 0.00 | **Down** | **Down** |
| 06 | **DCal** | **DCal** | **DCal** | 1.000 | **DCal** | **DCal** | **Down** | **Down** | **Down** | 105000 | **Down** | 0.00 | **Down** | **Down** |
| 07 | 17.31 | 36.10 | 0.2186 | 1.000 | 0.2186 | 34.4 | 0.10 | 9.4 | 6000.0 | 105000 | 630.0 | 0.25 | 9.7 | 1 |
| 08 | **Down** | **Down** | **Down** | 1.000 | **Down** | **Down** | 0.01 | 0.3 | 85.7 | 105000 | 9.0 | 0.63 | **Down** | **Down** |
| 09 | **Down** | **Down** | **Down** | 1.000 | **Down** | **Down** | 0.01 | 0.5 | 79.8 | 105000 | 8.4 | 0.97 | **Down** | **Down** |
| 10 | **Down** | **Down** | **Down** | 1.000 | **Down** | **Down** | 0.00 | 0.5 | 78.7 | 105000 | 8.3 | 0.93 | **Down** | **Down** |
| 11 | **Down** | **Down** | **Down** | 1.000 | **Down** | **Down** | 0.00 | 0.4 | 78.7 | 105000 | 8.3 | 0.75 | **Down** | **Down** |
| 12 | **Down** | **Down** | **Down** | 1.000 | **Down** | **Down** | 0.00 | 0.2 | 72.2 | 105000 | 7.6 | 0.42 | **Down** | **Down** |
| 13 | 16.98 | 40.40 | 0.2240 | 1.000 | 0.2240 | 154.2 | 0.41 | 40.9 | 6764.9 | 105000 | 710.3 | 0.98 | 19.0 | 1 |
| 14 | 14.10 | 10.75 | 0.0344 | 1.000 | 0.0344 | 44.0 | 0.77 | 76.0 | 12174.1 | 105000 | 1278.3 | 1.00 | 82.0 | 5 |
| 15 | 14.12 | 11.30 | 0.0362 | 1.000 | 0.0362 | 46.6 | 0.78 | 76.5 | 12262.2 | 105000 | 1287.5 | 1.00 | 82.4 | 5 |
| 16 | 13.28 | 14.09 | 0.0402 | 1.000 | 0.0402 | 83.6 | 1.25 | 123.6 | 19806.3 | 105000 | 2079.7 | 1.00 | 189.7 | 10 |
| 17 | 13.02 | 15.66 | 0.0432 | 1.000 | 0.0432 | 106.2 | 1.48 | 146.0 | 23402.0 | 105000 | 2457.2 | 1.00 | 235.4 | 10 |
| 18 | 13.02 | 15.31 | 0.0422 | 1.000 | 0.0422 | 103.7 | 1.48 | 146.0 | 23400.7 | 105000 | 2457.1 | 1.00 | 235.8 | 10 |
| 19 | 13.02 | 14.40 | 0.0397 | 1.000 | 0.0397 | 97.6 | 1.48 | 146.1 | 23404.3 | 105000 | 2457.5 | 1.00 | 236.4 | 10 |
| 20 | 13.02 | 13.98 | 0.0386 | 1.000 | 0.0386 | 94.8 | 1.48 | 146.0 | 23394.9 | 105000 | 2456.5 | 1.00 | 236.6 | 10 |
| 21 | 13.29 | 14.37 | 0.0410 | 1.000 | 0.0410 | 36.3 | 0.54 | 52.7 | 19538.2 | 105000 | 2051.5 | 1.00 | 186.8 | 10 |
| 22 | **Down** | **Down** | **Down** | 1.000 | **Down** | **Down** | 0.01 | 0.5 | 83.8 | 105000 | 8.8 | 1.00 | **Down** | **Down** |
| 23 | **Down** | **Down** | **Down** | 1.000 | **Down** | **Down** | 0.01 | 0.5 | 85.1 | 105000 | 8.9 | 1.00 | **Down** | **Down** |

Formula Verification Examples

**Unit Name:** **CRICKET VALLEY ENERGY CENTER** **Oris Code:** **57185**
**Date/ Time:** **1/6/2020 HOUR 1500** **Unit /Stack #** **U002**

**Formula** **19-1**
**Parameter** **NOx lb/mmBtu for gas**

| Fd dscf/mmbtu | K units lb/dscf-ppm Nox | NOx ppmv | O2 dry % | **NOx lb/mmBtu** |
|---|---|---|---|---|
| 8710 | 1.194E-07 | 11.30 | 14.12 | **0.0362** |

**Formula** **F-20**
**Parameter** **Heat Input - gas**

| CT Total NG hscf/hr | CT Op Time hr | DB Total NG hscf/hr | DB Op Time hr | Total PNG hscf | PNG GCV Btu/hscf | mmBtu/Btu | **Total Heat input mmBtu** |
|---|---|---|---|---|---|---|---|
| 12171.4 | 1 | 90.8 | 1.00 | 12262.2 | 105000 | 1.00E-06 | **1287.5** |

| CT Total PNG klb/hr | PNG Density klb/hscf | CT Op Time hr | Total CT PNG hscf | PNG GCV Btu/hscf | mmBtu/Btu | **CT Heat input mmBtu** |
|---|---|---|---|---|---|---|
| 51.1 | 0.0042 | 1 | 12171.4 | 105000 | 1.00E-06 | **1278.0** |

| DB Total PNG kscf/hr | conversion hscf/kscf | DB Op Time hr | Total DB PNG hscf | PNG GCV Btu/hscf | mmBtu/Btu | **DB Heat input mmBtu** |
|---|---|---|---|---|---|---|
| 9.1 | 10.0 | 1 | 90.8 | 105000 | 1.00E-06 | **9.5** |

**Parameter** **NOx ppm@15% O2**

| NOx ppm | O2 dry % | **NOx ppm corr** |
|---|---|---|
| 11.30 | 14.12 | **9.83** |

**Parameter** **NOx lb/hr** **gas**

| NOx lb/mmBtu | CT Heat input mmBtu/hr | DB Heat input mmBtu/hr | **NOx lb/hr** |
|---|---|---|---|
| 0.0362 | 1278.0 | 9.5 | **46.61** |

**Parameter** **CO ppm@15% O2**

**Formula** **19-1**
**Parameter** **CO lb/mmBtu for gas**

| Fc scf CO2/mmbtu | K ppmvd) | CO MW lb/lb-mol | CO ppmv | O2 dry % | **CO lb/mmBtu** |
|---|---|---|---|---|---|
| 8710 | 2.59E-09 | 28 | 9.42 | 14.12 | **0.0183** |

| CO ppm | O2 dry % | **CO ppm corr** |
|---|---|---|
| 9.42 | 14.12 | **8.20** |

**Parameter** **CO lb/hr** **gas**

| CO lb/mmBtu | CT Heat input mmBtu/hr | DB Heat input mmBtu/hr | **CO lb/hr** |
|---|---|---|---|
| 0.0183 | 1278.0 | 9.5 | **23.56** |

**Formula** **19-1**
**Parameter** **NH3 lb/mmBtu for gas**

| Fc scf CO2/mmbtu | K ppmvd) | NH3 MW lb/lb-mol | NH3 ppmv | O2 dry % | **NH3 lb/mmBtu** |
|---|---|---|---|---|---|
| 8710 | 2.59E-09 | 17.03 | 0.36 | 14.12 | **0.0004** |

| NH3 ppm | O2 dry % | **NH3 ppm corr** |
|---|---|---|
| 0.36 | 14.12 | **0.31** |

**Parameter** **CO lb/hr** **gas**

| NH3 lb/mmBtu | CT Heat input mmBtu/hr | DB Heat input mmBtu/hr | **NH3 lb/hr** |
|---|---|---|---|
| 0.0004 | 1278.0 | 9.5 | **0.51** |

**Parameter** **PM10/PM2.5 lb/hr** **gas**

| CT HI gas mmBtu/hr | CT PM10/PM2.5 EF lb/mmBtu | **CT PM10/PM2.5 lb/hr** | DB HI gas mmBtu/hr | DB PM10/PM2.5 EF lb/mmBtu | **DB PM10/PM2.5 lb/hr** | **Total PM10/PM2.5 lb/hr** |
|---|---|---|---|---|---|---|
| 1278.0 | 0.0005 | **0.64** | 9.5 | 0.0005 | **0.00** | **0.64** |

**Parameter** **VOC lb/hr** **gas**

| CT HI gas mmBtu/hr | VOC EF lb/mmBtu | **CT VOC lb/hr** | DB HI gas mmBtu/hr | VOC EF lb/mmBtu | **DB VOC lb/hr** | **Total VOC lb/hr** |
|---|---|---|---|---|---|---|
| 1278.0 | 0.0002 | **0.26** | 9.5 | 0.0002 | **0.00** | **0.26** |

**Parameter** **H2SO4 lb/hr** **gas**

| CT HI gas mmBtu/hr | H2SO4 EF lb/mmBtu | **CT H2SO4 lb/hr** | DB HI gas mmBtu/hr | H2SO4 EF lb/mmBtu | **DB H2SO4 lb/hr** | **Total H2SO4 lb/hr** |
|---|---|---|---|---|---|---|
| 1278.0 | 0.0001 | **0.13** | 9.5 | 0.0001 | **0.00** | **0.13** |

# Cricket Valley Energy Center

Dover Plains, NY

## Turbine 2- Daily Emissions Report

January 6, 2020

**Hourly Emission Limits**

Normal Ops NOx ppm @15% O2 - 2 | Normal Ops CO ppm @15% O2 - 2 | NH3 Slip ppm @15% O2 - 5

**30-Day Rolling Emission Limits**

**NOx ppm @15% O2 - <Null>**

| Hour | O2 % | NOx ppm | NOx ppm @15% O2 | NOx lb/mmBtu | NOx lbs | CO ppm | CO ppm @15% O2 | CO lb/mmBtu | CO lbs | NH3 Slip ppm | NH3 Slip ppm @15% O2 | NH3 Slip lb/mmBtu | NH3 Slip lbs | Process Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 00 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 01 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 02 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 03 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 04 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 05 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 06 | **DCal** | **DCal** | **DCal** | **DCal** | **DCal** | **DCal** | **DCal** | **DCal** | **DCal** | **DCal** | **DCal** | **DCal** | **DCal** | Down |
| 07 | 17.31 | 36.10 | 59.33 | 0.2186 | 34.43 | 418.68 | 688.08 | 1.5396 | 242.49 | 0.00 | 0.00 | 0.0000 | 0.00 | Hot SU |
| 08 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 09 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 10 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 11 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 12 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 13 | 16.98 | 40.40 | 60.81 | 0.2240 | 154.24 | 285.01 | 428.97 | 0.9598 | 660.91 | **OOR** | **OOR** | **OOR** | **OOR** | Hot SU |
| 14 | 14.10 | 10.75 | 9.33 | 0.0344 | 43.97 | 10.65 | 9.24 | 0.0207 | 26.46 | 0.36 | 0.31 | 0.0004 | 0.51 | Hot SU |
| 15 | 14.12 | 11.30 | 9.83 | 0.0362 | 46.61 | 9.42 | 8.20 | 0.0183 | 23.56 | 0.36 | 0.31 | 0.0004 | 0.51 | Hot SU |
| 16 | 13.28 | 14.09 | 10.91 | 0.0402 | 83.60 | 2.10 | 1.63 | 0.0036 | 7.48 | 0.36 | 0.28 | 0.0004 | 0.83 | Hot SU |
| 17 | 13.02 | 15.66 | 11.73 | 0.0432 | 106.15 | 0.93 | 0.70 | 0.0016 | 3.93 | 0.41 | 0.31 | 0.0004 | 0.98 | Hot SU |
| 18 | 13.02 | 15.31 | 11.46 | 0.0422 | 103.69 | 0.84 | 0.63 | 0.0014 | 3.44 | 0.38 | 0.28 | 0.0004 | 0.98 | Hot SU |
| 19 | 13.02 | 14.40 | 10.78 | 0.0397 | 97.57 | 0.85 | 0.64 | 0.0014 | 3.44 | 0.36 | 0.27 | 0.0004 | 0.98 | Hot SU |
| 20 | 13.02 | 13.98 | 10.47 | 0.0386 | 94.81 | 0.97 | 0.73 | 0.0016 | 3.93 | 0.37 | 0.28 | 0.0004 | 0.98 | Hot SU |
| 21 | 13.29 | 14.37 | 11.14 | 0.0410 | 36.35 | 60.05 | 46.56 | 0.1042 | 92.37 | 0.48 | 0.37 | 0.0005 | 0.44 | Hot SU |
| 22 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 23 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| Average | 14.12 | 18.64 | 20.58 | 0.0758 | 80.14 | 78.95 | 118.54 | 0.2652 | 106.80 | 0.34 | 0.27 | 0.0004 | 0.69 | |
| Total | | | | | 801.42 | | | | 1068.01 | | | | 6.21 | |
| 30-Day | | | **NSD** | | | | | | | | | | | |

# Cricket Valley Energy Center

Dover Plains, NY

## Turbine 2- Daily Operations & EMS Inlet Emissions Report

January 6, 2020

| Hour | SCR NOx ppm | SCR O2 % | CO Cat CO ppm | CT Nat Gas Flow klb | CT Heat Input mmBtu | DB Nat Gas Flow kscf | DB Heat Input mmBtu | Total Heat Input mmBtu | GT Megawatt Hours | ST Megawatt Hours | Process Status |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 00 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 01 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 02 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 03 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 04 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 05 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 06 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | Down |
| 07 | **Cal** | **Cal** | 358.15 | 6.3 | 157.5 | **Down** | **Down** | 157.5 | 2.4 | **Down** | Hot SU |
| 08 | **Down** | **Down** | **DCal** | **Down** | **Down** | 5.4 | 5.7 | 5.7 | **Down** | **Down** | Down |
| 09 | **Down** | **Down** | **Down** | **Down** | **Down** | 7.8 | 8.1 | 8.1 | **Down** | **Down** | Down |
| 10 | **Down** | **Down** | **Down** | **Down** | **Down** | 7.3 | 7.7 | 7.7 | **Down** | **Down** | Down |
| 11 | **Down** | **Down** | **Down** | **Down** | **Down** | 5.9 | 6.2 | 6.2 | **Down** | **Down** | Down |
| 12 | **Down** | **Down** | **Down** | **Down** | **Down** | 3.0 | 3.2 | 3.2 | **Down** | **Down** | Down |
| 13 | 38.37 | 16.74 | 267.50 | 27.3 | 680.9 | 7.3 | 7.6 | 688.5 | 18.6 | **Down** | Hot SU |
| 14 | 10.32 | 13.96 | 11.78 | 50.8 | 1269.0 | 8.8 | 9.3 | 1278.3 | 82.0 | **Down** | Hot SU |
| 15 | 10.74 | 13.98 | 10.75 | 51.1 | 1278.0 | 9.1 | 9.5 | 1287.5 | 82.4 | **Down** | Hot SU |
| 16 | 13.65 | 13.11 | 1.41 | 82.8 | 2070.0 | 9.2 | 9.7 | 2079.7 | 189.7 | **Down** | Hot SU |
| 17 | 15.27 | 12.84 | 0.00 | 97.9 | 2448.0 | 8.8 | 9.2 | 2457.2 | 235.4 | **Down** | Hot SU |
| 18 | 14.88 | 12.85 | 0.00 | 97.9 | 2448.0 | 8.6 | 9.1 | 2457.1 | 235.8 | **Down** | Hot SU |
| 19 | 14.00 | 12.85 | 0.00 | 97.9 | 2448.0 | 9.0 | 9.5 | 2457.5 | 236.4 | **Down** | Hot SU |
| 20 | 13.52 | 12.85 | 0.00 | 97.9 | 2448.0 | 7.9 | 8.3 | 2456.3 | 236.6 | **Down** | Hot SU |
| 21 | 15.15 | 13.25 | 79.60 | 35.1 | 878.5 | 7.5 | 7.9 | 886.4 | 186.8 | **Down** | Hot SU |
| 22 | **Down** | **Down** | **Down** | **Down** | **Down** | 8.4 | 8.8 | 8.8 | **Down** | **Down** | Down |
| 23 | **Down** | **Down** | **Down** | **Down** | **Down** | 8.5 | 8.9 | 8.9 | **Down** | **Down** | Down |
| Average | 16.21 | 13.60 | 72.92 | 64.5 | 1612.6 | 7.7 | 8.0 | 956.2 | 150.6 | **Down** | |
| Total | | | | 645.0 | 16125.9 | 122.5 | 128.7 | 16254.6 | 1506.1 | **Down** | |

# Cricket Valley Energy Center

Dover Plains, NY

## Turbine 2- Daily Mass Emissions Report

January 6, 2020

| Hour | NOx lbs | CO lbs | PM10/PM2.5 lbs | NH3 Slip lbs | VOC lbs | H2SO4 lbs | Turbine On-Time |
|---|---|---|---|---|---|---|---|
| 00 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| 01 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| 02 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| 03 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| 04 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| 05 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| 06 | **DCal** | **DCal** | **Down** | **DCal** | **Down** | **Down** | 0.00 |
| 07 | 34.43 | 242.49 | 0.08 | 0.00 | 0.03 | 0.02 | 0.25 |
| 08 | **Down** | **Down** | 0.00 | **Down** | 0.00 | 0.00 | 0.63 |
| 09 | **Down** | **Down** | 0.00 | **Down** | 0.00 | 0.00 | 0.97 |
| 10 | **Down** | **Down** | 0.00 | **Down** | 0.00 | 0.00 | 0.93 |
| 11 | **Down** | **Down** | 0.00 | **Down** | 0.00 | 0.00 | 0.75 |
| 12 | **Down** | **Down** | 0.00 | **Down** | 0.00 | 0.00 | 0.42 |
| 13 | 154.24 | 660.91 | 0.34 | **OOR** | 0.14 | 0.07 | 0.98 |
| 14 | 43.97 | 26.46 | 0.63 | 0.51 | 0.25 | 0.13 | 1.00 |
| 15 | 46.61 | 23.56 | 0.64 | 0.51 | 0.26 | 0.13 | 1.00 |
| 16 | 83.60 | 7.48 | 1.04 | 0.83 | 0.41 | 0.21 | 1.00 |
| 17 | 106.15 | 3.93 | 1.22 | 0.98 | 0.49 | 0.24 | 1.00 |
| 18 | 103.69 | 3.44 | 1.22 | 0.98 | 0.49 | 0.24 | 1.00 |
| 19 | 97.57 | 3.44 | 1.22 | 0.98 | 0.49 | 0.24 | 1.00 |
| 20 | 94.81 | 3.93 | 1.22 | 0.98 | 0.49 | 0.24 | 1.00 |
| 21 | 36.35 | 92.37 | 0.44 | 0.44 | 0.18 | 0.09 | 1.00 |
| 22 | **Down** | **Down** | 0.00 | **Down** | 0.00 | 0.00 | 1.00 |
| 23 | **Down** | **Down** | 0.00 | **Down** | 0.00 | 0.00 | 1.00 |
| Average | 80.14 | 106.80 | 0.47 | 0.69 | 0.19 | 0.09 | |
| Total | 801.42 | 1068.01 | 8.05 | 6.21 | 3.23 | 1.61 | 14.93 |

Formula Verification Examples

| | | | |
|---|---|---|---|
| **Unit Name:** | **144.5CRICKET VALLEY ENERGY CENTER** | **Oris Code:** | **57185** |
| **Date/ Time:** | **01/06/2020 HOUR 1500** | **Unit /Stack #** | **U002** |

**Formula** **Conversion**
**Parameter** **CO2 metric tons-PNG**

| CO2 (Eq. G-4) tons | conversion factor tons/metric ton | **CO2 metric tons** | GWP Factor | **CO2e (CO2) metric tons** |
|---|---|---|---|---|
| 76.5 | 1.1023 | **69.40** | 1 | **69.40** |

**Formula** **C-10**
**Parameter** **CH4 metric tons-PNG**

| Total CT HI mmBtu | Total DB HI mmBtu | CH4 EF kgCH4/mmBtu | Conversion metric ton/kg | **CH4 metric tons** | GWP Factor | **CO2e (CH4) metric tons** |
|---|---|---|---|---|---|---|
| 1278.0 | 9.5 | 0.001 | 0.001 | **0.00129** | 25 | **0.03225** |

**Formula** **C-10**
**Parameter** **N2O metric tons-PNG**

| Total CT HI mmBtu | Total DB HI mmBtu | N2O EF kgN2O/mmBtu | Conversion metric ton/kg | **N2O metric tons** | GWP Factor | **CO2e (N2O) metric tons** |
|---|---|---|---|---|---|---|
| 1278.0 | 9.5 | 0.0001 | 0.001 | **0.00013** | 298 | **0.03874** |

**Parameter** **CO2e metric tons-PNG**

| CO2e (CO2) metric tons | CO2e (CH4) metric tons | CO2e(N2O) metric tons | **CO2e (total) metric tons** |
|---|---|---|---|
| 69.4 | 0.03225 | 0.03874 | **69.47099** |

# Cricket Valley Energy Center

Dover Plains, NY

## Turbine 2- Daily GHG Emissions Report

January 6, 2020

| Hour | Nat Gas GCV Btu/scf | Heat Input mmBtu | CO2 tons | CO2 Metric Tons | N2O Metric Tons | CH4 Metric Tons | N2O (CO2e) Metric Tons | CH4 (CO2e) Metric Tons | Total CO2e Metric Tons | Turbine On-Time |
|---|---|---|---|---|---|---|---|---|---|---|
| 00 | 1050.0 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| 01 | 1050.0 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| 02 | 1050.0 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| 03 | 1050.0 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| 04 | 1050.0 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| 05 | 1050.0 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| 06 | 1050.0 | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | **Down** | 0.00 |
| 07 | 1050.0 | 157.5 | 9.4 | 8.53 | 0.00002 | 0.00016 | 0.00596 | 0.00400 | 8.53996 | 0.25 |
| 08 | 1050.0 | 5.7 | 0.3 | 0.27 | 0.00000 | 0.00001 | 0.00000 | 0.00025 | 0.27025 | 0.63 |
| 09 | 1050.0 | 8.1 | 0.5 | 0.45 | 0.00000 | 0.00001 | 0.00000 | 0.00025 | 0.45025 | 0.97 |
| 10 | 1050.0 | 7.7 | 0.5 | 0.45 | 0.00000 | 0.00001 | 0.00000 | 0.00025 | 0.45025 | 0.93 |
| 11 | 1050.0 | 6.2 | 0.4 | 0.36 | 0.00000 | 0.00001 | 0.00000 | 0.00025 | 0.36025 | 0.75 |
| 12 | 1050.0 | 3.2 | 0.2 | 0.18 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.18000 | 0.42 |
| 13 | 1050.0 | 688.5 | 40.9 | 37.10 | 0.00007 | 0.00069 | 0.02086 | 0.01725 | 37.13811 | 0.98 |
| 14 | 1050.0 | 1278.3 | 76.0 | 68.95 | 0.00013 | 0.00128 | 0.03874 | 0.03200 | 69.02074 | 1.00 |
| 15 | 1050.0 | 1287.5 | 76.5 | 69.40 | 0.00013 | 0.00129 | 0.03874 | 0.03225 | 69.47099 | 1.00 |
| 16 | 1050.0 | 2079.7 | 123.6 | 112.13 | 0.00021 | 0.00208 | 0.06258 | 0.05200 | 112.24458 | 1.00 |
| 17 | 1050.0 | 2457.2 | 146.0 | 132.45 | 0.00024 | 0.00246 | 0.07152 | 0.06150 | 132.58302 | 1.00 |
| 18 | 1050.0 | 2457.1 | 146.0 | 132.45 | 0.00024 | 0.00246 | 0.07152 | 0.06150 | 132.58302 | 1.00 |
| 19 | 1050.0 | 2457.5 | 146.1 | 132.54 | 0.00024 | 0.00246 | 0.07152 | 0.06150 | 132.67302 | 1.00 |
| 20 | 1050.0 | 2456.3 | 146.0 | 132.45 | 0.00024 | 0.00246 | 0.07152 | 0.06150 | 132.58302 | 1.00 |
| 21 | 1050.0 | 886.4 | 52.7 | 47.81 | 0.00009 | 0.00089 | 0.02682 | 0.02225 | 47.85907 | 1.00 |
| 22 | 1050.0 | 8.8 | 0.5 | 0.45 | 0.00000 | 0.00001 | 0.00000 | 0.00025 | 0.45025 | 1.00 |
| 23 | 1050.0 | 8.9 | 0.5 | 0.45 | 0.00000 | 0.00001 | 0.00000 | 0.00025 | 0.45025 | 1.00 |
| Average<br>Total | 1050.0 | 16254.6 | 966.1 | 876.42 | 0.00161 | 0.01629 | 0.47978 | 0.40725 | 877.30703 | 14.93 |

# APPENDIX 6

# RELATIVE ACCURACY TEST AUDIT REPORT

# RELATIVE ACCURACY TEST AUDIT
# FOR THE
# GENERAL ELECTRIC, 7F.05,
# UNIT #U-00002 CEMS
# PREPARED FOR
# CRICKET VALLEY ENERGY CENTER LLC
# AT THE
# CRICKET VALLEY ENERGY CENTER
# DOVER PLAINS, NEW YORK
# FEBRUARY 25, 2020

## Report Date: March 11, 2020



**Corporate Headquarters**
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012

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Humble, TX 77338
Shreveport, LA 71115
Miami, FL 33101
Pittsburgh, PA 15205

# RELATIVE ACCURACY TEST AUDIT
# FOR THE
# GENERAL ELECTRIC, 7F.05,
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# PREPARED FOR
# CRICKET VALLEY ENERGY CENTER LLC
# AT THE
# CRICKET VALLEY ENERGY CENTER
# DOVER PLAINS, NEW YORK
# FEBRUARY 25, 2020

Prepared and Reviewed by:

Logan K. Tsotsoros

Logan Tsotsoros
AHU Support Staff

Gavin Dolsky

Gavin Dolsky, QI
Staff Engineer – Report Manager

I, _____

Matt McBride, QSTI
Sr. Project Manager
certify that this testing was conducted and
this report was created in conformance
with the requirements of ASTM D7036

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**Relative Accuracy Test Audit**
**General Electric, 7F.05, Unit #U-00002 CEMS**
**Cricket Valley Energy Center LLC**
**Cricket Valley Energy Center**
**Dover Plains, New York**
**February 25, 2020**

## 1.0 INTRODUCTION

Air Hygiene International, Inc. (Air Hygiene) has completed the Relative Accuracy Test Audit (RATA) for nitrogen oxides (NOx), carbon monoxide (CO), ammonia ($NH_3$), and oxygen ($O_2$) from the exhaust of the General Electric, 7F.05, Unit #U-00002 for Cricket Valley Energy Center LLC at the Cricket Valley Energy Center in Dover Plains, New York. This report details the background, results, process description, and the sampling/analysis methodology of the stack sampling survey conducted on February 25, 2020.

The accumulated data from the RATA provides the figures for evaluating the acceptability of the operation of the on-site continuous emission monitoring system (CEMS) for the monitoring of NOx, CO, $NH_3$, and $O_2$ from the General Electric, 7F.05, Unit #U-00002 for Cricket Valley Energy Center LLC at the Cricket Valley Energy Center in Dover Plains, New York.

## 1.1 TEST PURPOSE AND OBJECTIVES

The purpose of the test was to perform the initial certification RATA on the CEMS that serves the General Electric, 7F.05, Unit #U-00002 for Cricket Valley Energy Center LLC at the Cricket Valley Energy Center in Dover Plains, New York. Reference method (RM) testing followed the Code of Federal Regulations (CFR), Title 40 (40 CFR), Part 60 (40 CFR 60), Appendix A, Methods 1, 3A, 7E, 10, 19; and 40 CFR 63, Appendix A, Method 320. RM values are compared with the on-site CEMS to document performance as required in the 40 CFR 60, Appendix B, Performance Specifications (PS) and 40 CFR 75 Appendix A and B. All relative accuracies were established on-site and were governed by the following sets of rules:

In accordance with 40 CFR 60, Appendix B, PS 2, Section 13.2, the NOx and $NH_3$ RATA results are acceptable if the relative accuracy (RA) does not exceed 20.0 percent when average emissions during the test are greater than 50 percent of the emission standard or alternative relative accuracy (ARA) does not exceed 10.0 percent when the average emissions during the test are less than 50 percent of the emission standard. Part 60 further requires that the unit be operating at greater than 50 percent of normal load.

In accordance with 40 CFR 75, Appendix A, Section 3.3.2(a) and (b), the NOx RATA results are acceptable if the relative accuracy (RA) does not exceed 10.0 percent or if during the RATA the average NOx emission rate is less than or equal to 0.200 lb/MMBtu and the average difference between the CEMS and reference method (RM) values does not exceed 0.020 lb/MMBtu. Passing this set of criteria requires the CEMS to be retested after no more than two operating quarters. Alternatively, in accordance with 40 CFR 75, Appendix B, Section 2.3.1.2(a) and (f), and Appendix B, Figure 2, the NOx RATA results are acceptable if the RA does not exceed 7.5 percent or if during the RATA the average NOx emission rate is less than or equal to 0.200 lb/MMBtu and the average difference between the CEMS and RM values does not exceed 0.015 lb/MMBtu. Passing this set of criteria allows the CEMS to be retested after four operating quarters or at least within eight calendar quarters.

In accordance with 40 CFR 60, Appendix B, PS 3, Section 13.2, the $O_2$ RATA results are acceptable if the relative accuracy (RA) does not exceed 20.0 percent or if the average difference between the CEMS and reference method (RM) values does not exceed plus or minus 1.0 percent of the measured value.

In accordance with 40 CFR 60, Appendix B, PS 4 and 4A, Sections 13.2 of each, the CO relative accuracy (RA) test results are acceptable if the RA does not exceed 10.0 percent, if the average difference between the CEMS and reference method (RM) values plus the 2.5 percent confidence coefficient (2.5%CC) does not exceed 5.0 parts per million (ppm), or if the alternative relative accuracy (ARA) does not exceed 5.0 percent. Part 60 further requires that the unit be operating at greater than 50 percent of normal load.

## 1.2 SUMMARY OF TEST PROGRAM

The following list details pertinent information related to this specific project:

1.2.1 Participating Organizations
- New York State Department of Environmental Conservation (NYSDEC)
- Cricket Valley Energy Center LLC
- Custom Instrumentation Services Corporation (CiSCO)
- Bechtel
- Air Hygiene

1.2.2 Industry
- Electric Utility / Electric Services

1.2.3 Air Permit and Federal Requirements
- Permit Number: 3-1326-00275/00009
- DEC ID: 3132600275
- 40 CFR 60, Appendix B, Performance Specifications (PS)
- 40 CFR 75, Appendix A and B

1.2.4 Plant Location
- Cricket Valley Energy Center in Dover Plains, New York
  - GPS Coordinates [Latitude 41.67616, Longitude -73.576914]
  - 2241 Route NY 22, Dover Plains, New York 12522
  - Federal Registry System / Facility Registry Service (FRS) No. – 110043333372
  - Source Classification Code (SCC) – 20100209

1.2.5 Equipment Tested
- General Electric, 7F.05, Unit #U-00002
  - NOx Analyzer (TAPI T200M, Serial No. 1013)
  - $NH_3$ Analyzer (TAPI T200M, Serial No. 1048)
  - CO Analyzer (TAPI T300M, Serial No. 519)
  - $O_2$ Analyzer (TAPI T803, Serial No. 129)

1.2.6 Emission Points
- Exhaust from the General Electric, 7F.05, Unit #U-00002
- For all gases, one sample point in the exhaust duct from the General Electric, 7F.05, Unit #U-00002, determined after conducting a stratification test

1.2.7 Emission Parameters Measured
- NOx
- CO
- $NH_3$
- $O_2$

1.2.8 Date of Emission Test
- February 25, 2020

1.2.9 Federal Certifications

- Stack Testing Accreditation Council AETB Certificate No. 3796.02
- International Standard ISO/IEC 17025:2005 Certificate No. 3796.01

## 1.3 KEY PERSONNEL

| | | |
|---|---|---|
| Cricket Valley Energy Center LLC: | Marc Duquette (mduquette@cricketvalley.com) | 617-320-5219 |
| Bechtel: | Ron Swanson (reswanson@bechtel.com) | 571-262-0198 |
| CiSCO: | Reginald Williams (rwilliams@ciscocems.com) | 720-419-0177 |
| Air Hygiene: | Matt McBride (mmcbride@airhygiene.com) | 918-307-8865 |
| Air Hygiene: | Swanson Bierman | 918-307-8865 |
| Air Hygiene: | Rob White | 918-307-8865 |

## 2.0 SUMMARY OF TEST RESULTS

Results from the sampling conducted on Cricket Valley Energy Center LLC's General Electric, 7F.05, Unit #U-00002 located at the Cricket Valley Energy Center on February 25, 2020 are summarized in the following table and relate only to the items tested.

**TABLE 2.1**
**SUMMARY OF GENERAL ELECTRIC, 7F.05, UNIT #U-00002 RATA RESULTS**

| Pollutant | Units | Criteria | | | Results | Passed / Test Frequency |
|---|---|---|---|---|---|---|
| | | CFR | Specification / Section | Standard | | |
| NOx | ppmvd@15%$O_2$ | Part 60 | Appendix B, Performance Specification 2, Section 13.2 | RA ≤ 20%, or ARA ≤ 10% | RA = 7.84% | YES / ANNUAL |
| NOx | lb/hr | Part 60 | Appendix B, Performance Specification 2, Section 13.2 | RA ≤ 20%, or ARA ≤ 10% | RA = 7.32% | YES / ANNUAL |
| NOx | lb/MMBtu | Part 75 | Appendix A, Section 3.3.2(a),(b)<br><br>Appendix B, Section 2.3.1.2(a),(f), Figure 2 | RA ≤ 10%, or if lb/MMBtu ≤ 0.200, d ≤ ±0.020 lb/MMBtu<br><br>Annual Incentive RA ≤ 7.5%, or if lb/MMBtu ≤ 0.2, d ≤ ±0.015 lb/MMBtu | RA = 7.88%<br>RM = 0.01 lb/MMBtu<br>d = 0.000 lb/MMBtu<br>BAF=1.000 | YES / ANNUAL |
| $O_2$ | %vd | Part 60 | Appendix B, Performance Specification 3, Section 13.2 | RA ≤ 20%, or d ≤ ±1.0% | RA = 1.70%<br>d = 0.2 % | YES / ANNUAL |
| CO | ppmvd@15%$O_2$ | Part 60 | Appendix B, Performance Specification 4, 4A, from all Section 13.2 | RA ≤ 10%, or d + 2.5% CC ≤ ±5 ppmv, or ARA ≤ 5% | RA = 87.96%<br>\|d\|+2.5%CC = 0.1 ppm | YES / ANNUAL |
| CO | lb/hr | Part 60 | Appendix B, Performance Specification 4, 4A Section 13.2 | RA ≤ 10%, or d + 2.5% CC ≤ ±5 lb/hr, or ARA ≤ 5% | RA = 98.88%<br>\|d\|+2.5%CC = 0.1 ppm (\|d\|+2.5%CC = 0.7 lb/hr) | YES / ANNUAL |
| $NH_3$ | ppmvd@15%$O_2$ | Assumed Part 60 | Appendix B, Performance Specification 2, Section 13.2 | RA ≤ 20%, or ARA ≤ 10% | ARA = 4.38% | YES / ANNUAL |
| $NH_3$ | lb/hr | Part 60 | Appendix B, Performance Specification 2, Section 13.2 | RA ≤ 20%, or ARA ≤ 10% | ARA = 6.50% | YES / ANNUAL |
| Load | MW | Part 60 | Appendix B, Performance Specifications | > 50% max load | 354.2 | WITHIN TOLERANCE |
| Load | MW | Part 75 | Appendix A and B | normal load range | 354.2 | WITHIN TOLERANCE |

Notes: RA = relative accuracy, ARA = alternative relative accuracy, RM = reference method value, d = difference between RM and CEMS value, CC = confidence coefficient, v = velocity, BAF = bias adjustment factor

The RATA passed for all pollutants (NOx, CO, $NH_3$, and $O_2$) in all units (ppm@15%$O_2$, lb/hr, lb/MMBtu, and %) under all 40 CFR 60 and 40 CFR 75 criteria.

Specifically, NOx in units of ppm@15%$O_2$ and lb/hr, passed 40 CFR 60 criteria with an RA less than 20 percent. NOx in units of lb/MMBtu passed the 40 CFR 75 alternative annual incentive criteria with an emissions rate of less than 0.200 lb/MMBtu and a difference between the RM and CEMS analyzers of less than 0.015 lb/MMBtu. Also the Bias Adjustment Factor test resulted in an adjustment factor equal to 1.0 (no adjustment required). $O_2$ in units of % passed the 40 CFR 60 criteria with an RA less than 20 percent. CO in units of ppm@15%$O_2$ and lb/hr passed the 40 CFR 60 alternative criteria with a concentration difference between the RM and CEMS analyzers plus the confidence coefficient of less than 5 ppm and 5 lb/hr respectively. $NH_3$ in units of ppm@15%$O_2$ and lb/hr passed the 40 CFR 60 criteria with an RA less than 20 percent.

Unit load was within the 40 CFR 60 required criteria of greater than 50 percent of the maximum load and also fell within the normal load criteria as defined by the plants Quality Control and Monitoring Plan which defined the upper and lower boundary on the unit and the normal and secondary normal load ranges.

The results of all measured pollutant emissions were below the required limits. All testing was performed without any real or apparent errors. All testing was conducted according to the approved testing protocol.

# 3.0 SOURCE OPERATION

## 3.1 PROCESS DESCRIPTION

Cricket Valley Energy Center LLC (CVEC) owns and operates the Cricket Valley Energy Center located at 2241 ST RTE 22 in Dover Plains, New York. Located on the Cricket Valley Energy Center are three General Electric (GE) 7F.05 Combustion Turbine Generators (CTGs), designated as U-00001, U-00002, and U-0003, and each unit is equipped with one heat recovery steam generator (HRSG) with supplemental duct firing. Each unit is rated at 381 megawatts (MW). The nominal MW per unit as per the NYSDEC Permit ID 3-1326-00275/00009 is identified as 333 MW.

A single, dedicated dry extraction based continuous emissions monitoring system (CEMS) is installed on each unit. The CEMS configurations include nitrogen oxide (NOx) analyzers, ammonia ($NH_3$) analyzers, carbon monoxide (CO) analyzers, diluent gas oxygen ($O_2$) analyzers, and data acquisition and handling systems (DAHS).

## 3.2 SAMPLING LOCATION

The CTG stack is vertical, circular, and measures 19 feet (ft) (228 inches) in diameter at the test ports which are approximately 265.8 ft above grade level with an exit elevation of approximately 282.5 ft above grade level. The test ports are located approximately 70.8 ft (850 inches) downstream and approximately 16.7 ft (200.4 inches) upstream from the nearest disturbances. Air Hygiene has field verified the measurable dimensions. Non-field verified dimensions are provided by Cricket Valley Energy Center LLC. All exhaust samples for gaseous emissions were continuously drawn from the exhaust system at the sample ports from a single point determined after conducting a stratification test. During the stratification test three points were traversed from each of the four ports. The probe was allowed to remain at a point for two times the system response time.

# 4.0 SAMPLING AND ANALYTICAL PROCEDURES

## 4.1 TEST METHODS

The emission test on the General Electric, 7F.05, Unit #U-00002 at the Cricket Valley Energy Center was performed following United States Environmental Protection Agency (EPA) methods described by the Code of Federal Regulations (CFR). Table 4.1 outlines the specific methods performed on February 25, 2020.

**TABLE 4.1**
**SUMMARY OF SAMPLING METHODS**

| Pollutant or Parameter | Sampling Method | Analysis Method |
|---|---|---|
| Sample Point Location | EPA Method 1 | Equal Area Method |
| Oxygen | EPA Method 3A | Paramagnetic Cell |
| Nitrogen Oxides | EPA Method 7E | Chemiluminescent Analyzer |
| Carbon Monoxide | EPA Method 10 | Nondispersive Infrared Analyzer |
| Stack Flow Rate | EPA Method 19 | Dry Oxygen F Factor |
| Ammonia and Moisture | EPA Method 320 | Fourier Transform Infrared |

## 4.2 INSTRUMENT CONFIGURATION AND OPERATIONS FOR GAS ANALYSIS

The sampling and analysis procedures used during these tests conform with the methods outlined in the Code of Federal Regulations (CFR), Title 40, Part 60, Appendix A, Methods 1, 3A, 7E, 10, 19; and 40 CFR 63, Appendix A, Method 320.

Figure 4.1 depicts the sample system used for the real-time gas analyzer tests. The gas sample was continuously pulled through the probe and transported, via heat-traced Teflon® tubing, to a heated head pump and into the FTIR then to a stainless steel minimum-contact condenser designed to dry the sample. Transportation of the sample, through Teflon® tubing, continued into the sample manifold within the mobile laboratory / portable analyzer via a stainless steel/Teflon® diaphragm pump. From the manifold, the sample was partitioned to the real-time analyzers through rotameters that controlled the flow rate of the sample.

Figure 4.1 shows that the sample system was also equipped with a separate path through which a calibration gas could be delivered to the probe and back through the entire sampling system. This allowed for convenient performance of system bias checks as required by the testing methods.

All instruments were housed in a climate controlled, trailer-mounted mobile laboratory. Gaseous calibration standards were provided in aluminum cylinders with the concentrations certified by the vendor. EPA Protocol No. 1 was used to determine the cylinder concentrations where applicable (i.e. NOx calibration gases).

Table 4.2 provides a description of the analyzers used for the instrument portion of the tests. All data from the continuous monitoring instruments were recorded on a Logic Beach Portable Data Logging System which retrieves calibrated electronic data from each instrument every one second and reports an average of the collected data every 30 seconds. For target compounds measured with the Fourier transform infrared (FTIR) spectrometer, interferograms consisting of 28 co-added scans were recorded continuously during the test periods, and provided approximately 30-second average concentrations. Spectral data was analyzed by the MKS MG2000 software.

Eleven test runs of approximately 21 minutes each were conducted on the General Electric, 7F.05, Unit #U-00002 for NOx, CO, $NH_3$, and $O_2$.

The stack gas analysis for $O_2$ concentrations was performed in accordance with procedures set forth in EPA Method 3A. The $O_2$ analyzer uses a paramagnetic cell detector.

EPA Method 7E was used to determine concentrations of NOx. A chemiluminescent analyzer was used to determine the nitrogen oxides concentration in the gas stream. A $NO_2$ in nitrogen certified gas cylinder was used to verify at least a 90 percent $NO_2$ conversion on the day of the test.

CO emission concentrations were quantified in accordance with procedures set forth in EPA Method 10. A continuous nondispersive infrared (NDIR) analyzer was used for this purpose.

An MKS Instruments - MultiGas™ Fourier Transform Infrared (FTIR) spectrometer, or equivalent, was used for $NH_3$ and $H_2O$ analysis per EPA Method 320. The FTIR spectrometer spectral resolution was 0.5 $cm^{-1}$. The system employed a silicon carbide infrared source at 1200ºC, a helium neon reference laser, beam splitters, potassium bromide (KBr) cell window, front-surface optical transfer mirrors, and multi-pass absorption cells. MCT detectors were used and cooled with liquid nitrogen in order to maintain a constant temperature of 77 Kelvin. The approximately 5.11-meter multi-pass path cells incorporated aspheric, aberration-correcting mirrors to increase the optical throughput and the detection sensitivity. Transducers and thermocouples were connected directly to the insulated sample cells that provide the pressure and temperatures of the sample streams. During testing, the temperature of the absorption cells was set at 191ºC. Elevated temperature prevented gas condensation within the cell and minimized compound adhesion to the cell walls and mirrors. The volume of the absorption cell was 0.5 liters, so at a sample gas flow rate of 4.0 liters per minute, the sample gas in the cell is refreshed approximately four times each minute. Interferograms consisting of 28 co-added scans were recorded continuously during the test periods, and provided approximately 30-second average concentrations.

**TABLE 4.2**
**ANALYTICAL INSTRUMENTATION**

| Parameter | Manufacturer and Model | Range | Sensitivity | Detection Principle |
|---|---|---|---|---|
| NOx | THERMO 42 series | User may select up to 5,000 ppm | 0.1 ppm | Thermal reduction of $NO_2$ to NO. Chemiluminescence of reaction of NO with $O_3$. Detection by PMT. Inherently linear for listed ranges. |
| CO | THERMO 48 series | User may select up to 10,000 ppm | 0.1 ppm | Infrared absorption, gas filter correlation detector, microprocessor based linearization. |
| $NH_3$ and $H_2O$ | MKS 2030 | User may select from multiple ranges | 0.1 ppm | Fourier Transform Infrared – FTIR |
| $O_2$ | SERVOMEX 1440 | 0-25% | 0.1% | Paramagnetic cell, inherently linear. |

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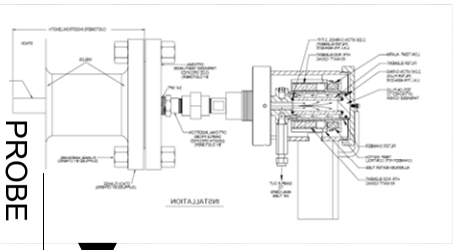
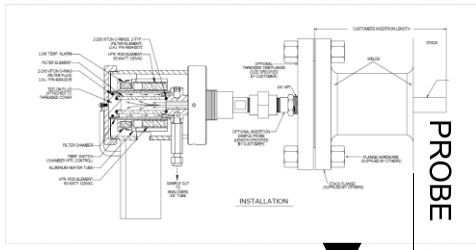



LEGEND
- Heated Teflon Tubing (pre-conditioned sample)
- Unheated Teflon Tubing (conditioned sample)
- Diluted Calibration Gas
- Calibration Gas
- Electronic Input/Output




PROCESS INLET OR 2ND STACK

dual line heated sample umbilical

STACK EXHAUST

TEST TRAILER EXTERIOR

TEST TRAILER INTERIOR

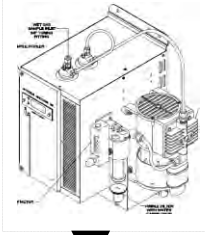
DATA RECORDER



COMPUTER



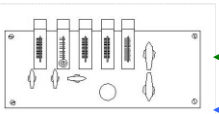
GAS CONDITIONER



dual line heated sample umbilical

MOBILE SECONDARY ANALYZERS

MANIFOLD





GAS DILUTER

THC, VOC



$O_2$, $CO_2$, NOx, CO, $SO_2$



HOT/WET ANALYZERS
COLD/DRY ANALYZERS

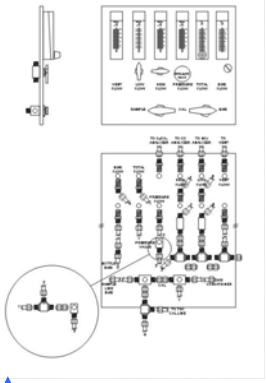


COLD/DRY ANALYZERS HOT/WET



$O_2$, $CO_2$, NOx, CO, $SO_2$

FLOW CONTROL MANIFOLD





FTIR

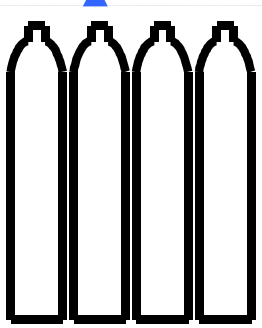
THC, VOC



CONDITIONER

VENT

CALIBRATION/ BIAS GAS BOTTLES



VENT

FIXED PRIMARY ANALYZERS

Shown fully equipped. Some labs may not contain these features and others may contain additional features specific to certain scopes.

AIR HYGIENE

Figure 4.1
EMISSIONS TESTING LAB

1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
www.airhygiene.com
(888) 461-8778

# APPENDIX A

# TEST RESULTS AND CALCULATIONS

**TABLE A.1:**
**EMISSIONS TESTING SCHEDULE**

| Unit | Load | Test Type | Run | Date | Start | Stop | Time Sync |
|---|---|---|---|---|---|---|---|
| U-00002 | Base Load | Stratification Test | 1 | 02/25/20 | 6:14:22 | 7:12:22 | DAHS |
| U-00002 | Base Load | Gas RATA | 1 | 02/25/20 | 11:53:28 | 12:13:58 | DAHS |
| U-00002 | Base Load | Gas RATA | 2 | 02/25/20 | 12:32:28 | 12:52:58 | DAHS |
| U-00002 | Base Load | Gas RATA | 3 | 02/25/20 | 13:07:28 | 13:27:58 | DAHS |
| U-00002 | Base Load | Gas RATA | 4 | 02/25/20 | 13:36:28 | 13:56:58 | DAHS |
| U-00002 | Base Load | Gas RATA | 5 | 02/25/20 | 14:15:28 | 14:35:58 | DAHS |
| U-00002 | Base Load | Gas RATA | 6 | 02/25/20 | 14:46:28 | 15:06:58 | DAHS |
| U-00002 | Base Load | Gas RATA | 7 | 02/25/20 | 15:17:28 | 15:37:58 | DAHS |
| U-00002 | Base Load | Gas RATA | 8 | 02/25/20 | 15:47:28 | 16:07:58 | DAHS |
| U-00002 | Base Load | Gas RATA | 9 | 02/25/20 | 16:20:28 | 16:40:58 | DAHS |
| U-00002 | Base Load | Gas RATA | 10 | 02/25/20 | 16:51:28 | 17:11:58 | DAHS |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**$O_2$ RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (%vd) | (%vd) | (diff) | ($diff^2$) |
| 1 | 11:53 - 12:13 | NO | 346.6 | 13.36 | 13.04 | | |
| 2 | 12:32 - 12:52 | YES | 345.9 | 13.25 | 13.06 | 0.19 | 0.04 |
| 3 | 13:07 - 13:27 | YES | 345.4 | 13.29 | 13.07 | 0.22 | 0.05 |
| 4 | 13:36 - 13:56 | NO | 345.6 | 11.85 | 13.07 | | |
| 5 | 14:15 - 14:35 | YES | 345.4 | 13.30 | 13.06 | 0.24 | 0.06 |
| 6 | 14:46 - 15:06 | YES | 345.5 | 13.25 | 13.07 | 0.18 | 0.03 |
| 7 | 15:17 - 15:37 | YES | 345.3 | 13.27 | 13.06 | 0.21 | 0.04 |
| 8 | 15:47 - 16:07 | YES | 345.8 | 13.25 | 13.05 | 0.20 | 0.04 |
| 9 | 16:20 - 16:40 | YES | 373.2 | 12.43 | 12.23 | 0.20 | 0.04 |
| 10 | 16:51 - 17:11 | YES | 378.1 | 12.29 | 12.11 | 0.18 | 0.03 |
| 11 | 17:57 - 18:17 | YES | 379.9 | 12.31 | 12.08 | 0.23 | 0.05 |
| 12 | | NO | | | | | |
| | **Total** | | **3204.5** | **116.63** | **114.79** | **1.84** | **0.38** |
| | **Average** | | **356.1** | **12.96** | **12.75** | **0.20** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.02 |
| T-value | 2.306 |
| Confidence Coefficient | 0.02 |

| | |
|---|---|
| **Average Difference =** | **0.2** |
| **Relative Accuracy =** | **1.7%** |

Part 60, Appendix B, Performance Specification 3,
13.2 CEMS Relative Accuracy Performance Specification. The RA of the CEMS must be no greater than 20 percent of the mean value of the reference method (RM) data. The results are also acceptable if the absolute value of the difference between the mean RM value and the mean CEMS value is less than or equal to 1.0 percent O2 (or CO2).

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**NOx RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (ppmvd@15%$O_2$) | (ppmvd@15%$O_2$) | (diff) | (diff$^2$) |
| 1 | 11:53 - 12:13 | YES | 346.6 | 1.58 | 1.70 | -0.12 | 0.02 |
| 2 | 12:32 - 12:52 | YES | 345.9 | 1.54 | 1.65 | -0.11 | 0.01 |
| 3 | 13:07 - 13:27 | NO | 345.4 | 1.55 | 1.45 | | |
| 4 | 13:36 - 13:56 | YES | 345.6 | 1.58 | 1.68 | -0.10 | 0.01 |
| 5 | 14:15 - 14:35 | YES | 345.4 | 1.50 | 1.57 | -0.07 | 0.00 |
| 6 | 14:46 - 15:06 | NO | 345.5 | 1.42 | 1.50 | | |
| 7 | 15:17 - 15:37 | YES | 345.3 | 1.51 | 1.60 | -0.09 | 0.01 |
| 8 | 15:47 - 16:07 | YES | 345.8 | 1.58 | 1.71 | -0.13 | 0.02 |
| 9 | 16:20 - 16:40 | YES | 373.2 | 1.65 | 1.77 | -0.12 | 0.02 |
| 10 | 16:51 - 17:11 | YES | 378.1 | 1.58 | 1.70 | -0.12 | 0.01 |
| 11 | 17:57 - 18:17 | YES | 379.9 | 1.59 | 1.70 | -0.11 | 0.01 |
| 12 | | NO | | | | | |
| | **Total** | | **3205.8** | **14.10** | **15.08** | **-0.98** | **0.11** |
| | **Average** | | **356.2** | **1.57** | **1.68** | **-0.11** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.02 |
| T-value | 2.306 |
| Confidence Coefficient | 0.01 |

**Relative Accuracy = 7.8%**

Part 60, Appendix B, Performance Specification 2,
8.4.1 RA Test Period. Conduct the RA test according to the procedure given in Sections 8.4.2 through 8.4.6 while the affected facility is operating at more than 50 percent of normal load, or as specified in an applicable subpart.
13.2 Relative Accuracy Performance Specification. The RA of the CEMS must be no greater than 20 percent when RM is used in the denominator of Eq. 2-6 (average emissions during test are greater than 50 percent of the emission standard) or 10 percent when the applicable emission standard (permit limit) is used in the denominator of Eq. 2-6 (average emissions during test are less than 50 percent of the emission standard).
Eq. 2.6 RA=([|d|+|CC|]*100)/RM

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**CO RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (ppmvd@15%$O_2$) | (ppmvd@15%$O_2$) | (diff) | (diff$^2$) |
| 1 | 11:53 - 12:13 | YES | 346.6 | 0.11 | 0.28 | -0.17 | 0.03 |
| 2 | 12:32 - 12:52 | NO | 345.9 | 0.35 | 0.09 | | |
| 3 | 13:07 - 13:27 | YES | 345.4 | 0.13 | 0.17 | -0.04 | 0.00 |
| 4 | 13:36 - 13:56 | NO | 345.6 | 0.51 | 0.34 | | |
| 5 | 14:15 - 14:35 | YES | 345.4 | 0.13 | 0.26 | -0.13 | 0.02 |
| 6 | 14:46 - 15:06 | YES | 345.5 | 0.16 | 0.07 | 0.09 | 0.01 |
| 7 | 15:17 - 15:37 | YES | 345.3 | 0.14 | 0.07 | 0.07 | 0.00 |
| 8 | 15:47 - 16:07 | YES | 345.8 | 0.14 | 0.04 | 0.10 | 0.01 |
| 9 | 16:20 - 16:40 | YES | 373.2 | 0.11 | 0.00 | 0.11 | 0.01 |
| 10 | 16:51 - 17:11 | YES | 378.1 | 0.11 | 0.00 | 0.11 | 0.01 |
| 11 | 17:57 - 18:17 | YES | 379.9 | 0.12 | 0.02 | 0.10 | 0.01 |
| 12 | | NO | | | | | |
| | **Total** | | **3205.2** | **1.15** | **0.91** | **0.24** | **0.11** |
| | **Average** | | **356.1** | **0.13** | **0.10** | **0.03** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.11 |
| T-value | 2.306 |
| Confidence Coefficient | 0.09 |

| | |
|---|---|
| **Relative Accuracy =** | **88.0%** |
| **\|d (difference in ppm)\| + CC =** | **0.11** |

Part 60, Appendix B, Performance Specification 4,
1.2.1 This specification is for evaluating the acceptability of carbon monoxide (CO) continuous emission monitoring systems (CEMS) at the time of installation or soon after and whenever specified in an applicable subpart of the regulations. This specification was developed primarily for CEMS having span values of 1,000 ppmv CO.
13.2 Relative Accuracy. The RA of the CEMS must be no greater than 10 percent when the average RM value is used to calculate RA or 5 percent when the applicable emission standard (permit limit) is used to calculate RA.

Part 60, Appendix B, Performance Specification 4A,
1.2.1 This specification is for evaluating the acceptability of carbon monoxide (CO) continuous emission monitoring systems (CEMS) at the time of installation or soon after and whenever specified in an applicable subpart of the regulations. This specification was developed primarily for CEMS that comply with low emission standards (less than 200 ppmv).
13.2 Relative Accuracy. The RA of the CEMS must be no greater than 10 percent when the average RM value is used to calculate RA, 5 percent when the applicable emission standard (permit limit) is used to calculate RA, or within 5 ppmv when the RA is calculated as the absolute average difference between the RM and CEMS plus the 2.5 percent confidence coefficient.

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**$NH_3$ RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (ppmvd@15%$O_2$) | (ppmvd@15%$O_2$) | (diff) | (diff$^2$) |
| 1 | 11:53 - 12:13 | YES | 346.6 | 0.66 | 0.71 | -0.05 | 0.00 |
| 2 | 12:32 - 12:52 | YES | 345.9 | 0.85 | 0.73 | 0.12 | 0.02 |
| 3 | 13:07 - 13:27 | YES | 345.4 | 0.87 | 1.02 | -0.15 | 0.02 |
| 4 | 13:36 - 13:56 | YES | 345.6 | 0.68 | 0.74 | -0.06 | 0.00 |
| 5 | 14:15 - 14:35 | YES | 345.4 | 0.87 | 0.83 | 0.04 | 0.00 |
| 6 | 14:46 - 15:06 | YES | 345.5 | 0.66 | 0.87 | -0.21 | 0.04 |
| 7 | 15:17 - 15:37 | YES | 345.3 | 0.66 | 0.81 | -0.15 | 0.02 |
| 8 | 15:47 - 16:07 | YES | 345.8 | 0.61 | 0.94 | -0.33 | 0.11 |
| 9 | 16:20 - 16:40 | NO | 373.2 | 0.48 | 0.82 | | |
| 10 | 16:51 - 17:11 | NO | 378.1 | 0.60 | 0.99 | | |
| 11 | 17:57 - 18:17 | YES | 379.9 | 1.53 | 1.00 | 0.53 | 0.28 |
| 12 | | NO | | | | | |
| | **Total** | | **3145.4** | **7.40** | **7.65** | **-0.25** | **0.50** |
| | **Average** | | **349.5** | **0.82** | **0.85** | **-0.03** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.25 |
| T-value | 2.306 |
| Confidence Coefficient | 0.19 |

| | |
|---|---|
| **Relative Accuracy =** | **26.6%** |
| **Applicable Standard =** | **5.00** |
| **Alternative Relative Accuracy =** | **4.4%** |

Part 60, Appendix B, Performance Specification 2,
8.4.1 RA Test Period. Conduct the RA test according to the procedure given in Sections 8.4.2 through 8.4.6 while the affected facility is operating at more than 50 percent of normal load, or as specified in an applicable subpart.
13.2 Relative Accuracy Performance Specification. The RA of the CEMS must be no greater than 20 percent when RM is used in the denominator of Eq. 2-6 (average emissions during test are greater than 50 percent of the emission standard) or 10 percent when the applicable emission standard (permit limit) is used in the denominator of Eq. 2-6 (average emissions during test are less than 50 percent of the emission standard).
Eq. 2.6 RA=([|d|+|CC|]*100)/RM

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**NOx RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (lb/hr) | (lb/hr) | (diff) | ($diff^2$) |
| 1 | 11:53 - 12:13 | YES | 346.6 | 14.14 | 15.13 | -0.99 | 0.97 |
| 2 | 12:32 - 12:52 | YES | 345.9 | 13.77 | 14.65 | -0.88 | 0.78 |
| 3 | 13:07 - 13:27 | NO | 345.4 | 13.85 | 12.89 | | |
| 4 | 13:36 - 13:56 | YES | 345.6 | 14.11 | 14.90 | -0.79 | 0.62 |
| 5 | 14:15 - 14:35 | YES | 345.4 | 13.41 | 13.95 | -0.54 | 0.30 |
| 6 | 14:46 - 15:06 | NO | 345.5 | 12.65 | 13.27 | | |
| 7 | 15:17 - 15:37 | YES | 345.3 | 13.45 | 14.13 | -0.68 | 0.47 |
| 8 | 15:47 - 16:07 | YES | 345.8 | 14.15 | 15.18 | -1.03 | 1.05 |
| 9 | 16:20 - 16:40 | YES | 373.2 | 16.10 | 17.22 | -1.12 | 1.26 |
| 10 | 16:51 - 17:11 | YES | 378.1 | 15.67 | 16.80 | -1.13 | 1.28 |
| 11 | 17:57 - 18:17 | YES | 379.9 | 15.73 | 16.73 | -1.00 | 1.01 |
| 12 | | NO | | | | | |
| | **Total** | | **3205.8** | **130.52** | **138.69** | **-8.17** | **7.74** |
| | **Average** | | **356.2** | **14.50** | **15.41** | **-0.91** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.20 |
| T-value | 2.306 |
| Confidence Coefficient | 0.15 |

**Relative Accuracy = 7.3%**

Part 60, Appendix B, Performance Specification 2,
8.4.1 RA Test Period. Conduct the RA test according to the procedure given in Sections 8.4.2 through 8.4.6 while the affected facility is operating at more than 50 percent of normal load, or as specified in an applicable subpart.
13.2 Relative Accuracy Performance Specification. The RA of the CEMS must be no greater than 20 percent when RM is used in the denominator of Eq. 2-6 (average emissions during test are greater than 50 percent of the emission standard) or 10 percent when the applicable emission standard (permit limit) is used in the denominator of Eq. 2-6 (average emissions during test are less than 50 percent of the emission standard).
Eq. 2.6 RA=([|d|+|CC|]*100)/RM

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**CO RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (lb/hr) | (lb/hr) | (diff) | ($diff^2$) |
| 1 | 11:53 - 12:13 | YES | 346.6 | 0.58 | 1.15 | -0.57 | 0.32 |
| 2 | 12:32 - 12:52 | NO | 345.9 | 1.93 | 0.38 | | |
| 3 | 13:07 - 13:27 | YES | 345.4 | 0.69 | 0.91 | -0.22 | 0.05 |
| 4 | 13:36 - 13:56 | NO | 345.6 | 2.76 | 0.26 | | |
| 5 | 14:15 - 14:35 | YES | 345.4 | 0.72 | 0.20 | 0.52 | 0.27 |
| 6 | 14:46 - 15:06 | YES | 345.5 | 0.89 | 0.37 | 0.52 | 0.28 |
| 7 | 15:17 - 15:37 | YES | 345.3 | 0.74 | 0.31 | 0.43 | 0.19 |
| 8 | 15:47 - 16:07 | YES | 345.8 | 0.77 | 0.21 | 0.56 | 0.31 |
| 9 | 16:20 - 16:40 | YES | 373.2 | 0.64 | 0.00 | 0.64 | 0.41 |
| 10 | 16:51 - 17:11 | YES | 378.1 | 0.68 | 0.00 | 0.68 | 0.47 |
| 11 | 17:57 - 18:17 | YES | 379.9 | 0.71 | 0.01 | 0.70 | 0.49 |
| 12 | | NO | | | | | |
| | **Total** | | **3205.2** | **6.43** | **3.16** | **3.27** | **2.78** |
| | **Average** | | **356.1** | **0.71** | **0.35** | **0.36** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.45 |
| T-value | 2.306 |
| Confidence Coefficient | 0.34 |

| | |
|---|---|
| **Relative Accuracy =** | **98.9%** |
| **\|d (difference in lb/hr)\| + CC =** | **0.71** |

Part 60, Appendix B, Performance Specification 4,
1.2.1 This specification is for evaluating the acceptability of carbon monoxide (CO) continuous emission monitoring systems (CEMS) at the time of installation or soon after and whenever specified in an applicable subpart of the regulations. This specification was developed primarily for CEMS having span values of 1,000 ppmv CO.
13.2 Relative Accuracy. The RA of the CEMS must be no greater than 10 percent when the average RM value is used to calculate RA or 5 percent when the applicable emission standard (permit limit) is used to calculate RA.

Part 60, Appendix B, Performance Specification 4A,
1.2.1 This specification is for evaluating the acceptability of carbon monoxide (CO) continuous emission monitoring systems (CEMS) at the time of installation or soon after and whenever specified in an applicable subpart of the regulations. This specification was developed primarily for CEMS that comply with low emission standards (less than 200 ppmv).
13.2 Relative Accuracy. The RA of the CEMS must be no greater than 10 percent when the average RM value is used to calculate RA, 5 percent when the applicable emission standard (permit limit) is used to calculate RA, or within 5 ppmv when the RA is calculated as the absolute average difference between the RM and CEMS plus the 2.5 percent confidence coefficient.

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**$NH_3$ RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (lb/hr) | (lb/hr) | (diff) | ($diff^2$) |
| 1 | 11:53 - 12:13 | YES | 346.6 | 2.20 | 2.40 | -0.20 | 0.04 |
| 2 | 12:32 - 12:52 | YES | 345.9 | 2.83 | 2.44 | 0.39 | 0.15 |
| 3 | 13:07 - 13:27 | YES | 345.4 | 2.88 | 3.38 | -0.50 | 0.25 |
| 4 | 13:36 - 13:56 | YES | 345.6 | 2.26 | 2.46 | -0.20 | 0.04 |
| 5 | 14:15 - 14:35 | YES | 345.4 | 2.87 | 2.71 | 0.16 | 0.02 |
| 6 | 14:46 - 15:06 | YES | 345.5 | 2.19 | 2.87 | -0.68 | 0.46 |
| 7 | 15:17 - 15:37 | YES | 345.3 | 2.17 | 2.64 | -0.47 | 0.22 |
| 8 | 15:47 - 16:07 | YES | 345.8 | 2.01 | 2.39 | -0.38 | 0.14 |
| 9 | 16:20 - 16:40 | NO | 373.2 | 1.73 | 2.91 | | |
| 10 | 16:51 - 17:11 | NO | 378.1 | 2.20 | 3.59 | | |
| 11 | 17:57 - 18:17 | YES | 379.9 | 5.62 | 3.60 | 2.02 | 4.10 |
| 12 | | NO | | | | | |
| | **Total** | | **3145.4** | **25.03** | **24.89** | **0.14** | **5.42** |
| | **Average** | | **349.5** | **2.78** | **2.77** | **0.02** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.82 |
| T-value | 2.306 |
| Confidence Coefficient | 0.63 |

| | |
|---|---|
| **Relative Accuracy =** | **23.3%** |
| **Applicable Standard* =** | **9.98** |
| **Alternative Relative Accuracy =** | **6.5%** |

* Value calculated using the Applicable Standard of 5 ppm@15%$O_2$ and the average stack flow and $O_2$ concentration for the first three runs.

$$NH_3\ {}^{lb}/_{hr} = \frac{(20.9-15)*C_{adj}*Q_s*MW}{(20.9-\%O_2)*10^6*G} = \frac{(20.9-15)*5*58{,}140{,}133*17.03}{(20.9-13.3)*10^6*385.23} = 9.98$$

Part 60, Appendix B, Performance Specification 2,
8.4.1 RA Test Period. Conduct the RA test according to the procedure given in Sections 8.4.2 through 8.4.6 while the affected facility is operating at more than 50 percent of normal load, or as specified in an applicable subpart.
13.2 Relative Accuracy Performance Specification. The RA of the CEMS must be no greater than 20 percent when RM is used in the denominator of Eq. 2-6 (average emissions during test are greater than 50 percent of the emission standard) or 10 percent when the applicable emission standard (permit limit) is used in the denominator of Eq. 2-6 (average emissions during test are less than 50 percent of the emission standard).
Eq. 2.6 RA=([|d|+|CC|]*100)/RM

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**NOx RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (lb/MMBtu) | (lb/MMBtu) | (diff) | ($diff^2$) |
| 1 | 11:53 - 12:13 | YES | 346.6 | 0.0058 | 0.0062 | -0.0004 | 0.0000 |
| 2 | 12:32 - 12:52 | YES | 345.9 | 0.0057 | 0.0061 | -0.0004 | 0.0000 |
| 3 | 13:07 - 13:27 | NO | 345.4 | 0.0057 | 0.0053 | | |
| 4 | 13:36 - 13:56 | YES | 345.6 | 0.0058 | 0.0062 | -0.0004 | 0.0000 |
| 5 | 14:15 - 14:35 | YES | 345.4 | 0.0055 | 0.0058 | -0.0003 | 0.0000 |
| 6 | 14:46 - 15:06 | NO | 345.5 | 0.0052 | 0.0055 | | |
| 7 | 15:17 - 15:37 | YES | 345.3 | 0.0056 | 0.0059 | -0.0003 | 0.0000 |
| 8 | 15:47 - 16:07 | YES | 345.8 | 0.0058 | 0.0063 | -0.0005 | 0.0000 |
| 9 | 16:20 - 16:40 | YES | 373.2 | 0.0061 | 0.0065 | -0.0004 | 0.0000 |
| 10 | 16:51 - 17:11 | YES | 378.1 | 0.0058 | 0.0063 | -0.0005 | 0.0000 |
| 11 | 17:57 - 18:17 | YES | 379.9 | 0.0058 | 0.0062 | -0.0004 | 0.0000 |
| 12 | | NO | | | | | |
| | **Total** | | **3205.8** | **0.0519** | **0.0555** | **-0.0036** | **0.0000** |
| | **Average** | | **356.2** | **0.0058** | **0.0062** | **-0.0004** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.0001 |
| T-value | 2.306 |
| Confidence Coefficient | 0.0001 |

**Relative Accuracy = 7.88%**

If the mean difference is less than or equal to the absolute value of the confidence coefficient, then the Bias Test passes and the bias adjustment factor is not applicable.

| | |
|---|---|
| Mean Difference = | -0.0004 |
| Confidence Coefficient = | 0.0001 |

BAF = 1 + (abs. value mean difference/avg. CEMS reading)

| | |
|---|---|
| Average CEMS Reading = | 0.0062 |
| **BAF =** | **1.000** |

Part 75, Appendix A,
3.3.2 Relative Accuracy for NOX-Diluent Continuous Emission Monitoring Systems
(a) The relative accuracy for NOX-diluent continuous emission monitoring systems shall not exceed 10.0 percent.
(b) For affected units where the average of the reference method measurements of NOX emission rate (this means lb/MMBtu) during the relative accuracy test audit is less than or equal to 0.200 lb/mmBtu, the difference between the mean value of the continuous emission monitoring system measurements and the reference method mean value shall not exceed ±0.020 lb/mmBtu, wherever the relative accuracy specification of 10.0 percent is not achieved.

7.6.5 Bias Adjustment
(b) For single-load RATAs of SO2 pollutant concentration monitors, NOX concentration monitoring systems, and NOX-diluent monitoring systems and for the single-load flow RATAs required or allowed under section 6.5.2 of this appendix and sections 2.3.1.3(b) and 2.3.1.3(c) of Appendix B to this part, the appropriate BAF is determined directly from the RATA results at normal load, using Equation A-12. Notwithstanding, when a NOX concentration CEMS or an SO2 CEMS or a NOX-diluent CEMS installed on a low-emitting affected unit (i.e., average SO2 or NOX concentration during the RATA &IE; 250 ppm or average NOX emission rate &IE; 0.200 lb/mmBtu) meets the normal 10.0 percent relative accuracy specification (as calculated using Equation A-10) or the alternate relative accuracy specification in section 3.3 of this appendix for low-emitters, but fails the bias test, the BAF may either be determined using Equation A-12, or a default BAF of 1.111 may be used.

Part 75, Appendix B,
2.3.1.2 Reduced RATA Frequencies. Relative accuracy test audits of primary and redundant backup SO2 pollutant concentration monitors, CO2 pollutant concentration monitors (including O2 monitors used to determine CO2 emissions), CO2 or O2 diluent monitors used to determine heat input, moisture monitoring systems, NOX concentration monitoring systems, flow monitors, NOX-diluent monitoring systems or SO2-diluent monitoring systems may be performed annually (i.e., once every four successive QA operating quarters, rather than once every two successive QA operating quarters) if any of the following conditions are met for the specific monitoring system involved:
(a) The relative accuracy during the audit of an SO2 or CO2 pollutant concentration monitor (including an O2 pollutant monitor used to measure CO2 using the procedures in appendix F to this part), or of a CO2 or O2 diluent monitor used to determine heat input, or of a NOX concentration monitoring system, or of a NOX-diluent monitoring system, or of an SO2-diluent continuous emissions monitoring system is ≤ 7.5 percent;

(f) For units with low NOX emission rates (average NOX emission rate measured by the reference method during the RATA ≤ 0.200 lb/mmBtu), when a NOX-diluent continuous emission monitoring system fails to achieve a relative accuracy ≤ 7.5 percent, but the monitoring system mean value from the RATA, calculated using Equation A-7 in appendix A to this part, is within ± 0.015 lb/mmBtu of the reference method mean value;

Figure 2 to Appendix B of Part 75_Relative Accuracy Test Frequency Incentive System.

| RATA | Semiannual(percent)(1) | Annual(1) |
|---|---|---|
| SO2 or NOX(3) | 7.5% < RA ≤ 10.0% or ± 15.0 ppm(2) | RA ≤ 7.5% or ± 12.0 ppm(2) |
| SO2-diluent | 7.5% < RA ≤ 10.0% or ± 0.030 lb/mmBtu(2) | RA ≤ 7.5% or ± 0.025 lb/mmBtu(2) |
| NOX-diluent | 7.5% < RA ≤ 10.0% or ± 0.020 lb/mmBtu(2) | RA ≤ 7.5% or ± 0.015 lb/mmBtu(2) |
| Flow | 7.5% < RA ≤ 10.0% or ± 2.0 fps(2) | RA ≤ 7.5% or ± 1.5 fps |
| CO2 or O2 | 7.5% < RA ≤ 10.0% or ± 1.0% CO2/O2(2) | RA ≤ 7.5% or ± 0.7% CO2/O2(2) |
| Moisture | 7.5% < RA ≤ 10.0% or ± 1.5% H2O(2) | RA ≤ 7.5% or ± 1.0% H2O(2) |

(1) The deadline for the next RATA is the end of the second (if semiannual) or fourth (if annual) successive QA operating quarter following the quarter in which the CEMS was last tested. Exclude calendar quarters with fewer than 168 unit operating hours (or, for common stacks and bypass stacks, exclude quarters with fewer than 168 stack operating hours) in determining the RATA deadline. For SO2 monitors, QA operating quarters in which only very low sulfur fuel as defined in § 72.2, is combusted may also be excluded. However, the exclusion of calendar quarters is limited as follows: the deadline for the next RATA shall be no more than 8 calendar quarters after the quarter in which a RATA was last performed.
(2) The difference between monitor and reference method mean values applies to moisture monitors, CO2, and O2 monitors, low emitters, or low flow, only.
(3) A NOX concentration monitoring system used to determine NOX mass emissions under § 75.71.

# Calculations, Formulas, and Constants

The following information supports the spreadsheets for this testing project.

**Given Data:**

Ideal Gas Conversion Factor = 385.23 SCF/lb-mol at 68 deg F & 14.696 psia

Fuel Heating Value is based upon Air Hygiene's fuel gas calculation sheet. All calculations are based upon a correction to 68 deg F & 14.696 psia

High Heating Values (HHV) are used for the Fuel Heating Value, F-Factor, and Fuel Flow Data per EPA requirements.

**ASTM D 3588**

| | |
|---|---|
| Molecular Weight of NOx (lb/lb-mole) = | 46.01 |
| Molecular Weight of CO (lb/lb-mole) = | 28.00 |
| Molecular Weight of $SO_2$ (lb/lb-mole) = | 64.00 |
| Molecular Weight of THC (propane) (lb/lb-mole) = | 44.00 |
| Molecular Weight of VOC (methane) (lb/lb-mole) = | 16.00 |
| Molecular Weight of $NH_3$ (lb/lb-mole) = | 17.03 |
| Molecular Weight of HCHO (lb/lb-mole) = | 30.03 |
| Molecular Weight of $CO_2$ (lb/lb-mole) = | 44.01 |

**40CFR60, App. A., RM 19, Table 19-1**

| | |
|---|---|
| Conversion Constant for NOx = | 0.0000001194351 |
| Conversion Constant for CO = | 0.0000000726839 |
| Conversion Constant for $SO_2$ = | 0.0000001661345 |
| Conversion Constant for THC = | 0.0000001142175 |
| Conversion Constant for VOC (methane) = | 0.0000000415336 |
| Conversion Constant for $NH_3$ = | 0.0000000442074 |
| Conversion Constant for HCHO = | 0.0000000779534 |
| Conversion Constant for $CO_2$ = | 0.0000001142434 |

NOTE: units are lb/ppm*ft$^3$

**Formulas:**

1. Corrected Raw Average ($C_{Gas}$), 40CFR60, App. A, RM 7E, Eq. 7E-5 (08/15/06)

$$C_{Gas} = (C_{Avg} - C_O) \times \left( \frac{C_{MA}}{C_M - C_O} \right)$$

2. Correction to % $O_2$, 40CFR60, App. A, RM 20, Eq. 20-5 (11/26/02)

$$C_{adj} = C_{Gas(Target)} \times \left( \frac{20.9\% - AdjFactor}{20.9\% - C_{Gas(O2)}} \right)$$

3. Correction to % $O_2$ and ISO Conditions

$$C_{ISO} = C_{Adj} \times \sqrt{\frac{P_r}{P_o}} \times e^{(19 \times (H_O - 0.00633))} \times \left( \frac{288}{T_a} \right)^{1.53}$$

4. Method 19 stack exhaust flow (scfh) [ref. EPA EMC FAQ Method 19]

$$Q_S = \left( \frac{FFactor \times Q_f \times HHV}{1{,}000{,}000} \right) \times \left( \frac{20.9\%}{20.9\% - C_{Gas(O2)}} \right)$$

5. Emission Rate in lb/hr

$$E_{lb/hr} = \frac{C_{Gas}}{10^6} \times \frac{Q_S \times MW}{G}$$

6. Emission Rate in tons per year

$$E_{ton/yr} = \frac{E_{lb/hr} \times hr_{year}}{2000}$$

7. Emission Concentration in lb/MMBtu ($O_2$ based)

$$E_{lb/MMBtu} = \frac{C_{Gas} \times F_d Factor \times Conv_C \times 20.9\%}{20.9\% - C_{Gas(O2)}}$$

8. Emission Concentration in g/hp*hr

$$E_{g/hp \cdot hr} = \frac{E_{lb/hr} \times 453.6}{mw \times 1341.022} or \frac{E_{lb/hr} \times 453.6}{hp}$$

**RATA SHEET CALCULATIONS**

d = Reference Method Data - CEMS Data

$S_d$ = Standard Deviation

CC = Confident Coefficient

n = number of runs

$t_{0.025}$ = 2.5 percent confidence coefficient T-values

RA = relative accuracy

ARA = alternative relative accuracy

BAF = Bias adjustment factor

| n | t | n | t | n | t |
|---|---|---|---|---|---|
| 2 | 12.706 | 7 | 2.447 | 12 | 2.201 |
| 3 | 4.303 | 8 | 2.365 | 13 | 2.179 |
| 4 | 3.182 | 9 | 2.306 | 14 | 2.160 |
| 5 | 2.776 | 10 | 2.262 | 15 | 2.145 |
| 6 | 2.571 | 11 | 2.228 | 16 | 2.131 |

1. Difference

$$d = \sum_{i=1}^{n} d_i$$

2. Standard Deviation

$$S_d = \sqrt{\frac{\sum_{i=1}^{n} d_i^2 - \left[ \frac{\left( \sum_{i=1}^{n} d_i \right)^2}{n} \right]}{n-1}}$$

3. Confident Coefficient

$$CC = t_{0.025} \times \frac{S_d}{\sqrt{n}}$$

4. Relative Accuracy

$$RA = \frac{|d_{AVG}| + |CC|}{RM_{AVG}} \times 100$$

5. Alternative Relative Accuracy

$$ARA = \frac{|d_{AVG}| + |CC|}{AS} \times 100$$

5. Bias Adjustment Factor

$$BAF = 1 + \left( \frac{|d_{AVG}|}{CEM_{AVG}} \right)$$

**RM 7E, (08-15-06), 12.1 Nomenclature. The terms used in the equations are defined as follows:**

ACE = Analyzer calibration error, percent of calibration span.
$B_{WS}$ = Moisture content of sample gas as measured by Method 4 or other approved method, percent/100.
$C_{Avg}$ = Average unadjusted gas concentration indicated by data recorder for the test run.
$C_D$ = Pollutant concentration adjusted to dry conditions.
$C_{Dir}$ = Measured concentration of a calibration gas (low, mid, or high) when introduced in direct calibration mode.
$C_{Gas}$ = Average effluent gas concentration adjusted for bias.
$C_M$ = Average of initial and final system calibration bias (or 2-point system calibration error) check responses for the upscale calibration gas.
$C_{MA}$ = Actual concentration of the upscale calibration gas, ppmv.
$C_O$ = Average of the initial and final system calibration bias (or 2-point system calibration error) check responses from the low-level (or zero) calibration gas.
$C_S$ = Measured concentration of a calibration gas (low, mid, or high) when introduced in system calibration mode.
$C_{SS}$ = Concentration of NOx measured in the spiked sample.
$C_{Spike}$ = Concentration of NOx in the undiluted spike gas.
$C_{Calc}$ = Calculated concentration of NOx in the spike gas diluted in the sample.
$C_V$ = Manufacturer certified concentration of a calibration gas (low, mid, or high).
$C_W$ = Pollutant concentration measured under moist sample conditions, wet basis.
CS = Calibration span.
D = Drift assessment, percent of calibration span.
$E_p$ = The predicted response for the low-level and mid-level gases based on a linear response line between the zero and high-level response.
$Eff_{NO2}$ = $NO_2$ to NO converter efficiency, percent.
H = High calibration gas, designator.
L = Low calibration gas, designator.
M = Mid calibration gas, designator.
NOFinal = The average NO concentration observed with the analyzer in the NO mode during the converter efficiency test in Section 16.2.2.
NOxCorr = The NOx concentration corrected for the converter efficiency.
NOxFinal = The final NOx concentration observed during the converter efficiency test in Section 16.2.2.
NOxPeak = The highest NOx concentration observed during the converter efficiency test in Section 16.2.2.
$Q_{Spike}$ = Flow rate of spike gas introduced in system calibration mode, L/min.
$Q_{Total}$ = Total sample flow rate during the spike test, L/min.
R = Spike recovery, percent.
SB = System bias, percent of calibration span.
$SB_i$ = Pre-run system bias, percent of calibration span.
$SB_f$ = Post-run system bias, percent of calibration span.
SB / $D_{Alt}$ = Alternative absolute difference criteria to pass bias and/or drift checks.
SCE = System calibration error, percent of calibration span.
$SCE_i$ = Pre-run system calibration error, percent of calibration span.
$SCE_{final}$ = Post-run system calibration error, percent of calibration span.
Z = Zero calibration gas, designator.

**40CFR60.355(b)(1), (09-20-06), Nomenclature. The terms used in the equations are defined as follows:**

$P_r$ = reference combustor inlet absolute pressure at 101.3 kilopascals ambient pressure, mm Hg
$P_o$ = observed combustor inlet absolute pressure at test, mm Hg
$H_o$ = observed humidity of ambient air, g $H_2O$/g air
e = transcendental constant, 2.718
$T_a$ = ambient temperature, K

**Small Engine and FTIR Nomenclature. The terms used in the equations are defined as follows:**

bhp = brake horsepower
hp = horsepower
$Q_{sys}$ = system flow (lpm)
$Q_m$ = matrix spike flow (lpm)

**RM 19, (07-29-06), 12.1 Nomenclature. The terms used in the equations are defined as follows:**

AdjFactor = Percent oxygen or carbon dioxide adjustment applied to a target pollutant
$B_{wa}$ = Moisture fraction of ambient air, percent.
Btu = British thermal unit
$\%_C$ = Concentration of carbon from an ultimate analysis of fuel, weight percent.
$\%_{CO2d}$,$\%_{CO2w}$ = Concentration of carbon dioxide on a dry and wet basis, respectively, percent.
CIP / CDP = Combustor inlet pressure / compressor discharge pressure (mm Hg); note, some manufactures reference as PCD.
E = Pollutant emission rate, ng/J (lb/million Btu).
$E_a$ = Average pollutant rate for the specified performance test period, ng/J (lb/million Btu).
$E_{ao}$, $E_{ai}$ = Average pollutant rate of the control device, outlet and inlet, respectively, for the performance test period, ng/J (lb/million Btu).
$E_{bi}$ = Pollutant rate from the steam generating unit, ng/J (lb/million Btu).
$E_{bo}$ = Pollutant emission rate from the steam generating unit, ng/J (lb/million Btu).
$E_{ci}$ = Pollutant rate in combined effluent, ng/J (lb/million Btu).
$E_{co}$ = Pollutant emission rate in combined effluent, ng/J (lb/million Btu).
$E_d$ = Average pollutant rate for each sampling period (e.g.,24-hr Method 6B sample or 24-hr fuel sample) or for each fuel lot (e.g., amount of fuel bunkered), ng/J (lb/million Btu).
$E_{di}$ = Average inlet $SO_2$ rate for each sampling period d, ng/J (lb/million Btu).
$E_g$ = Pollutant rate from gas turbine, ng/J (lb/million Btu).
$E_{ga}$ = Daily geometric average pollutant rate, ng/J (lbs/million Btu) or ppm corrected to 7 percent $O_2$.
$E_{jo}$,$E_{ji}$ = Matched pair hourly arithmetic average pollutant rate, outlet and inlet, respectively, ng/J (lb/million Btu) or ppm corrected to 7 percent $O_2$.
$E_h$ = Hourly average pollutant, ng/J (lb/million Btu).
$E_{hj}$ = Hourly arithmetic average pollutant rate for hour "j," ng/J (lb/million Btu) or ppm corrected to 7 percent $O_2$.
EXP = Natural logarithmic base (2.718) raised to the value enclosed by brackets.
Fc = Ratio of the volume of carbon dioxide produced to the gross calorific value of the fuel from Method 19
$F_d$, $F_w$, $F_c$ = Volumes of combustion components per unit of heat content, scm/J (scf/million Btu).
$ft^3$ = cubic feet
G = ideal gas conversion factor
(385.23 SCF/lb-mol at 68 deg F & 14.696 psia)
GCM = gross Btu per SCF (constant, compound based)
GCV = Gross calorific value of the fuel consistent with the ultimate analysis, kJ/kg (Btu/lb).
$GCV_p$, $GCV_r$ = Gross calorific value for the product and raw fuel lots, respectively, dry basis, kJ/kg (Btu/lb).
$\%_H$ = Concentration of hydrogen from an ultimate analysis of fuel, weight percent.
$H_b$ = Heat input rate to the steam generating unit from fuels fired in the steam generating unit, J/hr (million Btu/hr).
$H_g$ = Heat input rate to gas turbine from all fuels fired in the gas turbine, J/hr (million Btu/hr).
$\%_{H2O}$ = Concentration of water from an ultimate analysis of fuel, weight percent.
$H_r$ = Total numbers of hours in the performance test period (e.g., 720 hours for 30-day performance test period).
K = volume of combustion component per pound of component (constant)
K = Conversion factor, $10^{-5}$ (kJ/J)/(%) [$10^6$ Btu/million Btu].
$K_c$ = (9.57 scm/kg)/% [(1.53 scf/lb)/%].
$K_{cc}$ = (2.0 scm/kg)/% [(0.321 scf/lb)/%].
$K_{hd}$ = (22.7 scm/kg)/% [(3.64 scf/lb)/%].
$K_{hw}$ = (34.74 scm/kg)/% [(5.57 scf/lb)/%].
$K_n$ = (0.86 scm/kg)/% [(0.14 scf/lb)/%].
$K_o$ = (2.85 scm/kg)/% [(0.46 scf/lb)/%].
$K_s$ = (3.54 scm/kg)/% [(0.57 scf/lb)/%].
$K_{sulfur}$ = $2x10^4$ Btu/wt%-MMBtu
$K_w$ = (1.30 scm/kg)/% [(0.21 scf/lb)/%].
lb = pound
ln = Natural log of indicated value.
$L_p$,$L_r$ = Weight of the product and raw fuel lots, respectively, metric ton (ton).
$\%_N$ = Concentration of nitrogen from an ultimate analysis of fuel, weight percent.
$M_{\%}$ = mole percent
mol = mole
MW = molecular weight (lb/lb-mol)
$MW_{AIR}$ = molecular weight of air ( 28.9625 lb/lb-mole)[1]
NCM = net Btu per SCF (constant based on compound)
$\%_O$ = Concentration of oxygen from an ultimate analysis of fuel, weight percent.
$\%_{O2d}$, $\%_{O2w}$ = Concentration of oxygen on a dry and wet basis, respectively, percent.
$P_B$ = barometric pressure, in Hg
$P_s$ = Potential SO2 emissions, percent.
$\%_S$ = Sulfur content of as-fired fuel lot, dry basis, weight percent.
$S_e$ = Standard deviation of the hourly average pollutant rates for each performance test period, ng/J (lb/million Btu).
$\%_{Sf}$ = Concentration of sulfur from an ultimate analysis of fuel, weight percent.
S(wt%) = weight percent of sulfur, per lab analysis by appropriate ASTM standard
$S_i$ = Standard deviation of the hourly average inlet pollutant rates for each performance test period, ng/J (lb/million Btu).
$S_o$ = Standard deviation of the hourly average emission rates for each performance test period, ng/J (lb/million Btu).
$\%S_p$, $\%S_r$ = Sulfur content of the product and raw fuel lots respectively, dry basis, weight percent.
SCF = standard cubic feet
SH = specific humidity, pounds of water per pound of air
$t_{0.95}$ = Values shown in Table 19-3 for the indicated number of data points n.
$T_{amb}$ = ambient temperature, °F
W/D Factor = 1.0236 = conv. at 14.696 psia and
68 deg F (ref. Civil Eng. Ref. Manual, 7th Ed.)
$X_{CO2}$=$CO_2$ Correction factor, percent.
$X_k$ = Fraction of total heat input from each type of fuel k.

**EXAMPLE CALCULATIONS (INFORMATION)**

**Specific Humidity ($RH_{sp}$)**

Note: RHsp (gr/lb) calculated using temperature, relative humidity, and barometric pressure with psychrometric chart, psychrometric calculator, or built in psychrometric algorithm.

$$RH_{sp}(lb/lb) = \left[\left(\frac{gr}{lb}\right) \times \frac{lb}{7000\ gr}\right]$$

$RH_{sp}$= 32.23 gr / lb x 1 lb / 7000 gr = 0.004604 lb $H_2O$ / lb Air

**EXAMPLE CALCULATIONS (CALIBRATION)**

**Analyzer Calibration Error**

RM 7E, (02-27-14), 12.2 Analyzer Calibration Error. For non-dilution systems, use Equation 7E-1 to calculate the analyzer calibration error for the low-, mid-, and high-level calibration gases. (calc for NOx analyzer mid gas, if applicable)

$$ACE = \left(\frac{C_{Dir} - C_V}{CS}\right) \times 100$$ Eq. 7E-1

ACE = (5.09 ppm - 4.91 ppm) / 9.20 ppm x 100 = 1.96 %

**EXAMPLE CALCULATIONS (BIAS, DRIFT, AND CORRECTED RAW AVERAGE)**

**System Bias**

RM 7E, (02-27-14), 12.3 System Bias. For non-dilution systems, use Equation 7E-2 to calculate the system bias separately for the low-level and upscale calibration gases. (calc for NOx analyzer upscale gas, Run 1 initial bias, if applicable)

$$SB = \left(\frac{C_S - C_{Dir}}{CS}\right) \times 100$$ Eq. 7E-2

SB = (4.93 ppm - 5.09 ppm) / 9.20 ppm x 100 = -1.74 %

**Drift Assessment**

RM 7E, (02-27-14), 12.5 Drift Assessment. Use Equation 7E-4 to separately calculate the low-level and upscale drift over each test run. (calc for NOx analyzer upscale drift, Run 1, if applicable)

$$D = \left|SB_{final} - SB_t\right|$$ Eq. 7E-4

D = | -2.83 % - -1.74 % | = 1.09 %

**Alternative Drift and Bias**

RM 7E, (02-27-14), 13.2 / 13.3 System Bias and Drift. Alternatively, the results are acceptable if |Cs – Cdir| is ≤ 0.5 ppmv or if |Cs – Cv| is ≤ 0.5 ppmv (as applicable). (calc for NOx analyzer initial upscale, Run 1, if applicable)

$$SB / D_{Alt} = \left|C_S - C_{Dir}\right|$$ Eq. Section 13.2 and 13.3

$SB / D_{Alt}$ = | 4.93 ppm - 5.09 ppm | = 0.16 ppm

**Bias Adjusted Average**

RM 7E, (02-27-14), 12.6 Effluent Gas Concentration. For each test run, calculate Cavg, the arithmetic average of all valid NOx concentration values (e.g., 1-minute averages). Then adjust the value of Cavg for bias, using Equation 7E-5b. (calc for NOx analyzer, Run 1, if applicable)

$$C_{Gas} = \left(C_{Avg} - C_O\right) \times \left(\frac{C_{MA}}{C_M - C_O}\right)$$ Eq. 7E-5b

$C_{Gas}$ = (1.85 ppm - -0.26 ppm) (4.91 ppm / 4.88 ppm - -0.26 ppm) = 2.02 ppm

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (RUNS)**

**Stack Exhaust Flow ($Q_S$) - RM19**

$$Q_S = \left(\frac{FFactor \times Q_f \times HHV}{1{,}000{,}000}\right) \times \left(\frac{20.9\%}{20.9\% - C_{Gas(O2)}}\right)$$

Note: Equation presented in EPA Emission Measurement Center (EMC), Frequently Asked Questions (FAQ) for Method 19

$Q_S$ = 8,710.00 SCF/MMBtu x 2,317,550.00 SCF/hr x 1,050.00 Btu/SCF x MMBtu/$10^6$ Btu x [20.90% / (20.9% - 13.4 %)] = 58,713,359.00 SCFH

**Moisture Correction**

RM 7E, (02-27-14), 12.10 Moisture Correction. Use Equation 7E-10 if your measurements need to be corrected to a dry basis. (calc for NOx analyzer, Run 1, if applicable) Note: Calculations may not match as Run 1 results are typically also bias adjusted

$$C_W = C_D \times (1 - B_{WS})$$

$$C_D = \frac{C_W}{1 - B_{WS}}$$ Eq. 7E-10

$C_D$ = 1.85 ppmvw / (1 - 0.08) = 2.02 ppmvd or inversely, $C_W$ = 2.02 ppmvd x (1 - 0.08) = 1.85 ppmvw

**Diluent-Corrected Pollutant Concentration, $O_2$ Based**

RM 20, (11-26-02), 7.3.1 Correction of Pollutant Concentration Using $O_2$ Concentration. Calculate the $O_2$ corrected pollutant concentration, as follows: (calc for NOx gas, Run 1, if applicable) [now contained in applicable Subpart]

$$C_{adj} = C_{Gas(Target)} \times \left(\frac{20.9\% - AdjFactor}{20.9\% - C_{Gas(O2)}}\right)$$ Eq. 20-4

$C_{adj}$ = 2.02 ppm x [(20.9% - 15.00 %) / (20.9% - 13.36 %)] = 1.58 ppm@15%$O_2$

**Emissions Rate (lb/hr)**

Calculation for pound per hour emission rate. Calculate, as follows: (calc for NOx gas Run 1, if applicable)

$$E_{lb/hr} = \frac{C_{Gas}}{10^6} \times \frac{Q_S \times MW}{G}$$

$E_{lb/hr}$ = 2.02 ppmvd / $10^6$ ppm/part x 58,713,359 DSCFH x 46.01 lb/lb-mol / 385.23 SCF/lb-mol = 14.14 lb/hr

**Emissions Rate (lb/MMBtu)**

RM 19, (02-27-14), 12.2 Emission Rates of PM, $SO_2$, and NOx. Select from the following sections the applicable procedure to compute the PM, $SO_2$, or NOx emission rate (E) in ng/J (lb/million Btu). (calc for NOx gas Run 1, if applicable)

**Oxygen Based**

12.2.1 Oxygen-Based F Factor, Dry Basis. When measurements are on a dry basis for both $O_2$ ($\%O_2$d) and pollutant (Cd) concentrations, use the following equation:

$$E_{lb/MMBtu} = \frac{C_{Gas} \times F_d Factor \times Conv_C \times 20.9\%}{20.9\% - C_{Gas(O2)}}$$ Eq. 19-1

$E_{lb/MMBtu}$ = 2.02 ppm x 8,710.00 SCF/MMBtu x 0.0000001194 lb/ppm*$ft^3$ x 20.9% / (20.9% - 13.36 %) = 0.006 lb/MMBtu

**Conversion Constant**

Convc for NOx

$$Conv_c(lb/ppm \cdot ft^3) = \frac{\frac{MW}{G}}{10^6}$$

$Conv_c$ = (46.01 lb/lb•mole x lb•mole/385.23 SCF) / $10^6$ = 0.0000001194 lb/ppm-$ft^3$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (RATA RESULTS)**

**Difference (d)**

40 CFR 75, App A, (12-17-09), 7.3.1 Arithmetic Mean. Calculate the arithmetic mean of the differences, d , of a data set as follows. (calc for NOx lb/MMBtu data, if applicable. Note: This is an example calculation which may not have any bearing on the actual test requirements.)

$$d = \sum_{i=1}^{n} d_i$$ Eq. A-7

d = 0.006 lb/MMBtu - 0.006 lb/MMBtu = 0.000 lb/MMBtu

**Standard Deviation**

40 CFR 75, App A, (12-17-09), 7.3.2 Standard Deviation. Calculate the standard deviation, Sd, of a data set as follows:
(calc for NOx lb/MMBtu data, if applicable. Note: This is an example calculation which may not have any bearing on the actual test requirements.)

$$S_d = \sqrt{\frac{\sum_{i=1}^{n} d_i^2 - \frac{\left[\left(\sum_{i=1}^{n} d_i\right)^2\right]}{n}}{n-1}}$$ Eq. A-8

$$S_d = \sqrt{\frac{0.000 \text{ lb/MMBtu}^2 - \frac{(-0.004 \text{ lb/MMBtu})^2}{9}}{9 - 1}} = 0.000 \text{ lb/MMBtu}$$

**Confidence Coefficient**

40 CFR 75, App A, (12-17-09), 7.3.3 Confidence Coefficient. Calculate the confidence coefficient (one-tailed), cc, of a data set as follows. (calc for NOx lb/MMBtu data, if applicable. Note: This is an example calculation which may not have any bearing on the actual test requirements.)

$$CC = t_{0.025} \times \frac{S_d}{\sqrt{n}}$$ Eq. A-9

CC = 2.306 x $\frac{0.000 \text{ lb/MMBtu}}{\sqrt{9}}$ = 0.000 lb/MMBtu

| T-Values | n | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| | $t_{0.025}$ | 12.706 | 4.303 | 3.182 | 2.776 | 2.571 | 2.447 | 2.365 | 2.306 |

2.5 percent confidence coefficients

**Relative Accuracy**

40 CFR 75, App A, (12-17-09), 7.3.4 Relative Accuracy. Calculate the relative accuracy of a data set using the following equation. (calc for NOx lb/MMBtu data, if applicable. Note: This is an example calculation which may not have any bearing on the actual test requirements.)

$$RA = \frac{|d_{AVG}| + |CC|}{RM_{AVG}} \times 100$$ Eq. A-10

RA = $\frac{|0.000 \text{ lb/MMBtu}| + |0.000 \text{ lb/MMBtu}|}{0.006 \text{ lb/MMBtu}}$ x 100 = 7.88 %

**Bias Adjustment Factor (BAF)**

40 CFR 75, App A, (12-17-09), 7.6.5 Bias Adjustment. (a) If the monitor or monitoring system fails to meet the bias test requirement, adjust the value obtained from the monitor using the following equation: (calc for NOx lb/MMBtu data, if applicable. Note: This is an example calculation which may not have any bearing on the actual test requirements.)

$$BAF = 1 + \left(\frac{|d_{AVG}|}{CEM_{AVG}}\right)$$ Eq. A-12

$d_{AVG}$= 0.000 < |CC| = 0.000 ⇨ BAF = 1 + $\frac{|\quad| \text{ lb/MMBtu}}{\text{lb/MMBtu}}$ = 1.000 lb/MMBtu

Note: BAF only applies if the mean difference (d) is greater than the absolute value of the confidence coefficient.

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

# APPENDIX B

# CEMS AND REFERENCE METHOD DATA

# Cricket Valley Energy Center LLC

| | |
|---|---|
| **Air Permit Number:** | 3-1326-00275/00009 |
| **Plant Name or Location:** | Cricket Valley Energy Center |
| **Date:** | February 25, 2020 |
| **Project Number:** | cis-19-cricketvalley.ny-start#1 |
| **Manufacturer & Equipment:** | General Electric |
| **Model:** | 7F.05 |
| **Unit Number:** | U-00002 |
| **Test Load:** | Base Load |
| **Tester(s) / Test Unit(s):** | MM/215 |

| | | RUN | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **UNITS** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** |
| **Start Time** | hh:mm:ss | 11:53:28 | 12:32:28 | 13:07:28 | 13:36:28 | 14:15:28 | 14:46:28 | 15:17:28 | 15:47:28 | 16:20:28 | 16:51:28 | 17:57:28 |
| **End Time** | hh:mm:ss | 12:13:58 | 12:52:58 | 13:27:58 | 13:56:58 | 14:35:58 | 15:06:58 | 15:37:58 | 16:07:58 | 16:40:58 | 17:11:58 | 18:17:58 |
| **Bar. Pressure** | in. Hg | 29.38 | 29.36 | 29.34 | 29.33 | 29.30 | 29.33 | 29.33 | 29.33 | 29.33 | 29.34 | 29.37 |
| **Amb. Temp.** | °F | 54 | 55 | 55 | 56 | 59 | 56 | 56 | 55 | 55 | 54 | 51 |
| **Rel. Humidity** | % | 51 | 51 | 49 | 48 | 45 | 48 | 50 | 51 | 54 | 57 | 76 |
| **Spec. Humidity** | lb water / lb air | 0.004604 | 0.004760 | 0.004540 | 0.004504 | 0.004816 | 0.004585 | 0.004805 | 0.004759 | 0.004894 | 0.005008 | 0.006092 |
| **Turbine Fuel Flow** | SCFH | 2,317,550 | 2,310,200 | 2,308,160 | 2,308,570 | 2,306,530 | 2,306,940 | 2,305,710 | 2,311,140 | 2,528,440 | 2,554,920 | 2,563,390 |
| **Total Fuel Flow** | SCFH | 2,317,550 | 2,310,200 | 2,308,160 | 2,308,570 | 2,306,530 | 2,306,940 | 2,305,710 | 2,311,140 | 2,528,440 | 2,554,920 | 2,563,390 |
| **Power Output** | megawatts | 346.6 | 345.9 | 345.4 | 345.6 | 345.4 | 345.5 | 345.3 | 345.8 | 373.2 | 378.1 | 379.9 |
| **$O_2$ CEMS Data** | %vd | 13.04 | 13.06 | 13.07 | 13.07 | 13.06 | 13.07 | 13.06 | 13.05 | 12.23 | 12.11 | 12.1 |
| **NOx CEMS Data** | ppmvd@15%$O_2$ | 1.70 | 1.65 | 1.45 | 1.68 | 1.57 | 1.50 | 1.60 | 1.71 | 1.77 | 1.70 | 1.70 |
| | lb/hr | 15.13 | 14.65 | 12.89 | 14.90 | 13.95 | 13.27 | 14.13 | 15.18 | 17.22 | 16.80 | 16.73 |
| | lb/MMBtu | 0.0062 | 0.0061 | 0.0053 | 0.0062 | 0.0058 | 0.0055 | 0.0059 | 0.0063 | 0.0065 | 0.0063 | 0.0062 |
| **CO CEMS Data** | ppmvd@15%$O_2$ | 0.28 | 0.09 | 0.17 | 0.34 | 0.26 | 0.07 | 0.07 | 0.04 | 0.00 | 0.00 | 0.02 |
| | lb/hr | 1.15 | 0.38 | 0.91 | 0.26 | 0.20 | 0.37 | 0.31 | 0.21 | 0.00 | 0.00 | 0.01 |
| **$NH_3$ CEMS Data** | ppmvd@15%$O_2$ | 0.71 | 0.73 | 1.02 | 0.74 | 0.83 | 0.87 | 0.81 | 0.94 | 0.82 | 0.99 | 1.00 |
| | lb/hr | 2.40 | 2.44 | 3.38 | 2.46 | 2.71 | 2.87 | 2.64 | 2.39 | 2.91 | 3.59 | 3.60 |
| **$NH_3$ RM Data** | ppmvd@15%$O_2$ | 0.66 | 0.85 | 0.87 | 0.68 | 0.87 | 0.66 | 0.66 | 0.61 | 0.48 | 0.60 | 1.53 |
| | lb/hr | 2.20 | 2.83 | 2.88 | 2.26 | 2.87 | 2.19 | 2.17 | 2.01 | 1.73 | 2.20 | 5.62 |

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# CEMS AND REFERENCE METHOD DATA

## CEMS Data
## (provided by Cricket Valley Energy Center LLC)

**Relative Accuracy Test Data**
**CEMS Results (NOx)**
**General Electric, 7F.05, Unit #U-00002**

| | |
|---|---|
| Parameter: | Oxides of Nitrogen |
| Date of Test: | February 25, 2020 |
| Reference Method: | EPA Method 7E |
| CEMS Analyzer Type: | Chemiluminescence |
| Manufacturer: | TAPI |
| Model #: | T200M |
| Serial #: | 1013 |

| RUN # | RUN TIME | UNIT LOAD | CONCENTRATIONS | | RATES | |
|---|---|---|---|---|---|---|
| | | (MW) | (ppmvd) | (ppmvd@15%$O_2$) | (lb/hr) | (lb/MMBtu) |
| 1 | 11:53 - 12:13 | 346.6 | | 1.70 | 15.13 | 0.0062 |
| 2 | 12:32 - 12:52 | 345.9 | | 1.65 | 14.65 | 0.0061 |
| 3 | 13:07 - 13:27 | 345.4 | | 1.45 | 12.89 | 0.0053 |
| 4 | 13:36 - 13:56 | 345.6 | | 1.68 | 14.90 | 0.0062 |
| 5 | 14:15 - 14:35 | 345.4 | | 1.57 | 13.95 | 0.0058 |
| 6 | 14:46 - 15:06 | 345.5 | | 1.50 | 13.27 | 0.0055 |
| 7 | 15:17 - 15:37 | 345.3 | | 1.60 | 14.13 | 0.0059 |
| 8 | 15:47 - 16:07 | 345.8 | | 1.71 | 15.18 | 0.0063 |
| 9 | 16:20 - 16:40 | 373.2 | | 1.77 | 17.22 | 0.0065 |
| 10 | 16:51 - 17:11 | 378.1 | | 1.70 | 16.80 | 0.0063 |
| 11 | 17:57 - 18:17 | 379.9 | | 1.70 | 16.73 | 0.0062 |
| 12 | | | | | | |

**Relative Accuracy Test Data**
**CEMS Results (CO)**
**General Electric, 7F.05, Unit #U-00002**

| | |
|---|---|
| Parameter: | Carbon Monoxide |
| Date of Test: | February 25, 2020 |
| Reference Method: | EPA Method 10 |
| CEMS Analyzer Type: | Infrared Absorption |
| Manufacturer: | TAPI |
| Model #: | T300M |
| Serial #: | 519 |

| RUN # | RUN TIME | UNIT LOAD | CONCENTRATIONS | | RATES | |
|---|---|---|---|---|---|---|
| | | (MW) | (ppmvd) | (ppmvd@15%$O_2$) | (lb/hr) | (lb/MMBtu) |
| 1 | 11:53 - 12:13 | 346.6 | | 0.28 | 1.15 | |
| 2 | 12:32 - 12:52 | 345.9 | | 0.09 | 0.38 | |
| 3 | 13:07 - 13:27 | 345.4 | | 0.17 | 0.91 | |
| 4 | 13:36 - 13:56 | 345.6 | | 0.34 | 0.26 | |
| 5 | 14:15 - 14:35 | 345.4 | | 0.26 | 0.20 | |
| 6 | 14:46 - 15:06 | 345.5 | | 0.07 | 0.37 | |
| 7 | 15:17 - 15:37 | 345.3 | | 0.07 | 0.31 | |
| 8 | 15:47 - 16:07 | 345.8 | | 0.04 | 0.21 | |
| 9 | 16:20 - 16:40 | 373.2 | | 0.00 | 0.00 | |
| 10 | 16:51 - 17:11 | 378.1 | | 0.00 | 0.00 | |
| 11 | 17:57 - 18:17 | 379.9 | | 0.02 | 0.01 | |
| 12 | | | | | | |

**Relative Accuracy Test Data**
**CEMS Results ($NH_3$)**
**General Electric, 7F.05, Unit #U-00002**

| | |
|---|---|
| Parameter: | Ammonia |
| Date of Test: | February 25, 2020 |
| Reference Method: | EPA Method 7E |
| CEMS Analyzer Type: | Dual NOx w/ NH3 conversion |
| Manufacturer: | TAPI |
| Model #: | T200M |
| Serial #: | 1048 |

| RUN # | RUN TIME | UNIT LOAD | CONCENTRATIONS | | RATES | |
|---|---|---|---|---|---|---|
| | | (MW) | (ppmvd) | (ppmvd@15%$O_2$) | (lb/hr) | (lb/MMBtu) |
| 1 | 11:53 - 12:13 | 346.6 | | 0.71 | 2.40 | |
| 2 | 12:32 - 12:52 | 345.9 | | 0.73 | 2.44 | |
| 3 | 13:07 - 13:27 | 345.4 | | 1.02 | 3.38 | |
| 4 | 13:36 - 13:56 | 345.6 | | 0.74 | 2.46 | |
| 5 | 14:15 - 14:35 | 345.4 | | 0.83 | 2.71 | |
| 6 | 14:46 - 15:06 | 345.5 | | 0.87 | 2.87 | |
| 7 | 15:17 - 15:37 | 345.3 | | 0.81 | 2.64 | |
| 8 | 15:47 - 16:07 | 345.8 | | 0.94 | 2.39 | |
| 9 | 16:20 - 16:40 | 373.2 | | 0.82 | 2.91 | |
| 10 | 16:51 - 17:11 | 378.1 | | 0.99 | 3.59 | |
| 11 | 17:57 - 18:17 | 379.9 | | 1.00 | 3.60 | |
| 12 | | | | | | |

**Relative Accuracy Test Data**
**CEMS Results ($O_2$)**
**General Electric, 7F.05, Unit #U-00002**

| | |
|---|---|
| Parameter: | Oxygen |
| Date of Test: | February 25, 2020 |
| Reference Method: | EPA Method 3A |
| CEMS Analyzer Type: | Paramagnetic Cell |
| Manufacturer: | TAPI |
| Model #: | T803 |
| Serial #: | 129 |

| RUN # | RUN TIME | UNIT LOAD (MW) | CONC. (%vd) |
|---|---|---|---|
| 1 | 11:53 - 12:13 | 346.6 | 13.04 |
| 2 | 12:32 - 12:52 | 345.9 | 13.06 |
| 3 | 13:07 - 13:27 | 345.4 | 13.07 |
| 4 | 13:36 - 13:56 | 345.6 | 13.07 |
| 5 | 14:15 - 14:35 | 345.4 | 13.06 |
| 6 | 14:46 - 15:06 | 345.5 | 13.07 |
| 7 | 15:17 - 15:37 | 345.3 | 13.06 |
| 8 | 15:47 - 16:07 | 345.8 | 13.05 |
| 9 | 16:20 - 16:40 | 373.2 | 12.23 |
| 10 | 16:51 - 17:11 | 378.1 | 12.11 |
| 11 | 17:57 - 18:17 | 379.9 | 12.08 |
| 12 | | | |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 11:53 AM thru 2/25/2020 12:13 PM

| Timestamp | (Turbine 2) 75-NOx ppm 1-Min | (Turbine 2) NOx ppm @15% O2 1-Min | (Turbine 2) 75-NOx lb/mmBtu 1-Min | (Turbine 2) NOx lb/hr 1-Min | (Turbine 2) CO ppm 1-Min | (Turbine 2) CO ppm @15% O2 1-Min | (Turbine 2) CO lb/hr 1-Min | (Turbine 2) NH3 Slip ppm 1-Min | (Turbine 2) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/25 11:53 | 2.29 | 1.72 | 0.0063 | 15.29 | 0.25 | 0.19 | 0.97 | 0.94 | 0.71 |
| 2/25 11:54 | 2.30 | 1.73 | 0.0064 | 15.54 | 0.26 | 0.20 | 0.97 | 0.93 | 0.70 |
| 2/25 11:55 | 2.29 | 1.72 | 0.0063 | 15.29 | 0.26 | 0.20 | 0.97 | 0.93 | 0.70 |
| 2/25 11:56 | 2.28 | 1.71 | 0.0063 | 15.24 | 0.26 | 0.20 | 0.97 | 0.94 | 0.71 |
| 2/25 11:57 | 2.27 | 1.70 | 0.0063 | 15.24 | 0.23 | 0.17 | 0.97 | 0.94 | 0.71 |
| 2/25 11:58 | 2.26 | 1.70 | 0.0062 | 14.99 | 0.21 | 0.16 | 0.97 | 0.94 | 0.71 |
| 2/25 11:59 | 2.26 | 1.70 | 0.0062 | 15.05 | 0.17 | 0.13 | 0.73 | 0.94 | 0.71 |
| 2/25 12:00 | 2.25 | 1.69 | 0.0062 | 14.99 | 0.19 | 0.14 | 0.73 | 0.95 | 0.71 |
| 2/25 12:01 | 2.24 | 1.68 | 0.0062 | 14.99 | 0.24 | 0.18 | 0.97 | 0.95 | 0.71 |
| 2/25 12:02 | 2.24 | 1.68 | 0.0062 | 15.05 | 0.22 | 0.17 | 0.97 | 0.95 | 0.71 |
| 2/25 12:03 | 2.25 | 1.69 | 0.0062 | 15.05 | 0.25 | 0.19 | 0.97 | 0.95 | 0.71 |
| 2/25 12:04 | 2.27 | 1.70 | 0.0063 | 15.29 | 0.27 | 0.20 | 1.21 | 0.95 | 0.71 |
| 2/25 12:05 | 2.28 | 1.71 | 0.0063 | 15.24 | 0.27 | 0.20 | 1.21 | 0.95 | 0.71 |
| 2/25 12:06 | 2.28 | 1.71 | 0.0063 | 15.24 | 0.30 | 0.23 | 1.21 | 0.94 | 0.71 |
| 2/25 12:07 | 2.28 | 1.71 | 0.0063 | 15.29 | 0.29 | 0.22 | 1.21 | 0.95 | 0.71 |
| 2/25 12:08 | 2.26 | 1.70 | 0.0062 | 14.99 | 0.32 | 0.24 | 1.21 | 0.95 | 0.71 |
| 2/25 12:09 | 2.24 | 1.68 | 0.0062 | 14.99 | 0.36 | 0.27 | 1.45 | 0.95 | 0.71 |
| 2/25 12:10 | 2.24 | 1.68 | 0.0062 | 14.99 | 0.41 | 0.31 | 1.69 | 0.94 | 0.71 |
| 2/25 12:11 | 2.24 | 1.68 | 0.0062 | 15.05 | 0.44 | 0.33 | 1.70 | 0.94 | 0.71 |
| 2/25 12:12 | 2.24 | 1.68 | 0.0062 | 14.99 | 0.39 | 0.29 | 1.69 | 0.94 | 0.71 |
| 2/25 12:13 | 2.25 | 1.69 | 0.0062 | 14.94 | 0.35 | 0.26 | 1.45 | 0.94 | 0.71 |
| Average (all) | 2.26 | 1.70 | 0.0062 | 15.13 | 0.28 | 0.21 | 1.15 | 0.94 | 0.71 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 2.24 | 1.68 | 0.0062 | 14.94 | 0.17 | 0.13 | 0.73 | 0.93 | 0.70 |
| Maximum (all) | 2.30 | 1.73 | 0.0064 | 15.54 | 0.44 | 0.33 | 1.70 | 0.95 | 0.71 |
| Average (valid values only) | 2.26 | 1.70 | 0.0062 | 15.13 | 0.28 | 0.21 | 1.15 | 0.94 | 0.71 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 11:53 AM thru 2/25/2020 12:13 PM

| Timestamp | (Turbine 2) NH3 Slip lb/hr 1-Min | (Turbine 2) 75-O2 % 1-Min | (Turbine 2) Total Gas Flow hscf/hr 1-Min | (Turbine 2) GT Megawatts 1-Min | (Turbine 2) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 2/25 11:53 | 2.43 | 13.04 | 23228.6 | 232.6 | 346.9 |
| 2/25 11:54 | 2.18 | 13.04 | 23228.6 | 232.5 | 346.7 |
| 2/25 11:55 | 2.18 | 13.04 | 23228.6 | 232.5 | 346.8 |
| 2/25 11:56 | 2.42 | 13.04 | 23142.9 | 232.4 | 346.7 |
| 2/25 11:57 | 2.42 | 13.04 | 23142.9 | 232.5 | 346.7 |
| 2/25 11:58 | 2.42 | 13.04 | 23142.9 | 232.6 | 346.8 |
| 2/25 11:59 | 2.43 | 13.04 | 23228.6 | 232.5 | 346.8 |
| 2/25 12:00 | 2.42 | 13.04 | 23142.9 | 232.5 | 346.8 |
| 2/25 12:01 | 2.42 | 13.04 | 23142.9 | 232.4 | 346.7 |
| 2/25 12:02 | 2.43 | 13.04 | 23228.6 | 232.5 | 346.8 |
| 2/25 12:03 | 2.43 | 13.04 | 23228.6 | 232.5 | 346.8 |
| 2/25 12:04 | 2.43 | 13.03 | 23228.6 | 232.4 | 346.8 |
| 2/25 12:05 | 2.42 | 13.04 | 23142.9 | 232.4 | 346.7 |
| 2/25 12:06 | 2.42 | 13.04 | 23142.9 | 232.4 | 346.7 |
| 2/25 12:07 | 2.43 | 13.05 | 23228.6 | 232.3 | 346.5 |
| 2/25 12:08 | 2.42 | 13.04 | 23142.9 | 232.2 | 346.5 |
| 2/25 12:09 | 2.42 | 13.04 | 23142.9 | 232.4 | 346.1 |
| 2/25 12:10 | 2.42 | 13.04 | 23142.9 | 232.3 | 346.4 |
| 2/25 12:11 | 2.43 | 13.05 | 23228.6 | 232.2 | 346.4 |
| 2/25 12:12 | 2.42 | 13.05 | 23142.9 | 232.0 | 346.1 |
| 2/25 12:13 | 2.41 | 13.05 | 23057.1 | 232.1 | 346.2 |
| Average (all) | 2.40 | 13.04 | 23175.5 | 232.4 | 346.6 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 2.18 | 13.03 | 23057.1 | 232.0 | 346.1 |
| Maximum (all) | 2.43 | 13.05 | 23228.6 | 232.6 | 346.9 |
| Average (valid values only) | 2.40 | 13.04 | 23175.5 | 232.4 | 346.6 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 12:32 PM thru 2/25/2020 12:52 PM

| Timestamp | (Turbine 2) 75-NOx ppm 1-Min | (Turbine 2) NOx ppm @15% O2 1-Min | (Turbine 2) 75-NOx lb/mmBtu 1-Min | (Turbine 2) NOx lb/hr 1-Min | (Turbine 2) CO ppm 1-Min | (Turbine 2) CO ppm @15% O2 1-Min | (Turbine 2) CO lb/hr 1-Min | (Turbine 2) NH3 Slip ppm 1-Min | (Turbine 2) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/25 12:32 | 2.28 | 1.71 | 0.0063 | 15.24 | 0.28 | 0.21 | 1.21 | 0.93 | 0.70 |
| 2/25 12:33 | 2.27 | 1.71 | 0.0063 | 15.24 | 0.25 | 0.19 | 0.97 | 0.93 | 0.70 |
| 2/25 12:34 | 2.26 | 1.70 | 0.0063 | 15.18 | 0.19 | 0.14 | 0.72 | 0.94 | 0.71 |
| 2/25 12:35 | 2.24 | 1.68 | 0.0062 | 14.99 | 0.16 | 0.12 | 0.73 | 0.94 | 0.71 |
| 2/25 12:36 | 2.24 | 1.69 | 0.0062 | 14.94 | 0.16 | 0.12 | 0.72 | 0.93 | 0.70 |
| 2/25 12:37 | 2.23 | 1.68 | 0.0062 | 14.94 | 0.20 | 0.15 | 0.72 | 0.94 | 0.71 |
| 2/25 12:38 | 2.23 | 1.68 | 0.0062 | 14.99 | 0.17 | 0.13 | 0.73 | 0.95 | 0.71 |
| 2/25 12:39 | 2.22 | 1.67 | 0.0062 | 14.99 | 0.12 | 0.09 | 0.48 | 0.95 | 0.71 |
| 2/25 12:40 | 2.24 | 1.69 | 0.0062 | 14.99 | 0.11 | 0.08 | 0.48 | 0.94 | 0.71 |
| 2/25 12:41 | 2.25 | 1.69 | 0.0062 | 14.99 | 0.07 | 0.05 | 0.24 | 0.94 | 0.71 |
| 2/25 12:42 | 2.26 | 1.70 | 0.0063 | 15.18 | 0.01 | 0.01 | 0.00 | 0.94 | 0.71 |
| 2/25 12:43 | 2.27 | 1.71 | 0.0063 | 15.24 | 0.01 | 0.01 | 0.00 | 0.94 | 0.71 |
| 2/25 12:44 | 2.27 | 1.71 | 0.0063 | 15.18 | 0.00 | 0.00 | 0.00 | 0.94 | 0.71 |
| 2/25 12:45 | 2.27 | 1.71 | 0.0063 | 15.18 | 0.00 | 0.00 | 0.00 | 0.93 | 0.70 |
| 2/25 12:46 | 2.28 | 1.72 | 0.0063 | 15.24 | 0.00 | 0.00 | 0.00 | 0.93 | 0.70 |
| 2/25 12:47 | 2.27 | 1.71 | 0.0063 | 15.24 | 0.00 | 0.00 | 0.00 | 0.95 | 0.71 |
| 2/25 12:48 | 2.18 | 1.64 | 0.0060 | 14.46 | 0.00 | 0.00 | 0.00 | 0.99 | 0.75 |
| 2/25 12:49 | 2.07 | 1.56 | 0.0057 | 13.73 | 0.00 | 0.00 | 0.00 | 1.02 | 0.77 |
| 2/25 12:50 | 1.96 | 1.48 | 0.0054 | 13.01 | 0.00 | 0.00 | 0.00 | 1.06 | 0.80 |
| 2/25 12:51 | 1.86 | 1.40 | 0.0052 | 12.53 | 0.09 | 0.07 | 0.48 | 1.11 | 0.84 |
| 2/25 12:52 | 1.79 | 1.35 | 0.0050 | 12.09 | 0.10 | 0.08 | 0.48 | 1.17 | 0.88 |
| Average (all) | 2.19 | 1.65 | 0.0061 | 14.65 | 0.09 | 0.07 | 0.38 | 0.97 | 0.73 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 1.79 | 1.35 | 0.0050 | 12.09 | 0.00 | 0.00 | 0.00 | 0.93 | 0.70 |
| Maximum (all) | 2.28 | 1.72 | 0.0063 | 15.24 | 0.28 | 0.21 | 1.21 | 1.17 | 0.88 |
| Average (valid values only) | 2.19 | 1.65 | 0.0061 | 14.65 | 0.09 | 0.07 | 0.38 | 0.97 | 0.73 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 12:32 PM thru 2/25/2020 12:52 PM

| Timestamp | (Turbine 2) NH3 Slip lb/hr 1-Min | (Turbine 2) 75-O2 % 1-Min | (Turbine 2) Total Gas Flow hscf/hr 1-Min | (Turbine 2) GT Megawatts 1-Min | (Turbine 2) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 2/25 12:32 | 2.18 | 13.05 | 23142.9 | 231.8 | 346.1 |
| 2/25 12:33 | 2.18 | 13.05 | 23142.9 | 231.7 | 345.9 |
| 2/25 12:34 | 2.41 | 13.05 | 23057.1 | 231.9 | 346.2 |
| 2/25 12:35 | 2.42 | 13.05 | 23142.9 | 231.5 | 345.7 |
| 2/25 12:36 | 2.41 | 13.06 | 23057.1 | 231.7 | 346.0 |
| 2/25 12:37 | 2.41 | 13.06 | 23057.1 | 231.5 | 345.7 |
| 2/25 12:38 | 2.42 | 13.06 | 23142.9 | 231.6 | 345.8 |
| 2/25 12:39 | 2.42 | 13.06 | 23142.9 | 231.6 | 345.8 |
| 2/25 12:40 | 2.42 | 13.06 | 23142.9 | 231.7 | 345.9 |
| 2/25 12:41 | 2.42 | 13.06 | 23142.9 | 231.6 | 345.8 |
| 2/25 12:42 | 2.41 | 13.06 | 23057.1 | 231.7 | 346.0 |
| 2/25 12:43 | 2.42 | 13.06 | 23142.9 | 231.4 | 345.7 |
| 2/25 12:44 | 2.41 | 13.06 | 23057.1 | 231.4 | 345.7 |
| 2/25 12:45 | 2.41 | 13.06 | 23057.1 | 231.5 | 345.8 |
| 2/25 12:46 | 2.42 | 13.06 | 23142.9 | 231.5 | 345.7 |
| 2/25 12:47 | 2.42 | 13.06 | 23142.9 | 231.6 | 345.9 |
| 2/25 12:48 | 2.41 | 13.06 | 23057.1 | 231.7 | 345.9 |
| 2/25 12:49 | 2.41 | 13.06 | 23057.1 | 231.6 | 345.8 |
| 2/25 12:50 | 2.65 | 13.06 | 23057.1 | 231.7 | 345.9 |
| 2/25 12:51 | 2.65 | 13.06 | 23057.1 | 231.5 | 345.7 |
| 2/25 12:52 | 2.90 | 13.06 | 23142.9 | 231.6 | 345.9 |
| Average (all) | 2.44 | 13.06 | 23102.0 | 231.6 | 345.9 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 2.18 | 13.05 | 23057.1 | 231.4 | 345.7 |
| Maximum (all) | 2.90 | 13.06 | 23142.9 | 231.9 | 346.2 |
| Average (valid values only) | 2.44 | 13.06 | 23102.0 | 231.6 | 345.9 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 1:07 PM thru 2/25/2020 1:27 PM

| Timestamp | (Turbine 2) 75-NOx ppm 1-Min | (Turbine 2) NOx ppm @15% O2 1-Min | (Turbine 2) 75-NOx lb/mmBtu 1-Min | (Turbine 2) NOx lb/hr 1-Min | (Turbine 2) CO ppm 1-Min | (Turbine 2) CO ppm @15% O2 1-Min | (Turbine 2) CO lb/hr 1-Min | (Turbine 2) NH3 Slip ppm 1-Min | (Turbine 2) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/25 13:07 | 1.93 | 1.45 | 0.0054 | 13.01 | 0.01 | 0.01 | 0.00 | 1.38 | 1.04 |
| 2/25 13:08 | 1.93 | 1.45 | 0.0054 | 13.01 | 0.01 | 0.01 | 0.00 | 1.36 | 1.02 |
| 2/25 13:09 | 1.92 | 1.44 | 0.0053 | 12.82 | 0.04 | 0.03 | 0.24 | 1.35 | 1.02 |
| 2/25 13:10 | 1.91 | 1.44 | 0.0053 | 12.77 | 0.04 | 0.03 | 0.24 | 1.34 | 1.01 |
| 2/25 13:11 | 1.90 | 1.43 | 0.0053 | 12.82 | 0.10 | 0.08 | 0.48 | 1.34 | 1.01 |
| 2/25 13:12 | 1.90 | 1.43 | 0.0053 | 12.77 | 0.14 | 0.11 | 0.48 | 1.33 | 1.00 |
| 2/25 13:13 | 1.90 | 1.43 | 0.0053 | 12.77 | 0.20 | 0.15 | 0.72 | 1.33 | 1.00 |
| 2/25 13:14 | 1.90 | 1.43 | 0.0053 | 12.77 | 0.25 | 0.19 | 0.96 | 1.33 | 1.00 |
| 2/25 13:15 | 1.89 | 1.42 | 0.0052 | 12.58 | 0.35 | 0.26 | 1.45 | 1.35 | 1.02 |
| 2/25 13:16 | 1.87 | 1.41 | 0.0052 | 12.53 | 0.37 | 0.28 | 1.45 | 1.36 | 1.02 |
| 2/25 13:17 | 1.86 | 1.40 | 0.0052 | 12.53 | 0.34 | 0.26 | 1.45 | 1.37 | 1.03 |
| 2/25 13:18 | 1.85 | 1.39 | 0.0051 | 12.29 | 0.30 | 0.23 | 1.20 | 1.38 | 1.04 |
| 2/25 13:19 | 1.84 | 1.39 | 0.0051 | 12.29 | 0.32 | 0.24 | 1.20 | 1.40 | 1.05 |
| 2/25 13:20 | 1.83 | 1.38 | 0.0051 | 12.33 | 0.27 | 0.20 | 1.21 | 1.42 | 1.07 |
| 2/25 13:21 | 1.82 | 1.37 | 0.0050 | 12.05 | 0.26 | 0.20 | 0.96 | 1.43 | 1.08 |
| 2/25 13:22 | 1.82 | 1.37 | 0.0050 | 12.09 | 0.28 | 0.21 | 1.21 | 1.43 | 1.08 |
| 2/25 13:23 | 1.86 | 1.40 | 0.0052 | 12.58 | 0.27 | 0.20 | 1.21 | 1.41 | 1.06 |
| 2/25 13:24 | 1.92 | 1.45 | 0.0053 | 12.77 | 0.28 | 0.21 | 1.20 | 1.38 | 1.04 |
| 2/25 13:25 | 2.03 | 1.53 | 0.0056 | 13.49 | 0.26 | 0.20 | 0.96 | 1.32 | 0.99 |
| 2/25 13:26 | 2.18 | 1.64 | 0.0061 | 14.70 | 0.31 | 0.23 | 1.20 | 1.24 | 0.93 |
| 2/25 13:27 | 2.33 | 1.76 | 0.0065 | 15.66 | 0.27 | 0.20 | 1.20 | 1.16 | 0.87 |
| Average (all) | 1.92 | 1.45 | 0.0053 | 12.89 | 0.22 | 0.17 | 0.91 | 1.35 | 1.02 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 1.82 | 1.37 | 0.0050 | 12.05 | 0.01 | 0.01 | 0.00 | 1.16 | 0.87 |
| Maximum (all) | 2.33 | 1.76 | 0.0065 | 15.66 | 0.37 | 0.28 | 1.45 | 1.43 | 1.08 |
| Average (valid values only) | 1.92 | 1.45 | 0.0053 | 12.89 | 0.22 | 0.17 | 0.91 | 1.35 | 1.02 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 1:07 PM thru 2/25/2020 1:27 PM

| Timestamp | (Turbine 2) NH3 Slip lb/hr 1-Min | (Turbine 2) 75-O2 % 1-Min | (Turbine 2) Total Gas Flow hscf/hr 1-Min | (Turbine 2) GT Megawatts 1-Min | (Turbine 2) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 2/25 13:07 | 3.37 | 13.06 | 23057.1 | 231.2 | 345.3 |
| 2/25 13:08 | 3.37 | 13.06 | 23057.1 | 231.4 | 345.0 |
| 2/25 13:09 | 3.39 | 13.06 | 23142.9 | 231.4 | 345.5 |
| 2/25 13:10 | 3.37 | 13.06 | 23057.1 | 231.4 | 345.6 |
| 2/25 13:11 | 3.39 | 13.06 | 23142.9 | 231.3 | 345.5 |
| 2/25 13:12 | 3.37 | 13.07 | 23057.1 | 231.3 | 345.5 |
| 2/25 13:13 | 3.37 | 13.07 | 23057.1 | 231.3 | 345.4 |
| 2/25 13:14 | 3.37 | 13.08 | 23057.1 | 231.4 | 345.5 |
| 2/25 13:15 | 3.39 | 13.07 | 23142.9 | 231.4 | 345.5 |
| 2/25 13:16 | 3.37 | 13.07 | 23057.1 | 231.5 | 345.5 |
| 2/25 13:17 | 3.37 | 13.06 | 23057.1 | 231.4 | 345.5 |
| 2/25 13:18 | 3.37 | 13.06 | 23057.1 | 231.4 | 345.5 |
| 2/25 13:19 | 3.37 | 13.07 | 23057.1 | 231.5 | 345.6 |
| 2/25 13:20 | 3.63 | 13.06 | 23142.9 | 231.5 | 345.7 |
| 2/25 13:21 | 3.61 | 13.06 | 23057.1 | 231.3 | 345.4 |
| 2/25 13:22 | 3.63 | 13.06 | 23142.9 | 231.4 | 345.5 |
| 2/25 13:23 | 3.39 | 13.07 | 23142.9 | 231.4 | 345.5 |
| 2/25 13:24 | 3.37 | 13.07 | 23057.1 | 231.3 | 345.4 |
| 2/25 13:25 | 3.37 | 13.07 | 23057.1 | 231.1 | 345.3 |
| 2/25 13:26 | 3.13 | 13.07 | 23057.1 | 231.1 | 345.3 |
| 2/25 13:27 | 2.89 | 13.07 | 23057.1 | 231.1 | 345.2 |
| Average (all) | 3.38 | 13.07 | 23081.6 | 231.3 | 345.4 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 2.89 | 13.06 | 23057.1 | 231.1 | 345.0 |
| Maximum (all) | 3.63 | 13.08 | 23142.9 | 231.5 | 345.7 |
| Average (valid values only) | 3.38 | 13.07 | 23081.6 | 231.3 | 345.4 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 1:36 PM thru 2/25/2020 1:56 PM

| Timestamp | (Turbine 2) 75-NOx ppm 1-Min | (Turbine 2) NOx ppm @15% O2 1-Min | (Turbine 2) 75-NOx lb/mmBtu 1-Min | (Turbine 2) NOx lb/hr 1-Min | (Turbine 2) CO ppm 1-Min | (Turbine 2) CO ppm @15% O2 1-Min | (Turbine 2) CO lb/hr 1-Min | (Turbine 2) NH3 Slip ppm 1-Min | (Turbine 2) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/25 13:36 | 2.15 | 1.62 | 0.0060 | 14.46 | 0.20 | 0.15 | 0.72 | 0.99 | 0.75 |
| 2/25 13:37 | 2.09 | 1.57 | 0.0058 | 13.97 | 0.22 | 0.17 | 0.96 | 1.01 | 0.76 |
| 2/25 13:38 | 2.05 | 1.54 | 0.0057 | 13.73 | 0.23 | 0.17 | 0.96 | 1.04 | 0.78 |
| 2/25 13:39 | 2.04 | 1.54 | 0.0057 | 13.79 | 0.22 | 0.17 | 0.97 | 1.05 | 0.79 |
| 2/25 13:40 | 2.06 | 1.55 | 0.0057 | 13.73 | 0.21 | 0.16 | 0.96 | 1.05 | 0.79 |
| 2/25 13:41 | 2.12 | 1.60 | 0.0059 | 14.22 | 0.26 | 0.20 | 0.96 | 1.04 | 0.78 |
| 2/25 13:42 | 2.19 | 1.65 | 0.0061 | 14.75 | 0.27 | 0.20 | 1.21 | 1.02 | 0.77 |
| 2/25 13:43 | 2.28 | 1.72 | 0.0063 | 15.18 | 0.30 | 0.23 | 1.20 | 0.99 | 0.75 |
| 2/25 13:44 | 2.36 | 1.78 | 0.0065 | 15.66 | 0.34 | 0.26 | 1.45 | 0.97 | 0.73 |
| 2/25 13:45 | 2.43 | 1.83 | 0.0067 | 16.14 | 0.35 | 0.26 | 1.45 | 0.94 | 0.71 |
| 2/25 13:46 | 2.47 | 1.86 | 0.0069 | 16.69 | 0.37 | 0.28 | 1.45 | 0.93 | 0.70 |
| 2/25 13:47 | 2.46 | 1.85 | 0.0068 | 16.45 | 0.40 | 0.30 | 1.69 | 0.93 | 0.70 |
| 2/25 13:48 | 2.42 | 1.82 | 0.0067 | 16.14 | 0.43 | 0.32 | 1.69 | 0.93 | 0.70 |
| 2/25 13:49 | 2.36 | 1.78 | 0.0065 | 15.66 | 0.41 | 0.31 | 1.69 | 0.94 | 0.71 |
| 2/25 13:50 | 2.28 | 1.72 | 0.0063 | 15.18 | 0.41 | 0.31 | 1.69 | 0.95 | 0.72 |
| 2/25 13:51 | 2.21 | 1.66 | 0.0061 | 14.75 | 0.42 | 0.32 | 1.69 | 0.96 | 0.72 |
| 2/25 13:52 | 2.15 | 1.62 | 0.0060 | 14.51 | 0.43 | 0.32 | 1.69 | 0.97 | 0.73 |
| 2/25 13:53 | 2.12 | 1.60 | 0.0059 | 14.22 | 0.41 | 0.31 | 1.69 | 0.97 | 0.73 |
| 2/25 13:54 | 2.12 | 1.60 | 0.0059 | 14.22 | 0.43 | 0.32 | 1.69 | 0.97 | 0.73 |
| 2/25 13:55 | 2.16 | 1.63 | 0.0060 | 14.51 | 0.47 | 0.35 | 1.93 | 0.96 | 0.72 |
| 2/25 13:56 | 2.24 | 1.69 | 0.0062 | 14.94 | 0.42 | 0.32 | 1.69 | 0.94 | 0.71 |
| Average (all) | 2.23 | 1.68 | 0.0062 | 14.90 | 0.34 | 0.26 | 1.40 | 0.98 | 0.74 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 2.04 | 1.54 | 0.0057 | 13.73 | 0.20 | 0.15 | 0.72 | 0.93 | 0.70 |
| Maximum (all) | 2.47 | 1.86 | 0.0069 | 16.69 | 0.47 | 0.35 | 1.93 | 1.05 | 0.79 |
| Average (valid values only) | 2.23 | 1.68 | 0.0062 | 14.90 | 0.34 | 0.26 | 1.40 | 0.98 | 0.74 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 1:36 PM thru 2/25/2020 1:56 PM

| Timestamp | (Turbine 2) NH3 Slip lb/hr 1-Min | (Turbine 2) 75-O2 % 1-Min | (Turbine 2) Total Gas Flow hscf/hr 1-Min | (Turbine 2) GT Megawatts 1-Min | (Turbine 2) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 2/25 13:36 | 2.41 | 13.07 | 23057.1 | 231.4 | 345.8 |
| 2/25 13:37 | 2.41 | 13.07 | 23057.1 | 231.3 | 345.2 |
| 2/25 13:38 | 2.65 | 13.07 | 23057.1 | 231.4 | 345.6 |
| 2/25 13:39 | 2.66 | 13.06 | 23142.9 | 231.4 | 345.7 |
| 2/25 13:40 | 2.65 | 13.06 | 23057.1 | 231.4 | 345.7 |
| 2/25 13:41 | 2.65 | 13.06 | 23057.1 | 231.4 | 345.7 |
| 2/25 13:42 | 2.42 | 13.06 | 23142.9 | 231.4 | 345.7 |
| 2/25 13:43 | 2.41 | 13.06 | 23057.1 | 231.4 | 345.7 |
| 2/25 13:44 | 2.41 | 13.06 | 23057.1 | 231.4 | 345.7 |
| 2/25 13:45 | 2.41 | 13.06 | 23057.1 | 231.3 | 345.5 |
| 2/25 13:46 | 2.42 | 13.07 | 23142.9 | 231.3 | 345.5 |
| 2/25 13:47 | 2.42 | 13.07 | 23142.9 | 231.4 | 345.6 |
| 2/25 13:48 | 2.41 | 13.07 | 23057.1 | 231.4 | 345.6 |
| 2/25 13:49 | 2.41 | 13.06 | 23057.1 | 231.3 | 345.4 |
| 2/25 13:50 | 2.41 | 13.07 | 23057.1 | 231.3 | 345.4 |
| 2/25 13:51 | 2.42 | 13.06 | 23142.9 | 231.3 | 345.5 |
| 2/25 13:52 | 2.42 | 13.07 | 23142.9 | 231.2 | 345.4 |
| 2/25 13:53 | 2.41 | 13.07 | 23057.1 | 231.3 | 345.5 |
| 2/25 13:54 | 2.41 | 13.07 | 23057.1 | 231.3 | 345.5 |
| 2/25 13:55 | 2.42 | 13.06 | 23142.9 | 231.3 | 345.5 |
| 2/25 13:56 | 2.41 | 13.07 | 23057.1 | 231.2 | 345.5 |
| Average (all) | 2.46 | 13.07 | 23085.7 | 231.3 | 345.6 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 2.41 | 13.06 | 23057.1 | 231.2 | 345.2 |
| Maximum (all) | 2.66 | 13.07 | 23142.9 | 231.4 | 345.8 |
| Average (valid values only) | 2.46 | 13.07 | 23085.7 | 231.3 | 345.6 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 2:15 PM thru 2/25/2020 2:35 PM

| Timestamp | (Turbine 2) 75-NOx ppm 1-Min | (Turbine 2) NOx ppm @15% O2 1-Min | (Turbine 2) 75-NOx lb/mmBtu 1-Min | (Turbine 2) NOx lb/hr 1-Min | (Turbine 2) CO ppm 1-Min | (Turbine 2) CO ppm @15% O2 1-Min | (Turbine 2) CO lb/hr 1-Min | (Turbine 2) NH3 Slip ppm 1-Min | (Turbine 2) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/25 14:15 | 2.33 | 1.76 | 0.0065 | 15.72 | 0.22 | 0.17 | 0.97 | 0.94 | 0.71 |
| 2/25 14:16 | 2.39 | 1.80 | 0.0066 | 15.96 | 0.26 | 0.20 | 0.97 | 0.92 | 0.69 |
| 2/25 14:17 | 2.42 | 1.82 | 0.0067 | 16.14 | 0.28 | 0.21 | 1.20 | 0.92 | 0.69 |
| 2/25 14:18 | 2.42 | 1.82 | 0.0067 | 16.14 | 0.26 | 0.20 | 0.96 | 0.92 | 0.69 |
| 2/25 14:19 | 2.39 | 1.80 | 0.0066 | 15.90 | 0.28 | 0.21 | 1.20 | 0.92 | 0.69 |
| 2/25 14:20 | 2.35 | 1.77 | 0.0065 | 15.66 | 0.25 | 0.19 | 0.96 | 0.92 | 0.69 |
| 2/25 14:21 | 2.28 | 1.72 | 0.0063 | 15.18 | 0.28 | 0.21 | 1.20 | 0.94 | 0.71 |
| 2/25 14:22 | 2.14 | 1.61 | 0.0059 | 14.22 | 0.21 | 0.16 | 0.96 | 1.00 | 0.75 |
| 2/25 14:23 | 1.97 | 1.48 | 0.0055 | 13.20 | 0.20 | 0.15 | 0.72 | 1.05 | 0.79 |
| 2/25 14:24 | 1.84 | 1.38 | 0.0051 | 12.33 | 0.20 | 0.15 | 0.73 | 1.09 | 0.82 |
| 2/25 14:25 | 1.77 | 1.33 | 0.0049 | 11.81 | 0.25 | 0.19 | 0.96 | 1.15 | 0.87 |
| 2/25 14:26 | 1.75 | 1.32 | 0.0049 | 11.81 | 0.27 | 0.20 | 1.20 | 1.22 | 0.92 |
| 2/25 14:27 | 1.74 | 1.31 | 0.0048 | 11.57 | 0.26 | 0.20 | 0.96 | 1.29 | 0.97 |
| 2/25 14:28 | 1.76 | 1.33 | 0.0049 | 11.76 | 0.27 | 0.20 | 1.20 | 1.32 | 0.99 |
| 2/25 14:29 | 1.81 | 1.36 | 0.0050 | 12.05 | 0.27 | 0.20 | 1.20 | 1.33 | 1.00 |
| 2/25 14:30 | 1.88 | 1.42 | 0.0052 | 12.58 | 0.29 | 0.22 | 1.21 | 1.31 | 0.99 |
| 2/25 14:31 | 1.98 | 1.49 | 0.0055 | 13.25 | 0.27 | 0.20 | 1.20 | 1.26 | 0.95 |
| 2/25 14:32 | 2.06 | 1.55 | 0.0057 | 13.73 | 0.29 | 0.22 | 1.20 | 1.23 | 0.93 |
| 2/25 14:33 | 2.14 | 1.61 | 0.0059 | 14.22 | 0.31 | 0.23 | 1.20 | 1.17 | 0.88 |
| 2/25 14:34 | 2.20 | 1.66 | 0.0061 | 14.70 | 0.31 | 0.23 | 1.20 | 1.13 | 0.85 |
| 2/25 14:35 | 2.24 | 1.69 | 0.0062 | 14.94 | 0.24 | 0.18 | 0.96 | 1.10 | 0.83 |
| Average (all) | 2.09 | 1.57 | 0.0058 | 13.95 | 0.26 | 0.20 | 1.06 | 1.10 | 0.83 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 1.74 | 1.31 | 0.0048 | 11.57 | 0.20 | 0.15 | 0.72 | 0.92 | 0.69 |
| Maximum (all) | 2.42 | 1.82 | 0.0067 | 16.14 | 0.31 | 0.23 | 1.21 | 1.33 | 1.00 |
| Average (valid values only) | 2.09 | 1.57 | 0.0058 | 13.95 | 0.26 | 0.20 | 1.06 | 1.10 | 0.83 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 2:15 PM thru 2/25/2020 2:35 PM

| Timestamp | (Turbine 2) NH3 Slip lb/hr 1-Min | (Turbine 2) 75-O2 % 1-Min | (Turbine 2) Total Gas Flow hscf/hr 1-Min | (Turbine 2) GT Megawatts 1-Min | (Turbine 2) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 2/25 14:15 | 2.42 | 13.07 | 23142.9 | 231.2 | 345.1 |
| 2/25 14:16 | 2.18 | 13.06 | 23142.9 | 231.1 | 345.1 |
| 2/25 14:17 | 2.17 | 13.06 | 23057.1 | 231.1 | 345.2 |
| 2/25 14:18 | 2.17 | 13.06 | 23057.1 | 231.0 | 345.1 |
| 2/25 14:19 | 2.17 | 13.06 | 23057.1 | 230.9 | 345.0 |
| 2/25 14:20 | 2.17 | 13.06 | 23057.1 | 231.1 | 345.4 |
| 2/25 14:21 | 2.41 | 13.06 | 23057.1 | 231.1 | 345.4 |
| 2/25 14:22 | 2.41 | 13.06 | 23057.1 | 231.2 | 345.6 |
| 2/25 14:23 | 2.64 | 13.06 | 22971.4 | 231.0 | 345.4 |
| 2/25 14:24 | 2.66 | 13.06 | 23142.9 | 231.1 | 345.5 |
| 2/25 14:25 | 2.89 | 13.06 | 23057.1 | 231.0 | 344.9 |
| 2/25 14:26 | 2.89 | 13.07 | 23057.1 | 230.9 | 345.3 |
| 2/25 14:27 | 3.13 | 13.07 | 23057.1 | 231.1 | 345.6 |
| 2/25 14:28 | 3.36 | 13.07 | 22971.4 | 231.0 | 345.5 |
| 2/25 14:29 | 3.37 | 13.07 | 23057.1 | 231.0 | 345.5 |
| 2/25 14:30 | 3.14 | 13.07 | 23142.9 | 231.0 | 345.5 |
| 2/25 14:31 | 3.13 | 13.07 | 23057.1 | 231.1 | 345.6 |
| 2/25 14:32 | 3.13 | 13.07 | 23057.1 | 231.2 | 345.6 |
| 2/25 14:33 | 2.89 | 13.07 | 23057.1 | 231.1 | 345.5 |
| 2/25 14:34 | 2.89 | 13.06 | 23057.1 | 231.2 | 345.5 |
| 2/25 14:35 | 2.65 | 13.07 | 23057.1 | 231.1 | 345.4 |
| Average (all) | 2.71 | 13.06 | 23065.3 | 231.1 | 345.4 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 2.17 | 13.06 | 22971.4 | 230.9 | 344.9 |
| Maximum (all) | 3.37 | 13.07 | 23142.9 | 231.2 | 345.6 |
| Average (valid values only) | 2.71 | 13.06 | 23065.3 | 231.1 | 345.4 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 2:46 PM thru 2/25/2020 3:06 PM

| Timestamp | (Turbine 2) 75-NOx ppm 1-Min | (Turbine 2) NOx ppm @15% O2 1-Min | (Turbine 2) 75-NOx lb/mmBtu 1-Min | (Turbine 2) NOx lb/hr 1-Min | (Turbine 2) CO ppm 1-Min | (Turbine 2) CO ppm @15% O2 1-Min | (Turbine 2) CO lb/hr 1-Min | (Turbine 2) NH3 Slip ppm 1-Min | (Turbine 2) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/25 14:46 | 2.21 | 1.66 | 0.0061 | 14.70 | 0.11 | 0.08 | 0.48 | 0.99 | 0.75 |
| 2/25 14:47 | 2.14 | 1.61 | 0.0059 | 14.22 | 0.14 | 0.11 | 0.48 | 1.03 | 0.78 |
| 2/25 14:48 | 2.06 | 1.55 | 0.0057 | 13.73 | 0.18 | 0.14 | 0.72 | 1.06 | 0.80 |
| 2/25 14:49 | 2.00 | 1.51 | 0.0055 | 13.25 | 0.14 | 0.11 | 0.48 | 1.06 | 0.80 |
| 2/25 14:50 | 1.98 | 1.49 | 0.0055 | 13.30 | 0.06 | 0.05 | 0.24 | 1.07 | 0.81 |
| 2/25 14:51 | 1.98 | 1.49 | 0.0055 | 13.25 | 0.09 | 0.07 | 0.48 | 1.09 | 0.82 |
| 2/25 14:52 | 1.99 | 1.50 | 0.0055 | 13.25 | 0.06 | 0.05 | 0.24 | 1.11 | 0.84 |
| 2/25 14:53 | 2.00 | 1.51 | 0.0056 | 13.54 | 0.04 | 0.03 | 0.24 | 1.12 | 0.84 |
| 2/25 14:54 | 2.00 | 1.51 | 0.0056 | 13.44 | 0.04 | 0.03 | 0.24 | 1.14 | 0.86 |
| 2/25 14:55 | 2.00 | 1.51 | 0.0055 | 13.25 | 0.08 | 0.06 | 0.24 | 1.15 | 0.87 |
| 2/25 14:56 | 2.00 | 1.51 | 0.0056 | 13.49 | 0.08 | 0.06 | 0.24 | 1.15 | 0.87 |
| 2/25 14:57 | 1.99 | 1.50 | 0.0055 | 13.25 | 0.09 | 0.07 | 0.48 | 1.17 | 0.88 |
| 2/25 14:58 | 1.93 | 1.45 | 0.0054 | 13.06 | 0.10 | 0.08 | 0.48 | 1.20 | 0.90 |
| 2/25 14:59 | 1.86 | 1.40 | 0.0052 | 12.53 | 0.08 | 0.06 | 0.24 | 1.24 | 0.93 |
| 2/25 15:00 | 1.83 | 1.38 | 0.0051 | 12.29 | 0.08 | 0.06 | 0.24 | 1.25 | 0.94 |
| 2/25 15:01 | 1.85 | 1.39 | 0.0051 | 12.29 | 0.10 | 0.08 | 0.48 | 1.28 | 0.96 |
| 2/25 15:02 | 1.88 | 1.42 | 0.0052 | 12.48 | 0.08 | 0.06 | 0.24 | 1.29 | 0.97 |
| 2/25 15:03 | 1.92 | 1.45 | 0.0053 | 12.82 | 0.08 | 0.06 | 0.24 | 1.28 | 0.96 |
| 2/25 15:04 | 1.97 | 1.48 | 0.0055 | 13.30 | 0.08 | 0.06 | 0.24 | 1.26 | 0.95 |
| 2/25 15:05 | 2.02 | 1.52 | 0.0056 | 13.49 | 0.13 | 0.10 | 0.48 | 1.24 | 0.93 |
| 2/25 15:06 | 2.07 | 1.56 | 0.0057 | 13.73 | 0.10 | 0.08 | 0.48 | 1.21 | 0.91 |
| Average (all) | 1.98 | 1.50 | 0.0055 | 13.27 | 0.09 | 0.07 | 0.37 | 1.16 | 0.87 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 1.83 | 1.38 | 0.0051 | 12.29 | 0.04 | 0.03 | 0.24 | 0.99 | 0.75 |
| Maximum (all) | 2.21 | 1.66 | 0.0061 | 14.70 | 0.18 | 0.14 | 0.72 | 1.29 | 0.97 |
| Average (valid values only) | 1.98 | 1.50 | 0.0055 | 13.27 | 0.09 | 0.07 | 0.37 | 1.16 | 0.87 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 2:46 PM thru 2/25/2020 3:06 PM

| Timestamp | (Turbine 2) NH3 Slip lb/hr 1-Min | (Turbine 2) 75-O2 % 1-Min | (Turbine 2) Total Gas Flow hscf/hr 1-Min | (Turbine 2) GT Megawatts 1-Min | (Turbine 2) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 2/25 14:46 | 2.41 | 13.06 | 23057.1 | 231.2 | 345.7 |
| 2/25 14:47 | 2.65 | 13.06 | 23057.1 | 231.2 | 345.7 |
| 2/25 14:48 | 2.65 | 13.06 | 23057.1 | 231.0 | 345.5 |
| 2/25 14:49 | 2.65 | 13.06 | 23057.1 | 231.2 | 345.7 |
| 2/25 14:50 | 2.66 | 13.07 | 23142.9 | 231.0 | 345.5 |
| 2/25 14:51 | 2.65 | 13.06 | 23057.1 | 231.2 | 345.7 |
| 2/25 14:52 | 2.65 | 13.07 | 23057.1 | 231.0 | 345.5 |
| 2/25 14:53 | 2.66 | 13.07 | 23142.9 | 231.1 | 345.7 |
| 2/25 14:54 | 2.88 | 13.07 | 22971.4 | 230.9 | 345.4 |
| 2/25 14:55 | 2.89 | 13.06 | 23057.1 | 231.0 | 345.6 |
| 2/25 14:56 | 2.89 | 13.07 | 23057.1 | 231.0 | 345.5 |
| 2/25 14:57 | 2.89 | 13.07 | 23057.1 | 230.9 | 345.4 |
| 2/25 14:58 | 2.90 | 13.07 | 23142.9 | 231.1 | 345.6 |
| 2/25 14:59 | 3.13 | 13.06 | 23057.1 | 231.0 | 345.5 |
| 2/25 15:00 | 3.13 | 13.07 | 23057.1 | 230.9 | 345.4 |
| 2/25 15:01 | 3.13 | 13.07 | 23057.1 | 231.0 | 345.5 |
| 2/25 15:02 | 3.12 | 13.07 | 22971.4 | 231.0 | 345.4 |
| 2/25 15:03 | 3.14 | 13.07 | 23142.9 | 231.1 | 345.4 |
| 2/25 15:04 | 3.14 | 13.06 | 23142.9 | 231.1 | 345.5 |
| 2/25 15:05 | 3.13 | 13.06 | 23057.1 | 231.0 | 345.3 |
| 2/25 15:06 | 2.89 | 13.06 | 23057.1 | 231.0 | 345.1 |
| Average (all) | 2.87 | 13.07 | 23069.4 | 231.0 | 345.5 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 2.41 | 13.06 | 22971.4 | 230.9 | 345.1 |
| Maximum (all) | 3.14 | 13.07 | 23142.9 | 231.2 | 345.7 |
| Average (valid values only) | 2.87 | 13.07 | 23069.4 | 231.0 | 345.5 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 3:17 PM thru 2/25/2020 3:37 PM

| Timestamp | (Turbine 2) 75-NOx ppm 1-Min | (Turbine 2) NOx ppm @15% O2 1-Min | (Turbine 2) 75-NOx lb/mmBtu 1-Min | (Turbine 2) NOx lb/hr 1-Min | (Turbine 2) CO ppm 1-Min | (Turbine 2) CO ppm @15% O2 1-Min | (Turbine 2) CO lb/hr 1-Min | (Turbine 2) NH3 Slip ppm 1-Min | (Turbine 2) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/25 15:17 | 2.20 | 1.66 | 0.0061 | 14.70 | 0.16 | 0.12 | 0.72 | 1.04 | 0.78 |
| 2/25 15:18 | 2.23 | 1.68 | 0.0062 | 14.88 | 0.16 | 0.12 | 0.72 | 1.03 | 0.78 |
| 2/25 15:19 | 2.25 | 1.70 | 0.0062 | 14.94 | 0.11 | 0.08 | 0.48 | 1.02 | 0.77 |
| 2/25 15:20 | 2.25 | 1.70 | 0.0062 | 14.94 | 0.11 | 0.08 | 0.48 | 1.02 | 0.77 |
| 2/25 15:21 | 2.25 | 1.70 | 0.0062 | 14.94 | 0.11 | 0.08 | 0.48 | 1.01 | 0.76 |
| 2/25 15:22 | 2.25 | 1.69 | 0.0062 | 14.94 | 0.08 | 0.06 | 0.24 | 1.00 | 0.75 |
| 2/25 15:23 | 2.24 | 1.69 | 0.0062 | 14.94 | 0.10 | 0.08 | 0.48 | 1.00 | 0.75 |
| 2/25 15:24 | 2.23 | 1.68 | 0.0062 | 14.88 | 0.07 | 0.05 | 0.24 | 1.00 | 0.75 |
| 2/25 15:25 | 2.20 | 1.66 | 0.0061 | 14.75 | 0.03 | 0.02 | 0.24 | 1.01 | 0.76 |
| 2/25 15:26 | 2.14 | 1.61 | 0.0059 | 14.22 | 0.02 | 0.02 | 0.00 | 1.04 | 0.78 |
| 2/25 15:27 | 2.07 | 1.56 | 0.0057 | 13.73 | 0.03 | 0.02 | 0.24 | 1.07 | 0.81 |
| 2/25 15:28 | 2.02 | 1.52 | 0.0056 | 13.54 | 0.04 | 0.03 | 0.24 | 1.08 | 0.81 |
| 2/25 15:29 | 1.99 | 1.50 | 0.0055 | 13.25 | 0.00 | 0.00 | 0.00 | 1.10 | 0.83 |
| 2/25 15:30 | 1.98 | 1.49 | 0.0055 | 13.20 | 0.00 | 0.00 | 0.00 | 1.13 | 0.85 |
| 2/25 15:31 | 1.98 | 1.49 | 0.0055 | 13.25 | 0.04 | 0.03 | 0.24 | 1.14 | 0.86 |
| 2/25 15:32 | 1.97 | 1.48 | 0.0055 | 13.25 | 0.08 | 0.06 | 0.24 | 1.16 | 0.87 |
| 2/25 15:33 | 1.96 | 1.48 | 0.0054 | 13.01 | 0.06 | 0.05 | 0.24 | 1.17 | 0.88 |
| 2/25 15:34 | 1.96 | 1.48 | 0.0054 | 13.01 | 0.09 | 0.07 | 0.48 | 1.17 | 0.88 |
| 2/25 15:35 | 2.02 | 1.52 | 0.0056 | 13.49 | 0.06 | 0.05 | 0.24 | 1.14 | 0.86 |
| 2/25 15:36 | 2.12 | 1.60 | 0.0059 | 14.22 | 0.07 | 0.05 | 0.24 | 1.11 | 0.84 |
| 2/25 15:37 | 2.21 | 1.67 | 0.0061 | 14.75 | 0.07 | 0.05 | 0.24 | 1.07 | 0.81 |
| Average (all) | 2.12 | 1.60 | 0.0059 | 14.13 | 0.07 | 0.05 | 0.31 | 1.07 | 0.81 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 1.96 | 1.48 | 0.0054 | 13.01 | 0.00 | 0.00 | 0.00 | 1.00 | 0.75 |
| Maximum (all) | 2.25 | 1.70 | 0.0062 | 14.94 | 0.16 | 0.12 | 0.72 | 1.17 | 0.88 |
| Average (valid values only) | 2.12 | 1.60 | 0.0059 | 14.13 | 0.07 | 0.05 | 0.31 | 1.07 | 0.81 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 3:17 PM thru 2/25/2020 3:37 PM

| Timestamp | (Turbine 2) NH3 Slip lb/hr 1-Min | (Turbine 2) 75-O2 % 1-Min | (Turbine 2) Total Gas Flow hscf/hr 1-Min | (Turbine 2) GT Megawatts 1-Min | (Turbine 2) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 2/25 15:17 | 2.65 | 13.07 | 23057.1 | 231.0 | 345.1 |
| 2/25 15:18 | 2.64 | 13.07 | 22971.4 | 231.0 | 345.1 |
| 2/25 15:19 | 2.41 | 13.07 | 23057.1 | 231.0 | 345.1 |
| 2/25 15:20 | 2.41 | 13.07 | 23057.1 | 231.1 | 345.3 |
| 2/25 15:21 | 2.41 | 13.07 | 23057.1 | 231.0 | 345.2 |
| 2/25 15:22 | 2.41 | 13.06 | 23057.1 | 230.9 | 345.1 |
| 2/25 15:23 | 2.41 | 13.06 | 23057.1 | 231.0 | 345.3 |
| 2/25 15:24 | 2.40 | 13.06 | 22971.4 | 231.0 | 345.3 |
| 2/25 15:25 | 2.42 | 13.06 | 23142.9 | 231.0 | 345.4 |
| 2/25 15:26 | 2.65 | 13.06 | 23057.1 | 231.1 | 345.3 |
| 2/25 15:27 | 2.65 | 13.06 | 23057.1 | 231.0 | 345.1 |
| 2/25 15:28 | 2.66 | 13.06 | 23142.9 | 231.1 | 345.2 |
| 2/25 15:29 | 2.65 | 13.06 | 23057.1 | 231.0 | 345.1 |
| 2/25 15:30 | 2.88 | 13.06 | 22971.4 | 231.1 | 345.4 |
| 2/25 15:31 | 2.89 | 13.06 | 23057.1 | 231.0 | 345.3 |
| 2/25 15:32 | 2.89 | 13.06 | 23057.1 | 231.1 | 345.4 |
| 2/25 15:33 | 2.89 | 13.06 | 23057.1 | 231.1 | 345.4 |
| 2/25 15:34 | 2.89 | 13.06 | 23057.1 | 231.0 | 345.4 |
| 2/25 15:35 | 2.89 | 13.06 | 23057.1 | 231.1 | 345.5 |
| 2/25 15:36 | 2.65 | 13.06 | 23057.1 | 231.1 | 345.5 |
| 2/25 15:37 | 2.66 | 13.07 | 23142.9 | 231.1 | 345.5 |
| Average (all) | 2.64 | 13.06 | 23057.1 | 231.0 | 345.3 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 2.40 | 13.06 | 22971.4 | 230.9 | 345.1 |
| Maximum (all) | 2.89 | 13.07 | 23142.9 | 231.1 | 345.5 |
| Average (valid values only) | 2.64 | 13.06 | 23057.1 | 231.0 | 345.3 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 3:47 PM thru 2/25/2020 4:07 PM

| Timestamp | (Turbine 2) 75-NOx ppm 1-Min | (Turbine 2) NOx ppm @15% O2 1-Min | (Turbine 2) 75-NOx lb/mmBtu 1-Min | (Turbine 2) NOx lb/hr 1-Min | (Turbine 2) CO ppm 1-Min | (Turbine 2) CO ppm @15% O2 1-Min | (Turbine 2) CO lb/hr 1-Min | (Turbine 2) NH3 Slip ppm 1-Min | (Turbine 2) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/25 15:47 | 2.27 | 1.71 | 0.0063 | 15.18 | 0.09 | 0.07 | 0.48 | 0.96 | 0.72 |
| 2/25 15:48 | 2.28 | 1.72 | 0.0063 | 15.24 | 0.05 | 0.04 | 0.24 | 0.96 | 0.72 |
| 2/25 15:49 | 2.28 | 1.72 | 0.0063 | 15.24 | 0.05 | 0.04 | 0.24 | 0.96 | 0.72 |
| 2/25 15:50 | 2.28 | 1.72 | 0.0063 | 15.18 | 0.08 | 0.06 | 0.24 | 0.95 | 0.71 |
| 2/25 15:51 | 2.27 | 1.71 | 0.0063 | 15.18 | 0.04 | 0.03 | 0.24 | 0.96 | 0.72 |
| 2/25 15:52 | 2.27 | 1.71 | 0.0063 | 15.12 | 0.09 | 0.07 | 0.48 | 0.95 | 0.71 |
| 2/25 15:53 | 2.26 | 1.70 | 0.0063 | 15.24 | 0.03 | 0.02 | 0.24 | 0.95 | 0.71 |
| 2/25 15:54 | 2.25 | 1.69 | 0.0062 | 14.94 | 0.01 | 0.01 | 0.00 | 0.95 | 0.71 |
| 2/25 15:55 | 2.25 | 1.69 | 0.0062 | 14.94 | 0.03 | 0.02 | 0.24 | 0.94 | 0.71 |
| 2/25 15:56 | 2.27 | 1.71 | 0.0063 | 15.24 | 0.07 | 0.05 | 0.24 | 0.93 | 0.70 |
| 2/25 15:57 | 2.28 | 1.72 | 0.0063 | 15.18 | 0.08 | 0.06 | 0.24 | 0.93 | 0.70 |
| 2/25 15:58 | 2.28 | 1.72 | 0.0063 | 15.24 | 0.03 | 0.02 | 0.24 | 0.93 | 0.70 |
| 2/25 15:59 | 2.28 | 1.72 | 0.0063 | 15.18 | 0.02 | 0.02 | 0.00 | 0.94 | 0.71 |
| 2/25 16:00 | 2.27 | 1.71 | 0.0063 | 15.24 | 0.04 | 0.03 | 0.24 | 0.93 | 0.70 |
| 2/25 16:01 | 2.28 | 1.72 | 0.0063 | 15.18 | 0.06 | 0.05 | 0.24 | 0.92 | 0.69 |
| 2/25 16:02 | 2.28 | 1.72 | 0.0063 | 15.18 | 0.07 | 0.05 | 0.24 | 0.93 | 0.70 |
| 2/25 16:03 | 2.27 | 1.71 | 0.0063 | 15.18 | 0.02 | 0.02 | 0.00 | 0.93 | 0.70 |
| 2/25 16:04 | 2.26 | 1.70 | 0.0063 | 15.18 | 0.05 | 0.04 | 0.24 | 0.93 | 0.70 |
| 2/25 16:05 | 2.26 | 1.70 | 0.0063 | 15.18 | 0.01 | 0.01 | 0.00 | 0.94 | 0.71 |
| 2/25 16:06 | 2.26 | 1.70 | 0.0063 | 15.18 | 0.04 | 0.03 | 0.24 | 0.94 | 0.71 |
| 2/25 16:07 | 2.27 | 1.67 | 0.0062 | 15.40 | 0.03 | 0.02 | 0.00 | 0.93 | 0.68 |
| Average (all) | 2.27 | 1.71 | 0.0063 | 15.18 | 0.05 | 0.04 | 0.21 | 0.94 | 0.71 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 2.25 | 1.67 | 0.0062 | 14.94 | 0.01 | 0.01 | 0.00 | 0.92 | 0.68 |
| Maximum (all) | 2.28 | 1.72 | 0.0063 | 15.40 | 0.09 | 0.07 | 0.48 | 0.96 | 0.72 |
| Average (valid values only) | 2.27 | 1.71 | 0.0063 | 15.18 | 0.05 | 0.04 | 0.21 | 0.94 | 0.71 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 3:47 PM thru 2/25/2020 4:07 PM

| Timestamp | (Turbine 2) NH3 Slip lb/hr 1-Min | (Turbine 2) 75-O2 % 1-Min | (Turbine 2) Total Gas Flow hscf/hr 1-Min | (Turbine 2) GT Megawatts 1-Min | (Turbine 2) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 2/25 15:47 | 2.41 | 13.06 | 23057.1 | 231.1 | 345.5 |
| 2/25 15:48 | 2.42 | 13.06 | 23142.9 | 231.0 | 345.4 |
| 2/25 15:49 | 2.42 | 13.06 | 23142.9 | 231.2 | 345.7 |
| 2/25 15:50 | 2.41 | 13.06 | 23057.1 | 231.1 | 345.6 |
| 2/25 15:51 | 2.41 | 13.06 | 23057.1 | 231.2 | 345.8 |
| 2/25 15:52 | 2.40 | 13.06 | 22971.4 | 231.1 | 345.6 |
| 2/25 15:53 | 2.42 | 13.06 | 23142.9 | 231.1 | 345.5 |
| 2/25 15:54 | 2.41 | 13.06 | 23057.1 | 231.2 | 345.7 |
| 2/25 15:55 | 2.41 | 13.06 | 23057.1 | 231.2 | 345.7 |
| 2/25 15:56 | 2.42 | 13.06 | 23142.9 | 231.2 | 345.7 |
| 2/25 15:57 | 2.41 | 13.06 | 23057.1 | 231.2 | 345.7 |
| 2/25 15:58 | 2.42 | 13.06 | 23142.9 | 231.2 | 345.7 |
| 2/25 15:59 | 2.41 | 13.06 | 23057.1 | 231.2 | 345.9 |
| 2/25 16:00 | 2.42 | 13.06 | 23142.9 | 231.2 | 346.0 |
| 2/25 16:01 | 2.17 | 13.06 | 23057.1 | 231.3 | 346.0 |
| 2/25 16:02 | 2.41 | 13.06 | 23057.1 | 231.2 | 345.9 |
| 2/25 16:03 | 2.41 | 13.06 | 23057.1 | 231.3 | 346.0 |
| 2/25 16:04 | 2.41 | 13.06 | 23057.1 | 231.1 | 345.8 |
| 2/25 16:05 | 2.41 | 13.05 | 23057.1 | 231.1 | 345.8 |
| 2/25 16:06 | 2.41 | 13.06 | 23057.1 | 231.1 | 346.0 |
| 2/25 16:07 | 2.24 | 12.88 | 23768.8 | 231.2 | 347.6 |
| Average (all) | 2.39 | 13.05 | 23111.4 | 231.2 | 345.8 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 2.17 | 12.88 | 22971.4 | 231.0 | 345.4 |
| Maximum (all) | 2.42 | 13.06 | 23768.8 | 231.3 | 347.6 |
| Average (valid values only) | 2.39 | 13.05 | 23111.4 | 231.2 | 345.8 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 4:20 PM thru 2/25/2020 4:40 PM

| Timestamp | (Turbine 2) 75-NOx ppm 1-Min | (Turbine 2) NOx ppm @15% O2 1-Min | (Turbine 2) 75-NOx lb/mmBtu 1-Min | (Turbine 2) NOx lb/hr 1-Min | (Turbine 2) CO ppm 1-Min | (Turbine 2) CO ppm @15% O2 1-Min | (Turbine 2) CO lb/hr 1-Min | (Turbine 2) NH3 Slip ppm 1-Min | (Turbine 2) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/25 16:20 | 2.60 | 1.82 | 0.0067 | 17.36 | 0.00 | 0.00 | 0.00 | 1.03 | 0.72 |
| 2/25 16:21 | 2.56 | 1.78 | 0.0066 | 17.10 | 0.00 | 0.00 | 0.00 | 1.06 | 0.74 |
| 2/25 16:22 | 2.54 | 1.76 | 0.0065 | 16.95 | 0.00 | 0.00 | 0.00 | 1.08 | 0.75 |
| 2/25 16:23 | 2.53 | 1.75 | 0.0064 | 16.73 | 0.00 | 0.00 | 0.00 | 1.10 | 0.76 |
| 2/25 16:24 | 2.54 | 1.75 | 0.0064 | 16.84 | 0.00 | 0.00 | 0.00 | 1.11 | 0.76 |
| 2/25 16:25 | 2.57 | 1.77 | 0.0065 | 17.02 | 0.00 | 0.00 | 0.00 | 1.11 | 0.76 |
| 2/25 16:26 | 2.61 | 1.79 | 0.0066 | 17.38 | 0.00 | 0.00 | 0.00 | 1.12 | 0.77 |
| 2/25 16:27 | 2.63 | 1.80 | 0.0066 | 17.35 | 0.00 | 0.00 | 0.00 | 1.14 | 0.78 |
| 2/25 16:28 | 2.64 | 1.80 | 0.0066 | 17.39 | 0.00 | 0.00 | 0.00 | 1.15 | 0.78 |
| 2/25 16:29 | 2.63 | 1.79 | 0.0066 | 17.42 | 0.00 | 0.00 | 0.00 | 1.18 | 0.80 |
| 2/25 16:30 | 2.61 | 1.77 | 0.0065 | 17.19 | 0.00 | 0.00 | 0.00 | 1.19 | 0.81 |
| 2/25 16:31 | 2.60 | 1.76 | 0.0065 | 17.22 | 0.00 | 0.00 | 0.00 | 1.21 | 0.82 |
| 2/25 16:32 | 2.62 | 1.77 | 0.0065 | 17.25 | 0.00 | 0.00 | 0.00 | 1.22 | 0.82 |
| 2/25 16:33 | 2.65 | 1.79 | 0.0066 | 17.54 | 0.00 | 0.00 | 0.00 | 1.23 | 0.83 |
| 2/25 16:34 | 2.67 | 1.80 | 0.0066 | 17.62 | 0.00 | 0.00 | 0.00 | 1.25 | 0.84 |
| 2/25 16:35 | 2.67 | 1.79 | 0.0066 | 17.64 | 0.00 | 0.00 | 0.00 | 1.28 | 0.86 |
| 2/25 16:36 | 2.65 | 1.78 | 0.0066 | 17.64 | 0.00 | 0.00 | 0.00 | 1.30 | 0.87 |
| 2/25 16:37 | 2.62 | 1.76 | 0.0065 | 17.31 | 0.00 | 0.00 | 0.00 | 1.33 | 0.89 |
| 2/25 16:38 | 2.59 | 1.74 | 0.0064 | 17.11 | 0.00 | 0.00 | 0.00 | 1.35 | 0.91 |
| 2/25 16:39 | 2.57 | 1.72 | 0.0063 | 16.84 | 0.00 | 0.00 | 0.00 | 1.37 | 0.92 |
| 2/25 16:40 | 2.56 | 1.72 | 0.0063 | 16.79 | 0.00 | 0.00 | 0.00 | 1.38 | 0.93 |
| Average (all) | 2.60 | 1.77 | 0.0065 | 17.22 | 0.00 | 0.00 | 0.00 | 1.20 | 0.82 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 2.53 | 1.72 | 0.0063 | 16.73 | 0.00 | 0.00 | 0.00 | 1.03 | 0.72 |
| Maximum (all) | 2.67 | 1.82 | 0.0067 | 17.64 | 0.00 | 0.00 | 0.00 | 1.38 | 0.93 |
| Average (valid values only) | 2.60 | 1.77 | 0.0065 | 17.22 | 0.00 | 0.00 | 0.00 | 1.20 | 0.82 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 4:20 PM thru 2/25/2020 4:40 PM

| Timestamp | (Turbine 2) NH3 Slip lb/hr 1-Min | (Turbine 2) 75-O2 % 1-Min | (Turbine 2) Total Gas Flow hscf/hr 1-Min | (Turbine 2) GT Megawatts 1-Min | (Turbine 2) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 2/25 16:20 | 2.59 | 12.46 | 24799.3 | 231.3 | 364.6 |
| 2/25 16:21 | 2.59 | 12.42 | 24793.3 | 231.5 | 365.5 |
| 2/25 16:22 | 2.61 | 12.38 | 24950.2 | 231.3 | 367.0 |
| 2/25 16:23 | 2.62 | 12.36 | 25016.3 | 231.3 | 368.1 |
| 2/25 16:24 | 2.63 | 12.33 | 25167.7 | 231.3 | 369.1 |
| 2/25 16:25 | 2.62 | 12.31 | 25054.7 | 231.4 | 370.1 |
| 2/25 16:26 | 2.63 | 12.28 | 25197.2 | 231.5 | 371.0 |
| 2/25 16:27 | 2.89 | 12.26 | 25164.6 | 231.5 | 371.9 |
| 2/25 16:28 | 2.90 | 12.24 | 25220.2 | 231.5 | 372.6 |
| 2/25 16:29 | 2.90 | 12.22 | 25267.2 | 231.5 | 373.4 |
| 2/25 16:30 | 2.91 | 12.21 | 25307.8 | 231.6 | 374.2 |
| 2/25 16:31 | 2.91 | 12.18 | 25352.8 | 231.5 | 374.2 |
| 2/25 16:32 | 2.92 | 12.17 | 25397.6 | 231.6 | 375.3 |
| 2/25 16:33 | 2.92 | 12.15 | 25432.3 | 231.7 | 376.2 |
| 2/25 16:34 | 2.94 | 12.13 | 25554.5 | 231.6 | 376.6 |
| 2/25 16:35 | 3.20 | 12.12 | 25571.8 | 231.6 | 377.2 |
| 2/25 16:36 | 3.20 | 12.11 | 25575.1 | 231.7 | 377.7 |
| 2/25 16:37 | 3.20 | 12.12 | 25490.0 | 231.6 | 377.9 |
| 2/25 16:38 | 3.20 | 12.12 | 25574.9 | 231.7 | 378.2 |
| 2/25 16:39 | 3.21 | 12.10 | 25577.6 | 231.7 | 378.4 |
| 2/25 16:40 | 3.46 | 12.10 | 25506.5 | 231.8 | 378.5 |
| Average (all) | 2.91 | 12.23 | 25284.4 | 231.5 | 373.2 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 2.59 | 12.10 | 24793.3 | 231.3 | 364.6 |
| Maximum (all) | 3.46 | 12.46 | 25577.6 | 231.8 | 378.5 |
| Average (valid values only) | 2.91 | 12.23 | 25284.4 | 231.5 | 373.2 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 4:51 PM thru 2/25/2020 5:11 PM

| Timestamp | (Turbine 2) 75-NOx ppm 1-Min | (Turbine 2) NOx ppm @15% O2 1-Min | (Turbine 2) 75-NOx lb/mmBtu 1-Min | (Turbine 2) NOx lb/hr 1-Min | (Turbine 2) CO ppm 1-Min | (Turbine 2) CO ppm @15% O2 1-Min | (Turbine 2) CO lb/hr 1-Min | (Turbine 2) NH3 Slip ppm 1-Min | (Turbine 2) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/25 16:51 | 2.53 | 1.70 | 0.0063 | 16.83 | 0.00 | 0.00 | 0.00 | 1.47 | 0.99 |
| 2/25 16:52 | 2.53 | 1.70 | 0.0063 | 16.76 | 0.00 | 0.00 | 0.00 | 1.47 | 0.99 |
| 2/25 16:53 | 2.54 | 1.71 | 0.0063 | 16.81 | 0.00 | 0.00 | 0.00 | 1.46 | 0.98 |
| 2/25 16:54 | 2.56 | 1.72 | 0.0063 | 16.79 | 0.00 | 0.00 | 0.00 | 1.46 | 0.98 |
| 2/25 16:55 | 2.55 | 1.72 | 0.0063 | 16.79 | 0.00 | 0.00 | 0.00 | 1.48 | 1.00 |
| 2/25 16:56 | 2.53 | 1.70 | 0.0063 | 16.73 | 0.00 | 0.00 | 0.00 | 1.48 | 1.00 |
| 2/25 16:57 | 2.52 | 1.69 | 0.0062 | 16.55 | 0.00 | 0.00 | 0.00 | 1.48 | 0.99 |
| 2/25 16:58 | 2.52 | 1.69 | 0.0062 | 16.66 | 0.00 | 0.00 | 0.00 | 1.47 | 0.99 |
| 2/25 16:59 | 2.54 | 1.70 | 0.0063 | 16.91 | 0.00 | 0.00 | 0.00 | 1.46 | 0.98 |
| 2/25 17:00 | 2.57 | 1.71 | 0.0063 | 16.93 | 0.00 | 0.00 | 0.00 | 1.46 | 0.97 |
| 2/25 17:01 | 2.60 | 1.73 | 0.0064 | 17.13 | 0.00 | 0.00 | 0.00 | 1.47 | 0.98 |
| 2/25 17:02 | 2.59 | 1.73 | 0.0064 | 17.06 | 0.00 | 0.00 | 0.00 | 1.49 | 1.00 |
| 2/25 17:03 | 2.55 | 1.72 | 0.0063 | 16.74 | 0.00 | 0.00 | 0.00 | 1.51 | 1.02 |
| 2/25 17:04 | 2.49 | 1.68 | 0.0062 | 16.51 | 0.00 | 0.00 | 0.00 | 1.51 | 1.02 |
| 2/25 17:05 | 2.45 | 1.66 | 0.0061 | 16.21 | 0.00 | 0.00 | 0.00 | 1.50 | 1.01 |
| 2/25 17:06 | 2.45 | 1.65 | 0.0061 | 16.25 | 0.00 | 0.00 | 0.00 | 1.48 | 1.00 |
| 2/25 17:07 | 2.49 | 1.67 | 0.0062 | 16.56 | 0.00 | 0.00 | 0.00 | 1.47 | 0.99 |
| 2/25 17:08 | 2.54 | 1.70 | 0.0063 | 16.88 | 0.00 | 0.00 | 0.00 | 1.46 | 0.98 |
| 2/25 17:09 | 2.59 | 1.73 | 0.0064 | 17.14 | 0.00 | 0.00 | 0.00 | 1.46 | 0.98 |
| 2/25 17:10 | 2.62 | 1.75 | 0.0065 | 17.42 | 0.00 | 0.00 | 0.00 | 1.47 | 0.98 |
| 2/25 17:11 | 2.60 | 1.74 | 0.0064 | 17.05 | 0.00 | 0.00 | 0.00 | 1.49 | 1.00 |
| Average (all) | 2.54 | 1.70 | 0.0063 | 16.80 | 0.00 | 0.00 | 0.00 | 1.48 | 0.99 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 2.45 | 1.65 | 0.0061 | 16.21 | 0.00 | 0.00 | 0.00 | 1.46 | 0.97 |
| Maximum (all) | 2.62 | 1.75 | 0.0065 | 17.42 | 0.00 | 0.00 | 0.00 | 1.51 | 1.02 |
| Average (valid values only) | 2.54 | 1.70 | 0.0063 | 16.80 | 0.00 | 0.00 | 0.00 | 1.48 | 0.99 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 4:51 PM thru 2/25/2020 5:11 PM

| Timestamp | (Turbine 2) NH3 Slip lb/hr 1-Min | (Turbine 2) 75-O2 % 1-Min | (Turbine 2) Total Gas Flow hscf/hr 1-Min | (Turbine 2) GT Megawatts 1-Min | (Turbine 2) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 2/25 16:51 | 3.47 | 12.12 | 25552.3 | 231.7 | 377.9 |
| 2/25 16:52 | 3.46 | 12.12 | 25458.7 | 231.7 | 378.0 |
| 2/25 16:53 | 3.46 | 12.12 | 25525.4 | 231.8 | 378.3 |
| 2/25 16:54 | 3.46 | 12.12 | 25502.5 | 231.8 | 378.4 |
| 2/25 16:55 | 3.73 | 12.13 | 25499.5 | 231.8 | 378.3 |
| 2/25 16:56 | 3.72 | 12.13 | 25418.6 | 232.0 | 378.3 |
| 2/25 16:57 | 3.74 | 12.12 | 25548.6 | 232.0 | 378.0 |
| 2/25 16:58 | 3.50 | 12.10 | 25707.3 | 232.0 | 377.5 |
| 2/25 16:59 | 3.49 | 12.07 | 25686.2 | 232.1 | 377.5 |
| 2/25 17:00 | 3.49 | 12.05 | 25710.4 | 232.1 | 377.7 |
| 2/25 17:01 | 3.48 | 12.05 | 25617.3 | 232.1 | 378.0 |
| 2/25 17:02 | 3.73 | 12.08 | 25500.4 | 232.2 | 378.3 |
| 2/25 17:03 | 3.72 | 12.13 | 25420.5 | 232.1 | 378.4 |
| 2/25 17:04 | 3.73 | 12.16 | 25478.5 | 232.2 | 378.5 |
| 2/25 17:05 | 3.73 | 12.18 | 25434.1 | 232.2 | 378.0 |
| 2/25 17:06 | 3.74 | 12.15 | 25502.6 | 232.2 | 377.6 |
| 2/25 17:07 | 3.47 | 12.12 | 25573.7 | 232.2 | 377.5 |
| 2/25 17:08 | 3.48 | 12.09 | 25630.5 | 232.3 | 377.8 |
| 2/25 17:09 | 3.48 | 12.07 | 25620.6 | 232.2 | 378.2 |
| 2/25 17:10 | 3.49 | 12.09 | 25648.5 | 232.2 | 378.7 |
| 2/25 17:11 | 3.73 | 12.10 | 25496.6 | 232.3 | 379.2 |
| Average (all) | 3.59 | 12.11 | 25549.2 | 232.1 | 378.1 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 3.46 | 12.05 | 25418.6 | 231.7 | 377.5 |
| Maximum (all) | 3.74 | 12.18 | 25710.4 | 232.3 | 379.2 |
| Average (valid values only) | 3.59 | 12.11 | 25549.2 | 232.1 | 378.1 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 5:57 PM thru 2/25/2020 6:17 PM

| Timestamp | (Turbine 2) 75-NOx ppm 1-Min | (Turbine 2) NOx ppm @15% O2 1-Min | (Turbine 2) 75-NOx lb/mmBtu 1-Min | (Turbine 2) NOx lb/hr 1-Min | (Turbine 2) CO ppm 1-Min | (Turbine 2) CO ppm @15% O2 1-Min | (Turbine 2) CO lb/hr 1-Min | (Turbine 2) NH3 Slip ppm 1-Min | (Turbine 2) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/25 17:57 | 2.53 | 1.69 | 0.0062 | 16.65 | 0.00 | 0.00 | 0.00 | 1.48 | 0.99 |
| 2/25 17:58 | 2.51 | 1.68 | 0.0062 | 16.65 | 0.00 | 0.00 | 0.00 | 1.48 | 0.99 |
| 2/25 17:59 | 2.52 | 1.68 | 0.0062 | 16.61 | 0.00 | 0.00 | 0.00 | 1.48 | 0.99 |
| 2/25 18:00 | 2.54 | 1.70 | 0.0063 | 16.94 | 0.00 | 0.00 | 0.00 | 1.47 | 0.98 |
| 2/25 18:01 | 2.56 | 1.71 | 0.0063 | 16.89 | 0.00 | 0.00 | 0.00 | 1.47 | 0.98 |
| 2/25 18:02 | 2.57 | 1.72 | 0.0063 | 16.84 | 0.01 | 0.01 | 0.00 | 1.47 | 0.98 |
| 2/25 18:03 | 2.56 | 1.71 | 0.0063 | 16.84 | 0.02 | 0.01 | 0.00 | 1.48 | 0.99 |
| 2/25 18:04 | 2.55 | 1.71 | 0.0063 | 16.88 | 0.03 | 0.02 | 0.00 | 1.48 | 0.99 |
| 2/25 18:05 | 2.54 | 1.70 | 0.0063 | 16.82 | 0.02 | 0.01 | 0.00 | 1.48 | 0.99 |
| 2/25 18:06 | 2.55 | 1.71 | 0.0063 | 16.86 | 0.00 | 0.00 | 0.00 | 1.47 | 0.99 |
| 2/25 18:07 | 2.56 | 1.72 | 0.0063 | 16.92 | 0.00 | 0.00 | 0.00 | 1.47 | 0.99 |
| 2/25 18:08 | 2.55 | 1.71 | 0.0063 | 16.81 | 0.00 | 0.00 | 0.00 | 1.48 | 0.99 |
| 2/25 18:09 | 2.53 | 1.70 | 0.0062 | 16.60 | 0.00 | 0.00 | 0.00 | 1.49 | 1.00 |
| 2/25 18:10 | 2.52 | 1.69 | 0.0062 | 16.61 | 0.01 | 0.01 | 0.00 | 1.49 | 1.00 |
| 2/25 18:11 | 2.52 | 1.69 | 0.0062 | 16.62 | 0.00 | 0.00 | 0.00 | 1.49 | 1.00 |
| 2/25 18:12 | 2.51 | 1.68 | 0.0062 | 16.62 | 0.02 | 0.01 | 0.00 | 1.51 | 1.01 |
| 2/25 18:13 | 2.51 | 1.68 | 0.0062 | 16.62 | 0.05 | 0.03 | 0.27 | 1.51 | 1.01 |
| 2/25 18:14 | 2.51 | 1.68 | 0.0062 | 16.61 | 0.08 | 0.05 | 0.27 | 1.51 | 1.01 |
| 2/25 18:15 | 2.51 | 1.68 | 0.0062 | 16.60 | 0.02 | 0.01 | 0.00 | 1.51 | 1.01 |
| 2/25 18:16 | 2.51 | 1.68 | 0.0062 | 16.59 | 0.03 | 0.02 | 0.00 | 1.51 | 1.01 |
| 2/25 18:17 | 2.52 | 1.69 | 0.0062 | 16.65 | 0.04 | 0.03 | 0.26 | 1.51 | 1.01 |
| Average (all) | 2.53 | 1.70 | 0.0062 | 16.73 | 0.02 | 0.01 | 0.04 | 1.49 | 1.00 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 2.51 | 1.68 | 0.0062 | 16.59 | 0.00 | 0.00 | 0.00 | 1.47 | 0.98 |
| Maximum (all) | 2.57 | 1.72 | 0.0063 | 16.94 | 0.08 | 0.05 | 0.27 | 1.51 | 1.01 |
| Average (valid values only) | 2.53 | 1.70 | 0.0062 | 16.73 | 0.02 | 0.01 | 0.04 | 1.49 | 1.00 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 5:57 PM thru 2/25/2020 6:17 PM

| Timestamp | (Turbine 2) NH3 Slip lb/hr 1-Min | (Turbine 2) 75-O2 % 1-Min | (Turbine 2) Total Gas Flow hscf/hr 1-Min | (Turbine 2) GT Megawatts 1-Min | (Turbine 2) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 2/25 17:57 | 3.49 | 12.09 | 25688.5 | 233.4 | 380.1 |
| 2/25 17:58 | 3.49 | 12.09 | 25698.0 | 233.4 | 380.1 |
| 2/25 17:59 | 3.49 | 12.07 | 25628.7 | 233.5 | 379.9 |
| 2/25 18:00 | 3.50 | 12.07 | 25730.2 | 233.4 | 379.8 |
| 2/25 18:01 | 3.49 | 12.07 | 25651.7 | 233.5 | 379.9 |
| 2/25 18:02 | 3.47 | 12.07 | 25568.9 | 233.2 | 379.6 |
| 2/25 18:03 | 3.47 | 12.08 | 25567.6 | 233.0 | 379.5 |
| 2/25 18:04 | 3.49 | 12.09 | 25638.4 | 232.8 | 379.3 |
| 2/25 18:05 | 3.47 | 12.09 | 25538.6 | 233.0 | 379.8 |
| 2/25 18:06 | 3.48 | 12.10 | 25615.9 | 232.9 | 379.7 |
| 2/25 18:07 | 3.49 | 12.10 | 25697.1 | 233.0 | 379.8 |
| 2/25 18:08 | 3.46 | 12.10 | 25526.1 | 233.0 | 379.7 |
| 2/25 18:09 | 3.75 | 12.10 | 25624.6 | 233.1 | 379.6 |
| 2/25 18:10 | 3.75 | 12.08 | 25642.0 | 233.3 | 379.7 |
| 2/25 18:11 | 3.75 | 12.08 | 25652.8 | 233.2 | 379.5 |
| 2/25 18:12 | 3.75 | 12.08 | 25654.0 | 233.3 | 379.7 |
| 2/25 18:13 | 3.75 | 12.08 | 25645.3 | 233.3 | 379.8 |
| 2/25 18:14 | 3.75 | 12.07 | 25632.5 | 233.5 | 380.3 |
| 2/25 18:15 | 3.75 | 12.07 | 25616.7 | 233.5 | 380.6 |
| 2/25 18:16 | 3.75 | 12.08 | 25605.4 | 233.6 | 380.7 |
| 2/25 18:17 | 3.76 | 12.08 | 25689.3 | 233.7 | 380.9 |
| Average (all) | 3.60 | 12.08 | 25633.9 | 233.3 | 379.9 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 3.46 | 12.07 | 25526.1 | 232.8 | 379.3 |
| Maximum (all) | 3.76 | 12.10 | 25730.2 | 233.7 | 380.9 |
| Average (valid values only) | 3.60 | 12.08 | 25633.9 | 233.3 | 379.9 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CEMS AND REFERENCE METHOD DATA

## Reference Method Data

**Relative Accuracy Test Data**
**Reference Method Results (NOx)**
**General Electric, 7F.05, Unit #U-00002**

| | |
|---|---|
| Parameter: | Oxides of Nitrogen |
| Date of Test: | February 25, 2020 |
| Reference Method: | EPA Method 7E |
| RM Analyzer Type: | Chemiluminescence |
| Manufacturer: | |
| Model #: | THERMO 42 series |
| Serial #: | INST-NX-0031 |

| RUN # | RUN TIME | UNIT LOAD | CONCENTRATIONS | | RATES | |
|---|---|---|---|---|---|---|
| | | (MW) | (ppmvd) | (ppmvd@15%$O_2$) | (lb/hr) | (lb/MMBtu) |
| 1 | 11:53 - 12:13 | 346.6 | | 1.58 | 14.14 | 0.0058 |
| 2 | 12:32 - 12:52 | 345.9 | | 1.54 | 13.77 | 0.0057 |
| 3 | 13:07 - 13:27 | 345.4 | | 1.55 | 13.85 | 0.0057 |
| 4 | 13:36 - 13:56 | 345.6 | | 1.58 | 14.11 | 0.0058 |
| 5 | 14:15 - 14:35 | 345.4 | | 1.50 | 13.41 | 0.0055 |
| 6 | 14:46 - 15:06 | 345.5 | | 1.42 | 12.65 | 0.0052 |
| 7 | 15:17 - 15:37 | 345.3 | | 1.51 | 13.45 | 0.0056 |
| 8 | 15:47 - 16:07 | 345.8 | | 1.58 | 14.15 | 0.0058 |
| 9 | 16:20 - 16:40 | 373.2 | | 1.65 | 16.10 | 0.0061 |
| 10 | 16:51 - 17:11 | 378.1 | | 1.58 | 15.67 | 0.0058 |
| 11 | 17:57 - 18:17 | 379.9 | | 1.59 | 15.73 | 0.0058 |
| 12 | | | | | | |

**Relative Accuracy Test Data**
**Reference Method Results (CO)**
**General Electric, 7F.05, Unit #U-00002**

| | |
|---|---|
| Parameter: | Carbon Monoxide |
| Date of Test: | February 25, 2020 |
| Reference Method: | EPA Method 10 |
| RM Analyzer Type: | Infrared Absorption |
| Manufacturer: | |
| Model #: | THERMO 48 series |
| Serial #: | INST-CO-0029 |

| RUN # | RUN TIME | UNIT LOAD | CONCENTRATIONS | | RATES | |
|---|---|---|---|---|---|---|
| | | (MW) | (ppmvd) | (ppmvd@15%$O_2$) | (lb/hr) | (lb/MMBtu) |
| 1 | 11:53 - 12:13 | 346.6 | | 0.11 | 0.58 | |
| 2 | 12:32 - 12:52 | 345.9 | | 0.35 | 1.93 | |
| 3 | 13:07 - 13:27 | 345.4 | | 0.13 | 0.69 | |
| 4 | 13:36 - 13:56 | 345.6 | | 0.51 | 2.76 | |
| 5 | 14:15 - 14:35 | 345.4 | | 0.13 | 0.72 | |
| 6 | 14:46 - 15:06 | 345.5 | | 0.16 | 0.89 | |
| 7 | 15:17 - 15:37 | 345.3 | | 0.14 | 0.74 | |
| 8 | 15:47 - 16:07 | 345.8 | | 0.14 | 0.77 | |
| 9 | 16:20 - 16:40 | 373.2 | | 0.11 | 0.64 | |
| 10 | 16:51 - 17:11 | 378.1 | | 0.11 | 0.68 | |
| 11 | 17:57 - 18:17 | 379.9 | | 0.12 | 0.71 | |
| 12 | | | | | | |

**Relative Accuracy Test Data**
**Reference Method Results ($NH_3$)**
**General Electric, 7F.05, Unit #U-00002**

| | |
|---|---|
| Parameter: | Ammonia |
| Date of Test: | February 25, 2020 |
| Reference Method: | EPA Method 027 |
| RM Analyzer Type: | Fourier Transform infared |
| Manufacturer: | MKS |
| Model #: | 2030 |
| Serial #: | INST-IR-0004 |

| RUN # | RUN TIME | UNIT LOAD | CONCENTRATIONS | | RATES | |
|---|---|---|---|---|---|---|
| | | (MW) | (ppmvd) | (ppmvd@15%$O_2$) | (lb/hr) | (lb/MMBtu) |
| 1 | 11:53 - 12:13 | 346.6 | | 0.66 | 2.20 | |
| 2 | 12:32 - 12:52 | 345.9 | | 0.85 | 2.83 | |
| 3 | 13:07 - 13:27 | 345.4 | | 0.87 | 2.88 | |
| 4 | 13:36 - 13:56 | 345.6 | | 0.68 | 2.26 | |
| 5 | 14:15 - 14:35 | 345.4 | | 0.87 | 2.87 | |
| 6 | 14:46 - 15:06 | 345.5 | | 0.66 | 2.19 | |
| 7 | 15:17 - 15:37 | 345.3 | | 0.66 | 2.17 | |
| 8 | 15:47 - 16:07 | 345.8 | | 0.61 | 2.01 | |
| 9 | 16:20 - 16:40 | 373.2 | | 0.48 | 1.73 | |
| 10 | 16:51 - 17:11 | 378.1 | | 0.60 | 2.20 | |
| 11 | 17:57 - 18:17 | 379.9 | | 1.53 | 5.62 | |
| 12 | | | | | | |

**Relative Accuracy Test Data**
**Reference Method Results ($O_2$)**
**General Electric, 7F.05, Unit #U-00002**

| | |
|---|---|
| Parameter: | Oxygen |
| Date of Test: | February 25, 2020 |
| Reference Method: | EPA Method 3A |
| RM Analyzer Type: | Paramagnetic Cell |
| Manufacturer: Model #: | SERVOMEX 1440 |
| Serial #: | INST-O2-0024 |

| RUN # | RUN TIME | UNIT LOAD (MW) | CONC. (%vd) |
|---|---|---|---|
| 1 | 11:53 - 12:13 | 346.6 | 13.36 |
| 2 | 12:32 - 12:52 | 345.9 | 13.25 |
| 3 | 13:07 - 13:27 | 345.4 | 13.29 |
| 4 | 13:36 - 13:56 | 345.6 | 11.85 |
| 5 | 14:15 - 14:35 | 345.4 | 13.30 |
| 6 | 14:46 - 15:06 | 345.5 | 13.25 |
| 7 | 15:17 - 15:37 | 345.3 | 13.27 |
| 8 | 15:47 - 16:07 | 345.8 | 13.25 |
| 9 | 16:20 - 16:40 | 373.2 | 12.43 |
| 10 | 16:51 - 17:11 | 378.1 | 12.29 |
| 11 | 17:57 - 18:17 | 379.9 | 12.31 |
| 12 | | | |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,317,550 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,317,550 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.38 | in. Hg |
| Relative Humidity | 51 | % |
| Ambient Temperature | 54 | °F |
| Specific Humidity | 0.004604 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 346.6 | megawatts |
| Stack Exhaust Flow (M19) | 58,713,359 | SCFH |

Base Load Load, Run - 1

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/25/20 11:53:28 | 60 | 13.47 | 1.90 | 0.16 | 0.85 | 8.02 |
| 02/25/20 11:53:58 | 90 | 13.46 | 1.92 | 0.17 | 0.85 | 7.89 |
| 02/25/20 11:54:28 | 120 | 13.47 | 1.91 | 0.17 | 0.84 | 7.79 |
| 02/25/20 11:54:58 | 150 | 13.46 | 1.87 | 0.14 | 0.88 | 8.34 |
| 02/25/20 11:55:28 | 180 | 13.46 | 1.87 | 0.16 | 0.85 | 7.96 |
| 02/25/20 11:55:58 | 210 | 13.46 | 1.86 | 0.14 | 0.83 | 7.90 |
| 02/25/20 11:56:28 | 240 | 13.46 | 1.87 | 0.13 | 0.83 | 8.04 |
| 02/25/20 11:56:58 | 270 | 13.45 | 1.88 | 0.13 | 0.84 | 7.80 |
| 02/25/20 11:57:28 | 300 | 13.46 | 1.88 | 0.13 | 0.85 | 8.15 |
| 02/25/20 11:57:58 | 330 | 13.46 | 1.86 | 0.16 | 0.82 | 7.92 |
| 02/25/20 11:58:28 | 360 | 13.46 | 1.85 | 0.13 | 0.81 | 7.97 |
| 02/25/20 11:58:58 | 390 | 13.45 | 1.84 | 0.11 | 0.83 | 8.09 |
| 02/25/20 11:59:28 | 420 | 13.45 | 1.85 | 0.16 | 0.83 | 7.92 |
| 02/25/20 11:59:58 | 450 | 13.45 | 1.84 | 0.15 | 0.83 | 8.37 |
| 02/25/20 12:00:28 | 480 | 13.44 | 1.80 | 0.15 | 0.79 | 7.92 |
| 02/25/20 12:00:58 | 510 | 13.46 | 1.83 | 0.17 | 0.81 | 8.09 |
| 02/25/20 12:01:28 | 540 | 13.46 | 1.83 | 0.17 | 0.82 | 8.13 |
| 02/25/20 12:01:58 | 570 | 13.46 | 1.85 | 0.14 | 0.81 | 8.01 |
| 02/25/20 12:02:28 | 600 | 13.45 | 1.86 | 0.16 | 0.80 | 8.55 |
| 02/25/20 12:02:58 | 630 | 13.44 | 1.82 | 0.17 | 0.78 | 7.97 |
| 02/25/20 12:03:28 | 660 | 13.44 | 1.84 | 0.16 | 0.81 | 8.22 |
| 02/25/20 12:03:58 | 690 | 13.40 | 1.85 | 0.15 | 0.79 | 8.08 |
| 02/25/20 12:04:28 | 720 | 13.36 | 1.86 | 0.15 | 0.81 | 8.40 |
| 02/25/20 12:04:58 | 750 | 13.35 | 1.87 | 0.14 | 0.77 | 8.30 |
| 02/25/20 12:05:28 | 780 | 13.35 | 1.86 | 0.12 | 0.73 | 8.47 |
| 02/25/20 12:05:58 | 810 | 13.33 | 1.87 | 0.15 | 0.76 | 10.24 |
| 02/25/20 12:06:28 | 840 | 13.34 | 1.86 | 0.11 | 0.70 | 8.71 |
| 02/25/20 12:06:58 | 870 | 13.34 | 1.86 | 0.14 | 0.71 | 8.69 |
| 02/25/20 12:07:28 | 900 | 13.33 | 1.86 | 0.11 | 0.71 | 8.47 |
| 02/25/20 12:07:58 | 930 | 13.33 | 1.84 | 0.13 | 0.72 | 8.42 |
| 02/25/20 12:08:28 | 960 | 13.34 | 1.82 | 0.13 | 0.73 | 8.35 |
| 02/25/20 12:08:58 | 990 | 13.34 | 1.80 | 0.13 | 0.73 | 8.46 |
| 02/25/20 12:09:28 | 1020 | 13.34 | 1.82 | 0.13 | 0.72 | 8.70 |
| 02/25/20 12:09:58 | 1050 | 13.33 | 1.80 | 0.11 | 0.70 | 8.40 |
| 02/25/20 12:10:28 | 1080 | 13.34 | 1.83 | 0.13 | 0.71 | 8.48 |
| 02/25/20 12:10:58 | 1110 | 13.34 | 1.86 | 0.11 | 0.72 | 8.59 |
| 02/25/20 12:11:28 | 1140 | 13.34 | 1.86 | 0.14 | 0.72 | 8.38 |
| 02/25/20 12:11:58 | 1170 | 13.33 | 1.88 | 0.14 | 0.71 | 8.34 |
| 02/25/20 12:12:28 | 1200 | 13.33 | 1.85 | 0.18 | 0.73 | 8.64 |
| 02/25/20 12:12:58 | 1230 | 13.34 | 1.89 | 0.12 | 0.69 | 8.49 |
| 02/25/20 12:13:28 | 1260 | 13.34 | 1.87 | 0.15 | 0.71 | 8.39 |
| 02/25/20 12:13:58 | 1290 | 13.34 | 1.86 | 0.12 | 0.71 | 8.32 |
| **RAW AVERAGE** | | **13.40** | **1.85** | **0.14** | **0.78** | **8.30** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0024 | INST-NX-0031 | INST-CO-0029 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.03 | 0.02 | 0.05 | |
| | **Final Zero** | -0.05 | -0.53 | -0.04 | |
| | **Avg. Zero** | -0.04 | -0.26 | 0.01 | |
| | **Initial UpScale** | 11.99 | 4.93 | 5.13 | |
| | **Final UpScale** | 12.02 | 4.83 | 5.14 | |
| | **Avg. UpScale** | 12.01 | 4.88 | 5.14 | |
| **Upscale Cal Gas** | | 11.97 | 4.91 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 13.36 | 2.02 | 0.14 | 0.85 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.58 | 0.11 | 0.66 |
| Emission Rate (lb/hr) | N/A | 14.14 | 0.58 | 2.20 |
| Emission Rate (lb/MMBtu) | N/A | 0.0058 | 0.000 | 0.001 |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,310,200 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,310,200 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.36 | in. Hg |
| Relative Humidity | 51 | % |
| Ambient Temperature | 55 | °F |
| Specific Humidity | 0.004760 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 345.9 | megawatts |
| Stack Exhaust Flow (M19) | 57,751,340 | SCFH |

Base Load Load, Run - 2

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/25/20 12:32:28 | 2400 | 13.33 | 1.85 | 0.11 | 1.23 | 8.19 |
| 02/25/20 12:32:58 | 2430 | 13.33 | 1.85 | 0.13 | 1.18 | 8.16 |
| 02/25/20 12:33:28 | 2460 | 13.33 | 1.81 | 0.10 | 1.17 | 8.11 |
| 02/25/20 12:33:58 | 2490 | 13.33 | 1.80 | 0.13 | 1.18 | 8.09 |
| 02/25/20 12:34:28 | 2520 | 13.33 | 1.79 | 0.16 | 1.17 | 8.12 |
| 02/25/20 12:34:58 | 2550 | 13.34 | 1.78 | 0.12 | 1.17 | 8.15 |
| 02/25/20 12:35:28 | 2580 | 13.33 | 1.82 | 0.14 | 1.15 | 8.19 |
| 02/25/20 12:35:58 | 2610 | 13.33 | 1.81 | 0.13 | 1.15 | 8.18 |
| 02/25/20 12:36:28 | 2640 | 13.33 | 1.82 | 0.13 | 1.19 | 8.33 |
| 02/25/20 12:36:58 | 2670 | 13.33 | 1.82 | 0.12 | 1.22 | 8.37 |
| 02/25/20 12:37:28 | 2700 | 13.33 | 1.81 | 0.13 | 1.21 | 8.35 |
| 02/25/20 12:37:58 | 2730 | 13.33 | 1.77 | 0.12 | 1.15 | 8.33 |
| 02/25/20 12:38:28 | 2760 | 13.33 | 1.80 | 0.12 | 1.14 | 8.31 |
| 02/25/20 12:38:58 | 2790 | 13.34 | 1.79 | 0.11 | 1.15 | 8.31 |
| 02/25/20 12:39:28 | 2820 | 13.34 | 1.81 | 0.12 | 1.12 | 8.33 |
| 02/25/20 12:39:58 | 2850 | 13.33 | 1.81 | 0.13 | 1.13 | 8.32 |
| 02/25/20 12:40:28 | 2880 | 13.34 | 1.81 | 0.11 | 1.09 | 8.33 |
| 02/25/20 12:40:58 | 2910 | 13.34 | 1.81 | 0.11 | 1.02 | 8.36 |
| 02/25/20 12:41:28 | 2940 | 13.33 | 1.82 | 0.11 | 1.05 | 8.65 |
| 02/25/20 12:41:58 | 2970 | 13.33 | 1.87 | 0.12 | 1.03 | 8.57 |
| 02/25/20 12:42:28 | 3000 | 13.33 | 1.87 | 0.14 | 1.03 | 8.48 |
| 02/25/20 12:42:58 | 3030 | 13.33 | 1.88 | 0.15 | 1.03 | 8.44 |
| 02/25/20 12:43:28 | 3060 | 13.33 | 1.88 | 0.16 | 1.01 | 8.39 |
| 02/25/20 12:43:58 | 3090 | 13.33 | 1.85 | 0.13 | 0.97 | 8.38 |
| 02/25/20 12:44:28 | 3120 | 13.33 | 1.83 | 0.14 | 0.95 | 8.36 |
| 02/25/20 12:44:58 | 3150 | 13.33 | 1.85 | 0.15 | 0.96 | 8.32 |
| 02/25/20 12:45:28 | 3180 | 13.31 | 1.88 | 0.14 | 0.95 | 8.28 |
| 02/25/20 12:45:58 | 3210 | 13.28 | 1.90 | 0.12 | 0.99 | 8.26 |
| 02/25/20 12:46:28 | 3240 | 13.25 | 1.87 | 0.12 | 0.95 | 8.22 |
| 02/25/20 12:46:58 | 3270 | 13.24 | 1.85 | 0.13 | 0.90 | 8.28 |
| 02/25/20 12:47:28 | 3300 | 13.22 | 1.77 | 0.11 | 0.88 | 8.31 |
| 02/25/20 12:47:58 | 3330 | 13.22 | 1.68 | 0.11 | 0.83 | 8.33 |
| 02/25/20 12:48:28 | 3360 | 13.22 | 1.63 | 0.11 | 0.82 | 8.34 |
| 02/25/20 12:48:58 | 3390 | 13.21 | 1.56 | 0.13 | 0.79 | 8.39 |
| 02/25/20 12:49:28 | 3420 | 13.22 | 1.48 | 0.13 | 0.77 | 8.44 |
| 02/25/20 12:49:58 | 3450 | 13.25 | 1.45 | 0.16 | 0.82 | 8.45 |
| 02/25/20 12:50:28 | 3480 | 13.29 | 1.41 | 0.12 | 0.80 | 8.42 |
| 02/25/20 12:50:58 | 3510 | 13.31 | 1.37 | 0.11 | 0.77 | 8.33 |
| 02/25/20 12:51:28 | 3540 | 13.33 | 1.33 | 0.11 | 0.87 | 8.23 |
| 02/25/20 12:51:58 | 3570 | 13.35 | 1.31 | 0.14 | 0.85 | 8.23 |
| 02/25/20 12:52:28 | 3600 | 13.36 | 1.27 | 0.13 | 0.86 | 8.20 |
| 02/25/20 12:52:58 | 3630 | 13.37 | 1.26 | 0.12 | 0.91 | 8.18 |
| **RAW AVERAGE** | | **13.31** | **1.72** | **0.43** | **1.01** | **8.31** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0024 | INST-NX-0031 | INST-CO-0029 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.05 | -0.53 | -0.04 | |
| | **Final Zero** | 0.00 | -0.35 | -0.04 | |
| | **Avg. Zero** | -0.03 | -0.44 | -0.04 | |
| | **Initial UpScale** | 12.02 | 4.83 | 5.14 | |
| | **Final UpScale** | 12.02 | 4.94 | 5.09 | |
| | **Avg. UpScale** | 12.02 | 4.89 | 5.12 | |
| **Upscale Cal Gas** | | 11.97 | 4.91 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 13.25 | 2.00 | 0.46 | 1.11 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.54 | 0.35 | 0.85 |
| Emission Rate (lb/hr) | N/A | 13.77 | 1.93 | 2.83 |
| Emission Rate (lb/MMBtu) | N/A | 0.0057 | 0.001 | 0.001 |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,308,160 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,308,160 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.34 | in. Hg |
| Relative Humidity | 49 | % |
| Ambient Temperature | 55 | °F |
| Specific Humidity | 0.004540 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 345.4 | megawatts |
| Stack Exhaust Flow (M19) | 57,955,701 | SCFH |

Base Load Load, Run - 3

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/25/20 13:07:28 | 4500 | 13.27 | 1.90 | 0.13 | 1.17 | 7.19 |
| 02/25/20 13:07:58 | 4530 | 13.28 | 1.89 | 0.15 | 1.07 | 7.22 |
| 02/25/20 13:08:28 | 4560 | 13.29 | 1.86 | 0.13 | 1.03 | 7.28 |
| 02/25/20 13:08:58 | 4590 | 13.30 | 1.88 | 0.18 | 1.08 | 7.35 |
| 02/25/20 13:09:28 | 4620 | 13.30 | 1.88 | 0.17 | 1.06 | 7.40 |
| 02/25/20 13:09:58 | 4650 | 13.32 | 1.88 | 0.16 | 1.06 | 7.43 |
| 02/25/20 13:10:28 | 4680 | 13.33 | 1.87 | 0.15 | 1.06 | 7.50 |
| 02/25/20 13:10:58 | 4710 | 13.31 | 1.86 | 0.12 | 1.05 | 7.52 |
| 02/25/20 13:11:28 | 4740 | 13.32 | 1.86 | 0.13 | 1.07 | 8.62 |
| 02/25/20 13:11:58 | 4770 | 13.33 | 1.87 | 0.10 | 1.03 | 8.32 |
| 02/25/20 13:12:28 | 4800 | 13.33 | 1.89 | 0.12 | 1.09 | 9.15 |
| 02/25/20 13:12:58 | 4830 | 13.33 | 1.87 | 0.12 | 1.03 | 9.36 |
| 02/25/20 13:13:28 | 4860 | 13.34 | 1.86 | 0.12 | 1.02 | 8.82 |
| 02/25/20 13:13:58 | 4890 | 13.34 | 1.88 | 0.12 | 1.00 | 8.74 |
| 02/25/20 13:14:28 | 4920 | 13.34 | 1.87 | 0.14 | 0.98 | 8.35 |
| 02/25/20 13:14:58 | 4950 | 13.34 | 1.86 | 0.11 | 1.03 | 8.94 |
| 02/25/20 13:15:28 | 4980 | 13.34 | 1.82 | 0.13 | 1.00 | 8.18 |
| 02/25/20 13:15:58 | 5010 | 13.34 | 1.85 | 0.14 | 0.98 | 8.27 |
| 02/25/20 13:16:28 | 5040 | 13.35 | 1.82 | 0.12 | 0.99 | 8.23 |
| 02/25/20 13:16:58 | 5070 | 13.34 | 1.82 | 0.13 | 0.97 | 7.99 |
| 02/25/20 13:17:28 | 5100 | 13.36 | 1.82 | 0.11 | 1.02 | 8.43 |
| 02/25/20 13:17:58 | 5130 | 13.35 | 1.83 | 0.12 | 0.99 | 8.20 |
| 02/25/20 13:18:28 | 5160 | 13.35 | 1.82 | 0.14 | 1.01 | 8.29 |
| 02/25/20 13:18:58 | 5190 | 13.35 | 1.78 | 0.13 | 1.02 | 8.60 |
| 02/25/20 13:19:28 | 5220 | 13.35 | 1.82 | 0.12 | 0.99 | 8.11 |
| 02/25/20 13:19:58 | 5250 | 13.35 | 1.80 | 0.11 | 1.02 | 8.31 |
| 02/25/20 13:20:28 | 5280 | 13.35 | 1.75 | 0.11 | 1.00 | 8.16 |
| 02/25/20 13:20:58 | 5310 | 13.34 | 1.75 | 0.12 | 1.01 | 7.96 |
| 02/25/20 13:21:28 | 5340 | 13.35 | 1.75 | 0.11 | 1.07 | 8.60 |
| 02/25/20 13:21:58 | 5370 | 13.34 | 1.77 | 0.13 | 0.99 | 8.13 |
| 02/25/20 13:22:28 | 5400 | 13.35 | 1.78 | 0.15 | 1.02 | 7.96 |
| 02/25/20 13:22:58 | 5430 | 13.35 | 1.79 | 0.11 | 1.02 | 8.38 |
| 02/25/20 13:23:28 | 5460 | 13.34 | 1.85 | 0.13 | 1.01 | 8.02 |
| 02/25/20 13:23:58 | 5490 | 13.35 | 1.89 | 0.10 | 1.01 | 7.95 |
| 02/25/20 13:24:28 | 5520 | 13.35 | 1.94 | 0.13 | 1.07 | 8.65 |
| 02/25/20 13:24:58 | 5550 | 13.35 | 2.00 | 0.11 | 1.02 | 8.06 |
| 02/25/20 13:25:28 | 5580 | 13.35 | 2.10 | 0.13 | 1.06 | 8.09 |
| 02/25/20 13:25:58 | 5610 | 13.34 | 2.13 | 0.12 | 1.04 | 8.34 |
| 02/25/20 13:26:28 | 5640 | 13.35 | 2.23 | 0.12 | 1.08 | 7.96 |
| 02/25/20 13:26:58 | 5670 | 13.36 | 2.29 | 0.12 | 1.07 | 8.15 |
| 02/25/20 13:27:28 | 5700 | 13.35 | 2.35 | 0.08 | 1.07 | 8.38 |
| 02/25/20 13:27:58 | 5730 | 13.35 | 2.40 | 0.13 | 1.03 | 8.00 |
| **RAW AVERAGE** | | **13.34** | **1.90** | **0.13** | **1.03** | **8.16** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0024 | INST-NX-0031 | INST-CO-0029 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | 0.00 | -0.35 | -0.04 | |
| | **Final Zero** | -0.04 | -0.01 | -0.04 | |
| | **Avg. Zero** | -0.02 | -0.18 | -0.04 | |
| | **Initial UpScale** | 12.02 | 4.94 | 5.09 | |
| | **Final UpScale** | 12.01 | 4.92 | 5.08 | |
| | **Avg. UpScale** | 12.01 | 4.93 | 5.09 | |
| **Upscale Cal Gas** | | 11.97 | 4.91 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 13.29 | 2.00 | 0.16 | 1.13 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.55 | 0.13 | 0.87 |
| Emission Rate (lb/hr) | N/A | 13.85 | 0.69 | 2.88 |
| Emission Rate (lb/MMBtu) | N/A | 0.0057 | 0.000 | 0.001 |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,308,570 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,308,570 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.33 | in. Hg |
| Relative Humidity | 48 | % |
| Ambient Temperature | 56 | °F |
| Specific Humidity | 0.004504 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 345.6 | megawatts |
| Stack Exhaust Flow (M19) | 48,756,000 | SCFH |

Base Load Load, Run - 4

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/25/20 13:36:28 | 6240 | 13.30 | 2.02 | 0.12 | 1.11 | 7.00 |
| 02/25/20 13:36:58 | 6270 | 13.32 | 2.01 | 0.14 | 1.05 | 7.11 |
| 02/25/20 13:37:28 | 6300 | 13.32 | 2.01 | 0.15 | 1.00 | 7.17 |
| 02/25/20 13:37:58 | 6330 | 13.34 | 1.98 | 0.16 | 0.98 | 7.20 |
| 02/25/20 13:38:28 | 6360 | 13.34 | 1.99 | 0.13 | 1.01 | 7.24 |
| 02/25/20 13:38:58 | 6390 | 13.33 | 1.97 | 0.12 | 0.97 | 7.31 |
| 02/25/20 13:39:28 | 6420 | 13.35 | 2.02 | 0.12 | 1.03 | 8.43 |
| 02/25/20 13:39:58 | 6450 | 13.34 | 2.01 | 0.13 | 0.99 | 8.42 |
| 02/25/20 13:40:28 | 6480 | 13.35 | 2.02 | 0.13 | 0.99 | 8.10 |
| 02/25/20 13:40:58 | 6510 | 13.36 | 2.05 | 0.10 | 1.02 | 10.02 |
| 02/25/20 13:41:28 | 6540 | 13.35 | 2.08 | 0.11 | 0.96 | 8.79 |
| 02/25/20 13:41:58 | 6570 | 13.35 | 2.13 | 0.13 | 0.96 | 8.58 |
| 02/25/20 13:42:28 | 6600 | 13.36 | 2.18 | 0.14 | 0.97 | 8.43 |
| 02/25/20 13:42:58 | 6630 | 13.36 | 2.23 | 0.12 | 0.94 | 8.21 |
| 02/25/20 13:43:28 | 6660 | 13.36 | 2.25 | 0.12 | 0.98 | 8.14 |
| 02/25/20 13:43:58 | 6690 | 13.36 | 2.28 | 0.13 | 0.97 | 8.11 |
| 02/25/20 13:44:28 | 6720 | 13.35 | 2.31 | 0.11 | 0.98 | 8.09 |
| 02/25/20 13:44:58 | 6750 | 13.36 | 2.36 | 0.12 | 0.96 | 8.08 |
| 02/25/20 13:45:28 | 6780 | 13.37 | 2.37 | 0.10 | 0.93 | 8.08 |
| 02/25/20 13:45:58 | 6810 | 13.36 | 2.37 | 0.12 | 0.97 | 8.08 |
| 02/25/20 13:46:28 | 6840 | 13.36 | 2.38 | 0.13 | 0.99 | 8.07 |
| 02/25/20 13:46:58 | 6870 | 13.37 | 2.36 | 0.12 | 0.94 | 8.08 |
| 02/25/20 13:47:28 | 6900 | 13.37 | 2.37 | 0.11 | 0.96 | 8.06 |
| 02/25/20 13:47:58 | 6930 | 13.37 | 2.33 | 0.10 | 0.96 | 8.05 |
| 02/25/20 13:48:28 | 6960 | 13.37 | 2.31 | 0.13 | 0.98 | 8.05 |
| 02/25/20 13:48:58 | 6990 | 13.36 | 2.26 | 0.08 | 0.94 | 8.03 |
| 02/25/20 13:49:28 | 7020 | 13.37 | 2.21 | 0.10 | 0.91 | 8.03 |
| 02/25/20 13:49:58 | 7050 | 13.36 | 2.19 | 0.10 | 0.90 | 8.02 |
| 02/25/20 13:50:28 | 7080 | 13.37 | 2.18 | 0.12 | 0.91 | 8.03 |
| 02/25/20 13:50:58 | 7110 | 13.38 | 2.08 | 0.09 | 0.93 | 8.00 |
| 02/25/20 13:51:28 | 7140 | 13.38 | 2.06 | 0.12 | 0.92 | 7.98 |
| 02/25/20 13:51:58 | 7170 | 13.39 | 2.06 | 0.10 | 0.94 | 7.98 |
| 02/25/20 13:52:28 | 7200 | 13.39 | 2.06 | 0.12 | 0.92 | 8.01 |
| 02/25/20 13:52:58 | 7230 | 13.38 | 2.03 | 0.11 | 0.94 | 8.05 |
| 02/25/20 13:53:28 | 7260 | 13.38 | 2.02 | 0.12 | 0.92 | 8.08 |
| 02/25/20 13:53:58 | 7290 | 13.39 | 2.01 | 0.10 | 0.93 | 8.16 |
| 02/25/20 13:54:28 | 7320 | 13.39 | 2.03 | 0.10 | 0.93 | 8.16 |
| 02/25/20 13:54:58 | 7350 | 13.39 | 2.07 | 0.11 | 0.93 | 8.13 |
| 02/25/20 13:55:28 | 7380 | 13.38 | 2.09 | 0.10 | 0.96 | 8.09 |
| 02/25/20 13:55:58 | 7410 | 13.39 | 2.13 | 0.12 | 0.95 | 8.06 |
| 02/25/20 13:56:28 | 7440 | 13.38 | 2.18 | 0.12 | 0.96 | 8.05 |
| 02/25/20 13:56:58 | 7470 | 13.38 | 2.26 | 0.12 | 1.00 | 8.02 |
| **RAW AVERAGE** | | **11.91** | **2.44** | **0.74** | **0.96** | **8.04** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0024 | INST-NX-0031 | INST-CO-0029 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.04 | -0.01 | -0.04 | |
| | **Final Zero** | -0.02 | 0.03 | -0.05 | |
| | **Avg. Zero** | -0.03 | 0.01 | -0.05 | |
| | **Initial UpScale** | 12.01 | 4.92 | 5.08 | |
| | **Final UpScale** | 12.05 | 4.96 | 5.08 | |
| | **Avg. UpScale** | 12.03 | 4.94 | 5.08 | |
| **Upscale Cal Gas** | | 11.97 | 4.91 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 11.85 | 2.42 | 0.78 | 1.05 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.58 | 0.51 | 0.68 |
| Emission Rate (lb/hr) | N/A | 14.11 | 2.76 | 2.26 |
| Emission Rate (lb/MMBtu) | N/A | 0.0058 | 0.001 | 0.001 |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,306,530 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,306,530 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.30 | in. Hg |
| Relative Humidity | 45 | % |
| Ambient Temperature | 59 | °F |
| Specific Humidity | 0.004816 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 345.4 | megawatts |
| Stack Exhaust Flow (M19) | 57,994,954 | SCFH |

Base Load Load, Run - 5

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/25/20 14:15:28 | 8580 | 13.40 | 2.24 | 0.10 | 1.11 | 7.92 |
| 02/25/20 14:15:58 | 8610 | 13.41 | 2.26 | 0.13 | 1.11 | 7.90 |
| 02/25/20 14:16:28 | 8640 | 13.40 | 2.27 | 0.12 | 1.13 | 7.94 |
| 02/25/20 14:16:58 | 8670 | 13.42 | 2.33 | 0.10 | 1.09 | 7.95 |
| 02/25/20 14:17:28 | 8700 | 13.41 | 2.29 | 0.13 | 1.09 | 7.95 |
| 02/25/20 14:17:58 | 8730 | 13.40 | 2.26 | 0.12 | 1.08 | 7.94 |
| 02/25/20 14:18:28 | 8760 | 13.40 | 2.26 | 0.09 | 1.07 | 7.95 |
| 02/25/20 14:18:58 | 8790 | 13.40 | 2.27 | 0.13 | 1.06 | 7.96 |
| 02/25/20 14:19:28 | 8820 | 13.40 | 2.26 | 0.11 | 1.06 | 7.95 |
| 02/25/20 14:19:58 | 8850 | 13.39 | 2.22 | 0.13 | 1.04 | 7.94 |
| 02/25/20 14:20:28 | 8880 | 13.39 | 2.20 | 0.10 | 1.02 | 7.94 |
| 02/25/20 14:20:58 | 8910 | 13.39 | 2.15 | 0.11 | 1.02 | 7.96 |
| 02/25/20 14:21:28 | 8940 | 13.39 | 2.14 | 0.12 | 1.04 | 7.88 |
| 02/25/20 14:21:58 | 8970 | 13.39 | 2.05 | 0.12 | 1.06 | 7.97 |
| 02/25/20 14:22:28 | 9000 | 13.39 | 1.94 | 0.10 | 1.11 | 9.26 |
| 02/25/20 14:22:58 | 9030 | 13.39 | 1.84 | 0.11 | 1.04 | 8.64 |
| 02/25/20 14:23:28 | 9060 | 13.39 | 1.77 | 0.10 | 0.99 | 8.17 |
| 02/25/20 14:23:58 | 9090 | 13.38 | 1.73 | 0.12 | 1.03 | 8.13 |
| 02/25/20 14:24:28 | 9120 | 13.38 | 1.71 | 0.10 | 1.05 | 8.10 |
| 02/25/20 14:24:58 | 9150 | 13.39 | 1.67 | 0.11 | 1.02 | 8.08 |
| 02/25/20 14:25:28 | 9180 | 13.39 | 1.67 | 0.08 | 0.98 | 8.10 |
| 02/25/20 14:25:58 | 9210 | 13.38 | 1.65 | 0.10 | 0.99 | 8.12 |
| 02/25/20 14:26:28 | 9240 | 13.39 | 1.65 | 0.11 | 0.99 | 8.11 |
| 02/25/20 14:26:58 | 9270 | 13.39 | 1.65 | 0.10 | 0.99 | 8.09 |
| 02/25/20 14:27:28 | 9300 | 13.39 | 1.71 | 0.10 | 1.00 | 8.11 |
| 02/25/20 14:27:58 | 9330 | 13.39 | 1.71 | 0.10 | 1.08 | 9.45 |
| 02/25/20 14:28:28 | 9360 | 13.39 | 1.71 | 0.11 | 0.94 | 8.50 |
| 02/25/20 14:28:58 | 9390 | 13.39 | 1.70 | 0.09 | 0.99 | 8.26 |
| 02/25/20 14:29:28 | 9420 | 13.39 | 1.74 | 0.12 | 0.98 | 8.23 |
| 02/25/20 14:29:58 | 9450 | 13.38 | 1.78 | 0.11 | 1.00 | 8.19 |
| 02/25/20 14:30:28 | 9480 | 13.38 | 1.82 | 0.13 | 0.98 | 8.20 |
| 02/25/20 14:30:58 | 9510 | 13.38 | 1.92 | 0.08 | 0.95 | 8.20 |
| 02/25/20 14:31:28 | 9540 | 13.38 | 1.91 | 0.12 | 1.02 | 8.19 |
| 02/25/20 14:31:58 | 9570 | 13.38 | 1.97 | 0.12 | 1.00 | 8.16 |
| 02/25/20 14:32:28 | 9600 | 13.37 | 2.01 | 0.12 | 1.02 | 8.13 |
| 02/25/20 14:32:58 | 9630 | 13.38 | 2.02 | 0.11 | 0.94 | 8.13 |
| 02/25/20 14:33:28 | 9660 | 13.39 | 2.07 | 0.08 | 1.03 | 8.13 |
| 02/25/20 14:33:58 | 9690 | 13.39 | 2.09 | 0.12 | 1.02 | 8.20 |
| 02/25/20 14:34:28 | 9720 | 13.38 | 2.12 | 0.08 | 0.99 | 8.23 |
| 02/25/20 14:34:58 | 9750 | 13.38 | 2.12 | 0.10 | 1.03 | 8.27 |
| 02/25/20 14:35:28 | 9780 | 13.38 | 2.11 | 0.08 | 1.01 | 8.26 |
| 02/25/20 14:35:58 | 9810 | 13.38 | 2.11 | 0.11 | 1.00 | 8.25 |
| **RAW AVERAGE** | | **13.39** | **1.98** | **0.11** | **1.03** | **8.17** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0024 | INST-NX-0031 | INST-CO-0029 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.02 | 0.03 | -0.05 | |
| | **Final Zero** | -0.02 | 0.06 | -0.08 | |
| | **Avg. Zero** | -0.02 | 0.05 | -0.07 | |
| | **Initial UpScale** | 12.05 | 4.96 | 5.08 | |
| | **Final UpScale** | 12.05 | 4.94 | 5.04 | |
| | **Avg. UpScale** | 12.05 | 4.95 | 5.06 | |
| **Upscale Cal Gas** | | 11.97 | 4.91 | 5.09 | |

| **EMISSIONS DATA** | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 13.30 | 1.94 | 0.17 | 1.12 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.50 | 0.13 | 0.87 |
| **Emission Rate (lb/hr)** | N/A | 13.41 | 0.72 | 2.87 |
| **Emission Rate (lb/MMBtu)** | N/A | 0.0055 | 0.000 | 0.001 |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,306,940 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,306,940 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.33 | in. Hg |
| Relative Humidity | 48 | % |
| Ambient Temperature | 56 | °F |
| Specific Humidity | 0.004585 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 345.5 | megawatts |
| Stack Exhaust Flow (M19) | 57,620,510 | SCFH |

Base Load Load, Run - 6

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/25/20 14:46:28 | 10440 | 13.30 | 2.13 | 0.10 | 0.85 | 7.13 |
| 02/25/20 14:46:58 | 10470 | 13.30 | 2.03 | 0.12 | 0.83 | 7.15 |
| 02/25/20 14:47:28 | 10500 | 13.30 | 1.98 | 0.11 | 0.83 | 7.25 |
| 02/25/20 14:47:58 | 10530 | 13.31 | 1.93 | 0.12 | 0.82 | 7.35 |
| 02/25/20 14:48:28 | 10560 | 13.31 | 1.91 | 0.10 | 0.80 | 7.40 |
| 02/25/20 14:48:58 | 10590 | 13.32 | 1.87 | 0.08 | 0.80 | 7.83 |
| 02/25/20 14:49:28 | 10620 | 13.32 | 1.85 | 0.10 | 0.81 | 8.04 |
| 02/25/20 14:49:58 | 10650 | 13.33 | 1.85 | 0.10 | 0.78 | 7.85 |
| 02/25/20 14:50:28 | 10680 | 13.34 | 1.89 | 0.11 | 0.82 | 8.73 |
| 02/25/20 14:50:58 | 10710 | 13.34 | 1.91 | 0.07 | 0.83 | 9.89 |
| 02/25/20 14:51:28 | 10740 | 13.32 | 1.86 | 0.09 | 0.78 | 8.84 |
| 02/25/20 14:51:58 | 10770 | 13.31 | 1.87 | 0.07 | 0.82 | 8.69 |
| 02/25/20 14:52:28 | 10800 | 13.31 | 1.88 | 0.09 | 0.74 | 8.51 |
| 02/25/20 14:52:58 | 10830 | 13.32 | 1.87 | 0.10 | 0.74 | 8.25 |
| 02/25/20 14:53:28 | 10860 | 13.33 | 1.86 | 0.08 | 0.69 | 8.19 |
| 02/25/20 14:53:58 | 10890 | 13.32 | 2.09 | 0.09 | 0.74 | 8.39 |
| 02/25/20 14:54:28 | 10920 | 13.32 | 1.85 | 0.08 | 0.75 | 8.42 |
| 02/25/20 14:54:58 | 10950 | 13.32 | 2.21 | 0.11 | 0.74 | 8.33 |
| 02/25/20 14:55:28 | 10980 | 13.32 | 1.87 | 0.09 | 0.75 | 8.25 |
| 02/25/20 14:55:58 | 11010 | 13.31 | 1.87 | 0.23 | 0.75 | 8.18 |
| 02/25/20 14:56:28 | 11040 | 13.33 | 1.87 | 0.09 | 0.78 | 8.50 |
| 02/25/20 14:56:58 | 11070 | 13.32 | 1.86 | 0.09 | 0.75 | 8.32 |
| 02/25/20 14:57:28 | 11100 | 13.33 | 1.86 | 0.09 | 0.73 | 8.23 |
| 02/25/20 14:57:58 | 11130 | 13.32 | 1.77 | 0.10 | 0.78 | 8.34 |
| 02/25/20 14:58:28 | 11160 | 13.33 | 1.71 | 0.10 | 0.78 | 9.06 |
| 02/25/20 14:58:58 | 11190 | 13.33 | 1.71 | 0.10 | 0.81 | 10.71 |
| 02/25/20 14:59:28 | 11220 | 13.33 | 1.72 | 0.08 | 0.76 | 8.66 |
| 02/25/20 14:59:58 | 11250 | 13.33 | 1.70 | 0.08 | 0.75 | 8.53 |
| 02/25/20 15:00:28 | 11280 | 13.33 | 1.70 | 0.10 | 0.77 | 8.41 |
| 02/25/20 15:00:58 | 11310 | 13.33 | 1.70 | 0.07 | 0.78 | 8.35 |
| 02/25/20 15:01:28 | 11340 | 13.33 | 1.70 | 0.12 | 0.78 | 8.28 |
| 02/25/20 15:01:58 | 11370 | 13.33 | 1.74 | 0.08 | 0.82 | 8.50 |
| 02/25/20 15:02:28 | 11400 | 13.33 | 1.75 | 0.08 | 0.82 | 8.42 |
| 02/25/20 15:02:58 | 11430 | 13.32 | 1.81 | 0.12 | 0.82 | 8.31 |
| 02/25/20 15:03:28 | 11460 | 13.32 | 1.84 | 0.10 | 0.81 | 8.29 |
| 02/25/20 15:03:58 | 11490 | 13.33 | 1.84 | 0.80 | 0.79 | 8.23 |
| 02/25/20 15:04:28 | 11520 | 13.33 | 2.01 | 0.22 | 0.76 | 8.18 |
| 02/25/20 15:04:58 | 11550 | 13.33 | 1.90 | 0.25 | 0.80 | 8.21 |
| 02/25/20 15:05:28 | 11580 | 13.33 | 1.96 | 0.08 | 0.79 | 8.72 |
| 02/25/20 15:05:58 | 11610 | 13.33 | 1.91 | 0.08 | 0.81 | 8.45 |
| 02/25/20 15:06:28 | 11640 | 13.32 | 1.97 | 0.13 | 0.91 | 10.39 |
| 02/25/20 15:06:58 | 11670 | 13.33 | 1.95 | 0.08 | 0.90 | 8.51 |
| **RAW AVERAGE** | | **13.32** | **1.87** | **0.12** | **0.79** | **8.39** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0024 | INST-NX-0031 | INST-CO-0029 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.02 | 0.06 | -0.08 | |
| | **Final Zero** | -0.06 | 0.02 | -0.11 | |
| | **Avg. Zero** | -0.04 | 0.04 | -0.10 | |
| | **Initial UpScale** | 12.05 | 4.94 | 5.04 | |
| | **Final UpScale** | 12.02 | 4.92 | 5.07 | |
| | **Avg. UpScale** | 12.04 | 4.93 | 5.06 | |
| **Upscale Cal Gas** | | 11.97 | 4.91 | 5.09 | |

| **EMISSIONS DATA** | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 13.25 | 1.84 | 0.21 | 0.86 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.42 | 0.16 | 0.66 |
| **Emission Rate (lb/hr)** | N/A | 12.65 | 0.89 | 2.19 |
| **Emission Rate (lb/MMBtu)** | N/A | 0.0052 | 0.000 | 0.001 |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,305,710 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,305,710 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.33 | in. Hg |
| Relative Humidity | 50 | % |
| Ambient Temperature | 56 | °F |
| Specific Humidity | 0.004805 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 345.3 | megawatts |
| Stack Exhaust Flow (M19) | 57,735,796 | SCFH |

Base Load Load, Run - 7

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/25/20 15:17:28 | 12300 | 13.28 | 2.07 | 0.10 | 0.85 | 7.57 |
| 02/25/20 15:17:58 | 12330 | 13.29 | 2.05 | 0.11 | 0.86 | 7.57 |
| 02/25/20 15:18:28 | 12360 | 13.29 | 2.07 | 0.10 | 0.84 | 7.56 |
| 02/25/20 15:18:58 | 12390 | 13.29 | 2.06 | 0.11 | 0.81 | 7.56 |
| 02/25/20 15:19:28 | 12420 | 13.30 | 2.07 | 0.09 | 0.82 | 7.54 |
| 02/25/20 15:19:58 | 12450 | 13.32 | 2.06 | 0.07 | 0.79 | 7.51 |
| 02/25/20 15:20:28 | 12480 | 13.32 | 2.07 | 0.09 | 0.85 | 8.68 |
| 02/25/20 15:20:58 | 12510 | 13.33 | 2.07 | 0.10 | 0.93 | 10.81 |
| 02/25/20 15:21:28 | 12540 | 13.32 | 2.12 | 0.09 | 0.80 | 9.36 |
| 02/25/20 15:21:58 | 12570 | 13.32 | 2.12 | 0.10 | 0.73 | 8.61 |
| 02/25/20 15:22:28 | 12600 | 13.32 | 2.08 | 0.11 | 0.79 | 8.34 |
| 02/25/20 15:22:58 | 12630 | 13.32 | 2.05 | 0.06 | 0.81 | 8.15 |
| 02/25/20 15:23:28 | 12660 | 13.32 | 2.03 | 0.08 | 0.78 | 8.11 |
| 02/25/20 15:23:58 | 12690 | 13.32 | 2.02 | 0.08 | 0.80 | 8.08 |
| 02/25/20 15:24:28 | 12720 | 13.33 | 2.03 | 0.09 | 0.81 | 8.07 |
| 02/25/20 15:24:58 | 12750 | 13.32 | 2.04 | 0.08 | 0.84 | 8.05 |
| 02/25/20 15:25:28 | 12780 | 13.32 | 2.01 | 0.08 | 0.84 | 8.03 |
| 02/25/20 15:25:58 | 12810 | 13.32 | 1.95 | 0.07 | 0.78 | 8.07 |
| 02/25/20 15:26:28 | 12840 | 13.33 | 1.91 | 0.06 | 0.79 | 8.12 |
| 02/25/20 15:26:58 | 12870 | 13.33 | 1.89 | 0.08 | 0.77 | 8.20 |
| 02/25/20 15:27:28 | 12900 | 13.34 | 1.87 | 0.08 | 0.77 | 8.21 |
| 02/25/20 15:27:58 | 12930 | 13.34 | 1.91 | 0.16 | 0.72 | 8.21 |
| 02/25/20 15:28:28 | 12960 | 13.33 | 3.05 | 0.41 | 0.72 | 8.22 |
| 02/25/20 15:28:58 | 12990 | 13.32 | 1.80 | 0.07 | 0.71 | 8.23 |
| 02/25/20 15:29:28 | 13020 | 13.33 | 1.87 | 0.06 | 0.72 | 8.23 |
| 02/25/20 15:29:58 | 13050 | 13.33 | 1.82 | 0.08 | 0.73 | 8.22 |
| 02/25/20 15:30:28 | 13080 | 13.33 | 1.82 | 0.08 | 0.71 | 8.19 |
| 02/25/20 15:30:58 | 13110 | 13.33 | 1.80 | 0.09 | 0.74 | 8.16 |
| 02/25/20 15:31:28 | 13140 | 13.33 | 1.81 | 0.09 | 0.72 | 8.18 |
| 02/25/20 15:31:58 | 13170 | 13.33 | 1.82 | 0.07 | 0.75 | 8.98 |
| 02/25/20 15:32:28 | 13200 | 13.35 | 1.84 | 0.08 | 0.73 | 9.13 |
| 02/25/20 15:32:58 | 13230 | 13.33 | 1.77 | 0.10 | 0.74 | 8.33 |
| 02/25/20 15:33:28 | 13260 | 13.33 | 1.76 | 0.06 | 0.74 | 8.30 |
| 02/25/20 15:33:58 | 13290 | 13.32 | 1.80 | 0.07 | 0.73 | 8.24 |
| 02/25/20 15:34:28 | 13320 | 13.32 | 1.79 | 0.07 | 0.77 | 8.18 |
| 02/25/20 15:34:58 | 13350 | 13.33 | 1.88 | 0.07 | 0.77 | 8.16 |
| 02/25/20 15:35:28 | 13380 | 13.33 | 1.92 | 0.07 | 0.80 | 8.13 |
| 02/25/20 15:35:58 | 13410 | 13.33 | 1.96 | 0.05 | 0.76 | 8.15 |
| 02/25/20 15:36:28 | 13440 | 13.32 | 1.97 | 0.05 | 0.77 | 8.18 |
| 02/25/20 15:36:58 | 13470 | 13.33 | 2.02 | 0.06 | 0.73 | 8.20 |
| 02/25/20 15:37:28 | 13500 | 13.33 | 2.09 | 0.07 | 0.80 | 9.01 |
| 02/25/20 15:37:58 | 13530 | 13.33 | 2.11 | 0.06 | 0.78 | 8.34 |
| **RAW AVERAGE** | | **13.32** | **1.98** | **0.09** | **0.78** | **8.27** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0024 | INST-NX-0031 | INST-CO-0029 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.06 | 0.02 | -0.11 | |
| | **Final Zero** | -0.06 | 0.06 | -0.07 | |
| | **Avg. Zero** | -0.06 | 0.04 | -0.09 | |
| | **Initial UpScale** | 12.02 | 4.92 | 5.07 | |
| | **Final UpScale** | 12.01 | 4.94 | 5.09 | |
| | **Avg. UpScale** | 12.02 | 4.93 | 5.08 | |
| **Upscale Cal Gas** | | 11.97 | 4.91 | 5.09 | |

| **EMISSIONS DATA** | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 13.27 | 1.95 | 0.18 | 0.85 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.51 | 0.14 | 0.66 |
| **Emission Rate (lb/hr)** | N/A | 13.45 | 0.74 | 2.17 |
| **Emission Rate (lb/MMBtu)** | N/A | 0.0056 | 0.000 | 0.001 |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,311,140 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,311,140 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.33 | in. Hg |
| Relative Humidity | 51 | % |
| Ambient Temperature | 55 | °F |
| Specific Humidity | 0.004759 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 345.8 | megawatts |
| Stack Exhaust Flow (M19) | 57,743,475 | SCFH |

Base Load Load, Run - 8

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/25/20 15:47:28 | 14100 | 13.25 | 2.11 | 0.11 | 0.82 | 7.35 |
| 02/25/20 15:47:58 | 14130 | 13.26 | 2.12 | 0.12 | 0.78 | 7.43 |
| 02/25/20 15:48:28 | 14160 | 13.26 | 2.12 | 0.10 | 0.75 | 7.47 |
| 02/25/20 15:48:58 | 14190 | 13.28 | 2.12 | 0.12 | 0.77 | 7.50 |
| 02/25/20 15:49:28 | 14220 | 13.29 | 2.11 | 0.10 | 0.76 | 7.51 |
| 02/25/20 15:49:58 | 14250 | 13.29 | 2.06 | 0.07 | 0.74 | 7.53 |
| 02/25/20 15:50:28 | 14280 | 13.29 | 2.06 | 0.06 | 0.75 | 7.54 |
| 02/25/20 15:50:58 | 14310 | 13.31 | 2.07 | 0.08 | 0.77 | 7.56 |
| 02/25/20 15:51:28 | 14340 | 13.32 | 2.07 | 0.09 | 0.74 | 7.57 |
| 02/25/20 15:51:58 | 14370 | 13.32 | 2.06 | 0.07 | 0.76 | 8.67 |
| 02/25/20 15:52:28 | 14400 | 13.32 | 2.06 | 0.08 | 0.69 | 8.08 |
| 02/25/20 15:52:58 | 14430 | 13.32 | 2.07 | 0.62 | 0.77 | 9.79 |
| 02/25/20 15:53:28 | 14460 | 13.32 | 2.09 | 0.07 | 0.70 | 8.72 |
| 02/25/20 15:53:58 | 14490 | 13.32 | 2.06 | 0.10 | 0.76 | 8.63 |
| 02/25/20 15:54:28 | 14520 | 13.32 | 2.06 | 0.07 | 0.76 | 8.40 |
| 02/25/20 15:54:58 | 14550 | 13.33 | 2.07 | 0.08 | 0.76 | 8.27 |
| 02/25/20 15:55:28 | 14580 | 13.33 | 2.07 | 0.08 | 0.73 | 8.08 |
| 02/25/20 15:55:58 | 14610 | 13.34 | 2.06 | 0.07 | 0.71 | 8.45 |
| 02/25/20 15:56:28 | 14640 | 13.33 | 2.05 | 0.06 | 0.74 | 8.07 |
| 02/25/20 15:56:58 | 14670 | 13.32 | 2.07 | 0.08 | 0.70 | 8.13 |
| 02/25/20 15:57:28 | 14700 | 13.32 | 2.07 | 0.08 | 0.70 | 8.25 |
| 02/25/20 15:57:58 | 14730 | 13.33 | 2.07 | 0.09 | 0.71 | 8.05 |
| 02/25/20 15:58:28 | 14760 | 13.33 | 2.08 | 0.07 | 0.71 | 8.49 |
| 02/25/20 15:58:58 | 14790 | 13.34 | 2.06 | 0.08 | 0.72 | 8.16 |
| 02/25/20 15:59:28 | 14820 | 13.33 | 2.05 | 0.10 | 0.72 | 8.10 |
| 02/25/20 15:59:58 | 14850 | 13.33 | 2.09 | 0.11 | 0.70 | 8.27 |
| 02/25/20 16:00:28 | 14880 | 13.33 | 2.07 | 0.08 | 0.68 | 7.99 |
| 02/25/20 16:00:58 | 14910 | 13.33 | 2.04 | 0.07 | 0.71 | 8.21 |
| 02/25/20 16:01:28 | 14940 | 13.33 | 2.05 | 0.06 | 0.69 | 8.04 |
| 02/25/20 16:01:58 | 14970 | 13.33 | 2.07 | 0.08 | 0.67 | 7.92 |
| 02/25/20 16:02:28 | 15000 | 13.33 | 2.07 | 0.05 | 0.70 | 8.38 |
| 02/25/20 16:02:58 | 15030 | 13.33 | 2.07 | 0.08 | 0.70 | 8.14 |
| 02/25/20 16:03:28 | 15060 | 13.33 | 2.07 | 0.06 | 0.73 | 8.21 |
| 02/25/20 16:03:58 | 15090 | 13.33 | 2.07 | 0.07 | 0.75 | 8.45 |
| 02/25/20 16:04:28 | 15120 | 13.33 | 2.07 | 0.09 | 0.75 | 8.04 |
| 02/25/20 16:04:58 | 15150 | 13.34 | 2.06 | 0.08 | 0.73 | 8.31 |
| 02/25/20 16:05:28 | 15180 | 13.33 | 2.54 | 0.09 | 0.69 | 8.21 |
| 02/25/20 16:05:58 | 15210 | 13.33 | 2.05 | 0.07 | 0.69 | 8.06 |
| 02/25/20 16:06:28 | 15240 | 13.33 | 2.17 | 0.47 | 0.70 | 8.45 |
| 02/25/20 16:06:58 | 15270 | 13.33 | 2.01 | 0.12 | 0.65 | 8.05 |
| 02/25/20 16:07:28 | 15300 | 13.14 | 2.09 | 0.13 | 0.67 | 8.28 |
| 02/25/20 16:07:58 | 15330 | 13.16 | 2.12 | 0.07 | 0.66 | 8.22 |
| **RAW AVERAGE** | | **13.31** | **2.09** | **0.11** | **0.72** | **8.12** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0024 | INST-NX-0031 | INST-CO-0029 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.06 | 0.06 | -0.07 | |
| | **Final Zero** | -0.04 | 0.01 | -0.09 | |
| | **Avg. Zero** | -0.05 | 0.04 | -0.08 | |
| | **Initial UpScale** | 12.01 | 4.94 | 5.09 | |
| | **Final UpScale** | 12.03 | 4.94 | 5.08 | |
| | **Avg. UpScale** | 12.02 | 4.94 | 5.09 | |
| **Upscale Cal Gas** | | 11.97 | 4.91 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 13.25 | 2.05 | 0.18 | 0.79 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.58 | 0.14 | 0.61 |
| Emission Rate (lb/hr) | N/A | 14.15 | 0.77 | 2.01 |
| Emission Rate (lb/MMBtu) | N/A | 0.0058 | 0.000 | 0.001 |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,528,440 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,528,440 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.33 | in. Hg |
| Relative Humidity | 54 | % |
| Ambient Temperature | 55 | °F |
| Specific Humidity | 0.004894 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 373.2 | megawatts |
| Stack Exhaust Flow (M19) | 57,042,226 | SCFH |

Base Load Load, Run - 9

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/25/20 16:20:28 | 16080 | 12.72 | 2.35 | 0.06 | 0.65 | 9.20 |
| 02/25/20 16:20:58 | 16110 | 12.72 | 2.36 | 0.05 | 0.67 | 9.97 |
| 02/25/20 16:21:28 | 16140 | 12.70 | 2.31 | 0.04 | 0.63 | 9.56 |
| 02/25/20 16:21:58 | 16170 | 12.69 | 2.36 | 0.05 | 0.60 | 9.03 |
| 02/25/20 16:22:28 | 16200 | 12.68 | 2.36 | 0.05 | 0.61 | 8.78 |
| 02/25/20 16:22:58 | 16230 | 12.66 | 2.32 | 0.07 | 0.60 | 8.56 |
| 02/25/20 16:23:28 | 16260 | 12.62 | 2.32 | 0.05 | 0.61 | 8.71 |
| 02/25/20 16:23:58 | 16290 | 12.58 | 2.32 | 0.08 | 0.61 | 8.90 |
| 02/25/20 16:24:28 | 16320 | 12.58 | 2.33 | 0.08 | 0.57 | 9.03 |
| 02/25/20 16:24:58 | 16350 | 12.59 | 2.35 | 0.04 | 0.53 | 8.80 |
| 02/25/20 16:25:28 | 16380 | 12.58 | 2.41 | 0.07 | 0.60 | 8.91 |
| 02/25/20 16:25:58 | 16410 | 12.58 | 2.42 | 0.06 | 0.56 | 8.69 |
| 02/25/20 16:26:28 | 16440 | 12.55 | 2.43 | 0.09 | 0.58 | 8.87 |
| 02/25/20 16:26:58 | 16470 | 12.53 | 2.41 | 0.05 | 0.57 | 8.61 |
| 02/25/20 16:27:28 | 16500 | 12.52 | 2.42 | 0.08 | 0.56 | 8.87 |
| 02/25/20 16:27:58 | 16530 | 12.53 | 2.42 | 0.10 | 0.56 | 8.76 |
| 02/25/20 16:28:28 | 16560 | 12.51 | 2.43 | 0.09 | 0.58 | 9.26 |
| 02/25/20 16:28:58 | 16590 | 12.50 | 2.41 | 0.07 | 0.54 | 8.80 |
| 02/25/20 16:29:28 | 16620 | 12.49 | 2.41 | 0.05 | 0.57 | 9.00 |
| 02/25/20 16:29:58 | 16650 | 12.49 | 2.41 | 0.08 | 0.57 | 8.97 |
| 02/25/20 16:30:28 | 16680 | 12.48 | 2.41 | 0.09 | 0.60 | 8.87 |
| 02/25/20 16:30:58 | 16710 | 12.47 | 2.35 | 0.09 | 0.55 | 8.81 |
| 02/25/20 16:31:28 | 16740 | 12.46 | 2.35 | 0.06 | 0.58 | 9.05 |
| 02/25/20 16:31:58 | 16770 | 12.45 | 2.39 | 0.06 | 0.64 | 9.83 |
| 02/25/20 16:32:28 | 16800 | 12.45 | 2.41 | 0.08 | 0.62 | 9.03 |
| 02/25/20 16:32:58 | 16830 | 12.43 | 2.42 | 0.07 | 0.60 | 9.28 |
| 02/25/20 16:33:28 | 16860 | 12.42 | 2.45 | 0.11 | 0.63 | 9.10 |
| 02/25/20 16:33:58 | 16890 | 12.41 | 2.48 | 0.10 | 0.62 | 9.51 |
| 02/25/20 16:34:28 | 16920 | 12.41 | 2.47 | 0.09 | 0.65 | 9.00 |
| 02/25/20 16:34:58 | 16950 | 12.39 | 2.45 | 0.08 | 0.65 | 8.91 |
| 02/25/20 16:35:28 | 16980 | 12.39 | 2.44 | 0.08 | 0.65 | 9.15 |
| 02/25/20 16:35:58 | 17010 | 12.39 | 2.42 | 0.12 | 0.62 | 8.98 |
| 02/25/20 16:36:28 | 17040 | 12.38 | 2.44 | 0.11 | 0.70 | 10.47 |
| 02/25/20 16:36:58 | 17070 | 12.37 | 2.41 | 0.09 | 0.66 | 9.55 |
| 02/25/20 16:37:28 | 17100 | 12.38 | 2.39 | 0.08 | 0.67 | 9.35 |
| 02/25/20 16:37:58 | 17130 | 12.37 | 2.35 | 0.10 | 0.67 | 9.09 |
| 02/25/20 16:38:28 | 17160 | 12.36 | 2.33 | 0.07 | 0.66 | 9.07 |
| 02/25/20 16:38:58 | 17190 | 12.38 | 2.33 | 0.07 | 0.71 | 9.00 |
| 02/25/20 16:39:28 | 17220 | 12.37 | 2.31 | 0.08 | 0.76 | 9.23 |
| 02/25/20 16:39:58 | 17250 | 12.37 | 2.39 | 0.09 | 0.71 | 9.19 |
| 02/25/20 16:40:28 | 17280 | 12.36 | 2.32 | 0.07 | 0.74 | 9.10 |
| 02/25/20 16:40:58 | 17310 | 12.37 | 2.31 | 0.10 | 0.71 | 9.25 |
| **RAW AVERAGE** | | **12.49** | **2.38** | **0.08** | **0.62** | **9.10** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0024 | INST-NX-0031 | INST-CO-0029 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.04 | 0.01 | -0.09 | |
| | **Final Zero** | -0.06 | 0.02 | -0.07 | |
| | **Avg. Zero** | -0.05 | 0.02 | -0.08 | |
| | **Initial UpScale** | 12.03 | 4.94 | 5.08 | |
| | **Final UpScale** | 12.03 | 4.94 | 5.05 | |
| | **Avg. UpScale** | 12.03 | 4.94 | 5.07 | |
| **Upscale Cal Gas** | | 11.97 | 4.91 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 12.43 | 2.36 | 0.15 | 0.69 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.65 | 0.11 | 0.48 |
| Emission Rate (lb/hr) | N/A | 16.10 | 0.64 | 1.73 |
| Emission Rate (lb/MMBtu) | N/A | 0.0061 | 0.000 | 0.001 |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,554,920 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,554,920 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.34 | in. Hg |
| Relative Humidity | 57 | % |
| Ambient Temperature | 54 | °F |
| Specific Humidity | 0.005008 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 378.1 | megawatts |
| Stack Exhaust Flow (M19) | 56,695,483 | SCFH |

Base Load Load, Run - 10

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/25/20 16:51:28 | 17940 | 12.31 | 2.31 | 0.12 | 0.77 | 8.03 |
| 02/25/20 16:51:58 | 17970 | 12.33 | 2.29 | 0.09 | 0.72 | 8.07 |
| 02/25/20 16:52:28 | 18000 | 12.32 | 2.28 | 0.09 | 0.69 | 8.14 |
| 02/25/20 16:52:58 | 18030 | 12.34 | 2.32 | 0.11 | 0.69 | 8.19 |
| 02/25/20 16:53:28 | 18060 | 12.35 | 2.33 | 0.10 | 0.74 | 10.22 |
| 02/25/20 16:53:58 | 18090 | 12.34 | 2.31 | 0.09 | 0.67 | 9.70 |
| 02/25/20 16:54:28 | 18120 | 12.36 | 2.35 | 0.09 | 0.64 | 9.67 |
| 02/25/20 16:54:58 | 18150 | 12.35 | 2.33 | 0.11 | 0.58 | 9.41 |
| 02/25/20 16:55:28 | 18180 | 12.37 | 2.31 | 0.09 | 0.58 | 9.04 |
| 02/25/20 16:55:58 | 18210 | 12.37 | 2.34 | 0.11 | 0.62 | 9.35 |
| 02/25/20 16:56:28 | 18240 | 12.36 | 2.31 | 0.10 | 0.61 | 8.93 |
| 02/25/20 16:56:58 | 18270 | 12.37 | 2.30 | 0.10 | 0.63 | 9.13 |
| 02/25/20 16:57:28 | 18300 | 12.37 | 2.29 | 0.16 | 0.65 | 9.00 |
| 02/25/20 16:57:58 | 18330 | 12.35 | 2.27 | 0.11 | 0.66 | 9.03 |
| 02/25/20 16:58:28 | 18360 | 12.34 | 2.26 | 0.08 | 0.66 | 9.03 |
| 02/25/20 16:58:58 | 18390 | 12.34 | 2.31 | 0.13 | 0.64 | 8.91 |
| 02/25/20 16:59:28 | 18420 | 12.32 | 2.31 | 0.13 | 0.60 | 8.92 |
| 02/25/20 16:59:58 | 18450 | 12.29 | 2.34 | 0.12 | 0.65 | 9.26 |
| 02/25/20 17:00:28 | 18480 | 12.29 | 2.36 | 0.11 | 0.67 | 9.15 |
| 02/25/20 17:00:58 | 18510 | 12.28 | 2.40 | 0.11 | 0.67 | 9.13 |
| 02/25/20 17:01:28 | 18540 | 12.28 | 2.40 | 0.11 | 0.67 | 9.09 |
| 02/25/20 17:01:58 | 18570 | 12.31 | 2.40 | 0.10 | 0.71 | 10.00 |
| 02/25/20 17:02:28 | 18600 | 12.32 | 2.33 | 0.11 | 0.74 | 9.49 |
| 02/25/20 17:02:58 | 18630 | 12.35 | 2.29 | 0.09 | 0.79 | 9.16 |
| 02/25/20 17:03:28 | 18660 | 12.35 | 2.27 | 0.08 | 0.80 | 9.20 |
| 02/25/20 17:03:58 | 18690 | 12.38 | 2.28 | 0.08 | 0.78 | 9.22 |
| 02/25/20 17:04:28 | 18720 | 12.38 | 2.22 | 0.07 | 0.81 | 9.88 |
| 02/25/20 17:04:58 | 18750 | 12.40 | 2.28 | 0.08 | 0.82 | 9.25 |
| 02/25/20 17:05:28 | 18780 | 12.37 | 2.20 | 0.04 | 0.90 | 10.10 |
| 02/25/20 17:05:58 | 18810 | 12.39 | 2.23 | 0.07 | 0.89 | 9.16 |
| 02/25/20 17:06:28 | 18840 | 12.37 | 2.21 | 0.08 | 0.98 | 9.22 |
| 02/25/20 17:06:58 | 18870 | 12.36 | 2.25 | 0.06 | 1.05 | 9.80 |
| 02/25/20 17:07:28 | 18900 | 12.35 | 2.28 | 0.06 | 1.05 | 9.36 |
| 02/25/20 17:07:58 | 18930 | 12.35 | 2.30 | 0.10 | 1.05 | 9.20 |
| 02/25/20 17:08:28 | 18960 | 12.33 | 2.32 | 0.08 | 1.03 | 9.33 |
| 02/25/20 17:08:58 | 18990 | 12.31 | 2.35 | 0.11 | 0.96 | 9.45 |
| 02/25/20 17:09:28 | 19020 | 12.31 | 2.38 | 0.09 | 1.04 | 9.99 |
| 02/25/20 17:09:58 | 19050 | 12.30 | 2.37 | 0.10 | 1.09 | 9.30 |
| 02/25/20 17:10:28 | 19080 | 12.32 | 2.40 | 0.09 | 1.10 | 9.38 |
| 02/25/20 17:10:58 | 19110 | 12.32 | 2.35 | 0.11 | 1.06 | 9.14 |
| 02/25/20 17:11:28 | 19140 | 12.33 | 2.31 | 0.07 | 1.01 | 9.15 |
| 02/25/20 17:11:58 | 19170 | 12.34 | 2.30 | 0.13 | 1.01 | 9.13 |
| **RAW AVERAGE** | | **12.34** | **2.31** | **0.10** | **0.80** | **9.22** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0024 | INST-NX-0031 | INST-CO-0029 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.06 | 0.02 | -0.07 | |
| | **Final Zero** | -0.08 | -0.04 | -0.07 | |
| | **Avg. Zero** | -0.07 | -0.01 | -0.07 | |
| | **Initial UpScale** | 12.03 | 4.94 | 5.05 | |
| | **Final UpScale** | 12.01 | 4.89 | 5.04 | |
| | **Avg. UpScale** | 12.02 | 4.92 | 5.05 | |
| **Upscale Cal Gas** | | 11.97 | 4.91 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 12.29 | 2.31 | 0.17 | 0.88 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.58 | 0.11 | 0.60 |
| Emission Rate (lb/hr) | N/A | 15.67 | 0.68 | 2.20 |
| Emission Rate (lb/MMBtu) | N/A | 0.0058 | 0.000 | 0.001 |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,563,390 | SCFH |
| Total Fuel Flow | 2,563,390 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.37 | in. Hg |
| Relative Humidity | 76 | % |
| Ambient Temperature | 51 | °F |
| Specific Humidity | 0.006092 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 379.9 | megawatts |
| Stack Exhaust Flow (M19) | 57,031,539 | SCFH |

Base Load Load, Run - 11

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/25/20 17:57:28 | 21900 | 12.37 | 2.36 | 0.07 | 2.52 | 9.25 |
| 02/25/20 17:57:58 | 21930 | 12.37 | 2.32 | 0.09 | 2.51 | 9.31 |
| 02/25/20 17:58:28 | 21960 | 12.36 | 2.35 | 0.07 | 2.39 | 9.15 |
| 02/25/20 17:58:58 | 21990 | 12.38 | 2.34 | 0.08 | 2.36 | 8.96 |
| 02/25/20 17:59:28 | 22020 | 12.37 | 2.32 | 0.07 | 2.44 | 9.24 |
| 02/25/20 17:59:58 | 22050 | 12.36 | 2.36 | 0.07 | 2.32 | 8.91 |
| 02/25/20 18:00:28 | 22080 | 12.35 | 2.36 | 0.05 | 2.29 | 8.98 |
| 02/25/20 18:00:58 | 22110 | 12.35 | 2.39 | 0.08 | 2.12 | 8.89 |
| 02/25/20 18:01:28 | 22140 | 12.34 | 2.37 | 0.07 | 2.04 | 8.70 |
| 02/25/20 18:01:58 | 22170 | 12.36 | 2.36 | 0.08 | 2.00 | 8.65 |
| 02/25/20 18:02:28 | 22200 | 12.35 | 2.36 | 0.08 | 2.04 | 8.49 |
| 02/25/20 18:02:58 | 22230 | 12.36 | 2.38 | 0.08 | 2.04 | 8.90 |
| 02/25/20 18:03:28 | 22260 | 12.36 | 2.36 | 0.07 | 1.90 | 8.59 |
| 02/25/20 18:03:58 | 22290 | 12.36 | 2.37 | 0.09 | 1.89 | 8.85 |
| 02/25/20 18:04:28 | 22320 | 12.36 | 2.42 | 0.09 | 1.91 | 9.02 |
| 02/25/20 18:04:58 | 22350 | 12.36 | 2.36 | 0.06 | 1.90 | 8.54 |
| 02/25/20 18:05:28 | 22380 | 12.37 | 2.37 | 0.07 | 1.88 | 8.76 |
| 02/25/20 18:05:58 | 22410 | 12.37 | 2.36 | 0.07 | 1.85 | 8.54 |
| 02/25/20 18:06:28 | 22440 | 12.38 | 2.41 | 0.07 | 1.90 | 9.14 |
| 02/25/20 18:06:58 | 22470 | 12.36 | 2.38 | 0.07 | 1.89 | 9.31 |
| 02/25/20 18:07:28 | 22500 | 12.37 | 2.37 | 0.08 | 1.78 | 8.56 |
| 02/25/20 18:07:58 | 22530 | 12.38 | 2.37 | 0.08 | 1.80 | 8.84 |
| 02/25/20 18:08:28 | 22560 | 12.37 | 2.32 | 0.07 | 1.72 | 8.53 |
| 02/25/20 18:08:58 | 22590 | 12.37 | 2.34 | 0.06 | 1.71 | 8.65 |
| 02/25/20 18:09:28 | 22620 | 12.37 | 2.35 | 0.07 | 1.76 | 9.69 |
| 02/25/20 18:09:58 | 22650 | 12.36 | 2.33 | 0.08 | 1.81 | 9.65 |
| 02/25/20 18:10:28 | 22680 | 12.36 | 2.33 | 0.08 | 1.90 | 9.07 |
| 02/25/20 18:10:58 | 22710 | 12.35 | 2.32 | 0.07 | 1.88 | 8.64 |
| 02/25/20 18:11:28 | 22740 | 12.35 | 2.43 | 0.06 | 2.03 | 10.70 |
| 02/25/20 18:11:58 | 22770 | 12.35 | 2.36 | 0.07 | 2.09 | 9.65 |
| 02/25/20 18:12:28 | 22800 | 12.35 | 2.35 | 0.08 | 2.45 | 9.96 |
| 02/25/20 18:12:58 | 22830 | 12.35 | 2.37 | 0.06 | 2.36 | 9.12 |
| 02/25/20 18:13:28 | 22860 | 12.35 | 2.40 | 0.10 | 2.25 | 9.48 |
| 02/25/20 18:13:58 | 22890 | 12.34 | 2.41 | 0.07 | 2.03 | 9.14 |
| 02/25/20 18:14:28 | 22920 | 12.34 | 2.33 | 0.09 | 2.00 | 8.84 |
| 02/25/20 18:14:58 | 22950 | 12.35 | 2.34 | 0.07 | 2.04 | 8.75 |
| 02/25/20 18:15:28 | 22980 | 12.34 | 2.32 | 0.08 | 2.01 | 8.58 |
| 02/25/20 18:15:58 | 23010 | 12.34 | 2.30 | 0.07 | 1.98 | 9.21 |
| 02/25/20 18:16:28 | 23040 | 12.34 | 2.31 | 0.07 | 1.79 | 8.77 |
| 02/25/20 18:16:58 | 23070 | 12.34 | 2.37 | 0.07 | 1.90 | 10.30 |
| 02/25/20 18:17:28 | 23100 | 12.34 | 2.37 | 0.07 | 1.87 | 10.57 |
| 02/25/20 18:17:58 | 23130 | 12.34 | 2.37 | 0.08 | 1.80 | 9.59 |
| **RAW AVERAGE** | | **12.36** | **2.36** | **0.07** | **2.03** | **9.11** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0024 | INST-NX-0031 | INST-CO-0029 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.08 | -0.04 | -0.07 | |
| | **Final Zero** | -0.06 | 0.18 | -0.13 | |
| | **Avg. Zero** | -0.07 | 0.07 | -0.10 | |
| | **Initial UpScale** | 12.01 | 4.89 | 5.04 | |
| | **Final UpScale** | 12.02 | 4.98 | 5.05 | |
| | **Avg. UpScale** | 12.02 | 4.94 | 5.05 | |
| **Upscale Cal Gas** | | 11.97 | 4.91 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 12.31 | 2.31 | 0.17 | 2.23 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.59 | 0.12 | 1.53 |
| Emission Rate (lb/hr) | N/A | 15.73 | 0.71 | 5.62 |
| Emission Rate (lb/MMBtu) | N/A | 0.0058 | 0.000 | 0.006 |

# APPENDIX C

# CALIBRATION GAS CERTIFICATIONS

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**AETB/QI and PGVP RATA Data Sheet**
**Cricket Valley Energy Center**

**AirEmissionTestingData - Level 3**

| QILastName | QIFirstName | QIMiddleInitial | AETBName | AETBPhoneNumber | AETBEmail | ExamDate | ProviderName | ProviderEmail |
|---|---|---|---|---|---|---|---|---|
| McBride | Matthew | S | Air Hygiene International Inc | 888-461-8778 | info@airhygiene.com | 01/27/2019 | Source Evaluation Society | qstiprogram@gmail.com |

**ProtocolGasData - Level 3**

| GasLevelCode | GasTypeCode | CylinderIdentifier | VendorIdentifier | ExpirationDate |
|---|---|---|---|---|
| LOW | ZERO | | | |
| HIGH | BALN,CO2,O2 | CC721614 | G12018 | 11/11/2026 |
| MID | BALN,CO2,O2 | CC722590 | G12019 | 6/8/2027 |
| HIGH | BALN,CO,NO,NOX | EB0018492 | G12019 | 5/2/2022 |
| MID | BALN,CO,NO,NOX | EB0065964 | G12019 | 7/22/2022 |
| | | | | |

Assay Laboratory: Red Ball TGS
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150

# CERTIFICATE OF ANALYSIS
## (Zero Ambient Nitrogen)

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0072934 | **Certification Date:** | 05/21/2019 |
| **Product ID Number:** | 121026 | **Expiration Date:** | 05/19/2027 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | RBTGS-Shreveport-LA |
| **COA #** | EB0072934.20190521-0 | **Lot Number:** | EB0072934.20190521 |
| **Customer PO. NO.:** | | **Tracking Number:** | 084249399 |
| **Customer:** | | **Previous Certification Dates:** | |

This mixture is for laboratory use only, not for drug, household or other use.
This mixture is certified in Mole % to be within ±2% of the actual number reported with a confidence of 95%.
This mixture was manufactured by scale; weights traceable to N.I.S.T. Certificate #822/266926-02.
Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).

**Composing Material: Zero Ambient Nitrogen, Cert., Sz152**

| Component | Specification | Concentration |
|---|---|---|
| Nitrogen | Balance | Balance |
| Oxygen as Impurity | <1.0 PPM | <1.0 PPM |
| Carbon Dioxide as Impurity | <0.5 PPM | <0.5 PPM |
| Carbon Monoxide as Impurity | <0.5 PPM | <0.5 PPM |
| Total Oxides of Nitrogen as Impurity | <0.1 PPM | <0.1 PPM |
| Sulfur Dioxide as Impurity | <0.1 PPM | <0.1 PPM |
| Total Hydrocarbons as Impurity | <0.1 PPM | <0.1 PPM |

Red Ball Technical Gas Service
PGVP Vendor ID # G12019
Information and Ordering
800-551-8150
Fax (318-425-6309)

Accreditation #62754

Anthony Cyr
Assistant Operations Manager

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12019

PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0098845 | **Certification Date:** | 05/03/2019 |
| **Product ID Number:** | 124731 | **Expiration Date:** | 05/02/2022 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0098845.20190416-0 | **Lot Number:** | EB0098845.20190416 |
| **Customer PO. NO.:** | | **Tracking Number:** | 095689140 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Nitrogen Dioxide** | **48.7 PPM** | ±0.6 PPM | FTIR | 04/26/2019, 05/03/2019 |

Air Balance

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0003640 | EB0003640.20190102 | 03/20/2022 | GMIS | AIR | NO2 | 87.8 PPM | 1.061 | C1579010.01 |
| EB0096848 | EB0096848.20190102 | 03/21/2022 | GMIS | AIR | NO2 | 61.1 PPM | 1.072 | C1579010.01 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NO2 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 04/26/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Brandon Theus**
**Laboratory Supervisor**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12019

PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0065964 | **Certification Date:** | 07/23/2019 |
| **Product ID Number:** | 125564 | **Expiration Date:** | 07/22/2022 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0065964.20190611-0 | **Lot Number:** | EB0065964.20190611 |
| **Customer PO. NO.:** | | **Tracking Number:** | 083030934 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Monoxide** | **5.09 PPM** | ±0.07 PPM | FTIR | 06/19/2019 |
| **Nitric Oxide** | **4.88 PPM** | ±0.06 PPM | Chemiluminescence | 06/18/2019, 07/08/2019, 07/23/2019 |
| Total Oxides of Nitrogen | 4.91 PPM | | | |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| ALM066143 | ALM066143.20171116 | 11/09/2022 | GMIS | N2 | NO | 9.6 PPM | 1.062 | 12100115 |
| CC202290 | CC202290.20160721 | 01/11/2025 | GMIS | N2 | CO | 12.14 PPM | 1.033 | 091002 |
| EB0032297 | EB0032297.20160725 | 09/06/2025 | GMIS | N2 | CO | 6.15 PPM | 1.067 | 091002 |
| EB0060662 | EB0060662.20151012 | 01/02/2022 | GMIS | N2 | NO | 2.97 PPM | 1.062 | 12100115 |
| EB0078555 | EB0078555.20171116 | 11/09/2022 | GMIS | N2 | NO | 9.8 PPM | 1.113 | 12100115 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NO | Chemiluminescence | Thermo | T42C | 42C-68400-360 | 05/30/2019 |
| CO | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 05/30/2019 |
| NO | Chemiluminescence | Thermo | T42C | 42C-68400-360 | 07/08/2019 |
| NO | Chemiluminescence | Thermo | T42C | 42C-68400-360 | 07/08/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Anthony Cyr**
**Assistant Operations Manager**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12019

PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0018492 | **Certification Date:** | 05/03/2019 |
| **Product ID Number:** | 124737 | **Expiration Date:** | 05/02/2022 |
| **Cylinder Pressure:** | 1850 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0018492.20190404-0 | **Lot Number:** | EB0018492.20190404 |
| **Customer PO. NO.:** | | **Tracking Number:** | 040261874 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Monoxide** | **9.5 PPM** | ±0.11 PPM | FTIR | 04/29/2019 |
| **Nitric Oxide** | **9.2 PPM** | ±0.11 PPM | Chemiluminescence | 04/09/2019, 04/17/2019, 05/03/2019 |

Total Oxides of Nitrogen 9.2 PPM
Nitrogen Balance

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| CC279029 | 091002 | 03/10/2020 | NTRM | N2 | CO | 19.14 PPM | 0.9927 | 091002 |
| ALM066143 | ALM066143.20171116 | 11/09/2022 | GMIS | N2 | NO | 9.6 PPM | 1.062 | 12100115 |
| CC202290 | CC202290.20160721 | 01/11/2025 | GMIS | N2 | CO | 12.14 PPM | 1.033 | 091002 |
| CC209392 | CC209392.20180209 | 11/15/2021 | GMIS | N2 | NO | 32.4 PPM | 1.068 | 121001 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NO | Chemiluminescence | Thermo | T42C | 42C-68400-360 | 04/08/2019 |
| CO | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 03/29/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

LaMeka Dennis
**Operations Manager**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12019

PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | CC722590 | **Certification Date:** | 06/10/2019 |
| **Product ID Number:** | 124606 | **Expiration Date:** | 06/08/2027 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | CC722590.20190603-0 | **Lot Number:** | CC722590.20190603 |
| **Customer PO. NO.:** | | **Tracking Number:** | 098497708 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Dioxide** | **8.98 %** | ±0.08 % | NDIR | 06/10/2019 |
| **Oxygen** | **11.97 %** | ±0.07 % | MPA | 06/07/2019 |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0003672 | EB0003672.20180118 | 07/21/2026 | GMIS | N2 | O2 | 11.97 % | 0.507 | 071001 |
| EB0049614 | EB0049614.20180504 | 07/21/2026 | GMIS | N2 | O2 | 24 % | 0.497 | 071001 |
| EB0050249 | EB0050249.20180323 | 07/15/2026 | GMIS | N2 | CO2 | 15 % | 0.777 | 101001 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| O2 | MPA | Thermo | 410i | 1162980025 | 05/31/2019 |
| CO2 | NDIR | Thermo | 410i | 1162980025 | 05/14/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

Jasmine Godfrey
**Analytical Chemist**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

RED BALL TECHNICAL GAS SERVICES

PJLA Calibration and Testing
Accreditation #62754

**Red Ball Technical Gas Service**
**555 Craig Kennedy Way**
**Shreveport, LA 71107**
**800-551-8150**
**PGVP Vendor ID # G12018**

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | CC721614 | **Certification Date:** | 11/13/2018 |
| **Product ID Number:** | 124605 | **Expiration Date:** | 11/11/2026 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | CC721614.20181109-0 | **Lot Number:** | CC721614.20181109 |
| **Customer PO. NO.:** | | **Tracking Number:** | 098499636 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Dioxide** | **19.0 %** | ±0.16 % | NDIR | 11/13/2018 |
| **Oxygen** | **21.0 %** | ±0.12 % | MPA | 11/13/2018 |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0004987 | EB0004987.20180323 | 07/15/2026 | GMIS | N2 | CO2 | 19.5 % | 0.767 | 101001 |
| EB0005996 | EB0005996.20170209 | 05/09/2026 | GMIS | N2 | O2 | 20 % | 0.077 | 071001 |
| EB0032246 | EB0032246.20170209 | 08/05/2025 | GMIS | N2 | O2 | 24 % | 0.502 | 071001 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| O2 | MPA | Thermo | 410i | 1162980025 | 11/06/2018 |
| CO2 | NDIR | Thermo | 410i | 1162980025 | 10/24/2018 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Amisha Jewitt**
**Analytical Chemist**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12019

PJLA Calibration and Testing
Accreditation #62754

# CERTIFIED GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0100161 | **Certification Date:** | 12/30/2019 |
| **Product ID Number:** | 125123 | **Expiration Date:** | 12/29/2020 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0100161.20191230-0 | **Lot Number:** | EB0100161.20191230 |
| **Customer PO. NO.:** | | **Tracking Number:** | 095703088 |
| **Customer:** | | **Previous Certification Dates:** | |

**This mixture is for laboratory use only, not for drug, household or other use.**
**This mixture is certified in Mole % to be within ±2% of the actual number reported with a confidence of 95%.**
**This mixture was manufactured by scale; weights traceable to N.I.S.T. Certificate #822/266926-02.**
**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle |
|---|---|---|---|
| **Ammonia** | **50.4 PPM** | ± 2% NIST | FTIR |
| **Sulfur Hexafluoride** | **9.02 PPM** | ± 2% NIST | FTIR |
| Nitrogen | Balance | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| SA18481 | 70086910005 | 04/12/2020 | PS | N2 | NH3 | 21.1 PPM | 1.2 | 73248226 |
| EB0079029 | EB0079029 | 06/27/2020 | PS | N2 | SF6 | 10.1 PPM | 5 | 191064 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NH3 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | |
| SF6 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

LaMeka Dennis
**Operations Manager**
Assay Laboratory: Red Ball TGS
Version 02-G, Revised on 2017-07-02

# APPENDIX D

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

# QA/QC PROGRAM

AIR HYGIENE ensures the quality and validity of its emission measurement and reporting procedures through a rigorous quality assurance (QA) program. The program is developed and administered by an internal QA team and encompasses six major areas:

1. Field Qualifications
2. QA reviews of reports, laboratory work, and field testing;
3. Equipment calibration and maintenance;
4. Chain-of-custody;
5. Training; and
6. Knowledge of current test methods

## Field Qualifications

Air Hygiene personnel are required to gain and maintain competence with testing methods and techniques according to their job titles and the roles they play during field testing events. Qualifications for each job description include:

Staff Technician - An entry level position with responsibility to test on the stack by performing duties that include: keep trucks and trailers stocked and clean, travel to and from job site, be the "hands of the test" on the stack; stay on a stack during the sample test, set up and tear down equipment on-site, perform maintenance on equipment in the shop and on-site.

Test Technician or Specialist - Acts as the "hands of the test" on the stack by performing duties that include: stay on a stack during the sample test, migrate to the testing trailer and learn the different analyzers and testing methods used on site, set up and tear down testing equipment on site, learn the system for testing from Testing Managers and Project Managers, travel to and from job site; including driving responsibilities under DOT requirements, follow directions of Testing Managers and Project Managers, learn the proper way to conduct on-site test of stationary stacks

Test Manager or Engineer - Directs and coordinates all aspects of a successful test by performing the following duties personally or through subordinate supervisors including: operating analyzers and consoles during testing along with QA/QC procedures, supervise set up and tear down of equipment on site, writing, reviewing, and revising final test reports, working with the client or state personnel while on the job site, managing pre-test checklists and onsite testing procedures, diagnose and repair any problems that may arise with the equipment, safely operate a man lift and drive a truck with or without a trailer, act as crew leader in the field, write protocols and reports, maintain project log of services performed on the job, verify all equipment needed for a job was loaded on the trailer. Test Managers must hold at least one QSTI certificate.

Project Manager - Directs and coordinates all aspects of a successful test by performing the following duties personally or through subordinate supervisors including: operating analyzers and consoles during testing along with QA/QC procedures, supervise set up and tear down of equipment on site, writing, reviewing, and revising final test reports, working with the client or state personnel while on the job site, managing pre-test checklists and onsite testing procedures, diagnose and repair any problems that may arise with the equipment, safely operate a man lift and drive a truck with or without a trailer, act as crew leader in the field, write protocols and reports, maintain project log of services performed on the job, verify all equipment needed for a job was loaded on the trailer. Project Managers typically hold QSTI certificates in Groups 1 through 4.

## QA Reviews

Air Hygiene's review procedure includes review of each source test report, along with laboratory and fieldwork, by the QA Team. The most important review is the one that takes place before a test program begins. The QA Team works closely with technical division personnel to prepare and review test protocols. Test protocol review includes selection of appropriate test procedures, evaluation of interferences or other restrictions that might preclude use of standard test procedures, and evaluation and/or development of alternate procedures.

## Equipment Calibration and Maintenance

The equipment used to conduct the emission measurements is maintained according to the manufacturer's instructions to ensure proper operation. In addition to the maintenance program, calibrations are carried out on each measurement device according to the schedule outlined by the Environmental Protection Agency. Quality control checks are also conducted in the field for each test program. In conformance with ASTM D7036 Section 15.3.15, all metering and monitoring equipment meets or exceeds the uncertainty criteria contained in the method language that pertains to that equipment.

### Chain-of-Custody

Air Hygiene maintains full chain-of-custody documentation on all samples and data sheets. In addition to normal documentation of changes between field sample custodians, laboratory personnel, and field test personnel, Air Hygiene documents every individual who handles any test component in the field (e.g., probe wash, impinger loading and recovery, filter loading and recovery, etc.). Samples are stored in a locked area to which only Air Hygiene personnel have access. Field data sheets are secured at Air Hygiene's offices upon return from the field.

### Training

Personnel's training is essential to ensure quality testing. Air Hygiene has formal and informal training programs, which include:

1. Attendance at EPA-sponsored training courses
2. Enrollment in EPA correspondence courses
3 A requirement for all technicians to read and understand Air Hygiene's QA manual
4. In-house training and QA meetings on a regular basis
5. Maintenance of training records

### Knowledge of Current Test Methods

With the constant updating of standard test methods and the wide variety of emerging test procedures, it is essential that any qualified source tester keep abreast of new developments. Air Hygiene subscribes to services, which provide updates on EPA reference methods, rules, and regulations. Additionally, source test personnel regularly attend and present papers at testing and emission-related seminars and conferences. Air Hygiene personnel maintain membership in the Air and Waste Management Association and the American Industrial Hygiene Association.

### Reproduction and Distribution Policy

Reproducing portions of this test report may omit critical or substantial documentation or be taken out of context and due care must be exercised in this regard. Furthermore, this test report and its associated data shall not be reproduced in full or in part without the written consent of the customer.

### Data Provided by Client

Data provided by the Client is clearly identified in the report. Air Hygiene accepts data provided by the Client as accurate.

# COMBUSTION TESTING QUALITY ASSURANCE ACTIVITIES

In conformance with ASTM D7036 Section 15.3.11 and 13, all testing was performed without any real or apparent errors, with the exception of those that would be listed in Section 2.0 of this report. In addition, all testing was conducted according to the approved testing protocol, test methods, Air Hygiene Quality Manual, or ASTM D7036, with the exception of specifics noted in Section 2.0 of this report. A number of quality assurance activities were undertaken before, during, and after this testing project. This section of the report combined with the documentation in Appendix C describes each of those activities.

Each instrument's response was checked and adjusted in the field prior to the collection of data via multi-point calibration. The instrument's linearity was checked by adjusting its zero and span responses to zero nitrogen and an upscale calibration gas in the range of the expected concentrations. The instrument response was then challenged with other calibration gases of known concentration and accepted as being linear if the response of the other calibration gases agreed within plus or minus two percent of the range of predicted values. $NO_2$ to NO conversion was checked via direct connect with an EPA Protocol certified concentration of $NO_2$ in a balance of air or nitrogen. Conversion was verified to be between 90 and 110 percent.

After each test run, the analyzers were checked for zero and span drift. This allowed each test run to be bracketed by calibrations and documents the precision of the data just collected. The criterion for acceptable data is that the instrument drift is no more than three percent of the full-scale response. The quality assurance worksheets in the following pages summarize all multipoint calibration checks and zero to span checks performed during the tests. These worksheets (as prepared from the data records of Appendix A) show that no drifts in excess of three percent occurred in the zero to span checks following each test run.

The sampling systems were leak checked by demonstrating that a vacuum greater than 10 in Hg could be held for at least one minute with a decline of less than one inch of Hg. A leak test was conducted after the sample system was set up and before the system was dismantled. This test was conducted to ensure that ambient air had not diluted the sample. Any leakage detected prior to the tests would be repaired and another leak check conducted before testing commenced. No leaks were found during the pre or post-test leak checks.

The absence of leaks in the sampling system was also verified by a sampling system bias check. The sampling system's integrity was tested by comparing the responses of the analyzers to the calibration gases introduced via two paths. The first path was directly into the analyzer and the second path via the sample system at the sample probe. Any difference in the instrument responses by these two methods was attributed to sampling system bias or leakage. The criterion for acceptance is agreement within five percent of the span of the analyzer.

The control gases used to calibrate the instruments were analyzed and certified by the compressed gas vendors to plus or minus one percent accuracy for all gases. EPA Protocol No. 1 was used, where applicable to assign the concentration values traceable to the National Institute of Standards and Technology (NIST), Standard Reference Materials (SRM's). The gas calibration sheets as prepared by the vendor are contained in Appendix C.

Air Hygiene collected and reported the enclosed test data in accordance with the procedures and quality assurance activities described in this test report. Air Hygiene makes no warranty as to the suitability of the test methods. Air Hygiene also assumes no liability relating to the interpretation and use of the test data.

## INSTRUMENTAL ANALYSIS
## QUALITY ASSURANCE DATA

Date: February 25, 2020
Company: Cricket Valley Energy Center LLC
Location: Dover Plains, New York
Techs: MM / SB / RW

### Sample System Leak Check

| Date | Sample System | Leak Rate (l/min) |
|---|---|---|
| February 25, 2020 | 1 | 0 |

# Accredited Laboratory

A2LA has accredited

## AIR HYGIENE INTERNATIONAL, INC.

*Broken Arrow, OK*

for technical competence in the field of

## Environmental Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets the A2LA *R219 – Specific Requirements – TNI Field Sampling and Measurement Organization Accreditation Program*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 18th day of December 2019

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3796.01
Valid to August 31, 2021

*For the tests to which this accreditation applies, please refer to the laboratory's Envrionmental Scope of Accreditation.*

STAC
STACK TESTING ACCREDITATION COUNCIL

A2LA
American Association for Laboratory Accreditation

# *Accredited Air Emission Testing Body*

A2LA has accredited

## AIR HYGIENE INTERNATIONAL, INC.

In recognition of the successful completion of the joint A2LA and Stack Testing Accreditation Council (STAC) evaluation process, this laboratory is accredited to perform testing activities in compliance with ASTM D7036:2004 - Standard Practice for Competence of Air Emission Testing Bodies.




Presented this 18th day of December 2019.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3796.02
Valid to August 31, 2021

*This accreditation program is not included under the A2LA ILAC Mutual Recognition Arrangement.*

# SOURCE EVALUATION SOCIETY

## Qualified Source Testing Individual

LET IT BE KNOWN THAT

## MATTHEW S. McBRIDE

HAS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED EXPERIENCE REQUIREMENTS IN ACCORDANCE WITH THE GUIDELINES ISSUED BY THE SES QUALIFIED SOURCE TEST INDIVIDUAL REVIEW BOARD FOR

***GASEOUS POLLUTANTS INSTRUMENTAL SAMPLING METHODS***

ISSUED THIS 27TH DAY OF JANAURY 2019 AND EFFECTIVE UNTIL JANUARY 26TH, 2024

*Peter R. Westlin, QSTI/QSTO Review Board*

*Peter S. Pakalnis, QSTI/QSTO Review Board*

*Tina Sanderson, QSTI/QSTO Review Board*

*J. Wade Bice, QSTI/QSTO Review Board*

*Karen D. Kajiya-Mills , QSTI/QSTO Review Board*

*Bruce Randall QSTI/QSTO Review Board*

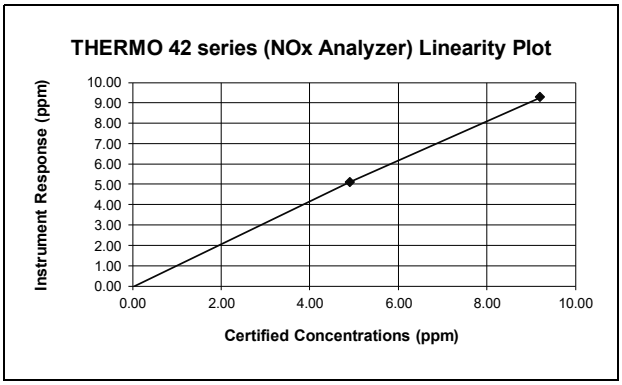
**CERTIFICATE NO. 2014-847**

**Calibration Date:** February 25, 2020 **Location:** Cricket Valley Energy Center - Unit U-00002

**Client:** Cricket Valley Energy Center LLC

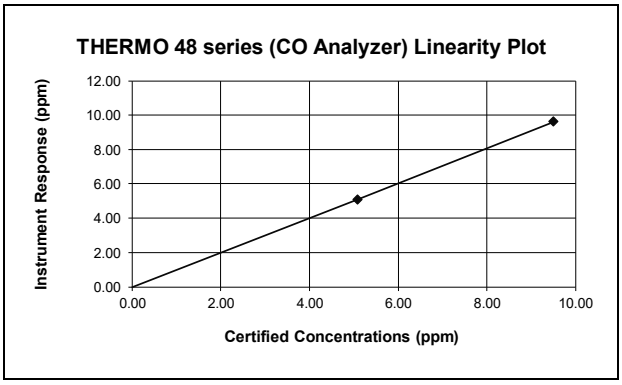
NOx Span (ppm) = 9.20

| THERMO 42 series (NOx Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Absolute Conc. (ppm) | Pass (±2%, ≤0.5ppm) |
| 0.00 | -0.05 | -0.54 | 0.05 | YES (%) |
| 4.91 | 5.09 | 1.96 | 0.18 | YES (%) |
| 9.20 | 9.28 | 0.87 | 0.08 | YES (%) |
| Linearity = 0.985 | | | | |



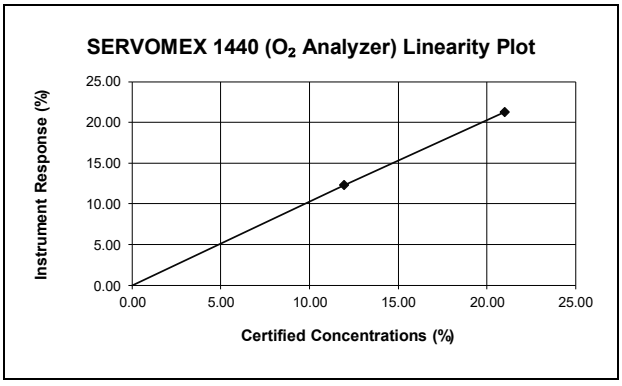

CO Span (ppm) = 9.50

| THERMO 48 series (CO Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Absolute Conc. (ppm) | Pass (±2%, ≤0.5ppm) |
| 0.00 | -0.01 | -0.11 | 0.01 | YES (%) |
| 5.09 | 5.08 | -0.11 | 0.01 | YES (%) |
| 9.50 | 9.62 | 1.26 | 0.12 | YES (%) |
| Linearity = 0.987 | | | | |




$O_2$ Span (%) = 21.00

| SERVOMEX 1440 ($O_2$ Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (%) | Instrument Response (%) | Calibration Error (%) | Absolute Conc. (%) | Pass (±2%, ≤0.5%) |
| 0.00 | -0.01 | -0.05 | 0.01 | YES (%) |
| 11.97 | 12.28 | 1.48 | 0.31 | YES (%) |
| 21.00 | 21.25 | 1.19 | 0.25 | YES (%) |
| Linearity = 0.987 | | | | |



**NOx Converter Efficiency**

**Date:** February 25, 2020

**Analyzer:** INST-NX-0031

RM 7E, (02-27-14), Sections 7.1.4; 8.2.4.1; 12.7; and 13.5 Introduce $NO_2$ to the analyzer and record the NOx concentration displayed. ... Calculate the converter efficiency using Equation 7E-7. The specification for converter efficiency must be met. ... Air Hygiene also references ALT-0013 for specific $NO_2$ concentration (40-60 ppm) and EPA Traceability Protocol requirements (±2%).

| | | |
|---|---|---|
| **Audit Gas:** | $NO_2$ Concentration ($C_v$), ppmvd | **48.70** |
| **Converter Efficiency Calculations:** | | |
| | Analyzer Reading, NO Channel, ppmvd | **1.40** |
| | Analyzer Reading, NOx Channel, ppmvd | **48.79** |
| | Analyzer Reading, $NO_2$ Channel ($C_{Dir(NO2)}$), ppmvd | **47.39** |
| | Converter Efficiency, % | **97.31** |

RM 7E, (02-27-14), 13.5 $NO_2$ to NO Conversion Efficiency Test (as applicable). The $NO_2$ to NO conversion efficiency, calculated according to Equation 7E-7, must be greater than or equal to 90 percent.

$$Eff_{NO2} = \left(\frac{C_{Dir}}{C_V}\right) \times 100$$

Eq. 7E-7 = $\frac{47.39 \text{ ppmvd}}{48.70 \text{ ppmvd}}$ x 100 = 97.31%

| Date/Time | Elapsed Time | NOx | NO |
|---|---|---|---|
| mm/dd/yy hh:mm:ss | Seconds | ppmvd | ppmvd |
| 02/25/20 05:10:12 | 380 | 48.20 | 1.54 |
| 02/25/20 05:10:22 | 390 | 48.62 | 1.58 |
| 02/25/20 05:10:32 | 400 | 48.69 | 1.51 |
| 02/25/20 05:10:42 | 410 | 48.69 | 1.50 |
| 02/25/20 05:10:52 | 420 | 48.73 | 1.50 |
| 02/25/20 05:11:02 | 430 | 48.78 | 1.54 |
| 02/25/20 05:11:12 | 440 | 48.74 | 1.39 |
| ***02/25/20 05:11:22*** | ***450*** | ***48.79*** | ***1.40*** |
| 02/25/20 05:11:32 | 460 | 48.76 | 1.42 |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - PRE TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ (%) |
|---|---|---|---|
| 02/25/20 | 10:50:28 | BKG_0028.LAB | 9.2175 |
| 02/25/20 | 10:50:42 | BKG_0029.LAB | 9.2171 |
| 02/25/20 | 10:50:56 | BKG_0030.LAB | 9.2332 |
| 02/25/20 | 10:51:10 | BKG_0031.LAB | 9.2632 |
| 02/25/20 | 10:51:23 | BKG_0032.LAB | 9.2413 |

**PRE TEST AVERAGE** **9.23**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - POST TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ (%) |
|---|---|---|---|
| 02/25/20 | 18:41:07 | CTS_0013.LAB | 9.1965 |
| 02/25/20 | 18:41:21 | CTS_0014.LAB | 9.2350 |
| 02/25/20 | 18:41:35 | CTS_0015.LAB | 9.2467 |
| 02/25/20 | 18:41:49 | CTS_0016.LAB | 9.2559 |
| 02/25/20 | 18:42:02 | CTS_0017.LAB | 9.2619 |

**POST TEST AVERAGE** **9.24**

**Analyzer Make:** MKS **Analyzer Model:** 2030

$CO_2$ Cylinder Conc. % = 8.98

| Run ID | Instrument Response (%) | Error (%) | Pass / Fail ±5% |
|---|---|---|---|
| Pre Test | 9.23 | 2.83 | PASS |
| Post Test | 9.24 | 2.89 | PASS |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - PRE TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ (ppm) |
|---|---|---|---|
| 02/25/20 | 9:03:35 | SPIKE_0074.LAB | 50.6911 |
| 02/25/20 | 9:03:48 | SPIKE_0075.LAB | 50.8156 |
| 02/25/20 | 9:04:01 | SPIKE_0076.LAB | 50.8104 |
| 02/25/20 | 9:04:14 | SPIKE_0077.LAB | 50.9847 |
| 02/25/20 | 9:04:27 | SPIKE_0078.LAB | 51.0389 |

**PRE TEST AVERAGE** **50.87**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - POST TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ (ppm) |
|---|---|---|---|
| 02/25/20 | 18:53:43 | CTS_0068.LAB | 50.6090 |
| 02/25/20 | 18:53:57 | CTS_0069.LAB | 50.7610 |
| 02/25/20 | 18:54:11 | CTS_0070.LAB | 50.4207 |
| 02/25/20 | 18:54:25 | CTS_0071.LAB | 50.3055 |
| 02/25/20 | 18:54:39 | CTS_0072.LAB | 50.6951 |

**POST TEST AVERAGE** **50.56**

**Analyzer Make:** MKS **Analyzer Model:** 2030

$NH_3$ Cylinder Conc. ppm = 50.40

| Run ID | Instrument Response (%) | Error (%) | Pass / Fail ±5% |
|---|---|---|---|
| Pre Test | 50.87 | 0.93 | PASS |
| Post Test | 50.56 | 0.31 | PASS |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

## Calibration Gas #1

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ ppmvd | $SF_6$ ppmvd |
|---|---|---|---|---|
| 02/25/20 | 18:53:02 | CTS_0065.LAB | 49.4376 | 9.6995 |
| 02/25/20 | 18:53:16 | CTS_0066.LAB | 49.8893 | 9.7029 |
| 02/25/20 | 18:53:30 | CTS_0067.LAB | 50.1982 | 9.6963 |
| 02/25/20 | 18:53:43 | CTS_0068.LAB | 50.6090 | 9.7062 |
| 02/25/20 | 18:53:57 | CTS_0069.LAB | 50.7610 | 9.6990 |
| 02/25/20 | 18:54:11 | CTS_0070.LAB | 50.4207 | 9.6701 |
| 02/25/20 | 18:54:25 | CTS_0071.LAB | 50.3055 | 9.6545 |
| 02/25/20 | 18:54:39 | CTS_0072.LAB | 50.6951 | 9.6904 |
| **RAW AVERAGE** | | | **50.290** | **9.690** |

## Run #1: Pre-Spike - Native

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vw | $H_2O$ (%) | $NH_3$ ppmvw | $SF_6$ ppmvw |
|---|---|---|---|---|---|---|
| 02/25/20 | 18:58:12 | SPIKEA_0011.LAB | 4.5224 | 10.3164 | 2.0434 | -0.0017 |
| 02/25/20 | 18:58:26 | SPIKEA_0012.LAB | 4.5272 | 10.2733 | 1.9964 | 0.0023 |
| 02/25/20 | 18:58:40 | SPIKEA_0013.LAB | 4.5351 | 10.3082 | 1.9227 | 0.0012 |
| 02/25/20 | 18:58:54 | SPIKEA_0014.LAB | 4.5242 | 10.1841 | 1.9010 | 0.0043 |
| 02/25/20 | 18:59:08 | SPIKEA_0015.LAB | 4.5202 | 10.3074 | 1.8297 | 0.0021 |
| 02/25/20 | 18:59:21 | SPIKEA_0016.LAB | 4.5223 | 10.3226 | 1.8202 | 0.0014 |
| 02/25/20 | 18:59:35 | SPIKEA_0017.LAB | 4.5175 | 10.3704 | 1.8775 | -0.0005 |
| 02/25/20 | 18:59:49 | SPIKEA_0018.LAB | 4.5186 | 10.4159 | 1.8772 | -0.0017 |
| **RAW AVERAGE** | | | **4.523** | **10.312** | **1.909** | **0.001** |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Run #1: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vw | $H_2O$ (%) | $SF_6$ ppmvw | $NH_3$ ppmvw |
|---|---|---|---|---|---|---|
| 02/25/20 | 19:14:42 | SPIKEA_0083.LAB | 4.2255 | 8.8933 | 0.7469 | 4.8027 |
| 02/25/20 | 19:14:56 | SPIKEA_0084.LAB | 4.2352 | 8.8749 | 0.7540 | 4.9654 |
| 02/25/20 | 19:15:10 | SPIKEA_0085.LAB | 4.2292 | 8.8755 | 0.7478 | 5.0308 |
| 02/25/20 | 19:15:23 | SPIKEA_0086.LAB | 4.2385 | 8.8667 | 0.7528 | 5.1024 |
| 02/25/20 | 19:15:37 | SPIKEA_0087.LAB | 4.2363 | 8.8807 | 0.7529 | 5.1074 |
| 02/25/20 | 19:15:51 | SPIKEA_0088.LAB | 4.2121 | 8.8493 | 0.7507 | 5.1148 |
| 02/25/20 | 19:16:05 | SPIKEA_0089.LAB | 4.2317 | 8.8510 | 0.7552 | 5.1317 |
| 02/25/20 | 19:16:18 | SPIKEA_0090.LAB | 4.2202 | 8.8275 | 0.7582 | 5.0736 |
| **RAW AVERAGE** | | | **4.229** | **8.865** | **0.752** | **5.041** |

**Run #2: Pre-Spike - Native**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vw | $H_2O$ (%) | $NH_3$ ppmvw | $SF_6$ ppmvw |
|---|---|---|---|---|---|---|
| 02/25/20 | 19:28:55 | SPIKEA_0145.LAB | 4.5872 | 9.5217 | 2.2365 | 0.0006 |
| 02/25/20 | 19:29:08 | SPIKEA_0146.LAB | 4.5784 | 9.5366 | 2.2389 | 0.0067 |
| 02/25/20 | 19:29:22 | SPIKEA_0147.LAB | 4.5825 | 9.5005 | 2.1338 | 0.0004 |
| 02/25/20 | 19:29:36 | SPIKEA_0148.LAB | 4.5891 | 9.5161 | 2.1187 | 0.0051 |
| 02/25/20 | 19:29:49 | SPIKEA_0149.LAB | 4.5844 | 9.5198 | 2.1194 | 0.0007 |
| 02/25/20 | 19:30:03 | SPIKEA_0150.LAB | 4.5840 | 9.5534 | 2.1266 | 0.0024 |
| 02/25/20 | 19:30:17 | SPIKEA_0151.LAB | 4.5505 | 10.0484 | 2.1577 | -0.0049 |
| 02/25/20 | 19:30:31 | SPIKEA_0152.LAB | 4.5667 | 9.8760 | 2.1536 | -0.0008 |
| **RAW AVERAGE** | | | **4.578** | **9.634** | **2.161** | **0.001** |

**Run #2: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vw | $H_2O$ (%) | $SF_6$ ppmvw | $NH_3$ ppmvw |
|---|---|---|---|---|---|---|
| 02/25/20 | 19:34:52 | SPIKEA_0171.LAB | 4.2457 | 8.8554 | 0.7409 | 5.3409 |
| 02/25/20 | 19:35:06 | SPIKEA_0172.LAB | 4.2458 | 8.8409 | 0.7430 | 5.3043 |
| 02/25/20 | 19:35:19 | SPIKEA_0173.LAB | 4.2347 | 8.8397 | 0.7447 | 5.2658 |
| 02/25/20 | 19:35:33 | SPIKEA_0174.LAB | 4.2535 | 8.8035 | 0.7459 | 5.1583 |
| 02/25/20 | 19:35:47 | SPIKEA_0175.LAB | 4.2444 | 8.7976 | 0.7480 | 5.0769 |
| 02/25/20 | 19:36:01 | SPIKEA_0176.LAB | 4.2350 | 8.7795 | 0.7494 | 5.0325 |
| 02/25/20 | 19:36:15 | SPIKEA_0177.LAB | 4.2373 | 8.7592 | 0.7512 | 4.9294 |
| 02/25/20 | 19:36:28 | SPIKEA_0178.LAB | 4.2837 | 8.8170 | 0.6576 | 4.9571 |
| **RAW AVERAGE** | | | **4.248** | **8.812** | **0.735** | **5.133** |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Run #3: Pre-Spike - Native**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vw | $H_2O$ (%) | $NH_3$ ppmvw | $SF_6$ ppmvw |
|---|---|---|---|---|---|---|
| 02/25/20 | 19:41:03 | SPIKEA_0198.LAB | 4.5824 | 9.4929 | 2.0110 | 0.0053 |
| 02/25/20 | 19:41:17 | SPIKEA_0199.LAB | 4.6064 | 9.4872 | 1.9369 | -0.0026 |
| 02/25/20 | 19:41:31 | SPIKEA_0200.LAB | 4.5913 | 9.4811 | 1.9793 | 0.0020 |
| 02/25/20 | 19:41:44 | SPIKEA_0201.LAB | 4.5849 | 9.4857 | 1.9839 | -0.0024 |
| 02/25/20 | 19:41:58 | SPIKEA_0202.LAB | 4.5880 | 9.4799 | 1.9764 | 0.0018 |
| 02/25/20 | 19:42:12 | SPIKEA_0203.LAB | 4.5935 | 9.4664 | 1.9715 | -0.0039 |
| 02/25/20 | 19:42:26 | SPIKEA_0204.LAB | 4.5924 | 9.4794 | 1.9360 | 0.0004 |
| 02/25/20 | 19:42:39 | SPIKEA_0205.LAB | 4.5819 | 9.5087 | 1.9563 | 0.0005 |
| **RAW AVERAGE** | | | **4.590** | **9.485** | **1.969** | **0.000** |

**Run #3: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vw | $H_2O$ (%) | $SF_6$ ppmvw | $NH_3$ ppmvw |
|---|---|---|---|---|---|---|
| 02/25/20 | 19:48:23 | SPIKEA_0230.LAB | 4.2485 | 8.6077 | 0.7432 | 5.8106 |
| 02/25/20 | 19:48:37 | SPIKEA_0231.LAB | 4.2446 | 8.5992 | 0.7497 | 5.6583 |
| 02/25/20 | 19:48:50 | SPIKEA_0232.LAB | 4.2390 | 8.5942 | 0.7522 | 5.4796 |
| 02/25/20 | 19:49:04 | SPIKEA_0233.LAB | 4.2462 | 8.5921 | 0.7514 | 5.4695 |
| 02/25/20 | 19:49:18 | SPIKEA_0234.LAB | 4.2421 | 8.6067 | 0.7574 | 5.4405 |
| 02/25/20 | 19:49:32 | SPIKEA_0235.LAB | 4.2373 | 8.5977 | 0.7529 | 5.3990 |
| 02/25/20 | 19:49:45 | SPIKEA_0236.LAB | 4.2379 | 8.5604 | 0.7521 | 5.3451 |
| 02/25/20 | 19:49:59 | SPIKEA_0237.LAB | 4.2344 | 8.5425 | 0.7541 | 5.3697 |
| **RAW AVERAGE** | | | **4.241** | **8.588** | **0.752** | **5.497** |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

| Parameter | Unit | Run 1 | Run 2 | Run 3 |
|---|---|---|---|---|
| Concentration of $NH_3$ Cylinder | ppmvd | 50.29 | 50.29 | 50.29 |
| Concentration of $SF_6$ Cylinder | ppmvd | 9.69 | 9.69 | 9.69 |

Spike A

| | | | | |
|---|---|---|---|---|
| Stack $CO_2$ Concentration | %vw | 4.523 | 4.578 | 4.590 |
| Stack $H_2O$ Concentration | % | 10.312 | 9.634 | 9.485 |
| Stack $NH_3$ Concentration | ppmvw | 1.909 | 2.161 | 1.969 |
| Stack $SF_6$ Concentration | ppmvw | 0.001 | 0.001 | 0.000 |
| Stack + Spike $CO_2$ Concentration | %vw | 4.229 | 4.248 | 4.241 |
| Stack + Spike $H_2O$ Concentration | % | 8.865 | 8.812 | 8.588 |
| Stack + Spike $NH_3$ Concentration | ppmvw | 5.041 | 5.133 | 5.497 |
| Stack + Spike $SF_6$ Concentration | ppmvw | 0.752 | 0.735 | 0.752 |
| Dilution Ratio | | 0.085 | 0.083 | 0.085 |
| Ideal $NH_3$ Spike Yield | ppmvd | 6.231 | 6.376 | 6.258 |
| Percent Recovery $NH_3$ | % | 83.67% | 82.15% | 94.26% |

| DRIFT AND BIAS CHECK AND RESPONSE TIME CALCULATOR | | |
|---|---|---|
| **Strat Test Pre and Post QA/QC Check** | **$O_2$** | **NOx** |
| **Initial Zero** | -0.02 | -0.02 |
| **Final Zero** | -0.01 | 0.02 |
| **Avg. Zero** | | 0.00 |
| **Initial UpScale** | 12.13 | 5.05 |
| **Final UpScale** | 12.02 | 4.83 |
| **Avg. UpScale** | 12.08 | 4.94 |
| **Sys Resp (Zero)** | -0.01 | 0.00 |
| **Sys Resp (Upscale)** | 12.28 | 5.09 |
| **Upscale Cal Gas** | 11.97 | 4.91 |
| **Initial Zero Bias** | -0.05% | -0.22% |
| **Final Zero Bias** | 0.00% | 0.22% |
| **Zero Drift** | 0.05% | 0.43% |
| **Initial Upscale Bias** | -0.71% | -0.43% |
| **Final Upscale Bias** | -1.24% | -2.83% |
| **Upscale Drift** | 0.52% | 2.39% |
| Alternative Specification Abs Diff **Initial Zero** | 0.01 | 0.02 |
| Alternative Specification Abs Diff **Final Zero** | 0.00 | 0.02 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.15 | 0.04 |
| Alternative Specification Abs Diff **Final Upscale** | 0.26 | 0.26 |
| **Calibration Span** | 21.00 | 9.20 |
| **3% of Cal. Span (drift)** | 0.63 | 0.28 |
| **5% of Cal. Span (bias)** | 1.05 | 0.46 |

| | | |
|---|---|---|
| **Respone Time (min)** | 1.3 | 2.0 |
| **Sys. Response (min)** | 2.0 | |

| Date/Time mm/dd/yy hh:mm:ss | z | $O_2$ %-10 | s | z | NOx ppm-10 | s | INJECTIONS |
|---|---|---|---|---|---|---|---|
| 02/25/20 06:05:32 | | 13.44 | | | 1.36 | | x |
| 02/25/20 06:05:42 | | 13.38 | | | 1.35 | | |
| 02/25/20 06:05:52 | | 13.39 | | | 1.33 | | |
| 02/25/20 06:06:02 | | 13.39 | | | 1.34 | | |
| 02/25/20 06:06:12 | | 13.38 | | | 1.38 | | |
| 02/25/20 06:06:22 | | 8.55 | | | 1.38 | | |
| 02/25/20 06:06:32 | | 0.72 | | | 1.24 | | |
| 02/25/20 06:06:42 | x | **0.16** | | | 2.29 | | |
| 02/25/20 06:06:52 | | **0.11** | | | 4.25 | | |
| 02/25/20 06:07:02 | | **0.07** | | | **4.95** | x | |
| 02/25/20 06:07:12 | | **0.05** | | | **4.89** | | |
| 02/25/20 06:07:22 | | **0.04** | | | **4.94** | | |
| 02/25/20 06:07:32 | | **0.02** | | | **4.91** | | |
| 02/25/20 06:07:42 | | **0.01** | | | **4.95** | | |
| 02/25/20 06:07:52 | | **0.01** | | | **4.94** | | |
| 02/25/20 06:08:02 | | **0.00** | | | **4.94** | | x |
| 02/25/20 06:08:12 | | **-0.01** | | | **4.94** | | |
| 02/25/20 06:08:22 | | **-0.01** | | | **4.94** | | |
| 02/25/20 06:08:32 | | **-0.02** | | | **4.94** | | |
| 02/25/20 06:08:42 | | **-0.03** | | | **4.92** | | |
| 02/25/20 06:08:52 | | **-0.02** | | | **4.89** | | |
| 02/25/20 06:09:02 | | **-0.03** | | | **4.94** | | |
| 02/25/20 06:09:12 | | 5.12 | | | **4.93** | | |
| 02/25/20 06:09:22 | | **11.55** | x | | 4.06 | | |
| 02/25/20 06:09:32 | | **11.85** | | | 3.07 | | |
| 02/25/20 06:09:42 | | **11.89** | | | 2.25 | | |
| 02/25/20 06:09:52 | | **11.91** | | | 0.84 | | |
| 02/25/20 06:10:02 | | **11.93** | | x | **0.12** | | |
| 02/25/20 06:10:12 | | **11.94** | | | **0.09** | | |
| 02/25/20 06:10:22 | | **11.95** | | | **0.05** | | |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 1** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 13.40 | 1.85 | 0.14 |
| **Corrected Average** | 13.36 | 2.02 | 0.14 |
| **Initial Zero** | -0.03 | 0.02 | 0.05 |
| **Final Zero** | -0.05 | -0.53 | -0.04 |
| **Avg. Zero** | -0.04 | -0.26 | 0.01 |
| **Initial UpScale** | 11.99 | 4.93 | 5.13 |
| **Final UpScale** | 12.02 | 4.83 | 5.14 |
| **Avg. UpScale** | 12.01 | 4.88 | 5.14 |
| **Sys Resp (Zero)** | -0.01 | -0.05 | -0.01 |
| **Sys Resp (Upscale)** | 12.28 | 5.09 | 5.08 |
| **Upscale Cal Gas** | 11.97 | 4.91 | 5.09 |
| **Initial Zero Bias** | -0.10% | 0.76% | 0.63% |
| **Final Zero Bias** | -0.19% | -5.22% | -0.32% |
| **Zero Drift** | 0.10% | 5.98% | 0.95% |
| **Initial Upscale Bias** | -1.38% | -1.74% | 0.53% |
| **Final Upscale Bias** | -1.24% | -2.83% | 0.63% |
| **Upscale Drift** | 0.14% | 1.09% | 0.11% |
| Alternative Specification Abs Diff **Initial Zero** | 0.02 | 0.07 | 0.06 |
| Alternative Specification Abs Diff **Final Zero** | 0.04 | 0.48 | 0.03 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.29 | 0.16 | 0.05 |
| Alternative Specification Abs Diff **Final Upscale** | 0.26 | 0.26 | 0.06 |
| **Calibration Span** | 21.00 | 9.20 | 9.50 |
| **3% of Cal. Span (drift)** | 0.63 | 0.28 | 0.29 |
| **5% of Cal. Span (bias)** | 1.05 | 0.46 | 0.48 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 2** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 13.31 | 1.72 | 0.43 |
| **Corrected Average** | 13.25 | 2.00 | 0.46 |
| **Initial Zero** | -0.05 | -0.53 | -0.04 |
| **Final Zero** | 0.00 | -0.35 | -0.04 |
| **Avg. Zero** | -0.03 | -0.44 | -0.04 |
| **Initial UpScale** | 12.02 | 4.83 | 5.14 |
| **Final UpScale** | 12.02 | 4.94 | 5.09 |
| **Avg. UpScale** | 12.02 | 4.89 | 5.12 |
| **Sys Resp (Zero)** | -0.01 | -0.05 | -0.01 |
| **Sys Resp (Upscale)** | 12.28 | 5.09 | 5.08 |
| **Upscale Cal Gas** | 11.97 | 4.91 | 5.09 |
| **Initial Zero Bias** | -0.19% | -5.22% | -0.32% |
| **Final Zero Bias** | 0.05% | -3.26% | -0.32% |
| **Zero Drift** | 0.24% | 1.96% | 0.00% |
| **Initial Upscale Bias** | -1.24% | -2.83% | 0.63% |
| **Final Upscale Bias** | -1.24% | -1.63% | 0.11% |
| **Upscale Drift** | 0.00% | 1.20% | 0.53% |
| Alternative Specification Abs Diff **Initial Zero** | 0.04 | 0.48 | 0.03 |
| Alternative Specification Abs Diff **Final Zero** | 0.01 | 0.30 | 0.03 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.26 | 0.26 | 0.06 |
| Alternative Specification Abs Diff **Final Upscale** | 0.26 | 0.15 | 0.01 |
| **Calibration Span** | 21.00 | 9.20 | 9.50 |
| **3% of Cal. Span (drift)** | 0.63 | 0.28 | 0.29 |
| **5% of Cal. Span (bias)** | 1.05 | 0.46 | 0.48 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 3** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 13.34 | 1.90 | 0.13 |
| **Corrected Average** | 13.29 | 2.00 | 0.16 |
| **Initial Zero** | 0.00 | -0.35 | -0.04 |
| **Final Zero** | -0.04 | -0.01 | -0.04 |
| **Avg. Zero** | -0.02 | -0.18 | -0.04 |
| **Initial UpScale** | 12.02 | 4.94 | 5.09 |
| **Final UpScale** | 12.01 | 4.92 | 5.08 |
| **Avg. UpScale** | 12.01 | 4.93 | 5.09 |
| **Sys Resp (Zero)** | -0.01 | -0.05 | -0.01 |
| **Sys Resp (Upscale)** | 12.28 | 5.09 | 5.08 |
| **Upscale Cal Gas** | 11.97 | 4.91 | 5.09 |
| **Initial Zero Bias** | 0.05% | -3.26% | -0.32% |
| **Final Zero Bias** | -0.14% | 0.43% | -0.32% |
| **Zero Drift** | 0.19% | 3.70% | 0.00% |
| **Initial Upscale Bias** | -1.24% | -1.63% | 0.11% |
| **Final Upscale Bias** | -1.31% | -1.85% | 0.00% |
| **Upscale Drift** | 0.07% | 0.22% | 0.11% |
| Alternative Specification Abs Diff **Initial Zero** | 0.01 | 0.30 | 0.03 |
| Alternative Specification Abs Diff **Final Zero** | 0.03 | 0.04 | 0.03 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.26 | 0.15 | 0.01 |
| Alternative Specification Abs Diff **Final Upscale** | 0.27 | 0.17 | 0.00 |
| **Calibration Span** | 21.00 | 9.20 | 9.50 |
| **3% of Cal. Span (drift)** | 0.63 | 0.28 | 0.29 |
| **5% of Cal. Span (bias)** | 1.05 | 0.46 | 0.48 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 4** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 11.91 | 2.44 | 0.74 |
| **Corrected Average** | 11.85 | 2.42 | 0.78 |
| **Initial Zero** | -0.04 | -0.01 | -0.04 |
| **Final Zero** | -0.02 | 0.03 | -0.05 |
| **Avg. Zero** | -0.03 | 0.01 | -0.05 |
| **Initial UpScale** | 12.01 | 4.92 | 5.08 |
| **Final UpScale** | 12.05 | 4.96 | 5.08 |
| **Avg. UpScale** | 12.03 | 4.94 | 5.08 |
| **Sys Resp (Zero)** | -0.01 | -0.05 | -0.01 |
| **Sys Resp (Upscale)** | 12.28 | 5.09 | 5.08 |
| **Upscale Cal Gas** | 11.97 | 4.91 | 5.09 |
| **Initial Zero Bias** | -0.14% | 0.43% | -0.32% |
| **Final Zero Bias** | -0.05% | 0.87% | -0.42% |
| **Zero Drift** | 0.10% | 0.43% | 0.11% |
| **Initial Upscale Bias** | -1.31% | -1.85% | 0.00% |
| **Final Upscale Bias** | -1.10% | -1.41% | 0.00% |
| **Upscale Drift** | 0.21% | 0.43% | 0.00% |
| Alternative Specification Abs Diff **Initial Zero** | 0.03 | 0.04 | 0.03 |
| Alternative Specification Abs Diff **Final Zero** | 0.01 | 0.08 | 0.04 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.27 | 0.17 | 0.00 |
| Alternative Specification Abs Diff **Final Upscale** | 0.23 | 0.13 | 0.00 |
| **Calibration Span** | 21.00 | 9.20 | 9.50 |
| **3% of Cal. Span (drift)** | 0.63 | 0.28 | 0.29 |
| **5% of Cal. Span (bias)** | 1.05 | 0.46 | 0.48 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 5** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 13.39 | 1.98 | 0.11 |
| **Corrected Average** | 13.30 | 1.94 | 0.17 |
| **Initial Zero** | -0.02 | 0.03 | -0.05 |
| **Final Zero** | -0.02 | 0.06 | -0.08 |
| **Avg. Zero** | -0.02 | 0.05 | -0.07 |
| **Initial UpScale** | 12.05 | 4.96 | 5.08 |
| **Final UpScale** | 12.05 | 4.94 | 5.04 |
| **Avg. UpScale** | 12.05 | 4.95 | 5.06 |
| **Sys Resp (Zero)** | -0.01 | -0.05 | -0.01 |
| **Sys Resp (Upscale)** | 12.28 | 5.09 | 5.08 |
| **Upscale Cal Gas** | 11.97 | 4.91 | 5.09 |
| **Initial Zero Bias** | -0.05% | 0.87% | -0.42% |
| **Final Zero Bias** | -0.05% | 1.20% | -0.74% |
| **Zero Drift** | 0.00% | 0.33% | 0.32% |
| **Initial Upscale Bias** | -1.10% | -1.41% | 0.00% |
| **Final Upscale Bias** | -1.10% | -1.63% | -0.42% |
| **Upscale Drift** | 0.00% | 0.22% | 0.42% |
| Alternative Specification Abs Diff **Initial Zero** | 0.01 | 0.08 | 0.04 |
| Alternative Specification Abs Diff **Final Zero** | 0.01 | 0.11 | 0.07 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.23 | 0.13 | 0.00 |
| Alternative Specification Abs Diff **Final Upscale** | 0.23 | 0.15 | 0.04 |
| **Calibration Span** | 21.00 | 9.20 | 9.50 |
| **3% of Cal. Span (drift)** | 0.63 | 0.28 | 0.29 |
| **5% of Cal. Span (bias)** | 1.05 | 0.46 | 0.48 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 6** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 13.32 | 1.87 | 0.12 |
| **Corrected Average** | 13.25 | 1.84 | 0.21 |
| **Initial Zero** | -0.02 | 0.06 | -0.08 |
| **Final Zero** | -0.06 | 0.02 | -0.11 |
| **Avg. Zero** | -0.04 | 0.04 | -0.10 |
| **Initial UpScale** | 12.05 | 4.94 | 5.04 |
| **Final UpScale** | 12.02 | 4.92 | 5.07 |
| **Avg. UpScale** | 12.04 | 4.93 | 5.06 |
| **Sys Resp (Zero)** | -0.01 | -0.05 | -0.01 |
| **Sys Resp (Upscale)** | 12.28 | 5.09 | 5.08 |
| **Upscale Cal Gas** | 11.97 | 4.91 | 5.09 |
| **Initial Zero Bias** | -0.05% | 1.20% | -0.74% |
| **Final Zero Bias** | -0.24% | 0.76% | -1.05% |
| **Zero Drift** | 0.19% | 0.43% | 0.32% |
| **Initial Upscale Bias** | -1.10% | -1.63% | -0.42% |
| **Final Upscale Bias** | -1.24% | -1.85% | -0.11% |
| **Upscale Drift** | 0.14% | 0.22% | 0.32% |
| Alternative Specification Abs Diff **Initial Zero** | 0.01 | 0.11 | 0.07 |
| Alternative Specification Abs Diff **Final Zero** | 0.05 | 0.07 | 0.10 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.23 | 0.15 | 0.04 |
| Alternative Specification Abs Diff **Final Upscale** | 0.26 | 0.17 | 0.01 |
| **Calibration Span** | 21.00 | 9.20 | 9.50 |
| **3% of Cal. Span (drift)** | 0.63 | 0.28 | 0.29 |
| **5% of Cal. Span (bias)** | 1.05 | 0.46 | 0.48 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 7** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 13.32 | 1.98 | 0.09 |
| **Corrected Average** | 13.27 | 1.95 | 0.18 |
| **Initial Zero** | -0.06 | 0.02 | -0.11 |
| **Final Zero** | -0.06 | 0.06 | -0.07 |
| **Avg. Zero** | -0.06 | 0.04 | -0.09 |
| **Initial UpScale** | 12.02 | 4.92 | 5.07 |
| **Final UpScale** | 12.01 | 4.94 | 5.09 |
| **Avg. UpScale** | 12.02 | 4.93 | 5.08 |
| **Sys Resp (Zero)** | -0.01 | -0.05 | -0.01 |
| **Sys Resp (Upscale)** | 12.28 | 5.09 | 5.08 |
| **Upscale Cal Gas** | 11.97 | 4.91 | 5.09 |
| **Initial Zero Bias** | -0.24% | 0.76% | -1.05% |
| **Final Zero Bias** | -0.24% | 1.20% | -0.63% |
| **Zero Drift** | 0.00% | 0.43% | 0.42% |
| **Initial Upscale Bias** | -1.24% | -1.85% | -0.11% |
| **Final Upscale Bias** | -1.29% | -1.63% | 0.11% |
| **Upscale Drift** | 0.05% | 0.22% | 0.21% |
| Alternative Specification Abs Diff **Initial Zero** | 0.05 | 0.07 | 0.10 |
| Alternative Specification Abs Diff **Final Zero** | 0.05 | 0.11 | 0.06 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.26 | 0.17 | 0.01 |
| Alternative Specification Abs Diff **Final Upscale** | 0.27 | 0.15 | 0.01 |
| **Calibration Span** | 21.00 | 9.20 | 9.50 |
| **3% of Cal. Span (drift)** | 0.63 | 0.28 | 0.29 |
| **5% of Cal. Span (bias)** | 1.05 | 0.46 | 0.48 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 8** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 13.31 | 2.09 | 0.11 |
| **Corrected Average** | 13.25 | 2.05 | 0.18 |
| **Initial Zero** | -0.06 | 0.06 | -0.07 |
| **Final Zero** | -0.04 | 0.01 | -0.09 |
| **Avg. Zero** | -0.05 | 0.04 | -0.08 |
| **Initial UpScale** | 12.01 | 4.94 | 5.09 |
| **Final UpScale** | 12.03 | 4.94 | 5.08 |
| **Avg. UpScale** | 12.02 | 4.94 | 5.09 |
| **Sys Resp (Zero)** | -0.01 | -0.05 | -0.01 |
| **Sys Resp (Upscale)** | 12.28 | 5.09 | 5.08 |
| **Upscale Cal Gas** | 11.97 | 4.91 | 5.09 |
| **Initial Zero Bias** | -0.24% | 1.20% | -0.63% |
| **Final Zero Bias** | -0.14% | 0.65% | -0.84% |
| **Zero Drift** | 0.10% | 0.54% | 0.21% |
| **Initial Upscale Bias** | -1.29% | -1.63% | 0.11% |
| **Final Upscale Bias** | -1.19% | -1.63% | 0.00% |
| **Upscale Drift** | 0.10% | 0.00% | 0.11% |
| Alternative Specification Abs Diff **Initial Zero** | 0.05 | 0.11 | 0.06 |
| Alternative Specification Abs Diff **Final Zero** | 0.03 | 0.06 | 0.08 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.27 | 0.15 | 0.01 |
| Alternative Specification Abs Diff **Final Upscale** | 0.25 | 0.15 | 0.00 |
| **Calibration Span** | 21.00 | 9.20 | 9.50 |
| **3% of Cal. Span (drift)** | 0.63 | 0.28 | 0.29 |
| **5% of Cal. Span (bias)** | 1.05 | 0.46 | 0.48 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 9** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 12.49 | 2.38 | 0.08 |
| **Corrected Average** | 12.43 | 2.36 | 0.15 |
| **Initial Zero** | -0.04 | 0.01 | -0.09 |
| **Final Zero** | -0.06 | 0.02 | -0.07 |
| **Avg. Zero** | -0.05 | 0.02 | -0.08 |
| **Initial UpScale** | 12.03 | 4.94 | 5.08 |
| **Final UpScale** | 12.03 | 4.94 | 5.05 |
| **Avg. UpScale** | 12.03 | 4.94 | 5.07 |
| **Sys Resp (Zero)** | -0.01 | -0.05 | -0.01 |
| **Sys Resp (Upscale)** | 12.28 | 5.09 | 5.08 |
| **Upscale Cal Gas** | 11.97 | 4.91 | 5.09 |
| **Initial Zero Bias** | -0.14% | 0.65% | -0.84% |
| **Final Zero Bias** | -0.24% | 0.76% | -0.63% |
| **Zero Drift** | 0.10% | 0.11% | 0.21% |
| **Initial Upscale Bias** | -1.19% | -1.63% | 0.00% |
| **Final Upscale Bias** | -1.19% | -1.63% | -0.32% |
| **Upscale Drift** | 0.00% | 0.00% | 0.32% |
| Alternative Specification Abs Diff **Initial Zero** | 0.03 | 0.06 | 0.08 |
| Alternative Specification Abs Diff **Final Zero** | 0.05 | 0.07 | 0.06 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.25 | 0.15 | 0.00 |
| Alternative Specification Abs Diff **Final Upscale** | 0.25 | 0.15 | 0.03 |
| **Calibration Span** | 21.00 | 9.20 | 9.50 |
| **3% of Cal. Span (drift)** | 0.63 | 0.28 | 0.29 |
| **5% of Cal. Span (bias)** | 1.05 | 0.46 | 0.48 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 10** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 12.34 | 2.31 | 0.10 |
| **Corrected Average** | 12.29 | 2.31 | 0.17 |
| **Initial Zero** | -0.06 | 0.02 | -0.07 |
| **Final Zero** | -0.08 | -0.04 | -0.07 |
| **Avg. Zero** | -0.07 | -0.01 | -0.07 |
| **Initial UpScale** | 12.03 | 4.94 | 5.05 |
| **Final UpScale** | 12.01 | 4.89 | 5.04 |
| **Avg. UpScale** | 12.02 | 4.92 | 5.05 |
| **Sys Resp (Zero)** | -0.01 | -0.05 | -0.01 |
| **Sys Resp (Upscale)** | 12.28 | 5.09 | 5.08 |
| **Upscale Cal Gas** | 11.97 | 4.91 | 5.09 |
| **Initial Zero Bias** | -0.24% | 0.76% | -0.63% |
| **Final Zero Bias** | -0.33% | 0.11% | -0.63% |
| **Zero Drift** | 0.10% | 0.65% | 0.00% |
| **Initial Upscale Bias** | -1.19% | -1.63% | -0.32% |
| **Final Upscale Bias** | -1.29% | -2.17% | -0.42% |
| **Upscale Drift** | 0.10% | 0.54% | 0.11% |
| Alternative Specification Abs Diff **Initial Zero** | 0.05 | 0.07 | 0.06 |
| Alternative Specification Abs Diff **Final Zero** | 0.07 | 0.01 | 0.06 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.25 | 0.15 | 0.03 |
| Alternative Specification Abs Diff **Final Upscale** | 0.27 | 0.20 | 0.04 |
| **Calibration Span** | 21.00 | 9.20 | 9.50 |
| **3% of Cal. Span (drift)** | 0.63 | 0.28 | 0.29 |
| **5% of Cal. Span (bias)** | 1.05 | 0.46 | 0.48 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 11** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 12.36 | 2.36 | 0.07 |
| **Corrected Average** | 12.31 | 2.31 | 0.17 |
| **Initial Zero** | -0.08 | -0.04 | -0.07 |
| **Final Zero** | -0.06 | 0.18 | -0.13 |
| **Avg. Zero** | -0.07 | 0.07 | -0.10 |
| **Initial UpScale** | 12.01 | 4.89 | 5.04 |
| **Final UpScale** | 12.02 | 4.98 | 5.05 |
| **Avg. UpScale** | 12.02 | 4.94 | 5.05 |
| **Sys Resp (Zero)** | -0.01 | -0.05 | -0.01 |
| **Sys Resp (Upscale)** | 12.28 | 5.09 | 5.08 |
| **Upscale Cal Gas** | 11.97 | 4.91 | 5.09 |
| **Initial Zero Bias** | -0.33% | 0.11% | -0.63% |
| **Final Zero Bias** | -0.24% | 2.50% | -1.26% |
| **Zero Drift** | 0.10% | 2.39% | 0.63% |
| **Initial Upscale Bias** | -1.29% | -2.17% | -0.42% |
| **Final Upscale Bias** | -1.24% | -1.20% | -0.32% |
| **Upscale Drift** | 0.05% | 0.98% | 0.11% |
| Alternative Specification Abs Diff **Initial Zero** | 0.07 | 0.01 | 0.06 |
| Alternative Specification Abs Diff **Final Zero** | 0.05 | 0.23 | 0.12 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.27 | 0.20 | 0.04 |
| Alternative Specification Abs Diff **Final Upscale** | 0.26 | 0.11 | 0.03 |
| **Calibration Span** | 21.00 | 9.20 | 9.50 |
| **3% of Cal. Span (drift)** | 0.63 | 0.28 | 0.29 |
| **5% of Cal. Span (bias)** | 1.05 | 0.46 | 0.48 |

# RATA - FIELD DATA SHEET

AIR HYGIENE

| | |
|---|---|
| Company: | CIS |
| Location: | Cricket Valley |
| Date: | 2/25/20 Project Code: 20-CIS-A-CricketValley |
| Unit Make and Model: | 7F-05 |
| Unit Number: | U-00002 |
| Serial Number: | |
| Data Recorded By: | MA |
| Tested With AHI Unit(s): | Truck(s): 176 Trailer(s): 215 |
| LDEQ Warmup/Cal Req: | On (Day/Time): 2/25/20 Cal (Day/Time): 5:00 |

Stack Dia. = 228
Measured By: RW
Measured With: Laser
*Start

| CYLINDER SERIAL NUMBERS | | $O_2$ | NOx | CO |
|---|---|---|---|---|
| | Low | EB0072434 | → | |
| | Mid | CC722590 | EB0065464 | 3 |
| | High | CC721614 | EB00B492 | |

NH3

| CYLINDER SERIAL NUMBERS | | ~~THC~~ | $CO_2$ | $SO_2$ |
|---|---|---|---|---|
| | Low | EB0065964 | | |
| | Mid | | | |
| | High | | | |

| RUN INFORMATION | Run #1 | Run #2 | Run #3 | Run #4 | Run #5 | Run #6 | Run #7 | Run #8 | Run #9 | Run #10 | Run #11 | Run #12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Time Start (hh:mm:ss) | 11:46:22 | 12:32:28 | 13:07:58 | 13:36:28 | 14:15:28 | 14:46:28 | 15:17:28 | 15:47:28 | 16:20:28 | 16:51:28 | 17:27:28 | |
| Time Stop (hh:mm:ss) | 11:53:28 | 12:52:58 | 13:27:58 | 13:56:58 | 14:35:58 | 15:06:58 | 15:37:58 | 16:07:58 | 16:40:58 | 17:11:58 | 18:17:58 | |
| Rated Power (MW or hp) | 12:13:58 | | | | | | | | | | | |
| Actual Power (MW or hp) | | | | | | | | | | | | |
| Barometric Pressure (In. Hg) | 29.33 | 29.36 | 29.34 | 29.33 | 29.34 | 29.33 | 29.33 | 29.33 | 29.33 | 29.34 | 29.37 | |
| Ambient Temperature (°F) | ~~53.5~~ 54.8 | 55.3 | 55.1 | 55.5 | 59.0 | 55.7 | ~~53.8~~ 55.8 | 55.1 | 54.5 | 53.5 | 51.0 | |
| Relative Humidity (%) | 50.8 | 50.6 | 48.6 | 47.5 | 44.7 | 48.0 | 50.1 | 50.9 | 53.5 | 56.8 | 75.7 | |
| CEMS DATA for $O_2$ | | | | | | | | | | | | |
| CEMS DATA for NOx | | | | | | | | | | | | |
| CEMS DATA for CO | | | | | | | | | | | | |
| CEMS DATA for $SO_2$ | | | | | | | | | | | | |

| CALIBRATION | $O_2$ | | NOx | | CO | | $SO_2$ | |
|---|---|---|---|---|---|---|---|---|
| | Conc. | Actual | Conc. | Actual | Conc. | Actual | Conc. | Actual |
| Zero Gas | 0.0 | -.01 | 0.0 | -.05 | 0.0 | -.01 | | |
| Low Gas | 11.47 | 12.28 | 4.91 | 5.09 | 5.09 | 5.08 | | |
| Mid Gas | 21.0 | 21.25 | 9.20 | 9.28 | 9.50 | 9.62 | | |
| High Gas | | | | | | | | |

| $NO_2$ CONVERSION | |
|---|---|
| $NO_2$ Gas (ppm) | 48.7 |
| NO Reading (ppm) | 1.40 |
| NOx Reading (ppm) | 48.79 |
| Cylinder Num | EB009843 |

| BIAS | $O_2$ | | NOx | | CO | | $SO_2$ | |
|---|---|---|---|---|---|---|---|---|
| | Zero | Mid | Zero | Mid | Zero | Mid | Zero | Mid |
| Initial Run #1 | -.03 | 11.99 | .02 | 4.93 | .05 | 5.13 | | |
| Run #1 / Run #2 | -.05 | 12.02 | -.03 | 4.83 | -.04 | 5.14 | | |
| Run #2 / Run #3 | 0.0 | 12.02 | -.35 | 4.94 | -.04 | 5.09 | | |
| Run #3 / Run #4 | -.04 | 12.01 | -.01 | 4.92 | -.04 | 5.08 | | |
| Run #4 / Run #5 | -.02 | 12.05 | .06 | 4.96 | -.05 | 5.03 | | |
| Run #5 / Run #6 | -.06 | 12.02 | .02 | 4.92 | -.11 | 5.07 | | |
| Run #6 / Run #7 | -.06 | 12.01 | .06 | 4.94 | -.07 | 5.09 | | |
| Run #7 / Run #8 | -.04 | 12.03 | .01 | 4.94 | -.09 | 5.08 | | |
| Run #8 / Run #9 | -.06 | 12.03 | .02 | 4.94 | -.07 | 5.05 | | |
| Run #9 / Run #10 | -.03 | 12.01 | -.04 | 4.89 | -.07 | 5.04 | | |
| Run #10 / Run #11 | -.06 | 12.02 | .18 | 4.98 | -.13 | 5.05 | | |
| Run #11 / Run #12 | | | | | | | | |
| Run #12 Final | | | | | | | | |
| Bias Gas Actual Conc. | | 11.97 | | 4.91 | | 5.09 | | |

| REPORT INFORMATION | INSTRUMENT | SERIAL # |
|---|---|---|
| $O_2$ | SERVO 1440 | 02-0021 |
| NOx | ThermO 42C | NX-003 |
| CO | Enst-co 300 ThermO 48C | |
| ~~THC~~MS | MKS | EF-0008 |
| $CO_2$ | | |
| $SO_2$ | | |

| RESPONSE TIME | TIME (hh:mm) | RESP (min) |
|---|---|---|
| Gas Inject | / / | |
| 1st Inst. @ 95% | / / | / / |
| 2nd Inst. @ 95% | / / | / / |
| 3rd Inst. @ 95% | / / | / / |

Signature

# APPENDIX E

# STRATIFICATION TEST DATA

| Source Information | |
|---|---|
| **Company** | Cricket Valley Energy Center LLC |
| **Plant Name** | Cricket Valley Energy Center |
| **Equipment** | General Electric (GE) 7F.05 Combustion Turbine |
| **Location** | Dover Plains, New York |

| Test Information | |
|---|---|
| **Date** | 02/25/20 |
| **Project #** | cis-19-cricketvalley.ny-start#1 |
| **Unit Number** | U-00002 |
| **Load** | Base Load |
| **Number of Ports Available** | 4 |
| **Number of Ports Used** | 4 |

| Stack and Test Type | | | |
|---|---|---|---|
| ○ | Isokinetic Traverse (Wet Chemistry Testing) | | **Circular Stack** |
| ○ | Velocity Traverse (Flow and Flow RATA Test) | | |
| ○ | Stratification Traverse (Compliance Test) | ☐ RM 20 | |
| ◉ | **Stratification Traverse (RATA)** | ☐ Part 60 ☑ Part 75 | |

Created with Traverse-AHI v20190211

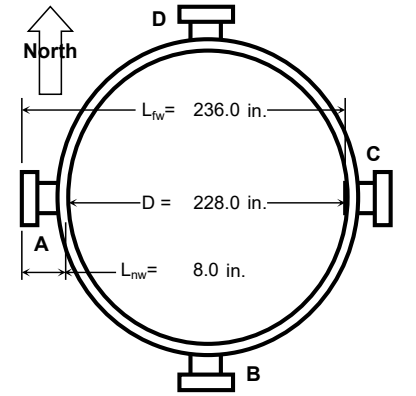
## METHOD 1 - STRATIFICATION TEST FOR A CIRCULAR SOURCE

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 02/25/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | cis-19-cricketvalley.ny-start#1 |
| **Equipment** | General Electric (GE) 7F.05 Combustion Turbine | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Circular Stack or Duct Diameter** | | | |
|---|---|---|---|
| **Distance to Far Wall of Stack** | ($L_{fw}$) | 236.00 | in. |
| **Distance to Near Wall of Stack** | ($L_{nw}$) | 8.00 | in.* |
| **Diameter of Stack** | (D) | 228.00 | in. |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ |

*assume 8 in. reference (must be measured and verified in field)

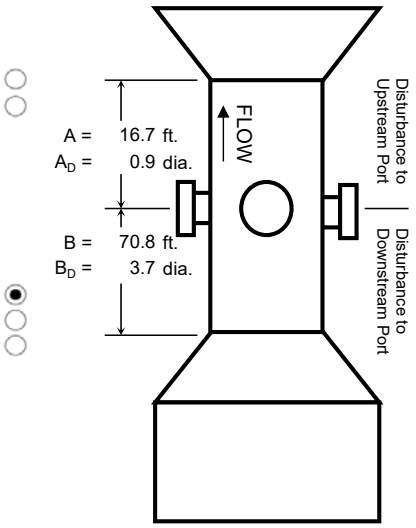
| **Distance from Disturbances to Port** | | | |
|---|---|---|---|
| **Distance Upstream** | (A) | 200.40 | in. |
| **Diameters Upstream** | ($A_D$) | 0.88 | diameters |
| **Distance Downstream** | (B) | 850.00 | in. |
| **Diameters Downstream** | ($B_D$) | 3.73 | diameters |




| **Number of Traverse Points Required** | | | | | |
|---|---|---|---|---|---|
| Diameters to Flow Disturbance | | Minimum Number of[1] Traverse Points | | Minimum Number of Traverse Points Comp Stratification | |
| Down ($B_D$) Stream | Up ($A_D$) Stream | Particulate Points | Velocity Points | Criteria | Points |
| 2.00-4.99 | 0.50-1.24 | 24 | 16 | RM 7E 8.1.2 | 12 RM1 pts |
| 5.00-5.99 | 1.25-1.49 | 20 | 16 | Alt 7E 8.1.2 | 3 points |
| 6.00-6.99 | 1.50-1.74 | 16 | 12 | | |
| 7.00-7.99 | 1.75-1.99 | 12 | 12 | | |
| >= 8.00 | >=2.00 | 8 or 12[2] | 8 or 12[2] | **Minimum Number of** | |
| Upstream Spec | | 24 | 16 | **Traverse Points** | |
| Downstream Spec | | 24 | 16 | **RATA Stratification** | |
| Traverse Pts Required | | 24 | 16 | **Criteria** | **Points** |
| | | | | Part75/60 | 12 RM1 pts |
| | | | | 75 abrv (a) | 3 points |
| | | | | 75 abrv (b) | 6 points |
| | | | | | points |

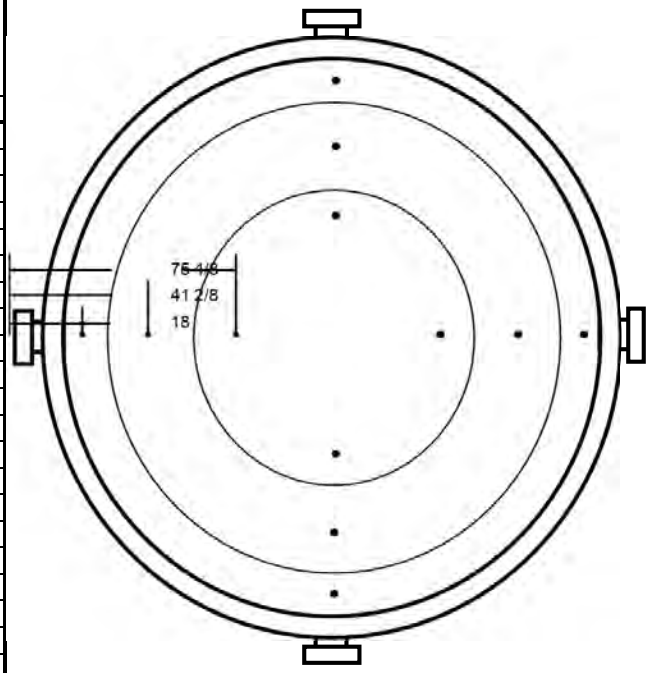
[1] Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.

[2] 8 for Circular Stacks 12 to 24 inches
12 for Circular Stacks over 24 inches




| **Number of Traverse Points Used** | | | | |
|---|---|---|---|---|
| 4 | **Ports by** | 3 | **Pts / port** | **Stratification Traverse (RATA)** |
| 12 | **Pts Used** | 12 | **Required** | |

| **Traverse Point Locations** | | | |
|---|---|---|---|
| **Traverse Point Number** | **Percent of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
| | % | in. | in. |
| **1** | 4.4% | 10 | 18 |
| **2** | 14.6% | 33 2/8 | 41 2/8 |
| **3** | 29.6% | 67 4/8 | 75 4/8 |
| **4** | | | |
| **5** | | | |
| **6** | | | |
| **7** | | | |
| **8** | | | |
| **9** | | | |
| **10** | | | |
| **11** | | | |
| **12** | | | |
| **13** | | | |
| **14** | | | |
| **15** | | | |
| **16** | | | |
| **17** | | | |
| **18** | | | |
| **19** | | | |
| **20** | | | |
| **21** | | | |
| **22** | | | |
| **23** | | | |
| **24** | | | |



## STRATIFICATION TRAVERSE (RATA) RESULTS

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 02/25/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | cis-19-cricketvalley.ny-start#1 |
| **Equipment** | General Electric (GE) 7F.05 Combustion Turbine | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Stack Dimensions** | | | | **Traverse Data** | | | |
|---|---|---|---|---|---|---|---|
| **Diameter or Length of Stack** | (D) | 228.00 | in. | 4 | **Ports by** | 3 | **Pts / port** |
| **Width of Stack** | (W) | | in. | 12 | **Pts Used** | 12 | **Required** |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ | **Run Start** | 6:14:22 | **Run End** | 7:12:22 |

| **Traverse Point** | **Time Per Point** | **Point Start Time** | **Point Stop Time (Reading)** | **$O_2$** | **Percent Difference** | **NOx** | **Percent Difference** |
|---|---|---|---|---|---|---|---|
| | min. | hh:mm:ss | hh:mm:ss | % | % | ppm | % |
| D-3 | 4.00 | 6:14:22 | 6:18:22 | 13.43 | 0.75% | 1.52 | 4.45% |
| D-2 | 4.00 | 6:18:22 | 6:22:22 | 13.40 | 0.52% | 1.50 | 5.70% |
| D-1 | 4.00 | 6:22:22 | 6:26:22 | 13.39 | 0.45% | 1.48 | 6.96% |
| C-3 | 8.00 | 6:26:22 | 6:34:22 | 13.32 | 0.07% | 1.49 | 6.33% |
| C-2 | 4.00 | 6:30:22 | 6:34:22 | 13.31 | 0.15% | 1.49 | 6.33% |
| C-1 | 4.00 | 6:34:22 | 6:38:22 | 13.31 | 0.15% | 1.58 | 0.68% |
| B-3 | 10.00 | 6:38:22 | 6:48:22 | 13.47 | 1.05% | 1.47 | 7.59% |
| B-2 | 4.00 | 6:48:22 | 6:52:22 | 13.45 | 0.90% | 1.45 | 8.85% |
| B-1 | 4.00 | 6:52:22 | 6:56:22 | 13.43 | 0.75% | 1.49 | 6.33% |
| A-3 | 8.00 | 6:56:22 | 7:04:22 | 13.03 | **2.25%** | 1.91 | **20.07%** |
| A-2 | 4.00 | 7:04:22 | 7:08:22 | 13.21 | 0.90% | 1.91 | **20.07%** |
| A-1 | 4.00 | 7:08:22 | 7:12:22 | 13.21 | 0.90% | 1.80 | 13.09% |
| **Average** | | | | 13.33 | | 1.59 | |

# RATA SAMPLE POINTS FOR CIRCULAR STACK

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 02/25/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | cis-19-cricketvalley.ny-start#1 |
| **Equipment** | General Electric (GE) 7F.05 Combustion Turbine | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Stack Dimensions** | | | | **Traverse Data** | | | |
|---|---|---|---|---|---|---|---|
| **Diameter or Length of Stack** | (D) | 228.00 | in. | 4 | **Ports by** | 3 | **Pts / port** |
| **Width of Stack** | (W) | | in. | 12 | **Pts Used** | 12 | **Required** |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ | **Run Start** | 6:14:22 | **Run End** | 7:12:22 |

**40 CFR 75 Criteria**

| **Stratification Results** | |
|---|---|
| **Maximum Percent Difference** | 2.25 % for $O_2$ |
| **Maximum Pollutant Conc. Diff.** | 0.32 ppm for NOx |
| **Maximum Diluent Conc. Diff.** | 0.30 % for $O_2$ |
| **Stratification Conclusions** | |
| **Comparison** | at least one diluent/pollutant |
| **Stack Diameter** | D > 93.6 in. |

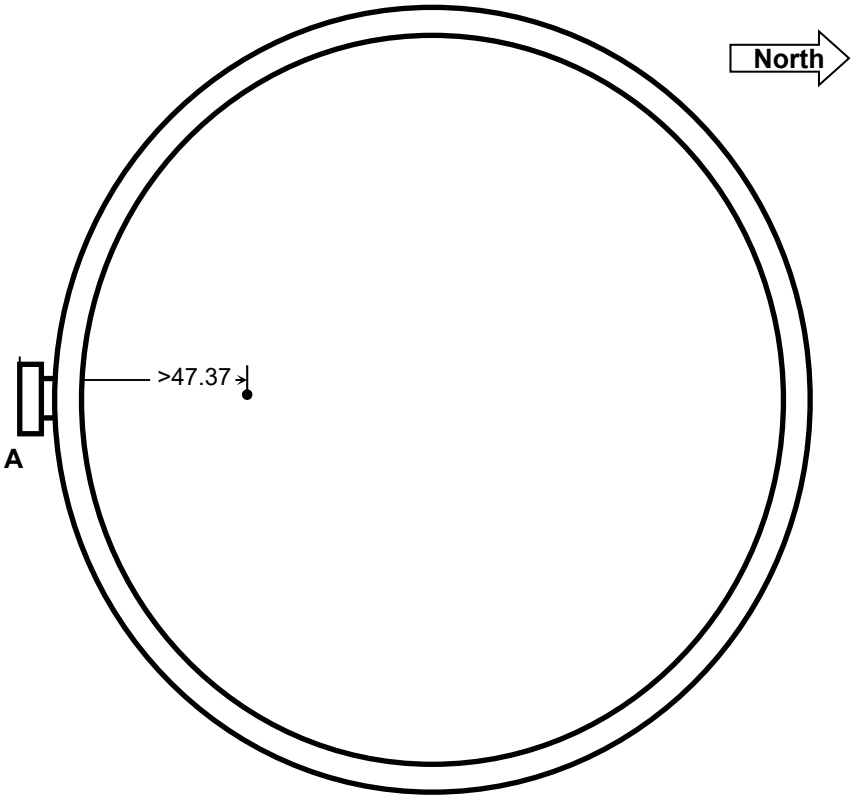
Under Part 75 criteria at least one measured pollutant or diluent demonstrates a non-stratified stack with subsequent testing from a single point located at least one meter away from the stack wall.

| **Traverse Point Number** | **Percent of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
|---|---|---|---|
| | % | in. | in. |
| **1** | >17.27% | >39.37 | >47.37 |
| **2** | | | |
| **3** | | | |

Test Type

- ☐ Moisture, for MW
- ☐ Moisture, for wet-to-dry
- ☑ Gas

- ☐ Use 6.5.6.3(a) points?
- ☐ 6.5.6(b)(2) alt. points could apply



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**end of report**

# APPENDIX 7

# FUEL FLOWMETER ACCURACY TEST/PRIMARY ELEMENT VISUAL INSPECTION DOCUMENTATION

# RELATIVE ACCURACY TEST AUDIT
# FOR THE
# GENERAL ELECTRIC, 7F.05,
# UNIT #U-00002 CEMS
# PREPARED FOR
# CRICKET VALLEY ENERGY CENTER LLC
# AT THE
# CRICKET VALLEY ENERGY CENTER
# DOVER PLAINS, NEW YORK
# FEBRUARY 25, 2020

## Report Date: March 11, 2020



**Corporate Headquarters**
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012

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Humble, TX 77338
Shreveport, LA 71115
Miami, FL 33101
Pittsburgh, PA 15205

# RELATIVE ACCURACY TEST AUDIT
# FOR THE
# GENERAL ELECTRIC, 7F.05,
# UNIT #U-00002 CEMS
# PREPARED FOR
# CRICKET VALLEY ENERGY CENTER LLC
# AT THE
# CRICKET VALLEY ENERGY CENTER
# DOVER PLAINS, NEW YORK
# FEBRUARY 25, 2020

Prepared and Reviewed by:

Logan K. Tsotsoros

Logan Tsotsoros
AHU Support Staff

Gavin Dolsky

Gavin Dolsky, QI
Staff Engineer – Report Manager

I, _____

Matt McBride, QSTI
Sr. Project Manager
certify that this testing was conducted and
this report was created in conformance
with the requirements of ASTM D7036

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**Relative Accuracy Test Audit**
**General Electric, 7F.05, Unit #U-00002 CEMS**
**Cricket Valley Energy Center LLC**
**Cricket Valley Energy Center**
**Dover Plains, New York**
**February 25, 2020**

## 1.0 INTRODUCTION

Air Hygiene International, Inc. (Air Hygiene) has completed the Relative Accuracy Test Audit (RATA) for nitrogen oxides (NOx), carbon monoxide (CO), ammonia ($NH_3$), and oxygen ($O_2$) from the exhaust of the General Electric, 7F.05, Unit #U-00002 for Cricket Valley Energy Center LLC at the Cricket Valley Energy Center in Dover Plains, New York. This report details the background, results, process description, and the sampling/analysis methodology of the stack sampling survey conducted on February 25, 2020.

The accumulated data from the RATA provides the figures for evaluating the acceptability of the operation of the on-site continuous emission monitoring system (CEMS) for the monitoring of NOx, CO, $NH_3$, and $O_2$ from the General Electric, 7F.05, Unit #U-00002 for Cricket Valley Energy Center LLC at the Cricket Valley Energy Center in Dover Plains, New York.

## 1.1 TEST PURPOSE AND OBJECTIVES

The purpose of the test was to perform the initial certification RATA on the CEMS that serves the General Electric, 7F.05, Unit #U-00002 for Cricket Valley Energy Center LLC at the Cricket Valley Energy Center in Dover Plains, New York. Reference method (RM) testing followed the Code of Federal Regulations (CFR), Title 40 (40 CFR), Part 60 (40 CFR 60), Appendix A, Methods 1, 3A, 7E, 10, 19; and 40 CFR 63, Appendix A, Method 320. RM values are compared with the on-site CEMS to document performance as required in the 40 CFR 60, Appendix B, Performance Specifications (PS) and 40 CFR 75 Appendix A and B. All relative accuracies were established on-site and were governed by the following sets of rules:

In accordance with 40 CFR 60, Appendix B, PS 2, Section 13.2, the NOx and $NH_3$ RATA results are acceptable if the relative accuracy (RA) does not exceed 20.0 percent when average emissions during the test are greater than 50 percent of the emission standard or alternative relative accuracy (ARA) does not exceed 10.0 percent when the average emissions during the test are less than 50 percent of the emission standard. Part 60 further requires that the unit be operating at greater than 50 percent of normal load.

In accordance with 40 CFR 75, Appendix A, Section 3.3.2(a) and (b), the NOx RATA results are acceptable if the relative accuracy (RA) does not exceed 10.0 percent or if during the RATA the average NOx emission rate is less than or equal to 0.200 lb/MMBtu and the average difference between the CEMS and reference method (RM) values does not exceed 0.020 lb/MMBtu. Passing this set of criteria requires the CEMS to be retested after no more than two operating quarters. Alternatively, in accordance with 40 CFR 75, Appendix B, Section 2.3.1.2(a) and (f), and Appendix B, Figure 2, the NOx RATA results are acceptable if the RA does not exceed 7.5 percent or if during the RATA the average NOx emission rate is less than or equal to 0.200 lb/MMBtu and the average difference between the CEMS and RM values does not exceed 0.015 lb/MMBtu. Passing this set of criteria allows the CEMS to be retested after four operating quarters or at least within eight calendar quarters.

In accordance with 40 CFR 60, Appendix B, PS 3, Section 13.2, the $O_2$ RATA results are acceptable if the relative accuracy (RA) does not exceed 20.0 percent or if the average difference between the CEMS and reference method (RM) values does not exceed plus or minus 1.0 percent of the measured value.

In accordance with 40 CFR 60, Appendix B, PS 4 and 4A, Sections 13.2 of each, the CO relative accuracy (RA) test results are acceptable if the RA does not exceed 10.0 percent, if the average difference between the CEMS and reference method (RM) values plus the 2.5 percent confidence coefficient (2.5%CC) does not exceed 5.0 parts per million (ppm), or if the alternative relative accuracy (ARA) does not exceed 5.0 percent. Part 60 further requires that the unit be operating at greater than 50 percent of normal load.

## 1.2 SUMMARY OF TEST PROGRAM

The following list details pertinent information related to this specific project:

1.2.1 Participating Organizations
- New York State Department of Environmental Conservation (NYSDEC)
- Cricket Valley Energy Center LLC
- Custom Instrumentation Services Corporation (CiSCO)
- Bechtel
- Air Hygiene

1.2.2 Industry
- Electric Utility / Electric Services

1.2.3 Air Permit and Federal Requirements
- Permit Number: 3-1326-00275/00009
- DEC ID: 3132600275
- 40 CFR 60, Appendix B, Performance Specifications (PS)
- 40 CFR 75, Appendix A and B

1.2.4 Plant Location
- Cricket Valley Energy Center in Dover Plains, New York
  - GPS Coordinates [Latitude 41.67616, Longitude -73.576914]
  - 2241 Route NY 22, Dover Plains, New York 12522
  - Federal Registry System / Facility Registry Service (FRS) No. – 110043333372
  - Source Classification Code (SCC) – 20100209

1.2.5 Equipment Tested
- General Electric, 7F.05, Unit #U-00002
  - NOx Analyzer (TAPI T200M, Serial No. 1013)
  - $NH_3$ Analyzer (TAPI T200M, Serial No. 1048)
  - CO Analyzer (TAPI T300M, Serial No. 519)
  - $O_2$ Analyzer (TAPI T803, Serial No. 129)

1.2.6 Emission Points
- Exhaust from the General Electric, 7F.05, Unit #U-00002
- For all gases, one sample point in the exhaust duct from the General Electric, 7F.05, Unit #U-00002, determined after conducting a stratification test

1.2.7 Emission Parameters Measured
- NOx
- CO
- $NH_3$
- $O_2$

1.2.8 Date of Emission Test
- February 25, 2020

1.2.9 Federal Certifications

- Stack Testing Accreditation Council AETB Certificate No. 3796.02
- International Standard ISO/IEC 17025:2005 Certificate No. 3796.01

## 1.3 KEY PERSONNEL

| | | |
|---|---|---|
| Cricket Valley Energy Center LLC: | Marc Duquette (mduquette@cricketvalley.com) | 617-320-5219 |
| Bechtel: | Ron Swanson (reswanson@bechtel.com) | 571-262-0198 |
| CiSCO: | Reginald Williams (rwilliams@ciscocems.com) | 720-419-0177 |
| Air Hygiene: | Matt McBride (mmcbride@airhygiene.com) | 918-307-8865 |
| Air Hygiene: | Swanson Bierman | 918-307-8865 |
| Air Hygiene: | Rob White | 918-307-8865 |

## 2.0 SUMMARY OF TEST RESULTS

Results from the sampling conducted on Cricket Valley Energy Center LLC's General Electric, 7F.05, Unit #U-00002 located at the Cricket Valley Energy Center on February 25, 2020 are summarized in the following table and relate only to the items tested.

**TABLE 2.1**
**SUMMARY OF GENERAL ELECTRIC, 7F.05, UNIT #U-00002 RATA RESULTS**

| Pollutant | Units | Criteria | | | Results | Passed / Test Frequency |
|---|---|---|---|---|---|---|
| | | CFR | Specification / Section | Standard | | |
| NOx | ppmvd@15%$O_2$ | Part 60 | Appendix B, Performance Specification 2, Section 13.2 | RA ≤ 20%, or ARA ≤ 10% | RA = 7.84% | YES / ANNUAL |
| NOx | lb/hr | Part 60 | Appendix B, Performance Specification 2, Section 13.2 | RA ≤ 20%, or ARA ≤ 10% | RA = 7.32% | YES / ANNUAL |
| NOx | lb/MMBtu | Part 75 | Appendix A, Section 3.3.2(a),(b)<br><br>Appendix B, Section 2.3.1.2(a),(f), Figure 2 | RA ≤ 10%, or if lb/MMBtu ≤ 0.200, d ≤ ±0.020 lb/MMBtu<br><br>Annual Incentive RA ≤ 7.5%, or if lb/MMBtu ≤ 0.2, d ≤ ±0.015 lb/MMBtu | RA = 7.88%<br>RM = 0.01 lb/MMBtu<br>d = 0.000 lb/MMBtu<br>BAF=1.000 | YES / ANNUAL |
| $O_2$ | %vd | Part 60 | Appendix B, Performance Specification 3, Section 13.2 | RA ≤ 20%, or d ≤ ±1.0% | RA = 1.70%<br>d = 0.2 % | YES / ANNUAL |
| CO | ppmvd@15%$O_2$ | Part 60 | Appendix B, Performance Specification 4, 4A, from all Section 13.2 | RA ≤ 10%, or d + 2.5% CC ≤ ±5 ppmv, or ARA ≤ 5% | RA = 87.96%<br>\|d\|+2.5%CC = 0.1 ppm | YES / ANNUAL |
| CO | lb/hr | Part 60 | Appendix B, Performance Specification 4, 4A Section 13.2 | RA ≤ 10%, or d + 2.5% CC ≤ ±5 lb/hr, or ARA ≤ 5% | RA = 98.88%<br>\|d\|+2.5%CC = 0.1 ppm (\|d\|+2.5%CC = 0.7 lb/hr) | YES / ANNUAL |
| $NH_3$ | ppmvd@15%$O_2$ | Assumed Part 60 | Appendix B, Performance Specification 2, Section 13.2 | RA ≤ 20%, or ARA ≤ 10% | ARA = 4.38% | YES / ANNUAL |
| $NH_3$ | lb/hr | Part 60 | Appendix B, Performance Specification 2, Section 13.2 | RA ≤ 20%, or ARA ≤ 10% | ARA = 6.50% | YES / ANNUAL |
| Load | MW | Part 60 | Appendix B, Performance Specifications | > 50% max load | 354.2 | WITHIN TOLERANCE |
| Load | MW | Part 75 | Appendix A and B | normal load range | 354.2 | WITHIN TOLERANCE |

Notes: RA = relative accuracy, ARA = alternative relative accuracy, RM = reference method value, d = difference between RM and CEMS value, CC = confidence coefficient, v = velocity, BAF = bias adjustment factor

The RATA passed for all pollutants (NOx, CO, $NH_3$, and $O_2$) in all units (ppm@15%$O_2$, lb/hr, lb/MMBtu, and %) under all 40 CFR 60 and 40 CFR 75 criteria.

Specifically, NOx in units of ppm@15%$O_2$ and lb/hr, passed 40 CFR 60 criteria with an RA less than 20 percent. NOx in units of lb/MMBtu passed the 40 CFR 75 alternative annual incentive criteria with an emissions rate of less than 0.200 lb/MMBtu and a difference between the RM and CEMS analyzers of less than 0.015 lb/MMBtu. Also the Bias Adjustment Factor test resulted in an adjustment factor equal to 1.0 (no adjustment required). $O_2$ in units of % passed the 40 CFR 60 criteria with an RA less than 20 percent. CO in units of ppm@15%$O_2$ and lb/hr passed the 40 CFR 60 alternative criteria with a concentration difference between the RM and CEMS analyzers plus the confidence coefficient of less than 5 ppm and 5 lb/hr respectively. $NH_3$ in units of ppm@15%$O_2$ and lb/hr passed the 40 CFR 60 criteria with an RA less than 20 percent.

Unit load was within the 40 CFR 60 required criteria of greater than 50 percent of the maximum load and also fell within the normal load criteria as defined by the plants Quality Control and Monitoring Plan which defined the upper and lower boundary on the unit and the normal and secondary normal load ranges.

The results of all measured pollutant emissions were below the required limits. All testing was performed without any real or apparent errors. All testing was conducted according to the approved testing protocol.

# 3.0 SOURCE OPERATION

## 3.1 PROCESS DESCRIPTION

Cricket Valley Energy Center LLC (CVEC) owns and operates the Cricket Valley Energy Center located at 2241 ST RTE 22 in Dover Plains, New York. Located on the Cricket Valley Energy Center are three General Electric (GE) 7F.05 Combustion Turbine Generators (CTGs), designated as U-00001, U-00002, and U-0003, and each unit is equipped with one heat recovery steam generator (HRSG) with supplemental duct firing. Each unit is rated at 381 megawatts (MW). The nominal MW per unit as per the NYSDEC Permit ID 3-1326-00275/00009 is identified as 333 MW.

A single, dedicated dry extraction based continuous emissions monitoring system (CEMS) is installed on each unit. The CEMS configurations include nitrogen oxide (NOx) analyzers, ammonia ($NH_3$) analyzers, carbon monoxide (CO) analyzers, diluent gas oxygen ($O_2$) analyzers, and data acquisition and handling systems (DAHS).

## 3.2 SAMPLING LOCATION

The CTG stack is vertical, circular, and measures 19 feet (ft) (228 inches) in diameter at the test ports which are approximately 265.8 ft above grade level with an exit elevation of approximately 282.5 ft above grade level. The test ports are located approximately 70.8 ft (850 inches) downstream and approximately 16.7 ft (200.4 inches) upstream from the nearest disturbances. Air Hygiene has field verified the measurable dimensions. Non-field verified dimensions are provided by Cricket Valley Energy Center LLC. All exhaust samples for gaseous emissions were continuously drawn from the exhaust system at the sample ports from a single point determined after conducting a stratification test. During the stratification test three points were traversed from each of the four ports. The probe was allowed to remain at a point for two times the system response time.

# 4.0 SAMPLING AND ANALYTICAL PROCEDURES

## 4.1 TEST METHODS

The emission test on the General Electric, 7F.05, Unit #U-00002 at the Cricket Valley Energy Center was performed following United States Environmental Protection Agency (EPA) methods described by the Code of Federal Regulations (CFR). Table 4.1 outlines the specific methods performed on February 25, 2020.

**TABLE 4.1**
**SUMMARY OF SAMPLING METHODS**

| Pollutant or Parameter | Sampling Method | Analysis Method |
|---|---|---|
| Sample Point Location | EPA Method 1 | Equal Area Method |
| Oxygen | EPA Method 3A | Paramagnetic Cell |
| Nitrogen Oxides | EPA Method 7E | Chemiluminescent Analyzer |
| Carbon Monoxide | EPA Method 10 | Nondispersive Infrared Analyzer |
| Stack Flow Rate | EPA Method 19 | Dry Oxygen F Factor |
| Ammonia and Moisture | EPA Method 320 | Fourier Transform Infrared |

## 4.2 INSTRUMENT CONFIGURATION AND OPERATIONS FOR GAS ANALYSIS

The sampling and analysis procedures used during these tests conform with the methods outlined in the Code of Federal Regulations (CFR), Title 40, Part 60, Appendix A, Methods 1, 3A, 7E, 10, 19; and 40 CFR 63, Appendix A, Method 320.

Figure 4.1 depicts the sample system used for the real-time gas analyzer tests. The gas sample was continuously pulled through the probe and transported, via heat-traced Teflon® tubing, to a heated head pump and into the FTIR then to a stainless steel minimum-contact condenser designed to dry the sample. Transportation of the sample, through Teflon® tubing, continued into the sample manifold within the mobile laboratory / portable analyzer via a stainless steel/Teflon® diaphragm pump. From the manifold, the sample was partitioned to the real-time analyzers through rotameters that controlled the flow rate of the sample.

Figure 4.1 shows that the sample system was also equipped with a separate path through which a calibration gas could be delivered to the probe and back through the entire sampling system. This allowed for convenient performance of system bias checks as required by the testing methods.

All instruments were housed in a climate controlled, trailer-mounted mobile laboratory. Gaseous calibration standards were provided in aluminum cylinders with the concentrations certified by the vendor. EPA Protocol No. 1 was used to determine the cylinder concentrations where applicable (i.e. NOx calibration gases).

Table 4.2 provides a description of the analyzers used for the instrument portion of the tests. All data from the continuous monitoring instruments were recorded on a Logic Beach Portable Data Logging System which retrieves calibrated electronic data from each instrument every one second and reports an average of the collected data every 30 seconds. For target compounds measured with the Fourier transform infrared (FTIR) spectrometer, interferograms consisting of 28 co-added scans were recorded continuously during the test periods, and provided approximately 30-second average concentrations. Spectral data was analyzed by the MKS MG2000 software.

Eleven test runs of approximately 21 minutes each were conducted on the General Electric, 7F.05, Unit #U-00002 for NOx, CO, $NH_3$, and $O_2$.

The stack gas analysis for $O_2$ concentrations was performed in accordance with procedures set forth in EPA Method 3A. The $O_2$ analyzer uses a paramagnetic cell detector.

EPA Method 7E was used to determine concentrations of NOx. A chemiluminescent analyzer was used to determine the nitrogen oxides concentration in the gas stream. A $NO_2$ in nitrogen certified gas cylinder was used to verify at least a 90 percent $NO_2$ conversion on the day of the test.

CO emission concentrations were quantified in accordance with procedures set forth in EPA Method 10. A continuous nondispersive infrared (NDIR) analyzer was used for this purpose.

An MKS Instruments - MultiGas™ Fourier Transform Infrared (FTIR) spectrometer, or equivalent, was used for $NH_3$ and $H_2O$ analysis per EPA Method 320. The FTIR spectrometer spectral resolution was 0.5 $cm^{-1}$. The system employed a silicon carbide infrared source at 1200ºC, a helium neon reference laser, beam splitters, potassium bromide (KBr) cell window, front-surface optical transfer mirrors, and multi-pass absorption cells. MCT detectors were used and cooled with liquid nitrogen in order to maintain a constant temperature of 77 Kelvin. The approximately 5.11-meter multi-pass path cells incorporated aspheric, aberration-correcting mirrors to increase the optical throughput and the detection sensitivity. Transducers and thermocouples were connected directly to the insulated sample cells that provide the pressure and temperatures of the sample streams. During testing, the temperature of the absorption cells was set at 191ºC. Elevated temperature prevented gas condensation within the cell and minimized compound adhesion to the cell walls and mirrors. The volume of the absorption cell was 0.5 liters, so at a sample gas flow rate of 4.0 liters per minute, the sample gas in the cell is refreshed approximately four times each minute. Interferograms consisting of 28 co-added scans were recorded continuously during the test periods, and provided approximately 30-second average concentrations.

**TABLE 4.2**
**ANALYTICAL INSTRUMENTATION**

| Parameter | Manufacturer and Model | Range | Sensitivity | Detection Principle |
|---|---|---|---|---|
| NOx | THERMO 42 series | User may select up to 5,000 ppm | 0.1 ppm | Thermal reduction of $NO_2$ to NO. Chemiluminescence of reaction of NO with $O_3$. Detection by PMT. Inherently linear for listed ranges. |
| CO | THERMO 48 series | User may select up to 10,000 ppm | 0.1 ppm | Infrared absorption, gas filter correlation detector, microprocessor based linearization. |
| $NH_3$ and $H_2O$ | MKS 2030 | User may select from multiple ranges | 0.1 ppm | Fourier Transform Infrared – FTIR |
| $O_2$ | SERVOMEX 1440 | 0-25% | 0.1% | Paramagnetic cell, inherently linear. |

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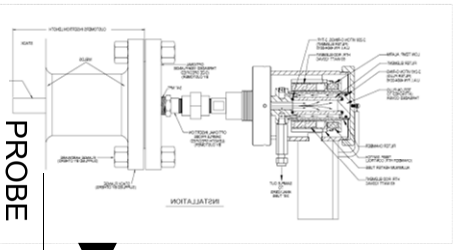
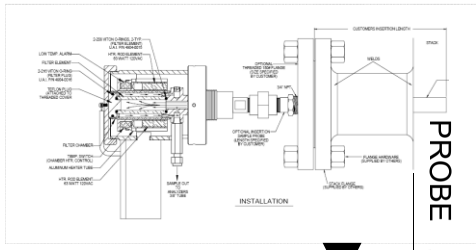



LEGEND
- Heated Teflon Tubing (pre-conditioned sample)
- Unheated Teflon Tubing (conditioned sample)
- Diluted Calibration Gas
- Calibration Gas
- Electronic Input/Output




PROCESS INLET OR 2ND STACK

dual line heated sample umbilical

STACK EXHAUST

TEST TRAILER EXTERIOR

TEST TRAILER INTERIOR

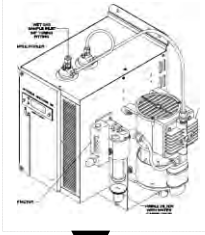
DATA RECORDER



COMPUTER



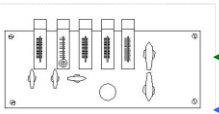
GAS CONDITIONER



dual line heated sample umbilical

MOBILE SECONDARY ANALYZERS

MANIFOLD





GAS DILUTER

THC, VOC



$O_2$, $CO_2$, NOx, CO, $SO_2$



HOT/WET ANALYZERS
COLD/DRY ANALYZERS

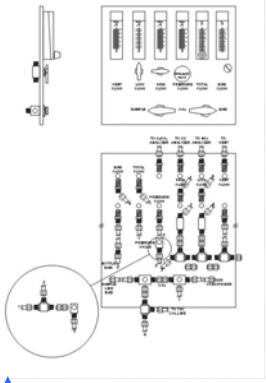


COLD/DRY ANALYZERS HOT/WET



$O_2$, $CO_2$, NOx, CO, $SO_2$

FLOW CONTROL MANIFOLD





FTIR

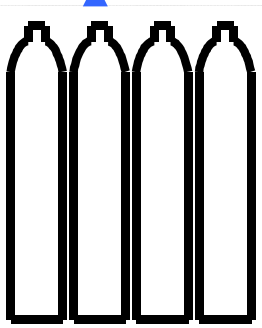
THC, VOC



CONDITIONER

VENT

CALIBRATION/ BIAS GAS BOTTLES



VENT

FIXED PRIMARY ANALYZERS

Shown fully equipped. Some labs may not contain these features and others may contain additional features specific to certain scopes.

AIR HYGIENE

Figure 4.1
EMISSIONS TESTING LAB

1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
www.airhygiene.com
(888) 461-8778

# APPENDIX A

# TEST RESULTS AND CALCULATIONS

**TABLE A.1:**
**EMISSIONS TESTING SCHEDULE**

| Unit | Load | Test Type | Run | Date | Start | Stop | Time Sync |
|---|---|---|---|---|---|---|---|
| U-00002 | Base Load | Stratification Test | 1 | 02/25/20 | 6:14:22 | 7:12:22 | DAHS |
| U-00002 | Base Load | Gas RATA | 1 | 02/25/20 | 11:53:28 | 12:13:58 | DAHS |
| U-00002 | Base Load | Gas RATA | 2 | 02/25/20 | 12:32:28 | 12:52:58 | DAHS |
| U-00002 | Base Load | Gas RATA | 3 | 02/25/20 | 13:07:28 | 13:27:58 | DAHS |
| U-00002 | Base Load | Gas RATA | 4 | 02/25/20 | 13:36:28 | 13:56:58 | DAHS |
| U-00002 | Base Load | Gas RATA | 5 | 02/25/20 | 14:15:28 | 14:35:58 | DAHS |
| U-00002 | Base Load | Gas RATA | 6 | 02/25/20 | 14:46:28 | 15:06:58 | DAHS |
| U-00002 | Base Load | Gas RATA | 7 | 02/25/20 | 15:17:28 | 15:37:58 | DAHS |
| U-00002 | Base Load | Gas RATA | 8 | 02/25/20 | 15:47:28 | 16:07:58 | DAHS |
| U-00002 | Base Load | Gas RATA | 9 | 02/25/20 | 16:20:28 | 16:40:58 | DAHS |
| U-00002 | Base Load | Gas RATA | 10 | 02/25/20 | 16:51:28 | 17:11:58 | DAHS |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**$O_2$ RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (%vd) | (%vd) | (diff) | ($diff^2$) |
| 1 | 11:53 - 12:13 | NO | 346.6 | 13.36 | 13.04 | | |
| 2 | 12:32 - 12:52 | YES | 345.9 | 13.25 | 13.06 | 0.19 | 0.04 |
| 3 | 13:07 - 13:27 | YES | 345.4 | 13.29 | 13.07 | 0.22 | 0.05 |
| 4 | 13:36 - 13:56 | NO | 345.6 | 11.85 | 13.07 | | |
| 5 | 14:15 - 14:35 | YES | 345.4 | 13.30 | 13.06 | 0.24 | 0.06 |
| 6 | 14:46 - 15:06 | YES | 345.5 | 13.25 | 13.07 | 0.18 | 0.03 |
| 7 | 15:17 - 15:37 | YES | 345.3 | 13.27 | 13.06 | 0.21 | 0.04 |
| 8 | 15:47 - 16:07 | YES | 345.8 | 13.25 | 13.05 | 0.20 | 0.04 |
| 9 | 16:20 - 16:40 | YES | 373.2 | 12.43 | 12.23 | 0.20 | 0.04 |
| 10 | 16:51 - 17:11 | YES | 378.1 | 12.29 | 12.11 | 0.18 | 0.03 |
| 11 | 17:57 - 18:17 | YES | 379.9 | 12.31 | 12.08 | 0.23 | 0.05 |
| 12 | | NO | | | | | |
| | **Total** | | **3204.5** | **116.63** | **114.79** | **1.84** | **0.38** |
| | **Average** | | **356.1** | **12.96** | **12.75** | **0.20** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.02 |
| T-value | 2.306 |
| Confidence Coefficient | 0.02 |

| | |
|---|---|
| **Average Difference =** | **0.2** |
| **Relative Accuracy =** | **1.7%** |

Part 60, Appendix B, Performance Specification 3,
13.2 CEMS Relative Accuracy Performance Specification. The RA of the CEMS must be no greater than 20 percent of the mean value of the reference method (RM) data. The results are also acceptable if the absolute value of the difference between the mean RM value and the mean CEMS value is less than or equal to 1.0 percent O2 (or CO2).

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**NOx RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (ppmvd@15%$O_2$) | (ppmvd@15%$O_2$) | (diff) | (diff$^2$) |
| 1 | 11:53 - 12:13 | YES | 346.6 | 1.58 | 1.70 | -0.12 | 0.02 |
| 2 | 12:32 - 12:52 | YES | 345.9 | 1.54 | 1.65 | -0.11 | 0.01 |
| 3 | 13:07 - 13:27 | NO | 345.4 | 1.55 | 1.45 | | |
| 4 | 13:36 - 13:56 | YES | 345.6 | 1.58 | 1.68 | -0.10 | 0.01 |
| 5 | 14:15 - 14:35 | YES | 345.4 | 1.50 | 1.57 | -0.07 | 0.00 |
| 6 | 14:46 - 15:06 | NO | 345.5 | 1.42 | 1.50 | | |
| 7 | 15:17 - 15:37 | YES | 345.3 | 1.51 | 1.60 | -0.09 | 0.01 |
| 8 | 15:47 - 16:07 | YES | 345.8 | 1.58 | 1.71 | -0.13 | 0.02 |
| 9 | 16:20 - 16:40 | YES | 373.2 | 1.65 | 1.77 | -0.12 | 0.02 |
| 10 | 16:51 - 17:11 | YES | 378.1 | 1.58 | 1.70 | -0.12 | 0.01 |
| 11 | 17:57 - 18:17 | YES | 379.9 | 1.59 | 1.70 | -0.11 | 0.01 |
| 12 | | NO | | | | | |
| | **Total** | | **3205.8** | **14.10** | **15.08** | **-0.98** | **0.11** |
| | **Average** | | **356.2** | **1.57** | **1.68** | **-0.11** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.02 |
| T-value | 2.306 |
| Confidence Coefficient | 0.01 |

**Relative Accuracy = 7.8%**

Part 60, Appendix B, Performance Specification 2,
8.4.1 RA Test Period. Conduct the RA test according to the procedure given in Sections 8.4.2 through 8.4.6 while the affected facility is operating at more than 50 percent of normal load, or as specified in an applicable subpart.
13.2 Relative Accuracy Performance Specification. The RA of the CEMS must be no greater than 20 percent when RM is used in the denominator of Eq. 2-6 (average emissions during test are greater than 50 percent of the emission standard) or 10 percent when the applicable emission standard (permit limit) is used in the denominator of Eq. 2-6 (average emissions during test are less than 50 percent of the emission standard).
Eq. 2.6 RA=([|d|+|CC|]*100)/RM

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**CO RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (ppmvd@15%$O_2$) | (ppmvd@15%$O_2$) | (diff) | (diff$^2$) |
| 1 | 11:53 - 12:13 | YES | 346.6 | 0.11 | 0.28 | -0.17 | 0.03 |
| 2 | 12:32 - 12:52 | NO | 345.9 | 0.35 | 0.09 | | |
| 3 | 13:07 - 13:27 | YES | 345.4 | 0.13 | 0.17 | -0.04 | 0.00 |
| 4 | 13:36 - 13:56 | NO | 345.6 | 0.51 | 0.34 | | |
| 5 | 14:15 - 14:35 | YES | 345.4 | 0.13 | 0.26 | -0.13 | 0.02 |
| 6 | 14:46 - 15:06 | YES | 345.5 | 0.16 | 0.07 | 0.09 | 0.01 |
| 7 | 15:17 - 15:37 | YES | 345.3 | 0.14 | 0.07 | 0.07 | 0.00 |
| 8 | 15:47 - 16:07 | YES | 345.8 | 0.14 | 0.04 | 0.10 | 0.01 |
| 9 | 16:20 - 16:40 | YES | 373.2 | 0.11 | 0.00 | 0.11 | 0.01 |
| 10 | 16:51 - 17:11 | YES | 378.1 | 0.11 | 0.00 | 0.11 | 0.01 |
| 11 | 17:57 - 18:17 | YES | 379.9 | 0.12 | 0.02 | 0.10 | 0.01 |
| 12 | | NO | | | | | |
| | **Total** | | **3205.2** | **1.15** | **0.91** | **0.24** | **0.11** |
| | **Average** | | **356.1** | **0.13** | **0.10** | **0.03** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.11 |
| T-value | 2.306 |
| Confidence Coefficient | 0.09 |

| | |
|---|---|
| **Relative Accuracy =** | **88.0%** |
| **\|d (difference in ppm)\| + CC =** | **0.11** |

Part 60, Appendix B, Performance Specification 4,
1.2.1 This specification is for evaluating the acceptability of carbon monoxide (CO) continuous emission monitoring systems (CEMS) at the time of installation or soon after and whenever specified in an applicable subpart of the regulations. This specification was developed primarily for CEMS having span values of 1,000 ppmv CO.
13.2 Relative Accuracy. The RA of the CEMS must be no greater than 10 percent when the average RM value is used to calculate RA or 5 percent when the applicable emission standard (permit limit) is used to calculate RA.

Part 60, Appendix B, Performance Specification 4A,
1.2.1 This specification is for evaluating the acceptability of carbon monoxide (CO) continuous emission monitoring systems (CEMS) at the time of installation or soon after and whenever specified in an applicable subpart of the regulations. This specification was developed primarily for CEMS that comply with low emission standards (less than 200 ppmv).
13.2 Relative Accuracy. The RA of the CEMS must be no greater than 10 percent when the average RM value is used to calculate RA, 5 percent when the applicable emission standard (permit limit) is used to calculate RA, or within 5 ppmv when the RA is calculated as the absolute average difference between the RM and CEMS plus the 2.5 percent confidence coefficient.

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**$NH_3$ RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (ppmvd@15%$O_2$) | (ppmvd@15%$O_2$) | (diff) | (diff$^2$) |
| 1 | 11:53 - 12:13 | YES | 346.6 | 0.66 | 0.71 | -0.05 | 0.00 |
| 2 | 12:32 - 12:52 | YES | 345.9 | 0.85 | 0.73 | 0.12 | 0.02 |
| 3 | 13:07 - 13:27 | YES | 345.4 | 0.87 | 1.02 | -0.15 | 0.02 |
| 4 | 13:36 - 13:56 | YES | 345.6 | 0.68 | 0.74 | -0.06 | 0.00 |
| 5 | 14:15 - 14:35 | YES | 345.4 | 0.87 | 0.83 | 0.04 | 0.00 |
| 6 | 14:46 - 15:06 | YES | 345.5 | 0.66 | 0.87 | -0.21 | 0.04 |
| 7 | 15:17 - 15:37 | YES | 345.3 | 0.66 | 0.81 | -0.15 | 0.02 |
| 8 | 15:47 - 16:07 | YES | 345.8 | 0.61 | 0.94 | -0.33 | 0.11 |
| 9 | 16:20 - 16:40 | NO | 373.2 | 0.48 | 0.82 | | |
| 10 | 16:51 - 17:11 | NO | 378.1 | 0.60 | 0.99 | | |
| 11 | 17:57 - 18:17 | YES | 379.9 | 1.53 | 1.00 | 0.53 | 0.28 |
| 12 | | NO | | | | | |
| | **Total** | | **3145.4** | **7.40** | **7.65** | **-0.25** | **0.50** |
| | **Average** | | **349.5** | **0.82** | **0.85** | **-0.03** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.25 |
| T-value | 2.306 |
| Confidence Coefficient | 0.19 |

| | |
|---|---|
| **Relative Accuracy =** | **26.6%** |
| **Applicable Standard =** | **5.00** |
| **Alternative Relative Accuracy =** | **4.4%** |

Part 60, Appendix B, Performance Specification 2,
8.4.1 RA Test Period. Conduct the RA test according to the procedure given in Sections 8.4.2 through 8.4.6 while the affected facility is operating at more than 50 percent of normal load, or as specified in an applicable subpart.
13.2 Relative Accuracy Performance Specification. The RA of the CEMS must be no greater than 20 percent when RM is used in the denominator of Eq. 2-6 (average emissions during test are greater than 50 percent of the emission standard) or 10 percent when the applicable emission standard (permit limit) is used in the denominator of Eq. 2-6 (average emissions during test are less than 50 percent of the emission standard).
Eq. 2.6 RA=([|d|+|CC|]*100)/RM

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**NOx RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (lb/hr) | (lb/hr) | (diff) | ($diff^2$) |
| 1 | 11:53 - 12:13 | YES | 346.6 | 14.14 | 15.13 | -0.99 | 0.97 |
| 2 | 12:32 - 12:52 | YES | 345.9 | 13.77 | 14.65 | -0.88 | 0.78 |
| 3 | 13:07 - 13:27 | NO | 345.4 | 13.85 | 12.89 | | |
| 4 | 13:36 - 13:56 | YES | 345.6 | 14.11 | 14.90 | -0.79 | 0.62 |
| 5 | 14:15 - 14:35 | YES | 345.4 | 13.41 | 13.95 | -0.54 | 0.30 |
| 6 | 14:46 - 15:06 | NO | 345.5 | 12.65 | 13.27 | | |
| 7 | 15:17 - 15:37 | YES | 345.3 | 13.45 | 14.13 | -0.68 | 0.47 |
| 8 | 15:47 - 16:07 | YES | 345.8 | 14.15 | 15.18 | -1.03 | 1.05 |
| 9 | 16:20 - 16:40 | YES | 373.2 | 16.10 | 17.22 | -1.12 | 1.26 |
| 10 | 16:51 - 17:11 | YES | 378.1 | 15.67 | 16.80 | -1.13 | 1.28 |
| 11 | 17:57 - 18:17 | YES | 379.9 | 15.73 | 16.73 | -1.00 | 1.01 |
| 12 | | NO | | | | | |
| | **Total** | | **3205.8** | **130.52** | **138.69** | **-8.17** | **7.74** |
| | **Average** | | **356.2** | **14.50** | **15.41** | **-0.91** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.20 |
| T-value | 2.306 |
| Confidence Coefficient | 0.15 |

**Relative Accuracy = 7.3%**

Part 60, Appendix B, Performance Specification 2,
8.4.1 RA Test Period. Conduct the RA test according to the procedure given in Sections 8.4.2 through 8.4.6 while the affected facility is operating at more than 50 percent of normal load, or as specified in an applicable subpart.
13.2 Relative Accuracy Performance Specification. The RA of the CEMS must be no greater than 20 percent when RM is used in the denominator of Eq. 2-6 (average emissions during test are greater than 50 percent of the emission standard) or 10 percent when the applicable emission standard (permit limit) is used in the denominator of Eq. 2-6 (average emissions during test are less than 50 percent of the emission standard).
Eq. 2.6 RA=([|d|+|CC|]*100)/RM

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**CO RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (lb/hr) | (lb/hr) | (diff) | ($diff^2$) |
| 1 | 11:53 - 12:13 | YES | 346.6 | 0.58 | 1.15 | -0.57 | 0.32 |
| 2 | 12:32 - 12:52 | NO | 345.9 | 1.93 | 0.38 | | |
| 3 | 13:07 - 13:27 | YES | 345.4 | 0.69 | 0.91 | -0.22 | 0.05 |
| 4 | 13:36 - 13:56 | NO | 345.6 | 2.76 | 0.26 | | |
| 5 | 14:15 - 14:35 | YES | 345.4 | 0.72 | 0.20 | 0.52 | 0.27 |
| 6 | 14:46 - 15:06 | YES | 345.5 | 0.89 | 0.37 | 0.52 | 0.28 |
| 7 | 15:17 - 15:37 | YES | 345.3 | 0.74 | 0.31 | 0.43 | 0.19 |
| 8 | 15:47 - 16:07 | YES | 345.8 | 0.77 | 0.21 | 0.56 | 0.31 |
| 9 | 16:20 - 16:40 | YES | 373.2 | 0.64 | 0.00 | 0.64 | 0.41 |
| 10 | 16:51 - 17:11 | YES | 378.1 | 0.68 | 0.00 | 0.68 | 0.47 |
| 11 | 17:57 - 18:17 | YES | 379.9 | 0.71 | 0.01 | 0.70 | 0.49 |
| 12 | | NO | | | | | |
| | **Total** | | **3205.2** | **6.43** | **3.16** | **3.27** | **2.78** |
| | **Average** | | **356.1** | **0.71** | **0.35** | **0.36** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.45 |
| T-value | 2.306 |
| Confidence Coefficient | 0.34 |

| | |
|---|---|
| **Relative Accuracy =** | **98.9%** |
| **\|d (difference in lb/hr)\| + CC =** | **0.71** |

Part 60, Appendix B, Performance Specification 4,
1.2.1 This specification is for evaluating the acceptability of carbon monoxide (CO) continuous emission monitoring systems (CEMS) at the time of installation or soon after and whenever specified in an applicable subpart of the regulations. This specification was developed primarily for CEMS having span values of 1,000 ppmv CO.
13.2 Relative Accuracy. The RA of the CEMS must be no greater than 10 percent when the average RM value is used to calculate RA or 5 percent when the applicable emission standard (permit limit) is used to calculate RA.

Part 60, Appendix B, Performance Specification 4A,
1.2.1 This specification is for evaluating the acceptability of carbon monoxide (CO) continuous emission monitoring systems (CEMS) at the time of installation or soon after and whenever specified in an applicable subpart of the regulations. This specification was developed primarily for CEMS that comply with low emission standards (less than 200 ppmv).
13.2 Relative Accuracy. The RA of the CEMS must be no greater than 10 percent when the average RM value is used to calculate RA, 5 percent when the applicable emission standard (permit limit) is used to calculate RA, or within 5 ppmv when the RA is calculated as the absolute average difference between the RM and CEMS plus the 2.5 percent confidence coefficient.

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**$NH_3$ RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (lb/hr) | (lb/hr) | (diff) | ($diff^2$) |
| 1 | 11:53 - 12:13 | YES | 346.6 | 2.20 | 2.40 | -0.20 | 0.04 |
| 2 | 12:32 - 12:52 | YES | 345.9 | 2.83 | 2.44 | 0.39 | 0.15 |
| 3 | 13:07 - 13:27 | YES | 345.4 | 2.88 | 3.38 | -0.50 | 0.25 |
| 4 | 13:36 - 13:56 | YES | 345.6 | 2.26 | 2.46 | -0.20 | 0.04 |
| 5 | 14:15 - 14:35 | YES | 345.4 | 2.87 | 2.71 | 0.16 | 0.02 |
| 6 | 14:46 - 15:06 | YES | 345.5 | 2.19 | 2.87 | -0.68 | 0.46 |
| 7 | 15:17 - 15:37 | YES | 345.3 | 2.17 | 2.64 | -0.47 | 0.22 |
| 8 | 15:47 - 16:07 | YES | 345.8 | 2.01 | 2.39 | -0.38 | 0.14 |
| 9 | 16:20 - 16:40 | NO | 373.2 | 1.73 | 2.91 | | |
| 10 | 16:51 - 17:11 | NO | 378.1 | 2.20 | 3.59 | | |
| 11 | 17:57 - 18:17 | YES | 379.9 | 5.62 | 3.60 | 2.02 | 4.10 |
| 12 | | NO | | | | | |
| | **Total** | | **3145.4** | **25.03** | **24.89** | **0.14** | **5.42** |
| | **Average** | | **349.5** | **2.78** | **2.77** | **0.02** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.82 |
| T-value | 2.306 |
| Confidence Coefficient | 0.63 |

| | |
|---|---|
| **Relative Accuracy =** | **23.3%** |
| **Applicable Standard* =** | **9.98** |
| **Alternative Relative Accuracy =** | **6.5%** |

* Value calculated using the Applicable Standard of 5 ppm@15%$O_2$ and the average stack flow and $O_2$ concentration for the first three runs.

$$NH_3\ {}^{lb}/_{hr} = \frac{(20.9-15)*C_{adj}*Q_s*MW}{(20.9-\%O_2)*10^6*G} = \frac{(20.9-15)*5*58{,}140{,}133*17.03}{(20.9-13.3)*10^6*385.23} = 9.98$$

Part 60, Appendix B, Performance Specification 2,
8.4.1 RA Test Period. Conduct the RA test according to the procedure given in Sections 8.4.2 through 8.4.6 while the affected facility is operating at more than 50 percent of normal load, or as specified in an applicable subpart.
13.2 Relative Accuracy Performance Specification. The RA of the CEMS must be no greater than 20 percent when RM is used in the denominator of Eq. 2-6 (average emissions during test are greater than 50 percent of the emission standard) or 10 percent when the applicable emission standard (permit limit) is used in the denominator of Eq. 2-6 (average emissions during test are less than 50 percent of the emission standard).
Eq. 2.6 RA=([|d|+|CC|]*100)/RM

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**NOx RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (lb/MMBtu) | (lb/MMBtu) | (diff) | ($diff^2$) |
| 1 | 11:53 - 12:13 | YES | 346.6 | 0.0058 | 0.0062 | -0.0004 | 0.0000 |
| 2 | 12:32 - 12:52 | YES | 345.9 | 0.0057 | 0.0061 | -0.0004 | 0.0000 |
| 3 | 13:07 - 13:27 | NO | 345.4 | 0.0057 | 0.0053 | | |
| 4 | 13:36 - 13:56 | YES | 345.6 | 0.0058 | 0.0062 | -0.0004 | 0.0000 |
| 5 | 14:15 - 14:35 | YES | 345.4 | 0.0055 | 0.0058 | -0.0003 | 0.0000 |
| 6 | 14:46 - 15:06 | NO | 345.5 | 0.0052 | 0.0055 | | |
| 7 | 15:17 - 15:37 | YES | 345.3 | 0.0056 | 0.0059 | -0.0003 | 0.0000 |
| 8 | 15:47 - 16:07 | YES | 345.8 | 0.0058 | 0.0063 | -0.0005 | 0.0000 |
| 9 | 16:20 - 16:40 | YES | 373.2 | 0.0061 | 0.0065 | -0.0004 | 0.0000 |
| 10 | 16:51 - 17:11 | YES | 378.1 | 0.0058 | 0.0063 | -0.0005 | 0.0000 |
| 11 | 17:57 - 18:17 | YES | 379.9 | 0.0058 | 0.0062 | -0.0004 | 0.0000 |
| 12 | | NO | | | | | |
| | **Total** | | **3205.8** | **0.0519** | **0.0555** | **-0.0036** | **0.0000** |
| | **Average** | | **356.2** | **0.0058** | **0.0062** | **-0.0004** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.0001 |
| T-value | 2.306 |
| Confidence Coefficient | 0.0001 |

**Relative Accuracy = 7.88%**

If the mean difference is less than or equal to the absolute value of the confidence coefficient, then the Bias Test passes and the bias adjustment factor is not applicable.

| | |
|---|---|
| Mean Difference = | -0.0004 |
| Confidence Coefficient = | 0.0001 |

BAF = 1 + (abs. value mean difference/avg. CEMS reading)

| | |
|---|---|
| Average CEMS Reading = | 0.0062 |
| **BAF =** | **1.000** |

Part 75, Appendix A,
3.3.2 Relative Accuracy for NOX-Diluent Continuous Emission Monitoring Systems
(a) The relative accuracy for NOX-diluent continuous emission monitoring systems shall not exceed 10.0 percent.
(b) For affected units where the average of the reference method measurements of NOX emission rate (this means lb/MMBtu) during the relative accuracy test audit is less than or equal to 0.200 lb/mmBtu, the difference between the mean value of the continuous emission monitoring system measurements and the reference method mean value shall not exceed ±0.020 lb/mmBtu, wherever the relative accuracy specification of 10.0 percent is not achieved.

7.6.5 Bias Adjustment
(b) For single-load RATAs of SO2 pollutant concentration monitors, NOX concentration monitoring systems, and NOX-diluent monitoring systems and for the single-load flow RATAs required or allowed under section 6.5.2 of this appendix and sections 2.3.1.3(b) and 2.3.1.3(c) of Appendix B to this part, the appropriate BAF is determined directly from the RATA results at normal load, using Equation A-12. Notwithstanding, when a NOX concentration CEMS or an SO2 CEMS or a NOX-diluent CEMS installed on a low-emitting affected unit (i.e., average SO2 or NOX concentration during the RATA &IE; 250 ppm or average NOX emission rate &IE; 0.200 lb/mmBtu) meets the normal 10.0 percent relative accuracy specification (as calculated using Equation A-10) or the alternate relative accuracy specification in section 3.3 of this appendix for low-emitters, but fails the bias test, the BAF may either be determined using Equation A-12, or a default BAF of 1.111 may be used.

Part 75, Appendix B,
2.3.1.2 Reduced RATA Frequencies. Relative accuracy test audits of primary and redundant backup SO2 pollutant concentration monitors, CO2 pollutant concentration monitors (including O2 monitors used to determine CO2 emissions), CO2 or O2 diluent monitors used to determine heat input, moisture monitoring systems, NOX concentration monitoring systems, flow monitors, NOX-diluent monitoring systems or SO2-diluent monitoring systems may be performed annually (i.e., once every four successive QA operating quarters, rather than once every two successive QA operating quarters) if any of the following conditions are met for the specific monitoring system involved:
(a) The relative accuracy during the audit of an SO2 or CO2 pollutant concentration monitor (including an O2 pollutant monitor used to measure CO2 using the procedures in appendix F to this part), or of a CO2 or O2 diluent monitor used to determine heat input, or of a NOX concentration monitoring system, or of a NOX-diluent monitoring system, or of an SO2-diluent continuous emissions monitoring system is ≤ 7.5 percent;

(f) For units with low NOX emission rates (average NOX emission rate measured by the reference method during the RATA ≤ 0.200 lb/mmBtu), when a NOX-diluent continuous emission monitoring system fails to achieve a relative accuracy ≤ 7.5 percent, but the monitoring system mean value from the RATA, calculated using Equation A-7 in appendix A to this part, is within ± 0.015 lb/mmBtu of the reference method mean value;

Figure 2 to Appendix B of Part 75_Relative Accuracy Test Frequency Incentive System.

| RATA | Semiannual(percent)(1) | Annual(1) |
|---|---|---|
| SO2 or NOX(3) | 7.5% < RA ≤ 10.0% or ± 15.0 ppm(2) | RA ≤ 7.5% or ± 12.0 ppm(2) |
| SO2-diluent | 7.5% < RA ≤ 10.0% or ± 0.030 lb/mmBtu(2) | RA ≤ 7.5% or ± 0.025 lb/mmBtu(2) |
| NOX-diluent | 7.5% < RA ≤ 10.0% or ± 0.020 lb/mmBtu(2) | RA ≤ 7.5% or ± 0.015 lb/mmBtu(2) |
| Flow | 7.5% < RA ≤ 10.0% or ± 2.0 fps(2) | RA ≤ 7.5% or ± 1.5 fps |
| CO2 or O2 | 7.5% < RA ≤ 10.0% or ± 1.0% CO2/O2(2) | RA ≤ 7.5% or ± 0.7% CO2/O2(2) |
| Moisture | 7.5% < RA ≤ 10.0% or ± 1.5% H2O(2) | RA ≤ 7.5% or ± 1.0% H2O(2) |

(1) The deadline for the next RATA is the end of the second (if semiannual) or fourth (if annual) successive QA operating quarter following the quarter in which the CEMS was last tested. Exclude calendar quarters with fewer than 168 unit operating hours (or, for common stacks and bypass stacks, exclude quarters with fewer than 168 stack operating hours) in determining the RATA deadline. For SO2 monitors, QA operating quarters in which only very low sulfur fuel as defined in § 72.2, is combusted may also be excluded. However, the exclusion of calendar quarters is limited as follows: the deadline for the next RATA shall be no more than 8 calendar quarters after the quarter in which a RATA was last performed.
(2) The difference between monitor and reference method mean values applies to moisture monitors, CO2, and O2 monitors, low emitters, or low flow, only.
(3) A NOX concentration monitoring system used to determine NOX mass emissions under § 75.71.

# Calculations, Formulas, and Constants

The following information supports the spreadsheets for this testing project.

**Given Data:**

Ideal Gas Conversion Factor = 385.23 SCF/lb-mol at 68 deg F & 14.696 psia

Fuel Heating Value is based upon Air Hygiene's fuel gas calculation sheet. All calculations are based upon a correction to 68 deg F & 14.696 psia

High Heating Values (HHV) are used for the Fuel Heating Value, F-Factor, and Fuel Flow Data per EPA requirements.

**ASTM D 3588**

| | |
|---|---|
| Molecular Weight of NOx (lb/lb-mole) = | 46.01 |
| Molecular Weight of CO (lb/lb-mole) = | 28.00 |
| Molecular Weight of $SO_2$ (lb/lb-mole) = | 64.00 |
| Molecular Weight of THC (propane) (lb/lb-mole) = | 44.00 |
| Molecular Weight of VOC (methane) (lb/lb-mole) = | 16.00 |
| Molecular Weight of $NH_3$ (lb/lb-mole) = | 17.03 |
| Molecular Weight of HCHO (lb/lb-mole) = | 30.03 |
| Molecular Weight of $CO_2$ (lb/lb-mole) = | 44.01 |

**40CFR60, App. A., RM 19, Table 19-1**

| | |
|---|---|
| Conversion Constant for NOx = | 0.0000001194351 |
| Conversion Constant for CO = | 0.0000000726839 |
| Conversion Constant for $SO_2$ = | 0.0000001661345 |
| Conversion Constant for THC = | 0.0000001142175 |
| Conversion Constant for VOC (methane) = | 0.0000000415336 |
| Conversion Constant for $NH_3$ = | 0.0000000442074 |
| Conversion Constant for HCHO = | 0.0000000779534 |
| Conversion Constant for $CO_2$ = | 0.0000001142434 |

NOTE: units are lb/ppm*ft$^3$

**Formulas:**

1. Corrected Raw Average ($C_{Gas}$), 40CFR60, App. A, RM 7E, Eq. 7E-5 (08/15/06)

$$C_{Gas} = (C_{Avg} - C_O) \times \left( \frac{C_{MA}}{C_M - C_O} \right)$$

2. Correction to % $O_2$, 40CFR60, App. A, RM 20, Eq. 20-5 (11/26/02)

$$C_{adj} = C_{Gas(Target)} \times \left( \frac{20.9\% - AdjFactor}{20.9\% - C_{Gas(O2)}} \right)$$

3. Correction to % $O_2$ and ISO Conditions

$$C_{ISO} = C_{Adj} \times \sqrt{\frac{P_r}{P_o}} \times e^{(19 \times (H_O - 0.00633))} \times \left( \frac{288}{T_a} \right)^{1.53}$$

4. Method 19 stack exhaust flow (scfh) [ref. EPA EMC FAQ Method 19]

$$Q_S = \left( \frac{FFactor \times Q_f \times HHV}{1{,}000{,}000} \right) \times \left( \frac{20.9\%}{20.9\% - C_{Gas(O2)}} \right)$$

5. Emission Rate in lb/hr

$$E_{lb/hr} = \frac{C_{Gas}}{10^6} \times \frac{Q_S \times MW}{G}$$

6. Emission Rate in tons per year

$$E_{ton/yr} = \frac{E_{lb/hr} \times hr_{year}}{2000}$$

7. Emission Concentration in lb/MMBtu ($O_2$ based)

$$E_{lb/MMBtu} = \frac{C_{Gas} \times F_d Factor \times Conv_C \times 20.9\%}{20.9\% - C_{Gas(O2)}}$$

8. Emission Concentration in g/hp*hr

$$E_{g/hp \cdot hr} = \frac{E_{lb/hr} \times 453.6}{mw \times 1341.022} or \frac{E_{lb/hr} \times 453.6}{hp}$$

**RATA SHEET CALCULATIONS**

d = Reference Method Data - CEMS Data

$S_d$ = Standard Deviation

CC = Confident Coefficient

n = number of runs

$t_{0.025}$ = 2.5 percent confidence coefficient T-values

RA = relative accuracy

ARA = alternative relative accuracy

BAF = Bias adjustment factor

| n | t | n | t | n | t |
|---|---|---|---|---|---|
| 2 | 12.706 | 7 | 2.447 | 12 | 2.201 |
| 3 | 4.303 | 8 | 2.365 | 13 | 2.179 |
| 4 | 3.182 | 9 | 2.306 | 14 | 2.160 |
| 5 | 2.776 | 10 | 2.262 | 15 | 2.145 |
| 6 | 2.571 | 11 | 2.228 | 16 | 2.131 |

1. Difference

$$d = \sum_{i=1}^{n} d_i$$

2. Standard Deviation

$$S_d = \sqrt{\frac{\sum_{i=1}^{n} d_i^2 - \left[ \frac{\left( \sum_{i=1}^{n} d_i \right)^2}{n} \right]}{n-1}}$$

3. Confident Coefficient

$$CC = t_{0.025} \times \frac{S_d}{\sqrt{n}}$$

4. Relative Accuracy

$$RA = \frac{|d_{AVG}| + |CC|}{RM_{AVG}} \times 100$$

5. Alternative Relative Accuracy

$$ARA = \frac{|d_{AVG}| + |CC|}{AS} \times 100$$

5. Bias Adjustment Factor

$$BAF = 1 + \left( \frac{|d_{AVG}|}{CEM_{AVG}} \right)$$

**RM 7E, (08-15-06), 12.1 Nomenclature. The terms used in the equations are defined as follows:**

ACE = Analyzer calibration error, percent of calibration span.
$B_{WS}$ = Moisture content of sample gas as measured by Method 4 or other approved method, percent/100.
$C_{Avg}$ = Average unadjusted gas concentration indicated by data recorder for the test run.
$C_D$ = Pollutant concentration adjusted to dry conditions.
$C_{Dir}$ = Measured concentration of a calibration gas (low, mid, or high) when introduced in direct calibration mode.
$C_{Gas}$ = Average effluent gas concentration adjusted for bias.
$C_M$ = Average of initial and final system calibration bias (or 2-point system calibration error) check responses for the upscale calibration gas.
$C_{MA}$ = Actual concentration of the upscale calibration gas, ppmv.
$C_O$ = Average of the initial and final system calibration bias (or 2-point system calibration error) check responses from the low-level (or zero) calibration gas.
$C_S$ = Measured concentration of a calibration gas (low, mid, or high) when introduced in system calibration mode.
$C_{SS}$ = Concentration of NOx measured in the spiked sample.
$C_{Spike}$ = Concentration of NOx in the undiluted spike gas.
$C_{Calc}$ = Calculated concentration of NOx in the spike gas diluted in the sample.
$C_V$ = Manufacturer certified concentration of a calibration gas (low, mid, or high).
$C_W$ = Pollutant concentration measured under moist sample conditions, wet basis.
CS = Calibration span.
D = Drift assessment, percent of calibration span.
$E_p$ = The predicted response for the low-level and mid-level gases based on a linear response line between the zero and high-level response.
$Eff_{NO2}$ = $NO_2$ to NO converter efficiency, percent.
H = High calibration gas, designator.
L = Low calibration gas, designator.
M = Mid calibration gas, designator.
NOFinal = The average NO concentration observed with the analyzer in the NO mode during the converter efficiency test in Section 16.2.2.
NOxCorr = The NOx concentration corrected for the converter efficiency.
NOxFinal = The final NOx concentration observed during the converter efficiency test in Section 16.2.2.
NOxPeak = The highest NOx concentration observed during the converter efficiency test in Section 16.2.2.
$Q_{Spike}$ = Flow rate of spike gas introduced in system calibration mode, L/min.
$Q_{Total}$ = Total sample flow rate during the spike test, L/min.
R = Spike recovery, percent.
SB = System bias, percent of calibration span.
$SB_i$ = Pre-run system bias, percent of calibration span.
$SB_f$ = Post-run system bias, percent of calibration span.
SB / $D_{Alt}$ = Alternative absolute difference criteria to pass bias and/or drift checks.
SCE = System calibration error, percent of calibration span.
$SCE_i$ = Pre-run system calibration error, percent of calibration span.
$SCE_{final}$ = Post-run system calibration error, percent of calibration span.
Z = Zero calibration gas, designator.

**40CFR60.355(b)(1), (09-20-06), Nomenclature. The terms used in the equations are defined as follows:**

$P_r$ = reference combustor inlet absolute pressure at 101.3 kilopascals ambient pressure, mm Hg
$P_o$ = observed combustor inlet absolute pressure at test, mm Hg
$H_o$ = observed humidity of ambient air, g $H_2O$/g air
e = transcendental constant, 2.718
$T_a$ = ambient temperature, K

**Small Engine and FTIR Nomenclature. The terms used in the equations are defined as follows:**

bhp = brake horsepower
hp = horsepower
$Q_{sys}$ = system flow (lpm)
$Q_m$ = matrix spike flow (lpm)

**RM 19, (07-29-06), 12.1 Nomenclature. The terms used in the equations are defined as follows:**

AdjFactor = Percent oxygen or carbon dioxide adjustment applied to a target pollutant
$B_{wa}$ = Moisture fraction of ambient air, percent.
Btu = British thermal unit
$\%_C$ = Concentration of carbon from an ultimate analysis of fuel, weight percent.
$\%_{CO2d}$,$\%_{CO2w}$ = Concentration of carbon dioxide on a dry and wet basis, respectively, percent.
CIP / CDP = Combustor inlet pressure / compressor discharge pressure (mm Hg); note, some manufactures reference as PCD.
E = Pollutant emission rate, ng/J (lb/million Btu).
$E_a$ = Average pollutant rate for the specified performance test period, ng/J (lb/million Btu).
$E_{ao}$, $E_{ai}$ = Average pollutant rate of the control device, outlet and inlet, respectively, for the performance test period, ng/J (lb/million Btu).
$E_{bi}$ = Pollutant rate from the steam generating unit, ng/J (lb/million Btu).
$E_{bo}$ = Pollutant emission rate from the steam generating unit, ng/J (lb/million Btu).
$E_{ci}$ = Pollutant rate in combined effluent, ng/J (lb/million Btu).
$E_{co}$ = Pollutant emission rate in combined effluent, ng/J (lb/million Btu).
$E_d$ = Average pollutant rate for each sampling period (e.g.,24-hr Method 6B sample or 24-hr fuel sample) or for each fuel lot (e.g., amount of fuel bunkered), ng/J (lb/million Btu).
$E_{di}$ = Average inlet $SO_2$ rate for each sampling period d, ng/J (lb/million Btu).
$E_g$ = Pollutant rate from gas turbine, ng/J (lb/million Btu).
$E_{ga}$ = Daily geometric average pollutant rate, ng/J (lbs/million Btu) or ppm corrected to 7 percent $O_2$.
$E_{jo}$,$E_{ji}$ = Matched pair hourly arithmetic average pollutant rate, outlet and inlet, respectively, ng/J (lb/million Btu) or ppm corrected to 7 percent $O_2$.
$E_h$ = Hourly average pollutant, ng/J (lb/million Btu).
$E_{hj}$ = Hourly arithmetic average pollutant rate for hour "j," ng/J (lb/million Btu) or ppm corrected to 7 percent $O_2$.
EXP = Natural logarithmic base (2.718) raised to the value enclosed by brackets.
Fc = Ratio of the volume of carbon dioxide produced to the gross calorific value of the fuel from Method 19
$F_d$, $F_w$, $F_c$ = Volumes of combustion components per unit of heat content, scm/J (scf/million Btu).
$ft^3$ = cubic feet
G = ideal gas conversion factor
(385.23 SCF/lb-mol at 68 deg F & 14.696 psia)
GCM = gross Btu per SCF (constant, compound based)
GCV = Gross calorific value of the fuel consistent with the ultimate analysis, kJ/kg (Btu/lb).
$GCV_p$, $GCV_r$ = Gross calorific value for the product and raw fuel lots, respectively, dry basis, kJ/kg (Btu/lb).
$\%_H$ = Concentration of hydrogen from an ultimate analysis of fuel, weight percent.
$H_b$ = Heat input rate to the steam generating unit from fuels fired in the steam generating unit, J/hr (million Btu/hr).
$H_g$ = Heat input rate to gas turbine from all fuels fired in the gas turbine, J/hr (million Btu/hr).
$\%_{H2O}$ = Concentration of water from an ultimate analysis of fuel, weight percent.
$H_r$ = Total numbers of hours in the performance test period (e.g., 720 hours for 30-day performance test period).
K = volume of combustion component per pound of component (constant)
K = Conversion factor, $10^{-5}$ (kJ/J)/(%) [$10^6$ Btu/million Btu].
$K_c$ = (9.57 scm/kg)/% [(1.53 scf/lb)/%].
$K_{cc}$ = (2.0 scm/kg)/% [(0.321 scf/lb)/%].
$K_{hd}$ = (22.7 scm/kg)/% [(3.64 scf/lb)/%].
$K_{hw}$ = (34.74 scm/kg)/% [(5.57 scf/lb)/%].
$K_n$ = (0.86 scm/kg)/% [(0.14 scf/lb)/%].
$K_o$ = (2.85 scm/kg)/% [(0.46 scf/lb)/%].
$K_s$ = (3.54 scm/kg)/% [(0.57 scf/lb)/%].
$K_{sulfur}$ = $2x10^4$ Btu/wt%-MMBtu
$K_w$ = (1.30 scm/kg)/% [(0.21 scf/lb)/%].
lb = pound
ln = Natural log of indicated value.
$L_p$,$L_r$ = Weight of the product and raw fuel lots, respectively, metric ton (ton).
$\%_N$ = Concentration of nitrogen from an ultimate analysis of fuel, weight percent.
$M_{\%}$ = mole percent
mol = mole
MW = molecular weight (lb/lb-mol)
$MW_{AIR}$ = molecular weight of air ( 28.9625 lb/lb-mole)[1]
NCM = net Btu per SCF (constant based on compound)
$\%_O$ = Concentration of oxygen from an ultimate analysis of fuel, weight percent.
$\%_{O2d}$, $\%_{O2w}$ = Concentration of oxygen on a dry and wet basis, respectively, percent.
$P_B$ = barometric pressure, in Hg
$P_s$ = Potential SO2 emissions, percent.
$\%_S$ = Sulfur content of as-fired fuel lot, dry basis, weight percent.
$S_e$ = Standard deviation of the hourly average pollutant rates for each performance test period, ng/J (lb/million Btu).
$\%_{Sf}$ = Concentration of sulfur from an ultimate analysis of fuel, weight percent.
S(wt%) = weight percent of sulfur, per lab analysis by appropriate ASTM standard
$S_i$ = Standard deviation of the hourly average inlet pollutant rates for each performance test period, ng/J (lb/million Btu).
$S_o$ = Standard deviation of the hourly average emission rates for each performance test period, ng/J (lb/million Btu).
$\%S_p$, $\%S_r$ = Sulfur content of the product and raw fuel lots respectively, dry basis, weight percent.
SCF = standard cubic feet
SH = specific humidity, pounds of water per pound of air
$t_{0.95}$ = Values shown in Table 19-3 for the indicated number of data points n.
$T_{amb}$ = ambient temperature, °F
W/D Factor = 1.0236 = conv. at 14.696 psia and
68 deg F (ref. Civil Eng. Ref. Manual, 7th Ed.)
$X_{CO2}$=$CO_2$ Correction factor, percent.
$X_k$ = Fraction of total heat input from each type of fuel k.

**EXAMPLE CALCULATIONS (INFORMATION)**

**Specific Humidity ($RH_{sp}$)**

Note: RHsp (gr/lb) calculated using temperature, relative humidity, and barometric pressure with psychrometric chart, psychrometric calculator, or built in psychrometric algorithm.

$$RH_{sp}(lb/lb) = \left[\left(\frac{gr}{lb}\right) \times \frac{lb}{7000\ gr}\right]$$

$RH_{sp}$= 32.23 gr / lb x 1 lb / 7000 gr = 0.004604 lb $H_2O$ / lb Air

**EXAMPLE CALCULATIONS (CALIBRATION)**

**Analyzer Calibration Error**

RM 7E, (02-27-14), 12.2 Analyzer Calibration Error. For non-dilution systems, use Equation 7E-1 to calculate the analyzer calibration error for the low-, mid-, and high-level calibration gases. (calc for NOx analyzer mid gas, if applicable)

$$ACE = \left(\frac{C_{Dir} - C_V}{CS}\right) \times 100$$ Eq. 7E-1

ACE = (5.09 ppm - 4.91 ppm) / 9.20 ppm x 100 = 1.96 %

**EXAMPLE CALCULATIONS (BIAS, DRIFT, AND CORRECTED RAW AVERAGE)**

**System Bias**

RM 7E, (02-27-14), 12.3 System Bias. For non-dilution systems, use Equation 7E-2 to calculate the system bias separately for the low-level and upscale calibration gases. (calc for NOx analyzer upscale gas, Run 1 initial bias, if applicable)

$$SB = \left(\frac{C_S - C_{Dir}}{CS}\right) \times 100$$ Eq. 7E-2

SB = (4.93 ppm - 5.09 ppm) / 9.20 ppm x 100 = -1.74 %

**Drift Assessment**

RM 7E, (02-27-14), 12.5 Drift Assessment. Use Equation 7E-4 to separately calculate the low-level and upscale drift over each test run. (calc for NOx analyzer upscale drift, Run 1, if applicable)

$$D = \left|SB_{final} - SB_t\right|$$ Eq. 7E-4

D = | -2.83 % - -1.74 % | = 1.09 %

**Alternative Drift and Bias**

RM 7E, (02-27-14), 13.2 / 13.3 System Bias and Drift. Alternatively, the results are acceptable if |Cs – Cdir| is ≤ 0.5 ppmv or if |Cs – Cv| is ≤ 0.5 ppmv (as applicable). (calc for NOx analyzer initial upscale, Run 1, if applicable)

$$SB / D_{Alt} = \left|C_S - C_{Dir}\right|$$ Eq. Section 13.2 and 13.3

$SB / D_{Alt}$ = | 4.93 ppm - 5.09 ppm | = 0.16 ppm

**Bias Adjusted Average**

RM 7E, (02-27-14), 12.6 Effluent Gas Concentration. For each test run, calculate Cavg, the arithmetic average of all valid NOx concentration values (e.g., 1-minute averages). Then adjust the value of Cavg for bias, using Equation 7E-5b. (calc for NOx analyzer, Run 1, if applicable)

$$C_{Gas} = \left(C_{Avg} - C_O\right) \times \left(\frac{C_{MA}}{C_M - C_O}\right)$$ Eq. 7E-5b

$C_{Gas}$ = (1.85 ppm - -0.26 ppm) (4.91 ppm / 4.88 ppm - -0.26 ppm) = 2.02 ppm

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (RUNS)**

**Stack Exhaust Flow ($Q_S$) - RM19**

$$Q_S = \left(\frac{FFactor \times Q_f \times HHV}{1{,}000{,}000}\right) \times \left(\frac{20.9\%}{20.9\% - C_{Gas(O2)}}\right)$$

Note: Equation presented in EPA Emission Measurement Center (EMC), Frequently Asked Questions (FAQ) for Method 19

$Q_S$ = 8,710.00 SCF/MMBtu x 2,317,550.00 SCF/hr x 1,050.00 Btu/SCF x MMBtu/$10^6$ Btu x [20.90% / (20.9% - 13.4 %)] = 58,713,359.00 SCFH

**Moisture Correction**

RM 7E, (02-27-14), 12.10 Moisture Correction. Use Equation 7E-10 if your measurements need to be corrected to a dry basis. (calc for NOx analyzer, Run 1, if applicable) Note: Calculations may not match as Run 1 results are typically also bias adjusted

$$C_W = C_D \times (1 - B_{WS})$$

$$C_D = \frac{C_W}{1 - B_{WS}}$$ Eq. 7E-10

$C_D$ = 1.85 ppmvw / (1 - 0.08) = 2.02 ppmvd or inversely, $C_W$ = 2.02 ppmvd x (1 - 0.08) = 1.85 ppmvw

**Diluent-Corrected Pollutant Concentration, $O_2$ Based**

RM 20, (11-26-02), 7.3.1 Correction of Pollutant Concentration Using $O_2$ Concentration. Calculate the $O_2$ corrected pollutant concentration, as follows: (calc for NOx gas, Run 1, if applicable) [now contained in applicable Subpart]

$$C_{adj} = C_{Gas(Target)} \times \left(\frac{20.9\% - AdjFactor}{20.9\% - C_{Gas(O2)}}\right)$$ Eq. 20-4

$C_{adj}$ = 2.02 ppm x [(20.9% - 15.00 %) / (20.9% - 13.36 %)] = 1.58 ppm@15%$O_2$

**Emissions Rate (lb/hr)**

Calculation for pound per hour emission rate. Calculate, as follows: (calc for NOx gas Run 1, if applicable)

$$E_{lb/hr} = \frac{C_{Gas}}{10^6} \times \frac{Q_S \times MW}{G}$$

$E_{lb/hr}$ = 2.02 ppmvd / $10^6$ ppm/part x 58,713,359 DSCFH x 46.01 lb/lb-mol / 385.23 SCF/lb-mol = 14.14 lb/hr

**Emissions Rate (lb/MMBtu)**

RM 19, (02-27-14), 12.2 Emission Rates of PM, $SO_2$, and NOx. Select from the following sections the applicable procedure to compute the PM, $SO_2$, or NOx emission rate (E) in ng/J (lb/million Btu). (calc for NOx gas Run 1, if applicable)

**Oxygen Based**

12.2.1 Oxygen-Based F Factor, Dry Basis. When measurements are on a dry basis for both $O_2$ ($\%O_2$d) and pollutant (Cd) concentrations, use the following equation:

$$E_{lb/MMBtu} = \frac{C_{Gas} \times F_d Factor \times Conv_C \times 20.9\%}{20.9\% - C_{Gas(O2)}}$$ Eq. 19-1

$E_{lb/MMBtu}$ = 2.02 ppm x 8,710.00 SCF/MMBtu x 0.0000001194 lb/ppm*$ft^3$ x 20.9% / (20.9% - 13.36 %) = 0.006 lb/MMBtu

**Conversion Constant**

Convc for NOx

$$Conv_c(lb/ppm \cdot ft^3) = \frac{\frac{MW}{G}}{10^6}$$

$Conv_c$ = (46.01 lb/lb•mole x lb•mole/385.23 SCF) / $10^6$ = 0.0000001194 lb/ppm-$ft^3$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (RATA RESULTS)**

**Difference (d)**

40 CFR 75, App A, (12-17-09), 7.3.1 Arithmetic Mean. Calculate the arithmetic mean of the differences, d , of a data set as follows. (calc for NOx lb/MMBtu data, if applicable. Note: This is an example calculation which may not have any bearing on the actual test requirements.)

$$d = \sum_{i=1}^{n} d_i$$ Eq. A-7

d = 0.006 lb/MMBtu - 0.006 lb/MMBtu = 0.000 lb/MMBtu

**Standard Deviation**

40 CFR 75, App A, (12-17-09), 7.3.2 Standard Deviation. Calculate the standard deviation, Sd, of a data set as follows:
(calc for NOx lb/MMBtu data, if applicable. Note: This is an example calculation which may not have any bearing on the actual test requirements.)

$$S_d = \sqrt{\frac{\sum_{i=1}^{n} d_i^2 - \frac{\left[\left(\sum_{i=1}^{n} d_i\right)^2\right]}{n}}{n-1}}$$ Eq. A-8

$$S_d = \sqrt{\frac{0.000 \text{ lb/MMBtu}^2 - \frac{(-0.004 \text{ lb/MMBtu})^2}{9}}{9 - 1}} = 0.000 \text{ lb/MMBtu}$$

**Confidence Coefficient**

40 CFR 75, App A, (12-17-09), 7.3.3 Confidence Coefficient. Calculate the confidence coefficient (one-tailed), cc, of a data set as follows. (calc for NOx lb/MMBtu data, if applicable. Note: This is an example calculation which may not have any bearing on the actual test requirements.)

$$CC = t_{0.025} \times \frac{S_d}{\sqrt{n}}$$ Eq. A-9

CC = 2.306 x $\frac{0.000 \text{ lb/MMBtu}}{\sqrt{9}}$ = 0.000 lb/MMBtu

| T-Values | n | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| | $t_{0.025}$ | 12.706 | 4.303 | 3.182 | 2.776 | 2.571 | 2.447 | 2.365 | 2.306 |

2.5 percent confidence coefficients

**Relative Accuracy**

40 CFR 75, App A, (12-17-09), 7.3.4 Relative Accuracy. Calculate the relative accuracy of a data set using the following equation. (calc for NOx lb/MMBtu data, if applicable. Note: This is an example calculation which may not have any bearing on the actual test requirements.)

$$RA = \frac{|d_{AVG}| + |CC|}{RM_{AVG}} \times 100$$ Eq. A-10

RA = $\frac{|0.000 \text{ lb/MMBtu}| + |0.000 \text{ lb/MMBtu}|}{0.006 \text{ lb/MMBtu}}$ x 100 = 7.88 %

**Bias Adjustment Factor (BAF)**

40 CFR 75, App A, (12-17-09), 7.6.5 Bias Adjustment. (a) If the monitor or monitoring system fails to meet the bias test requirement, adjust the value obtained from the monitor using the following equation: (calc for NOx lb/MMBtu data, if applicable. Note: This is an example calculation which may not have any bearing on the actual test requirements.)

$$BAF = 1 + \left(\frac{|d_{AVG}|}{CEM_{AVG}}\right)$$ Eq. A-12

$d_{AVG}$= 0.000 < |CC| = 0.000 ⇨ BAF = 1 + $\frac{|\quad| \text{ lb/MMBtu}}{\text{lb/MMBtu}}$ = 1.000 lb/MMBtu

Note: BAF only applies if the mean difference (d) is greater than the absolute value of the confidence coefficient.

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

# APPENDIX B

# CEMS AND REFERENCE METHOD DATA

# Cricket Valley Energy Center LLC

| | |
|---|---|
| **Air Permit Number:** | 3-1326-00275/00009 |
| **Plant Name or Location:** | Cricket Valley Energy Center |
| **Date:** | February 25, 2020 |
| **Project Number:** | cis-19-cricketvalley.ny-start#1 |
| **Manufacturer & Equipment:** | General Electric |
| **Model:** | 7F.05 |
| **Unit Number:** | U-00002 |
| **Test Load:** | Base Load |
| **Tester(s) / Test Unit(s):** | MM/215 |

| | | RUN | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **UNITS** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** |
| **Start Time** | hh:mm:ss | 11:53:28 | 12:32:28 | 13:07:28 | 13:36:28 | 14:15:28 | 14:46:28 | 15:17:28 | 15:47:28 | 16:20:28 | 16:51:28 | 17:57:28 |
| **End Time** | hh:mm:ss | 12:13:58 | 12:52:58 | 13:27:58 | 13:56:58 | 14:35:58 | 15:06:58 | 15:37:58 | 16:07:58 | 16:40:58 | 17:11:58 | 18:17:58 |
| **Bar. Pressure** | in. Hg | 29.38 | 29.36 | 29.34 | 29.33 | 29.30 | 29.33 | 29.33 | 29.33 | 29.33 | 29.34 | 29.37 |
| **Amb. Temp.** | °F | 54 | 55 | 55 | 56 | 59 | 56 | 56 | 55 | 55 | 54 | 51 |
| **Rel. Humidity** | % | 51 | 51 | 49 | 48 | 45 | 48 | 50 | 51 | 54 | 57 | 76 |
| **Spec. Humidity** | lb water / lb air | 0.004604 | 0.004760 | 0.004540 | 0.004504 | 0.004816 | 0.004585 | 0.004805 | 0.004759 | 0.004894 | 0.005008 | 0.006092 |
| **Turbine Fuel Flow** | SCFH | 2,317,550 | 2,310,200 | 2,308,160 | 2,308,570 | 2,306,530 | 2,306,940 | 2,305,710 | 2,311,140 | 2,528,440 | 2,554,920 | 2,563,390 |
| **Total Fuel Flow** | SCFH | 2,317,550 | 2,310,200 | 2,308,160 | 2,308,570 | 2,306,530 | 2,306,940 | 2,305,710 | 2,311,140 | 2,528,440 | 2,554,920 | 2,563,390 |
| **Power Output** | megawatts | 346.6 | 345.9 | 345.4 | 345.6 | 345.4 | 345.5 | 345.3 | 345.8 | 373.2 | 378.1 | 379.9 |
| **$O_2$ CEMS Data** | %vd | 13.04 | 13.06 | 13.07 | 13.07 | 13.06 | 13.07 | 13.06 | 13.05 | 12.23 | 12.11 | 12.1 |
| **NOx CEMS Data** | ppmvd@15%$O_2$ | 1.70 | 1.65 | 1.45 | 1.68 | 1.57 | 1.50 | 1.60 | 1.71 | 1.77 | 1.70 | 1.70 |
| | lb/hr | 15.13 | 14.65 | 12.89 | 14.90 | 13.95 | 13.27 | 14.13 | 15.18 | 17.22 | 16.80 | 16.73 |
| | lb/MMBtu | 0.0062 | 0.0061 | 0.0053 | 0.0062 | 0.0058 | 0.0055 | 0.0059 | 0.0063 | 0.0065 | 0.0063 | 0.0062 |
| **CO CEMS Data** | ppmvd@15%$O_2$ | 0.28 | 0.09 | 0.17 | 0.34 | 0.26 | 0.07 | 0.07 | 0.04 | 0.00 | 0.00 | 0.02 |
| | lb/hr | 1.15 | 0.38 | 0.91 | 0.26 | 0.20 | 0.37 | 0.31 | 0.21 | 0.00 | 0.00 | 0.01 |
| **$NH_3$ CEMS Data** | ppmvd@15%$O_2$ | 0.71 | 0.73 | 1.02 | 0.74 | 0.83 | 0.87 | 0.81 | 0.94 | 0.82 | 0.99 | 1.00 |
| | lb/hr | 2.40 | 2.44 | 3.38 | 2.46 | 2.71 | 2.87 | 2.64 | 2.39 | 2.91 | 3.59 | 3.60 |
| **$NH_3$ RM Data** | ppmvd@15%$O_2$ | 0.66 | 0.85 | 0.87 | 0.68 | 0.87 | 0.66 | 0.66 | 0.61 | 0.48 | 0.60 | 1.53 |
| | lb/hr | 2.20 | 2.83 | 2.88 | 2.26 | 2.87 | 2.19 | 2.17 | 2.01 | 1.73 | 2.20 | 5.62 |

Created with Comp&RATA&Eng-AHI v20190529

# CEMS AND REFERENCE METHOD DATA

## CEMS Data
## (provided by Cricket Valley Energy Center LLC)

**Relative Accuracy Test Data**
**CEMS Results (NOx)**
**General Electric, 7F.05, Unit #U-00002**

| | |
|---|---|
| Parameter: | Oxides of Nitrogen |
| Date of Test: | February 25, 2020 |
| Reference Method: | EPA Method 7E |
| CEMS Analyzer Type: | Chemiluminescence |
| Manufacturer: | TAPI |
| Model #: | T200M |
| Serial #: | 1013 |

| RUN # | RUN TIME | UNIT LOAD | CONCENTRATIONS | | RATES | |
|---|---|---|---|---|---|---|
| | | (MW) | (ppmvd) | (ppmvd@15%$O_2$) | (lb/hr) | (lb/MMBtu) |
| 1 | 11:53 - 12:13 | 346.6 | | 1.70 | 15.13 | 0.0062 |
| 2 | 12:32 - 12:52 | 345.9 | | 1.65 | 14.65 | 0.0061 |
| 3 | 13:07 - 13:27 | 345.4 | | 1.45 | 12.89 | 0.0053 |
| 4 | 13:36 - 13:56 | 345.6 | | 1.68 | 14.90 | 0.0062 |
| 5 | 14:15 - 14:35 | 345.4 | | 1.57 | 13.95 | 0.0058 |
| 6 | 14:46 - 15:06 | 345.5 | | 1.50 | 13.27 | 0.0055 |
| 7 | 15:17 - 15:37 | 345.3 | | 1.60 | 14.13 | 0.0059 |
| 8 | 15:47 - 16:07 | 345.8 | | 1.71 | 15.18 | 0.0063 |
| 9 | 16:20 - 16:40 | 373.2 | | 1.77 | 17.22 | 0.0065 |
| 10 | 16:51 - 17:11 | 378.1 | | 1.70 | 16.80 | 0.0063 |
| 11 | 17:57 - 18:17 | 379.9 | | 1.70 | 16.73 | 0.0062 |
| 12 | | | | | | |

**Relative Accuracy Test Data**
**CEMS Results (CO)**
**General Electric, 7F.05, Unit #U-00002**

| | |
|---|---|
| Parameter: | Carbon Monoxide |
| Date of Test: | February 25, 2020 |
| Reference Method: | EPA Method 10 |
| CEMS Analyzer Type: | Infrared Absorption |
| Manufacturer: | TAPI |
| Model #: | T300M |
| Serial #: | 519 |

| RUN # | RUN TIME | UNIT LOAD | CONCENTRATIONS | | RATES | |
|---|---|---|---|---|---|---|
| | | (MW) | (ppmvd) | (ppmvd@15%$O_2$) | (lb/hr) | (lb/MMBtu) |
| 1 | 11:53 - 12:13 | 346.6 | | 0.28 | 1.15 | |
| 2 | 12:32 - 12:52 | 345.9 | | 0.09 | 0.38 | |
| 3 | 13:07 - 13:27 | 345.4 | | 0.17 | 0.91 | |
| 4 | 13:36 - 13:56 | 345.6 | | 0.34 | 0.26 | |
| 5 | 14:15 - 14:35 | 345.4 | | 0.26 | 0.20 | |
| 6 | 14:46 - 15:06 | 345.5 | | 0.07 | 0.37 | |
| 7 | 15:17 - 15:37 | 345.3 | | 0.07 | 0.31 | |
| 8 | 15:47 - 16:07 | 345.8 | | 0.04 | 0.21 | |
| 9 | 16:20 - 16:40 | 373.2 | | 0.00 | 0.00 | |
| 10 | 16:51 - 17:11 | 378.1 | | 0.00 | 0.00 | |
| 11 | 17:57 - 18:17 | 379.9 | | 0.02 | 0.01 | |
| 12 | | | | | | |

**Relative Accuracy Test Data**
**CEMS Results ($NH_3$)**
**General Electric, 7F.05, Unit #U-00002**

| | |
|---|---|
| Parameter: | Ammonia |
| Date of Test: | February 25, 2020 |
| Reference Method: | EPA Method 7E |
| CEMS Analyzer Type: | Dual NOx w/ NH3 conversion |
| Manufacturer: | TAPI |
| Model #: | T200M |
| Serial #: | 1048 |

| RUN # | RUN TIME | UNIT LOAD | CONCENTRATIONS | | RATES | |
|---|---|---|---|---|---|---|
| | | (MW) | (ppmvd) | (ppmvd@15%$O_2$) | (lb/hr) | (lb/MMBtu) |
| 1 | 11:53 - 12:13 | 346.6 | | 0.71 | 2.40 | |
| 2 | 12:32 - 12:52 | 345.9 | | 0.73 | 2.44 | |
| 3 | 13:07 - 13:27 | 345.4 | | 1.02 | 3.38 | |
| 4 | 13:36 - 13:56 | 345.6 | | 0.74 | 2.46 | |
| 5 | 14:15 - 14:35 | 345.4 | | 0.83 | 2.71 | |
| 6 | 14:46 - 15:06 | 345.5 | | 0.87 | 2.87 | |
| 7 | 15:17 - 15:37 | 345.3 | | 0.81 | 2.64 | |
| 8 | 15:47 - 16:07 | 345.8 | | 0.94 | 2.39 | |
| 9 | 16:20 - 16:40 | 373.2 | | 0.82 | 2.91 | |
| 10 | 16:51 - 17:11 | 378.1 | | 0.99 | 3.59 | |
| 11 | 17:57 - 18:17 | 379.9 | | 1.00 | 3.60 | |
| 12 | | | | | | |

**Relative Accuracy Test Data**
**CEMS Results ($O_2$)**
**General Electric, 7F.05, Unit #U-00002**

| | |
|---|---|
| Parameter: | Oxygen |
| Date of Test: | February 25, 2020 |
| Reference Method: | EPA Method 3A |
| CEMS Analyzer Type: | Paramagnetic Cell |
| Manufacturer: | TAPI |
| Model #: | T803 |
| Serial #: | 129 |

| RUN # | RUN TIME | UNIT LOAD (MW) | CONC. (%vd) |
|---|---|---|---|
| 1 | 11:53 - 12:13 | 346.6 | 13.04 |
| 2 | 12:32 - 12:52 | 345.9 | 13.06 |
| 3 | 13:07 - 13:27 | 345.4 | 13.07 |
| 4 | 13:36 - 13:56 | 345.6 | 13.07 |
| 5 | 14:15 - 14:35 | 345.4 | 13.06 |
| 6 | 14:46 - 15:06 | 345.5 | 13.07 |
| 7 | 15:17 - 15:37 | 345.3 | 13.06 |
| 8 | 15:47 - 16:07 | 345.8 | 13.05 |
| 9 | 16:20 - 16:40 | 373.2 | 12.23 |
| 10 | 16:51 - 17:11 | 378.1 | 12.11 |
| 11 | 17:57 - 18:17 | 379.9 | 12.08 |
| 12 | | | |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 11:53 AM thru 2/25/2020 12:13 PM

| Timestamp | (Turbine 2) 75-NOx ppm 1-Min | (Turbine 2) NOx ppm @15% O2 1-Min | (Turbine 2) 75-NOx lb/mmBtu 1-Min | (Turbine 2) NOx lb/hr 1-Min | (Turbine 2) CO ppm 1-Min | (Turbine 2) CO ppm @15% O2 1-Min | (Turbine 2) CO lb/hr 1-Min | (Turbine 2) NH3 Slip ppm 1-Min | (Turbine 2) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/25 11:53 | 2.29 | 1.72 | 0.0063 | 15.29 | 0.25 | 0.19 | 0.97 | 0.94 | 0.71 |
| 2/25 11:54 | 2.30 | 1.73 | 0.0064 | 15.54 | 0.26 | 0.20 | 0.97 | 0.93 | 0.70 |
| 2/25 11:55 | 2.29 | 1.72 | 0.0063 | 15.29 | 0.26 | 0.20 | 0.97 | 0.93 | 0.70 |
| 2/25 11:56 | 2.28 | 1.71 | 0.0063 | 15.24 | 0.26 | 0.20 | 0.97 | 0.94 | 0.71 |
| 2/25 11:57 | 2.27 | 1.70 | 0.0063 | 15.24 | 0.23 | 0.17 | 0.97 | 0.94 | 0.71 |
| 2/25 11:58 | 2.26 | 1.70 | 0.0062 | 14.99 | 0.21 | 0.16 | 0.97 | 0.94 | 0.71 |
| 2/25 11:59 | 2.26 | 1.70 | 0.0062 | 15.05 | 0.17 | 0.13 | 0.73 | 0.94 | 0.71 |
| 2/25 12:00 | 2.25 | 1.69 | 0.0062 | 14.99 | 0.19 | 0.14 | 0.73 | 0.95 | 0.71 |
| 2/25 12:01 | 2.24 | 1.68 | 0.0062 | 14.99 | 0.24 | 0.18 | 0.97 | 0.95 | 0.71 |
| 2/25 12:02 | 2.24 | 1.68 | 0.0062 | 15.05 | 0.22 | 0.17 | 0.97 | 0.95 | 0.71 |
| 2/25 12:03 | 2.25 | 1.69 | 0.0062 | 15.05 | 0.25 | 0.19 | 0.97 | 0.95 | 0.71 |
| 2/25 12:04 | 2.27 | 1.70 | 0.0063 | 15.29 | 0.27 | 0.20 | 1.21 | 0.95 | 0.71 |
| 2/25 12:05 | 2.28 | 1.71 | 0.0063 | 15.24 | 0.27 | 0.20 | 1.21 | 0.95 | 0.71 |
| 2/25 12:06 | 2.28 | 1.71 | 0.0063 | 15.24 | 0.30 | 0.23 | 1.21 | 0.94 | 0.71 |
| 2/25 12:07 | 2.28 | 1.71 | 0.0063 | 15.29 | 0.29 | 0.22 | 1.21 | 0.95 | 0.71 |
| 2/25 12:08 | 2.26 | 1.70 | 0.0062 | 14.99 | 0.32 | 0.24 | 1.21 | 0.95 | 0.71 |
| 2/25 12:09 | 2.24 | 1.68 | 0.0062 | 14.99 | 0.36 | 0.27 | 1.45 | 0.95 | 0.71 |
| 2/25 12:10 | 2.24 | 1.68 | 0.0062 | 14.99 | 0.41 | 0.31 | 1.69 | 0.94 | 0.71 |
| 2/25 12:11 | 2.24 | 1.68 | 0.0062 | 15.05 | 0.44 | 0.33 | 1.70 | 0.94 | 0.71 |
| 2/25 12:12 | 2.24 | 1.68 | 0.0062 | 14.99 | 0.39 | 0.29 | 1.69 | 0.94 | 0.71 |
| 2/25 12:13 | 2.25 | 1.69 | 0.0062 | 14.94 | 0.35 | 0.26 | 1.45 | 0.94 | 0.71 |
| Average (all) | 2.26 | 1.70 | 0.0062 | 15.13 | 0.28 | 0.21 | 1.15 | 0.94 | 0.71 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 2.24 | 1.68 | 0.0062 | 14.94 | 0.17 | 0.13 | 0.73 | 0.93 | 0.70 |
| Maximum (all) | 2.30 | 1.73 | 0.0064 | 15.54 | 0.44 | 0.33 | 1.70 | 0.95 | 0.71 |
| Average (valid values only) | 2.26 | 1.70 | 0.0062 | 15.13 | 0.28 | 0.21 | 1.15 | 0.94 | 0.71 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 11:53 AM thru 2/25/2020 12:13 PM

| Timestamp | (Turbine 2) NH3 Slip lb/hr 1-Min | (Turbine 2) 75-O2 % 1-Min | (Turbine 2) Total Gas Flow hscf/hr 1-Min | (Turbine 2) GT Megawatts 1-Min | (Turbine 2) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 2/25 11:53 | 2.43 | 13.04 | 23228.6 | 232.6 | 346.9 |
| 2/25 11:54 | 2.18 | 13.04 | 23228.6 | 232.5 | 346.7 |
| 2/25 11:55 | 2.18 | 13.04 | 23228.6 | 232.5 | 346.8 |
| 2/25 11:56 | 2.42 | 13.04 | 23142.9 | 232.4 | 346.7 |
| 2/25 11:57 | 2.42 | 13.04 | 23142.9 | 232.5 | 346.7 |
| 2/25 11:58 | 2.42 | 13.04 | 23142.9 | 232.6 | 346.8 |
| 2/25 11:59 | 2.43 | 13.04 | 23228.6 | 232.5 | 346.8 |
| 2/25 12:00 | 2.42 | 13.04 | 23142.9 | 232.5 | 346.8 |
| 2/25 12:01 | 2.42 | 13.04 | 23142.9 | 232.4 | 346.7 |
| 2/25 12:02 | 2.43 | 13.04 | 23228.6 | 232.5 | 346.8 |
| 2/25 12:03 | 2.43 | 13.04 | 23228.6 | 232.5 | 346.8 |
| 2/25 12:04 | 2.43 | 13.03 | 23228.6 | 232.4 | 346.8 |
| 2/25 12:05 | 2.42 | 13.04 | 23142.9 | 232.4 | 346.7 |
| 2/25 12:06 | 2.42 | 13.04 | 23142.9 | 232.4 | 346.7 |
| 2/25 12:07 | 2.43 | 13.05 | 23228.6 | 232.3 | 346.5 |
| 2/25 12:08 | 2.42 | 13.04 | 23142.9 | 232.2 | 346.5 |
| 2/25 12:09 | 2.42 | 13.04 | 23142.9 | 232.4 | 346.1 |
| 2/25 12:10 | 2.42 | 13.04 | 23142.9 | 232.3 | 346.4 |
| 2/25 12:11 | 2.43 | 13.05 | 23228.6 | 232.2 | 346.4 |
| 2/25 12:12 | 2.42 | 13.05 | 23142.9 | 232.0 | 346.1 |
| 2/25 12:13 | 2.41 | 13.05 | 23057.1 | 232.1 | 346.2 |
| Average (all) | 2.40 | 13.04 | 23175.5 | 232.4 | 346.6 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 2.18 | 13.03 | 23057.1 | 232.0 | 346.1 |
| Maximum (all) | 2.43 | 13.05 | 23228.6 | 232.6 | 346.9 |
| Average (valid values only) | 2.40 | 13.04 | 23175.5 | 232.4 | 346.6 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 12:32 PM thru 2/25/2020 12:52 PM

| Timestamp | (Turbine 2) 75-NOx ppm 1-Min | (Turbine 2) NOx ppm @15% O2 1-Min | (Turbine 2) 75-NOx lb/mmBtu 1-Min | (Turbine 2) NOx lb/hr 1-Min | (Turbine 2) CO ppm 1-Min | (Turbine 2) CO ppm @15% O2 1-Min | (Turbine 2) CO lb/hr 1-Min | (Turbine 2) NH3 Slip ppm 1-Min | (Turbine 2) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/25 12:32 | 2.28 | 1.71 | 0.0063 | 15.24 | 0.28 | 0.21 | 1.21 | 0.93 | 0.70 |
| 2/25 12:33 | 2.27 | 1.71 | 0.0063 | 15.24 | 0.25 | 0.19 | 0.97 | 0.93 | 0.70 |
| 2/25 12:34 | 2.26 | 1.70 | 0.0063 | 15.18 | 0.19 | 0.14 | 0.72 | 0.94 | 0.71 |
| 2/25 12:35 | 2.24 | 1.68 | 0.0062 | 14.99 | 0.16 | 0.12 | 0.73 | 0.94 | 0.71 |
| 2/25 12:36 | 2.24 | 1.69 | 0.0062 | 14.94 | 0.16 | 0.12 | 0.72 | 0.93 | 0.70 |
| 2/25 12:37 | 2.23 | 1.68 | 0.0062 | 14.94 | 0.20 | 0.15 | 0.72 | 0.94 | 0.71 |
| 2/25 12:38 | 2.23 | 1.68 | 0.0062 | 14.99 | 0.17 | 0.13 | 0.73 | 0.95 | 0.71 |
| 2/25 12:39 | 2.22 | 1.67 | 0.0062 | 14.99 | 0.12 | 0.09 | 0.48 | 0.95 | 0.71 |
| 2/25 12:40 | 2.24 | 1.69 | 0.0062 | 14.99 | 0.11 | 0.08 | 0.48 | 0.94 | 0.71 |
| 2/25 12:41 | 2.25 | 1.69 | 0.0062 | 14.99 | 0.07 | 0.05 | 0.24 | 0.94 | 0.71 |
| 2/25 12:42 | 2.26 | 1.70 | 0.0063 | 15.18 | 0.01 | 0.01 | 0.00 | 0.94 | 0.71 |
| 2/25 12:43 | 2.27 | 1.71 | 0.0063 | 15.24 | 0.01 | 0.01 | 0.00 | 0.94 | 0.71 |
| 2/25 12:44 | 2.27 | 1.71 | 0.0063 | 15.18 | 0.00 | 0.00 | 0.00 | 0.94 | 0.71 |
| 2/25 12:45 | 2.27 | 1.71 | 0.0063 | 15.18 | 0.00 | 0.00 | 0.00 | 0.93 | 0.70 |
| 2/25 12:46 | 2.28 | 1.72 | 0.0063 | 15.24 | 0.00 | 0.00 | 0.00 | 0.93 | 0.70 |
| 2/25 12:47 | 2.27 | 1.71 | 0.0063 | 15.24 | 0.00 | 0.00 | 0.00 | 0.95 | 0.71 |
| 2/25 12:48 | 2.18 | 1.64 | 0.0060 | 14.46 | 0.00 | 0.00 | 0.00 | 0.99 | 0.75 |
| 2/25 12:49 | 2.07 | 1.56 | 0.0057 | 13.73 | 0.00 | 0.00 | 0.00 | 1.02 | 0.77 |
| 2/25 12:50 | 1.96 | 1.48 | 0.0054 | 13.01 | 0.00 | 0.00 | 0.00 | 1.06 | 0.80 |
| 2/25 12:51 | 1.86 | 1.40 | 0.0052 | 12.53 | 0.09 | 0.07 | 0.48 | 1.11 | 0.84 |
| 2/25 12:52 | 1.79 | 1.35 | 0.0050 | 12.09 | 0.10 | 0.08 | 0.48 | 1.17 | 0.88 |
| Average (all) | 2.19 | 1.65 | 0.0061 | 14.65 | 0.09 | 0.07 | 0.38 | 0.97 | 0.73 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 1.79 | 1.35 | 0.0050 | 12.09 | 0.00 | 0.00 | 0.00 | 0.93 | 0.70 |
| Maximum (all) | 2.28 | 1.72 | 0.0063 | 15.24 | 0.28 | 0.21 | 1.21 | 1.17 | 0.88 |
| Average (valid values only) | 2.19 | 1.65 | 0.0061 | 14.65 | 0.09 | 0.07 | 0.38 | 0.97 | 0.73 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 12:32 PM thru 2/25/2020 12:52 PM

| Timestamp | (Turbine 2) NH3 Slip lb/hr 1-Min | (Turbine 2) 75-O2 % 1-Min | (Turbine 2) Total Gas Flow hscf/hr 1-Min | (Turbine 2) GT Megawatts 1-Min | (Turbine 2) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 2/25 12:32 | 2.18 | 13.05 | 23142.9 | 231.8 | 346.1 |
| 2/25 12:33 | 2.18 | 13.05 | 23142.9 | 231.7 | 345.9 |
| 2/25 12:34 | 2.41 | 13.05 | 23057.1 | 231.9 | 346.2 |
| 2/25 12:35 | 2.42 | 13.05 | 23142.9 | 231.5 | 345.7 |
| 2/25 12:36 | 2.41 | 13.06 | 23057.1 | 231.7 | 346.0 |
| 2/25 12:37 | 2.41 | 13.06 | 23057.1 | 231.5 | 345.7 |
| 2/25 12:38 | 2.42 | 13.06 | 23142.9 | 231.6 | 345.8 |
| 2/25 12:39 | 2.42 | 13.06 | 23142.9 | 231.6 | 345.8 |
| 2/25 12:40 | 2.42 | 13.06 | 23142.9 | 231.7 | 345.9 |
| 2/25 12:41 | 2.42 | 13.06 | 23142.9 | 231.6 | 345.8 |
| 2/25 12:42 | 2.41 | 13.06 | 23057.1 | 231.7 | 346.0 |
| 2/25 12:43 | 2.42 | 13.06 | 23142.9 | 231.4 | 345.7 |
| 2/25 12:44 | 2.41 | 13.06 | 23057.1 | 231.4 | 345.7 |
| 2/25 12:45 | 2.41 | 13.06 | 23057.1 | 231.5 | 345.8 |
| 2/25 12:46 | 2.42 | 13.06 | 23142.9 | 231.5 | 345.7 |
| 2/25 12:47 | 2.42 | 13.06 | 23142.9 | 231.6 | 345.9 |
| 2/25 12:48 | 2.41 | 13.06 | 23057.1 | 231.7 | 345.9 |
| 2/25 12:49 | 2.41 | 13.06 | 23057.1 | 231.6 | 345.8 |
| 2/25 12:50 | 2.65 | 13.06 | 23057.1 | 231.7 | 345.9 |
| 2/25 12:51 | 2.65 | 13.06 | 23057.1 | 231.5 | 345.7 |
| 2/25 12:52 | 2.90 | 13.06 | 23142.9 | 231.6 | 345.9 |
| Average (all) | 2.44 | 13.06 | 23102.0 | 231.6 | 345.9 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 2.18 | 13.05 | 23057.1 | 231.4 | 345.7 |
| Maximum (all) | 2.90 | 13.06 | 23142.9 | 231.9 | 346.2 |
| Average (valid values only) | 2.44 | 13.06 | 23102.0 | 231.6 | 345.9 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 1:07 PM thru 2/25/2020 1:27 PM

| Timestamp | (Turbine 2) 75-NOx ppm 1-Min | (Turbine 2) NOx ppm @15% O2 1-Min | (Turbine 2) 75-NOx lb/mmBtu 1-Min | (Turbine 2) NOx lb/hr 1-Min | (Turbine 2) CO ppm 1-Min | (Turbine 2) CO ppm @15% O2 1-Min | (Turbine 2) CO lb/hr 1-Min | (Turbine 2) NH3 Slip ppm 1-Min | (Turbine 2) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/25 13:07 | 1.93 | 1.45 | 0.0054 | 13.01 | 0.01 | 0.01 | 0.00 | 1.38 | 1.04 |
| 2/25 13:08 | 1.93 | 1.45 | 0.0054 | 13.01 | 0.01 | 0.01 | 0.00 | 1.36 | 1.02 |
| 2/25 13:09 | 1.92 | 1.44 | 0.0053 | 12.82 | 0.04 | 0.03 | 0.24 | 1.35 | 1.02 |
| 2/25 13:10 | 1.91 | 1.44 | 0.0053 | 12.77 | 0.04 | 0.03 | 0.24 | 1.34 | 1.01 |
| 2/25 13:11 | 1.90 | 1.43 | 0.0053 | 12.82 | 0.10 | 0.08 | 0.48 | 1.34 | 1.01 |
| 2/25 13:12 | 1.90 | 1.43 | 0.0053 | 12.77 | 0.14 | 0.11 | 0.48 | 1.33 | 1.00 |
| 2/25 13:13 | 1.90 | 1.43 | 0.0053 | 12.77 | 0.20 | 0.15 | 0.72 | 1.33 | 1.00 |
| 2/25 13:14 | 1.90 | 1.43 | 0.0053 | 12.77 | 0.25 | 0.19 | 0.96 | 1.33 | 1.00 |
| 2/25 13:15 | 1.89 | 1.42 | 0.0052 | 12.58 | 0.35 | 0.26 | 1.45 | 1.35 | 1.02 |
| 2/25 13:16 | 1.87 | 1.41 | 0.0052 | 12.53 | 0.37 | 0.28 | 1.45 | 1.36 | 1.02 |
| 2/25 13:17 | 1.86 | 1.40 | 0.0052 | 12.53 | 0.34 | 0.26 | 1.45 | 1.37 | 1.03 |
| 2/25 13:18 | 1.85 | 1.39 | 0.0051 | 12.29 | 0.30 | 0.23 | 1.20 | 1.38 | 1.04 |
| 2/25 13:19 | 1.84 | 1.39 | 0.0051 | 12.29 | 0.32 | 0.24 | 1.20 | 1.40 | 1.05 |
| 2/25 13:20 | 1.83 | 1.38 | 0.0051 | 12.33 | 0.27 | 0.20 | 1.21 | 1.42 | 1.07 |
| 2/25 13:21 | 1.82 | 1.37 | 0.0050 | 12.05 | 0.26 | 0.20 | 0.96 | 1.43 | 1.08 |
| 2/25 13:22 | 1.82 | 1.37 | 0.0050 | 12.09 | 0.28 | 0.21 | 1.21 | 1.43 | 1.08 |
| 2/25 13:23 | 1.86 | 1.40 | 0.0052 | 12.58 | 0.27 | 0.20 | 1.21 | 1.41 | 1.06 |
| 2/25 13:24 | 1.92 | 1.45 | 0.0053 | 12.77 | 0.28 | 0.21 | 1.20 | 1.38 | 1.04 |
| 2/25 13:25 | 2.03 | 1.53 | 0.0056 | 13.49 | 0.26 | 0.20 | 0.96 | 1.32 | 0.99 |
| 2/25 13:26 | 2.18 | 1.64 | 0.0061 | 14.70 | 0.31 | 0.23 | 1.20 | 1.24 | 0.93 |
| 2/25 13:27 | 2.33 | 1.76 | 0.0065 | 15.66 | 0.27 | 0.20 | 1.20 | 1.16 | 0.87 |
| Average (all) | 1.92 | 1.45 | 0.0053 | 12.89 | 0.22 | 0.17 | 0.91 | 1.35 | 1.02 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 1.82 | 1.37 | 0.0050 | 12.05 | 0.01 | 0.01 | 0.00 | 1.16 | 0.87 |
| Maximum (all) | 2.33 | 1.76 | 0.0065 | 15.66 | 0.37 | 0.28 | 1.45 | 1.43 | 1.08 |
| Average (valid values only) | 1.92 | 1.45 | 0.0053 | 12.89 | 0.22 | 0.17 | 0.91 | 1.35 | 1.02 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 1:07 PM thru 2/25/2020 1:27 PM

| Timestamp | (Turbine 2) NH3 Slip lb/hr 1-Min | (Turbine 2) 75-O2 % 1-Min | (Turbine 2) Total Gas Flow hscf/hr 1-Min | (Turbine 2) GT Megawatts 1-Min | (Turbine 2) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 2/25 13:07 | 3.37 | 13.06 | 23057.1 | 231.2 | 345.3 |
| 2/25 13:08 | 3.37 | 13.06 | 23057.1 | 231.4 | 345.0 |
| 2/25 13:09 | 3.39 | 13.06 | 23142.9 | 231.4 | 345.5 |
| 2/25 13:10 | 3.37 | 13.06 | 23057.1 | 231.4 | 345.6 |
| 2/25 13:11 | 3.39 | 13.06 | 23142.9 | 231.3 | 345.5 |
| 2/25 13:12 | 3.37 | 13.07 | 23057.1 | 231.3 | 345.5 |
| 2/25 13:13 | 3.37 | 13.07 | 23057.1 | 231.3 | 345.4 |
| 2/25 13:14 | 3.37 | 13.08 | 23057.1 | 231.4 | 345.5 |
| 2/25 13:15 | 3.39 | 13.07 | 23142.9 | 231.4 | 345.5 |
| 2/25 13:16 | 3.37 | 13.07 | 23057.1 | 231.5 | 345.5 |
| 2/25 13:17 | 3.37 | 13.06 | 23057.1 | 231.4 | 345.5 |
| 2/25 13:18 | 3.37 | 13.06 | 23057.1 | 231.4 | 345.5 |
| 2/25 13:19 | 3.37 | 13.07 | 23057.1 | 231.5 | 345.6 |
| 2/25 13:20 | 3.63 | 13.06 | 23142.9 | 231.5 | 345.7 |
| 2/25 13:21 | 3.61 | 13.06 | 23057.1 | 231.3 | 345.4 |
| 2/25 13:22 | 3.63 | 13.06 | 23142.9 | 231.4 | 345.5 |
| 2/25 13:23 | 3.39 | 13.07 | 23142.9 | 231.4 | 345.5 |
| 2/25 13:24 | 3.37 | 13.07 | 23057.1 | 231.3 | 345.4 |
| 2/25 13:25 | 3.37 | 13.07 | 23057.1 | 231.1 | 345.3 |
| 2/25 13:26 | 3.13 | 13.07 | 23057.1 | 231.1 | 345.3 |
| 2/25 13:27 | 2.89 | 13.07 | 23057.1 | 231.1 | 345.2 |
| Average (all) | 3.38 | 13.07 | 23081.6 | 231.3 | 345.4 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 2.89 | 13.06 | 23057.1 | 231.1 | 345.0 |
| Maximum (all) | 3.63 | 13.08 | 23142.9 | 231.5 | 345.7 |
| Average (valid values only) | 3.38 | 13.07 | 23081.6 | 231.3 | 345.4 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 1:36 PM thru 2/25/2020 1:56 PM

| Timestamp | (Turbine 2) 75-NOx ppm 1-Min | (Turbine 2) NOx ppm @15% O2 1-Min | (Turbine 2) 75-NOx lb/mmBtu 1-Min | (Turbine 2) NOx lb/hr 1-Min | (Turbine 2) CO ppm 1-Min | (Turbine 2) CO ppm @15% O2 1-Min | (Turbine 2) CO lb/hr 1-Min | (Turbine 2) NH3 Slip ppm 1-Min | (Turbine 2) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/25 13:36 | 2.15 | 1.62 | 0.0060 | 14.46 | 0.20 | 0.15 | 0.72 | 0.99 | 0.75 |
| 2/25 13:37 | 2.09 | 1.57 | 0.0058 | 13.97 | 0.22 | 0.17 | 0.96 | 1.01 | 0.76 |
| 2/25 13:38 | 2.05 | 1.54 | 0.0057 | 13.73 | 0.23 | 0.17 | 0.96 | 1.04 | 0.78 |
| 2/25 13:39 | 2.04 | 1.54 | 0.0057 | 13.79 | 0.22 | 0.17 | 0.97 | 1.05 | 0.79 |
| 2/25 13:40 | 2.06 | 1.55 | 0.0057 | 13.73 | 0.21 | 0.16 | 0.96 | 1.05 | 0.79 |
| 2/25 13:41 | 2.12 | 1.60 | 0.0059 | 14.22 | 0.26 | 0.20 | 0.96 | 1.04 | 0.78 |
| 2/25 13:42 | 2.19 | 1.65 | 0.0061 | 14.75 | 0.27 | 0.20 | 1.21 | 1.02 | 0.77 |
| 2/25 13:43 | 2.28 | 1.72 | 0.0063 | 15.18 | 0.30 | 0.23 | 1.20 | 0.99 | 0.75 |
| 2/25 13:44 | 2.36 | 1.78 | 0.0065 | 15.66 | 0.34 | 0.26 | 1.45 | 0.97 | 0.73 |
| 2/25 13:45 | 2.43 | 1.83 | 0.0067 | 16.14 | 0.35 | 0.26 | 1.45 | 0.94 | 0.71 |
| 2/25 13:46 | 2.47 | 1.86 | 0.0069 | 16.69 | 0.37 | 0.28 | 1.45 | 0.93 | 0.70 |
| 2/25 13:47 | 2.46 | 1.85 | 0.0068 | 16.45 | 0.40 | 0.30 | 1.69 | 0.93 | 0.70 |
| 2/25 13:48 | 2.42 | 1.82 | 0.0067 | 16.14 | 0.43 | 0.32 | 1.69 | 0.93 | 0.70 |
| 2/25 13:49 | 2.36 | 1.78 | 0.0065 | 15.66 | 0.41 | 0.31 | 1.69 | 0.94 | 0.71 |
| 2/25 13:50 | 2.28 | 1.72 | 0.0063 | 15.18 | 0.41 | 0.31 | 1.69 | 0.95 | 0.72 |
| 2/25 13:51 | 2.21 | 1.66 | 0.0061 | 14.75 | 0.42 | 0.32 | 1.69 | 0.96 | 0.72 |
| 2/25 13:52 | 2.15 | 1.62 | 0.0060 | 14.51 | 0.43 | 0.32 | 1.69 | 0.97 | 0.73 |
| 2/25 13:53 | 2.12 | 1.60 | 0.0059 | 14.22 | 0.41 | 0.31 | 1.69 | 0.97 | 0.73 |
| 2/25 13:54 | 2.12 | 1.60 | 0.0059 | 14.22 | 0.43 | 0.32 | 1.69 | 0.97 | 0.73 |
| 2/25 13:55 | 2.16 | 1.63 | 0.0060 | 14.51 | 0.47 | 0.35 | 1.93 | 0.96 | 0.72 |
| 2/25 13:56 | 2.24 | 1.69 | 0.0062 | 14.94 | 0.42 | 0.32 | 1.69 | 0.94 | 0.71 |
| Average (all) | 2.23 | 1.68 | 0.0062 | 14.90 | 0.34 | 0.26 | 1.40 | 0.98 | 0.74 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 2.04 | 1.54 | 0.0057 | 13.73 | 0.20 | 0.15 | 0.72 | 0.93 | 0.70 |
| Maximum (all) | 2.47 | 1.86 | 0.0069 | 16.69 | 0.47 | 0.35 | 1.93 | 1.05 | 0.79 |
| Average (valid values only) | 2.23 | 1.68 | 0.0062 | 14.90 | 0.34 | 0.26 | 1.40 | 0.98 | 0.74 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 1:36 PM thru 2/25/2020 1:56 PM

| Timestamp | (Turbine 2) NH3 Slip lb/hr 1-Min | (Turbine 2) 75-O2 % 1-Min | (Turbine 2) Total Gas Flow hscf/hr 1-Min | (Turbine 2) GT Megawatts 1-Min | (Turbine 2) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 2/25 13:36 | 2.41 | 13.07 | 23057.1 | 231.4 | 345.8 |
| 2/25 13:37 | 2.41 | 13.07 | 23057.1 | 231.3 | 345.2 |
| 2/25 13:38 | 2.65 | 13.07 | 23057.1 | 231.4 | 345.6 |
| 2/25 13:39 | 2.66 | 13.06 | 23142.9 | 231.4 | 345.7 |
| 2/25 13:40 | 2.65 | 13.06 | 23057.1 | 231.4 | 345.7 |
| 2/25 13:41 | 2.65 | 13.06 | 23057.1 | 231.4 | 345.7 |
| 2/25 13:42 | 2.42 | 13.06 | 23142.9 | 231.4 | 345.7 |
| 2/25 13:43 | 2.41 | 13.06 | 23057.1 | 231.4 | 345.7 |
| 2/25 13:44 | 2.41 | 13.06 | 23057.1 | 231.4 | 345.7 |
| 2/25 13:45 | 2.41 | 13.06 | 23057.1 | 231.3 | 345.5 |
| 2/25 13:46 | 2.42 | 13.07 | 23142.9 | 231.3 | 345.5 |
| 2/25 13:47 | 2.42 | 13.07 | 23142.9 | 231.4 | 345.6 |
| 2/25 13:48 | 2.41 | 13.07 | 23057.1 | 231.4 | 345.6 |
| 2/25 13:49 | 2.41 | 13.06 | 23057.1 | 231.3 | 345.4 |
| 2/25 13:50 | 2.41 | 13.07 | 23057.1 | 231.3 | 345.4 |
| 2/25 13:51 | 2.42 | 13.06 | 23142.9 | 231.3 | 345.5 |
| 2/25 13:52 | 2.42 | 13.07 | 23142.9 | 231.2 | 345.4 |
| 2/25 13:53 | 2.41 | 13.07 | 23057.1 | 231.3 | 345.5 |
| 2/25 13:54 | 2.41 | 13.07 | 23057.1 | 231.3 | 345.5 |
| 2/25 13:55 | 2.42 | 13.06 | 23142.9 | 231.3 | 345.5 |
| 2/25 13:56 | 2.41 | 13.07 | 23057.1 | 231.2 | 345.5 |
| Average (all) | 2.46 | 13.07 | 23085.7 | 231.3 | 345.6 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 2.41 | 13.06 | 23057.1 | 231.2 | 345.2 |
| Maximum (all) | 2.66 | 13.07 | 23142.9 | 231.4 | 345.8 |
| Average (valid values only) | 2.46 | 13.07 | 23085.7 | 231.3 | 345.6 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 2:15 PM thru 2/25/2020 2:35 PM

| Timestamp | (Turbine 2) 75-NOx ppm 1-Min | (Turbine 2) NOx ppm @15% O2 1-Min | (Turbine 2) 75-NOx lb/mmBtu 1-Min | (Turbine 2) NOx lb/hr 1-Min | (Turbine 2) CO ppm 1-Min | (Turbine 2) CO ppm @15% O2 1-Min | (Turbine 2) CO lb/hr 1-Min | (Turbine 2) NH3 Slip ppm 1-Min | (Turbine 2) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/25 14:15 | 2.33 | 1.76 | 0.0065 | 15.72 | 0.22 | 0.17 | 0.97 | 0.94 | 0.71 |
| 2/25 14:16 | 2.39 | 1.80 | 0.0066 | 15.96 | 0.26 | 0.20 | 0.97 | 0.92 | 0.69 |
| 2/25 14:17 | 2.42 | 1.82 | 0.0067 | 16.14 | 0.28 | 0.21 | 1.20 | 0.92 | 0.69 |
| 2/25 14:18 | 2.42 | 1.82 | 0.0067 | 16.14 | 0.26 | 0.20 | 0.96 | 0.92 | 0.69 |
| 2/25 14:19 | 2.39 | 1.80 | 0.0066 | 15.90 | 0.28 | 0.21 | 1.20 | 0.92 | 0.69 |
| 2/25 14:20 | 2.35 | 1.77 | 0.0065 | 15.66 | 0.25 | 0.19 | 0.96 | 0.92 | 0.69 |
| 2/25 14:21 | 2.28 | 1.72 | 0.0063 | 15.18 | 0.28 | 0.21 | 1.20 | 0.94 | 0.71 |
| 2/25 14:22 | 2.14 | 1.61 | 0.0059 | 14.22 | 0.21 | 0.16 | 0.96 | 1.00 | 0.75 |
| 2/25 14:23 | 1.97 | 1.48 | 0.0055 | 13.20 | 0.20 | 0.15 | 0.72 | 1.05 | 0.79 |
| 2/25 14:24 | 1.84 | 1.38 | 0.0051 | 12.33 | 0.20 | 0.15 | 0.73 | 1.09 | 0.82 |
| 2/25 14:25 | 1.77 | 1.33 | 0.0049 | 11.81 | 0.25 | 0.19 | 0.96 | 1.15 | 0.87 |
| 2/25 14:26 | 1.75 | 1.32 | 0.0049 | 11.81 | 0.27 | 0.20 | 1.20 | 1.22 | 0.92 |
| 2/25 14:27 | 1.74 | 1.31 | 0.0048 | 11.57 | 0.26 | 0.20 | 0.96 | 1.29 | 0.97 |
| 2/25 14:28 | 1.76 | 1.33 | 0.0049 | 11.76 | 0.27 | 0.20 | 1.20 | 1.32 | 0.99 |
| 2/25 14:29 | 1.81 | 1.36 | 0.0050 | 12.05 | 0.27 | 0.20 | 1.20 | 1.33 | 1.00 |
| 2/25 14:30 | 1.88 | 1.42 | 0.0052 | 12.58 | 0.29 | 0.22 | 1.21 | 1.31 | 0.99 |
| 2/25 14:31 | 1.98 | 1.49 | 0.0055 | 13.25 | 0.27 | 0.20 | 1.20 | 1.26 | 0.95 |
| 2/25 14:32 | 2.06 | 1.55 | 0.0057 | 13.73 | 0.29 | 0.22 | 1.20 | 1.23 | 0.93 |
| 2/25 14:33 | 2.14 | 1.61 | 0.0059 | 14.22 | 0.31 | 0.23 | 1.20 | 1.17 | 0.88 |
| 2/25 14:34 | 2.20 | 1.66 | 0.0061 | 14.70 | 0.31 | 0.23 | 1.20 | 1.13 | 0.85 |
| 2/25 14:35 | 2.24 | 1.69 | 0.0062 | 14.94 | 0.24 | 0.18 | 0.96 | 1.10 | 0.83 |
| Average (all) | 2.09 | 1.57 | 0.0058 | 13.95 | 0.26 | 0.20 | 1.06 | 1.10 | 0.83 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 1.74 | 1.31 | 0.0048 | 11.57 | 0.20 | 0.15 | 0.72 | 0.92 | 0.69 |
| Maximum (all) | 2.42 | 1.82 | 0.0067 | 16.14 | 0.31 | 0.23 | 1.21 | 1.33 | 1.00 |
| Average (valid values only) | 2.09 | 1.57 | 0.0058 | 13.95 | 0.26 | 0.20 | 1.06 | 1.10 | 0.83 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 2:15 PM thru 2/25/2020 2:35 PM

| Timestamp | (Turbine 2) NH3 Slip lb/hr 1-Min | (Turbine 2) 75-O2 % 1-Min | (Turbine 2) Total Gas Flow hscf/hr 1-Min | (Turbine 2) GT Megawatts 1-Min | (Turbine 2) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 2/25 14:15 | 2.42 | 13.07 | 23142.9 | 231.2 | 345.1 |
| 2/25 14:16 | 2.18 | 13.06 | 23142.9 | 231.1 | 345.1 |
| 2/25 14:17 | 2.17 | 13.06 | 23057.1 | 231.1 | 345.2 |
| 2/25 14:18 | 2.17 | 13.06 | 23057.1 | 231.0 | 345.1 |
| 2/25 14:19 | 2.17 | 13.06 | 23057.1 | 230.9 | 345.0 |
| 2/25 14:20 | 2.17 | 13.06 | 23057.1 | 231.1 | 345.4 |
| 2/25 14:21 | 2.41 | 13.06 | 23057.1 | 231.1 | 345.4 |
| 2/25 14:22 | 2.41 | 13.06 | 23057.1 | 231.2 | 345.6 |
| 2/25 14:23 | 2.64 | 13.06 | 22971.4 | 231.0 | 345.4 |
| 2/25 14:24 | 2.66 | 13.06 | 23142.9 | 231.1 | 345.5 |
| 2/25 14:25 | 2.89 | 13.06 | 23057.1 | 231.0 | 344.9 |
| 2/25 14:26 | 2.89 | 13.07 | 23057.1 | 230.9 | 345.3 |
| 2/25 14:27 | 3.13 | 13.07 | 23057.1 | 231.1 | 345.6 |
| 2/25 14:28 | 3.36 | 13.07 | 22971.4 | 231.0 | 345.5 |
| 2/25 14:29 | 3.37 | 13.07 | 23057.1 | 231.0 | 345.5 |
| 2/25 14:30 | 3.14 | 13.07 | 23142.9 | 231.0 | 345.5 |
| 2/25 14:31 | 3.13 | 13.07 | 23057.1 | 231.1 | 345.6 |
| 2/25 14:32 | 3.13 | 13.07 | 23057.1 | 231.2 | 345.6 |
| 2/25 14:33 | 2.89 | 13.07 | 23057.1 | 231.1 | 345.5 |
| 2/25 14:34 | 2.89 | 13.06 | 23057.1 | 231.2 | 345.5 |
| 2/25 14:35 | 2.65 | 13.07 | 23057.1 | 231.1 | 345.4 |
| Average (all) | 2.71 | 13.06 | 23065.3 | 231.1 | 345.4 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 2.17 | 13.06 | 22971.4 | 230.9 | 344.9 |
| Maximum (all) | 3.37 | 13.07 | 23142.9 | 231.2 | 345.6 |
| Average (valid values only) | 2.71 | 13.06 | 23065.3 | 231.1 | 345.4 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 2:46 PM thru 2/25/2020 3:06 PM

| Timestamp | (Turbine 2) 75-NOx ppm 1-Min | (Turbine 2) NOx ppm @15% O2 1-Min | (Turbine 2) 75-NOx lb/mmBtu 1-Min | (Turbine 2) NOx lb/hr 1-Min | (Turbine 2) CO ppm 1-Min | (Turbine 2) CO ppm @15% O2 1-Min | (Turbine 2) CO lb/hr 1-Min | (Turbine 2) NH3 Slip ppm 1-Min | (Turbine 2) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/25 14:46 | 2.21 | 1.66 | 0.0061 | 14.70 | 0.11 | 0.08 | 0.48 | 0.99 | 0.75 |
| 2/25 14:47 | 2.14 | 1.61 | 0.0059 | 14.22 | 0.14 | 0.11 | 0.48 | 1.03 | 0.78 |
| 2/25 14:48 | 2.06 | 1.55 | 0.0057 | 13.73 | 0.18 | 0.14 | 0.72 | 1.06 | 0.80 |
| 2/25 14:49 | 2.00 | 1.51 | 0.0055 | 13.25 | 0.14 | 0.11 | 0.48 | 1.06 | 0.80 |
| 2/25 14:50 | 1.98 | 1.49 | 0.0055 | 13.30 | 0.06 | 0.05 | 0.24 | 1.07 | 0.81 |
| 2/25 14:51 | 1.98 | 1.49 | 0.0055 | 13.25 | 0.09 | 0.07 | 0.48 | 1.09 | 0.82 |
| 2/25 14:52 | 1.99 | 1.50 | 0.0055 | 13.25 | 0.06 | 0.05 | 0.24 | 1.11 | 0.84 |
| 2/25 14:53 | 2.00 | 1.51 | 0.0056 | 13.54 | 0.04 | 0.03 | 0.24 | 1.12 | 0.84 |
| 2/25 14:54 | 2.00 | 1.51 | 0.0056 | 13.44 | 0.04 | 0.03 | 0.24 | 1.14 | 0.86 |
| 2/25 14:55 | 2.00 | 1.51 | 0.0055 | 13.25 | 0.08 | 0.06 | 0.24 | 1.15 | 0.87 |
| 2/25 14:56 | 2.00 | 1.51 | 0.0056 | 13.49 | 0.08 | 0.06 | 0.24 | 1.15 | 0.87 |
| 2/25 14:57 | 1.99 | 1.50 | 0.0055 | 13.25 | 0.09 | 0.07 | 0.48 | 1.17 | 0.88 |
| 2/25 14:58 | 1.93 | 1.45 | 0.0054 | 13.06 | 0.10 | 0.08 | 0.48 | 1.20 | 0.90 |
| 2/25 14:59 | 1.86 | 1.40 | 0.0052 | 12.53 | 0.08 | 0.06 | 0.24 | 1.24 | 0.93 |
| 2/25 15:00 | 1.83 | 1.38 | 0.0051 | 12.29 | 0.08 | 0.06 | 0.24 | 1.25 | 0.94 |
| 2/25 15:01 | 1.85 | 1.39 | 0.0051 | 12.29 | 0.10 | 0.08 | 0.48 | 1.28 | 0.96 |
| 2/25 15:02 | 1.88 | 1.42 | 0.0052 | 12.48 | 0.08 | 0.06 | 0.24 | 1.29 | 0.97 |
| 2/25 15:03 | 1.92 | 1.45 | 0.0053 | 12.82 | 0.08 | 0.06 | 0.24 | 1.28 | 0.96 |
| 2/25 15:04 | 1.97 | 1.48 | 0.0055 | 13.30 | 0.08 | 0.06 | 0.24 | 1.26 | 0.95 |
| 2/25 15:05 | 2.02 | 1.52 | 0.0056 | 13.49 | 0.13 | 0.10 | 0.48 | 1.24 | 0.93 |
| 2/25 15:06 | 2.07 | 1.56 | 0.0057 | 13.73 | 0.10 | 0.08 | 0.48 | 1.21 | 0.91 |
| Average (all) | 1.98 | 1.50 | 0.0055 | 13.27 | 0.09 | 0.07 | 0.37 | 1.16 | 0.87 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 1.83 | 1.38 | 0.0051 | 12.29 | 0.04 | 0.03 | 0.24 | 0.99 | 0.75 |
| Maximum (all) | 2.21 | 1.66 | 0.0061 | 14.70 | 0.18 | 0.14 | 0.72 | 1.29 | 0.97 |
| Average (valid values only) | 1.98 | 1.50 | 0.0055 | 13.27 | 0.09 | 0.07 | 0.37 | 1.16 | 0.87 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 2:46 PM thru 2/25/2020 3:06 PM

| Timestamp | (Turbine 2) NH3 Slip lb/hr 1-Min | (Turbine 2) 75-O2 % 1-Min | (Turbine 2) Total Gas Flow hscf/hr 1-Min | (Turbine 2) GT Megawatts 1-Min | (Turbine 2) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 2/25 14:46 | 2.41 | 13.06 | 23057.1 | 231.2 | 345.7 |
| 2/25 14:47 | 2.65 | 13.06 | 23057.1 | 231.2 | 345.7 |
| 2/25 14:48 | 2.65 | 13.06 | 23057.1 | 231.0 | 345.5 |
| 2/25 14:49 | 2.65 | 13.06 | 23057.1 | 231.2 | 345.7 |
| 2/25 14:50 | 2.66 | 13.07 | 23142.9 | 231.0 | 345.5 |
| 2/25 14:51 | 2.65 | 13.06 | 23057.1 | 231.2 | 345.7 |
| 2/25 14:52 | 2.65 | 13.07 | 23057.1 | 231.0 | 345.5 |
| 2/25 14:53 | 2.66 | 13.07 | 23142.9 | 231.1 | 345.7 |
| 2/25 14:54 | 2.88 | 13.07 | 22971.4 | 230.9 | 345.4 |
| 2/25 14:55 | 2.89 | 13.06 | 23057.1 | 231.0 | 345.6 |
| 2/25 14:56 | 2.89 | 13.07 | 23057.1 | 231.0 | 345.5 |
| 2/25 14:57 | 2.89 | 13.07 | 23057.1 | 230.9 | 345.4 |
| 2/25 14:58 | 2.90 | 13.07 | 23142.9 | 231.1 | 345.6 |
| 2/25 14:59 | 3.13 | 13.06 | 23057.1 | 231.0 | 345.5 |
| 2/25 15:00 | 3.13 | 13.07 | 23057.1 | 230.9 | 345.4 |
| 2/25 15:01 | 3.13 | 13.07 | 23057.1 | 231.0 | 345.5 |
| 2/25 15:02 | 3.12 | 13.07 | 22971.4 | 231.0 | 345.4 |
| 2/25 15:03 | 3.14 | 13.07 | 23142.9 | 231.1 | 345.4 |
| 2/25 15:04 | 3.14 | 13.06 | 23142.9 | 231.1 | 345.5 |
| 2/25 15:05 | 3.13 | 13.06 | 23057.1 | 231.0 | 345.3 |
| 2/25 15:06 | 2.89 | 13.06 | 23057.1 | 231.0 | 345.1 |
| Average (all) | 2.87 | 13.07 | 23069.4 | 231.0 | 345.5 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 2.41 | 13.06 | 22971.4 | 230.9 | 345.1 |
| Maximum (all) | 3.14 | 13.07 | 23142.9 | 231.2 | 345.7 |
| Average (valid values only) | 2.87 | 13.07 | 23069.4 | 231.0 | 345.5 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 3:17 PM thru 2/25/2020 3:37 PM

| Timestamp | (Turbine 2) 75-NOx ppm 1-Min | (Turbine 2) NOx ppm @15% O2 1-Min | (Turbine 2) 75-NOx lb/mmBtu 1-Min | (Turbine 2) NOx lb/hr 1-Min | (Turbine 2) CO ppm 1-Min | (Turbine 2) CO ppm @15% O2 1-Min | (Turbine 2) CO lb/hr 1-Min | (Turbine 2) NH3 Slip ppm 1-Min | (Turbine 2) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/25 15:17 | 2.20 | 1.66 | 0.0061 | 14.70 | 0.16 | 0.12 | 0.72 | 1.04 | 0.78 |
| 2/25 15:18 | 2.23 | 1.68 | 0.0062 | 14.88 | 0.16 | 0.12 | 0.72 | 1.03 | 0.78 |
| 2/25 15:19 | 2.25 | 1.70 | 0.0062 | 14.94 | 0.11 | 0.08 | 0.48 | 1.02 | 0.77 |
| 2/25 15:20 | 2.25 | 1.70 | 0.0062 | 14.94 | 0.11 | 0.08 | 0.48 | 1.02 | 0.77 |
| 2/25 15:21 | 2.25 | 1.70 | 0.0062 | 14.94 | 0.11 | 0.08 | 0.48 | 1.01 | 0.76 |
| 2/25 15:22 | 2.25 | 1.69 | 0.0062 | 14.94 | 0.08 | 0.06 | 0.24 | 1.00 | 0.75 |
| 2/25 15:23 | 2.24 | 1.69 | 0.0062 | 14.94 | 0.10 | 0.08 | 0.48 | 1.00 | 0.75 |
| 2/25 15:24 | 2.23 | 1.68 | 0.0062 | 14.88 | 0.07 | 0.05 | 0.24 | 1.00 | 0.75 |
| 2/25 15:25 | 2.20 | 1.66 | 0.0061 | 14.75 | 0.03 | 0.02 | 0.24 | 1.01 | 0.76 |
| 2/25 15:26 | 2.14 | 1.61 | 0.0059 | 14.22 | 0.02 | 0.02 | 0.00 | 1.04 | 0.78 |
| 2/25 15:27 | 2.07 | 1.56 | 0.0057 | 13.73 | 0.03 | 0.02 | 0.24 | 1.07 | 0.81 |
| 2/25 15:28 | 2.02 | 1.52 | 0.0056 | 13.54 | 0.04 | 0.03 | 0.24 | 1.08 | 0.81 |
| 2/25 15:29 | 1.99 | 1.50 | 0.0055 | 13.25 | 0.00 | 0.00 | 0.00 | 1.10 | 0.83 |
| 2/25 15:30 | 1.98 | 1.49 | 0.0055 | 13.20 | 0.00 | 0.00 | 0.00 | 1.13 | 0.85 |
| 2/25 15:31 | 1.98 | 1.49 | 0.0055 | 13.25 | 0.04 | 0.03 | 0.24 | 1.14 | 0.86 |
| 2/25 15:32 | 1.97 | 1.48 | 0.0055 | 13.25 | 0.08 | 0.06 | 0.24 | 1.16 | 0.87 |
| 2/25 15:33 | 1.96 | 1.48 | 0.0054 | 13.01 | 0.06 | 0.05 | 0.24 | 1.17 | 0.88 |
| 2/25 15:34 | 1.96 | 1.48 | 0.0054 | 13.01 | 0.09 | 0.07 | 0.48 | 1.17 | 0.88 |
| 2/25 15:35 | 2.02 | 1.52 | 0.0056 | 13.49 | 0.06 | 0.05 | 0.24 | 1.14 | 0.86 |
| 2/25 15:36 | 2.12 | 1.60 | 0.0059 | 14.22 | 0.07 | 0.05 | 0.24 | 1.11 | 0.84 |
| 2/25 15:37 | 2.21 | 1.67 | 0.0061 | 14.75 | 0.07 | 0.05 | 0.24 | 1.07 | 0.81 |
| Average (all) | 2.12 | 1.60 | 0.0059 | 14.13 | 0.07 | 0.05 | 0.31 | 1.07 | 0.81 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 1.96 | 1.48 | 0.0054 | 13.01 | 0.00 | 0.00 | 0.00 | 1.00 | 0.75 |
| Maximum (all) | 2.25 | 1.70 | 0.0062 | 14.94 | 0.16 | 0.12 | 0.72 | 1.17 | 0.88 |
| Average (valid values only) | 2.12 | 1.60 | 0.0059 | 14.13 | 0.07 | 0.05 | 0.31 | 1.07 | 0.81 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 3:17 PM thru 2/25/2020 3:37 PM

| Timestamp | (Turbine 2) NH3 Slip lb/hr 1-Min | (Turbine 2) 75-O2 % 1-Min | (Turbine 2) Total Gas Flow hscf/hr 1-Min | (Turbine 2) GT Megawatts 1-Min | (Turbine 2) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 2/25 15:17 | 2.65 | 13.07 | 23057.1 | 231.0 | 345.1 |
| 2/25 15:18 | 2.64 | 13.07 | 22971.4 | 231.0 | 345.1 |
| 2/25 15:19 | 2.41 | 13.07 | 23057.1 | 231.0 | 345.1 |
| 2/25 15:20 | 2.41 | 13.07 | 23057.1 | 231.1 | 345.3 |
| 2/25 15:21 | 2.41 | 13.07 | 23057.1 | 231.0 | 345.2 |
| 2/25 15:22 | 2.41 | 13.06 | 23057.1 | 230.9 | 345.1 |
| 2/25 15:23 | 2.41 | 13.06 | 23057.1 | 231.0 | 345.3 |
| 2/25 15:24 | 2.40 | 13.06 | 22971.4 | 231.0 | 345.3 |
| 2/25 15:25 | 2.42 | 13.06 | 23142.9 | 231.0 | 345.4 |
| 2/25 15:26 | 2.65 | 13.06 | 23057.1 | 231.1 | 345.3 |
| 2/25 15:27 | 2.65 | 13.06 | 23057.1 | 231.0 | 345.1 |
| 2/25 15:28 | 2.66 | 13.06 | 23142.9 | 231.1 | 345.2 |
| 2/25 15:29 | 2.65 | 13.06 | 23057.1 | 231.0 | 345.1 |
| 2/25 15:30 | 2.88 | 13.06 | 22971.4 | 231.1 | 345.4 |
| 2/25 15:31 | 2.89 | 13.06 | 23057.1 | 231.0 | 345.3 |
| 2/25 15:32 | 2.89 | 13.06 | 23057.1 | 231.1 | 345.4 |
| 2/25 15:33 | 2.89 | 13.06 | 23057.1 | 231.1 | 345.4 |
| 2/25 15:34 | 2.89 | 13.06 | 23057.1 | 231.0 | 345.4 |
| 2/25 15:35 | 2.89 | 13.06 | 23057.1 | 231.1 | 345.5 |
| 2/25 15:36 | 2.65 | 13.06 | 23057.1 | 231.1 | 345.5 |
| 2/25 15:37 | 2.66 | 13.07 | 23142.9 | 231.1 | 345.5 |
| Average (all) | 2.64 | 13.06 | 23057.1 | 231.0 | 345.3 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 2.40 | 13.06 | 22971.4 | 230.9 | 345.1 |
| Maximum (all) | 2.89 | 13.07 | 23142.9 | 231.1 | 345.5 |
| Average (valid values only) | 2.64 | 13.06 | 23057.1 | 231.0 | 345.3 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 3:47 PM thru 2/25/2020 4:07 PM

| Timestamp | (Turbine 2) 75-NOx ppm 1-Min | (Turbine 2) NOx ppm @15% O2 1-Min | (Turbine 2) 75-NOx lb/mmBtu 1-Min | (Turbine 2) NOx lb/hr 1-Min | (Turbine 2) CO ppm 1-Min | (Turbine 2) CO ppm @15% O2 1-Min | (Turbine 2) CO lb/hr 1-Min | (Turbine 2) NH3 Slip ppm 1-Min | (Turbine 2) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/25 15:47 | 2.27 | 1.71 | 0.0063 | 15.18 | 0.09 | 0.07 | 0.48 | 0.96 | 0.72 |
| 2/25 15:48 | 2.28 | 1.72 | 0.0063 | 15.24 | 0.05 | 0.04 | 0.24 | 0.96 | 0.72 |
| 2/25 15:49 | 2.28 | 1.72 | 0.0063 | 15.24 | 0.05 | 0.04 | 0.24 | 0.96 | 0.72 |
| 2/25 15:50 | 2.28 | 1.72 | 0.0063 | 15.18 | 0.08 | 0.06 | 0.24 | 0.95 | 0.71 |
| 2/25 15:51 | 2.27 | 1.71 | 0.0063 | 15.18 | 0.04 | 0.03 | 0.24 | 0.96 | 0.72 |
| 2/25 15:52 | 2.27 | 1.71 | 0.0063 | 15.12 | 0.09 | 0.07 | 0.48 | 0.95 | 0.71 |
| 2/25 15:53 | 2.26 | 1.70 | 0.0063 | 15.24 | 0.03 | 0.02 | 0.24 | 0.95 | 0.71 |
| 2/25 15:54 | 2.25 | 1.69 | 0.0062 | 14.94 | 0.01 | 0.01 | 0.00 | 0.95 | 0.71 |
| 2/25 15:55 | 2.25 | 1.69 | 0.0062 | 14.94 | 0.03 | 0.02 | 0.24 | 0.94 | 0.71 |
| 2/25 15:56 | 2.27 | 1.71 | 0.0063 | 15.24 | 0.07 | 0.05 | 0.24 | 0.93 | 0.70 |
| 2/25 15:57 | 2.28 | 1.72 | 0.0063 | 15.18 | 0.08 | 0.06 | 0.24 | 0.93 | 0.70 |
| 2/25 15:58 | 2.28 | 1.72 | 0.0063 | 15.24 | 0.03 | 0.02 | 0.24 | 0.93 | 0.70 |
| 2/25 15:59 | 2.28 | 1.72 | 0.0063 | 15.18 | 0.02 | 0.02 | 0.00 | 0.94 | 0.71 |
| 2/25 16:00 | 2.27 | 1.71 | 0.0063 | 15.24 | 0.04 | 0.03 | 0.24 | 0.93 | 0.70 |
| 2/25 16:01 | 2.28 | 1.72 | 0.0063 | 15.18 | 0.06 | 0.05 | 0.24 | 0.92 | 0.69 |
| 2/25 16:02 | 2.28 | 1.72 | 0.0063 | 15.18 | 0.07 | 0.05 | 0.24 | 0.93 | 0.70 |
| 2/25 16:03 | 2.27 | 1.71 | 0.0063 | 15.18 | 0.02 | 0.02 | 0.00 | 0.93 | 0.70 |
| 2/25 16:04 | 2.26 | 1.70 | 0.0063 | 15.18 | 0.05 | 0.04 | 0.24 | 0.93 | 0.70 |
| 2/25 16:05 | 2.26 | 1.70 | 0.0063 | 15.18 | 0.01 | 0.01 | 0.00 | 0.94 | 0.71 |
| 2/25 16:06 | 2.26 | 1.70 | 0.0063 | 15.18 | 0.04 | 0.03 | 0.24 | 0.94 | 0.71 |
| 2/25 16:07 | 2.27 | 1.67 | 0.0062 | 15.40 | 0.03 | 0.02 | 0.00 | 0.93 | 0.68 |
| Average (all) | 2.27 | 1.71 | 0.0063 | 15.18 | 0.05 | 0.04 | 0.21 | 0.94 | 0.71 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 2.25 | 1.67 | 0.0062 | 14.94 | 0.01 | 0.01 | 0.00 | 0.92 | 0.68 |
| Maximum (all) | 2.28 | 1.72 | 0.0063 | 15.40 | 0.09 | 0.07 | 0.48 | 0.96 | 0.72 |
| Average (valid values only) | 2.27 | 1.71 | 0.0063 | 15.18 | 0.05 | 0.04 | 0.21 | 0.94 | 0.71 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 3:47 PM thru 2/25/2020 4:07 PM

| Timestamp | (Turbine 2) NH3 Slip lb/hr 1-Min | (Turbine 2) 75-O2 % 1-Min | (Turbine 2) Total Gas Flow hscf/hr 1-Min | (Turbine 2) GT Megawatts 1-Min | (Turbine 2) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 2/25 15:47 | 2.41 | 13.06 | 23057.1 | 231.1 | 345.5 |
| 2/25 15:48 | 2.42 | 13.06 | 23142.9 | 231.0 | 345.4 |
| 2/25 15:49 | 2.42 | 13.06 | 23142.9 | 231.2 | 345.7 |
| 2/25 15:50 | 2.41 | 13.06 | 23057.1 | 231.1 | 345.6 |
| 2/25 15:51 | 2.41 | 13.06 | 23057.1 | 231.2 | 345.8 |
| 2/25 15:52 | 2.40 | 13.06 | 22971.4 | 231.1 | 345.6 |
| 2/25 15:53 | 2.42 | 13.06 | 23142.9 | 231.1 | 345.5 |
| 2/25 15:54 | 2.41 | 13.06 | 23057.1 | 231.2 | 345.7 |
| 2/25 15:55 | 2.41 | 13.06 | 23057.1 | 231.2 | 345.7 |
| 2/25 15:56 | 2.42 | 13.06 | 23142.9 | 231.2 | 345.7 |
| 2/25 15:57 | 2.41 | 13.06 | 23057.1 | 231.2 | 345.7 |
| 2/25 15:58 | 2.42 | 13.06 | 23142.9 | 231.2 | 345.7 |
| 2/25 15:59 | 2.41 | 13.06 | 23057.1 | 231.2 | 345.9 |
| 2/25 16:00 | 2.42 | 13.06 | 23142.9 | 231.2 | 346.0 |
| 2/25 16:01 | 2.17 | 13.06 | 23057.1 | 231.3 | 346.0 |
| 2/25 16:02 | 2.41 | 13.06 | 23057.1 | 231.2 | 345.9 |
| 2/25 16:03 | 2.41 | 13.06 | 23057.1 | 231.3 | 346.0 |
| 2/25 16:04 | 2.41 | 13.06 | 23057.1 | 231.1 | 345.8 |
| 2/25 16:05 | 2.41 | 13.05 | 23057.1 | 231.1 | 345.8 |
| 2/25 16:06 | 2.41 | 13.06 | 23057.1 | 231.1 | 346.0 |
| 2/25 16:07 | 2.24 | 12.88 | 23768.8 | 231.2 | 347.6 |
| Average (all) | 2.39 | 13.05 | 23111.4 | 231.2 | 345.8 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 2.17 | 12.88 | 22971.4 | 231.0 | 345.4 |
| Maximum (all) | 2.42 | 13.06 | 23768.8 | 231.3 | 347.6 |
| Average (valid values only) | 2.39 | 13.05 | 23111.4 | 231.2 | 345.8 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 4:20 PM thru 2/25/2020 4:40 PM

| Timestamp | (Turbine 2) 75-NOx ppm 1-Min | (Turbine 2) NOx ppm @15% O2 1-Min | (Turbine 2) 75-NOx lb/mmBtu 1-Min | (Turbine 2) NOx lb/hr 1-Min | (Turbine 2) CO ppm 1-Min | (Turbine 2) CO ppm @15% O2 1-Min | (Turbine 2) CO lb/hr 1-Min | (Turbine 2) NH3 Slip ppm 1-Min | (Turbine 2) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/25 16:20 | 2.60 | 1.82 | 0.0067 | 17.36 | 0.00 | 0.00 | 0.00 | 1.03 | 0.72 |
| 2/25 16:21 | 2.56 | 1.78 | 0.0066 | 17.10 | 0.00 | 0.00 | 0.00 | 1.06 | 0.74 |
| 2/25 16:22 | 2.54 | 1.76 | 0.0065 | 16.95 | 0.00 | 0.00 | 0.00 | 1.08 | 0.75 |
| 2/25 16:23 | 2.53 | 1.75 | 0.0064 | 16.73 | 0.00 | 0.00 | 0.00 | 1.10 | 0.76 |
| 2/25 16:24 | 2.54 | 1.75 | 0.0064 | 16.84 | 0.00 | 0.00 | 0.00 | 1.11 | 0.76 |
| 2/25 16:25 | 2.57 | 1.77 | 0.0065 | 17.02 | 0.00 | 0.00 | 0.00 | 1.11 | 0.76 |
| 2/25 16:26 | 2.61 | 1.79 | 0.0066 | 17.38 | 0.00 | 0.00 | 0.00 | 1.12 | 0.77 |
| 2/25 16:27 | 2.63 | 1.80 | 0.0066 | 17.35 | 0.00 | 0.00 | 0.00 | 1.14 | 0.78 |
| 2/25 16:28 | 2.64 | 1.80 | 0.0066 | 17.39 | 0.00 | 0.00 | 0.00 | 1.15 | 0.78 |
| 2/25 16:29 | 2.63 | 1.79 | 0.0066 | 17.42 | 0.00 | 0.00 | 0.00 | 1.18 | 0.80 |
| 2/25 16:30 | 2.61 | 1.77 | 0.0065 | 17.19 | 0.00 | 0.00 | 0.00 | 1.19 | 0.81 |
| 2/25 16:31 | 2.60 | 1.76 | 0.0065 | 17.22 | 0.00 | 0.00 | 0.00 | 1.21 | 0.82 |
| 2/25 16:32 | 2.62 | 1.77 | 0.0065 | 17.25 | 0.00 | 0.00 | 0.00 | 1.22 | 0.82 |
| 2/25 16:33 | 2.65 | 1.79 | 0.0066 | 17.54 | 0.00 | 0.00 | 0.00 | 1.23 | 0.83 |
| 2/25 16:34 | 2.67 | 1.80 | 0.0066 | 17.62 | 0.00 | 0.00 | 0.00 | 1.25 | 0.84 |
| 2/25 16:35 | 2.67 | 1.79 | 0.0066 | 17.64 | 0.00 | 0.00 | 0.00 | 1.28 | 0.86 |
| 2/25 16:36 | 2.65 | 1.78 | 0.0066 | 17.64 | 0.00 | 0.00 | 0.00 | 1.30 | 0.87 |
| 2/25 16:37 | 2.62 | 1.76 | 0.0065 | 17.31 | 0.00 | 0.00 | 0.00 | 1.33 | 0.89 |
| 2/25 16:38 | 2.59 | 1.74 | 0.0064 | 17.11 | 0.00 | 0.00 | 0.00 | 1.35 | 0.91 |
| 2/25 16:39 | 2.57 | 1.72 | 0.0063 | 16.84 | 0.00 | 0.00 | 0.00 | 1.37 | 0.92 |
| 2/25 16:40 | 2.56 | 1.72 | 0.0063 | 16.79 | 0.00 | 0.00 | 0.00 | 1.38 | 0.93 |
| Average (all) | 2.60 | 1.77 | 0.0065 | 17.22 | 0.00 | 0.00 | 0.00 | 1.20 | 0.82 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 2.53 | 1.72 | 0.0063 | 16.73 | 0.00 | 0.00 | 0.00 | 1.03 | 0.72 |
| Maximum (all) | 2.67 | 1.82 | 0.0067 | 17.64 | 0.00 | 0.00 | 0.00 | 1.38 | 0.93 |
| Average (valid values only) | 2.60 | 1.77 | 0.0065 | 17.22 | 0.00 | 0.00 | 0.00 | 1.20 | 0.82 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 4:20 PM thru 2/25/2020 4:40 PM

| Timestamp | (Turbine 2) NH3 Slip lb/hr 1-Min | (Turbine 2) 75-O2 % 1-Min | (Turbine 2) Total Gas Flow hscf/hr 1-Min | (Turbine 2) GT Megawatts 1-Min | (Turbine 2) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 2/25 16:20 | 2.59 | 12.46 | 24799.3 | 231.3 | 364.6 |
| 2/25 16:21 | 2.59 | 12.42 | 24793.3 | 231.5 | 365.5 |
| 2/25 16:22 | 2.61 | 12.38 | 24950.2 | 231.3 | 367.0 |
| 2/25 16:23 | 2.62 | 12.36 | 25016.3 | 231.3 | 368.1 |
| 2/25 16:24 | 2.63 | 12.33 | 25167.7 | 231.3 | 369.1 |
| 2/25 16:25 | 2.62 | 12.31 | 25054.7 | 231.4 | 370.1 |
| 2/25 16:26 | 2.63 | 12.28 | 25197.2 | 231.5 | 371.0 |
| 2/25 16:27 | 2.89 | 12.26 | 25164.6 | 231.5 | 371.9 |
| 2/25 16:28 | 2.90 | 12.24 | 25220.2 | 231.5 | 372.6 |
| 2/25 16:29 | 2.90 | 12.22 | 25267.2 | 231.5 | 373.4 |
| 2/25 16:30 | 2.91 | 12.21 | 25307.8 | 231.6 | 374.2 |
| 2/25 16:31 | 2.91 | 12.18 | 25352.8 | 231.5 | 374.2 |
| 2/25 16:32 | 2.92 | 12.17 | 25397.6 | 231.6 | 375.3 |
| 2/25 16:33 | 2.92 | 12.15 | 25432.3 | 231.7 | 376.2 |
| 2/25 16:34 | 2.94 | 12.13 | 25554.5 | 231.6 | 376.6 |
| 2/25 16:35 | 3.20 | 12.12 | 25571.8 | 231.6 | 377.2 |
| 2/25 16:36 | 3.20 | 12.11 | 25575.1 | 231.7 | 377.7 |
| 2/25 16:37 | 3.20 | 12.12 | 25490.0 | 231.6 | 377.9 |
| 2/25 16:38 | 3.20 | 12.12 | 25574.9 | 231.7 | 378.2 |
| 2/25 16:39 | 3.21 | 12.10 | 25577.6 | 231.7 | 378.4 |
| 2/25 16:40 | 3.46 | 12.10 | 25506.5 | 231.8 | 378.5 |
| Average (all) | 2.91 | 12.23 | 25284.4 | 231.5 | 373.2 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 2.59 | 12.10 | 24793.3 | 231.3 | 364.6 |
| Maximum (all) | 3.46 | 12.46 | 25577.6 | 231.8 | 378.5 |
| Average (valid values only) | 2.91 | 12.23 | 25284.4 | 231.5 | 373.2 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 4:51 PM thru 2/25/2020 5:11 PM

| Timestamp | (Turbine 2) 75-NOx ppm 1-Min | (Turbine 2) NOx ppm @15% O2 1-Min | (Turbine 2) 75-NOx lb/mmBtu 1-Min | (Turbine 2) NOx lb/hr 1-Min | (Turbine 2) CO ppm 1-Min | (Turbine 2) CO ppm @15% O2 1-Min | (Turbine 2) CO lb/hr 1-Min | (Turbine 2) NH3 Slip ppm 1-Min | (Turbine 2) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/25 16:51 | 2.53 | 1.70 | 0.0063 | 16.83 | 0.00 | 0.00 | 0.00 | 1.47 | 0.99 |
| 2/25 16:52 | 2.53 | 1.70 | 0.0063 | 16.76 | 0.00 | 0.00 | 0.00 | 1.47 | 0.99 |
| 2/25 16:53 | 2.54 | 1.71 | 0.0063 | 16.81 | 0.00 | 0.00 | 0.00 | 1.46 | 0.98 |
| 2/25 16:54 | 2.56 | 1.72 | 0.0063 | 16.79 | 0.00 | 0.00 | 0.00 | 1.46 | 0.98 |
| 2/25 16:55 | 2.55 | 1.72 | 0.0063 | 16.79 | 0.00 | 0.00 | 0.00 | 1.48 | 1.00 |
| 2/25 16:56 | 2.53 | 1.70 | 0.0063 | 16.73 | 0.00 | 0.00 | 0.00 | 1.48 | 1.00 |
| 2/25 16:57 | 2.52 | 1.69 | 0.0062 | 16.55 | 0.00 | 0.00 | 0.00 | 1.48 | 0.99 |
| 2/25 16:58 | 2.52 | 1.69 | 0.0062 | 16.66 | 0.00 | 0.00 | 0.00 | 1.47 | 0.99 |
| 2/25 16:59 | 2.54 | 1.70 | 0.0063 | 16.91 | 0.00 | 0.00 | 0.00 | 1.46 | 0.98 |
| 2/25 17:00 | 2.57 | 1.71 | 0.0063 | 16.93 | 0.00 | 0.00 | 0.00 | 1.46 | 0.97 |
| 2/25 17:01 | 2.60 | 1.73 | 0.0064 | 17.13 | 0.00 | 0.00 | 0.00 | 1.47 | 0.98 |
| 2/25 17:02 | 2.59 | 1.73 | 0.0064 | 17.06 | 0.00 | 0.00 | 0.00 | 1.49 | 1.00 |
| 2/25 17:03 | 2.55 | 1.72 | 0.0063 | 16.74 | 0.00 | 0.00 | 0.00 | 1.51 | 1.02 |
| 2/25 17:04 | 2.49 | 1.68 | 0.0062 | 16.51 | 0.00 | 0.00 | 0.00 | 1.51 | 1.02 |
| 2/25 17:05 | 2.45 | 1.66 | 0.0061 | 16.21 | 0.00 | 0.00 | 0.00 | 1.50 | 1.01 |
| 2/25 17:06 | 2.45 | 1.65 | 0.0061 | 16.25 | 0.00 | 0.00 | 0.00 | 1.48 | 1.00 |
| 2/25 17:07 | 2.49 | 1.67 | 0.0062 | 16.56 | 0.00 | 0.00 | 0.00 | 1.47 | 0.99 |
| 2/25 17:08 | 2.54 | 1.70 | 0.0063 | 16.88 | 0.00 | 0.00 | 0.00 | 1.46 | 0.98 |
| 2/25 17:09 | 2.59 | 1.73 | 0.0064 | 17.14 | 0.00 | 0.00 | 0.00 | 1.46 | 0.98 |
| 2/25 17:10 | 2.62 | 1.75 | 0.0065 | 17.42 | 0.00 | 0.00 | 0.00 | 1.47 | 0.98 |
| 2/25 17:11 | 2.60 | 1.74 | 0.0064 | 17.05 | 0.00 | 0.00 | 0.00 | 1.49 | 1.00 |
| Average (all) | 2.54 | 1.70 | 0.0063 | 16.80 | 0.00 | 0.00 | 0.00 | 1.48 | 0.99 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 2.45 | 1.65 | 0.0061 | 16.21 | 0.00 | 0.00 | 0.00 | 1.46 | 0.97 |
| Maximum (all) | 2.62 | 1.75 | 0.0065 | 17.42 | 0.00 | 0.00 | 0.00 | 1.51 | 1.02 |
| Average (valid values only) | 2.54 | 1.70 | 0.0063 | 16.80 | 0.00 | 0.00 | 0.00 | 1.48 | 0.99 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 4:51 PM thru 2/25/2020 5:11 PM

| Timestamp | (Turbine 2) NH3 Slip lb/hr 1-Min | (Turbine 2) 75-O2 % 1-Min | (Turbine 2) Total Gas Flow hscf/hr 1-Min | (Turbine 2) GT Megawatts 1-Min | (Turbine 2) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 2/25 16:51 | 3.47 | 12.12 | 25552.3 | 231.7 | 377.9 |
| 2/25 16:52 | 3.46 | 12.12 | 25458.7 | 231.7 | 378.0 |
| 2/25 16:53 | 3.46 | 12.12 | 25525.4 | 231.8 | 378.3 |
| 2/25 16:54 | 3.46 | 12.12 | 25502.5 | 231.8 | 378.4 |
| 2/25 16:55 | 3.73 | 12.13 | 25499.5 | 231.8 | 378.3 |
| 2/25 16:56 | 3.72 | 12.13 | 25418.6 | 232.0 | 378.3 |
| 2/25 16:57 | 3.74 | 12.12 | 25548.6 | 232.0 | 378.0 |
| 2/25 16:58 | 3.50 | 12.10 | 25707.3 | 232.0 | 377.5 |
| 2/25 16:59 | 3.49 | 12.07 | 25686.2 | 232.1 | 377.5 |
| 2/25 17:00 | 3.49 | 12.05 | 25710.4 | 232.1 | 377.7 |
| 2/25 17:01 | 3.48 | 12.05 | 25617.3 | 232.1 | 378.0 |
| 2/25 17:02 | 3.73 | 12.08 | 25500.4 | 232.2 | 378.3 |
| 2/25 17:03 | 3.72 | 12.13 | 25420.5 | 232.1 | 378.4 |
| 2/25 17:04 | 3.73 | 12.16 | 25478.5 | 232.2 | 378.5 |
| 2/25 17:05 | 3.73 | 12.18 | 25434.1 | 232.2 | 378.0 |
| 2/25 17:06 | 3.74 | 12.15 | 25502.6 | 232.2 | 377.6 |
| 2/25 17:07 | 3.47 | 12.12 | 25573.7 | 232.2 | 377.5 |
| 2/25 17:08 | 3.48 | 12.09 | 25630.5 | 232.3 | 377.8 |
| 2/25 17:09 | 3.48 | 12.07 | 25620.6 | 232.2 | 378.2 |
| 2/25 17:10 | 3.49 | 12.09 | 25648.5 | 232.2 | 378.7 |
| 2/25 17:11 | 3.73 | 12.10 | 25496.6 | 232.3 | 379.2 |
| Average (all) | 3.59 | 12.11 | 25549.2 | 232.1 | 378.1 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 3.46 | 12.05 | 25418.6 | 231.7 | 377.5 |
| Maximum (all) | 3.74 | 12.18 | 25710.4 | 232.3 | 379.2 |
| Average (valid values only) | 3.59 | 12.11 | 25549.2 | 232.1 | 378.1 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 5:57 PM thru 2/25/2020 6:17 PM

| Timestamp | (Turbine 2) 75-NOx ppm 1-Min | (Turbine 2) NOx ppm @15% O2 1-Min | (Turbine 2) 75-NOx lb/mmBtu 1-Min | (Turbine 2) NOx lb/hr 1-Min | (Turbine 2) CO ppm 1-Min | (Turbine 2) CO ppm @15% O2 1-Min | (Turbine 2) CO lb/hr 1-Min | (Turbine 2) NH3 Slip ppm 1-Min | (Turbine 2) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|---|---|---|
| 2/25 17:57 | 2.53 | 1.69 | 0.0062 | 16.65 | 0.00 | 0.00 | 0.00 | 1.48 | 0.99 |
| 2/25 17:58 | 2.51 | 1.68 | 0.0062 | 16.65 | 0.00 | 0.00 | 0.00 | 1.48 | 0.99 |
| 2/25 17:59 | 2.52 | 1.68 | 0.0062 | 16.61 | 0.00 | 0.00 | 0.00 | 1.48 | 0.99 |
| 2/25 18:00 | 2.54 | 1.70 | 0.0063 | 16.94 | 0.00 | 0.00 | 0.00 | 1.47 | 0.98 |
| 2/25 18:01 | 2.56 | 1.71 | 0.0063 | 16.89 | 0.00 | 0.00 | 0.00 | 1.47 | 0.98 |
| 2/25 18:02 | 2.57 | 1.72 | 0.0063 | 16.84 | 0.01 | 0.01 | 0.00 | 1.47 | 0.98 |
| 2/25 18:03 | 2.56 | 1.71 | 0.0063 | 16.84 | 0.02 | 0.01 | 0.00 | 1.48 | 0.99 |
| 2/25 18:04 | 2.55 | 1.71 | 0.0063 | 16.88 | 0.03 | 0.02 | 0.00 | 1.48 | 0.99 |
| 2/25 18:05 | 2.54 | 1.70 | 0.0063 | 16.82 | 0.02 | 0.01 | 0.00 | 1.48 | 0.99 |
| 2/25 18:06 | 2.55 | 1.71 | 0.0063 | 16.86 | 0.00 | 0.00 | 0.00 | 1.47 | 0.99 |
| 2/25 18:07 | 2.56 | 1.72 | 0.0063 | 16.92 | 0.00 | 0.00 | 0.00 | 1.47 | 0.99 |
| 2/25 18:08 | 2.55 | 1.71 | 0.0063 | 16.81 | 0.00 | 0.00 | 0.00 | 1.48 | 0.99 |
| 2/25 18:09 | 2.53 | 1.70 | 0.0062 | 16.60 | 0.00 | 0.00 | 0.00 | 1.49 | 1.00 |
| 2/25 18:10 | 2.52 | 1.69 | 0.0062 | 16.61 | 0.01 | 0.01 | 0.00 | 1.49 | 1.00 |
| 2/25 18:11 | 2.52 | 1.69 | 0.0062 | 16.62 | 0.00 | 0.00 | 0.00 | 1.49 | 1.00 |
| 2/25 18:12 | 2.51 | 1.68 | 0.0062 | 16.62 | 0.02 | 0.01 | 0.00 | 1.51 | 1.01 |
| 2/25 18:13 | 2.51 | 1.68 | 0.0062 | 16.62 | 0.05 | 0.03 | 0.27 | 1.51 | 1.01 |
| 2/25 18:14 | 2.51 | 1.68 | 0.0062 | 16.61 | 0.08 | 0.05 | 0.27 | 1.51 | 1.01 |
| 2/25 18:15 | 2.51 | 1.68 | 0.0062 | 16.60 | 0.02 | 0.01 | 0.00 | 1.51 | 1.01 |
| 2/25 18:16 | 2.51 | 1.68 | 0.0062 | 16.59 | 0.03 | 0.02 | 0.00 | 1.51 | 1.01 |
| 2/25 18:17 | 2.52 | 1.69 | 0.0062 | 16.65 | 0.04 | 0.03 | 0.26 | 1.51 | 1.01 |
| Average (all) | 2.53 | 1.70 | 0.0062 | 16.73 | 0.02 | 0.01 | 0.04 | 1.49 | 1.00 |
| Total (all) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 2.51 | 1.68 | 0.0062 | 16.59 | 0.00 | 0.00 | 0.00 | 1.47 | 0.98 |
| Maximum (all) | 2.57 | 1.72 | 0.0063 | 16.94 | 0.08 | 0.05 | 0.27 | 1.51 | 1.01 |
| Average (valid values only) | 2.53 | 1.70 | 0.0062 | 16.73 | 0.02 | 0.01 | 0.04 | 1.49 | 1.00 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 2/25/2020 5:57 PM thru 2/25/2020 6:17 PM

| Timestamp | (Turbine 2) NH3 Slip lb/hr 1-Min | (Turbine 2) 75-O2 % 1-Min | (Turbine 2) Total Gas Flow hscf/hr 1-Min | (Turbine 2) GT Megawatts 1-Min | (Turbine 2) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 2/25 17:57 | 3.49 | 12.09 | 25688.5 | 233.4 | 380.1 |
| 2/25 17:58 | 3.49 | 12.09 | 25698.0 | 233.4 | 380.1 |
| 2/25 17:59 | 3.49 | 12.07 | 25628.7 | 233.5 | 379.9 |
| 2/25 18:00 | 3.50 | 12.07 | 25730.2 | 233.4 | 379.8 |
| 2/25 18:01 | 3.49 | 12.07 | 25651.7 | 233.5 | 379.9 |
| 2/25 18:02 | 3.47 | 12.07 | 25568.9 | 233.2 | 379.6 |
| 2/25 18:03 | 3.47 | 12.08 | 25567.6 | 233.0 | 379.5 |
| 2/25 18:04 | 3.49 | 12.09 | 25638.4 | 232.8 | 379.3 |
| 2/25 18:05 | 3.47 | 12.09 | 25538.6 | 233.0 | 379.8 |
| 2/25 18:06 | 3.48 | 12.10 | 25615.9 | 232.9 | 379.7 |
| 2/25 18:07 | 3.49 | 12.10 | 25697.1 | 233.0 | 379.8 |
| 2/25 18:08 | 3.46 | 12.10 | 25526.1 | 233.0 | 379.7 |
| 2/25 18:09 | 3.75 | 12.10 | 25624.6 | 233.1 | 379.6 |
| 2/25 18:10 | 3.75 | 12.08 | 25642.0 | 233.3 | 379.7 |
| 2/25 18:11 | 3.75 | 12.08 | 25652.8 | 233.2 | 379.5 |
| 2/25 18:12 | 3.75 | 12.08 | 25654.0 | 233.3 | 379.7 |
| 2/25 18:13 | 3.75 | 12.08 | 25645.3 | 233.3 | 379.8 |
| 2/25 18:14 | 3.75 | 12.07 | 25632.5 | 233.5 | 380.3 |
| 2/25 18:15 | 3.75 | 12.07 | 25616.7 | 233.5 | 380.6 |
| 2/25 18:16 | 3.75 | 12.08 | 25605.4 | 233.6 | 380.7 |
| 2/25 18:17 | 3.76 | 12.08 | 25689.3 | 233.7 | 380.9 |
| Average (all) | 3.60 | 12.08 | 25633.9 | 233.3 | 379.9 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 3.46 | 12.07 | 25526.1 | 232.8 | 379.3 |
| Maximum (all) | 3.76 | 12.10 | 25730.2 | 233.7 | 380.9 |
| Average (valid values only) | 3.60 | 12.08 | 25633.9 | 233.3 | 379.9 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CEMS AND REFERENCE METHOD DATA

## Reference Method Data

**Relative Accuracy Test Data**
**Reference Method Results (NOx)**
**General Electric, 7F.05, Unit #U-00002**

| | |
|---|---|
| Parameter: | Oxides of Nitrogen |
| Date of Test: | February 25, 2020 |
| Reference Method: | EPA Method 7E |
| RM Analyzer Type: | Chemiluminescence |
| Manufacturer: | |
| Model #: | THERMO 42 series |
| Serial #: | INST-NX-0031 |

| RUN # | RUN TIME | UNIT LOAD | CONCENTRATIONS | | RATES | |
|---|---|---|---|---|---|---|
| | | (MW) | (ppmvd) | (ppmvd@15%$O_2$) | (lb/hr) | (lb/MMBtu) |
| 1 | 11:53 - 12:13 | 346.6 | | 1.58 | 14.14 | 0.0058 |
| 2 | 12:32 - 12:52 | 345.9 | | 1.54 | 13.77 | 0.0057 |
| 3 | 13:07 - 13:27 | 345.4 | | 1.55 | 13.85 | 0.0057 |
| 4 | 13:36 - 13:56 | 345.6 | | 1.58 | 14.11 | 0.0058 |
| 5 | 14:15 - 14:35 | 345.4 | | 1.50 | 13.41 | 0.0055 |
| 6 | 14:46 - 15:06 | 345.5 | | 1.42 | 12.65 | 0.0052 |
| 7 | 15:17 - 15:37 | 345.3 | | 1.51 | 13.45 | 0.0056 |
| 8 | 15:47 - 16:07 | 345.8 | | 1.58 | 14.15 | 0.0058 |
| 9 | 16:20 - 16:40 | 373.2 | | 1.65 | 16.10 | 0.0061 |
| 10 | 16:51 - 17:11 | 378.1 | | 1.58 | 15.67 | 0.0058 |
| 11 | 17:57 - 18:17 | 379.9 | | 1.59 | 15.73 | 0.0058 |
| 12 | | | | | | |

**Relative Accuracy Test Data**
**Reference Method Results (CO)**
**General Electric, 7F.05, Unit #U-00002**

| | |
|---|---|
| Parameter: | Carbon Monoxide |
| Date of Test: | February 25, 2020 |
| Reference Method: | EPA Method 10 |
| RM Analyzer Type: | Infrared Absorption |
| Manufacturer: | |
| Model #: | THERMO 48 series |
| Serial #: | INST-CO-0029 |

| RUN # | RUN TIME | UNIT LOAD | CONCENTRATIONS | | RATES | |
|---|---|---|---|---|---|---|
| | | (MW) | (ppmvd) | (ppmvd@15%$O_2$) | (lb/hr) | (lb/MMBtu) |
| 1 | 11:53 - 12:13 | 346.6 | | 0.11 | 0.58 | |
| 2 | 12:32 - 12:52 | 345.9 | | 0.35 | 1.93 | |
| 3 | 13:07 - 13:27 | 345.4 | | 0.13 | 0.69 | |
| 4 | 13:36 - 13:56 | 345.6 | | 0.51 | 2.76 | |
| 5 | 14:15 - 14:35 | 345.4 | | 0.13 | 0.72 | |
| 6 | 14:46 - 15:06 | 345.5 | | 0.16 | 0.89 | |
| 7 | 15:17 - 15:37 | 345.3 | | 0.14 | 0.74 | |
| 8 | 15:47 - 16:07 | 345.8 | | 0.14 | 0.77 | |
| 9 | 16:20 - 16:40 | 373.2 | | 0.11 | 0.64 | |
| 10 | 16:51 - 17:11 | 378.1 | | 0.11 | 0.68 | |
| 11 | 17:57 - 18:17 | 379.9 | | 0.12 | 0.71 | |
| 12 | | | | | | |

**Relative Accuracy Test Data**
**Reference Method Results ($NH_3$)**
**General Electric, 7F.05, Unit #U-00002**

| | |
|---|---|
| Parameter: | Ammonia |
| Date of Test: | February 25, 2020 |
| Reference Method: | EPA Method 027 |
| RM Analyzer Type: | Fourier Transform infared |
| Manufacturer: | MKS |
| Model #: | 2030 |
| Serial #: | INST-IR-0004 |

| RUN # | RUN TIME | UNIT LOAD | CONCENTRATIONS | | RATES | |
|---|---|---|---|---|---|---|
| | | (MW) | (ppmvd) | (ppmvd@15%$O_2$) | (lb/hr) | (lb/MMBtu) |
| 1 | 11:53 - 12:13 | 346.6 | | 0.66 | 2.20 | |
| 2 | 12:32 - 12:52 | 345.9 | | 0.85 | 2.83 | |
| 3 | 13:07 - 13:27 | 345.4 | | 0.87 | 2.88 | |
| 4 | 13:36 - 13:56 | 345.6 | | 0.68 | 2.26 | |
| 5 | 14:15 - 14:35 | 345.4 | | 0.87 | 2.87 | |
| 6 | 14:46 - 15:06 | 345.5 | | 0.66 | 2.19 | |
| 7 | 15:17 - 15:37 | 345.3 | | 0.66 | 2.17 | |
| 8 | 15:47 - 16:07 | 345.8 | | 0.61 | 2.01 | |
| 9 | 16:20 - 16:40 | 373.2 | | 0.48 | 1.73 | |
| 10 | 16:51 - 17:11 | 378.1 | | 0.60 | 2.20 | |
| 11 | 17:57 - 18:17 | 379.9 | | 1.53 | 5.62 | |
| 12 | | | | | | |

**Relative Accuracy Test Data**
**Reference Method Results ($O_2$)**
**General Electric, 7F.05, Unit #U-00002**

| | |
|---|---|
| Parameter: | Oxygen |
| Date of Test: | February 25, 2020 |
| Reference Method: | EPA Method 3A |
| RM Analyzer Type: | Paramagnetic Cell |
| Manufacturer: Model #: | SERVOMEX 1440 |
| Serial #: | INST-O2-0024 |

| RUN # | RUN TIME | UNIT LOAD (MW) | CONC. (%vd) |
|---|---|---|---|
| 1 | 11:53 - 12:13 | 346.6 | 13.36 |
| 2 | 12:32 - 12:52 | 345.9 | 13.25 |
| 3 | 13:07 - 13:27 | 345.4 | 13.29 |
| 4 | 13:36 - 13:56 | 345.6 | 11.85 |
| 5 | 14:15 - 14:35 | 345.4 | 13.30 |
| 6 | 14:46 - 15:06 | 345.5 | 13.25 |
| 7 | 15:17 - 15:37 | 345.3 | 13.27 |
| 8 | 15:47 - 16:07 | 345.8 | 13.25 |
| 9 | 16:20 - 16:40 | 373.2 | 12.43 |
| 10 | 16:51 - 17:11 | 378.1 | 12.29 |
| 11 | 17:57 - 18:17 | 379.9 | 12.31 |
| 12 | | | |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,317,550 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,317,550 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.38 | in. Hg |
| Relative Humidity | 51 | % |
| Ambient Temperature | 54 | °F |
| Specific Humidity | 0.004604 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 346.6 | megawatts |
| Stack Exhaust Flow (M19) | 58,713,359 | SCFH |

Base Load Load, Run - 1

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/25/20 11:53:28 | 60 | 13.47 | 1.90 | 0.16 | 0.85 | 8.02 |
| 02/25/20 11:53:58 | 90 | 13.46 | 1.92 | 0.17 | 0.85 | 7.89 |
| 02/25/20 11:54:28 | 120 | 13.47 | 1.91 | 0.17 | 0.84 | 7.79 |
| 02/25/20 11:54:58 | 150 | 13.46 | 1.87 | 0.14 | 0.88 | 8.34 |
| 02/25/20 11:55:28 | 180 | 13.46 | 1.87 | 0.16 | 0.85 | 7.96 |
| 02/25/20 11:55:58 | 210 | 13.46 | 1.86 | 0.14 | 0.83 | 7.90 |
| 02/25/20 11:56:28 | 240 | 13.46 | 1.87 | 0.13 | 0.83 | 8.04 |
| 02/25/20 11:56:58 | 270 | 13.45 | 1.88 | 0.13 | 0.84 | 7.80 |
| 02/25/20 11:57:28 | 300 | 13.46 | 1.88 | 0.13 | 0.85 | 8.15 |
| 02/25/20 11:57:58 | 330 | 13.46 | 1.86 | 0.16 | 0.82 | 7.92 |
| 02/25/20 11:58:28 | 360 | 13.46 | 1.85 | 0.13 | 0.81 | 7.97 |
| 02/25/20 11:58:58 | 390 | 13.45 | 1.84 | 0.11 | 0.83 | 8.09 |
| 02/25/20 11:59:28 | 420 | 13.45 | 1.85 | 0.16 | 0.83 | 7.92 |
| 02/25/20 11:59:58 | 450 | 13.45 | 1.84 | 0.15 | 0.83 | 8.37 |
| 02/25/20 12:00:28 | 480 | 13.44 | 1.80 | 0.15 | 0.79 | 7.92 |
| 02/25/20 12:00:58 | 510 | 13.46 | 1.83 | 0.17 | 0.81 | 8.09 |
| 02/25/20 12:01:28 | 540 | 13.46 | 1.83 | 0.17 | 0.82 | 8.13 |
| 02/25/20 12:01:58 | 570 | 13.46 | 1.85 | 0.14 | 0.81 | 8.01 |
| 02/25/20 12:02:28 | 600 | 13.45 | 1.86 | 0.16 | 0.80 | 8.55 |
| 02/25/20 12:02:58 | 630 | 13.44 | 1.82 | 0.17 | 0.78 | 7.97 |
| 02/25/20 12:03:28 | 660 | 13.44 | 1.84 | 0.16 | 0.81 | 8.22 |
| 02/25/20 12:03:58 | 690 | 13.40 | 1.85 | 0.15 | 0.79 | 8.08 |
| 02/25/20 12:04:28 | 720 | 13.36 | 1.86 | 0.15 | 0.81 | 8.40 |
| 02/25/20 12:04:58 | 750 | 13.35 | 1.87 | 0.14 | 0.77 | 8.30 |
| 02/25/20 12:05:28 | 780 | 13.35 | 1.86 | 0.12 | 0.73 | 8.47 |
| 02/25/20 12:05:58 | 810 | 13.33 | 1.87 | 0.15 | 0.76 | 10.24 |
| 02/25/20 12:06:28 | 840 | 13.34 | 1.86 | 0.11 | 0.70 | 8.71 |
| 02/25/20 12:06:58 | 870 | 13.34 | 1.86 | 0.14 | 0.71 | 8.69 |
| 02/25/20 12:07:28 | 900 | 13.33 | 1.86 | 0.11 | 0.71 | 8.47 |
| 02/25/20 12:07:58 | 930 | 13.33 | 1.84 | 0.13 | 0.72 | 8.42 |
| 02/25/20 12:08:28 | 960 | 13.34 | 1.82 | 0.13 | 0.73 | 8.35 |
| 02/25/20 12:08:58 | 990 | 13.34 | 1.80 | 0.13 | 0.73 | 8.46 |
| 02/25/20 12:09:28 | 1020 | 13.34 | 1.82 | 0.13 | 0.72 | 8.70 |
| 02/25/20 12:09:58 | 1050 | 13.33 | 1.80 | 0.11 | 0.70 | 8.40 |
| 02/25/20 12:10:28 | 1080 | 13.34 | 1.83 | 0.13 | 0.71 | 8.48 |
| 02/25/20 12:10:58 | 1110 | 13.34 | 1.86 | 0.11 | 0.72 | 8.59 |
| 02/25/20 12:11:28 | 1140 | 13.34 | 1.86 | 0.14 | 0.72 | 8.38 |
| 02/25/20 12:11:58 | 1170 | 13.33 | 1.88 | 0.14 | 0.71 | 8.34 |
| 02/25/20 12:12:28 | 1200 | 13.33 | 1.85 | 0.18 | 0.73 | 8.64 |
| 02/25/20 12:12:58 | 1230 | 13.34 | 1.89 | 0.12 | 0.69 | 8.49 |
| 02/25/20 12:13:28 | 1260 | 13.34 | 1.87 | 0.15 | 0.71 | 8.39 |
| 02/25/20 12:13:58 | 1290 | 13.34 | 1.86 | 0.12 | 0.71 | 8.32 |
| **RAW AVERAGE** | | **13.40** | **1.85** | **0.14** | **0.78** | **8.30** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0024 | INST-NX-0031 | INST-CO-0029 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.03 | 0.02 | 0.05 | |
| | **Final Zero** | -0.05 | -0.53 | -0.04 | |
| | **Avg. Zero** | -0.04 | -0.26 | 0.01 | |
| | **Initial UpScale** | 11.99 | 4.93 | 5.13 | |
| | **Final UpScale** | 12.02 | 4.83 | 5.14 | |
| | **Avg. UpScale** | 12.01 | 4.88 | 5.14 | |
| **Upscale Cal Gas** | | 11.97 | 4.91 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 13.36 | 2.02 | 0.14 | 0.85 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.58 | 0.11 | 0.66 |
| Emission Rate (lb/hr) | N/A | 14.14 | 0.58 | 2.20 |
| Emission Rate (lb/MMBtu) | N/A | 0.0058 | 0.000 | 0.001 |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,310,200 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,310,200 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.36 | in. Hg |
| Relative Humidity | 51 | % |
| Ambient Temperature | 55 | °F |
| Specific Humidity | 0.004760 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 345.9 | megawatts |
| Stack Exhaust Flow (M19) | 57,751,340 | SCFH |

Base Load Load, Run - 2

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/25/20 12:32:28 | 2400 | 13.33 | 1.85 | 0.11 | 1.23 | 8.19 |
| 02/25/20 12:32:58 | 2430 | 13.33 | 1.85 | 0.13 | 1.18 | 8.16 |
| 02/25/20 12:33:28 | 2460 | 13.33 | 1.81 | 0.10 | 1.17 | 8.11 |
| 02/25/20 12:33:58 | 2490 | 13.33 | 1.80 | 0.13 | 1.18 | 8.09 |
| 02/25/20 12:34:28 | 2520 | 13.33 | 1.79 | 0.16 | 1.17 | 8.12 |
| 02/25/20 12:34:58 | 2550 | 13.34 | 1.78 | 0.12 | 1.17 | 8.15 |
| 02/25/20 12:35:28 | 2580 | 13.33 | 1.82 | 0.14 | 1.15 | 8.19 |
| 02/25/20 12:35:58 | 2610 | 13.33 | 1.81 | 0.13 | 1.15 | 8.18 |
| 02/25/20 12:36:28 | 2640 | 13.33 | 1.82 | 0.13 | 1.19 | 8.33 |
| 02/25/20 12:36:58 | 2670 | 13.33 | 1.82 | 0.12 | 1.22 | 8.37 |
| 02/25/20 12:37:28 | 2700 | 13.33 | 1.81 | 0.13 | 1.21 | 8.35 |
| 02/25/20 12:37:58 | 2730 | 13.33 | 1.77 | 0.12 | 1.15 | 8.33 |
| 02/25/20 12:38:28 | 2760 | 13.33 | 1.80 | 0.12 | 1.14 | 8.31 |
| 02/25/20 12:38:58 | 2790 | 13.34 | 1.79 | 0.11 | 1.15 | 8.31 |
| 02/25/20 12:39:28 | 2820 | 13.34 | 1.81 | 0.12 | 1.12 | 8.33 |
| 02/25/20 12:39:58 | 2850 | 13.33 | 1.81 | 0.13 | 1.13 | 8.32 |
| 02/25/20 12:40:28 | 2880 | 13.34 | 1.81 | 0.11 | 1.09 | 8.33 |
| 02/25/20 12:40:58 | 2910 | 13.34 | 1.81 | 0.11 | 1.02 | 8.36 |
| 02/25/20 12:41:28 | 2940 | 13.33 | 1.82 | 0.11 | 1.05 | 8.65 |
| 02/25/20 12:41:58 | 2970 | 13.33 | 1.87 | 0.12 | 1.03 | 8.57 |
| 02/25/20 12:42:28 | 3000 | 13.33 | 1.87 | 0.14 | 1.03 | 8.48 |
| 02/25/20 12:42:58 | 3030 | 13.33 | 1.88 | 0.15 | 1.03 | 8.44 |
| 02/25/20 12:43:28 | 3060 | 13.33 | 1.88 | 0.16 | 1.01 | 8.39 |
| 02/25/20 12:43:58 | 3090 | 13.33 | 1.85 | 0.13 | 0.97 | 8.38 |
| 02/25/20 12:44:28 | 3120 | 13.33 | 1.83 | 0.14 | 0.95 | 8.36 |
| 02/25/20 12:44:58 | 3150 | 13.33 | 1.85 | 0.15 | 0.96 | 8.32 |
| 02/25/20 12:45:28 | 3180 | 13.31 | 1.88 | 0.14 | 0.95 | 8.28 |
| 02/25/20 12:45:58 | 3210 | 13.28 | 1.90 | 0.12 | 0.99 | 8.26 |
| 02/25/20 12:46:28 | 3240 | 13.25 | 1.87 | 0.12 | 0.95 | 8.22 |
| 02/25/20 12:46:58 | 3270 | 13.24 | 1.85 | 0.13 | 0.90 | 8.28 |
| 02/25/20 12:47:28 | 3300 | 13.22 | 1.77 | 0.11 | 0.88 | 8.31 |
| 02/25/20 12:47:58 | 3330 | 13.22 | 1.68 | 0.11 | 0.83 | 8.33 |
| 02/25/20 12:48:28 | 3360 | 13.22 | 1.63 | 0.11 | 0.82 | 8.34 |
| 02/25/20 12:48:58 | 3390 | 13.21 | 1.56 | 0.13 | 0.79 | 8.39 |
| 02/25/20 12:49:28 | 3420 | 13.22 | 1.48 | 0.13 | 0.77 | 8.44 |
| 02/25/20 12:49:58 | 3450 | 13.25 | 1.45 | 0.16 | 0.82 | 8.45 |
| 02/25/20 12:50:28 | 3480 | 13.29 | 1.41 | 0.12 | 0.80 | 8.42 |
| 02/25/20 12:50:58 | 3510 | 13.31 | 1.37 | 0.11 | 0.77 | 8.33 |
| 02/25/20 12:51:28 | 3540 | 13.33 | 1.33 | 0.11 | 0.87 | 8.23 |
| 02/25/20 12:51:58 | 3570 | 13.35 | 1.31 | 0.14 | 0.85 | 8.23 |
| 02/25/20 12:52:28 | 3600 | 13.36 | 1.27 | 0.13 | 0.86 | 8.20 |
| 02/25/20 12:52:58 | 3630 | 13.37 | 1.26 | 0.12 | 0.91 | 8.18 |
| **RAW AVERAGE** | | **13.31** | **1.72** | **0.43** | **1.01** | **8.31** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0024 | INST-NX-0031 | INST-CO-0029 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.05 | -0.53 | -0.04 | |
| | **Final Zero** | 0.00 | -0.35 | -0.04 | |
| | **Avg. Zero** | -0.03 | -0.44 | -0.04 | |
| | **Initial UpScale** | 12.02 | 4.83 | 5.14 | |
| | **Final UpScale** | 12.02 | 4.94 | 5.09 | |
| | **Avg. UpScale** | 12.02 | 4.89 | 5.12 | |
| **Upscale Cal Gas** | | 11.97 | 4.91 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 13.25 | 2.00 | 0.46 | 1.11 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.54 | 0.35 | 0.85 |
| Emission Rate (lb/hr) | N/A | 13.77 | 1.93 | 2.83 |
| Emission Rate (lb/MMBtu) | N/A | 0.0057 | 0.001 | 0.001 |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,308,160 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,308,160 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.34 | in. Hg |
| Relative Humidity | 49 | % |
| Ambient Temperature | 55 | °F |
| Specific Humidity | 0.004540 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 345.4 | megawatts |
| Stack Exhaust Flow (M19) | 57,955,701 | SCFH |

Base Load Load, Run - 3

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/25/20 13:07:28 | 4500 | 13.27 | 1.90 | 0.13 | 1.17 | 7.19 |
| 02/25/20 13:07:58 | 4530 | 13.28 | 1.89 | 0.15 | 1.07 | 7.22 |
| 02/25/20 13:08:28 | 4560 | 13.29 | 1.86 | 0.13 | 1.03 | 7.28 |
| 02/25/20 13:08:58 | 4590 | 13.30 | 1.88 | 0.18 | 1.08 | 7.35 |
| 02/25/20 13:09:28 | 4620 | 13.30 | 1.88 | 0.17 | 1.06 | 7.40 |
| 02/25/20 13:09:58 | 4650 | 13.32 | 1.88 | 0.16 | 1.06 | 7.43 |
| 02/25/20 13:10:28 | 4680 | 13.33 | 1.87 | 0.15 | 1.06 | 7.50 |
| 02/25/20 13:10:58 | 4710 | 13.31 | 1.86 | 0.12 | 1.05 | 7.52 |
| 02/25/20 13:11:28 | 4740 | 13.32 | 1.86 | 0.13 | 1.07 | 8.62 |
| 02/25/20 13:11:58 | 4770 | 13.33 | 1.87 | 0.10 | 1.03 | 8.32 |
| 02/25/20 13:12:28 | 4800 | 13.33 | 1.89 | 0.12 | 1.09 | 9.15 |
| 02/25/20 13:12:58 | 4830 | 13.33 | 1.87 | 0.12 | 1.03 | 9.36 |
| 02/25/20 13:13:28 | 4860 | 13.34 | 1.86 | 0.12 | 1.02 | 8.82 |
| 02/25/20 13:13:58 | 4890 | 13.34 | 1.88 | 0.12 | 1.00 | 8.74 |
| 02/25/20 13:14:28 | 4920 | 13.34 | 1.87 | 0.14 | 0.98 | 8.35 |
| 02/25/20 13:14:58 | 4950 | 13.34 | 1.86 | 0.11 | 1.03 | 8.94 |
| 02/25/20 13:15:28 | 4980 | 13.34 | 1.82 | 0.13 | 1.00 | 8.18 |
| 02/25/20 13:15:58 | 5010 | 13.34 | 1.85 | 0.14 | 0.98 | 8.27 |
| 02/25/20 13:16:28 | 5040 | 13.35 | 1.82 | 0.12 | 0.99 | 8.23 |
| 02/25/20 13:16:58 | 5070 | 13.34 | 1.82 | 0.13 | 0.97 | 7.99 |
| 02/25/20 13:17:28 | 5100 | 13.36 | 1.82 | 0.11 | 1.02 | 8.43 |
| 02/25/20 13:17:58 | 5130 | 13.35 | 1.83 | 0.12 | 0.99 | 8.20 |
| 02/25/20 13:18:28 | 5160 | 13.35 | 1.82 | 0.14 | 1.01 | 8.29 |
| 02/25/20 13:18:58 | 5190 | 13.35 | 1.78 | 0.13 | 1.02 | 8.60 |
| 02/25/20 13:19:28 | 5220 | 13.35 | 1.82 | 0.12 | 0.99 | 8.11 |
| 02/25/20 13:19:58 | 5250 | 13.35 | 1.80 | 0.11 | 1.02 | 8.31 |
| 02/25/20 13:20:28 | 5280 | 13.35 | 1.75 | 0.11 | 1.00 | 8.16 |
| 02/25/20 13:20:58 | 5310 | 13.34 | 1.75 | 0.12 | 1.01 | 7.96 |
| 02/25/20 13:21:28 | 5340 | 13.35 | 1.75 | 0.11 | 1.07 | 8.60 |
| 02/25/20 13:21:58 | 5370 | 13.34 | 1.77 | 0.13 | 0.99 | 8.13 |
| 02/25/20 13:22:28 | 5400 | 13.35 | 1.78 | 0.15 | 1.02 | 7.96 |
| 02/25/20 13:22:58 | 5430 | 13.35 | 1.79 | 0.11 | 1.02 | 8.38 |
| 02/25/20 13:23:28 | 5460 | 13.34 | 1.85 | 0.13 | 1.01 | 8.02 |
| 02/25/20 13:23:58 | 5490 | 13.35 | 1.89 | 0.10 | 1.01 | 7.95 |
| 02/25/20 13:24:28 | 5520 | 13.35 | 1.94 | 0.13 | 1.07 | 8.65 |
| 02/25/20 13:24:58 | 5550 | 13.35 | 2.00 | 0.11 | 1.02 | 8.06 |
| 02/25/20 13:25:28 | 5580 | 13.35 | 2.10 | 0.13 | 1.06 | 8.09 |
| 02/25/20 13:25:58 | 5610 | 13.34 | 2.13 | 0.12 | 1.04 | 8.34 |
| 02/25/20 13:26:28 | 5640 | 13.35 | 2.23 | 0.12 | 1.08 | 7.96 |
| 02/25/20 13:26:58 | 5670 | 13.36 | 2.29 | 0.12 | 1.07 | 8.15 |
| 02/25/20 13:27:28 | 5700 | 13.35 | 2.35 | 0.08 | 1.07 | 8.38 |
| 02/25/20 13:27:58 | 5730 | 13.35 | 2.40 | 0.13 | 1.03 | 8.00 |
| **RAW AVERAGE** | | **13.34** | **1.90** | **0.13** | **1.03** | **8.16** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0024 | INST-NX-0031 | INST-CO-0029 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | 0.00 | -0.35 | -0.04 | |
| | **Final Zero** | -0.04 | -0.01 | -0.04 | |
| | **Avg. Zero** | -0.02 | -0.18 | -0.04 | |
| | **Initial UpScale** | 12.02 | 4.94 | 5.09 | |
| | **Final UpScale** | 12.01 | 4.92 | 5.08 | |
| | **Avg. UpScale** | 12.01 | 4.93 | 5.09 | |
| **Upscale Cal Gas** | | 11.97 | 4.91 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 13.29 | 2.00 | 0.16 | 1.13 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.55 | 0.13 | 0.87 |
| Emission Rate (lb/hr) | N/A | 13.85 | 0.69 | 2.88 |
| Emission Rate (lb/MMBtu) | N/A | 0.0057 | 0.000 | 0.001 |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,308,570 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,308,570 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.33 | in. Hg |
| Relative Humidity | 48 | % |
| Ambient Temperature | 56 | °F |
| Specific Humidity | 0.004504 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 345.6 | megawatts |
| Stack Exhaust Flow (M19) | 48,756,000 | SCFH |

Base Load Load, Run - 4

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/25/20 13:36:28 | 6240 | 13.30 | 2.02 | 0.12 | 1.11 | 7.00 |
| 02/25/20 13:36:58 | 6270 | 13.32 | 2.01 | 0.14 | 1.05 | 7.11 |
| 02/25/20 13:37:28 | 6300 | 13.32 | 2.01 | 0.15 | 1.00 | 7.17 |
| 02/25/20 13:37:58 | 6330 | 13.34 | 1.98 | 0.16 | 0.98 | 7.20 |
| 02/25/20 13:38:28 | 6360 | 13.34 | 1.99 | 0.13 | 1.01 | 7.24 |
| 02/25/20 13:38:58 | 6390 | 13.33 | 1.97 | 0.12 | 0.97 | 7.31 |
| 02/25/20 13:39:28 | 6420 | 13.35 | 2.02 | 0.12 | 1.03 | 8.43 |
| 02/25/20 13:39:58 | 6450 | 13.34 | 2.01 | 0.13 | 0.99 | 8.42 |
| 02/25/20 13:40:28 | 6480 | 13.35 | 2.02 | 0.13 | 0.99 | 8.10 |
| 02/25/20 13:40:58 | 6510 | 13.36 | 2.05 | 0.10 | 1.02 | 10.02 |
| 02/25/20 13:41:28 | 6540 | 13.35 | 2.08 | 0.11 | 0.96 | 8.79 |
| 02/25/20 13:41:58 | 6570 | 13.35 | 2.13 | 0.13 | 0.96 | 8.58 |
| 02/25/20 13:42:28 | 6600 | 13.36 | 2.18 | 0.14 | 0.97 | 8.43 |
| 02/25/20 13:42:58 | 6630 | 13.36 | 2.23 | 0.12 | 0.94 | 8.21 |
| 02/25/20 13:43:28 | 6660 | 13.36 | 2.25 | 0.12 | 0.98 | 8.14 |
| 02/25/20 13:43:58 | 6690 | 13.36 | 2.28 | 0.13 | 0.97 | 8.11 |
| 02/25/20 13:44:28 | 6720 | 13.35 | 2.31 | 0.11 | 0.98 | 8.09 |
| 02/25/20 13:44:58 | 6750 | 13.36 | 2.36 | 0.12 | 0.96 | 8.08 |
| 02/25/20 13:45:28 | 6780 | 13.37 | 2.37 | 0.10 | 0.93 | 8.08 |
| 02/25/20 13:45:58 | 6810 | 13.36 | 2.37 | 0.12 | 0.97 | 8.08 |
| 02/25/20 13:46:28 | 6840 | 13.36 | 2.38 | 0.13 | 0.99 | 8.07 |
| 02/25/20 13:46:58 | 6870 | 13.37 | 2.36 | 0.12 | 0.94 | 8.08 |
| 02/25/20 13:47:28 | 6900 | 13.37 | 2.37 | 0.11 | 0.96 | 8.06 |
| 02/25/20 13:47:58 | 6930 | 13.37 | 2.33 | 0.10 | 0.96 | 8.05 |
| 02/25/20 13:48:28 | 6960 | 13.37 | 2.31 | 0.13 | 0.98 | 8.05 |
| 02/25/20 13:48:58 | 6990 | 13.36 | 2.26 | 0.08 | 0.94 | 8.03 |
| 02/25/20 13:49:28 | 7020 | 13.37 | 2.21 | 0.10 | 0.91 | 8.03 |
| 02/25/20 13:49:58 | 7050 | 13.36 | 2.19 | 0.10 | 0.90 | 8.02 |
| 02/25/20 13:50:28 | 7080 | 13.37 | 2.18 | 0.12 | 0.91 | 8.03 |
| 02/25/20 13:50:58 | 7110 | 13.38 | 2.08 | 0.09 | 0.93 | 8.00 |
| 02/25/20 13:51:28 | 7140 | 13.38 | 2.06 | 0.12 | 0.92 | 7.98 |
| 02/25/20 13:51:58 | 7170 | 13.39 | 2.06 | 0.10 | 0.94 | 7.98 |
| 02/25/20 13:52:28 | 7200 | 13.39 | 2.06 | 0.12 | 0.92 | 8.01 |
| 02/25/20 13:52:58 | 7230 | 13.38 | 2.03 | 0.11 | 0.94 | 8.05 |
| 02/25/20 13:53:28 | 7260 | 13.38 | 2.02 | 0.12 | 0.92 | 8.08 |
| 02/25/20 13:53:58 | 7290 | 13.39 | 2.01 | 0.10 | 0.93 | 8.16 |
| 02/25/20 13:54:28 | 7320 | 13.39 | 2.03 | 0.10 | 0.93 | 8.16 |
| 02/25/20 13:54:58 | 7350 | 13.39 | 2.07 | 0.11 | 0.93 | 8.13 |
| 02/25/20 13:55:28 | 7380 | 13.38 | 2.09 | 0.10 | 0.96 | 8.09 |
| 02/25/20 13:55:58 | 7410 | 13.39 | 2.13 | 0.12 | 0.95 | 8.06 |
| 02/25/20 13:56:28 | 7440 | 13.38 | 2.18 | 0.12 | 0.96 | 8.05 |
| 02/25/20 13:56:58 | 7470 | 13.38 | 2.26 | 0.12 | 1.00 | 8.02 |
| **RAW AVERAGE** | | **11.91** | **2.44** | **0.74** | **0.96** | **8.04** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0024 | INST-NX-0031 | INST-CO-0029 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.04 | -0.01 | -0.04 | |
| | **Final Zero** | -0.02 | 0.03 | -0.05 | |
| | **Avg. Zero** | -0.03 | 0.01 | -0.05 | |
| | **Initial UpScale** | 12.01 | 4.92 | 5.08 | |
| | **Final UpScale** | 12.05 | 4.96 | 5.08 | |
| | **Avg. UpScale** | 12.03 | 4.94 | 5.08 | |
| **Upscale Cal Gas** | | 11.97 | 4.91 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 11.85 | 2.42 | 0.78 | 1.05 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.58 | 0.51 | 0.68 |
| Emission Rate (lb/hr) | N/A | 14.11 | 2.76 | 2.26 |
| Emission Rate (lb/MMBtu) | N/A | 0.0058 | 0.001 | 0.001 |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,306,530 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,306,530 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.30 | in. Hg |
| Relative Humidity | 45 | % |
| Ambient Temperature | 59 | °F |
| Specific Humidity | 0.004816 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 345.4 | megawatts |
| Stack Exhaust Flow (M19) | 57,994,954 | SCFH |

Base Load Load, Run - 5

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/25/20 14:15:28 | 8580 | 13.40 | 2.24 | 0.10 | 1.11 | 7.92 |
| 02/25/20 14:15:58 | 8610 | 13.41 | 2.26 | 0.13 | 1.11 | 7.90 |
| 02/25/20 14:16:28 | 8640 | 13.40 | 2.27 | 0.12 | 1.13 | 7.94 |
| 02/25/20 14:16:58 | 8670 | 13.42 | 2.33 | 0.10 | 1.09 | 7.95 |
| 02/25/20 14:17:28 | 8700 | 13.41 | 2.29 | 0.13 | 1.09 | 7.95 |
| 02/25/20 14:17:58 | 8730 | 13.40 | 2.26 | 0.12 | 1.08 | 7.94 |
| 02/25/20 14:18:28 | 8760 | 13.40 | 2.26 | 0.09 | 1.07 | 7.95 |
| 02/25/20 14:18:58 | 8790 | 13.40 | 2.27 | 0.13 | 1.06 | 7.96 |
| 02/25/20 14:19:28 | 8820 | 13.40 | 2.26 | 0.11 | 1.06 | 7.95 |
| 02/25/20 14:19:58 | 8850 | 13.39 | 2.22 | 0.13 | 1.04 | 7.94 |
| 02/25/20 14:20:28 | 8880 | 13.39 | 2.20 | 0.10 | 1.02 | 7.94 |
| 02/25/20 14:20:58 | 8910 | 13.39 | 2.15 | 0.11 | 1.02 | 7.96 |
| 02/25/20 14:21:28 | 8940 | 13.39 | 2.14 | 0.12 | 1.04 | 7.88 |
| 02/25/20 14:21:58 | 8970 | 13.39 | 2.05 | 0.12 | 1.06 | 7.97 |
| 02/25/20 14:22:28 | 9000 | 13.39 | 1.94 | 0.10 | 1.11 | 9.26 |
| 02/25/20 14:22:58 | 9030 | 13.39 | 1.84 | 0.11 | 1.04 | 8.64 |
| 02/25/20 14:23:28 | 9060 | 13.39 | 1.77 | 0.10 | 0.99 | 8.17 |
| 02/25/20 14:23:58 | 9090 | 13.38 | 1.73 | 0.12 | 1.03 | 8.13 |
| 02/25/20 14:24:28 | 9120 | 13.38 | 1.71 | 0.10 | 1.05 | 8.10 |
| 02/25/20 14:24:58 | 9150 | 13.39 | 1.67 | 0.11 | 1.02 | 8.08 |
| 02/25/20 14:25:28 | 9180 | 13.39 | 1.67 | 0.08 | 0.98 | 8.10 |
| 02/25/20 14:25:58 | 9210 | 13.38 | 1.65 | 0.10 | 0.99 | 8.12 |
| 02/25/20 14:26:28 | 9240 | 13.39 | 1.65 | 0.11 | 0.99 | 8.11 |
| 02/25/20 14:26:58 | 9270 | 13.39 | 1.65 | 0.10 | 0.99 | 8.09 |
| 02/25/20 14:27:28 | 9300 | 13.39 | 1.71 | 0.10 | 1.00 | 8.11 |
| 02/25/20 14:27:58 | 9330 | 13.39 | 1.71 | 0.10 | 1.08 | 9.45 |
| 02/25/20 14:28:28 | 9360 | 13.39 | 1.71 | 0.11 | 0.94 | 8.50 |
| 02/25/20 14:28:58 | 9390 | 13.39 | 1.70 | 0.09 | 0.99 | 8.26 |
| 02/25/20 14:29:28 | 9420 | 13.39 | 1.74 | 0.12 | 0.98 | 8.23 |
| 02/25/20 14:29:58 | 9450 | 13.38 | 1.78 | 0.11 | 1.00 | 8.19 |
| 02/25/20 14:30:28 | 9480 | 13.38 | 1.82 | 0.13 | 0.98 | 8.20 |
| 02/25/20 14:30:58 | 9510 | 13.38 | 1.92 | 0.08 | 0.95 | 8.20 |
| 02/25/20 14:31:28 | 9540 | 13.38 | 1.91 | 0.12 | 1.02 | 8.19 |
| 02/25/20 14:31:58 | 9570 | 13.38 | 1.97 | 0.12 | 1.00 | 8.16 |
| 02/25/20 14:32:28 | 9600 | 13.37 | 2.01 | 0.12 | 1.02 | 8.13 |
| 02/25/20 14:32:58 | 9630 | 13.38 | 2.02 | 0.11 | 0.94 | 8.13 |
| 02/25/20 14:33:28 | 9660 | 13.39 | 2.07 | 0.08 | 1.03 | 8.13 |
| 02/25/20 14:33:58 | 9690 | 13.39 | 2.09 | 0.12 | 1.02 | 8.20 |
| 02/25/20 14:34:28 | 9720 | 13.38 | 2.12 | 0.08 | 0.99 | 8.23 |
| 02/25/20 14:34:58 | 9750 | 13.38 | 2.12 | 0.10 | 1.03 | 8.27 |
| 02/25/20 14:35:28 | 9780 | 13.38 | 2.11 | 0.08 | 1.01 | 8.26 |
| 02/25/20 14:35:58 | 9810 | 13.38 | 2.11 | 0.11 | 1.00 | 8.25 |
| **RAW AVERAGE** | | **13.39** | **1.98** | **0.11** | **1.03** | **8.17** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0024 | INST-NX-0031 | INST-CO-0029 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.02 | 0.03 | -0.05 | |
| | **Final Zero** | -0.02 | 0.06 | -0.08 | |
| | **Avg. Zero** | -0.02 | 0.05 | -0.07 | |
| | **Initial UpScale** | 12.05 | 4.96 | 5.08 | |
| | **Final UpScale** | 12.05 | 4.94 | 5.04 | |
| | **Avg. UpScale** | 12.05 | 4.95 | 5.06 | |
| **Upscale Cal Gas** | | 11.97 | 4.91 | 5.09 | |

| **EMISSIONS DATA** | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 13.30 | 1.94 | 0.17 | 1.12 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.50 | 0.13 | 0.87 |
| **Emission Rate (lb/hr)** | N/A | 13.41 | 0.72 | 2.87 |
| **Emission Rate (lb/MMBtu)** | N/A | 0.0055 | 0.000 | 0.001 |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,306,940 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,306,940 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.33 | in. Hg |
| Relative Humidity | 48 | % |
| Ambient Temperature | 56 | °F |
| Specific Humidity | 0.004585 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 345.5 | megawatts |
| Stack Exhaust Flow (M19) | 57,620,510 | SCFH |

Base Load Load, Run - 6

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/25/20 14:46:28 | 10440 | 13.30 | 2.13 | 0.10 | 0.85 | 7.13 |
| 02/25/20 14:46:58 | 10470 | 13.30 | 2.03 | 0.12 | 0.83 | 7.15 |
| 02/25/20 14:47:28 | 10500 | 13.30 | 1.98 | 0.11 | 0.83 | 7.25 |
| 02/25/20 14:47:58 | 10530 | 13.31 | 1.93 | 0.12 | 0.82 | 7.35 |
| 02/25/20 14:48:28 | 10560 | 13.31 | 1.91 | 0.10 | 0.80 | 7.40 |
| 02/25/20 14:48:58 | 10590 | 13.32 | 1.87 | 0.08 | 0.80 | 7.83 |
| 02/25/20 14:49:28 | 10620 | 13.32 | 1.85 | 0.10 | 0.81 | 8.04 |
| 02/25/20 14:49:58 | 10650 | 13.33 | 1.85 | 0.10 | 0.78 | 7.85 |
| 02/25/20 14:50:28 | 10680 | 13.34 | 1.89 | 0.11 | 0.82 | 8.73 |
| 02/25/20 14:50:58 | 10710 | 13.34 | 1.91 | 0.07 | 0.83 | 9.89 |
| 02/25/20 14:51:28 | 10740 | 13.32 | 1.86 | 0.09 | 0.78 | 8.84 |
| 02/25/20 14:51:58 | 10770 | 13.31 | 1.87 | 0.07 | 0.82 | 8.69 |
| 02/25/20 14:52:28 | 10800 | 13.31 | 1.88 | 0.09 | 0.74 | 8.51 |
| 02/25/20 14:52:58 | 10830 | 13.32 | 1.87 | 0.10 | 0.74 | 8.25 |
| 02/25/20 14:53:28 | 10860 | 13.33 | 1.86 | 0.08 | 0.69 | 8.19 |
| 02/25/20 14:53:58 | 10890 | 13.32 | 2.09 | 0.09 | 0.74 | 8.39 |
| 02/25/20 14:54:28 | 10920 | 13.32 | 1.85 | 0.08 | 0.75 | 8.42 |
| 02/25/20 14:54:58 | 10950 | 13.32 | 2.21 | 0.11 | 0.74 | 8.33 |
| 02/25/20 14:55:28 | 10980 | 13.32 | 1.87 | 0.09 | 0.75 | 8.25 |
| 02/25/20 14:55:58 | 11010 | 13.31 | 1.87 | 0.23 | 0.75 | 8.18 |
| 02/25/20 14:56:28 | 11040 | 13.33 | 1.87 | 0.09 | 0.78 | 8.50 |
| 02/25/20 14:56:58 | 11070 | 13.32 | 1.86 | 0.09 | 0.75 | 8.32 |
| 02/25/20 14:57:28 | 11100 | 13.33 | 1.86 | 0.09 | 0.73 | 8.23 |
| 02/25/20 14:57:58 | 11130 | 13.32 | 1.77 | 0.10 | 0.78 | 8.34 |
| 02/25/20 14:58:28 | 11160 | 13.33 | 1.71 | 0.10 | 0.78 | 9.06 |
| 02/25/20 14:58:58 | 11190 | 13.33 | 1.71 | 0.10 | 0.81 | 10.71 |
| 02/25/20 14:59:28 | 11220 | 13.33 | 1.72 | 0.08 | 0.76 | 8.66 |
| 02/25/20 14:59:58 | 11250 | 13.33 | 1.70 | 0.08 | 0.75 | 8.53 |
| 02/25/20 15:00:28 | 11280 | 13.33 | 1.70 | 0.10 | 0.77 | 8.41 |
| 02/25/20 15:00:58 | 11310 | 13.33 | 1.70 | 0.07 | 0.78 | 8.35 |
| 02/25/20 15:01:28 | 11340 | 13.33 | 1.70 | 0.12 | 0.78 | 8.28 |
| 02/25/20 15:01:58 | 11370 | 13.33 | 1.74 | 0.08 | 0.82 | 8.50 |
| 02/25/20 15:02:28 | 11400 | 13.33 | 1.75 | 0.08 | 0.82 | 8.42 |
| 02/25/20 15:02:58 | 11430 | 13.32 | 1.81 | 0.12 | 0.82 | 8.31 |
| 02/25/20 15:03:28 | 11460 | 13.32 | 1.84 | 0.10 | 0.81 | 8.29 |
| 02/25/20 15:03:58 | 11490 | 13.33 | 1.84 | 0.80 | 0.79 | 8.23 |
| 02/25/20 15:04:28 | 11520 | 13.33 | 2.01 | 0.22 | 0.76 | 8.18 |
| 02/25/20 15:04:58 | 11550 | 13.33 | 1.90 | 0.25 | 0.80 | 8.21 |
| 02/25/20 15:05:28 | 11580 | 13.33 | 1.96 | 0.08 | 0.79 | 8.72 |
| 02/25/20 15:05:58 | 11610 | 13.33 | 1.91 | 0.08 | 0.81 | 8.45 |
| 02/25/20 15:06:28 | 11640 | 13.32 | 1.97 | 0.13 | 0.91 | 10.39 |
| 02/25/20 15:06:58 | 11670 | 13.33 | 1.95 | 0.08 | 0.90 | 8.51 |
| **RAW AVERAGE** | | **13.32** | **1.87** | **0.12** | **0.79** | **8.39** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0024 | INST-NX-0031 | INST-CO-0029 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.02 | 0.06 | -0.08 | |
| | **Final Zero** | -0.06 | 0.02 | -0.11 | |
| | **Avg. Zero** | -0.04 | 0.04 | -0.10 | |
| | **Initial UpScale** | 12.05 | 4.94 | 5.04 | |
| | **Final UpScale** | 12.02 | 4.92 | 5.07 | |
| | **Avg. UpScale** | 12.04 | 4.93 | 5.06 | |
| **Upscale Cal Gas** | | 11.97 | 4.91 | 5.09 | |

| **EMISSIONS DATA** | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 13.25 | 1.84 | 0.21 | 0.86 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.42 | 0.16 | 0.66 |
| **Emission Rate (lb/hr)** | N/A | 12.65 | 0.89 | 2.19 |
| **Emission Rate (lb/MMBtu)** | N/A | 0.0052 | 0.000 | 0.001 |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,305,710 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,305,710 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.33 | in. Hg |
| Relative Humidity | 50 | % |
| Ambient Temperature | 56 | °F |
| Specific Humidity | 0.004805 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 345.3 | megawatts |
| Stack Exhaust Flow (M19) | 57,735,796 | SCFH |

Base Load Load, Run - 7

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/25/20 15:17:28 | 12300 | 13.28 | 2.07 | 0.10 | 0.85 | 7.57 |
| 02/25/20 15:17:58 | 12330 | 13.29 | 2.05 | 0.11 | 0.86 | 7.57 |
| 02/25/20 15:18:28 | 12360 | 13.29 | 2.07 | 0.10 | 0.84 | 7.56 |
| 02/25/20 15:18:58 | 12390 | 13.29 | 2.06 | 0.11 | 0.81 | 7.56 |
| 02/25/20 15:19:28 | 12420 | 13.30 | 2.07 | 0.09 | 0.82 | 7.54 |
| 02/25/20 15:19:58 | 12450 | 13.32 | 2.06 | 0.07 | 0.79 | 7.51 |
| 02/25/20 15:20:28 | 12480 | 13.32 | 2.07 | 0.09 | 0.85 | 8.68 |
| 02/25/20 15:20:58 | 12510 | 13.33 | 2.07 | 0.10 | 0.93 | 10.81 |
| 02/25/20 15:21:28 | 12540 | 13.32 | 2.12 | 0.09 | 0.80 | 9.36 |
| 02/25/20 15:21:58 | 12570 | 13.32 | 2.12 | 0.10 | 0.73 | 8.61 |
| 02/25/20 15:22:28 | 12600 | 13.32 | 2.08 | 0.11 | 0.79 | 8.34 |
| 02/25/20 15:22:58 | 12630 | 13.32 | 2.05 | 0.06 | 0.81 | 8.15 |
| 02/25/20 15:23:28 | 12660 | 13.32 | 2.03 | 0.08 | 0.78 | 8.11 |
| 02/25/20 15:23:58 | 12690 | 13.32 | 2.02 | 0.08 | 0.80 | 8.08 |
| 02/25/20 15:24:28 | 12720 | 13.33 | 2.03 | 0.09 | 0.81 | 8.07 |
| 02/25/20 15:24:58 | 12750 | 13.32 | 2.04 | 0.08 | 0.84 | 8.05 |
| 02/25/20 15:25:28 | 12780 | 13.32 | 2.01 | 0.08 | 0.84 | 8.03 |
| 02/25/20 15:25:58 | 12810 | 13.32 | 1.95 | 0.07 | 0.78 | 8.07 |
| 02/25/20 15:26:28 | 12840 | 13.33 | 1.91 | 0.06 | 0.79 | 8.12 |
| 02/25/20 15:26:58 | 12870 | 13.33 | 1.89 | 0.08 | 0.77 | 8.20 |
| 02/25/20 15:27:28 | 12900 | 13.34 | 1.87 | 0.08 | 0.77 | 8.21 |
| 02/25/20 15:27:58 | 12930 | 13.34 | 1.91 | 0.16 | 0.72 | 8.21 |
| 02/25/20 15:28:28 | 12960 | 13.33 | 3.05 | 0.41 | 0.72 | 8.22 |
| 02/25/20 15:28:58 | 12990 | 13.32 | 1.80 | 0.07 | 0.71 | 8.23 |
| 02/25/20 15:29:28 | 13020 | 13.33 | 1.87 | 0.06 | 0.72 | 8.23 |
| 02/25/20 15:29:58 | 13050 | 13.33 | 1.82 | 0.08 | 0.73 | 8.22 |
| 02/25/20 15:30:28 | 13080 | 13.33 | 1.82 | 0.08 | 0.71 | 8.19 |
| 02/25/20 15:30:58 | 13110 | 13.33 | 1.80 | 0.09 | 0.74 | 8.16 |
| 02/25/20 15:31:28 | 13140 | 13.33 | 1.81 | 0.09 | 0.72 | 8.18 |
| 02/25/20 15:31:58 | 13170 | 13.33 | 1.82 | 0.07 | 0.75 | 8.98 |
| 02/25/20 15:32:28 | 13200 | 13.35 | 1.84 | 0.08 | 0.73 | 9.13 |
| 02/25/20 15:32:58 | 13230 | 13.33 | 1.77 | 0.10 | 0.74 | 8.33 |
| 02/25/20 15:33:28 | 13260 | 13.33 | 1.76 | 0.06 | 0.74 | 8.30 |
| 02/25/20 15:33:58 | 13290 | 13.32 | 1.80 | 0.07 | 0.73 | 8.24 |
| 02/25/20 15:34:28 | 13320 | 13.32 | 1.79 | 0.07 | 0.77 | 8.18 |
| 02/25/20 15:34:58 | 13350 | 13.33 | 1.88 | 0.07 | 0.77 | 8.16 |
| 02/25/20 15:35:28 | 13380 | 13.33 | 1.92 | 0.07 | 0.80 | 8.13 |
| 02/25/20 15:35:58 | 13410 | 13.33 | 1.96 | 0.05 | 0.76 | 8.15 |
| 02/25/20 15:36:28 | 13440 | 13.32 | 1.97 | 0.05 | 0.77 | 8.18 |
| 02/25/20 15:36:58 | 13470 | 13.33 | 2.02 | 0.06 | 0.73 | 8.20 |
| 02/25/20 15:37:28 | 13500 | 13.33 | 2.09 | 0.07 | 0.80 | 9.01 |
| 02/25/20 15:37:58 | 13530 | 13.33 | 2.11 | 0.06 | 0.78 | 8.34 |
| **RAW AVERAGE** | | **13.32** | **1.98** | **0.09** | **0.78** | **8.27** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0024 | INST-NX-0031 | INST-CO-0029 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.06 | 0.02 | -0.11 | |
| | **Final Zero** | -0.06 | 0.06 | -0.07 | |
| | **Avg. Zero** | -0.06 | 0.04 | -0.09 | |
| | **Initial UpScale** | 12.02 | 4.92 | 5.07 | |
| | **Final UpScale** | 12.01 | 4.94 | 5.09 | |
| | **Avg. UpScale** | 12.02 | 4.93 | 5.08 | |
| **Upscale Cal Gas** | | 11.97 | 4.91 | 5.09 | |

| **EMISSIONS DATA** | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 13.27 | 1.95 | 0.18 | 0.85 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.51 | 0.14 | 0.66 |
| **Emission Rate (lb/hr)** | N/A | 13.45 | 0.74 | 2.17 |
| **Emission Rate (lb/MMBtu)** | N/A | 0.0056 | 0.000 | 0.001 |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,311,140 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,311,140 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.33 | in. Hg |
| Relative Humidity | 51 | % |
| Ambient Temperature | 55 | °F |
| Specific Humidity | 0.004759 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 345.8 | megawatts |
| Stack Exhaust Flow (M19) | 57,743,475 | SCFH |

Base Load Load, Run - 8

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/25/20 15:47:28 | 14100 | 13.25 | 2.11 | 0.11 | 0.82 | 7.35 |
| 02/25/20 15:47:58 | 14130 | 13.26 | 2.12 | 0.12 | 0.78 | 7.43 |
| 02/25/20 15:48:28 | 14160 | 13.26 | 2.12 | 0.10 | 0.75 | 7.47 |
| 02/25/20 15:48:58 | 14190 | 13.28 | 2.12 | 0.12 | 0.77 | 7.50 |
| 02/25/20 15:49:28 | 14220 | 13.29 | 2.11 | 0.10 | 0.76 | 7.51 |
| 02/25/20 15:49:58 | 14250 | 13.29 | 2.06 | 0.07 | 0.74 | 7.53 |
| 02/25/20 15:50:28 | 14280 | 13.29 | 2.06 | 0.06 | 0.75 | 7.54 |
| 02/25/20 15:50:58 | 14310 | 13.31 | 2.07 | 0.08 | 0.77 | 7.56 |
| 02/25/20 15:51:28 | 14340 | 13.32 | 2.07 | 0.09 | 0.74 | 7.57 |
| 02/25/20 15:51:58 | 14370 | 13.32 | 2.06 | 0.07 | 0.76 | 8.67 |
| 02/25/20 15:52:28 | 14400 | 13.32 | 2.06 | 0.08 | 0.69 | 8.08 |
| 02/25/20 15:52:58 | 14430 | 13.32 | 2.07 | 0.62 | 0.77 | 9.79 |
| 02/25/20 15:53:28 | 14460 | 13.32 | 2.09 | 0.07 | 0.70 | 8.72 |
| 02/25/20 15:53:58 | 14490 | 13.32 | 2.06 | 0.10 | 0.76 | 8.63 |
| 02/25/20 15:54:28 | 14520 | 13.32 | 2.06 | 0.07 | 0.76 | 8.40 |
| 02/25/20 15:54:58 | 14550 | 13.33 | 2.07 | 0.08 | 0.76 | 8.27 |
| 02/25/20 15:55:28 | 14580 | 13.33 | 2.07 | 0.08 | 0.73 | 8.08 |
| 02/25/20 15:55:58 | 14610 | 13.34 | 2.06 | 0.07 | 0.71 | 8.45 |
| 02/25/20 15:56:28 | 14640 | 13.33 | 2.05 | 0.06 | 0.74 | 8.07 |
| 02/25/20 15:56:58 | 14670 | 13.32 | 2.07 | 0.08 | 0.70 | 8.13 |
| 02/25/20 15:57:28 | 14700 | 13.32 | 2.07 | 0.08 | 0.70 | 8.25 |
| 02/25/20 15:57:58 | 14730 | 13.33 | 2.07 | 0.09 | 0.71 | 8.05 |
| 02/25/20 15:58:28 | 14760 | 13.33 | 2.08 | 0.07 | 0.71 | 8.49 |
| 02/25/20 15:58:58 | 14790 | 13.34 | 2.06 | 0.08 | 0.72 | 8.16 |
| 02/25/20 15:59:28 | 14820 | 13.33 | 2.05 | 0.10 | 0.72 | 8.10 |
| 02/25/20 15:59:58 | 14850 | 13.33 | 2.09 | 0.11 | 0.70 | 8.27 |
| 02/25/20 16:00:28 | 14880 | 13.33 | 2.07 | 0.08 | 0.68 | 7.99 |
| 02/25/20 16:00:58 | 14910 | 13.33 | 2.04 | 0.07 | 0.71 | 8.21 |
| 02/25/20 16:01:28 | 14940 | 13.33 | 2.05 | 0.06 | 0.69 | 8.04 |
| 02/25/20 16:01:58 | 14970 | 13.33 | 2.07 | 0.08 | 0.67 | 7.92 |
| 02/25/20 16:02:28 | 15000 | 13.33 | 2.07 | 0.05 | 0.70 | 8.38 |
| 02/25/20 16:02:58 | 15030 | 13.33 | 2.07 | 0.08 | 0.70 | 8.14 |
| 02/25/20 16:03:28 | 15060 | 13.33 | 2.07 | 0.06 | 0.73 | 8.21 |
| 02/25/20 16:03:58 | 15090 | 13.33 | 2.07 | 0.07 | 0.75 | 8.45 |
| 02/25/20 16:04:28 | 15120 | 13.33 | 2.07 | 0.09 | 0.75 | 8.04 |
| 02/25/20 16:04:58 | 15150 | 13.34 | 2.06 | 0.08 | 0.73 | 8.31 |
| 02/25/20 16:05:28 | 15180 | 13.33 | 2.54 | 0.09 | 0.69 | 8.21 |
| 02/25/20 16:05:58 | 15210 | 13.33 | 2.05 | 0.07 | 0.69 | 8.06 |
| 02/25/20 16:06:28 | 15240 | 13.33 | 2.17 | 0.47 | 0.70 | 8.45 |
| 02/25/20 16:06:58 | 15270 | 13.33 | 2.01 | 0.12 | 0.65 | 8.05 |
| 02/25/20 16:07:28 | 15300 | 13.14 | 2.09 | 0.13 | 0.67 | 8.28 |
| 02/25/20 16:07:58 | 15330 | 13.16 | 2.12 | 0.07 | 0.66 | 8.22 |
| **RAW AVERAGE** | | **13.31** | **2.09** | **0.11** | **0.72** | **8.12** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0024 | INST-NX-0031 | INST-CO-0029 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.06 | 0.06 | -0.07 | |
| | **Final Zero** | -0.04 | 0.01 | -0.09 | |
| | **Avg. Zero** | -0.05 | 0.04 | -0.08 | |
| | **Initial UpScale** | 12.01 | 4.94 | 5.09 | |
| | **Final UpScale** | 12.03 | 4.94 | 5.08 | |
| | **Avg. UpScale** | 12.02 | 4.94 | 5.09 | |
| **Upscale Cal Gas** | | 11.97 | 4.91 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 13.25 | 2.05 | 0.18 | 0.79 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.58 | 0.14 | 0.61 |
| Emission Rate (lb/hr) | N/A | 14.15 | 0.77 | 2.01 |
| Emission Rate (lb/MMBtu) | N/A | 0.0058 | 0.000 | 0.001 |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,528,440 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,528,440 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.33 | in. Hg |
| Relative Humidity | 54 | % |
| Ambient Temperature | 55 | °F |
| Specific Humidity | 0.004894 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 373.2 | megawatts |
| Stack Exhaust Flow (M19) | 57,042,226 | SCFH |

Base Load Load, Run - 9

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/25/20 16:20:28 | 16080 | 12.72 | 2.35 | 0.06 | 0.65 | 9.20 |
| 02/25/20 16:20:58 | 16110 | 12.72 | 2.36 | 0.05 | 0.67 | 9.97 |
| 02/25/20 16:21:28 | 16140 | 12.70 | 2.31 | 0.04 | 0.63 | 9.56 |
| 02/25/20 16:21:58 | 16170 | 12.69 | 2.36 | 0.05 | 0.60 | 9.03 |
| 02/25/20 16:22:28 | 16200 | 12.68 | 2.36 | 0.05 | 0.61 | 8.78 |
| 02/25/20 16:22:58 | 16230 | 12.66 | 2.32 | 0.07 | 0.60 | 8.56 |
| 02/25/20 16:23:28 | 16260 | 12.62 | 2.32 | 0.05 | 0.61 | 8.71 |
| 02/25/20 16:23:58 | 16290 | 12.58 | 2.32 | 0.08 | 0.61 | 8.90 |
| 02/25/20 16:24:28 | 16320 | 12.58 | 2.33 | 0.08 | 0.57 | 9.03 |
| 02/25/20 16:24:58 | 16350 | 12.59 | 2.35 | 0.04 | 0.53 | 8.80 |
| 02/25/20 16:25:28 | 16380 | 12.58 | 2.41 | 0.07 | 0.60 | 8.91 |
| 02/25/20 16:25:58 | 16410 | 12.58 | 2.42 | 0.06 | 0.56 | 8.69 |
| 02/25/20 16:26:28 | 16440 | 12.55 | 2.43 | 0.09 | 0.58 | 8.87 |
| 02/25/20 16:26:58 | 16470 | 12.53 | 2.41 | 0.05 | 0.57 | 8.61 |
| 02/25/20 16:27:28 | 16500 | 12.52 | 2.42 | 0.08 | 0.56 | 8.87 |
| 02/25/20 16:27:58 | 16530 | 12.53 | 2.42 | 0.10 | 0.56 | 8.76 |
| 02/25/20 16:28:28 | 16560 | 12.51 | 2.43 | 0.09 | 0.58 | 9.26 |
| 02/25/20 16:28:58 | 16590 | 12.50 | 2.41 | 0.07 | 0.54 | 8.80 |
| 02/25/20 16:29:28 | 16620 | 12.49 | 2.41 | 0.05 | 0.57 | 9.00 |
| 02/25/20 16:29:58 | 16650 | 12.49 | 2.41 | 0.08 | 0.57 | 8.97 |
| 02/25/20 16:30:28 | 16680 | 12.48 | 2.41 | 0.09 | 0.60 | 8.87 |
| 02/25/20 16:30:58 | 16710 | 12.47 | 2.35 | 0.09 | 0.55 | 8.81 |
| 02/25/20 16:31:28 | 16740 | 12.46 | 2.35 | 0.06 | 0.58 | 9.05 |
| 02/25/20 16:31:58 | 16770 | 12.45 | 2.39 | 0.06 | 0.64 | 9.83 |
| 02/25/20 16:32:28 | 16800 | 12.45 | 2.41 | 0.08 | 0.62 | 9.03 |
| 02/25/20 16:32:58 | 16830 | 12.43 | 2.42 | 0.07 | 0.60 | 9.28 |
| 02/25/20 16:33:28 | 16860 | 12.42 | 2.45 | 0.11 | 0.63 | 9.10 |
| 02/25/20 16:33:58 | 16890 | 12.41 | 2.48 | 0.10 | 0.62 | 9.51 |
| 02/25/20 16:34:28 | 16920 | 12.41 | 2.47 | 0.09 | 0.65 | 9.00 |
| 02/25/20 16:34:58 | 16950 | 12.39 | 2.45 | 0.08 | 0.65 | 8.91 |
| 02/25/20 16:35:28 | 16980 | 12.39 | 2.44 | 0.08 | 0.65 | 9.15 |
| 02/25/20 16:35:58 | 17010 | 12.39 | 2.42 | 0.12 | 0.62 | 8.98 |
| 02/25/20 16:36:28 | 17040 | 12.38 | 2.44 | 0.11 | 0.70 | 10.47 |
| 02/25/20 16:36:58 | 17070 | 12.37 | 2.41 | 0.09 | 0.66 | 9.55 |
| 02/25/20 16:37:28 | 17100 | 12.38 | 2.39 | 0.08 | 0.67 | 9.35 |
| 02/25/20 16:37:58 | 17130 | 12.37 | 2.35 | 0.10 | 0.67 | 9.09 |
| 02/25/20 16:38:28 | 17160 | 12.36 | 2.33 | 0.07 | 0.66 | 9.07 |
| 02/25/20 16:38:58 | 17190 | 12.38 | 2.33 | 0.07 | 0.71 | 9.00 |
| 02/25/20 16:39:28 | 17220 | 12.37 | 2.31 | 0.08 | 0.76 | 9.23 |
| 02/25/20 16:39:58 | 17250 | 12.37 | 2.39 | 0.09 | 0.71 | 9.19 |
| 02/25/20 16:40:28 | 17280 | 12.36 | 2.32 | 0.07 | 0.74 | 9.10 |
| 02/25/20 16:40:58 | 17310 | 12.37 | 2.31 | 0.10 | 0.71 | 9.25 |
| **RAW AVERAGE** | | **12.49** | **2.38** | **0.08** | **0.62** | **9.10** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0024 | INST-NX-0031 | INST-CO-0029 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.04 | 0.01 | -0.09 | |
| | **Final Zero** | -0.06 | 0.02 | -0.07 | |
| | **Avg. Zero** | -0.05 | 0.02 | -0.08 | |
| | **Initial UpScale** | 12.03 | 4.94 | 5.08 | |
| | **Final UpScale** | 12.03 | 4.94 | 5.05 | |
| | **Avg. UpScale** | 12.03 | 4.94 | 5.07 | |
| **Upscale Cal Gas** | | 11.97 | 4.91 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 12.43 | 2.36 | 0.15 | 0.69 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.65 | 0.11 | 0.48 |
| Emission Rate (lb/hr) | N/A | 16.10 | 0.64 | 1.73 |
| Emission Rate (lb/MMBtu) | N/A | 0.0061 | 0.000 | 0.001 |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,554,920 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,554,920 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.34 | in. Hg |
| Relative Humidity | 57 | % |
| Ambient Temperature | 54 | °F |
| Specific Humidity | 0.005008 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 378.1 | megawatts |
| Stack Exhaust Flow (M19) | 56,695,483 | SCFH |

Base Load Load, Run - 10

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/25/20 16:51:28 | 17940 | 12.31 | 2.31 | 0.12 | 0.77 | 8.03 |
| 02/25/20 16:51:58 | 17970 | 12.33 | 2.29 | 0.09 | 0.72 | 8.07 |
| 02/25/20 16:52:28 | 18000 | 12.32 | 2.28 | 0.09 | 0.69 | 8.14 |
| 02/25/20 16:52:58 | 18030 | 12.34 | 2.32 | 0.11 | 0.69 | 8.19 |
| 02/25/20 16:53:28 | 18060 | 12.35 | 2.33 | 0.10 | 0.74 | 10.22 |
| 02/25/20 16:53:58 | 18090 | 12.34 | 2.31 | 0.09 | 0.67 | 9.70 |
| 02/25/20 16:54:28 | 18120 | 12.36 | 2.35 | 0.09 | 0.64 | 9.67 |
| 02/25/20 16:54:58 | 18150 | 12.35 | 2.33 | 0.11 | 0.58 | 9.41 |
| 02/25/20 16:55:28 | 18180 | 12.37 | 2.31 | 0.09 | 0.58 | 9.04 |
| 02/25/20 16:55:58 | 18210 | 12.37 | 2.34 | 0.11 | 0.62 | 9.35 |
| 02/25/20 16:56:28 | 18240 | 12.36 | 2.31 | 0.10 | 0.61 | 8.93 |
| 02/25/20 16:56:58 | 18270 | 12.37 | 2.30 | 0.10 | 0.63 | 9.13 |
| 02/25/20 16:57:28 | 18300 | 12.37 | 2.29 | 0.16 | 0.65 | 9.00 |
| 02/25/20 16:57:58 | 18330 | 12.35 | 2.27 | 0.11 | 0.66 | 9.03 |
| 02/25/20 16:58:28 | 18360 | 12.34 | 2.26 | 0.08 | 0.66 | 9.03 |
| 02/25/20 16:58:58 | 18390 | 12.34 | 2.31 | 0.13 | 0.64 | 8.91 |
| 02/25/20 16:59:28 | 18420 | 12.32 | 2.31 | 0.13 | 0.60 | 8.92 |
| 02/25/20 16:59:58 | 18450 | 12.29 | 2.34 | 0.12 | 0.65 | 9.26 |
| 02/25/20 17:00:28 | 18480 | 12.29 | 2.36 | 0.11 | 0.67 | 9.15 |
| 02/25/20 17:00:58 | 18510 | 12.28 | 2.40 | 0.11 | 0.67 | 9.13 |
| 02/25/20 17:01:28 | 18540 | 12.28 | 2.40 | 0.11 | 0.67 | 9.09 |
| 02/25/20 17:01:58 | 18570 | 12.31 | 2.40 | 0.10 | 0.71 | 10.00 |
| 02/25/20 17:02:28 | 18600 | 12.32 | 2.33 | 0.11 | 0.74 | 9.49 |
| 02/25/20 17:02:58 | 18630 | 12.35 | 2.29 | 0.09 | 0.79 | 9.16 |
| 02/25/20 17:03:28 | 18660 | 12.35 | 2.27 | 0.08 | 0.80 | 9.20 |
| 02/25/20 17:03:58 | 18690 | 12.38 | 2.28 | 0.08 | 0.78 | 9.22 |
| 02/25/20 17:04:28 | 18720 | 12.38 | 2.22 | 0.07 | 0.81 | 9.88 |
| 02/25/20 17:04:58 | 18750 | 12.40 | 2.28 | 0.08 | 0.82 | 9.25 |
| 02/25/20 17:05:28 | 18780 | 12.37 | 2.20 | 0.04 | 0.90 | 10.10 |
| 02/25/20 17:05:58 | 18810 | 12.39 | 2.23 | 0.07 | 0.89 | 9.16 |
| 02/25/20 17:06:28 | 18840 | 12.37 | 2.21 | 0.08 | 0.98 | 9.22 |
| 02/25/20 17:06:58 | 18870 | 12.36 | 2.25 | 0.06 | 1.05 | 9.80 |
| 02/25/20 17:07:28 | 18900 | 12.35 | 2.28 | 0.06 | 1.05 | 9.36 |
| 02/25/20 17:07:58 | 18930 | 12.35 | 2.30 | 0.10 | 1.05 | 9.20 |
| 02/25/20 17:08:28 | 18960 | 12.33 | 2.32 | 0.08 | 1.03 | 9.33 |
| 02/25/20 17:08:58 | 18990 | 12.31 | 2.35 | 0.11 | 0.96 | 9.45 |
| 02/25/20 17:09:28 | 19020 | 12.31 | 2.38 | 0.09 | 1.04 | 9.99 |
| 02/25/20 17:09:58 | 19050 | 12.30 | 2.37 | 0.10 | 1.09 | 9.30 |
| 02/25/20 17:10:28 | 19080 | 12.32 | 2.40 | 0.09 | 1.10 | 9.38 |
| 02/25/20 17:10:58 | 19110 | 12.32 | 2.35 | 0.11 | 1.06 | 9.14 |
| 02/25/20 17:11:28 | 19140 | 12.33 | 2.31 | 0.07 | 1.01 | 9.15 |
| 02/25/20 17:11:58 | 19170 | 12.34 | 2.30 | 0.13 | 1.01 | 9.13 |
| **RAW AVERAGE** | | **12.34** | **2.31** | **0.10** | **0.80** | **9.22** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0024 | INST-NX-0031 | INST-CO-0029 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.06 | 0.02 | -0.07 | |
| | **Final Zero** | -0.08 | -0.04 | -0.07 | |
| | **Avg. Zero** | -0.07 | -0.01 | -0.07 | |
| | **Initial UpScale** | 12.03 | 4.94 | 5.05 | |
| | **Final UpScale** | 12.01 | 4.89 | 5.04 | |
| | **Avg. UpScale** | 12.02 | 4.92 | 5.05 | |
| **Upscale Cal Gas** | | 11.97 | 4.91 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 12.29 | 2.31 | 0.17 | 0.88 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.58 | 0.11 | 0.60 |
| Emission Rate (lb/hr) | N/A | 15.67 | 0.68 | 2.20 |
| Emission Rate (lb/MMBtu) | N/A | 0.0058 | 0.000 | 0.001 |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,563,390 | SCFH |
| Total Fuel Flow | 2,563,390 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.37 | in. Hg |
| Relative Humidity | 76 | % |
| Ambient Temperature | 51 | °F |
| Specific Humidity | 0.006092 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 379.9 | megawatts |
| Stack Exhaust Flow (M19) | 57,031,539 | SCFH |

Base Load Load, Run - 11

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 02/25/20 17:57:28 | 21900 | 12.37 | 2.36 | 0.07 | 2.52 | 9.25 |
| 02/25/20 17:57:58 | 21930 | 12.37 | 2.32 | 0.09 | 2.51 | 9.31 |
| 02/25/20 17:58:28 | 21960 | 12.36 | 2.35 | 0.07 | 2.39 | 9.15 |
| 02/25/20 17:58:58 | 21990 | 12.38 | 2.34 | 0.08 | 2.36 | 8.96 |
| 02/25/20 17:59:28 | 22020 | 12.37 | 2.32 | 0.07 | 2.44 | 9.24 |
| 02/25/20 17:59:58 | 22050 | 12.36 | 2.36 | 0.07 | 2.32 | 8.91 |
| 02/25/20 18:00:28 | 22080 | 12.35 | 2.36 | 0.05 | 2.29 | 8.98 |
| 02/25/20 18:00:58 | 22110 | 12.35 | 2.39 | 0.08 | 2.12 | 8.89 |
| 02/25/20 18:01:28 | 22140 | 12.34 | 2.37 | 0.07 | 2.04 | 8.70 |
| 02/25/20 18:01:58 | 22170 | 12.36 | 2.36 | 0.08 | 2.00 | 8.65 |
| 02/25/20 18:02:28 | 22200 | 12.35 | 2.36 | 0.08 | 2.04 | 8.49 |
| 02/25/20 18:02:58 | 22230 | 12.36 | 2.38 | 0.08 | 2.04 | 8.90 |
| 02/25/20 18:03:28 | 22260 | 12.36 | 2.36 | 0.07 | 1.90 | 8.59 |
| 02/25/20 18:03:58 | 22290 | 12.36 | 2.37 | 0.09 | 1.89 | 8.85 |
| 02/25/20 18:04:28 | 22320 | 12.36 | 2.42 | 0.09 | 1.91 | 9.02 |
| 02/25/20 18:04:58 | 22350 | 12.36 | 2.36 | 0.06 | 1.90 | 8.54 |
| 02/25/20 18:05:28 | 22380 | 12.37 | 2.37 | 0.07 | 1.88 | 8.76 |
| 02/25/20 18:05:58 | 22410 | 12.37 | 2.36 | 0.07 | 1.85 | 8.54 |
| 02/25/20 18:06:28 | 22440 | 12.38 | 2.41 | 0.07 | 1.90 | 9.14 |
| 02/25/20 18:06:58 | 22470 | 12.36 | 2.38 | 0.07 | 1.89 | 9.31 |
| 02/25/20 18:07:28 | 22500 | 12.37 | 2.37 | 0.08 | 1.78 | 8.56 |
| 02/25/20 18:07:58 | 22530 | 12.38 | 2.37 | 0.08 | 1.80 | 8.84 |
| 02/25/20 18:08:28 | 22560 | 12.37 | 2.32 | 0.07 | 1.72 | 8.53 |
| 02/25/20 18:08:58 | 22590 | 12.37 | 2.34 | 0.06 | 1.71 | 8.65 |
| 02/25/20 18:09:28 | 22620 | 12.37 | 2.35 | 0.07 | 1.76 | 9.69 |
| 02/25/20 18:09:58 | 22650 | 12.36 | 2.33 | 0.08 | 1.81 | 9.65 |
| 02/25/20 18:10:28 | 22680 | 12.36 | 2.33 | 0.08 | 1.90 | 9.07 |
| 02/25/20 18:10:58 | 22710 | 12.35 | 2.32 | 0.07 | 1.88 | 8.64 |
| 02/25/20 18:11:28 | 22740 | 12.35 | 2.43 | 0.06 | 2.03 | 10.70 |
| 02/25/20 18:11:58 | 22770 | 12.35 | 2.36 | 0.07 | 2.09 | 9.65 |
| 02/25/20 18:12:28 | 22800 | 12.35 | 2.35 | 0.08 | 2.45 | 9.96 |
| 02/25/20 18:12:58 | 22830 | 12.35 | 2.37 | 0.06 | 2.36 | 9.12 |
| 02/25/20 18:13:28 | 22860 | 12.35 | 2.40 | 0.10 | 2.25 | 9.48 |
| 02/25/20 18:13:58 | 22890 | 12.34 | 2.41 | 0.07 | 2.03 | 9.14 |
| 02/25/20 18:14:28 | 22920 | 12.34 | 2.33 | 0.09 | 2.00 | 8.84 |
| 02/25/20 18:14:58 | 22950 | 12.35 | 2.34 | 0.07 | 2.04 | 8.75 |
| 02/25/20 18:15:28 | 22980 | 12.34 | 2.32 | 0.08 | 2.01 | 8.58 |
| 02/25/20 18:15:58 | 23010 | 12.34 | 2.30 | 0.07 | 1.98 | 9.21 |
| 02/25/20 18:16:28 | 23040 | 12.34 | 2.31 | 0.07 | 1.79 | 8.77 |
| 02/25/20 18:16:58 | 23070 | 12.34 | 2.37 | 0.07 | 1.90 | 10.30 |
| 02/25/20 18:17:28 | 23100 | 12.34 | 2.37 | 0.07 | 1.87 | 10.57 |
| 02/25/20 18:17:58 | 23130 | 12.34 | 2.37 | 0.08 | 1.80 | 9.59 |
| **RAW AVERAGE** | | **12.36** | **2.36** | **0.07** | **2.03** | **9.11** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0024 | INST-NX-0031 | INST-CO-0029 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.08 | -0.04 | -0.07 | |
| | **Final Zero** | -0.06 | 0.18 | -0.13 | |
| | **Avg. Zero** | -0.07 | 0.07 | -0.10 | |
| | **Initial UpScale** | 12.01 | 4.89 | 5.04 | |
| | **Final UpScale** | 12.02 | 4.98 | 5.05 | |
| | **Avg. UpScale** | 12.02 | 4.94 | 5.05 | |
| **Upscale Cal Gas** | | 11.97 | 4.91 | 5.09 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 12.31 | 2.31 | 0.17 | 2.23 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.59 | 0.12 | 1.53 |
| Emission Rate (lb/hr) | N/A | 15.73 | 0.71 | 5.62 |
| Emission Rate (lb/MMBtu) | N/A | 0.0058 | 0.000 | 0.006 |

# APPENDIX C

# CALIBRATION GAS CERTIFICATIONS

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**AETB/QI and PGVP RATA Data Sheet**
**Cricket Valley Energy Center**

**AirEmissionTestingData - Level 3**

| QILastName | QIFirstName | QIMiddleInitial | AETBName | AETBPhoneNumber | AETBEmail | ExamDate | ProviderName | ProviderEmail |
|---|---|---|---|---|---|---|---|---|
| McBride | Matthew | S | Air Hygiene International Inc | 888-461-8778 | info@airhygiene.com | 01/27/2019 | Source Evaluation Society | qstiprogram@gmail.com |

**ProtocolGasData - Level 3**

| GasLevelCode | GasTypeCode | CylinderIdentifier | VendorIdentifier | ExpirationDate |
|---|---|---|---|---|
| LOW | ZERO | | | |
| HIGH | BALN,CO2,O2 | CC721614 | G12018 | 11/11/2026 |
| MID | BALN,CO2,O2 | CC722590 | G12019 | 6/8/2027 |
| HIGH | BALN,CO,NO,NOX | EB0018492 | G12019 | 5/2/2022 |
| MID | BALN,CO,NO,NOX | EB0065964 | G12019 | 7/22/2022 |
| | | | | |

Assay Laboratory: Red Ball TGS
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150

# CERTIFICATE OF ANALYSIS
## (Zero Ambient Nitrogen)

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0072934 | **Certification Date:** | 05/21/2019 |
| **Product ID Number:** | 121026 | **Expiration Date:** | 05/19/2027 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | RBTGS-Shreveport-LA |
| **COA #** | EB0072934.20190521-0 | **Lot Number:** | EB0072934.20190521 |
| **Customer PO. NO.:** | | **Tracking Number:** | 084249399 |
| **Customer:** | | **Previous Certification Dates:** | |

This mixture is for laboratory use only, not for drug, household or other use.
This mixture is certified in Mole % to be within ±2% of the actual number reported with a confidence of 95%.
This mixture was manufactured by scale; weights traceable to N.I.S.T. Certificate #822/266926-02.
Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).

**Composing Material: Zero Ambient Nitrogen, Cert., Sz152**

| Component | Specification | Concentration |
|---|---|---|
| Nitrogen | Balance | Balance |
| Oxygen as Impurity | <1.0 PPM | <1.0 PPM |
| Carbon Dioxide as Impurity | <0.5 PPM | <0.5 PPM |
| Carbon Monoxide as Impurity | <0.5 PPM | <0.5 PPM |
| Total Oxides of Nitrogen as Impurity | <0.1 PPM | <0.1 PPM |
| Sulfur Dioxide as Impurity | <0.1 PPM | <0.1 PPM |
| Total Hydrocarbons as Impurity | <0.1 PPM | <0.1 PPM |

Red Ball Technical Gas Service
PGVP Vendor ID # G12019
Information and Ordering
800-551-8150
Fax (318-425-6309)

Accreditation #62754

Anthony Cyr
Assistant Operations Manager

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12019

PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0098845 | **Certification Date:** | 05/03/2019 |
| **Product ID Number:** | 124731 | **Expiration Date:** | 05/02/2022 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0098845.20190416-0 | **Lot Number:** | EB0098845.20190416 |
| **Customer PO. NO.:** | | **Tracking Number:** | 095689140 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Nitrogen Dioxide** | **48.7 PPM** | ±0.6 PPM | FTIR | 04/26/2019, 05/03/2019 |

Air Balance

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0003640 | EB0003640.20190102 | 03/20/2022 | GMIS | AIR | NO2 | 87.8 PPM | 1.061 | C1579010.01 |
| EB0096848 | EB0096848.20190102 | 03/21/2022 | GMIS | AIR | NO2 | 61.1 PPM | 1.072 | C1579010.01 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NO2 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 04/26/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Brandon Theus**
**Laboratory Supervisor**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12019

PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0065964 | **Certification Date:** | 07/23/2019 |
| **Product ID Number:** | 125564 | **Expiration Date:** | 07/22/2022 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0065964.20190611-0 | **Lot Number:** | EB0065964.20190611 |
| **Customer PO. NO.:** | | **Tracking Number:** | 083030934 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Monoxide** | **5.09 PPM** | ±0.07 PPM | FTIR | 06/19/2019 |
| **Nitric Oxide** | **4.88 PPM** | ±0.06 PPM | Chemiluminescence | 06/18/2019, 07/08/2019, 07/23/2019 |
| Total Oxides of Nitrogen | 4.91 PPM | | | |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| ALM066143 | ALM066143.20171116 | 11/09/2022 | GMIS | N2 | NO | 9.6 PPM | 1.062 | 12100115 |
| CC202290 | CC202290.20160721 | 01/11/2025 | GMIS | N2 | CO | 12.14 PPM | 1.033 | 091002 |
| EB0032297 | EB0032297.20160725 | 09/06/2025 | GMIS | N2 | CO | 6.15 PPM | 1.067 | 091002 |
| EB0060662 | EB0060662.20151012 | 01/02/2022 | GMIS | N2 | NO | 2.97 PPM | 1.062 | 12100115 |
| EB0078555 | EB0078555.20171116 | 11/09/2022 | GMIS | N2 | NO | 9.8 PPM | 1.113 | 12100115 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NO | Chemiluminescence | Thermo | T42C | 42C-68400-360 | 05/30/2019 |
| CO | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 05/30/2019 |
| NO | Chemiluminescence | Thermo | T42C | 42C-68400-360 | 07/08/2019 |
| NO | Chemiluminescence | Thermo | T42C | 42C-68400-360 | 07/08/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Anthony Cyr**
**Assistant Operations Manager**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12019

PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0018492 | **Certification Date:** | 05/03/2019 |
| **Product ID Number:** | 124737 | **Expiration Date:** | 05/02/2022 |
| **Cylinder Pressure:** | 1850 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0018492.20190404-0 | **Lot Number:** | EB0018492.20190404 |
| **Customer PO. NO.:** | | **Tracking Number:** | 040261874 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Monoxide** | **9.5 PPM** | ±0.11 PPM | FTIR | 04/29/2019 |
| **Nitric Oxide** | **9.2 PPM** | ±0.11 PPM | Chemiluminescence | 04/09/2019, 04/17/2019, 05/03/2019 |

Total Oxides of Nitrogen 9.2 PPM
Nitrogen Balance

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| CC279029 | 091002 | 03/10/2020 | NTRM | N2 | CO | 19.14 PPM | 0.9927 | 091002 |
| ALM066143 | ALM066143.20171116 | 11/09/2022 | GMIS | N2 | NO | 9.6 PPM | 1.062 | 12100115 |
| CC202290 | CC202290.20160721 | 01/11/2025 | GMIS | N2 | CO | 12.14 PPM | 1.033 | 091002 |
| CC209392 | CC209392.20180209 | 11/15/2021 | GMIS | N2 | NO | 32.4 PPM | 1.068 | 121001 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NO | Chemiluminescence | Thermo | T42C | 42C-68400-360 | 04/08/2019 |
| CO | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 03/29/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

LaMeka Dennis
**Operations Manager**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12019

PJLA Calibration and Testing
Accreditation #62754

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | CC722590 | **Certification Date:** | 06/10/2019 |
| **Product ID Number:** | 124606 | **Expiration Date:** | 06/08/2027 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | CC722590.20190603-0 | **Lot Number:** | CC722590.20190603 |
| **Customer PO. NO.:** | | **Tracking Number:** | 098497708 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Dioxide** | **8.98 %** | ±0.08 % | NDIR | 06/10/2019 |
| **Oxygen** | **11.97 %** | ±0.07 % | MPA | 06/07/2019 |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0003672 | EB0003672.20180118 | 07/21/2026 | GMIS | N2 | O2 | 11.97 % | 0.507 | 071001 |
| EB0049614 | EB0049614.20180504 | 07/21/2026 | GMIS | N2 | O2 | 24 % | 0.497 | 071001 |
| EB0050249 | EB0050249.20180323 | 07/15/2026 | GMIS | N2 | CO2 | 15 % | 0.777 | 101001 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| O2 | MPA | Thermo | 410i | 1162980025 | 05/31/2019 |
| CO2 | NDIR | Thermo | 410i | 1162980025 | 05/14/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

Jasmine Godfrey
**Analytical Chemist**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

RED BALL TECHNICAL GAS SERVICES

PJLA Calibration and Testing
Accreditation #62754

**Red Ball Technical Gas Service**
**555 Craig Kennedy Way**
**Shreveport, LA 71107**
**800-551-8150**
**PGVP Vendor ID # G12018**

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | CC721614 | **Certification Date:** | 11/13/2018 |
| **Product ID Number:** | 124605 | **Expiration Date:** | 11/11/2026 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | CC721614.20181109-0 | **Lot Number:** | CC721614.20181109 |
| **Customer PO. NO.:** | | **Tracking Number:** | 098499636 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Dioxide** | **19.0 %** | ±0.16 % | NDIR | 11/13/2018 |
| **Oxygen** | **21.0 %** | ±0.12 % | MPA | 11/13/2018 |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0004987 | EB0004987.20180323 | 07/15/2026 | GMIS | N2 | CO2 | 19.5 % | 0.767 | 101001 |
| EB0005996 | EB0005996.20170209 | 05/09/2026 | GMIS | N2 | O2 | 20 % | 0.077 | 071001 |
| EB0032246 | EB0032246.20170209 | 08/05/2025 | GMIS | N2 | O2 | 24 % | 0.502 | 071001 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| O2 | MPA | Thermo | 410i | 1162980025 | 11/06/2018 |
| CO2 | NDIR | Thermo | 410i | 1162980025 | 10/24/2018 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Amisha Jewitt**
**Analytical Chemist**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

Red Ball Technical Gas Service
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150
PGVP Vendor ID # G12019

PJLA Calibration and Testing
Accreditation #62754

# CERTIFIED GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0100161 | **Certification Date:** | 12/30/2019 |
| **Product ID Number:** | 125123 | **Expiration Date:** | 12/29/2020 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0100161.20191230-0 | **Lot Number:** | EB0100161.20191230 |
| **Customer PO. NO.:** | | **Tracking Number:** | 095703088 |
| **Customer:** | | **Previous Certification Dates:** | |

**This mixture is for laboratory use only, not for drug, household or other use.**
**This mixture is certified in Mole % to be within ±2% of the actual number reported with a confidence of 95%.**
**This mixture was manufactured by scale; weights traceable to N.I.S.T. Certificate #822/266926-02.**
**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle |
|---|---|---|---|
| **Ammonia** | **50.4 PPM** | ± 2% NIST | FTIR |
| **Sulfur Hexafluoride** | **9.02 PPM** | ± 2% NIST | FTIR |
| Nitrogen | Balance | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| SA18481 | 70086910005 | 04/12/2020 | PS | N2 | NH3 | 21.1 PPM | 1.2 | 73248226 |
| EB0079029 | EB0079029 | 06/27/2020 | PS | N2 | SF6 | 10.1 PPM | 5 | 191064 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NH3 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | |
| SF6 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

LaMeka Dennis
**Operations Manager**
Assay Laboratory: Red Ball TGS
Version 02-G, Revised on 2017-07-02

# APPENDIX D

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

# QA/QC PROGRAM

AIR HYGIENE ensures the quality and validity of its emission measurement and reporting procedures through a rigorous quality assurance (QA) program. The program is developed and administered by an internal QA team and encompasses six major areas:

1. Field Qualifications
2. QA reviews of reports, laboratory work, and field testing;
3. Equipment calibration and maintenance;
4. Chain-of-custody;
5. Training; and
6. Knowledge of current test methods

## Field Qualifications

Air Hygiene personnel are required to gain and maintain competence with testing methods and techniques according to their job titles and the roles they play during field testing events. Qualifications for each job description include:

Staff Technician - An entry level position with responsibility to test on the stack by performing duties that include: keep trucks and trailers stocked and clean, travel to and from job site, be the "hands of the test" on the stack; stay on a stack during the sample test, set up and tear down equipment on-site, perform maintenance on equipment in the shop and on-site.

Test Technician or Specialist - Acts as the "hands of the test" on the stack by performing duties that include: stay on a stack during the sample test, migrate to the testing trailer and learn the different analyzers and testing methods used on site, set up and tear down testing equipment on site, learn the system for testing from Testing Managers and Project Managers, travel to and from job site; including driving responsibilities under DOT requirements, follow directions of Testing Managers and Project Managers, learn the proper way to conduct on-site test of stationary stacks

Test Manager or Engineer - Directs and coordinates all aspects of a successful test by performing the following duties personally or through subordinate supervisors including: operating analyzers and consoles during testing along with QA/QC procedures, supervise set up and tear down of equipment on site, writing, reviewing, and revising final test reports, working with the client or state personnel while on the job site, managing pre-test checklists and onsite testing procedures, diagnose and repair any problems that may arise with the equipment, safely operate a man lift and drive a truck with or without a trailer, act as crew leader in the field, write protocols and reports, maintain project log of services performed on the job, verify all equipment needed for a job was loaded on the trailer. Test Managers must hold at least one QSTI certificate.

Project Manager - Directs and coordinates all aspects of a successful test by performing the following duties personally or through subordinate supervisors including: operating analyzers and consoles during testing along with QA/QC procedures, supervise set up and tear down of equipment on site, writing, reviewing, and revising final test reports, working with the client or state personnel while on the job site, managing pre-test checklists and onsite testing procedures, diagnose and repair any problems that may arise with the equipment, safely operate a man lift and drive a truck with or without a trailer, act as crew leader in the field, write protocols and reports, maintain project log of services performed on the job, verify all equipment needed for a job was loaded on the trailer. Project Managers typically hold QSTI certificates in Groups 1 through 4.

## QA Reviews

Air Hygiene's review procedure includes review of each source test report, along with laboratory and fieldwork, by the QA Team. The most important review is the one that takes place before a test program begins. The QA Team works closely with technical division personnel to prepare and review test protocols. Test protocol review includes selection of appropriate test procedures, evaluation of interferences or other restrictions that might preclude use of standard test procedures, and evaluation and/or development of alternate procedures.

## Equipment Calibration and Maintenance

The equipment used to conduct the emission measurements is maintained according to the manufacturer's instructions to ensure proper operation. In addition to the maintenance program, calibrations are carried out on each measurement device according to the schedule outlined by the Environmental Protection Agency. Quality control checks are also conducted in the field for each test program. In conformance with ASTM D7036 Section 15.3.15, all metering and monitoring equipment meets or exceeds the uncertainty criteria contained in the method language that pertains to that equipment.

### Chain-of-Custody

Air Hygiene maintains full chain-of-custody documentation on all samples and data sheets. In addition to normal documentation of changes between field sample custodians, laboratory personnel, and field test personnel, Air Hygiene documents every individual who handles any test component in the field (e.g., probe wash, impinger loading and recovery, filter loading and recovery, etc.). Samples are stored in a locked area to which only Air Hygiene personnel have access. Field data sheets are secured at Air Hygiene's offices upon return from the field.

### Training

Personnel's training is essential to ensure quality testing. Air Hygiene has formal and informal training programs, which include:

1. Attendance at EPA-sponsored training courses
2. Enrollment in EPA correspondence courses
3 A requirement for all technicians to read and understand Air Hygiene's QA manual
4. In-house training and QA meetings on a regular basis
5. Maintenance of training records

### Knowledge of Current Test Methods

With the constant updating of standard test methods and the wide variety of emerging test procedures, it is essential that any qualified source tester keep abreast of new developments. Air Hygiene subscribes to services, which provide updates on EPA reference methods, rules, and regulations. Additionally, source test personnel regularly attend and present papers at testing and emission-related seminars and conferences. Air Hygiene personnel maintain membership in the Air and Waste Management Association and the American Industrial Hygiene Association.

### Reproduction and Distribution Policy

Reproducing portions of this test report may omit critical or substantial documentation or be taken out of context and due care must be exercised in this regard. Furthermore, this test report and its associated data shall not be reproduced in full or in part without the written consent of the customer.

### Data Provided by Client

Data provided by the Client is clearly identified in the report. Air Hygiene accepts data provided by the Client as accurate.

# COMBUSTION TESTING QUALITY ASSURANCE ACTIVITIES

In conformance with ASTM D7036 Section 15.3.11 and 13, all testing was performed without any real or apparent errors, with the exception of those that would be listed in Section 2.0 of this report. In addition, all testing was conducted according to the approved testing protocol, test methods, Air Hygiene Quality Manual, or ASTM D7036, with the exception of specifics noted in Section 2.0 of this report. A number of quality assurance activities were undertaken before, during, and after this testing project. This section of the report combined with the documentation in Appendix C describes each of those activities.

Each instrument's response was checked and adjusted in the field prior to the collection of data via multi-point calibration. The instrument's linearity was checked by adjusting its zero and span responses to zero nitrogen and an upscale calibration gas in the range of the expected concentrations. The instrument response was then challenged with other calibration gases of known concentration and accepted as being linear if the response of the other calibration gases agreed within plus or minus two percent of the range of predicted values. $NO_2$ to NO conversion was checked via direct connect with an EPA Protocol certified concentration of $NO_2$ in a balance of air or nitrogen. Conversion was verified to be between 90 and 110 percent.

After each test run, the analyzers were checked for zero and span drift. This allowed each test run to be bracketed by calibrations and documents the precision of the data just collected. The criterion for acceptable data is that the instrument drift is no more than three percent of the full-scale response. The quality assurance worksheets in the following pages summarize all multipoint calibration checks and zero to span checks performed during the tests. These worksheets (as prepared from the data records of Appendix A) show that no drifts in excess of three percent occurred in the zero to span checks following each test run.

The sampling systems were leak checked by demonstrating that a vacuum greater than 10 in Hg could be held for at least one minute with a decline of less than one inch of Hg. A leak test was conducted after the sample system was set up and before the system was dismantled. This test was conducted to ensure that ambient air had not diluted the sample. Any leakage detected prior to the tests would be repaired and another leak check conducted before testing commenced. No leaks were found during the pre or post-test leak checks.

The absence of leaks in the sampling system was also verified by a sampling system bias check. The sampling system's integrity was tested by comparing the responses of the analyzers to the calibration gases introduced via two paths. The first path was directly into the analyzer and the second path via the sample system at the sample probe. Any difference in the instrument responses by these two methods was attributed to sampling system bias or leakage. The criterion for acceptance is agreement within five percent of the span of the analyzer.

The control gases used to calibrate the instruments were analyzed and certified by the compressed gas vendors to plus or minus one percent accuracy for all gases. EPA Protocol No. 1 was used, where applicable to assign the concentration values traceable to the National Institute of Standards and Technology (NIST), Standard Reference Materials (SRM's). The gas calibration sheets as prepared by the vendor are contained in Appendix C.

Air Hygiene collected and reported the enclosed test data in accordance with the procedures and quality assurance activities described in this test report. Air Hygiene makes no warranty as to the suitability of the test methods. Air Hygiene also assumes no liability relating to the interpretation and use of the test data.

## INSTRUMENTAL ANALYSIS
## QUALITY ASSURANCE DATA

Date: February 25, 2020
Company: Cricket Valley Energy Center LLC
Location: Dover Plains, New York
Techs: MM / SB / RW

### Sample System Leak Check

| Date | Sample System | Leak Rate (l/min) |
|---|---|---|
| February 25, 2020 | 1 | 0 |

# Accredited Laboratory

A2LA has accredited

## AIR HYGIENE INTERNATIONAL, INC.

*Broken Arrow, OK*

for technical competence in the field of

## Environmental Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets the A2LA *R219 – Specific Requirements – TNI Field Sampling and Measurement Organization Accreditation Program*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 18th day of December 2019

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3796.01
Valid to August 31, 2021

*For the tests to which this accreditation applies, please refer to the laboratory's Envrionmental Scope of Accreditation.*

STAC
STACK TESTING ACCREDITATION COUNCIL

A2LA
American Association for Laboratory Accreditation

# *Accredited Air Emission Testing Body*

A2LA has accredited

## AIR HYGIENE INTERNATIONAL, INC.

In recognition of the successful completion of the joint A2LA and Stack Testing Accreditation Council (STAC) evaluation process, this laboratory is accredited to perform testing activities in compliance with ASTM D7036:2004 - Standard Practice for Competence of Air Emission Testing Bodies.




Presented this 18th day of December 2019.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3796.02
Valid to August 31, 2021

*This accreditation program is not included under the A2LA ILAC Mutual Recognition Arrangement.*

# SOURCE EVALUATION SOCIETY

## Qualified Source Testing Individual

LET IT BE KNOWN THAT

## MATTHEW S. McBRIDE

HAS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED EXPERIENCE REQUIREMENTS IN ACCORDANCE WITH THE GUIDELINES ISSUED BY THE SES QUALIFIED SOURCE TEST INDIVIDUAL REVIEW BOARD FOR

***GASEOUS POLLUTANTS INSTRUMENTAL SAMPLING METHODS***

ISSUED THIS 27TH DAY OF JANAURY 2019 AND EFFECTIVE UNTIL JANUARY 26TH, 2024

*Peter R. Westlin, QSTI/QSTO Review Board*

*Peter S. Pakalnis, QSTI/QSTO Review Board*

*Tina Sanderson, QSTI/QSTO Review Board*

*J. Wade Bice, QSTI/QSTO Review Board*

*Karen D. Kajiya-Mills , QSTI/QSTO Review Board*

*Bruce Randall QSTI/QSTO Review Board*

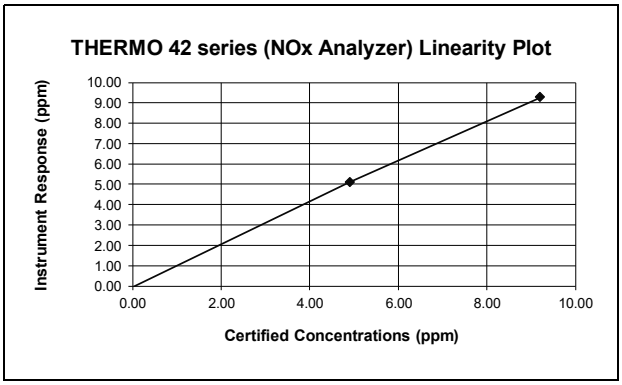
**CERTIFICATE NO. 2014-847**

**Calibration Date:** February 25, 2020 **Location:** Cricket Valley Energy Center - Unit U-00002

**Client:** Cricket Valley Energy Center LLC

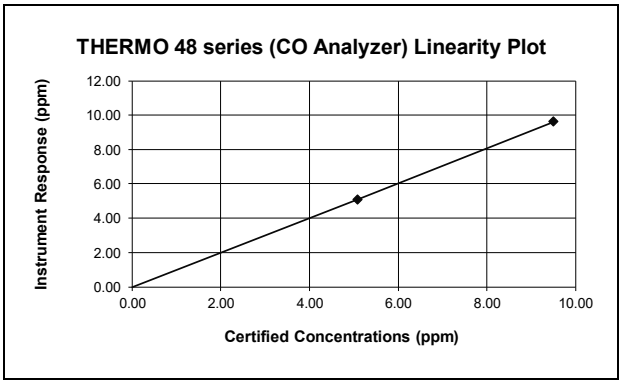
NOx Span (ppm) = 9.20

| THERMO 42 series (NOx Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Absolute Conc. (ppm) | Pass (±2%, ≤0.5ppm) |
| 0.00 | -0.05 | -0.54 | 0.05 | YES (%) |
| 4.91 | 5.09 | 1.96 | 0.18 | YES (%) |
| 9.20 | 9.28 | 0.87 | 0.08 | YES (%) |
| Linearity = 0.985 | | | | |



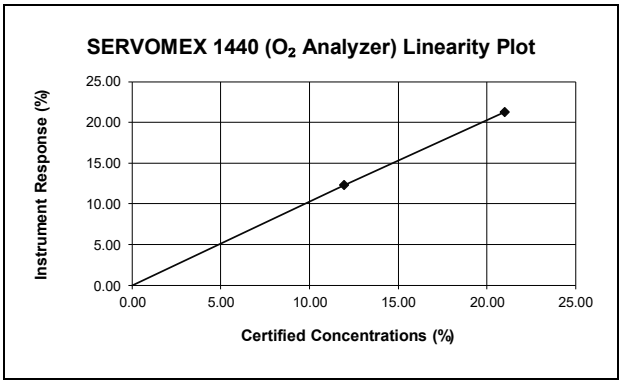

CO Span (ppm) = 9.50

| THERMO 48 series (CO Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Absolute Conc. (ppm) | Pass (±2%, ≤0.5ppm) |
| 0.00 | -0.01 | -0.11 | 0.01 | YES (%) |
| 5.09 | 5.08 | -0.11 | 0.01 | YES (%) |
| 9.50 | 9.62 | 1.26 | 0.12 | YES (%) |
| Linearity = 0.987 | | | | |




$O_2$ Span (%) = 21.00

| SERVOMEX 1440 ($O_2$ Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (%) | Instrument Response (%) | Calibration Error (%) | Absolute Conc. (%) | Pass (±2%, ≤0.5%) |
| 0.00 | -0.01 | -0.05 | 0.01 | YES (%) |
| 11.97 | 12.28 | 1.48 | 0.31 | YES (%) |
| 21.00 | 21.25 | 1.19 | 0.25 | YES (%) |
| Linearity = 0.987 | | | | |



**NOx Converter Efficiency**

**Date:** February 25, 2020

**Analyzer:** INST-NX-0031

RM 7E, (02-27-14), Sections 7.1.4; 8.2.4.1; 12.7; and 13.5 Introduce $NO_2$ to the analyzer and record the NOx concentration displayed. ... Calculate the converter efficiency using Equation 7E-7. The specification for converter efficiency must be met. ... Air Hygiene also references ALT-0013 for specific $NO_2$ concentration (40-60 ppm) and EPA Traceability Protocol requirements (±2%).

| | | |
|---|---|---|
| **Audit Gas:** | $NO_2$ Concentration ($C_v$), ppmvd | **48.70** |
| **Converter Efficiency Calculations:** | | |
| | Analyzer Reading, NO Channel, ppmvd | **1.40** |
| | Analyzer Reading, NOx Channel, ppmvd | **48.79** |
| | Analyzer Reading, $NO_2$ Channel ($C_{Dir(NO2)}$), ppmvd | **47.39** |
| | Converter Efficiency, % | **97.31** |

RM 7E, (02-27-14), 13.5 $NO_2$ to NO Conversion Efficiency Test (as applicable). The $NO_2$ to NO conversion efficiency, calculated according to Equation 7E-7, must be greater than or equal to 90 percent.

$$Eff_{NO2} = \left(\frac{C_{Dir}}{C_V}\right) \times 100$$

Eq. 7E-7 = $\frac{47.39 \text{ ppmvd}}{48.70 \text{ ppmvd}}$ x 100 = 97.31%

| Date/Time | Elapsed Time | NOx | NO |
|---|---|---|---|
| mm/dd/yy hh:mm:ss | Seconds | ppmvd | ppmvd |
| 02/25/20 05:10:12 | 380 | 48.20 | 1.54 |
| 02/25/20 05:10:22 | 390 | 48.62 | 1.58 |
| 02/25/20 05:10:32 | 400 | 48.69 | 1.51 |
| 02/25/20 05:10:42 | 410 | 48.69 | 1.50 |
| 02/25/20 05:10:52 | 420 | 48.73 | 1.50 |
| 02/25/20 05:11:02 | 430 | 48.78 | 1.54 |
| 02/25/20 05:11:12 | 440 | 48.74 | 1.39 |
| ***02/25/20 05:11:22*** | ***450*** | ***48.79*** | ***1.40*** |
| 02/25/20 05:11:32 | 460 | 48.76 | 1.42 |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - PRE TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ (%) |
|---|---|---|---|
| 02/25/20 | 10:50:28 | BKG_0028.LAB | 9.2175 |
| 02/25/20 | 10:50:42 | BKG_0029.LAB | 9.2171 |
| 02/25/20 | 10:50:56 | BKG_0030.LAB | 9.2332 |
| 02/25/20 | 10:51:10 | BKG_0031.LAB | 9.2632 |
| 02/25/20 | 10:51:23 | BKG_0032.LAB | 9.2413 |

**PRE TEST AVERAGE** **9.23**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - POST TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ (%) |
|---|---|---|---|
| 02/25/20 | 18:41:07 | CTS_0013.LAB | 9.1965 |
| 02/25/20 | 18:41:21 | CTS_0014.LAB | 9.2350 |
| 02/25/20 | 18:41:35 | CTS_0015.LAB | 9.2467 |
| 02/25/20 | 18:41:49 | CTS_0016.LAB | 9.2559 |
| 02/25/20 | 18:42:02 | CTS_0017.LAB | 9.2619 |

**POST TEST AVERAGE** **9.24**

**Analyzer Make:** MKS **Analyzer Model:** 2030

$CO_2$ Cylinder Conc. % = 8.98

| Run ID | Instrument Response (%) | Error (%) | Pass / Fail ±5% |
|---|---|---|---|
| Pre Test | 9.23 | 2.83 | PASS |
| Post Test | 9.24 | 2.89 | PASS |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - PRE TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ (ppm) |
|---|---|---|---|
| 02/25/20 | 9:03:35 | SPIKE_0074.LAB | 50.6911 |
| 02/25/20 | 9:03:48 | SPIKE_0075.LAB | 50.8156 |
| 02/25/20 | 9:04:01 | SPIKE_0076.LAB | 50.8104 |
| 02/25/20 | 9:04:14 | SPIKE_0077.LAB | 50.9847 |
| 02/25/20 | 9:04:27 | SPIKE_0078.LAB | 51.0389 |

**PRE TEST AVERAGE** **50.87**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - POST TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ (ppm) |
|---|---|---|---|
| 02/25/20 | 18:53:43 | CTS_0068.LAB | 50.6090 |
| 02/25/20 | 18:53:57 | CTS_0069.LAB | 50.7610 |
| 02/25/20 | 18:54:11 | CTS_0070.LAB | 50.4207 |
| 02/25/20 | 18:54:25 | CTS_0071.LAB | 50.3055 |
| 02/25/20 | 18:54:39 | CTS_0072.LAB | 50.6951 |

**POST TEST AVERAGE** **50.56**

**Analyzer Make:** MKS **Analyzer Model:** 2030

$NH_3$ Cylinder Conc. ppm = 50.40

| Run ID | Instrument Response (%) | Error (%) | Pass / Fail ±5% |
|---|---|---|---|
| Pre Test | 50.87 | 0.93 | PASS |
| Post Test | 50.56 | 0.31 | PASS |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

## Calibration Gas #1

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ ppmvd | $SF_6$ ppmvd |
|---|---|---|---|---|
| 02/25/20 | 18:53:02 | CTS_0065.LAB | 49.4376 | 9.6995 |
| 02/25/20 | 18:53:16 | CTS_0066.LAB | 49.8893 | 9.7029 |
| 02/25/20 | 18:53:30 | CTS_0067.LAB | 50.1982 | 9.6963 |
| 02/25/20 | 18:53:43 | CTS_0068.LAB | 50.6090 | 9.7062 |
| 02/25/20 | 18:53:57 | CTS_0069.LAB | 50.7610 | 9.6990 |
| 02/25/20 | 18:54:11 | CTS_0070.LAB | 50.4207 | 9.6701 |
| 02/25/20 | 18:54:25 | CTS_0071.LAB | 50.3055 | 9.6545 |
| 02/25/20 | 18:54:39 | CTS_0072.LAB | 50.6951 | 9.6904 |
| **RAW AVERAGE** | | | **50.290** | **9.690** |

## Run #1: Pre-Spike - Native

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vw | $H_2O$ (%) | $NH_3$ ppmvw | $SF_6$ ppmvw |
|---|---|---|---|---|---|---|
| 02/25/20 | 18:58:12 | SPIKEA_0011.LAB | 4.5224 | 10.3164 | 2.0434 | -0.0017 |
| 02/25/20 | 18:58:26 | SPIKEA_0012.LAB | 4.5272 | 10.2733 | 1.9964 | 0.0023 |
| 02/25/20 | 18:58:40 | SPIKEA_0013.LAB | 4.5351 | 10.3082 | 1.9227 | 0.0012 |
| 02/25/20 | 18:58:54 | SPIKEA_0014.LAB | 4.5242 | 10.1841 | 1.9010 | 0.0043 |
| 02/25/20 | 18:59:08 | SPIKEA_0015.LAB | 4.5202 | 10.3074 | 1.8297 | 0.0021 |
| 02/25/20 | 18:59:21 | SPIKEA_0016.LAB | 4.5223 | 10.3226 | 1.8202 | 0.0014 |
| 02/25/20 | 18:59:35 | SPIKEA_0017.LAB | 4.5175 | 10.3704 | 1.8775 | -0.0005 |
| 02/25/20 | 18:59:49 | SPIKEA_0018.LAB | 4.5186 | 10.4159 | 1.8772 | -0.0017 |
| **RAW AVERAGE** | | | **4.523** | **10.312** | **1.909** | **0.001** |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Run #1: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vw | $H_2O$ (%) | $SF_6$ ppmvw | $NH_3$ ppmvw |
|---|---|---|---|---|---|---|
| 02/25/20 | 19:14:42 | SPIKEA_0083.LAB | 4.2255 | 8.8933 | 0.7469 | 4.8027 |
| 02/25/20 | 19:14:56 | SPIKEA_0084.LAB | 4.2352 | 8.8749 | 0.7540 | 4.9654 |
| 02/25/20 | 19:15:10 | SPIKEA_0085.LAB | 4.2292 | 8.8755 | 0.7478 | 5.0308 |
| 02/25/20 | 19:15:23 | SPIKEA_0086.LAB | 4.2385 | 8.8667 | 0.7528 | 5.1024 |
| 02/25/20 | 19:15:37 | SPIKEA_0087.LAB | 4.2363 | 8.8807 | 0.7529 | 5.1074 |
| 02/25/20 | 19:15:51 | SPIKEA_0088.LAB | 4.2121 | 8.8493 | 0.7507 | 5.1148 |
| 02/25/20 | 19:16:05 | SPIKEA_0089.LAB | 4.2317 | 8.8510 | 0.7552 | 5.1317 |
| 02/25/20 | 19:16:18 | SPIKEA_0090.LAB | 4.2202 | 8.8275 | 0.7582 | 5.0736 |
| **RAW AVERAGE** | | | **4.229** | **8.865** | **0.752** | **5.041** |

**Run #2: Pre-Spike - Native**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vw | $H_2O$ (%) | $NH_3$ ppmvw | $SF_6$ ppmvw |
|---|---|---|---|---|---|---|
| 02/25/20 | 19:28:55 | SPIKEA_0145.LAB | 4.5872 | 9.5217 | 2.2365 | 0.0006 |
| 02/25/20 | 19:29:08 | SPIKEA_0146.LAB | 4.5784 | 9.5366 | 2.2389 | 0.0067 |
| 02/25/20 | 19:29:22 | SPIKEA_0147.LAB | 4.5825 | 9.5005 | 2.1338 | 0.0004 |
| 02/25/20 | 19:29:36 | SPIKEA_0148.LAB | 4.5891 | 9.5161 | 2.1187 | 0.0051 |
| 02/25/20 | 19:29:49 | SPIKEA_0149.LAB | 4.5844 | 9.5198 | 2.1194 | 0.0007 |
| 02/25/20 | 19:30:03 | SPIKEA_0150.LAB | 4.5840 | 9.5534 | 2.1266 | 0.0024 |
| 02/25/20 | 19:30:17 | SPIKEA_0151.LAB | 4.5505 | 10.0484 | 2.1577 | -0.0049 |
| 02/25/20 | 19:30:31 | SPIKEA_0152.LAB | 4.5667 | 9.8760 | 2.1536 | -0.0008 |
| **RAW AVERAGE** | | | **4.578** | **9.634** | **2.161** | **0.001** |

**Run #2: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vw | $H_2O$ (%) | $SF_6$ ppmvw | $NH_3$ ppmvw |
|---|---|---|---|---|---|---|
| 02/25/20 | 19:34:52 | SPIKEA_0171.LAB | 4.2457 | 8.8554 | 0.7409 | 5.3409 |
| 02/25/20 | 19:35:06 | SPIKEA_0172.LAB | 4.2458 | 8.8409 | 0.7430 | 5.3043 |
| 02/25/20 | 19:35:19 | SPIKEA_0173.LAB | 4.2347 | 8.8397 | 0.7447 | 5.2658 |
| 02/25/20 | 19:35:33 | SPIKEA_0174.LAB | 4.2535 | 8.8035 | 0.7459 | 5.1583 |
| 02/25/20 | 19:35:47 | SPIKEA_0175.LAB | 4.2444 | 8.7976 | 0.7480 | 5.0769 |
| 02/25/20 | 19:36:01 | SPIKEA_0176.LAB | 4.2350 | 8.7795 | 0.7494 | 5.0325 |
| 02/25/20 | 19:36:15 | SPIKEA_0177.LAB | 4.2373 | 8.7592 | 0.7512 | 4.9294 |
| 02/25/20 | 19:36:28 | SPIKEA_0178.LAB | 4.2837 | 8.8170 | 0.6576 | 4.9571 |
| **RAW AVERAGE** | | | **4.248** | **8.812** | **0.735** | **5.133** |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

**Run #3: Pre-Spike - Native**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vw | $H_2O$ (%) | $NH_3$ ppmvw | $SF_6$ ppmvw |
|---|---|---|---|---|---|---|
| 02/25/20 | 19:41:03 | SPIKEA_0198.LAB | 4.5824 | 9.4929 | 2.0110 | 0.0053 |
| 02/25/20 | 19:41:17 | SPIKEA_0199.LAB | 4.6064 | 9.4872 | 1.9369 | -0.0026 |
| 02/25/20 | 19:41:31 | SPIKEA_0200.LAB | 4.5913 | 9.4811 | 1.9793 | 0.0020 |
| 02/25/20 | 19:41:44 | SPIKEA_0201.LAB | 4.5849 | 9.4857 | 1.9839 | -0.0024 |
| 02/25/20 | 19:41:58 | SPIKEA_0202.LAB | 4.5880 | 9.4799 | 1.9764 | 0.0018 |
| 02/25/20 | 19:42:12 | SPIKEA_0203.LAB | 4.5935 | 9.4664 | 1.9715 | -0.0039 |
| 02/25/20 | 19:42:26 | SPIKEA_0204.LAB | 4.5924 | 9.4794 | 1.9360 | 0.0004 |
| 02/25/20 | 19:42:39 | SPIKEA_0205.LAB | 4.5819 | 9.5087 | 1.9563 | 0.0005 |
| **RAW AVERAGE** | | | **4.590** | **9.485** | **1.969** | **0.000** |

**Run #3: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vw | $H_2O$ (%) | $SF_6$ ppmvw | $NH_3$ ppmvw |
|---|---|---|---|---|---|---|
| 02/25/20 | 19:48:23 | SPIKEA_0230.LAB | 4.2485 | 8.6077 | 0.7432 | 5.8106 |
| 02/25/20 | 19:48:37 | SPIKEA_0231.LAB | 4.2446 | 8.5992 | 0.7497 | 5.6583 |
| 02/25/20 | 19:48:50 | SPIKEA_0232.LAB | 4.2390 | 8.5942 | 0.7522 | 5.4796 |
| 02/25/20 | 19:49:04 | SPIKEA_0233.LAB | 4.2462 | 8.5921 | 0.7514 | 5.4695 |
| 02/25/20 | 19:49:18 | SPIKEA_0234.LAB | 4.2421 | 8.6067 | 0.7574 | 5.4405 |
| 02/25/20 | 19:49:32 | SPIKEA_0235.LAB | 4.2373 | 8.5977 | 0.7529 | 5.3990 |
| 02/25/20 | 19:49:45 | SPIKEA_0236.LAB | 4.2379 | 8.5604 | 0.7521 | 5.3451 |
| 02/25/20 | 19:49:59 | SPIKEA_0237.LAB | 4.2344 | 8.5425 | 0.7541 | 5.3697 |
| **RAW AVERAGE** | | | **4.241** | **8.588** | **0.752** | **5.497** |

**Cricket Valley Energy Center LLC**
**February 25, 2020**
**General Electric, 7F.05, Unit #U-00002**
**Cricket Valley Energy Center**

| Parameter | Unit | Run 1 | Run 2 | Run 3 |
|---|---|---|---|---|
| Concentration of $NH_3$ Cylinder | ppmvd | 50.29 | 50.29 | 50.29 |
| Concentration of $SF_6$ Cylinder | ppmvd | 9.69 | 9.69 | 9.69 |

Spike A

| | | | | |
|---|---|---|---|---|
| Stack $CO_2$ Concentration | %vw | 4.523 | 4.578 | 4.590 |
| Stack $H_2O$ Concentration | % | 10.312 | 9.634 | 9.485 |
| Stack $NH_3$ Concentration | ppmvw | 1.909 | 2.161 | 1.969 |
| Stack $SF_6$ Concentration | ppmvw | 0.001 | 0.001 | 0.000 |
| Stack + Spike $CO_2$ Concentration | %vw | 4.229 | 4.248 | 4.241 |
| Stack + Spike $H_2O$ Concentration | % | 8.865 | 8.812 | 8.588 |
| Stack + Spike $NH_3$ Concentration | ppmvw | 5.041 | 5.133 | 5.497 |
| Stack + Spike $SF_6$ Concentration | ppmvw | 0.752 | 0.735 | 0.752 |
| Dilution Ratio | | 0.085 | 0.083 | 0.085 |
| Ideal $NH_3$ Spike Yield | ppmvd | 6.231 | 6.376 | 6.258 |
| Percent Recovery $NH_3$ | % | 83.67% | 82.15% | 94.26% |

| DRIFT AND BIAS CHECK AND RESPONSE TIME CALCULATOR | | |
|---|---|---|
| **Strat Test Pre and Post QA/QC Check** | **$O_2$** | **NOx** |
| **Initial Zero** | -0.02 | -0.02 |
| **Final Zero** | -0.01 | 0.02 |
| **Avg. Zero** | | 0.00 |
| **Initial UpScale** | 12.13 | 5.05 |
| **Final UpScale** | 12.02 | 4.83 |
| **Avg. UpScale** | 12.08 | 4.94 |
| **Sys Resp (Zero)** | -0.01 | 0.00 |
| **Sys Resp (Upscale)** | 12.28 | 5.09 |
| **Upscale Cal Gas** | 11.97 | 4.91 |
| **Initial Zero Bias** | -0.05% | -0.22% |
| **Final Zero Bias** | 0.00% | 0.22% |
| **Zero Drift** | 0.05% | 0.43% |
| **Initial Upscale Bias** | -0.71% | -0.43% |
| **Final Upscale Bias** | -1.24% | -2.83% |
| **Upscale Drift** | 0.52% | 2.39% |
| Alternative Specification Abs Diff **Initial Zero** | 0.01 | 0.02 |
| Alternative Specification Abs Diff **Final Zero** | 0.00 | 0.02 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.15 | 0.04 |
| Alternative Specification Abs Diff **Final Upscale** | 0.26 | 0.26 |
| **Calibration Span** | 21.00 | 9.20 |
| **3% of Cal. Span (drift)** | 0.63 | 0.28 |
| **5% of Cal. Span (bias)** | 1.05 | 0.46 |

| | | |
|---|---|---|
| **Respone Time (min)** | 1.3 | 2.0 |
| **Sys. Response (min)** | 2.0 | |

| Date/Time mm/dd/yy hh:mm:ss | z | $O_2$ %-10 | s | z | NOx ppm-10 | s | INJECTIONS |
|---|---|---|---|---|---|---|---|
| 02/25/20 06:05:32 | | 13.44 | | | 1.36 | | x |
| 02/25/20 06:05:42 | | 13.38 | | | 1.35 | | |
| 02/25/20 06:05:52 | | 13.39 | | | 1.33 | | |
| 02/25/20 06:06:02 | | 13.39 | | | 1.34 | | |
| 02/25/20 06:06:12 | | 13.38 | | | 1.38 | | |
| 02/25/20 06:06:22 | | 8.55 | | | 1.38 | | |
| 02/25/20 06:06:32 | | 0.72 | | | 1.24 | | |
| 02/25/20 06:06:42 | x | **0.16** | | | 2.29 | | |
| 02/25/20 06:06:52 | | **0.11** | | | 4.25 | | |
| 02/25/20 06:07:02 | | **0.07** | | | **4.95** | x | |
| 02/25/20 06:07:12 | | **0.05** | | | **4.89** | | |
| 02/25/20 06:07:22 | | **0.04** | | | **4.94** | | |
| 02/25/20 06:07:32 | | **0.02** | | | **4.91** | | |
| 02/25/20 06:07:42 | | **0.01** | | | **4.95** | | |
| 02/25/20 06:07:52 | | **0.01** | | | **4.94** | | |
| 02/25/20 06:08:02 | | **0.00** | | | **4.94** | | x |
| 02/25/20 06:08:12 | | **-0.01** | | | **4.94** | | |
| 02/25/20 06:08:22 | | **-0.01** | | | **4.94** | | |
| 02/25/20 06:08:32 | | **-0.02** | | | **4.94** | | |
| 02/25/20 06:08:42 | | **-0.03** | | | **4.92** | | |
| 02/25/20 06:08:52 | | **-0.02** | | | **4.89** | | |
| 02/25/20 06:09:02 | | **-0.03** | | | **4.94** | | |
| 02/25/20 06:09:12 | | 5.12 | | | **4.93** | | |
| 02/25/20 06:09:22 | | **11.55** | x | | 4.06 | | |
| 02/25/20 06:09:32 | | **11.85** | | | 3.07 | | |
| 02/25/20 06:09:42 | | **11.89** | | | 2.25 | | |
| 02/25/20 06:09:52 | | **11.91** | | | 0.84 | | |
| 02/25/20 06:10:02 | | **11.93** | | x | **0.12** | | |
| 02/25/20 06:10:12 | | **11.94** | | | **0.09** | | |
| 02/25/20 06:10:22 | | **11.95** | | | **0.05** | | |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 1** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 13.40 | 1.85 | 0.14 |
| **Corrected Average** | 13.36 | 2.02 | 0.14 |
| **Initial Zero** | -0.03 | 0.02 | 0.05 |
| **Final Zero** | -0.05 | -0.53 | -0.04 |
| **Avg. Zero** | -0.04 | -0.26 | 0.01 |
| **Initial UpScale** | 11.99 | 4.93 | 5.13 |
| **Final UpScale** | 12.02 | 4.83 | 5.14 |
| **Avg. UpScale** | 12.01 | 4.88 | 5.14 |
| **Sys Resp (Zero)** | -0.01 | -0.05 | -0.01 |
| **Sys Resp (Upscale)** | 12.28 | 5.09 | 5.08 |
| **Upscale Cal Gas** | 11.97 | 4.91 | 5.09 |
| **Initial Zero Bias** | -0.10% | 0.76% | 0.63% |
| **Final Zero Bias** | -0.19% | -5.22% | -0.32% |
| **Zero Drift** | 0.10% | 5.98% | 0.95% |
| **Initial Upscale Bias** | -1.38% | -1.74% | 0.53% |
| **Final Upscale Bias** | -1.24% | -2.83% | 0.63% |
| **Upscale Drift** | 0.14% | 1.09% | 0.11% |
| Alternative Specification Abs Diff **Initial Zero** | 0.02 | 0.07 | 0.06 |
| Alternative Specification Abs Diff **Final Zero** | 0.04 | 0.48 | 0.03 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.29 | 0.16 | 0.05 |
| Alternative Specification Abs Diff **Final Upscale** | 0.26 | 0.26 | 0.06 |
| **Calibration Span** | 21.00 | 9.20 | 9.50 |
| **3% of Cal. Span (drift)** | 0.63 | 0.28 | 0.29 |
| **5% of Cal. Span (bias)** | 1.05 | 0.46 | 0.48 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 2** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 13.31 | 1.72 | 0.43 |
| **Corrected Average** | 13.25 | 2.00 | 0.46 |
| **Initial Zero** | -0.05 | -0.53 | -0.04 |
| **Final Zero** | 0.00 | -0.35 | -0.04 |
| **Avg. Zero** | -0.03 | -0.44 | -0.04 |
| **Initial UpScale** | 12.02 | 4.83 | 5.14 |
| **Final UpScale** | 12.02 | 4.94 | 5.09 |
| **Avg. UpScale** | 12.02 | 4.89 | 5.12 |
| **Sys Resp (Zero)** | -0.01 | -0.05 | -0.01 |
| **Sys Resp (Upscale)** | 12.28 | 5.09 | 5.08 |
| **Upscale Cal Gas** | 11.97 | 4.91 | 5.09 |
| **Initial Zero Bias** | -0.19% | -5.22% | -0.32% |
| **Final Zero Bias** | 0.05% | -3.26% | -0.32% |
| **Zero Drift** | 0.24% | 1.96% | 0.00% |
| **Initial Upscale Bias** | -1.24% | -2.83% | 0.63% |
| **Final Upscale Bias** | -1.24% | -1.63% | 0.11% |
| **Upscale Drift** | 0.00% | 1.20% | 0.53% |
| Alternative Specification Abs Diff **Initial Zero** | 0.04 | 0.48 | 0.03 |
| Alternative Specification Abs Diff **Final Zero** | 0.01 | 0.30 | 0.03 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.26 | 0.26 | 0.06 |
| Alternative Specification Abs Diff **Final Upscale** | 0.26 | 0.15 | 0.01 |
| **Calibration Span** | 21.00 | 9.20 | 9.50 |
| **3% of Cal. Span (drift)** | 0.63 | 0.28 | 0.29 |
| **5% of Cal. Span (bias)** | 1.05 | 0.46 | 0.48 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 3** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 13.34 | 1.90 | 0.13 |
| **Corrected Average** | 13.29 | 2.00 | 0.16 |
| **Initial Zero** | 0.00 | -0.35 | -0.04 |
| **Final Zero** | -0.04 | -0.01 | -0.04 |
| **Avg. Zero** | -0.02 | -0.18 | -0.04 |
| **Initial UpScale** | 12.02 | 4.94 | 5.09 |
| **Final UpScale** | 12.01 | 4.92 | 5.08 |
| **Avg. UpScale** | 12.01 | 4.93 | 5.09 |
| **Sys Resp (Zero)** | -0.01 | -0.05 | -0.01 |
| **Sys Resp (Upscale)** | 12.28 | 5.09 | 5.08 |
| **Upscale Cal Gas** | 11.97 | 4.91 | 5.09 |
| **Initial Zero Bias** | 0.05% | -3.26% | -0.32% |
| **Final Zero Bias** | -0.14% | 0.43% | -0.32% |
| **Zero Drift** | 0.19% | 3.70% | 0.00% |
| **Initial Upscale Bias** | -1.24% | -1.63% | 0.11% |
| **Final Upscale Bias** | -1.31% | -1.85% | 0.00% |
| **Upscale Drift** | 0.07% | 0.22% | 0.11% |
| Alternative Specification Abs Diff **Initial Zero** | 0.01 | 0.30 | 0.03 |
| Alternative Specification Abs Diff **Final Zero** | 0.03 | 0.04 | 0.03 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.26 | 0.15 | 0.01 |
| Alternative Specification Abs Diff **Final Upscale** | 0.27 | 0.17 | 0.00 |
| **Calibration Span** | 21.00 | 9.20 | 9.50 |
| **3% of Cal. Span (drift)** | 0.63 | 0.28 | 0.29 |
| **5% of Cal. Span (bias)** | 1.05 | 0.46 | 0.48 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 4** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 11.91 | 2.44 | 0.74 |
| **Corrected Average** | 11.85 | 2.42 | 0.78 |
| **Initial Zero** | -0.04 | -0.01 | -0.04 |
| **Final Zero** | -0.02 | 0.03 | -0.05 |
| **Avg. Zero** | -0.03 | 0.01 | -0.05 |
| **Initial UpScale** | 12.01 | 4.92 | 5.08 |
| **Final UpScale** | 12.05 | 4.96 | 5.08 |
| **Avg. UpScale** | 12.03 | 4.94 | 5.08 |
| **Sys Resp (Zero)** | -0.01 | -0.05 | -0.01 |
| **Sys Resp (Upscale)** | 12.28 | 5.09 | 5.08 |
| **Upscale Cal Gas** | 11.97 | 4.91 | 5.09 |
| **Initial Zero Bias** | -0.14% | 0.43% | -0.32% |
| **Final Zero Bias** | -0.05% | 0.87% | -0.42% |
| **Zero Drift** | 0.10% | 0.43% | 0.11% |
| **Initial Upscale Bias** | -1.31% | -1.85% | 0.00% |
| **Final Upscale Bias** | -1.10% | -1.41% | 0.00% |
| **Upscale Drift** | 0.21% | 0.43% | 0.00% |
| Alternative Specification Abs Diff **Initial Zero** | 0.03 | 0.04 | 0.03 |
| Alternative Specification Abs Diff **Final Zero** | 0.01 | 0.08 | 0.04 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.27 | 0.17 | 0.00 |
| Alternative Specification Abs Diff **Final Upscale** | 0.23 | 0.13 | 0.00 |
| **Calibration Span** | 21.00 | 9.20 | 9.50 |
| **3% of Cal. Span (drift)** | 0.63 | 0.28 | 0.29 |
| **5% of Cal. Span (bias)** | 1.05 | 0.46 | 0.48 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 5** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 13.39 | 1.98 | 0.11 |
| **Corrected Average** | 13.30 | 1.94 | 0.17 |
| **Initial Zero** | -0.02 | 0.03 | -0.05 |
| **Final Zero** | -0.02 | 0.06 | -0.08 |
| **Avg. Zero** | -0.02 | 0.05 | -0.07 |
| **Initial UpScale** | 12.05 | 4.96 | 5.08 |
| **Final UpScale** | 12.05 | 4.94 | 5.04 |
| **Avg. UpScale** | 12.05 | 4.95 | 5.06 |
| **Sys Resp (Zero)** | -0.01 | -0.05 | -0.01 |
| **Sys Resp (Upscale)** | 12.28 | 5.09 | 5.08 |
| **Upscale Cal Gas** | 11.97 | 4.91 | 5.09 |
| **Initial Zero Bias** | -0.05% | 0.87% | -0.42% |
| **Final Zero Bias** | -0.05% | 1.20% | -0.74% |
| **Zero Drift** | 0.00% | 0.33% | 0.32% |
| **Initial Upscale Bias** | -1.10% | -1.41% | 0.00% |
| **Final Upscale Bias** | -1.10% | -1.63% | -0.42% |
| **Upscale Drift** | 0.00% | 0.22% | 0.42% |
| Alternative Specification Abs Diff **Initial Zero** | 0.01 | 0.08 | 0.04 |
| Alternative Specification Abs Diff **Final Zero** | 0.01 | 0.11 | 0.07 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.23 | 0.13 | 0.00 |
| Alternative Specification Abs Diff **Final Upscale** | 0.23 | 0.15 | 0.04 |
| **Calibration Span** | 21.00 | 9.20 | 9.50 |
| **3% of Cal. Span (drift)** | 0.63 | 0.28 | 0.29 |
| **5% of Cal. Span (bias)** | 1.05 | 0.46 | 0.48 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 6** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 13.32 | 1.87 | 0.12 |
| **Corrected Average** | 13.25 | 1.84 | 0.21 |
| **Initial Zero** | -0.02 | 0.06 | -0.08 |
| **Final Zero** | -0.06 | 0.02 | -0.11 |
| **Avg. Zero** | -0.04 | 0.04 | -0.10 |
| **Initial UpScale** | 12.05 | 4.94 | 5.04 |
| **Final UpScale** | 12.02 | 4.92 | 5.07 |
| **Avg. UpScale** | 12.04 | 4.93 | 5.06 |
| **Sys Resp (Zero)** | -0.01 | -0.05 | -0.01 |
| **Sys Resp (Upscale)** | 12.28 | 5.09 | 5.08 |
| **Upscale Cal Gas** | 11.97 | 4.91 | 5.09 |
| **Initial Zero Bias** | -0.05% | 1.20% | -0.74% |
| **Final Zero Bias** | -0.24% | 0.76% | -1.05% |
| **Zero Drift** | 0.19% | 0.43% | 0.32% |
| **Initial Upscale Bias** | -1.10% | -1.63% | -0.42% |
| **Final Upscale Bias** | -1.24% | -1.85% | -0.11% |
| **Upscale Drift** | 0.14% | 0.22% | 0.32% |
| Alternative Specification Abs Diff **Initial Zero** | 0.01 | 0.11 | 0.07 |
| Alternative Specification Abs Diff **Final Zero** | 0.05 | 0.07 | 0.10 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.23 | 0.15 | 0.04 |
| Alternative Specification Abs Diff **Final Upscale** | 0.26 | 0.17 | 0.01 |
| **Calibration Span** | 21.00 | 9.20 | 9.50 |
| **3% of Cal. Span (drift)** | 0.63 | 0.28 | 0.29 |
| **5% of Cal. Span (bias)** | 1.05 | 0.46 | 0.48 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 7** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 13.32 | 1.98 | 0.09 |
| **Corrected Average** | 13.27 | 1.95 | 0.18 |
| **Initial Zero** | -0.06 | 0.02 | -0.11 |
| **Final Zero** | -0.06 | 0.06 | -0.07 |
| **Avg. Zero** | -0.06 | 0.04 | -0.09 |
| **Initial UpScale** | 12.02 | 4.92 | 5.07 |
| **Final UpScale** | 12.01 | 4.94 | 5.09 |
| **Avg. UpScale** | 12.02 | 4.93 | 5.08 |
| **Sys Resp (Zero)** | -0.01 | -0.05 | -0.01 |
| **Sys Resp (Upscale)** | 12.28 | 5.09 | 5.08 |
| **Upscale Cal Gas** | 11.97 | 4.91 | 5.09 |
| **Initial Zero Bias** | -0.24% | 0.76% | -1.05% |
| **Final Zero Bias** | -0.24% | 1.20% | -0.63% |
| **Zero Drift** | 0.00% | 0.43% | 0.42% |
| **Initial Upscale Bias** | -1.24% | -1.85% | -0.11% |
| **Final Upscale Bias** | -1.29% | -1.63% | 0.11% |
| **Upscale Drift** | 0.05% | 0.22% | 0.21% |
| Alternative Specification Abs Diff **Initial Zero** | 0.05 | 0.07 | 0.10 |
| Alternative Specification Abs Diff **Final Zero** | 0.05 | 0.11 | 0.06 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.26 | 0.17 | 0.01 |
| Alternative Specification Abs Diff **Final Upscale** | 0.27 | 0.15 | 0.01 |
| **Calibration Span** | 21.00 | 9.20 | 9.50 |
| **3% of Cal. Span (drift)** | 0.63 | 0.28 | 0.29 |
| **5% of Cal. Span (bias)** | 1.05 | 0.46 | 0.48 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 8** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 13.31 | 2.09 | 0.11 |
| **Corrected Average** | 13.25 | 2.05 | 0.18 |
| **Initial Zero** | -0.06 | 0.06 | -0.07 |
| **Final Zero** | -0.04 | 0.01 | -0.09 |
| **Avg. Zero** | -0.05 | 0.04 | -0.08 |
| **Initial UpScale** | 12.01 | 4.94 | 5.09 |
| **Final UpScale** | 12.03 | 4.94 | 5.08 |
| **Avg. UpScale** | 12.02 | 4.94 | 5.09 |
| **Sys Resp (Zero)** | -0.01 | -0.05 | -0.01 |
| **Sys Resp (Upscale)** | 12.28 | 5.09 | 5.08 |
| **Upscale Cal Gas** | 11.97 | 4.91 | 5.09 |
| **Initial Zero Bias** | -0.24% | 1.20% | -0.63% |
| **Final Zero Bias** | -0.14% | 0.65% | -0.84% |
| **Zero Drift** | 0.10% | 0.54% | 0.21% |
| **Initial Upscale Bias** | -1.29% | -1.63% | 0.11% |
| **Final Upscale Bias** | -1.19% | -1.63% | 0.00% |
| **Upscale Drift** | 0.10% | 0.00% | 0.11% |
| Alternative Specification Abs Diff **Initial Zero** | 0.05 | 0.11 | 0.06 |
| Alternative Specification Abs Diff **Final Zero** | 0.03 | 0.06 | 0.08 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.27 | 0.15 | 0.01 |
| Alternative Specification Abs Diff **Final Upscale** | 0.25 | 0.15 | 0.00 |
| **Calibration Span** | 21.00 | 9.20 | 9.50 |
| **3% of Cal. Span (drift)** | 0.63 | 0.28 | 0.29 |
| **5% of Cal. Span (bias)** | 1.05 | 0.46 | 0.48 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 9** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 12.49 | 2.38 | 0.08 |
| **Corrected Average** | 12.43 | 2.36 | 0.15 |
| **Initial Zero** | -0.04 | 0.01 | -0.09 |
| **Final Zero** | -0.06 | 0.02 | -0.07 |
| **Avg. Zero** | -0.05 | 0.02 | -0.08 |
| **Initial UpScale** | 12.03 | 4.94 | 5.08 |
| **Final UpScale** | 12.03 | 4.94 | 5.05 |
| **Avg. UpScale** | 12.03 | 4.94 | 5.07 |
| **Sys Resp (Zero)** | -0.01 | -0.05 | -0.01 |
| **Sys Resp (Upscale)** | 12.28 | 5.09 | 5.08 |
| **Upscale Cal Gas** | 11.97 | 4.91 | 5.09 |
| **Initial Zero Bias** | -0.14% | 0.65% | -0.84% |
| **Final Zero Bias** | -0.24% | 0.76% | -0.63% |
| **Zero Drift** | 0.10% | 0.11% | 0.21% |
| **Initial Upscale Bias** | -1.19% | -1.63% | 0.00% |
| **Final Upscale Bias** | -1.19% | -1.63% | -0.32% |
| **Upscale Drift** | 0.00% | 0.00% | 0.32% |
| Alternative Specification Abs Diff **Initial Zero** | 0.03 | 0.06 | 0.08 |
| Alternative Specification Abs Diff **Final Zero** | 0.05 | 0.07 | 0.06 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.25 | 0.15 | 0.00 |
| Alternative Specification Abs Diff **Final Upscale** | 0.25 | 0.15 | 0.03 |
| **Calibration Span** | 21.00 | 9.20 | 9.50 |
| **3% of Cal. Span (drift)** | 0.63 | 0.28 | 0.29 |
| **5% of Cal. Span (bias)** | 1.05 | 0.46 | 0.48 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 10** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 12.34 | 2.31 | 0.10 |
| **Corrected Average** | 12.29 | 2.31 | 0.17 |
| **Initial Zero** | -0.06 | 0.02 | -0.07 |
| **Final Zero** | -0.08 | -0.04 | -0.07 |
| **Avg. Zero** | -0.07 | -0.01 | -0.07 |
| **Initial UpScale** | 12.03 | 4.94 | 5.05 |
| **Final UpScale** | 12.01 | 4.89 | 5.04 |
| **Avg. UpScale** | 12.02 | 4.92 | 5.05 |
| **Sys Resp (Zero)** | -0.01 | -0.05 | -0.01 |
| **Sys Resp (Upscale)** | 12.28 | 5.09 | 5.08 |
| **Upscale Cal Gas** | 11.97 | 4.91 | 5.09 |
| **Initial Zero Bias** | -0.24% | 0.76% | -0.63% |
| **Final Zero Bias** | -0.33% | 0.11% | -0.63% |
| **Zero Drift** | 0.10% | 0.65% | 0.00% |
| **Initial Upscale Bias** | -1.19% | -1.63% | -0.32% |
| **Final Upscale Bias** | -1.29% | -2.17% | -0.42% |
| **Upscale Drift** | 0.10% | 0.54% | 0.11% |
| Alternative Specification Abs Diff **Initial Zero** | 0.05 | 0.07 | 0.06 |
| Alternative Specification Abs Diff **Final Zero** | 0.07 | 0.01 | 0.06 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.25 | 0.15 | 0.03 |
| Alternative Specification Abs Diff **Final Upscale** | 0.27 | 0.20 | 0.04 |
| **Calibration Span** | 21.00 | 9.20 | 9.50 |
| **3% of Cal. Span (drift)** | 0.63 | 0.28 | 0.29 |
| **5% of Cal. Span (bias)** | 1.05 | 0.46 | 0.48 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 11** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 12.36 | 2.36 | 0.07 |
| **Corrected Average** | 12.31 | 2.31 | 0.17 |
| **Initial Zero** | -0.08 | -0.04 | -0.07 |
| **Final Zero** | -0.06 | 0.18 | -0.13 |
| **Avg. Zero** | -0.07 | 0.07 | -0.10 |
| **Initial UpScale** | 12.01 | 4.89 | 5.04 |
| **Final UpScale** | 12.02 | 4.98 | 5.05 |
| **Avg. UpScale** | 12.02 | 4.94 | 5.05 |
| **Sys Resp (Zero)** | -0.01 | -0.05 | -0.01 |
| **Sys Resp (Upscale)** | 12.28 | 5.09 | 5.08 |
| **Upscale Cal Gas** | 11.97 | 4.91 | 5.09 |
| **Initial Zero Bias** | -0.33% | 0.11% | -0.63% |
| **Final Zero Bias** | -0.24% | 2.50% | -1.26% |
| **Zero Drift** | 0.10% | 2.39% | 0.63% |
| **Initial Upscale Bias** | -1.29% | -2.17% | -0.42% |
| **Final Upscale Bias** | -1.24% | -1.20% | -0.32% |
| **Upscale Drift** | 0.05% | 0.98% | 0.11% |
| Alternative Specification Abs Diff **Initial Zero** | 0.07 | 0.01 | 0.06 |
| Alternative Specification Abs Diff **Final Zero** | 0.05 | 0.23 | 0.12 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.27 | 0.20 | 0.04 |
| Alternative Specification Abs Diff **Final Upscale** | 0.26 | 0.11 | 0.03 |
| **Calibration Span** | 21.00 | 9.20 | 9.50 |
| **3% of Cal. Span (drift)** | 0.63 | 0.28 | 0.29 |
| **5% of Cal. Span (bias)** | 1.05 | 0.46 | 0.48 |

# RATA - FIELD DATA SHEET

AIR HYGIENE

| | |
|---|---|
| Company: | CIS |
| Location: | Cricket Valley |
| Date: | 2/25/20 Project Code: 20-CIS-A-CricketValley |
| Unit Make and Model: | 7F-05 |
| Unit Number: | U-00002 |
| Serial Number: | |
| Data Recorded By: | MA |
| Tested With AHI Unit(s): | Truck(s): 176 Trailer(s): 215 |
| LDEQ Warmup/Cal Req: | On (Day/Time): 2/25/20 Cal (Day/Time): 5:00 |

Stack Dia. = 228
Measured By: RW
Measured With: Laser
*Start

| CYLINDER SERIAL NUMBERS | | $O_2$ | NOx | CO |
|---|---|---|---|---|
| | Low | EB0072434 | → | |
| | Mid | CC722590 | EB0065464 | 3 |
| | High | CC721614 | EB00B492 | |

NH3

| CYLINDER SERIAL NUMBERS | | ~~THC~~ | $CO_2$ | $SO_2$ |
|---|---|---|---|---|
| | Low | EB0065964 | | |
| | Mid | | | |
| | High | | | |

| RUN INFORMATION | Run #1 | Run #2 | Run #3 | Run #4 | Run #5 | Run #6 | Run #7 | Run #8 | Run #9 | Run #10 | Run #11 | Run #12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Time Start (hh:mm:ss) | 11:46:22 | 12:32:28 | 13:07:58 | 13:36:28 | 14:15:28 | 14:46:28 | 15:17:28 | 15:47:28 | 16:20:28 | 16:51:28 | 17:27:28 | |
| Time Stop (hh:mm:ss) | 11:53:28 | 12:52:58 | 13:27:58 | 13:56:58 | 14:35:58 | 15:06:58 | 15:37:58 | 16:07:58 | 16:40:58 | 17:11:58 | 18:17:58 | |
| Rated Power (MW or hp) | 12:13:58 | | | | | | | | | | | |
| Actual Power (MW or hp) | | | | | | | | | | | | |
| Barometric Pressure (In. Hg) | 29.33 | 29.36 | 29.34 | 29.33 | 29.34 | 29.33 | 29.33 | 29.33 | 29.33 | 29.34 | 29.37 | |
| Ambient Temperature (°F) | ~~53.5~~ 54.8 | 55.3 | 55.1 | 55.5 | 59.0 | 55.7 | ~~53.8~~ 55.8 | 55.1 | 54.5 | 53.5 | 51.0 | |
| Relative Humidity (%) | 50.8 | 50.6 | 48.6 | 47.5 | 44.7 | 48.0 | 50.1 | 50.9 | 53.5 | 56.8 | 75.7 | |
| CEMS DATA for $O_2$ | | | | | | | | | | | | |
| CEMS DATA for NOx | | | | | | | | | | | | |
| CEMS DATA for CO | | | | | | | | | | | | |
| CEMS DATA for $SO_2$ | | | | | | | | | | | | |

| CALIBRATION | $O_2$ | | NOx | | CO | | $SO_2$ | |
|---|---|---|---|---|---|---|---|---|
| | Conc. | Actual | Conc. | Actual | Conc. | Actual | Conc. | Actual |
| Zero Gas | 0.0 | -.01 | 0.0 | -.05 | 0.0 | -.01 | | |
| Low Gas | 11.47 | 12.28 | 4.91 | 5.09 | 5.09 | 5.08 | | |
| Mid Gas | 21.0 | 21.25 | 9.20 | 9.28 | 9.50 | 9.62 | | |
| High Gas | | | | | | | | |

| $NO_2$ CONVERSION | |
|---|---|
| $NO_2$ Gas (ppm) | 48.7 |
| NO Reading (ppm) | 1.40 |
| NOx Reading (ppm) | 48.79 |
| Cylinder Num | EB009843 |

| BIAS | $O_2$ | | NOx | | CO | | $SO_2$ | |
|---|---|---|---|---|---|---|---|---|
| | Zero | Mid | Zero | Mid | Zero | Mid | Zero | Mid |
| Initial Run #1 | -.03 | 11.99 | .02 | 4.93 | .05 | 5.13 | | |
| Run #1 / Run #2 | -.05 | 12.02 | -.03 | 4.83 | -.04 | 5.14 | | |
| Run #2 / Run #3 | 0.0 | 12.02 | -.35 | 4.94 | -.04 | 5.09 | | |
| Run #3 / Run #4 | -.04 | 12.01 | -.01 | 4.92 | -.04 | 5.08 | | |
| Run #4 / Run #5 | -.02 | 12.05 | .06 | 4.96 | -.05 | 5.03 | | |
| Run #5 / Run #6 | -.06 | 12.02 | .02 | 4.92 | -.11 | 5.07 | | |
| Run #6 / Run #7 | -.06 | 12.01 | .06 | 4.94 | -.07 | 5.09 | | |
| Run #7 / Run #8 | -.04 | 12.03 | .01 | 4.94 | -.09 | 5.08 | | |
| Run #8 / Run #9 | -.06 | 12.03 | .02 | 4.94 | -.07 | 5.05 | | |
| Run #9 / Run #10 | -.03 | 12.01 | -.04 | 4.89 | -.07 | 5.04 | | |
| Run #10 / Run #11 | -.06 | 12.02 | .18 | 4.98 | -.13 | 5.05 | | |
| Run #11 / Run #12 | | | | | | | | |
| Run #12 Final | | | | | | | | |
| Bias Gas Actual Conc. | | 11.97 | | 4.91 | | 5.09 | | |

| REPORT INFORMATION | INSTRUMENT | SERIAL # |
|---|---|---|
| $O_2$ | SERVO 1440 | 02-0021 |
| NOx | ThermO 42C | NX-003 |
| CO | Enst-co 300 ThermO 48C | |
| ~~THC~~MS | MKS | EF-0008 |
| $CO_2$ | | |
| $SO_2$ | | |

| RESPONSE TIME | TIME (hh:mm) | RESP (min) |
|---|---|---|
| Gas Inject | / / | |
| 1st Inst. @ 95% | / / | / / |
| 2nd Inst. @ 95% | / / | / / |
| 3rd Inst. @ 95% | / / | / / |

Signature

# APPENDIX E

# STRATIFICATION TEST DATA

| Source Information | |
|---|---|
| **Company** | Cricket Valley Energy Center LLC |
| **Plant Name** | Cricket Valley Energy Center |
| **Equipment** | General Electric (GE) 7F.05 Combustion Turbine |
| **Location** | Dover Plains, New York |

| Test Information | |
|---|---|
| **Date** | 02/25/20 |
| **Project #** | cis-19-cricketvalley.ny-start#1 |
| **Unit Number** | U-00002 |
| **Load** | Base Load |
| **Number of Ports Available** | 4 |
| **Number of Ports Used** | 4 |

| Stack and Test Type | | | |
|---|---|---|---|
| ○ | Isokinetic Traverse (Wet Chemistry Testing) | | **Circular Stack** |
| ○ | Velocity Traverse (Flow and Flow RATA Test) | | |
| ○ | Stratification Traverse (Compliance Test) | ☐ RM 20 | |
| ◉ | **Stratification Traverse (RATA)** | ☐ Part 60 ☑ Part 75 | |

Created with Traverse-AHI v20190211

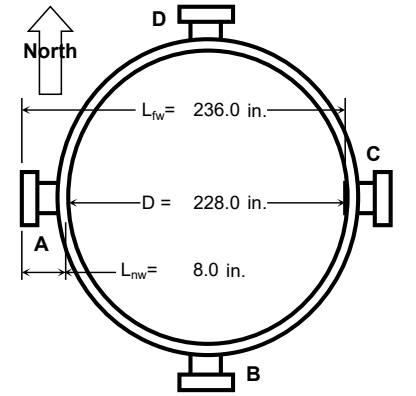
## METHOD 1 - STRATIFICATION TEST FOR A CIRCULAR SOURCE

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 02/25/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | cis-19-cricketvalley.ny-start#1 |
| **Equipment** | General Electric (GE) 7F.05 Combustion Turbine | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Circular Stack or Duct Diameter** | | | |
|---|---|---|---|
| **Distance to Far Wall of Stack** | ($L_{fw}$) | 236.00 | in. |
| **Distance to Near Wall of Stack** | ($L_{nw}$) | 8.00 | in.* |
| **Diameter of Stack** | (D) | 228.00 | in. |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ |

*assume 8 in. reference (must be measured and verified in field)

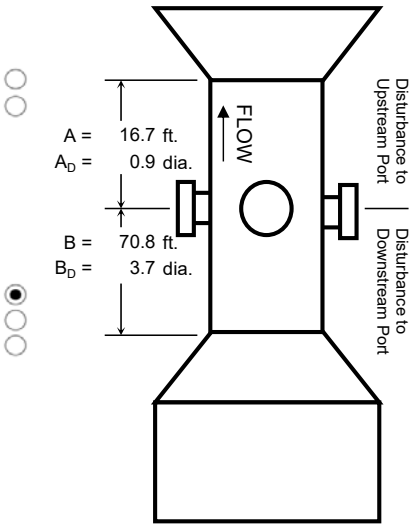
| **Distance from Disturbances to Port** | | | |
|---|---|---|---|
| **Distance Upstream** | (A) | 200.40 | in. |
| **Diameters Upstream** | ($A_D$) | 0.88 | diameters |
| **Distance Downstream** | (B) | 850.00 | in. |
| **Diameters Downstream** | ($B_D$) | 3.73 | diameters |




| **Number of Traverse Points Required** | | | | | |
|---|---|---|---|---|---|
| Diameters to Flow Disturbance | | Minimum Number of[1] Traverse Points | | Minimum Number of Traverse Points Comp Stratification | |
| Down ($B_D$) Stream | Up ($A_D$) Stream | Particulate Points | Velocity Points | Criteria | Points |
| 2.00-4.99 | 0.50-1.24 | 24 | 16 | RM 7E 8.1.2 | 12 RM1 pts |
| 5.00-5.99 | 1.25-1.49 | 20 | 16 | Alt 7E 8.1.2 | 3 points |
| 6.00-6.99 | 1.50-1.74 | 16 | 12 | | |
| 7.00-7.99 | 1.75-1.99 | 12 | 12 | | |
| >= 8.00 | >=2.00 | 8 or 12[2] | 8 or 12[2] | **Minimum Number of** | |
| Upstream Spec | | 24 | 16 | **Traverse Points** | |
| Downstream Spec | | 24 | 16 | **RATA Stratification** | |
| Traverse Pts Required | | 24 | 16 | **Criteria** | **Points** |
| | | | | Part75/60 | 12 RM1 pts |
| | | | | 75 abrv (a) | 3 points |
| | | | | 75 abrv (b) | 6 points |
| | | | | | points |

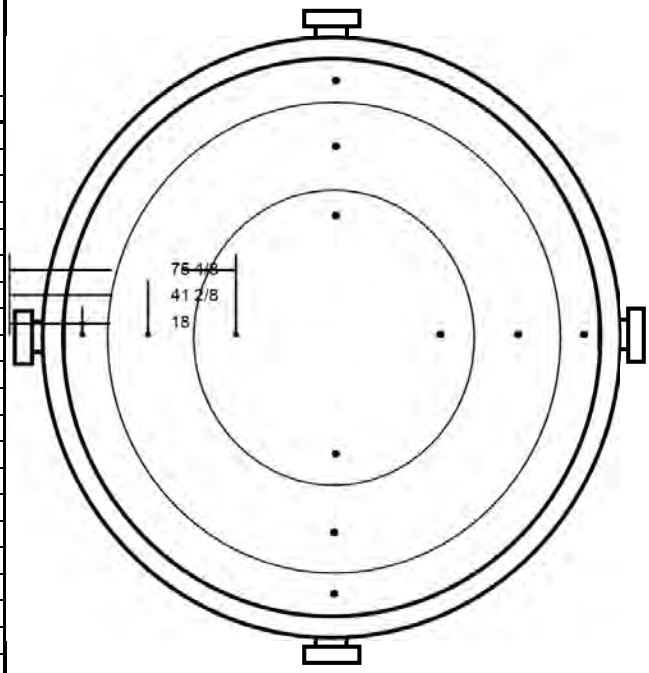
[1] Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.

[2] 8 for Circular Stacks 12 to 24 inches
12 for Circular Stacks over 24 inches




| **Number of Traverse Points Used** | | | | |
|---|---|---|---|---|
| 4 | **Ports by** | 3 | **Pts / port** | **Stratification Traverse (RATA)** |
| 12 | **Pts Used** | 12 | **Required** | |

| **Traverse Point Locations** | | | |
|---|---|---|---|
| **Traverse Point Number** | **Percent of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
| | % | in. | in. |
| **1** | 4.4% | 10 | 18 |
| **2** | 14.6% | 33 2/8 | 41 2/8 |
| **3** | 29.6% | 67 4/8 | 75 4/8 |
| **4** | | | |
| **5** | | | |
| **6** | | | |
| **7** | | | |
| **8** | | | |
| **9** | | | |
| **10** | | | |
| **11** | | | |
| **12** | | | |
| **13** | | | |
| **14** | | | |
| **15** | | | |
| **16** | | | |
| **17** | | | |
| **18** | | | |
| **19** | | | |
| **20** | | | |
| **21** | | | |
| **22** | | | |
| **23** | | | |
| **24** | | | |



## STRATIFICATION TRAVERSE (RATA) RESULTS

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 02/25/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | cis-19-cricketvalley.ny-start#1 |
| **Equipment** | General Electric (GE) 7F.05 Combustion Turbine | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Stack Dimensions** | | | | **Traverse Data** | | | |
|---|---|---|---|---|---|---|---|
| **Diameter or Length of Stack** | (D) | 228.00 | in. | 4 | **Ports by** | 3 | **Pts / port** |
| **Width of Stack** | (W) | | in. | 12 | **Pts Used** | 12 | **Required** |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ | **Run Start** | 6:14:22 | **Run End** | 7:12:22 |

| **Traverse Point** | **Time Per Point** | **Point Start Time** | **Point Stop Time (Reading)** | **$O_2$** | **Percent Difference** | **NOx** | **Percent Difference** |
|---|---|---|---|---|---|---|---|
| | min. | hh:mm:ss | hh:mm:ss | % | % | ppm | % |
| D-3 | 4.00 | 6:14:22 | 6:18:22 | 13.43 | 0.75% | 1.52 | 4.45% |
| D-2 | 4.00 | 6:18:22 | 6:22:22 | 13.40 | 0.52% | 1.50 | 5.70% |
| D-1 | 4.00 | 6:22:22 | 6:26:22 | 13.39 | 0.45% | 1.48 | 6.96% |
| C-3 | 8.00 | 6:26:22 | 6:34:22 | 13.32 | 0.07% | 1.49 | 6.33% |
| C-2 | 4.00 | 6:30:22 | 6:34:22 | 13.31 | 0.15% | 1.49 | 6.33% |
| C-1 | 4.00 | 6:34:22 | 6:38:22 | 13.31 | 0.15% | 1.58 | 0.68% |
| B-3 | 10.00 | 6:38:22 | 6:48:22 | 13.47 | 1.05% | 1.47 | 7.59% |
| B-2 | 4.00 | 6:48:22 | 6:52:22 | 13.45 | 0.90% | 1.45 | 8.85% |
| B-1 | 4.00 | 6:52:22 | 6:56:22 | 13.43 | 0.75% | 1.49 | 6.33% |
| A-3 | 8.00 | 6:56:22 | 7:04:22 | 13.03 | **2.25%** | 1.91 | **20.07%** |
| A-2 | 4.00 | 7:04:22 | 7:08:22 | 13.21 | 0.90% | 1.91 | **20.07%** |
| A-1 | 4.00 | 7:08:22 | 7:12:22 | 13.21 | 0.90% | 1.80 | 13.09% |
| **Average** | | | | 13.33 | | 1.59 | |

# RATA SAMPLE POINTS FOR CIRCULAR STACK

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center LLC | **Date** | 02/25/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | cis-19-cricketvalley.ny-start#1 |
| **Equipment** | General Electric (GE) 7F.05 Combustion Turbine | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Stack Dimensions** | | | | **Traverse Data** | | | |
|---|---|---|---|---|---|---|---|
| **Diameter or Length of Stack** | (D) | 228.00 | in. | 4 | **Ports by** | 3 | **Pts / port** |
| **Width of Stack** | (W) | | in. | 12 | **Pts Used** | 12 | **Required** |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ | **Run Start** | 6:14:22 | **Run End** | 7:12:22 |

**40 CFR 75 Criteria**

| **Stratification Results** | |
|---|---|
| **Maximum Percent Difference** | 2.25 % for $O_2$ |
| **Maximum Pollutant Conc. Diff.** | 0.32 ppm for NOx |
| **Maximum Diluent Conc. Diff.** | 0.30 % for $O_2$ |
| **Stratification Conclusions** | |
| **Comparison** | at least one diluent/pollutant |
| **Stack Diameter** | D > 93.6 in. |

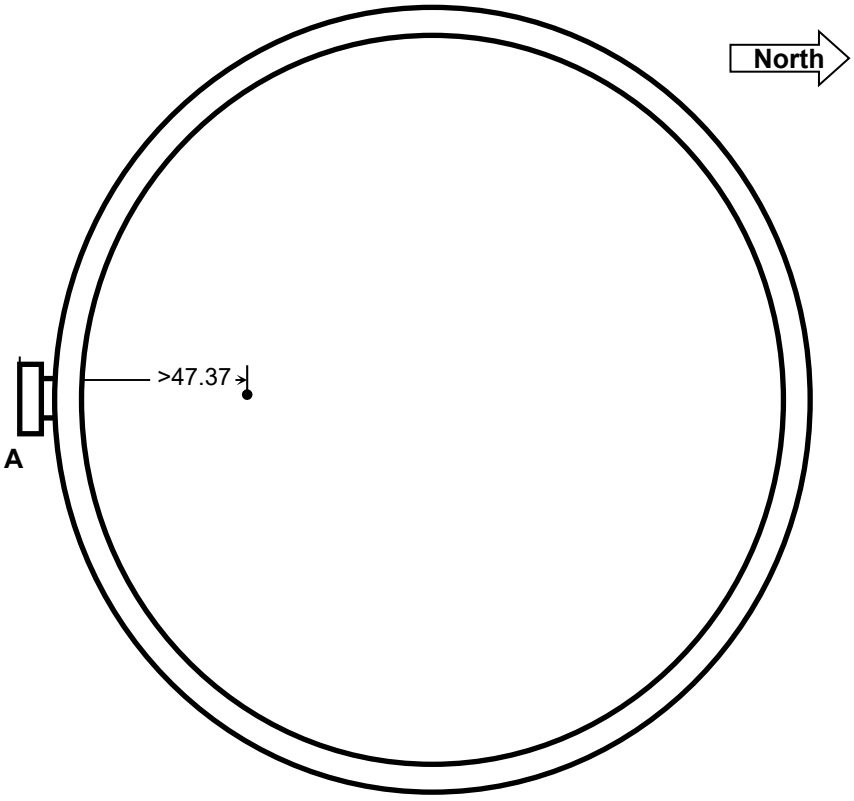
Under Part 75 criteria at least one measured pollutant or diluent demonstrates a non-stratified stack with subsequent testing from a single point located at least one meter away from the stack wall.

| **Traverse Point Number** | **Percent of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
|---|---|---|---|
| | % | in. | in. |
| **1** | >17.27% | >39.37 | >47.37 |
| **2** | | | |
| **3** | | | |

Test Type

- ☐ Moisture, for MW
- ☐ Moisture, for wet-to-dry
- ☑ Gas

- ☐ Use 6.5.6.3(a) points?
- ☐ 6.5.6(b)(2) alt. points could apply



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**end of report**

# APPENDIX 8

# GAS CYLINDER CERTIFICATION SHEETS

Airgas
an Air Liquide company

C0/L
02/22/20

**Airgas Specialty Gases**
Airgas USA, LLC
6141 Easton Road
Bldg 1
Plumsteadville, PA 18949
Airgas.com

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI99E15A2039 | Reference Number: | 160-401523613-1 |
| Cylinder Number: | SG910481 | Cylinder Volume: | 144.3 CF |
| Laboratory: | 124 - Plumsteadville - PA | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | A12019 | Valve Outlet: | 350 |
| Gas Code: | CO,BALN | Certification Date: | Jun 20, 2019 |

**Expiration Date: Jun 20, 2027**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| CARBON MONOXIDE | 7.000 PPM | 7.067 PPM | G1 | +/- 0.6% NIST Traceable | 06/20/2019 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 061207 | KAL003958 | 9.855 PPM CARBON MONOXIDE/NITROGEN | 0.51% | Jun 05, 2024 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| MKS FTIR - CO - 000928781 | FTIR | Jun 07, 2019 |

**Triad Data Available Upon Request**

Approved for Release

Airgas
an Air Liquide company

02/24/20 NO/NOx-CO/N

**Airgas Specialty Gases**
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E03NI99E15A09J6 | Reference Number: | 122-401543888-1 |
| Cylinder Number: | ALM034669 | Cylinder Volume: | 144.4 CF |
| Laboratory: | 124 - Durham (SAP) - NC | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | B22019 | Valve Outlet: | 660 |
| Gas Code: | CO,NO,NOX,BALN | Certification Date: | Jul 22, 2019 |

**Expiration Date: Jul 22, 2027**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| NOX | 180.0 PPM | 176.8 PPM | G1 | +/- 0.5% NIST Traceable | 07/15/2019, 07/22/2019 |
| NITRIC OXIDE | 180.0 PPM | 176.8 PPM | G1 | +/- 0.5% NIST Traceable | 07/15/2019, 07/22/2019 |
| CARBON MONOXIDE | 1700 PPM | 1709 PPM | G1 | +/- 0.5% NIST Traceable | 07/15/2019 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 18060130 | KAL004288 | 249.9 PPM NITRIC OXIDE/NITROGEN | +/-0.4% | Nov 08, 2023 |
| PRM | PRM | D562879 | 10.01 PPM NITROGEN DIOXIDE/AIR | +/- 1.9% | Aug 17, 2018 |
| GMIS | 124206889114 | CC322698 | 4.432 PPM NITROGEN DIOXIDE/NITROGEN | +/- 2.0% | Aug 15, 2021 |
| NTRM | 09010339 | KAL004580 | 970.0 PPM CARBON MONOXIDE/NITROGEN | +/- 0.4% | May 14, 2021 |

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| Nicolet 6700 AHR0801549 CO | FTIR | Jun 27, 2019 |
| Nicolet 6700 AHR0801549 NO | FTIR | Jun 27, 2019 |
| Nicolet 6700 AHR0801549 NO | FTIR | Jun 27, 2019 |

**Triad Data Available Upon Request**

Approved for Release

Airgas
an Air Liquide company

02/02/2029 1051
CAL

**Airgas Specialty Gases**
Airgas USA, LLC
6141 Easton Road
Bldg 1
Plumsteadville, PA 18949
Airgas.com

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI99E15A2039 | Reference Number: | 160-401523613-1 |
| Cylinder Number: | ALM057981 | Cylinder Volume: | 144.3 CF |
| Laboratory: | 124 - Plumsteadville - PA | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | A12019 | Valve Outlet: | 350 |
| Gas Code: | CO,BALN | Certification Date: | Jun 20, 2019 |

**Expiration Date: Jun 20, 2027**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531 using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| CARBON MONOXIDE | 7.000 PPM | 7.052 PPM | G1 | +/- 0.6% NIST Traceable | 06/20/2019 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 061207 | KAL003958 | 9.855 PPM CARBON MONOXIDE/NITROGEN | 0.51% | Jun 05, 2024 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| MKS FTIR - CO - 000928781 | FTIR | Jun 07, 2019 |

**Triad Data Available Upon Request**

Approved for Release

Airgas
an Air Liquide company

02/03/20
NO/H- CO/H 1058

**Airgas Specialty Gases**
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E03NI99E15A09J6 | Reference Number: | 122-401543888-1 |
| Cylinder Number: | SG9160199BAL | Cylinder Volume: | 144.4 CF |
| Laboratory: | 124 - Durham (SAP) - NC | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | B22019 | Valve Outlet: | 660 |
| Gas Code: | CO,NO,NOX,BALN | Certification Date: | Jul 22, 2019 |

**Expiration Date: Jul 22, 2027**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| NOX | 180.0 PPM | 177.2 PPM | G1 | +/- 0.6% NIST Traceable | 07/15/2019, 07/22/2019 |
| NITRIC OXIDE | 180.0 PPM | 177.0 PPM | G1 | +/- 0.6% NIST Traceable | 07/15/2019, 07/22/2019 |
| CARBON MONOXIDE | 1700 PPM | 1712 PPM | G1 | +/- 0.6% NIST Traceable | 07/15/2019 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 18060130 | KAL004288 | 249.9 PPM NITRIC OXIDE/NITROGEN | +/- 0.4% | Nov 08, 2023 |
| PRM | PRM | D582879 | 10.01 PPM NITROGEN DIOXIDE/AIR | +/- 1.9% | Aug 17, 2018 |
| GMIS | 124206889114 | CC322698 | 4.432 PPM NITROGEN DIOXIDE/NITROGEN | +/- 2.0% | Aug 15, 2021 |
| NTRM | 09010339 | KAL004580 | 970.0 PPM CARBON MONOXIDE/NITROGEN | +/- 0.4% | May 14, 2021 |

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| Nicolet 6700 AHR0801549 CO | FTIR | Jun 27, 2019 |
| Nicolet 6700 AHR0801549 NO | FTIR | Jun 27, 2019 |
| Nicolet 6700 AHR0801549 NO | FTIR | Jun 27, 2019 |

**Triad Data Available Upon Request**

Approved for Release

**Airgas Specialty Gases**
Airgas USA, LLC
6141 Easton Road
Bldg 1
Plumsteadville, PA 18949
Airgas.com

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI78E15A0124 | Reference Number: | 160-401495594-1 |
| Cylinder Number: | ALM064777 | Cylinder Volume: | 146.3 CF |
| Laboratory: | 124 - Plumsteadville - PA | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | A12019 | Valve Outlet: | 590 |
| Gas Code: | O2,BALN | Certification Date: | May 09, 2019 |

**Expiration Date: May 09, 2027**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| OXYGEN | 22.00 % | 22.14 % | G1 | +/- 0.3% NIST Traceable | 05/09/2019 |
| NITROGEN | Balance | | | - | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| SIEMENS OXYMAT 6 - W5951 - O2 | PARAMAGNETIC | Apr 25, 2019 |

**Triad Data Available Upon Request**

**Signature on file**

**Approved for Release**

**Airgas Specialty Gases**
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI99E15A0131 | Reference Number: | 122-401524346-1 |
| Cylinder Number: | CC722081 | Cylinder Volume: | 144.3 CF |
| Laboratory: | 124 - Durham (SAP) - NC | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | B22019 | Valve Outlet: | 660 |
| Gas Code: | NO,NOX,BALN | Certification Date: | Jun 24, 2019 |

**Expiration Date: Jun 24, 2022**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| NOX | 9.000 PPM | 8.935 PPM | G1 | +/- 1.0% NIST Traceable | 06/17/2019, 06/24/2019 |
| NITRIC OXIDE | 9.000 PPM | 8.902 PPM | G1 | +/- 0.9% NIST Traceable | 06/17/2019, 06/24/2019 |
| NITROGEN | Balance | | | - | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 16060622 | CC442581 | 50.42 PPM NITRIC OXIDE/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060612 | CC442569 | 50.42 PPM NITRIC OXIDE/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060622 | CC442581 NOx | 50.49 PPM NOx/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060612 | CC442569 NOx | 50.49 PPM NOx/NITROGEN | +/- 0.8% | Jun 27, 2020 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| THERMO NO 42I-1308857345 | Chemiluminescence | Jun 20, 2019 |
| THERMO NOX 42I-1308857345 | Chemiluminescence | Jun 20, 2019 |

**Triad Data Available Upon Request**

**Signature on file**

**Approved for Release**

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

0920 02/04/20 no/L

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI99E15A0131 | Reference Number: | 122-401524346-1 |
| Cylinder Number: | EB0108627 | Cylinder Volume: | 144.3 CF |
| Laboratory: | 124 - Durham (SAP) - NC | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | B22019 | Valve Outlet: | 660 |
| Gas Code: | NO,NOX,BALN | Certification Date: | Jun 24, 2019 |

**Expiration Date: Jun 24, 2022**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| NOX | 9.000 PPM | 8.926 PPM | G1 | +/- 1.2% NIST Traceable | 06/17/2019, 06/24/2019 |
| NITRIC OXIDE | 9.000 PPM | 8.893 PPM | G1 | +/- 1.2% NIST Traceable | 06/17/2019, 06/24/2019 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 16060622 | CC442581 | 50.42 PPM NITRIC OXIDE/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060612 | CC442569 | 50.42 PPM NITRIC OXIDE/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060622 | CC442581 NOx | 50.49 PPM NOx/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060612 | CC442569 NOx | 50.49 PPM NOx/NITROGEN | +/- 0.8% | Jun 27, 2020 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| THERMO NO 42I-1308857345 | Chemiluminescence | Jun 20, 2019 |
| THERMO NOX 42I-1308857345 | Chemiluminescence | Jun 20, 2019 |

**Triad Data Available Upon Request**

Approved for Release

Airgas
an Air Liquide company

02/06/20

**Airgas Specialty Gases**
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E03NI99E15AE020 | Reference Number: | 122-401671594-1 |
| Cylinder Number: | EB0070742 | Cylinder Volume: | 144.4 CF |
| Laboratory: | 124 - Durham (SAP) - NC | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | B22019 | Valve Outlet: | 660 |
| Gas Code: | CO,NO,NOX,BALN | Certification Date: | Dec 13, 2019 |

**Expiration Date: Dec 13, 2027**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| NOX | 110.0 PPM | 112.4 PPM | G1 | +/- 0.8% NIST Traceable | 12/06/2019, 12/13/2019 |
| NITRIC OXIDE | 110.0 PPM | 112.2 PPM | G1 | +/- 0.8% NIST Traceable | 12/06/2019, 12/13/2019 |
| CARBON MONOXIDE | 1100 PPM | 1119 PPM | G1 | +/- 1.1% NIST Traceable | 12/06/2019 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 18060108 | KAL004078 | 249.9 PPM NITRIC OXIDE/NITROGEN | +/- 0.4% | Nov 08, 2023 |
| PRM | PRM | D562879 | 10.01 PPM NITROGEN DIOXIDE/AIR | +/- 1.9% | Aug 17, 2018 |
| GMIS | 124206889114 | CC322698 | 4.432 PPM NITROGEN DIOXIDE/NITROGEN | +/- 2.0% | Aug 15, 2021 |
| NTRM | 09010359 | KAL004729 | 970.0 PPM CARBON MONOXIDE/NITROGEN | +/- 0.4% | May 14, 2021 |

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| Nicolet 6700 AHR0801333 CO | FTIR | Dec 04, 2019 |
| Nicolet 6700 AHR0801333 NO | FTIR | Dec 04, 2019 |
| Nicolet 6700 AHR0801333 NO2 | FTIR | Dec 04, 2019 |

**Triad Data Available Upon Request**

Approved for Release

Airgas
an Air Liquide company

02/06/20

**Airgas Specialty Gases**
Airgas USA, LLC
6141 Easton Road
Bldg 1
Plumsteadville, PA 18949
Airgas.com

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E03NI99E15AE015 | Reference Number: | 160-401543679-1 |
| Cylinder Number: | AAL073505 | Cylinder Volume: | 144.3 CF |
| Laboratory: | 124 - Plumsteadville - PA | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | A12019 | Valve Outlet: | 660 |
| Gas Code: | CO,NO,NOX,BALN | Certification Date: | Jul 19, 2019 |

**Expiration Date: Jul 19, 2027**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| NOX | 50.00 PPM | 51.21 PPM | G1 | +/- 0.8% NIST Traceable | 07/12/2019, 07/19/2019 |
| NITRIC OXIDE | 50.00 PPM | 51.21 PPM | G1 | +/- 0.8% NIST Traceable | 07/12/2019, 07/19/2019 |
| CARBON MONOXIDE | 500.0 PPM | 518.9 PPM | G1 | +/- 0.4% NIST Traceable | 07/12/2019 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 18006110 | KAL004085 | 249.9 PPM NITRIC OXIDE/NITROGEN | 0.4% | Nov 08, 2023 |
| NTRM | 18060110 | KAL004085-NOX | 250.1 PPM NOx/NITROGEN | 0.4% | Nov 08, 2023 |
| NTRM | 072508 | KAL004570 | 970.0 PPM CARBON MONOXIDE/NITROGEN | 0.36% | May 14, 2021 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| SIEMENS ULTRAMAT6E 7MB2123 1BD20 0BM1Z LOW CO | NDIR | Jun 13, 2019 |
| THERMO 42i HL 1032345595 CHEMI NO | CHEMILUMINESCENCE | Jul 11, 2019 |
| THERMO 42i HL 1032345595 CHEMI NOX | CHEMILUMINESCENCE | Jul 11, 2019 |

**Triad Data Available Upon Request**

Approved for Release

HiQ® Certificate / Certificat HiQ®

**LINDE CANADA LIMITED**
530 Watson St. East
Whitby, ON, Canada L1N 5R9

# CERTIFICATE OF ANALYSIS — EPA PROTOCOL MIXTURE

Purchase order # 110585036
Lot # 1263941
Cylinder Number: EB 0049417

PGVP ID # L12013
Procedure: G1
Gas Type Code: OC2
Cylinder pressure: 2000 psig

**Certification date**
August 12, 2013

**Expiration Date**
August 13, 2021

## ANALYTICAL RESULTS

| Component | Requested Concentration ± blending tolerance | Date of Assay | Mean Concentration | Certified Concentration Uncertainty expressed at 95% confidence |
|---|---|---|---|---|
| Carbon Dioxide | 5 % ± 5% | August 12, 2013 | 5.01 % | 5.01 ± 0.02 % |
| Oxygen | 6 % ± 5% | August 9, 2013 | 6.03 % | 6.03 ± 0.01 % |

BALANCE GAS: Nitrogen

## REFERENCE STANDARDS

| Component | Type | Serial Number | Reference Number | Concentration | Expiration Date |
|---|---|---|---|---|---|
| Carbon Dioxide | GMIS | SX 21992 | 1187915 | 10 ± 0.02 % | August 20, 2013 |
| | NTRM | SG 9916842 | 101001 | 19.98 ± 0.14 % | April 15, 2016 |
| Oxygen | GMIS | SX 31579 | 1107503 | 9.975 ± 0.06 % | August 18, 2013 |
| | NTRM | CC 237234 | 071001 | 24.12 ± 0.12 % | March 27, 2017 |

## CERTIFICATION INSTRUMENTS

| Component | Make/Model | Measurement Principle | Serial Number | Last Calibration |
|---|---|---|---|---|
| Carbon Dioxide | SICK MCS 100E | Infrared Photometer | 04310670 | August 1, 2013 |
| Oxygen | Servomex 04100 C1 | Paramagnetic Sensor | 392350 | August 9, 2013 |

THIS STANDARD IS NIST TRACEABLE. IT WAS CERTIFIED ACCORDING TO THE 2012 EPA PROTOCOL *PROCEDURE*

DO NOT USE THIS CYLINDER WHEN THE PRESSURE FALLS BELOW 100 PSIG

Analyst: Keith Cybulski Signature K Date 08/12/13

Notes:

Tel: 1-(866) 385-5349 Fax:1-(866) 385-5347 service@lindecanada.com

Assay Laboratory: Red Ball TGS
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0053431 | **Certification Date:** | 06/15/2015 |
| **Product ID Number:** | 124822 | **Expiration Date:** | 06/13/2023 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | RBTGS-Shreveport-LA |
| **COA #** | EB0053431.20150611-0 | **Lot Number:** | EB0053431.20150611 |
| **Customer PO. NO.:** | | **Tracking Number:** | 074201901 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle |
|---|---|---|---|
| **Oxygen** | **13.46 %** | ±0.06 % | MPA |
| Nitrogen | Balance | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|
| EB0055414.20140228-1C | 10/07/2022 | GMIS | N2 | O2 | 23.8 % | 0.505 | 071001 |
| LD131022.115903.1G | 10/07/2022 | GMIS | N2 | O2 | 11.97 % | 0.527 | 071001 |

## Analytical Instrumentation

| Component | Analytical Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| O2 | MPA | Horiba | VA-3013 | H0000P11 | 5/22/2015 12:35:56 PM |

Red Ball Technical Gas Service
PGVP Vendor ID # G12015
Information and Ordering
800-551-8150
Fax (318-425-6309)

PJLA Calibration and Testing
Accreditation #62754

LaMeka Dennis
Assistant Operations Manager

# <<<<END OF DOCUMENT>>>>

**CUSTOM INSTRUMENTATION SERVICES CORPORATION**

# CRICKET VALLEY ENERGY CENTER
# DUTCHESS COUNTY, NEW YORK

## ORIS CODE: 57185
## UNIT U-00003 (U003)

# PART 75 INITIAL CEMS AND FUEL FLOWMETERS CERTIFICATION TEST REPORTS

# AND

# PART 60 INITIAL CEMS CERTIFICATION TEST REPORTS

**PREPARED FOR: GENERAL ELECTRIC**

**PREPARED BY: CUSTOM INSTRUMENTATION SERVICES, CORP. (CiSCO)**

**Date: April 28, 2020**

**Revision: 0**

COPY NO:

**7841 SOUTH WHEELING COURT • ENGLEWOOD, COLORADO 80112**
**TEL: (303) 790-1000 FAX: (303) 790-7292**

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APPENDIX 6 Relative Accuracy Test Audit Report

APPENDIX 7 Fuel Flowmeter Accuracy Test/Primary Element Visual Inspection Documentation

APPENDIX 8 Gas Cylinder Certification Sheets

# 1. INTRODUCTION

Cricket Valley Energy Center is a facility located in Dover Plains, New York. The facility consists of three natural gas-fired combined cycle electric generating units identified as U-00001 (U001), U-00002 (U002), and U-00003 (U003). In addition to the air emitting equipment, the Facility will include three steam turbine generators (STGs), an air cooled condenser (ACC) and associated auxiliary equipment and systems. This certification report pertains to the U-00003 (U003), which consists of a General Electric (GE) Model 7FA.05 combustion turbine generators (CTGs) operating in combined-cycle mode with supplemental firing of the heat recovery steam generators (HRSGs), which has a nominal generating capacity of 333 MW. The maximum potential when incorporated with the steam turbine generator megawatts as per 40 CFR 75 is 383 MW. Natural gas will be the sole fuel fired in the CTGs and duct burners. Each combined cycle generating unit consisting of the CTG, HRSG and STG will be exhausted through its own stack. In addition, to oxidation catalyst being used to control CO emission, both dry-low $NO_X$ burners (DLNB) and Selective Catalytic Reduction (SCR) are used for $NO_X$ control on each unit. Exhaust gases from the turbines are discharged into the atmosphere through a stack approximately 282.5 feet above grade. A dedicated CEMS will monitor $NO_X$, CO, $NH_3$($NO_X$) and $O_2$ emissions and gas fuel flow from each of the three units. This report focuses on the U-00003 CEMS.

Custom Instrumentation Services Corporation of Englewood, Colorado built the Continuous Emission Monitoring System. Data from the CEMS is recorded and stored on a Data Acquisition and Handling System (DAHS).

The CEMS on the U-00003 unit was designed to meet the monitoring and reporting requirements of New York State Department of Environmental Conservation (NYSDEC) Permit No. 3-1326-00275/00009 and the regulatory requirements of 40 CFR 60 ($NO_X$, $NH_3$, CO and $O_2$ analyzers) and 40 CFR 75 ($NO_x$ and $O_2$ analyzers). This report presents the results of the initial certification tests performed on the $NO_x$, $NO_X/NH_3$, CO and $O_2$ analyzers. The testing was performed in accordance with the requirements of 40 CFR 60, Appendix B, Performance Specification 2, 3, 4a and 40 CFR 75, Appendix A.

In addition, this report provides documentation of the DAHS missing data substitution and formula verification as well as fuel flow meter transmitter accuracy tests and orifice plate primary element visual inspections performed, as required by 40 CFR 75 for the initial certification.

Field certification testing on Unit U-00003 occurred between March 27, 2020 and April 4, 2020. The tests conducted under 40 CFR 75 on the $NO_x$ and $O_2$ CEMS included Relative Accuracy Test Audit (RATA), Bias Check, 7-Day Calibration Error Test, Linearity Check and Cycle Time Test. The tests conducted under 40 CFR 60 on $NO_X$, $NH_3/NO_X$, CO and $O_2$ CEMS included RATA, 7-Day Calibration Drift Test and CO Response Time Test. A summary of the tests performed on each analyzer is provided in Table 1.

Printouts of the tests results and revised monitoring plans for the 40 CFR 75 $NO_x$ and $O_2$ CEMS from EPA's Emissions Collection and Monitoring Plan System (ECMPS) Software are provided in Appendix 1.

Air Hygiene, International(AHI) of Broken Arrow, Oklahoma conducted the RATAs on the $NO_x$, $NH_3/NO_X$, CO and $O_2$ CEMS. On March 4, 2020 ten (10) 21-minute runs were completed on the unit. The results of the RATAs are summarized in Table 1. As shown, the Relative Accuracy calculations on the analyzers were within the EPA and NYSDEC specifications for all parameters. A detailed description of the RATAs conducted are provided in Section 2.1 and the AHI test report in Appendix 6.

A bias check evaluation was made on the $NO_x$ lb/mmBtu relative accuracy results as required in 40 CFR 75. The bias adjustment factor for the $NO_x$ monitoring systems ($NO_x$ lb/mmBtu) is provided in Table 1. The bias test results are discussed in Section 2.2. Supporting data is provided in the relative accuracy tables in the AHI RA report in Appendix 6.

The 40 CFR 60 7-day Calibration Drift and 40 CFR 75 7-Day Calibration Error tests for U-00003 CEMS occurred during seven consecutive unit operating days from March 27, 2020 through April 2, 2020. The results of these tests are summarized in Table 1. As shown, the analyzers operated well within the applicable specifications. An explanation of the calibration drift and calibration error tests is provided in Section 2.3 and supporting documentation is provided in Appendix 2 of this report.

Although not required for the initial certification, Online/Offline Calibration Error Demonstration tests were performed on the 40 CFR 75 $NO_x$ and $O_2$ analyzers on March 25, 2020 to allow the use of offline calibrations to validate the Part 75 data during subsequent normal operation. Information on the Online/Offline calibration error demonstration tests is also provided in Section 2.3 and Appendix 2 of this report.

The U-00003 Linearity Checks were performed on the 40 CFR 75 $NO_x$ and $O_2$ analyzers on April 4, 2020. The $NO_x$ and $O_2$ Cycle Time Tests and the CO Response Time tests were performed April 4, 2020. The results of these tests are summarized in Table 1. As shown, the analyzers operated well within EPA specifications for all parameters. An explanation of the linearity check is provided in Section 2.4. Explanations of the cycle time and response time tests are provided in Section 2.5. Audit reports for the linearity checks and supporting documents for the cycle time/response time tests are provided in Appendices 3 and 4, respectively.

The DAHS missing data substitution verification and formula verification tests took place March 8, 2020. The DAHS passed all the tests required by EPA. The DAHS tests are described in Section 3 and supporting documents are provided in Appendix 5. Please note that although not required by 40 CFR 60, DAHS formula verifications are also provided for the CO analyzers.

In summary, based on the results of the initial certification tests performed on the CEMS installed on the U-00003 stacks at the Cricket Valley Energy Center, the CEMSs met the

requirements in 40 CFR 60, Appendix B Performance Specification 2, 3, 4a and 40 CFR 75, Appendix A and are therefore certified to provide accurate and reliable data under these regulations and under the NYSDEC air permit. These CEMS will continue to be calibrated, maintained, and operated following the requirements of 40 CFR 60, Appendix F and 40 CFR 75, Appendix B.

# TABLE 1.
# SUMMARY OF CEMS CERTIFICATION TESTS RESULTS

| U-00003 (U003) | RESULTS | STANDARD | PASS / FAIL |
|---|---|---|---|
| | **RELATIVE ACCURACY** | | |
| $NO_x$ ppm @ 15% $O_2$ | 14.33% RA RM | 20% RA RM or 10% ARA[1] | PASS |
| $NO_x$ lb/hr | 11.59% RA RM | 20% RA RM or 10% ARA | PASS |
| $NO_x$ lb/mmBtu | 0.001 lb/mmBtu MD | 7.5% RA RM or 0.015 lb/mmBtu MD[2] | PASS |
| CO ppm @ 15% $O_2$ | 0.2 ppm MD | 10% RA RM or 5% ARA or ±5 ppm MD[3] | PASS |
| CO lb/hr | 0.2 ppm MD | 10% RA RM or 5% ARA or ±5 ppm MD | PASS |
| $NH_3$ ppm @ 15% $O_2$ | 4.34% RA RM | 20% RA RM or 10% ARA | PASS |
| $NH_3$ lb/hr | 3.84% RA ARA[4] | 20% RA RM or 10% ARA | PASS |
| $O_2$ % | 0.08% RA RM | 20% RA RM or 1% $O_2$ MD | PASS |
| | **BIAS TEST** | | |
| Adjustment Factor | 1.000 | NA | PASS |
| | **24-HOUR ZERO DRIFT[5]** | | |
| $NO_x$ low | 0.2% of span | 2.5 % of span | PASS |
| $NO_x$ high | 0.0% of span | 2.5 % of span | PASS |
| CO low | 3.90% of span | 5 % of span | PASS |
| CO high | 0.00% of span | 5 % of span | PASS |
| $NH_3/(NO_x)$ | 0.63% of span | 2.5 % of span | PASS |
| $O_2$ % | 0.04% $O_2$ | 0.5% $O_2$ | PASS |
| | **24-HOUR SPAN DRIFT[5]** | | |
| $NO_x$ low | 0.4% of span | 2.5 % of span | PASS |
| $NO_x$ high | 0.4% of span | 2.5 % of span | PASS |
| CO low | 4.30% of span | 5 % of span | PASS |
| CO high | 0.34% of span | 5 % of span | PASS |
| $NH_3/(NO_x)$ | 0.31% of span | 2.5 % of span | PASS |
| $O_2$ % | 0.03% $O_2$ | 0.5% $O_2$ | PASS |
| | **LINEARITY[5]** | | |
| $NO_x$ high ppm | 2.2% LE | 5% LE | PASS |
| $O_2$ % | 0.7% LE | 5% LE | PASS |
| | **CYCLE TIME/CO RESPONSE TIME TEST(S) [5]** | | |
| $NO_x$ lb/mmBtu | 2 Minutes | 15 Minutes | PASS |
| CO low | 173 Avg. Seconds | 240 Avg. Seconds | PASS |
| | **DAHS VERIFICATION** | | |
| DAHS Computer | Verified (03/08/2020) | Verify | PASS |
| **ANALYZER SERIAL NUMBERS** | | | |
| $NO_x$ | | 1014 | |
| $O_2$ | | 151 | |
| CO | | 520 | |
| $NH_3/NO_X$ | | 1049 | |

[1] ARA = alternative relative accuracy determined from the permit applicable standard.

[2] RATA RESULTS REQUIRED FOR ANNUAL RATA FREQUENCY FOR 40 CFR 75

[3] MD =|d| +|2.5% CC

[4] NYSDEC permit ID 3-1326-00275/00009 does not have a current NH3 lb/hr limit, so a conservative value (16.66 lb/hr) was back-calculated from the existing 5 ppm corrected limit. Calculation is provided in Air Hygiene RATA report in Appendix 6.

[5] DRIFT, LINEARITY CTT/RTT RESULTS ARE THE HIGHEST ENCOUNTERED DURING ALL TESTS

## 2. CEMS CERTIFICATION TESTS

Field tests were performed for the initial CEMS certification in accordance with the requirements of 40 CFR 60, Appendix B and 40 CFR Part 75, Appendix A. The results for all tests were determined from the data collected by the DAHS. The computer printouts for each field test are included in the Appendices.

### 2.1 RELATIVE ACCURACY TEST AUDIT

Relative accuracy testing was performed on April 4, 2020 by AHI, a source testing company that meets the EPA Air Emissions Testing Body (AETB) requirements. Each test run was a minimum of 21 minutes in duration and consisted of sampling for $NO_x$, $NH_3$ ($NO_X$), CO and $O_2$. The times during which the tests were performed and additional information on stratification test, $NO_x$ converter efficiency check and reference method calibrations are provided in the AHI report in Appendix 6.

The reference methods used by AHI are outlined below:

| CONSTITUENT | METHOD |
|---|---|
| $O_2$ | EPA METHOD 3A |
| $NO_x$ | EPA METHOD 7E |
| $NH_3(NO_x)$ | EPA METHOD 7E |
| CO | EPA METHOD 10 |

As shown in the Relative Accuracy tables in the AHI report in Appendix 6, relative accuracy is reported as an error and is the sum of the absolute mean value of the differences between the reference method tests and the instrument readings, plus the 95 percent confidence interval of the differences, expressed as a percentage of the mean reference method value or the emission standard. As an alternative, 40 CFR 75 allows low $NO_x$ emitters (less than 0.20 lb/mmBtu) to express relative accuracy as the difference between the average reference method value and the average CEMS value. Performance Specification 4a in 40 CFR 60, Appendix B also allows for CO relative accuracy results to be expressed as a mean difference between the reference method average value and CEMS average value.

The analyzer response was determined from the average of readings taken every minute for the duration of the time the relative accuracy tests were performed. The 1-Minute Data Reports from the CEMS are included in the AHI report.

The $NO_x$, $NH_3(NO_X)$, CO and $O_2$. analyzers passed the relative accuracy requirements (as stated in 40 CRF 60, Appendix B 2, 3, 4a). In addition, the $NO_x$ diluent systems ($NO_x$ and $O_2$ analyzers combined) passed the relative accuracy requirements as stated in 40 CRF 75, Appendix A and based on the RATA results, these systems qualify for annual RATA frequency under 40 CFR 75.

## 2.2 BIAS CHECK

The relative accuracy result for the $NO_x$ diluent systems reported in lb/mmBtu was checked for low bias by determining if the mean difference between the test team's values and the CEMS values was greater than the absolute value of the confidence coefficient. U-00003 $NO_x$ diluent systems did not exhibit bias. Therefore, the bias adjustment factor (BAF) for the unit was 1.000. In general, the BAF is determined after each RATA test.

## 2.3 7 DAY CALIBRATION ERROR/DRIFT TEST & ONLINE/OFFLINE DEMONSTRATION TESTS

In general, the U-00003 7-day calibration error/drift tests required by 40 CFR 60 and 40 CFR 75 on the $NO_x$, $NH_3$ ($NO_X$), CO and $O_2$. analyzers occurred between March 27, 2020 and April 2, 2020. All tests occurred on seven consecutive unit-operating days when the unit was combusting fuel. The $NO_x$ and $O_2$ calibration gases used for the zero and span calibration error tests meet the requirements of the EPA 40 CFR 75, Appendix A, Protocol Gas Verification Program (PGVP). The certificates of analysis for the cylinders used to meet the requirements of both 40 CFR 60 and 40 CFR 75 drift/calibration error requirements are included in Appendix 8 of this report.

Although not required for the initial certification, this report includes the results of the Online/Offline Calibration Error Demonstration tests that were performed on March 25, 2020. 40 CFR 75 Appendix B §2.1.1.2 allows the use of offline calibrations for the purpose of validating online data if both offline and online calibrations are performed within 26-clock hours and meets the performance specification criteria of 40 CFR 75 Append A, §3.1.

The data from calibrations occurring over seven days and the offline determination occurring within 26-clock hours are summarized in Appendix 2 of this report. As shown, the calibration error/drift for all analyzers were well within EPA requirements as stated in 40 CFR 60, Appendix B and 40 CFR 75, Appendix A. The calibration summary reports are provided in Appendix 2.

## 2.4 LINEARITY CHECKS

The U-00003 $NO_x$ and $O_2$ linearity checks were performed on April 4, 2020. To perform the linearity check, the high ranges of the $NO_x$ analyzers and the $O_2$ analyzers were challenged three times with each of three levels of calibration gas (low, mid and high). The mean difference between the analyzer response and the calibration gas value, as a percentage of the calibration gas value, must be within 5%. Results are also acceptable if the difference between the mean response and the calibration gas value is within 0.5% $O_2$ or 5 ppm $NO_x$. The results were well within the requirements of 40 CFR 75, Appendix A.

A summary of the linearity check results are provided in Appendix 3 and the certificates of analysis for the calibration gases used during the checks are provided in Appendix 8. The calibration gases used for the linearity checks met the US EPA PGVP requirements of 40 CFR 75, Appendix A.

## 2.5 CYCLE TIME & RESPONSE TIME TESTS

The U-00003 cycle time tests were performed on April 4, 2020. To perform the test, the $NO_x$ and $O_2$ analyzers were challenged with a zero gas and a high level (80 to 100% of span) calibration gas. Both the upscale and down scale response times were determined. As stated in 40 CFR 75, Appendix A, the response time to reach 95% of the gas value must be less than 15 minutes.

40 CFR 75, Appendix A, Section 6.4 specifies that on and after January 1, 2009, the cycle time for each component analyzer of a $NO_x$ diluent system must be recorded separately. It also specifies that for monitors with dual ranges, the test results for each range must be reported separately. Cycle time test results are acceptable for monitoring system certification if none of the cycle times exceed 15 minutes. The down scale and upscale cycle times for the $NO_x$ low range, $NO_x$ high range and $O_2$ analyzers met this specification.

The U-00003 CO response time tests were performed on April 4, 2020 to meet the requirements of 40 CFR 60. To perform this test, the low range of the CO analyzer was challenged with a zero gas and a high level (50 to 100% of range) calibration gas. Both the upscale and down scale response time averages were determined. As stated in 40 CFR 60, Appendix B, Performance Specification 4A the response time to reach 95% of the gas value must be less than 240 seconds. For the upscale and downscale readings the longer of the two response times is the response time for the analyzer. The response time for the low range of the CO analyzers met this requirement. The gas cylinders used to perform the CO response time tests are provided in Appendix 8.

Audit reports that show the analyzers response in ten second increments are located in Appendix 4. The gas cylinders used to perform the $NO_X/O_2$ cycle time tests meet the US EPA PGVP requirements of 40 CFR 75, Appendix A and are provided in Appendix 8.

# 3. DAHS VERIFICATION

A letter from the 40 CFR 75 software vendor (CiSCO CEMS) stating that each of the missing data routines and calculations performed by the DAHS was verified is included in Appendix 5. A formula verification is also included. All variables included in the calculations (bias adjustment factor, fuel inputs) were used. The formula verification spreadsheet and associated printouts are also included in Appendix 5.

## 4. FUEL FLOWMETER CERTIFICATION TESTS DOCUMENTATION

Documents demonstrating that the fuel flowmeters installed in each combustion turbine and duct burner meet the 2% upper range accuracy specified in 40 CFR 75 Appendix D are provided in Appendix 7. This includes Certificate of Compliance document, which references ASME MFC 9M:2006 calibration which demonstrates compliance with 40 CFR 75 Appendix D Section 2.1.5.1 certification criteria.

## 5. DISCUSSION OF RESULTS

The CEMS and DAHS on the U-00003 combustion turbine generators at the Cricket Valley Energy Center successfully met all the requirements of the EPA, as outlined in 40 CFR 60 and 40 CFR 75. An electronic QA certification file in the format specified by EPA Clean Air Markets Division for 40 CFR 75 has been prepared for each unit and will be submitted via ECMPS within 45 days of test completion.

# APPENDIX 1

# EMISSIONS MONITORING AND MONITORING PLAN SYSTEM PRINTOUTS

# ECMPS Client Tool

Version 1.* 2020 Q1

## QA/Cert Events Printout Report

April 13, 2020 09:26 PM

## Facility Name: Cricket Valley Energy Center

### Facility Details

| | |
|---|---|
| Facility ID (ORISPL): | 57185 |
| State: | NY |
| County: | Dutchess County |

### QA Certification Events Details

| Unit/Stack Identifier | Event Code | Event Date/Hour | System ID / Type | Component ID / Type | Required Tests | Conditional Data Begin Date/Hour | Last Test Completed Date/Hour | Submitted? |
|---|---|---|---|---|---|---|---|---|
| U003 | 125 | 03/24/2020 23 | N30/NOX | 310/NOX | 4 | | 04/04/2020 23 | Not Yet Submitted |
| | | | | 320/O2 | 4 | | 04/04/2020 23 | Not Yet Submitted |

Event Codes: 125 - Initial Certification of Gas Monitoring System

Required Test Codes: 4 - Normal Load RATA, 7-day Calibration Error Test, Linearity Check, Cycle Time Test, DAHS Verification

# ECMPS Client Tool

Version 1.* 2020 Q1

## QA/Cert Test Detail Report

April 28, 2020 12:05 PM

## Facility Name: Cricket Valley Energy Center

### Facility Details

Facility ID (ORISPL): 57185
State: NY
County: Dutchess County

**Unit/Stack/Pipe ID:** U003

**7-Day Calibration**

**Component ID:** 310
**Test Number:** 7DCAL-NOX_H-
**Span Scale Level:** High
**Component Type:** NOX
**Reason for Test:** INITIAL
**Span Value:** 200.000
**Test Completion:** 04/02/2020 00:01
**Reported Test Results:** PASSED
**EPA Calculated Result:** PASSED
**Evaluation Status:** No Errors
**Submission Status:** Not Submitted
**Submission Date/Time:**

| Injection Date/Hour | Gas Level | Reference Value | Reference Value % of Span | Measured Value | Reported | | Recalculated | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Results | APS | Results | APS |
| 03/27/2020 14 | ZERO | 0.000 | 0 | 0.000 | 0.00 | | 0.00 | |
| 03/27/2020 14 | HIGH | 177.000 | 88.5 | 177.500 | 0.30 | | 0.30 | |
| 03/28/2020 00 | ZERO | 0.000 | 0 | 0.000 | 0.00 | | 0.00 | |
| 03/28/2020 00 | HIGH | 177.000 | 88.5 | 176.690 | 0.20 | | 0.20 | |
| 03/29/2020 00 | ZERO | 0.000 | 0 | 0.000 | 0.00 | | 0.00 | |
| 03/29/2020 00 | HIGH | 177.000 | 88.5 | 177.000 | 0.00 | | 0.00 | |
| 03/30/2020 00 | ZERO | 0.000 | 0 | 0.000 | 0.00 | | 0.00 | |
| 03/30/2020 00 | HIGH | 177.000 | 88.5 | 176.600 | 0.20 | | 0.20 | |
| 03/31/2020 00 | ZERO | 0.000 | 0 | 0.000 | 0.00 | | 0.00 | |
| 03/31/2020 00 | HIGH | 177.000 | 88.5 | 176.800 | 0.10 | | 0.10 | |
| 04/01/2020 00 | ZERO | 0.000 | 0 | 0.000 | 0.00 | | 0.00 | |
| 04/01/2020 00 | HIGH | 177.000 | 88.5 | 177.700 | 0.40 | | 0.40 | |
| 04/02/2020 00 | ZERO | 0.000 | 0 | 0.000 | 0.00 | | 0.00 | |
| 04/02/2020 00 | HIGH | 177.000 | 88.5 | 177.500 | 0.30 | | 0.30 | |

**Additional Information:**
No comment.

*Performance Spec: CE <= 2.5% of Span  Alternate Performance Spec: |R-A| <= 5 ppm (Appendix A &3.1)

**Facility Name:** Cricket Valley Energy Center

**Facility ID (ORISPL):** 57185

# QA/Cert Test Detail Report

April 28, 2020 12:05 PM

**Unit/Stack/Pipe ID:** U003

**7-Day Calibration**

| | | | | | |
|---|---|---|---|---|---|
| **Component ID:** | 320 | **Component Type:** | O2 | **Test Completion:** | 04/02/2020 00:01 |
| **Test Number:** | 7DCAL-O2_H- | **Reason for Test:** | INITIAL | **Reported Test Results:** | PASSED |
| **Span Scale Level:** | High | **Span Value:** | 25.000 | **EPA Calculated Result:** | PASSED |
| **Evaluation Status:** | No Errors | | | **Submission Status:** | Not Submitted |
| | | | | **Submission Date/Time:** | |

| Injection Date/Hour | Gas Level | Reference Value | Reference Value % of Span | Measured Value | Reported | | Recalculated | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Results | APS | Results | APS |
| 03/27/2020 09 | ZERO | 0.000 | 0 | 0.020 | 0.00 | | 0.00 | |
| 03/27/2020 09 | HIGH | 22.200 | 88.8 | 22.250 | 0.10 | | 0.10 | |
| 03/28/2020 00 | ZERO | 0.000 | 0 | 0.030 | 0.00 | | 0.00 | |
| 03/28/2020 00 | HIGH | 22.200 | 88.8 | 22.250 | 0.10 | | 0.10 | |
| 03/29/2020 00 | ZERO | 0.000 | 0 | 0.030 | 0.00 | | 0.00 | |
| 03/29/2020 00 | HIGH | 22.200 | 88.8 | 22.260 | 0.10 | | 0.10 | |
| 03/30/2020 00 | ZERO | 0.000 | 0 | 0.030 | 0.00 | | 0.00 | |
| 03/30/2020 00 | HIGH | 22.200 | 88.8 | 22.250 | 0.10 | | 0.10 | |
| 03/31/2020 00 | ZERO | 0.000 | 0 | 0.040 | 0.00 | | 0.00 | |
| 03/31/2020 00 | HIGH | 22.200 | 88.8 | 22.210 | 0.00 | | 0.00 | |
| 04/01/2020 00 | ZERO | 0.000 | 0 | 0.040 | 0.00 | | 0.00 | |
| 04/01/2020 00 | HIGH | 22.200 | 88.8 | 22.220 | 0.00 | | 0.00 | |
| 04/02/2020 00 | ZERO | 0.000 | 0 | 0.040 | 0.00 | | 0.00 | |
| 04/02/2020 00 | HIGH | 22.200 | 88.8 | 22.220 | 0.00 | | 0.00 | |

**Additional Information:**
No comment.

*Performance Spec: CE <= 2.5% of Span  Alternate Performance Spec: |R-A| <= 5 ppm (Appendix A &3.1)

**Facility Name:** Cricket Valley Energy Center

**Facility ID (ORISPL):** 57185

# QA/Cert Test Detail Report

April 28, 2020 12:05 PM

**Unit/Stack/Pipe ID:** U003

**Cycle Time Test**

| | | | | | |
|---|---|---|---|---|---|
| **Component ID:** | 310 | **Component Type:** | NOX | **Test Completion:** | 04/04/2020 14:22 |
| **Test Number:** | CTT-310L-2020Q2 | **Reason for Test:** | INITIAL | **Reported Test Results:** | PASSED |
| **Span Scale Level:** | Low | **Span Value:** | 10.000 | **EPA Calculated Result:** | PASSED |
| **Total Cycle Time:** | 2 | **Calculated Total Cycle Time:** | 2 | | |
| **Evaluation Status:** | No Errors | | | **Submission Status:** | Not Submitted |
| | | | | **Submission Date/Time:** | |

| Date | Start Time | End Time | Gas Level | Reference Gas Value | Stable Values | | Injection Cycle Time | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Starting | Ending | Results | Recalculated |
| 2020/04/04 | 14:14 | 14:15 | ZERO | 0.000 | 2.123 | -0.027 | 1 | 1 |
| 2020/04/04 | 14:20 | 14:22 | HIGH | 8.820 | 2.094 | 9.015 | 2 | 2 |

**Additional Information:**

No comment.

*Performance Spec: Cycle Time <= 15 minutes (Appendix A &3.5)

**Unit/Stack/Pipe ID:** U003

**Cycle Time Test**

| | | | | | |
|---|---|---|---|---|---|
| **Component ID:** | 320 | **Component Type:** | O2 | **Test Completion:** | 04/04/2020 22:44 |
| **Test Number:** | CTT-320-2020Q2 | **Reason for Test:** | INITIAL | **Reported Test Results:** | PASSED |
| **Span Scale Level:** | High | **Span Value:** | 25.000 | **EPA Calculated Result:** | PASSED |
| **Total Cycle Time:** | 2 | **Calculated Total Cycle Time:** | 2 | | |
| **Evaluation Status:** | No Errors | | | **Submission Status:** | Not Submitted |
| | | | | **Submission Date/Time:** | |

| Date | Start Time | End Time | Gas Level | Reference Gas Value | Stable Values | | Injection Cycle Time | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Starting | Ending | Results | Recalculated |
| 2020/04/04 | 22:36 | 22:38 | ZERO | 0.000 | 13.058 | 0.048 | 2 | 2 |
| 2020/04/04 | 22:42 | 22:44 | HIGH | 22.200 | 13.051 | 22.233 | 2 | 2 |

**Additional Information:**

No comment.

*Performance Spec: Cycle Time <= 15 minutes (Appendix A &3.5)

**Facility Name:** Cricket Valley Energy Center

**Facility ID (ORISPL):** 57185

# QA/Cert Test Detail Report

April 28, 2020 12:05 PM

**Unit/Stack/Pipe ID:** U003

## Cycle Time Test

**Component ID:** 310
**Component Type:** NOX
**Test Completion:** 04/04/2020 14:33
**Test Number:** CTT-310H-2020Q2
**Reason for Test:** INITIAL
**Reported Test Results:** PASSED
**Span Scale Level:** High
**Span Value:** 200.000
**EPA Calculated Result:** PASSED
**Total Cycle Time:** 1
**Calculated Total Cycle Time:** 1

**Evaluation Status:** No Errors
**Submission Status:** Not Submitted
**Submission Date/Time:**

| Date | Start Time | End Time | Gas Level | Reference Gas Value | Stable Values | | Injection Cycle Time | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Starting | Ending | Results | Recalculated |
| 2020/04/04 | 14:26 | 14:27 | ZERO | 0.000 | 2.145 | -0.069 | 1 | 1 |
| 2020/04/04 | 14:32 | 14:33 | HIGH | 176.900 | 2.074 | 180.938 | 1 | 1 |

**Additional Information:**

No comment.

*Performance Spec: Cycle Time <= 15 minutes (Appendix A &3.5)

**Unit/Stack/Pipe ID:** U003

## Fuel Flowmeter Accuracy Test

**Component ID:** 370
**Component Type:** GFFM
**Test Completion:** 06/11/2018 10:00
**Test Number:** FFAT-370-2020Q2
**Reported Test Results:** PASSED
**EPA Calculated Result:** PASSED

**Evaluation Status:** No Errors
**Submission Status:** Not Submitted
**Submission Date/Time:**

| Accuracy Test Method | High Level Accuracy | Mid Level Accuracy | Low Level Accuracy | Reinstallation Date/Hour |
|---|---|---|---|---|
| ASME | 0.0 | 0.0 | 0.0 | 02/23/2020 00 |

**Additional Information:**

No comment.

**Unit/Stack/Pipe ID:** U003

## Linearity Check

## Facility Name: Cricket Valley Energy Center

**Facility ID (ORISPL):** 57185

# QA/Cert Test Detail Report

April 28, 2020 12:05 PM

| | | | | | |
|---|---|---|---|---|---|
| **Component ID:** | 310 | **Component Type:** | NOX | **Test Completion:** | 04/04/2020 19:38 |
| **Test Number:** | 310-LIN-2020Q2 | **Reason for Test:** | INITIAL | **Reported Test Results:** | PASSED |
| **Span Scale Level:** | High | **Span Value:** | 200.000 | **EPA Calculated Result:** | PASSED |
| **Evaluation Status:** | No Errors | | | **Submission Status:** | Not Submitted |
| **Grace period Tested?** | | | | **Submission Date/Time:** | |

**Protocol Gas Data:**

| Gas Level Code | Gas Type Code | Vendor Identifier | Cylinder Identifier | Expiration Date |
|---|---|---|---|---|
| High | CO,NO,NOX,BALN | B22019 | CC435700 | 02/11/2028 |
| Mid | CO,NO,NOX,BALN | G12019 | CC719253 | 09/24/2026 |
| Low | CO,NO,NOX,BALN | G12019 | CC712750 | 06/27/2022 |

**Summary Statistics:**

| | High | | Mid | | Low | |
|---|---|---|---|---|---|---|
| | Reported | Recalculated | Reported | Recalculated | Reported | Recalculated |
| **Reference Value** | 180.200 | 180.200 | 109.400 | 109.400 | 49.400 | 49.400 |
| **Mass CEM Value** | 180.567 | 180.567 | 110.567 | 110.567 | 48.333 | 48.333 |
| **Alt. Perf. Indicator** | | | | | | |
| **Results** | 0.2 | 0.2 | 1.1 | 1.1 | 2.2 | 2.2 |

**Injection Statistics:**

| Date | Gas Level | Measured Value | Reference Value | Reference Value as % of Span |
|---|---|---|---|---|
| 04/04/2020 19:34 | MID | 110.400 | 109.400 | 54.7% |
| 04/04/2020 19:22 | MID | 110.600 | 109.400 | 54.7% |
| 04/04/2020 19:09 | MID | 110.700 | 109.400 | 54.7% |
| 04/04/2020 19:38 | HIGH | 180.600 | 180.200 | 90.1% |
| 04/04/2020 19:26 | HIGH | 180.500 | 180.200 | 90.1% |
| 04/04/2020 19:13 | HIGH | 180.600 | 180.200 | 90.1% |
| 04/04/2020 19:05 | LOW | 48.200 | 49.400 | 24.7% |
| 04/04/2020 19:30 | LOW | 48.400 | 49.400 | 24.7% |
| 04/04/2020 19:17 | LOW | 48.400 | 49.400 | 24.7% |

**Additional Information:**

No comment.

**Facility Name:** Cricket Valley Energy Center

**Facility ID (ORISPL):** 57185

## QA/Cert Test Detail Report

April 28, 2020 12:05 PM

*Performance Spec: LE <= 5.0% of Reference Value; Alternate Performance Spec: |R-A| <= 5ppm (Appendix A &3.2)

**Unit/Stack/Pipe ID:** U003

**Linearity Check**

| | | | | | |
|---|---|---|---|---|---|
| **Component ID:** | 320 | **Component Type:** | O2 | **Test Completion:** | 04/04/2020 18:58 |
| **Test Number:** | 320-LIN-2020Q2 | **Reason for Test:** | INITIAL | **Reported Test Results:** | PASSED |
| **Span Scale Level:** | High | **Span Value:** | 25.000 | **EPA Calculated Result:** | PASSED |
| **Evaluation Status:** | No Errors | | | **Submission Status:** | Not Submitted |
| **Grace period Tested?** | | | | **Submission Date/Time:** | |

**Protocol Gas Data:**

| Gas Level Code | Gas Type Code | Vendor Identifier | Cylinder Identifier | Expiration Date |
|---|---|---|---|---|
| High | CO2,O2,BALN | A12019 | ALMO47793 | 03/04/2027 |
| Low | CO2,O2,BALN | L12013 | EB0049417 | 08/13/2021 |
| Mid | O2,BALN | G12015 | EB0053431 | 06/13/2023 |

**Summary Statistics:**

| | High | | Mid | | Low | |
|---|---|---|---|---|---|---|
| | Reported | Recalculated | Reported | Recalculated | Reported | Recalculated |
| **Reference Value** | 22.200 | 22.200 | 13.460 | 13.460 | 6.030 | 6.030 |
| **Mass CEM Value** | 22.230 | 22.230 | 13.553 | 13.553 | 6.063 | 6.063 |
| **Alt. Perf. Indicator** | | | | | | |
| **Results** | 0.1 | 0.1 | 0.7 | 0.7 | 0.6 | 0.6 |

**Injection Statistics:**

**Facility Name:** Cricket Valley Energy Center

**Facility ID (ORISPL):** 57185

## QA/Cert Test Detail Report

April 28, 2020 12:05 PM

| Date | Gas Level | Measured Value | Reference Value | Reference Value as % of Span |
|---|---|---|---|---|
| 04/04/2020 18:28 | HIGH | 22.220 | 22.200 | 88.8% |
| 04/04/2020 18:43 | HIGH | 22.230 | 22.200 | 88.8% |
| 04/04/2020 18:58 | HIGH | 22.240 | 22.200 | 88.8% |
| 04/04/2020 18:23 | MID | 13.550 | 13.460 | 53.8% |
| 04/04/2020 18:53 | MID | 13.560 | 13.460 | 53.8% |
| 04/04/2020 18:38 | MID | 13.550 | 13.460 | 53.8% |
| 04/04/2020 18:48 | LOW | 6.070 | 6.030 | 24.1% |
| 04/04/2020 18:18 | LOW | 6.060 | 6.030 | 24.1% |
| 04/04/2020 18:33 | LOW | 6.060 | 6.030 | 24.1% |

**Additional Information:**

No comment.

*Performance Spec: LE <= 5.0% of Reference Value; Alternate Performance Spec: |R-A| <= 5ppm (Appendix A &3.2)

**Unit/Stack/Pipe ID:** U003

**On-Line/Off-Line Calibration**

**Component ID:** 310
**Test Number:** ON_OFF-310H-
**Span Scale Level:** High
**Component Type:** NOX
**Reason for Test:** INITIAL
**Span Value:**
**Test Completion:** 03/25/2020 20
**Reported Test Results:** PASSED
**EPA Calculated Result:** PASSED
**Evaluation Status:** No Errors
**Submission Status:** Not Submitted
**Submission Date/Time:**

| Calibration Type | Injection Date/Hour | Gas Level | Reference Value | Reference Value % of Span | Measured Value | Reported | | Recalculated | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Results | APS | Results | APS |
| Online | 03/25/2020 20 | ZERO | 0.000 | | 0.000 | 0.00 | | 0.00 | |
| Online | 03/25/2020 20 | HIGH | 176.900 | | 175.700 | 0.60 | | 0 | |
| Offline | 03/25/2020 00 | ZERO | 0.000 | | 0.000 | 0.00 | | 0.00 | |
| Offline | 03/25/2020 00 | HIGH | 176.900 | | 176.900 | 0.00 | | 0.00 | |

**Additional Information:**

No comment.

**Facility Name:** Cricket Valley Energy Center

**Facility ID (ORISPL):** 57185

# QA/Cert Test Detail Report

April 28, 2020 12:05 PM

**Unit/Stack/Pipe ID:** U003

**On-Line/Off-Line Calibration**

**Component ID:** 320
**Component Type:** O2
**Test Completion:** 03/25/2020 20
**Test Number:** ON_OFF-320-
**Reason for Test:** INITIAL
**Reported Test Results:** PASSED
**Span Scale Level:** High
**Span Value:**
**EPA Calculated Result:** PASSED

**Evaluation Status:** No Errors
**Submission Status:** Not Submitted
**Submission Date/Time:**

| Calibration Type | Injection Date/Hour | Gas Level | Reference Value | Reference Value % of Span | Measured Value | Reported | | Recalculated | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Results | APS | Results | APS |
| Online | 03/25/2020 20 | ZERO | 0.000 | | 0.000 | 0.00 | | 0.00 | |
| Online | 03/25/2020 20 | HIGH | 22.220 | | 22.250 | 0.00 | | 0 | |
| Offline | 03/25/2020 00 | ZERO | 0.000 | | 0.010 | 0.00 | | 0.00 | |
| Offline | 03/25/2020 00 | HIGH | 22.220 | | 22.300 | 0.10 | | 0.10 | |

**Additional Information:**

No comment.

**Unit/Stack/Pipe ID:** U003

**On-Line/Off-Line Calibration**

**Component ID:** 310
**Component Type:** NOX
**Test Completion:** 03/25/2020 20
**Test Number:** ON_OFF-310L-
**Reason for Test:** INITIAL
**Reported Test Results:** PASSED
**Span Scale Level:** Low
**Span Value:**
**EPA Calculated Result:** PASSED

**Evaluation Status:** No Errors
**Submission Status:** Not Submitted
**Submission Date/Time:**

| Calibration Type | Injection Date/Hour | Gas Level | Reference Value | Reference Value % of Span | Measured Value | Reported | | Recalculated | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Results | APS | Results | APS |
| Online | 03/25/2020 20 | ZERO | 0.000 | | -0.020 | 0.20 | | 0.20 | |
| Online | 03/25/2020 20 | HIGH | 8.820 | | 8.620 | 2.00 | | 0 | |
| Offline | 03/25/2020 00 | ZERO | 0.000 | | 0.020 | 0.20 | | 0.20 | |
| Offline | 03/25/2020 00 | HIGH | 8.820 | | 8.610 | 2.10 | | 2.10 | |

**Additional Information:**

No comment.

**Facility Name:** Cricket Valley Energy Center

**Facility ID (ORISPL):** 57185

# QA/Cert Test Detail Report

April 28, 2020 12:05 PM

**Unit/Stack/Pipe ID:** U003

**Relative Accuracy Test**

| | | | | | |
|---|---|---|---|---|---|
| **System ID:** | N30 | **System Parameter:** | NOX | **Test Completion:** | 04/04/2020 22:10 |
| **Test Number:** | N30-2020Q2 | **Reason for Test:** | INITIAL | **Reported Test Results:** | PASSAPS |
| **# of Op. Levels:** | 1 | **Grace Period Test?** | | **EPA Calculated Result:** | PASSAPS |
| **Evaluation Status:** | No Errors | | | **Reported BAF:** | 1.000 |
| **Submission Status:** | Not Submitted | | | **EPA Calculated BAF:** | 1.000 |
| **Submission Date:** | | | | **RATA Frequency:** | 4QTRS |

**Air Emissions Testing Data**

| | | | |
|---|---|---|---|
| **QI Name:** | McBRIDE, MATTHEW S | **AETB Name:** | AIR HYGIENE INTERNATIONAL |
| **Exam Date:** | 01/27/2019 | **AETB Phone Number:** | 888-461-8778 |
| **Provider Name:** | SOURCE EVALUATION SOCIETY (SES) | **AETB Email:** | info@airhygiene.com |
| **Provider Email:** | QSTIPROGRAM@GMAIL.COM | | |

**Protocol Gas Data:**

| Gas Level Code | Gas Type Code | Vendor Identifier | Cylinder Identifier | Expiration Date |
|---|---|---|---|---|
| High | BALN,CO,NO,NOX | G12019 | EB0040961 | 10/30/2022 |
| Mid | BALN,CO,NO,NOX | G12019 | CC727541 | 09/03/2022 |
| High | BALN,CO2,O2 | G12019 | CC721614 | 11/11/2026 |
| Mid | BALN,CO2,O2 | G12019 | CC716390 | 02/23/2028 |
| Low | ZERO | | | |

**Operating Level:** High
**Reference Method Used:** 7E,3A: NOX RM 7E and CO2/O2 RM 3A

**Summary Statistics:**

| | Reported | Recalculated | | Reported | Recalculated |
|---|---|---|---|---|---|
| **Mean of Monitoring System** | 0.00618 | 0.00618 | **Relative Accuracy** | 15.05 | 15.05 |
| **Mean of Reference Method Values** | 0.00544 | 0.00544 | **Bias Adjustment Factor** | 1.000 | 1.000 |
| **Mean of Difference** | -0.00074 | -0.00074 | **APS Indicator** | Y | Y |
| **Standard Deviation of Difference** | 0.00011 | 0.00011 | **T-Value** | 2.306 | 2.306 |
| **Confidence Coefficient** | 0.00008 | 0.00008 | **Gross Unit Load or Velocity** | 352 | 352 |

**Facility Name:** Cricket Valley Energy Center

**Facility ID (ORISPL):** 57185

## QA/Cert Test Detail Report

April 28, 2020 12:05 PM

**Run Data:**

| Run | Start Date | End Date | Run Status | Monitoring System Value | Reference Method Value | Gross Load or Velocity |
|---|---|---|---|---|---|---|
| 1 | 04/04/2020 17:23 | 04/04/2020 17:43 | RUNUSED | 0.00630 | 0.00560 | 350 |
| 2 | 04/04/2020 17:52 | 04/04/2020 18:12 | RUNUSED | 0.00630 | 0.00560 | 350 |
| 3 | 04/04/2020 18:20 | 04/04/2020 18:40 | RUNUSED | 0.00623 | 0.00560 | 350 |
| 4 | 04/04/2020 18:51 | 04/04/2020 19:11 | RUNUSED | 0.00620 | 0.00560 | 351 |
| 5 | 04/04/2020 19:20 | 04/04/2020 19:40 | RUNUSED | 0.00630 | 0.00560 | 352 |
| 6 | 04/04/2020 19:48 | 04/04/2020 20:08 | RUNUSED | 0.00570 | 0.00500 | 352 |
| 7 | 04/04/2020 20:20 | 04/04/2020 20:40 | RUNUSED | 0.00640 | 0.00550 | 353 |
| 8 | 04/04/2020 20:49 | 04/04/2020 21:09 | RUNUSED | 0.00590 | 0.00510 | 353 |
| 9 | 04/04/2020 21:17 | 04/04/2020 21:37 | RUNUSED | 0.00630 | 0.00540 | 353 |
| 10 | 04/04/2020 21:50 | 04/04/2020 22:10 | NOTUSED | 0.00630 | 0.00540 | 352 |

**Additional Information:**

No comment.

*Performance Spec: RA <= 10% or Mean Difference <= +/- 2.0fps:
Reduced Frequency Spec: RA <= 7.5% or Mean Difference +/- 1.5 fps (Appendix A &3.3.4)

**Unit/Stack/Pipe ID:** U003

**Transmitter Transducer Test**

**Component ID:** 375
**Test Number:** FTTT-375-2020Q2
**Component Type:** GFFM
**Reason for Test:** INITIAL
**Test Completion:** 02/23/2018 08:47
**Reported Test Results:** PASSED
**EPA Calculated Result:** PASSED
**Evaluation Status:** No Errors
**Submission Status:** Not Submitted
**Submission Date/Time:**

| High Level Accuracy | High Level Accuracy Specification | Mid Level Accuracy | Mid Level Accuracy Specification | Low Level Accuracy | Low Level Accuracy Specification |
|---|---|---|---|---|---|
| 0.0 | SUM | 0.0 | SUM | 0.0 | SUM |

**Additional Information:**

No comment.

**Facility Name:** Cricket Valley Energy Center

**Facility ID (ORISPL):** 57185

# QA/Cert Test Detail Report

April 28, 2020 12:05 PM

**Unit/Stack/Pipe ID:** U003

**DAHS Verification**

| | | | | | |
|---|---|---|---|---|---|
| **System ID:** | | **System Type:** | | **Test Completion:** | 03/08/2020 06:59 |
| **Component ID:** | D01 | **Component Type:** | DAHS | **Reported Test Results:** | PASSED |
| **Test Number:** | DAHS_FV-2020Q2 | **Reason for Test:** | INITIAL | **Grace Period Test?** | |
| **Evaluation Status:** | No Errors | | | **Submission Status:** | Not Submitted |

**Test Description:**

**Additional Information:**

DAHS Verfication

**Unit/Stack/Pipe ID:** U003

**Primary Element Inspection**

| | | | | | |
|---|---|---|---|---|---|
| **System ID:** | | **System Type:** | | **Test Completion:** | 02/23/2020 10:00 |
| **Component ID:** | 375 | **Component Type:** | GFFM | **Reported Test Results:** | PASSED |
| **Test Number:** | PEI-275-2020Q2 | **Reason for Test:** | INITIAL | **Grace Period Test?** | |
| **Evaluation Status:** | No Errors | | | **Submission Status:** | Not Submitted |

**Test Description:**

**Additional Information:**

Orifice Inspection

# APPENDIX 2

# 7-DAY ERROR/DRIFT TESTS
# &
# ONLINE/OFFLINE DEMONSTRATION TESTS
# DOCUMENTATION

# Cricket Valley Energy Center

## 7-Day Drift Test

Turbine 3 75-NOx ppm/H

| Time | Instrument Span | Zero Reference | Zero Measured | Zero Drift | Zero Drift Limit | Span Reference | Span Measured | Span Drift | Span Drift Limit | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 3/27/2020 00:01 | 200 | 0.00 | 0.80 | 0.80 | 5.00 | 176.90 | 175.10 | -1.80 | 5.00 | On-Line |
| 3/27/2020 08:15 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 176.90 | 175.40 | -1.50 | 5.00 | Off-Line |
| 3/27/2020 14:07 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 177.00 | 177.50 | 0.50 | 5.00 | On-Line |
| 3/28/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 177.00 | 176.60 | -0.40 | 5.00 | On-Line |
| 3/29/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 177.00 | 177.00 | 0.00 | 5.00 | On-Line |
| 3/29/2020 06:52 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 177.00 | 176.50 | -0.50 | 5.00 | On-Line |
| 3/29/2020 07:33 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 177.00 | 177.10 | 0.10 | 5.00 | On-Line |
| 3/30/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 177.00 | 176.60 | -0.40 | 5.00 | On-Line |
| 3/31/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 177.00 | 176.80 | -0.20 | 5.00 | On-Line |
| 3/31/2020 19:13 | 200 | 0.00 | 0.10 | 0.10 | 5.00 | 177.00 | 177.80 | 0.80 | 5.00 | On-Line |
| 4/1/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 177.00 | 177.70 | 0.70 | 5.00 | On-Line |
| 4/2/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 177.00 | 177.50 | 0.50 | 5.00 | On-Line |

The 7-Day Drift Test has been passed.

# Cricket Valley Energy Center

## 7-Day Drift Test

Turbine 3 60-NOx ppm/H

| Time | Instrument Span | Zero Reference | Zero Measured | Zero Drift | Zero Drift Limit | Span Reference | Span Measured | Span Drift | Span Drift Limit | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 3/27/2020 00:01 | 200 | 0.00 | 0.80 | 0.80 | 5.00 | 176.90 | 175.10 | -1.80 | 5.00 | On-Line |
| 3/27/2020 08:15 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 176.90 | 175.40 | -1.50 | 5.00 | Off-Line |
| 3/27/2020 14:07 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 177.00 | 177.50 | 0.50 | 5.00 | On-Line |
| 3/28/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 177.00 | 176.60 | -0.40 | 5.00 | On-Line |
| 3/29/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 177.00 | 177.00 | 0.00 | 5.00 | On-Line |
| 3/29/2020 06:52 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 177.00 | 176.50 | -0.50 | 5.00 | On-Line |
| 3/29/2020 07:33 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 177.00 | 177.10 | 0.10 | 5.00 | On-Line |
| 3/30/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 177.00 | 176.60 | -0.40 | 5.00 | On-Line |
| 3/31/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 177.00 | 176.80 | -0.20 | 5.00 | On-Line |
| 3/31/2020 19:13 | 200 | 0.00 | 0.10 | 0.10 | 5.00 | 177.00 | 177.80 | 0.80 | 5.00 | On-Line |
| 4/1/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 177.00 | 177.70 | 0.70 | 5.00 | On-Line |
| 4/2/2020 00:01 | 200 | 0.00 | 0.00 | 0.00 | 5.00 | 177.00 | 177.50 | 0.50 | 5.00 | On-Line |

The 7-Day Drift Test has been passed.

# Cricket Valley Energy Center

## 7-Day Drift Test

Turbine 3 60-NOx ppm/L

| Time | Instrument Span | Zero Reference | Zero Measured | Zero Drift | Zero Drift Limit | Span Reference | Span Measured | Span Drift | Span Drift Limit | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 3/27/2020 00:01 | 10 | 0.00 | 0.83 | **0.83** | 0.25 | 8.82 | 8.56 | **-0.26** | 0.25 | On-Line |
| 3/27/2020 08:15 | 10 | 0.00 | 0.00 | 0.00 | 0.25 | 8.82 | 8.09 | **-0.73** | 0.25 | Off-Line |
| 3/27/2020 14:07 | 10 | 0.00 | 0.02 | 0.02 | 0.25 | 8.88 | 8.85 | -0.03 | 0.25 | On-Line |
| 3/28/2020 00:01 | 10 | 0.00 | 0.00 | 0.00 | 0.25 | 8.88 | 8.92 | 0.04 | 0.25 | On-Line |
| 3/29/2020 00:01 | 10 | 0.00 | 0.01 | 0.01 | 0.25 | 8.88 | 8.88 | 0.00 | 0.25 | On-Line |
| 3/29/2020 06:52 | 10 | 0.00 | 0.01 | 0.01 | 0.25 | 8.88 | 8.89 | 0.01 | 0.25 | On-Line |
| 3/29/2020 07:33 | 10 | 0.00 | 0.01 | 0.01 | 0.25 | 8.88 | 8.89 | 0.01 | 0.25 | On-Line |
| 3/30/2020 00:01 | 10 | 0.00 | 0.00 | 0.00 | 0.25 | 8.88 | 8.87 | -0.01 | 0.25 | On-Line |
| 3/31/2020 00:01 | 10 | 0.00 | 0.01 | 0.01 | 0.25 | 8.88 | 8.87 | -0.01 | 0.25 | On-Line |
| 3/31/2020 19:13 | 10 | 0.00 | 0.02 | 0.02 | 0.25 | 8.88 | 8.93 | 0.05 | 0.25 | On-Line |
| 4/1/2020 00:01 | 10 | 0.00 | 0.01 | 0.01 | 0.25 | 8.88 | 8.92 | 0.04 | 0.25 | On-Line |
| 4/2/2020 00:01 | 10 | 0.00 | 0.00 | 0.00 | 0.25 | 8.88 | 8.91 | 0.03 | 0.25 | On-Line |

The 7-Day Drift Test has been passed.

# Cricket Valley Energy Center

## 7-Day Drift Test

Turbine 3 CO ppm/H

| Time | Instrument Span | Zero Reference | Zero Measured | Zero Drift | Zero Drift Limit | Span Reference | Span Measured | Span Drift | Span Drift Limit | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 3/27/2020 00:01 | 2050 | 0.00 | 0.00 | 0.00 | 102.50 | 1711.00 | 1716.00 | 5.00 | 102.50 | On-Line |
| 3/27/2020 14:07 | 2050 | 0.00 | 0.00 | 0.00 | 102.50 | 1707.00 | 1704.00 | -3.00 | 102.50 | On-Line |
| 3/28/2020 00:01 | 2050 | 0.00 | 0.00 | 0.00 | 102.50 | 1707.00 | 1700.00 | -7.00 | 102.50 | On-Line |
| 3/29/2020 00:01 | 2050 | 0.00 | 0.00 | 0.00 | 102.50 | 1707.00 | 1700.00 | -7.00 | 102.50 | On-Line |
| 3/29/2020 06:52 | 2050 | 0.00 | 0.00 | 0.00 | 102.50 | 1707.00 | 1702.00 | -5.00 | 102.50 | On-Line |
| 3/29/2020 07:33 | 2050 | 0.00 | 0.00 | 0.00 | 102.50 | 1707.00 | 1701.00 | -6.00 | 102.50 | On-Line |
| 3/30/2020 00:01 | 2050 | 0.00 | 0.00 | 0.00 | 102.50 | 1707.00 | 1702.00 | -5.00 | 102.50 | On-Line |
| 3/31/2020 00:01 | 2050 | 0.00 | 0.00 | 0.00 | 102.50 | 1707.00 | 1703.00 | -4.00 | 102.50 | On-Line |
| 3/31/2020 19:13 | 2050 | 0.00 | 0.00 | 0.00 | 102.50 | 1707.00 | 1704.00 | -3.00 | 102.50 | On-Line |
| 4/1/2020 00:01 | 2050 | 0.00 | 0.00 | 0.00 | 102.50 | 1707.00 | 1705.00 | -2.00 | 102.50 | On-Line |
| 4/2/2020 00:01 | 2050 | 0.00 | 0.00 | 0.00 | 102.50 | 1707.00 | 1707.00 | 0.00 | 102.50 | On-Line |

The 7-Day Drift Test has been passed.

# Cricket Valley Energy Center

## 7-Day Drift Test

Turbine 3 CO ppm/L

| Time | Instrument Span | Zero Reference | Zero Measured | Zero Drift | Zero Drift Limit | Span Reference | Span Measured | Span Drift | Span Drift Limit | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 3/27/2020 00:01 | 10 | 0.00 | 0.39 | 0.39 | 0.50 | 6.98 | 6.74 | -0.24 | 0.50 | On-Line |
| 3/27/2020 14:07 | 10 | 0.00 | 0.14 | 0.14 | 0.50 | 7.04 | 7.31 | 0.27 | 0.50 | On-Line |
| 3/28/2020 00:01 | 10 | 0.00 | 0.21 | 0.21 | 0.50 | 7.04 | 6.69 | -0.35 | 0.50 | On-Line |
| 3/29/2020 00:01 | 10 | 0.00 | 0.07 | 0.07 | 0.50 | 7.04 | 6.61 | -0.43 | 0.50 | On-Line |
| 3/29/2020 06:52 | 10 | 0.00 | 0.08 | 0.08 | 0.50 | 7.04 | 8.21 | **1.17** | 0.50 | On-Line |
| 3/29/2020 07:33 | 10 | 0.00 | 0.08 | 0.08 | 0.50 | 7.04 | 6.71 | -0.33 | 0.50 | On-Line |
| 3/30/2020 00:01 | 10 | 0.00 | 0.13 | 0.13 | 0.50 | 7.04 | 6.69 | -0.35 | 0.50 | On-Line |
| 3/31/2020 00:01 | 10 | 0.00 | 0.10 | 0.10 | 0.50 | 7.04 | 6.75 | -0.29 | 0.50 | On-Line |
| 3/31/2020 19:13 | 10 | 0.00 | 0.18 | 0.18 | 0.50 | 7.04 | 7.41 | 0.37 | 0.50 | On-Line |
| 4/1/2020 00:01 | 10 | 0.00 | 0.19 | 0.19 | 0.50 | 7.04 | 7.42 | 0.38 | 0.50 | On-Line |
| 4/2/2020 00:01 | 10 | 0.00 | 0.09 | 0.09 | 0.50 | 7.04 | 7.40 | 0.36 | 0.50 | On-Line |

The 7-Day Drift Test has been passed.

# Cricket Valley Energy Center

## 7-Day Drift Test

Turbine 3 NH3/NOx ppm

| Time | Instrument Span | Zero Reference | Zero Measured | Zero Drift | Zero Drift Limit | Span Reference | Span Measured | Span Drift | Span Drift Limit | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 3/27/2020 00:01 | 16 | 0.00 | 3.40 | **3.40** | 0.48 | 8.82 | 8.88 | 0.06 | 0.48 | On-Line |
| 3/27/2020 08:42 | 16 | 0.00 | 0.10 | 0.10 | 0.48 | 8.82 | 8.85 | 0.03 | 0.48 | On-Line |
| 3/27/2020 14:07 | 16 | 0.00 | 0.05 | 0.05 | 0.48 | 8.88 | 8.86 | -0.02 | 0.48 | On-Line |
| 3/28/2020 00:01 | 16 | 0.00 | 0.00 | 0.00 | 0.48 | 8.88 | 8.89 | 0.01 | 0.48 | On-Line |
| 3/29/2020 00:01 | 16 | 0.00 | -0.01 | -0.01 | 0.48 | 8.88 | 8.86 | -0.02 | 0.48 | On-Line |
| 3/29/2020 06:52 | 16 | 0.00 | 0.01 | 0.01 | 0.48 | 8.88 | 8.87 | -0.01 | 0.48 | On-Line |
| 3/29/2020 07:33 | 16 | 0.00 | 0.19 | 0.19 | 0.48 | 8.88 | 8.92 | 0.04 | 0.48 | On-Line |
| 3/30/2020 00:01 | 16 | 0.00 | -0.01 | -0.01 | 0.48 | 8.88 | 8.84 | -0.04 | 0.48 | On-Line |
| 3/31/2020 00:01 | 16 | 0.00 | 0.00 | 0.00 | 0.48 | 8.88 | 8.89 | 0.01 | 0.48 | On-Line |
| 3/31/2020 19:13 | 16 | 0.00 | 0.03 | 0.03 | 0.48 | 8.88 | 8.93 | 0.05 | 0.48 | On-Line |
| 4/1/2020 00:01 | 16 | 0.00 | -0.01 | -0.01 | 0.48 | 8.88 | 8.93 | 0.05 | 0.48 | On-Line |
| 4/2/2020 00:01 | 16 | 0.00 | -0.01 | -0.01 | 0.48 | 8.88 | 8.93 | 0.05 | 0.48 | On-Line |

The 7-Day Drift Test has been passed.

# Cricket Valley Energy Center

## 7-Day Drift Test

Turbine 3 75-O2 %

| Time | Instrument Span | Zero Reference | Zero Measured | Zero Drift | Zero Drift Limit | Span Reference | Span Measured | Span Drift | Span Drift Limit | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 3/27/2020 00:01 | 25 | 0.00 | 13.48 | **13.48** | 0.50 | 22.22 | 22.24 | 0.02 | 0.50 | On-Line |
| 3/27/2020 09:32 | 25 | 0.00 | 0.02 | 0.02 | 0.50 | 22.22 | 22.25 | 0.03 | 0.50 | On-Line |
| 3/27/2020 14:07 | 25 | 0.00 | 0.03 | 0.03 | 0.50 | 22.20 | 22.27 | 0.07 | 0.50 | On-Line |
| 3/28/2020 00:01 | 25 | 0.00 | 0.03 | 0.03 | 0.50 | 22.20 | 22.25 | 0.05 | 0.50 | On-Line |
| 3/29/2020 00:01 | 25 | 0.00 | 0.03 | 0.03 | 0.50 | 22.20 | 22.26 | 0.06 | 0.50 | On-Line |
| 3/29/2020 06:52 | 25 | 0.00 | 0.03 | 0.03 | 0.50 | 22.20 | 22.27 | 0.07 | 0.50 | On-Line |
| 3/29/2020 07:33 | 25 | 0.00 | 0.03 | 0.03 | 0.50 | 22.20 | 22.26 | 0.06 | 0.50 | On-Line |
| 3/30/2020 00:01 | 25 | 0.00 | 0.03 | 0.03 | 0.50 | 22.20 | 22.25 | 0.05 | 0.50 | On-Line |
| 3/31/2020 00:01 | 25 | 0.00 | 0.04 | 0.04 | 0.50 | 22.20 | 22.21 | 0.01 | 0.50 | On-Line |
| 3/31/2020 19:13 | 25 | 0.00 | 0.04 | 0.04 | 0.50 | 22.20 | 22.24 | 0.04 | 0.50 | On-Line |
| 4/1/2020 00:01 | 25 | 0.00 | 0.04 | 0.04 | 0.50 | 22.20 | 22.22 | 0.02 | 0.50 | On-Line |
| 4/2/2020 00:01 | 25 | 0.00 | 0.04 | 0.04 | 0.50 | 22.20 | 22.22 | 0.02 | 0.50 | On-Line |

The 7-Day Drift Test has been passed.

# Cricket Valley Energy Center

## 7-Day Drift Test

Turbine 3 60-O2 %

| Time | Instrument Span | Zero Reference | Zero Measured | Zero Drift | Zero Drift Limit | Span Reference | Span Measured | Span Drift | Span Drift Limit | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| 3/27/2020 00:01 | 25 | 0.00 | 13.48 | **13.48** | 0.50 | 22.22 | 22.24 | 0.02 | 0.50 | On-Line |
| 3/27/2020 09:32 | 25 | 0.00 | 0.02 | 0.02 | 0.50 | 22.22 | 22.25 | 0.03 | 0.50 | On-Line |
| 3/27/2020 14:07 | 25 | 0.00 | 0.03 | 0.03 | 0.50 | 22.20 | 22.27 | 0.07 | 0.50 | On-Line |
| 3/28/2020 00:01 | 25 | 0.00 | 0.03 | 0.03 | 0.50 | 22.20 | 22.25 | 0.05 | 0.50 | On-Line |
| 3/29/2020 00:01 | 25 | 0.00 | 0.03 | 0.03 | 0.50 | 22.20 | 22.26 | 0.06 | 0.50 | On-Line |
| 3/29/2020 06:52 | 25 | 0.00 | 0.03 | 0.03 | 0.50 | 22.20 | 22.27 | 0.07 | 0.50 | On-Line |
| 3/29/2020 07:33 | 25 | 0.00 | 0.03 | 0.03 | 0.50 | 22.20 | 22.26 | 0.06 | 0.50 | On-Line |
| 3/30/2020 00:01 | 25 | 0.00 | 0.03 | 0.03 | 0.50 | 22.20 | 22.25 | 0.05 | 0.50 | On-Line |
| 3/31/2020 00:01 | 25 | 0.00 | 0.04 | 0.04 | 0.50 | 22.20 | 22.21 | 0.01 | 0.50 | On-Line |
| 3/31/2020 19:13 | 25 | 0.00 | 0.04 | 0.04 | 0.50 | 22.20 | 22.24 | 0.04 | 0.50 | On-Line |
| 4/1/2020 00:01 | 25 | 0.00 | 0.04 | 0.04 | 0.50 | 22.20 | 22.22 | 0.02 | 0.50 | On-Line |
| 4/2/2020 00:01 | 25 | 0.00 | 0.04 | 0.04 | 0.50 | 22.20 | 22.22 | 0.02 | 0.50 | On-Line |

The 7-Day Drift Test has been passed.

ONLINE/OFFLINE DETERMINATION

# Turbine 3 Calibration Checks

Cricket Valley Energy Center
Cal Checks for 3/25/2020

| Date/Time | Parameter | Analyzer Scale | Test Level | Reference Value | Measured Value | Actual Drift | Allowable Drift | Instrument Span | Results |
|---|---|---|---|---|---|---|---|---|---|
| | | | *Cylinder ID* | *Expiration Date* | | *EPA Vendor ID* | *EPA Gas Type Codes* | | |
| 3/25/2020 12:01 AM | 75-NOx ppm | High | Zero | 0.0 ppm | 0.0 ppm | 0 ppm | ±10 ppm | 200 ppm | Unit offline; Passed |
| | | | *NI CZ15A* | *1/15/2028* | | *B22019* | *N2* | | |
| 3/25/2020 12:01 AM | 75-NOx ppm | High | Span | 176.9 ppm | 176.9 ppm | 0 ppm | ±10 ppm | 200 ppm | Unit offline; Passed |
| | | | *SG9147577BAL* | *7/22/2027* | | *B22019* | *CO,NO,NOX,BALN* | | |
| 3/25/2020 12:01 AM | 75-NOx ppm | Low | Zero | 0.00 ppm | -0.01 ppm | -0.01 ppm | ±0.5 ppm | 10 ppm | Unit offline; Passed |
| | | | *NI CZ15A* | *1/15/2028* | | *B22019* | *N2* | | |
| 3/25/2020 12:01 AM | 75-NOx ppm | Low | Span | 8.82 ppm | 8.61 ppm | -0.21 ppm | ±0.5 ppm | 10 ppm | Unit offline; Passed |
| | | | *CC409686* | *6/24/2022* | | *B22019* | *NO,NOX,BALN* | | |
| 3/25/2020 12:01 AM | 75-O2 % | Single | Zero | 0.00% | 0.01% | 0.01% | ±1% | 25% | Unit offline; Passed |
| | | | *NI CZ15A* | *1/15/2028* | | *B22019* | *N2* | | |
| 3/25/2020 12:01 AM | 75-O2 % | Single | Span | 22.22% | 22.30% | 0.08% | ±1% | 25% | Unit offline; Passed |
| | | | *CC270907* | *6/17/2027* | | *A12019* | *O2,BALN* | | |
| 3/25/2020 8:11 PM | 75-NOx ppm | High | Zero | 0.0 ppm | 0.0 ppm | 0 ppm | ±10 ppm | 200 ppm | Unit online; Passed |
| | | | *NI CZ15A* | *1/15/2028* | | *B22019* | *N2* | | |
| 3/25/2020 8:11 PM | 75-NOx ppm | High | Span | 176.9 ppm | 175.7 ppm | -1.2 ppm | ±10 ppm | 200 ppm | Unit online; Passed |
| | | | *SG9147577BAL* | *7/22/2027* | | *B22019* | *CO,NO,NOX,BALN* | | |
| 3/25/2020 8:11 PM | 75-NOx ppm | Low | Zero | 0.00 ppm | 0.02 ppm | 0.02 ppm | ±0.5 ppm | 10 ppm | Unit online; Passed |
| | | | *NI CZ15A* | *1/15/2028* | | *B22019* | *N2* | | |
| 3/25/2020 8:11 PM | 75-NOx ppm | Low | Span | 8.82 ppm | 8.62 ppm | -0.2 ppm | ±0.5 ppm | 10 ppm | Unit online; Passed |
| | | | *CC409686* | *6/24/2022* | | *B22019* | *NO,NOX,BALN* | | |
| 3/25/2020 8:11 PM | 75-O2 % | Single | Zero | 0.00% | 0.00% | 0% | ±1% | 25% | Unit online; Passed |
| | | | *NI CZ15A* | *1/15/2028* | | *B22019* | *N2* | | |
| 3/25/2020 8:11 PM | 75-O2 % | Single | Span | 22.22% | 22.25% | 0.03% | ±1% | 25% | Unit online; Passed |
| | | | *CC270907* | *6/17/2027* | | *A12019* | *O2,BALN* | | |

# APPENDIX 3

# LINEARITY CHECK DOCUMENTATION

# Turbine 3 NOx/H Linearity

Cricket Valley Energy Center

## Test Information

**Test Date:** **4/3/2020**
Test Reason:
Grace Period: No
Aborted: No
*Unit online during QA test*

## Analyzer and Monitor Information

Range: High
Instrument Span: 200 ppm
Component ID: 310
Manufacturer: TELEDYNE
Model: T200M
Serial Number: 1014

| Run Number | Time | Reference Gas | CEMS Response | | Cylinder Information |
|---|---|---|---|---|---|
| **Low Gas** | | | | | |
| 1 | 7:05 PM | 49.4 | 48.2 | | Allowable Reference Values: 40-60 ppm (20-30% of span) |
| 2 | 7:17 PM | 49.4 | 48.4 | | |
| 3 | 7:30 PM | 49.4 | 48.4 | | Cylinder ID: CC712750 |
| | Mean (ppm) | 49.4 | 48.3 | | Expiration Date: 6/27/2022 |
| | Difference of means ( \|R-A\| ) (ppm) | 1.1 | *Limit 5* | *Passed* | EPA Vendor ID: G12019 |
| | Linearity Error (%) | 2.2 | *Limit 5.0* | *Passed* | Cylinder contains: NO,NOX,CO,BALN |
| **Mid Gas** | | | | | |
| 1 | 7:09 PM | 109.4 | 110.7 | | Allowable Reference Values: 100-120 ppm (50-60% of span) |
| 2 | 7:22 PM | 109.4 | 110.6 | | |
| 3 | 7:34 PM | 109.4 | 110.4 | | Cylinder ID: CC719253 |
| | Mean (ppm) | 109.4 | 110.6 | | Expiration Date: 9/24/2026 |
| | Difference of means ( \|R-A\| ) (ppm) | 1.2 | *Limit 5* | *Passed* | EPA Vendor ID: G12018 |
| | Linearity Error (%) | 1.1 | *Limit 5.0* | *Passed* | Cylinder contains: NO,NOX,CO,BALN |
| **High Gas** | | | | | |
| 1 | 7:13 PM | 180.2 | 180.6 | | Allowable Reference Values: 160-200 ppm (80-100% of span) |
| 2 | 7:26 PM | 180.2 | 180.5 | | |
| 3 | 7:38 PM | 180.2 | 180.6 | | Cylinder ID: CC435700 |
| | Mean (ppm) | 180.2 | 180.6 | | Expiration Date: 2/11/2028 |
| | Difference of means ( \|R-A\| ) (ppm) | 0.4 | *Limit 5* | *Passed* | EPA Vendor ID: B22019 |
| | Linearity Error (%) | 0.2 | *Limit 5.0* | *Passed* | Cylinder contains: CO,NO,NOX,BALN |

*Linearity Error (LE) Determination*

*LE (%) = (|R-A| / R) * 100*

*R = Reference gas value*

*A = Mean of actual CEMS responses*

# Turbine 3 O2 Linearity

Cricket Valley Energy Center

## Test Information

**Test Date:** **4/3/2020**
Test Reason:
Grace Period: No
Aborted: No
*Unit online during QA test*

## Analyzer and Monitor Information

Range: Single Scale
Instrument Span: 25 %O2
Component ID: 320
Manufacturer: TELEDYNE
Model: T802
Serial Number: 151

| Run Number | Time | Reference Gas | CEMS Response | | Cylinder Information |
|---|---|---|---|---|---|
| **Low Gas** | | | | | |
| 1 | 6:18 PM | 6.03 | 6.06 | | |
| 2 | 6:33 PM | 6.03 | 6.06 | | Allowable Reference Values: |
| 3 | 6:48 PM | 6.03 | 6.07 | | 5-7.5 %O2 (20-30% of span) |
| | Mean (%O2) | 6.03 | 6.06 | | Cylinder ID: EB0049417 |
| | Difference of means ( \|R-A\| ) (%O2) | 0.0 | *Limit 0.5* | *Passed* | Expiration Date: 8/13/2021 |
| | | | | | EPA Vendor ID: L12013 |
| | Linearity Error (%) | 0.6 | *Limit 5.0* | *Passed* | Cylinder contains: CO2,O2,BALN |
| **Mid Gas** | | | | | |
| 1 | 6:23 PM | 13.46 | 13.55 | | |
| 2 | 6:38 PM | 13.46 | 13.55 | | Allowable Reference Values: |
| 3 | 6:53 PM | 13.46 | 13.56 | | 12.5-15 %O2 (50-60% of span) |
| | Mean (%O2) | 13.46 | 13.55 | | Cylinder ID: EB0053431 |
| | Difference of means ( \|R-A\| ) (%O2) | 0.1 | *Limit 0.5* | *Passed* | Expiration Date: 6/13/2023 |
| | | | | | EPA Vendor ID: G12015 |
| | Linearity Error (%) | 0.7 | *Limit 5.0* | *Passed* | Cylinder contains: O2,BALN |
| **High Gas** | | | | | |
| 1 | 6:28 PM | 22.20 | 22.22 | | |
| 2 | 6:43 PM | 22.20 | 22.23 | | Allowable Reference Values: |
| 3 | 6:58 PM | 22.20 | 22.24 | | 20-25 %O2 (80-100% of span) |
| | Mean (%O2) | 22.20 | 22.23 | | Cylinder ID: ALMO47793 |
| | Difference of means ( \|R-A\| ) (%O2) | 0.0 | *Limit 0.5* | *Passed* | Expiration Date: 3/4/2027 |
| | | | | | EPA Vendor ID: A12019 |
| | Linearity Error (%) | 0.1 | *Limit 5.0* | *Passed* | Cylinder contains: CO2,O2,BALN |

*Linearity Error (LE) Determination*

*LE (%) = (|R-A| / R) * 100*

*R = Reference gas value*

*A = Mean of actual CEMS responses*

# APPENDIX 4

# CYCLE TIME & RESPONSE TIME TESTS DOCUMENTATION

# I/O Audit Data

Cricket Valley Energy Center

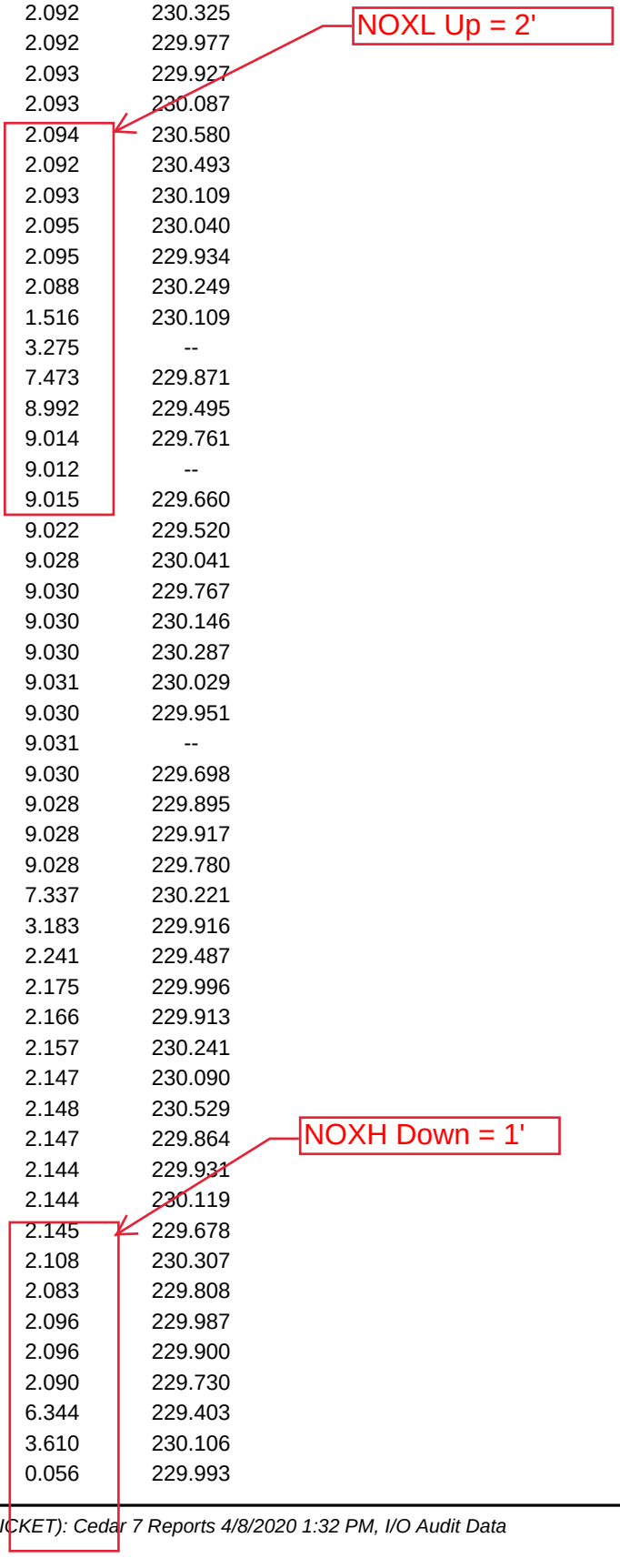
Data for 4/4/2020 2:11:50 PM thru 4/4/2020 2:38:30 PM

| Timestamp | (Turbine 3) NOx Value | (Turbine 3) GT Megawatts Value |
|---|---|---|
| 2:11:53 PM | 2.131 | 230.131 |
| 2:12:03 PM | 2.130 | 230.151 |
| 2:12:13 PM | 2.130 | 230.012 |
| 2:12:23 PM | 2.131 | -- |
| 2:12:33 PM | 2.132 | 229.631 |
| 2:12:43 PM | 2.132 | 229.954 |
| 2:12:53 PM | 2.127 | 229.941 |
| 2:13:03 PM | 2.129 | 230.177 |
| 2:13:13 PM | 2.127 | 230.144 |
| 2:13:23 PM | 2.126 | 230.498 |
| 2:13:33 PM | 2.126 | 230.668 |
| 2:13:43 PM | 2.124 | 230.263 |
| 2:13:53 PM | 2.122 | 229.953 |
| 2:14:03 PM | 2.123 | 229.966 |
| 2:14:13 PM | 2.122 | 230.052 |
| 2:14:23 PM | 2.122 | 230.447 |
| 2:14:33 PM | 2.123 | 229.924 |
| 2:14:43 PM | 2.123 | 230.192 |
| 2:14:53 PM | 2.042 | 229.938 |
| 2:15:03 PM | 0.904 | -- |
| 2:15:13 PM | 0.127 | 230.454 |
| 2:15:23 PM | -0.010 | 230.469 |
| 2:15:33 PM | -0.022 | 230.296 |
| 2:15:43 PM | -0.023 | 230.560 |
| 2:15:53 PM | -0.027 | 230.223 |
| 2:16:03 PM | -0.027 | 229.944 |
| 2:16:13 PM | -0.027 | 230.794 |
| 2:16:23 PM | -0.027 | 230.667 |
| 2:16:33 PM | -0.027 | 230.403 |
| 2:16:43 PM | -0.029 | 230.529 |
| 2:16:53 PM | -0.029 | 230.350 |
| 2:17:03 PM | -0.030 | 229.848 |
| 2:17:13 PM | -0.029 | 230.278 |
| 2:17:23 PM | -0.029 | 230.122 |
| 2:17:33 PM | -0.030 | 229.804 |
| 2:17:43 PM | -0.029 | 230.254 |
| 2:17:53 PM | -0.029 | 229.729 |
| 2:18:03 PM | 0.187 | 229.779 |
| 2:18:13 PM | 1.446 | 230.092 |
| 2:18:23 PM | 2.066 | 229.967 |
| 2:18:33 PM | 2.084 | 230.244 |
| 2:18:43 PM | 2.077 | 229.656 |
| 2:18:53 PM | 2.091 | 229.819 |
| 2:19:03 PM | 2.091 | 230.208 |
| 2:19:13 PM | 2.090 | 230.266 |

NOXL Down = 1'

NOXL Ref gas =9.05 ppm
0.05% of Ref = 0.453 ppm
95.0% of Ref = 8.598 ppm
NOXH Ref gas =180.2 ppm
0.05% of Ref = 9.01 ppm
95.0% of Ref = 171.19 ppm

| Timestamp | (Turbine 3) NOx Value | (Turbine 3) GT Megawatts Value |
|---|---|---|
| 2:19:23 PM | 2.092 | 230.325 |
| 2:19:33 PM | 2.092 | 229.977 |
| 2:19:43 PM | 2.093 | 229.927 |
| 2:19:53 PM | 2.093 | 230.087 |
| 2:20:03 PM | 2.094 | 230.580 |
| 2:20:13 PM | 2.092 | 230.493 |
| 2:20:23 PM | 2.093 | 230.109 |
| 2:20:33 PM | 2.095 | 230.040 |
| 2:20:43 PM | 2.095 | 229.934 |
| 2:20:53 PM | 2.088 | 230.249 |
| 2:21:03 PM | 1.516 | 230.109 |
| 2:21:13 PM | 3.275 | -- |
| 2:21:23 PM | 7.473 | 229.871 |
| 2:21:33 PM | 8.992 | 229.495 |
| 2:21:43 PM | 9.014 | 229.761 |
| 2:21:53 PM | 9.012 | -- |
| 2:22:03 PM | 9.015 | 229.660 |
| 2:22:13 PM | 9.022 | 229.520 |
| 2:22:23 PM | 9.028 | 230.041 |
| 2:22:33 PM | 9.030 | 229.767 |
| 2:22:43 PM | 9.030 | 230.146 |
| 2:22:53 PM | 9.030 | 230.287 |
| 2:23:03 PM | 9.031 | 230.029 |
| 2:23:13 PM | 9.030 | 229.951 |
| 2:23:23 PM | 9.031 | -- |
| 2:23:33 PM | 9.030 | 229.698 |
| 2:23:43 PM | 9.028 | 229.895 |
| 2:23:53 PM | 9.028 | 229.917 |
| 2:24:03 PM | 9.028 | 229.780 |
| 2:24:13 PM | 7.337 | 230.221 |
| 2:24:23 PM | 3.183 | 229.916 |
| 2:24:33 PM | 2.241 | 229.487 |
| 2:24:43 PM | 2.175 | 229.996 |
| 2:24:53 PM | 2.166 | 229.913 |
| 2:25:03 PM | 2.157 | 230.241 |
| 2:25:13 PM | 2.147 | 230.090 |
| 2:25:23 PM | 2.148 | 230.529 |
| 2:25:33 PM | 2.147 | 229.864 |
| 2:25:43 PM | 2.144 | 229.931 |
| 2:25:53 PM | 2.144 | 230.119 |
| 2:26:03 PM | 2.145 | 229.678 |
| 2:26:13 PM | 2.108 | 230.307 |
| 2:26:23 PM | 2.083 | 229.808 |
| 2:26:33 PM | 2.096 | 229.987 |
| 2:26:43 PM | 2.096 | 229.900 |
| 2:26:53 PM | 2.090 | 229.730 |
| 2:27:03 PM | 6.344 | 229.403 |
| 2:27:13 PM | 3.610 | 230.106 |
| 2:27:23 PM | 0.056 | 229.993 |



| Timestamp | (Turbine 3) NOx Value | (Turbine 3) GT Megawatts Value |
|---|---|---|
| 2:27:33 PM | -0.069 | 229.982 |
| 2:27:43 PM | -0.044 | 229.856 |
| 2:27:53 PM | -0.069 | 230.080 |
| 2:28:03 PM | -0.038 | 230.105 |
| 2:28:13 PM | -0.044 | 229.824 |
| 2:28:23 PM | -0.050 | 229.923 |
| 2:28:33 PM | -0.056 | 230.017 |
| 2:28:43 PM | -0.050 | 229.901 |
| 2:28:53 PM | -0.069 | 229.989 |
| 2:29:03 PM | -0.038 | 230.158 |
| 2:29:13 PM | -0.044 | 229.901 |
| 2:29:23 PM | -0.026 | 230.225 |
| 2:29:33 PM | -0.027 | 229.663 |
| 2:29:43 PM | -0.026 | -- |
| 2:29:53 PM | -0.027 | 229.465 |
| 2:30:03 PM | -0.027 | 229.809 |
| 2:30:13 PM | 1.143 | 230.077 |
| 2:30:23 PM | 2.001 | 229.770 |
| 2:30:33 PM | 2.073 | 229.925 |
| 2:30:43 PM | 2.079 | 230.294 |
| 2:30:53 PM | 2.084 | 230.310 |
| 2:31:03 PM | 2.076 | 229.698 |
| 2:31:13 PM | 2.074 | 229.579 |
| 2:31:23 PM | 2.075 | 229.419 |
| 2:31:33 PM | 2.073 | 229.803 |
| 2:31:43 PM | 2.074 | 229.835 |
| 2:31:53 PM | 2.073 | 230.191 |
| 2:32:03 PM | 2.074 | 229.764 |
| 2:32:13 PM | 1.996 | -- |
| 2:32:23 PM | 2.015 | 229.894 |
| 2:32:33 PM | 1.983 | 230.075 |
| 2:32:43 PM | 1.977 | 229.975 |
| 2:32:53 PM | 1.883 | 230.055 |
| 2:33:03 PM | 26.320 | 229.652 |
| 2:33:13 PM | 159.823 | 230.044 |
| 2:33:23 PM | 178.805 | 230.082 |
| 2:33:33 PM | 180.200 | 229.896 |
| 2:33:43 PM | 180.669 | 229.378 |
| 2:33:53 PM | 180.938 | 229.894 |
| 2:34:03 PM | 181.045 | 229.636 |
| 2:34:13 PM | 181.045 | 229.604 |
| 2:34:23 PM | 181.070 | 229.616 |
| 2:34:33 PM | 181.051 | 229.779 |
| 2:34:43 PM | 181.051 | 229.542 |
| 2:34:53 PM | 181.095 | 229.652 |
| 2:35:03 PM | 181.101 | 229.468 |
| 2:35:13 PM | 181.089 | 229.938 |
| 2:35:23 PM | 181.170 | 229.910 |
| 2:35:33 PM | 181.157 | 229.271 |

NOXH Up = 1'

| Timestamp | (Turbine 3) NOx Value | (Turbine 3) GT Megawatts Value |
|---|---|---|
| 2:35:43 PM | 181.157 | 230.091 |
| 2:35:53 PM | 181.201 | 230.063 |
| 2:36:03 PM | 181.220 | 229.828 |
| 2:36:13 PM | 111.475 | 229.956 |
| 2:36:23 PM | 9.284 | 229.677 |
| 2:36:33 PM | 9.284 | 230.095 |
| 2:36:43 PM | 3.427 | 229.440 |
| 2:36:53 PM | 2.834 | 230.065 |
| 2:37:03 PM | 2.619 | 229.405 |
| 2:37:13 PM | 2.507 | 229.254 |
| 2:37:23 PM | 2.461 | 229.689 |
| 2:37:33 PM | 2.439 | 229.829 |
| 2:37:43 PM | 2.424 | 229.680 |
| 2:37:53 PM | 2.420 | 229.848 |
| 2:38:03 PM | 2.418 | 229.572 |
| 2:38:13 PM | 2.415 | 229.370 |
| 2:38:23 PM | 2.404 | 229.452 |
| Average | 23.362 | 229.960 |
| Minimum | -0.069 | 229.254 |
| Maximum | 181.220 | 230.794 |

# I/O Audit Data

Cricket Valley Energy Center

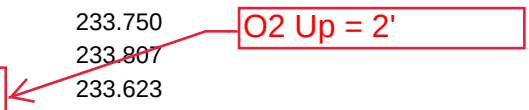
Data for 4/4/2020 10:33:00 PM thru 4/4/2020 10:45:40 PM

| Timestamp | (Turbine 3) O2 Value | (Turbine 3) GT Megawatts Value |
|---|---|---|
| 10:33:03 PM | 13.065 | 233.812 |
| 10:33:13 PM | 13.056 | 233.728 |
| 10:33:23 PM | 13.058 | 234.026 |
| 10:33:33 PM | 13.056 | 234.034 |
| 10:33:43 PM | 13.058 | 233.883 |
| 10:33:53 PM | 13.056 | 233.901 |
| 10:34:03 PM | 13.058 | -- |
| 10:34:13 PM | 13.054 | 233.894 |
| 10:34:23 PM | 13.058 | 233.624 |
| 10:34:33 PM | 13.057 | 233.553 |
| 10:34:43 PM | 13.058 | 233.661 |
| 10:34:53 PM | 13.063 | 234.026 |
| 10:35:03 PM | 13.058 | 233.456 |
| 10:35:13 PM | 13.058 | 233.549 |
| 10:35:23 PM | 13.057 | 233.945 |
| 10:35:33 PM | 13.058 | 233.922 |
| 10:35:43 PM | 13.058 | 233.740 |
| 10:35:53 PM | 13.058 | 233.550 |
| 10:36:03 PM | 13.058 | 233.466 |
| 10:36:13 PM | 13.058 | 233.680 |
| 10:36:23 PM | 13.058 | 233.956 |
| 10:36:33 PM | 13.050 | -- |
| 10:36:43 PM | 13.062 | 233.759 |
| 10:36:53 PM | 13.056 | 233.576 |
| 10:37:03 PM | 5.617 | 233.912 |
| 10:37:13 PM | 1.075 | 233.668 |
| 10:37:23 PM | 0.281 | 233.722 |
| 10:37:33 PM | 0.109 | 233.838 |
| 10:37:43 PM | 0.076 | 233.539 |
| 10:37:53 PM | 0.055 | 234.026 |
| 10:38:03 PM | 0.050 | 233.630 |
| 10:38:13 PM | 0.048 | 233.321 |
| 10:38:23 PM | 0.043 | 234.231 |
| 10:38:33 PM | 0.041 | 233.739 |
| 10:38:43 PM | 0.035 | -- |
| 10:38:53 PM | 0.037 | 233.610 |
| 10:39:03 PM | 0.029 | -- |
| 10:39:13 PM | 0.038 | 233.804 |
| 10:39:23 PM | 0.035 | 233.848 |
| 10:39:33 PM | 0.030 | 233.958 |
| 10:39:43 PM | 0.023 | 233.624 |
| 10:39:53 PM | 0.023 | 233.954 |
| 10:40:03 PM | 0.098 | -- |
| 10:40:13 PM | 9.772 | 233.865 |
| 10:40:23 PM | 12.397 | 233.609 |

O2 Ref gas =22.20%
0.05% of Ref = 1.11%
95.0% of Ref = 21.09%

O2 Down = 2'

| Timestamp | (Turbine 3) O2 Value | (Turbine 3) GT Megawatts Value |
|---|---|---|
| 10:40:33 PM | 12.876 | 233.790 |
| 10:40:43 PM | 12.980 | -- |
| 10:40:53 PM | 13.019 | 233.883 |
| 10:41:03 PM | 13.033 | 233.520 |
| 10:41:13 PM | 13.044 | 233.882 |
| 10:41:23 PM | 13.046 | 234.040 |
| 10:41:33 PM | 13.044 | 233.574 |
| 10:41:43 PM | 13.045 | 233.776 |
| 10:41:53 PM | 13.045 | 233.750 |
| 10:42:03 PM | 13.051 | 233.807 |
| 10:42:13 PM | 13.051 | 233.623 |
| 10:42:23 PM | 13.044 | -- |
| 10:42:33 PM | 13.051 | 234.075 |
| 10:42:43 PM | 13.052 | 233.800 |
| 10:42:53 PM | 13.058 | 233.627 |
| 10:43:03 PM | 4.593 | -- |
| 10:43:13 PM | 17.425 | -- |
| 10:43:23 PM | 21.333 | 233.786 |
| 10:43:33 PM | 22.003 | 233.839 |
| 10:43:43 PM | 22.173 | 233.595 |
| 10:43:53 PM | 22.212 | 234.465 |
| 10:44:03 PM | 22.233 | 234.127 |
| 10:44:13 PM | 22.239 | 233.635 |
| 10:44:23 PM | 22.247 | 233.594 |
| 10:44:33 PM | 22.256 | 233.623 |
| 10:44:43 PM | 22.254 | 233.411 |
| 10:44:53 PM | 22.258 | 233.995 |
| 10:45:03 PM | 22.260 | 233.428 |
| 10:45:13 PM | 22.258 | 233.614 |
| 10:45:23 PM | 22.259 | 233.461 |
| 10:45:33 PM | 22.259 | 233.640 |
| Average | 11.461 | 233.761 |
| Minimum | 0.023 | 233.321 |
| Maximum | 22.260 | 234.465 |

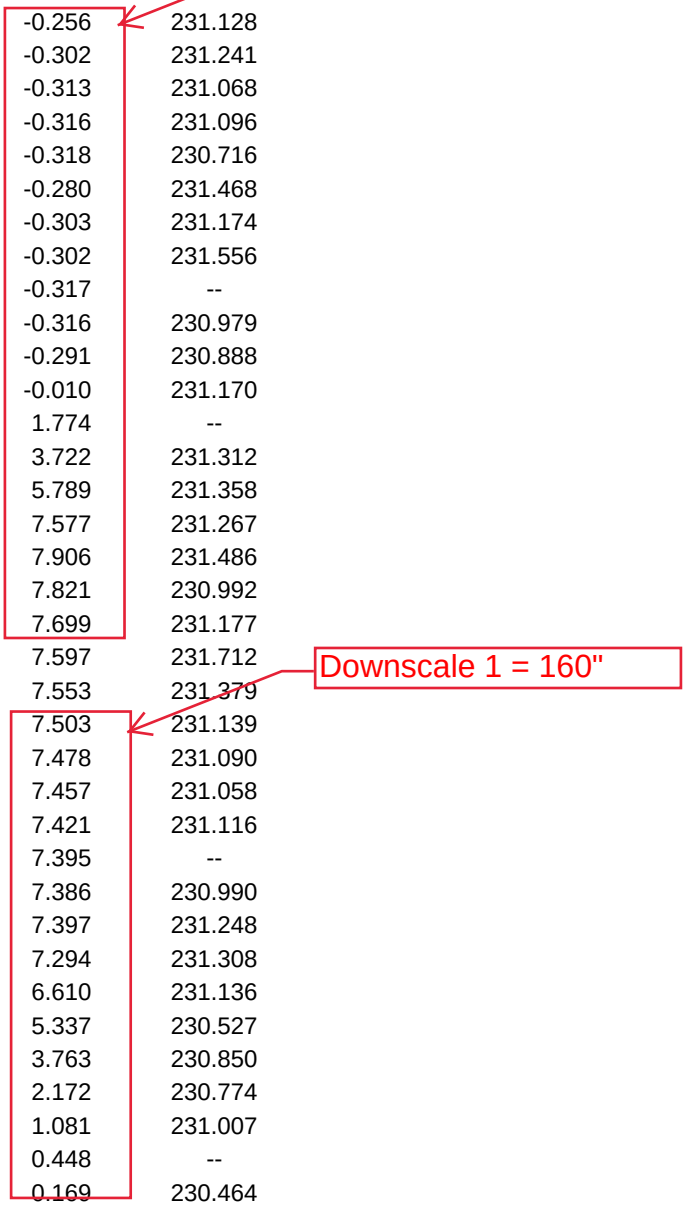


# I/O Audit Data

Cricket Valley Energy Center

Data for 4/4/2020 1:44:00 PM thru 4/4/2020 2:10:30 PM

| Timestamp | (Turbine 3) CO Value | (Turbine 3) GT Megawatts Value |
|---|---|---|
| 1:44:03 PM | -0.247 | 230.727 |
| 1:44:13 PM | -0.231 | 230.606 |
| 1:44:23 PM | -0.246 | 230.973 |
| 1:44:33 PM | -0.264 | 231.211 |
| 1:44:43 PM | -0.294 | 230.657 |
| 1:44:53 PM | -0.291 | 230.679 |
| 1:45:03 PM | -0.280 | 231.153 |
| 1:45:13 PM | -0.269 | 230.873 |
| 1:45:23 PM | -0.272 | 230.937 |
| 1:45:33 PM | -0.256 | 231.128 |
| 1:45:43 PM | -0.302 | 231.241 |
| 1:45:53 PM | -0.313 | 231.068 |
| 1:46:03 PM | -0.316 | 231.096 |
| 1:46:13 PM | -0.318 | 230.716 |
| 1:46:23 PM | -0.280 | 231.468 |
| 1:46:33 PM | -0.303 | 231.174 |
| 1:46:43 PM | -0.302 | 231.556 |
| 1:46:53 PM | -0.317 | -- |
| 1:47:03 PM | -0.316 | 230.979 |
| 1:47:13 PM | -0.291 | 230.888 |
| 1:47:23 PM | -0.010 | 231.170 |
| 1:47:33 PM | 1.774 | -- |
| 1:47:43 PM | 3.722 | 231.312 |
| 1:47:53 PM | 5.789 | 231.358 |
| 1:48:03 PM | 7.577 | 231.267 |
| 1:48:13 PM | 7.906 | 231.486 |
| 1:48:23 PM | 7.821 | 230.992 |
| 1:48:33 PM | 7.699 | 231.177 |
| 1:48:43 PM | 7.597 | 231.712 |
| 1:48:53 PM | 7.553 | 231.379 |
| 1:49:03 PM | 7.503 | 231.139 |
| 1:49:13 PM | 7.478 | 231.090 |
| 1:49:23 PM | 7.457 | 231.058 |
| 1:49:33 PM | 7.421 | 231.116 |
| 1:49:43 PM | 7.395 | -- |
| 1:49:53 PM | 7.386 | 230.990 |
| 1:50:03 PM | 7.397 | 231.248 |
| 1:50:13 PM | 7.294 | 231.308 |
| 1:50:23 PM | 6.610 | 231.136 |
| 1:50:33 PM | 5.337 | 230.527 |
| 1:50:43 PM | 3.763 | 230.850 |
| 1:50:53 PM | 2.172 | 230.774 |
| 1:51:03 PM | 1.081 | 231.007 |
| 1:51:13 PM | 0.448 | -- |
| 1:51:23 PM | 0.169 | 230.464 |



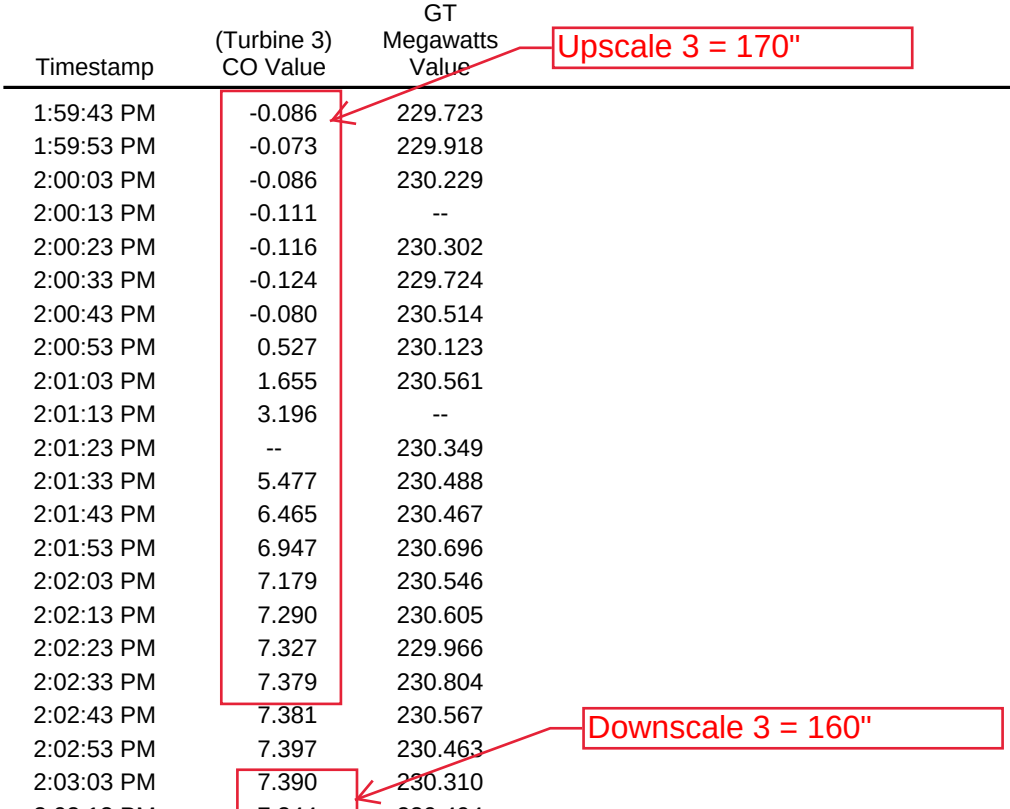

CO Ref gas =7.04 ppm
0.05% of Ref = 0.352 ppm
95.0% of Ref = 6.688 ppm

| Timestamp | (Turbine 3) CO Value | (Turbine 3) GT Megawatts Value |
|---|---|---|
| 1:51:33 PM | 0.028 | 230.298 |
| 1:51:43 PM | -0.057 | 230.464 |
| 1:51:53 PM | -0.092 | 230.229 |
| 1:52:03 PM | -0.086 | -- |
| 1:52:13 PM | -0.111 | -- |
| 1:52:23 PM | -0.113 | 230.473 |
| 1:52:33 PM | -0.103 | 230.087 |
| 1:52:43 PM | -0.140 | 230.166 |
| 1:52:53 PM | -0.132 | 230.537 |
| 1:53:03 PM | -0.145 | 230.495 |
| 1:53:13 PM | -0.162 | 230.346 |
| 1:53:23 PM | -0.138 | 230.204 |
| 1:53:33 PM | -0.135 | -- |
| 1:53:43 PM | 0.011 | 230.256 |
| 1:53:53 PM | 0.763 | 229.975 |
| 1:54:03 PM | 2.003 | 230.200 |
| 1:54:13 PM | 3.539 | 230.290 |
| 1:54:23 PM | 5.127 | 230.162 |
| 1:54:33 PM | 6.224 | 230.029 |
| 1:54:43 PM | 6.842 | 230.107 |
| 1:54:53 PM | 7.138 | 230.409 |
| 1:55:03 PM | 7.309 | 230.000 |
| 1:55:13 PM | 7.378 | 229.856 |
| 1:55:23 PM | 7.365 | 230.473 |
| 1:55:33 PM | 7.394 | 229.823 |
| 1:55:43 PM | 7.400 | 230.339 |
| 1:55:53 PM | 7.416 | 230.342 |
| 1:56:03 PM | 7.443 | -- |
| 1:56:13 PM | 7.407 | 230.158 |
| 1:56:23 PM | 7.392 | 230.111 |
| 1:56:33 PM | 7.354 | 230.126 |
| 1:56:43 PM | 7.350 | 230.421 |
| 1:56:53 PM | 7.392 | 230.278 |
| 1:57:03 PM | 7.402 | 230.089 |
| 1:57:13 PM | 7.139 | 230.340 |
| 1:57:23 PM | 6.311 | 230.231 |
| 1:57:33 PM | 4.919 | 230.353 |
| 1:57:43 PM | 3.289 | 229.892 |
| 1:57:53 PM | 1.832 | 230.244 |
| 1:58:03 PM | 0.888 | 230.596 |
| 1:58:13 PM | 0.363 | 230.043 |
| 1:58:23 PM | 0.135 | 230.235 |
| 1:58:33 PM | 0.003 | 230.051 |
| 1:58:43 PM | -0.062 | 230.232 |
| 1:58:53 PM | -0.079 | 229.821 |
| 1:59:03 PM | -0.118 | 229.342 |
| 1:59:13 PM | -0.118 | -- |
| 1:59:23 PM | -0.116 | 230.208 |
| 1:59:33 PM | -0.100 | 229.961 |

Upscale 2 = 170"

Downscale 2 = 160"

| Timestamp | (Turbine 3) CO Value | (Turbine 3) GT Megawatts Value |
|---|---|---|
| 1:59:43 PM | -0.086 | 229.723 |
| 1:59:53 PM | -0.073 | 229.918 |
| 2:00:03 PM | -0.086 | 230.229 |
| 2:00:13 PM | -0.111 | -- |
| 2:00:23 PM | -0.116 | 230.302 |
| 2:00:33 PM | -0.124 | 229.724 |
| 2:00:43 PM | -0.080 | 230.514 |
| 2:00:53 PM | 0.527 | 230.123 |
| 2:01:03 PM | 1.655 | 230.561 |
| 2:01:13 PM | 3.196 | -- |
| 2:01:23 PM | -- | 230.349 |
| 2:01:33 PM | 5.477 | 230.488 |
| 2:01:43 PM | 6.465 | 230.467 |
| 2:01:53 PM | 6.947 | 230.696 |
| 2:02:03 PM | 7.179 | 230.546 |
| 2:02:13 PM | 7.290 | 230.605 |
| 2:02:23 PM | 7.327 | 229.966 |
| 2:02:33 PM | 7.379 | 230.804 |
| 2:02:43 PM | 7.381 | 230.567 |
| 2:02:53 PM | 7.397 | 230.463 |
| 2:03:03 PM | 7.390 | 230.310 |
| 2:03:13 PM | 7.344 | 230.494 |
| 2:03:23 PM | 7.339 | 230.757 |
| 2:03:33 PM | 7.347 | 230.647 |
| 2:03:43 PM | 7.363 | 230.742 |
| 2:03:53 PM | 7.406 | 230.698 |
| 2:04:03 PM | 7.421 | 230.373 |
| 2:04:13 PM | 7.148 | 230.209 |
| 2:04:23 PM | 6.248 | 230.291 |
| 2:04:33 PM | 4.866 | 230.043 |
| 2:04:43 PM | 3.247 | 230.486 |
| 2:04:53 PM | 1.719 | 230.598 |
| 2:05:03 PM | 0.778 | 230.168 |
| 2:05:13 PM | 0.297 | 230.094 |
| 2:05:23 PM | 0.081 | 230.131 |
| 2:05:33 PM | -0.038 | 230.838 |
| 2:05:43 PM | -0.089 | 230.543 |
| 2:05:53 PM | -0.101 | 229.753 |
| 2:06:03 PM | -0.108 | 230.089 |
| 2:06:13 PM | -0.081 | 230.201 |
| 2:06:23 PM | -0.099 | 230.061 |
| 2:06:33 PM | -0.097 | 230.005 |
| 2:06:43 PM | -0.100 | 230.742 |
| 2:06:53 PM | -0.107 | 230.637 |
| 2:07:03 PM | -0.097 | 230.095 |
| 2:07:13 PM | -0.116 | 230.129 |
| 2:07:23 PM | -0.137 | -- |
| 2:07:33 PM | -0.155 | 229.915 |
| 2:07:43 PM | -0.143 | 230.280 |



| Timestamp | (Turbine 3) CO Value | (Turbine 3) GT Megawatts Value |
|---|---|---|
| 2:07:53 PM | -0.167 | 230.330 |
| 2:08:03 PM | -0.198 | 230.176 |
| 2:08:13 PM | -0.206 | 230.222 |
| 2:08:23 PM | -0.281 | 230.553 |
| 2:08:33 PM | -0.303 | 230.238 |
| 2:08:43 PM | -0.285 | 229.761 |
| 2:08:53 PM | -0.313 | 229.719 |
| 2:09:03 PM | -0.294 | 230.089 |
| 2:09:13 PM | -0.308 | 229.966 |
| 2:09:23 PM | -0.348 | 229.756 |
| 2:09:33 PM | -0.332 | 230.008 |
| 2:09:43 PM | -0.363 | 230.292 |
| 2:09:53 PM | -0.368 | 229.918 |
| 2:10:03 PM | -0.357 | 229.805 |
| 2:10:13 PM | -0.356 | 230.053 |
| 2:10:23 PM | -0.346 | 230.081 |
| Average | 2.648 | 230.465 |
| Minimum | -0.368 | 229.342 |
| Maximum | 7.906 | 231.712 |

# APPENDIX 5

# DAHS VERIFICATION DOCUMENTATION

**CUSTOM INSTRUMENTATION SERVICES CORPORATION**

Data Acquisition and Handling System (DAHS) Verification Documentation

**CeDAR and Breez75X ECMPS Reporting Software**

Developed by:
Custom Instrumentation Services Corporation

EPA Regulations

- 40CFR75 Acid Rain
- 40CFR97 CSAPR NOx and $SO_2$

This letter serves as notice that the required 40 CFR 75 DAHS (missing data and formula) verification have been conducted and passed.

The attached formula verification document which includes CeDAR printouts demonstrates that the DAHS accurately calculates regulated parameters using raw data. In addition, verification tests have been conducted and passed for all missing data substitution routines for ECMPS reporting according to all applicable regulations and specifications in 40 CFR 75 Appendix D and Subpart D. The attached checklist, as adapted from Section 15 of the Acid Rain Program Policy Manual (revised) for 40CFR75, provides the regulatory description of the data substitution criteria.
These verification tests were conducted using numerous data sets at varying loads and operating conditions as well as various missing data periods as described in each set of tests. The tests were conducted using data sets with known outcomes and criteria and were verified against those outcomes. All missing data substitution procedures have been verified to be accurate and correct. Detailed data sets and documentation and test documentation are provided below

Walt Bastron
President

**CUSTOM INSTRUMENTATION SERVICES CORPORATION**

CISCO

# $SO_2$ Missing Data Verification Checklist [1]

## Initial $SO_2$ Data Substitution: 75.31

| Description | Regulation |
|---|---|
| Prior to 720 QA hours, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.31(b)(1) |
| Prior to 720 QA hours, non-QA data is substituted with the MPC if previous QA data does not exist. | 75.31(b)(2) |
| Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) |

## Standard $SO_2$ Data Substitution: 75.33

| Description | Regulation |
|---|---|
| For non-QA data blocks less than or equal to 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.33(b)(1)(i) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(b)(1)(ii)(A) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period. | 75.33(b)(1)(ii)(B) |
| For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.33(b)(2)(i) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the 95$^{th}$ percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(b)(2)(ii)(A) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95$^{th}$ percentile of the lookback period. | 75.33(b)(2)(ii)(B) |
| For non-QA data blocks with an availability greater than or equal to 80.0% and less than 90.0%, non-QA data is substituted with the maximum value in the lookback period. | 75.33(b)(3) |
| For non-QA data blocks with an availability below 80.0%, non-QA data is substituted with a MPC. | 75.33(b)(4) |
| Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a) |

Miscellaneous $SO_2$ Data Substitution

| Description | Regulation |
|---|---|
| For Non-QA data blocks that cross quarter boundaries, the two missing data block portions will be handled individually with respect to the quarter they end or start. | Reporting Instructions II(C)(12) |
| For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) |

1 The SO2 missing data verification mentioned here does not apply to Cricket Valley Energy Center

**CUSTOM INSTRUMENTATION SERVICES CORPORATION**

CISCO

$O_2$ Missing Data Verification Checklist

Initial $O_2$ Data Substitution: 75.31

| Description | Regulation |
|---|---|
| Prior to 720 QA hours, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.36(b)<br>75.31(b)(1) |
| Prior to 720 QA hours, non-QA data is substituted with the MPC if previous QA data does not exist. | 75.36(b)<br>75.31(b)(2) |
| Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) |

Standard O2 Data Substitution: 75.33

| Description | Regulation |
|---|---|
| For non-QA data blocks less than or equal to 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.36(d)<br>75.33(b)(1)(i) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the 10th percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.36(d)<br>75.33(b)(1)(ii)(A) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 10th percentile of the lookback period. | 75.36(d)<br>75.33(b)(1)(ii)(B) |
| For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.36(d)<br>75.33(b)(2)(i) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the 5th percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.36(d)<br>75.33(b)(2)(ii)(A) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 5th percentile of the lookback period. | 75.36(d)<br>75.33(b)(2)(ii)(B) |
| For non-QA data blocks with an availability greater than or equal to 80.0% and less than 90.0%, non-QA data is substituted with the minimum value in the lookback period. | 75.36(d)<br>75.33(b)(3) |
| For non-QA data blocks with an availability below 80.0%, non-QA data is substituted with a MPC. | 75.36(d)<br>75.33(b)(4) |
| Substitution routines have a maximum lookback period of 26280 hours. | 75.36(d)<br>75.33(a) |

Miscellaneous $SO_2$ Data Substitution

| Description | Regulation |
|---|---|
| For Non-QA data blocks that cross quarter boundaries, the two missing data block portions will be handled individually with respect to the quarter they end or start. | Reporting Instructions II(C)(12) |
| For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) |

$NO_X$ Missing Data Verification Checklist

Initial $NO_X$ Data Substitution: 75.31

| Description | Regulation |
|---|---|
| Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.31(c)(1) |
| Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the next higher available load range if prior data does not exist in the corresponding load range. | 75.31(c)(2) |
| Prior to 2160 QA hours, non-QA data is substituted with the MPC if previous data does not exist in the corresponding or higher load ranges. | 75.31(c)(3) |
| Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) |

Standard $NO_X$ Data Substitution: 75.33

| Description | Regulation |
|---|---|
| For non-QA data blocks less than or equal to 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.33(c)(1)(i) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(c)(1)(ii)(A) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period in the corresponding load range. | 75.33(c)(1)(ii)(B) |
| For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.33(c)(2)(i) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the 95$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(c)(2)(ii)(A) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95$^{th}$ percentile of the lookback period in the corresponding load range. | 75.33(c)(2)(ii)(B) |

| | |
|---|---|
| For non-QA data blocks with an availability greater than or equal to 80.0% and less than 90.0%, non-QA data is substituted with the maximum value in the lookback period at the corresponding load range. | 75.33(c)(3) |
| For non-QA data blocks with an availability below 80.0%, non-QA data is substituted with a MPC. | 75.33(c)(4) |
| If no data in the lookback period exists for the corresponding load range, the maximum value at the next higher available load range is used. | 75.33(c)(5) |
| If no data in the corresponding or higher load ranges exists in the lookback period, the MPC is used. | 75.33(c)(6) |
| Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a) |

Miscellaneous NOx Data Substitution

| Description | Regulation |
|---|---|
| For Non-QA data blocks that cross quarter boundaries, the two missing data block portions will be handled individually with respect to the quarter they end or start. | Reporting Instructions II(C)(12) |
| For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) |

Appendix D Fuel Flow Rate Missing Data Verification Checklist

Single Fuel Hours, Load Based: Appendix D

| Description | Regulation |
|---|---|
| Non-QA data is substituted with the average of the lookback period at the corresponding load range when only the same fuel was combusted. | App. D 2.4.2.2.1 |
| Non-QA data is substituted with the average of the lookback period at the next higher available load range when only the same fuel was combusted if no data in the corresponding load range exists. | App. D 2.4.2.2.1 |
| Non-QA data is substituted with the a maximum potential flow rate if no data in the lookback period at the corresponding or higher load range when only the same fuel was combusted exists. | App. D 2.4.2.2.1 |
| Substitution routines have a maximum lookback period of 26280 hours. | App. D 2.4.3 |

Co-Fired Fuel Hours, Load Based: Appendix D

| Description | Regulation |
|---|---|
| Non-QA data is substituted with the maximum in the lookback period at the corresponding load range when the same fuel is co-fired with another fuel. | App. D 2.4.2.3.1<br>App. D 2.4.2.3.3 |
| Non-QA data is substituted with the maximum in the lookback period at the next higher available load range when the same fuel is co-fired with another fuel. | App. D 2.4.2.3.1<br>App. D 2.4.2.3.3 |
| Non-QA data is substituted with a maximum potential flow rate if no data in the lookback period at the corresponding or higher load range when the same fuel is co-fired with another fuel exists. | App. D 2.4.2.3.1<br>App. D 2.4.2.3.3 |
| Substitution routines have a maximum lookback period of 26280 hours. | App. D 2.4.3 |

Note: If Maximum Heat Rate is exceeded, manual adjustment of Fuel Flows is allowed so that reported Heat Rate equals the maximum. (App. D 2.4.2.3.4)

Fuel Specific $NO_X$ Missing Data Verification Checklist

Initial $NO_X$ Data Substitution: 75.31

| Description | Regulation |
|---|---|
| Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.31(c)(1) |
| Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the next higher available load range if prior data does not exist in the corresponding load range. | 75.31(c)(2) |
| Prior to 2160 QA hours, non-QA data is substituted with the MPC if previous data does not exist in the corresponding or higher load ranges. | 75.31(c)(3) |
| Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) |

Fuel Specific $NO_X$ Data Substitution: 75.33

| Description | Regulation |
|---|---|
| For non-QA data blocks less than or equal to 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(1)(i)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(1)(ii)(A)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period in the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(1)(ii)(B)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) |
| For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(2)(i)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) |

| | |
|---|---|
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the 95th percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(2)(ii)(A)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95th percentile of the lookback period in the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(2)(ii)(B)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) |
| For non-QA data blocks with an availability greater than or equal to 80.0% and less than 90.0%, non-QA data is substituted with the maximum value in the lookback period at the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(3)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) |
| For non-QA data blocks with an availability below 80.0%, non-QA data is substituted with a fuel specific MPC. | 75.33(c)(4)<br>75.33(c)(8)(iii) |
| If no data in the lookback period exists for the corresponding load range, the maximum value at the next higher available load range is used. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(5)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) |
| If no data in the corresponding or higher load ranges exists in the lookback period, the fuel specific MPC is used. | 75.33(c)(6)<br>75.33(c)(8)(iii) |
| Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a)<br>75.33(c)(8) |

Miscellaneous Fuel Specific $NO_X$ Data Substitution

| Description | Regulation |
|---|---|
| For Non-QA data blocks that cross quarter boundaries, the two missing data block portions will be handled individually with respect to the quarter they end or start. | Reporting Instructions II(C)(12) |
| For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) |

**CUSTOM INSTRUMENTATION SERVICES CORPORATION**

Season Specific $NO_X$ Missing Data Verification Checklist

Initial $NO_X$ Data Substitution: 75.31

| Description | Regulation |
|---|---|
| Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.31(c)(1)<br>75.74(c)(7) |
| Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the next higher available load range if prior data does not exist in the corresponding load range. Historical data is separated into season specific pools. | 75.31(c)(2)<br>75.74(c)(7) |
| Prior to 2160 QA hours, non-QA data is substituted with the MPC if previous data does not exist in the corresponding or higher load ranges. Historical data is separated into season specific pools. | 75.31(c)(3)<br>75.74(c)(7) |
| Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) |

Season Specific $NO_X$ Data Substitution: 75.33

| Description | Regulation |
|---|---|
| For non-QA data blocks less than or equal to 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(1)(i)<br>75.34(a)(2)<br>75.74(c)(7) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. Historical data is separated into season specific pools. | 75.33(c)(1)(ii)(A)<br>75.34(a)(2)<br>75.74(c)(7) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(1)(ii)(B)<br>75.34(a)(2)<br>75.74(c)(7) |
| For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(2)(i)<br>75.34(a)(2)<br>75.74(c)(7) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the 95$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. Historical data is separated into season specific pools. | 75.33(c)(2)(ii)(A)<br>75.34(a)(2)<br>75.74(c)(7) |

| | |
|---|---|
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95$^{th}$ percentile of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(2)(ii)(B)<br>75.34(a)(2)<br>75.74(c)(7) |
| For non-QA data blocks with an availability greater than or equal to 80.0% and less than 90.0%, non-QA data is substituted with the maximum value in the lookback period at the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(3)<br>75.34(a)(2)<br>75.74(c)(7) |
| For non-QA data blocks with an availability below 80.0%, non-QA data is substituted with an MPC. | 75.33(c)(4)<br>75.74(c)(7) |
| If no data in the lookback period exists for the corresponding load range, the maximum value at the next higher available load range is used. Historical data is separated into season specific pools. | 75.33(c)(5)<br>75.34(a)(2)<br>75.74(c)(7) |
| If no data in the corresponding or higher load ranges exists in the lookback period, the MPC is used. | 75.33(c)(6)<br>75.34(a)(2)<br>75.74(c)(7) |
| Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a)<br>75.34(a)(2)<br>75.74(c)(7) |

Miscellaneous Season Specific $NO_X$ Data Substitution

| Description | Regulation |
|---|---|
| For Non-QA data blocks that cross quarter boundaries, the two missing data block portions will be handled individually with respect to the quarter they end or start. | Reporting Instructions II(C)(12) |
| For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) |

**CUSTOM INSTRUMENTATION SERVICES CORPORATION**

CISCO

$CO_2$ Missing Data Verification Checklist 2

Initial $CO_2$ Data Substitution: 75.35(b) [75.31]

| Description | Regulation |
|---|---|
| Prior to 720 QA hours, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.31(b)(1) |
| Prior to 720 QA hours, non-QA data is substituted with the MPC if previous QA data does not exist. | 75.31(b)(2) |
| Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) |

Standard $CO_2$ Data Substitution: 75.35(d) [75.33]

| Description | Regulation |
|---|---|
| For non-QA data blocks less than or equal to 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.33(b)(1)(i) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(b)(1)(ii)(A) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period. | 75.33(b)(1)(ii)(B) |
| For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.33(b)(2)(i) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the 95$^{th}$ percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(b)(2)(ii)(A) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95$^{th}$ percentile of the lookback period. | 75.33(b)(2)(ii)(B) |
| For non-QA data blocks with an availability greater than or equal to 80.0% and less than 90.0%, non-QA data is substituted with the maximum value in the lookback period. | 75.33(b)(3) |
| For non-QA data blocks with an availability below 80.0%, non-QA data is substituted with a MPC. | 75.33(b)(4) |
| Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a) |

Miscellaneous $CO_2$ Data Substitution

| Description | Regulation |
|---|---|
| For Non-QA data blocks that cross quarter boundaries, the two missing data block portions will be handled individually with respect to the quarter they end or start. | Reporting Instructions II(C)(12) |
| For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) |

2 The CO2 missing data verification mentioned here does not apply to Cricket Valley Energy Center

**CUSTOM INSTRUMENTATION SERVICES CORPORATION**

CISCO

Missing Data Verification Checklist [3]

Initial Stack Flow Data Substitution: 75.31

| Description | Regulation |
|---|---|
| Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.31(c)(1) |
| Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the next higher available load range if prior data does not exist in the corresponding load range. | 75.31(c)(2) |
| Prior to 2160 QA hours, non-QA data is substituted with the MPC if previous data does not exist in the corresponding or higher load ranges. | 75.31(c)(3) |
| Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) |

Standard Stack Flow Data Substitution: 75.33

| Description | Regulation |
|---|---|
| For non-QA data blocks less than or equal to 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.33(c)(1)(i) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(c)(1)(ii)(A) |
| For non-QA data blocks greater than 24 hours with an availability of 95.0% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period in the corresponding load range. | 75.33(c)(1)(ii)(B) |
| For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.33(c)(2)(i) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the 95$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(c)(2)(ii)(A) |
| For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90.0% and less than 95.0%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95$^{th}$ percentile of the lookback period in the corresponding load range. | 75.33(c)(2)(ii)(B) |

| | |
|---|---|
| For non-QA data blocks with an availability greater than or equal to 80.0% and less than 90.0%, non-QA data is substituted with the maximum value in the lookback period at the corresponding load range. | 75.33(c)(3) |
| For non-QA data blocks with an availability below 80.0%, non-QA data is substituted with a MPC. | 75.33(c)(4) |
| If no data in the lookback period exists for the corresponding load range, the maximum value at the next higher available load range is used. | 75.33(c)(5) |
| If no data in the corresponding or higher load ranges exists in the lookback period, the MPC is used. | 75.33(c)(6) |
| Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a) |

Miscellaneous Stack Flow Data Substitution

| Description | Regulation |
|---|---|
| For Non-QA data blocks that cross quarter boundaries, the two missing data block portions will be handled individually with respect to the quarter they end or start. | Reporting Instructions II(C)(12) |
| For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) |

3 The stack flow missing data verification mentioned here does not apply to Cricket Valley Energy Center

**CUSTOM INSTRUMENTATION SERVICES CORPORATION**

# TECHNICAL DOCUMENT - DATA SUBSTITUTION - 1 [4]

SO2 Missing Data Verification Checklist [5]

Initial SO2 Data Substitution: 75.31

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | Prior to 720 QA hours, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.31(b)(1) | DS1 1/1/99 |
| | Prior to 720 QA hours, non-QA data is substituted with the MPC if previous QA data does not exist. | 75.31(b)(2) | DS2 1/1/99 |
| | Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) | DS3 12/30/01 |

Standard SO2 Data Substitution: 75.33

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For non-QA data blocks less than or equal to 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.33(b)(1)(i) | DS1 4/20/99 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(b)(1)(ii)(A) | DS1 3/3/99 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period. | 75.33(b)(1)(ii)(B) | DS1 5/31/99 |
| | For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.33(b)(2)(i) | DS1 6/16/99 |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the 95$^{th}$ percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(b)(2)(ii)(A) | DS1 6/14/99 |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95$^{th}$ percentile of the lookback period. | 75.33(b)(2)(ii)(B) | DS1 6/17/99 |
| | For non-QA data blocks with an availability greater than or equal to 80% and less than 90%, non-QA data is substituted with the maximum value in the lookback period. | 75.33(b)(3) | DS1 6/30/99 |



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| | | | |
|---|---|---|---|
| | For non-QA data blocks with an availability below 80%, non-QA data is substituted with a MPC. | 75.33(b)(4) | DS1 7/31/99 |
| | Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a) | DS3 3/31/02 |

Miscellaneous SO2 Data Substitution

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For Non-QA data blocks that cross quarter boundaries, the missing data block ends or starts with the quarter. | Reporting Instructions II(C)(12) | DS3 6/30/03 7/1/03 |
| | For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) | DS3 8/6/03 |

O2 Missing Data Verification Checklist

Initial O2 Data Substitution: 75.31

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | Prior to 720 QA hours, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.36(b) 75.31(b)(1) | DS1 1/1/99 |
| | Prior to 720 QA hours, non-QA data is substituted with the MPC if previous QA data does not exist. | 75.36(b) 75.31(b)(2) | DS2 1/1/99 |
| | Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) | DS3 12/30/01 |

Standard O2 Data Substitution: 75.33

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For non-QA data blocks less than or equal to 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.36(d) 75.33(b)(1)(i) | DS1 4/20/99 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the $10^{th}$ percentile of the lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.36(d) 75.33(b)(1)(ii)(A) | DS1 3/3/99 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the $10^{th}$ percentile of the lookback period. | 75.36(d) 75.33(b)(1)(ii)(B) | DS1 5/31/99 |
| | For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the data from the hour before and after the outage. | 75.36(d) 75.33(b)(2)(i) | DS1 6/16/99 |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the $5^{th}$ percentile of the | 75.36(d) 75.33(b)(2)(ii)(A) | DS1 6/14/99 |



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| | | | |
|---|---|---|---|
| | lookback period if the substitution value is greater than the average of the data from the hour before and after the outage. | | |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 5th percentile of the lookback period. | 75.36(d)<br>75.33(b)(2)(ii)(B) | DS1<br>6/17/99 |
| | For non-QA data blocks with an availability greater than or equal to 80% and less than 90%, non-QA data is substituted with the minimum value in the lookback period. | 75.36(d)<br>75.33(b)(3) | DS1<br>6/30/99 |
| | For non-QA data blocks with an availability below 80%, non-QA data is substituted with a MPC. | 75.36(d)<br>75.33(b)(4) | DS1<br>7/31/99 |
| | Substitution routines have a maximum lookback period of 26280 hours. | 75.36(d)<br>75.33(a) | DS3<br>3/31/02 |

Miscellaneous SO2 Data Substitution

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For Non-QA data blocks that cross quarter boundaries, the missing data block ends or starts with the quarter. | Reporting Instructions II(C)(12) | DS3<br>6/30/03<br>7/1/03 |
| | For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) | DS3<br>8/6/03 |

NOx Missing Data Verification Checklist

Initial NOx Data Substitution: 75.31

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.31(c)(1) | DS1<br>1/1/99 |
| | Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the next higher available load range if prior data does not exist in the corresponding load range. | 75.31(c)(2) | DS2<br>4/3/99 |
| | Prior to 2160 QA hours, non-QA data is substituted with the MPC if previous data does not exist in the corresponding or higher load ranges. | 75.31(c)(3) | DS1<br>1/1/99 |
| | Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) | DS3<br>12/30/01 |

4 The dates and data sets for in-house testing of formulas, monitor code logic and general software testing is historical, but is consistent with the operations required by the most recent regulatory requirements.

5 The stack SO2 missing data verification mentioned here does not apply to Cricket Valley Energy Center



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Standard NOx Data Substitution: 75.33

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For non-QA data blocks less than or equal to 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.33(c)(1)(i) | DS1 4/20/99 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(c)(1)(ii)(A) | DS2 1/3/00 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period in the corresponding load range. | 75.33(c)(1)(ii)(B) | DS1 5/31/99 |
| | For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.33(c)(2)(i) | DS1 6/16/99 |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the 95$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. | 75.33(c)(2)(ii)(A) | DS1 6/17/99 |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95$^{th}$ percentile of the lookback period in the corresponding load range. | 75.33(c)(2)(ii)(B) | DS1 6/17/99 |
| | For non-QA data blocks with an availability greater than or equal to 80% and less than 90%, non-QA data is substituted with the maximum value in the lookback period at the corresponding load range. | 75.33(c)(3) | DS1 6/21/99 |
| | For non-QA data blocks with an availability below 80%, non-QA data is substituted with a MPC. | 75.33(c)(4) | DS1 8/3/99 |
| | If no data in the lookback period exists for the corresponding load range, the maximum value at the next higher available load range is used. | 75.33(c)(5) | DS2 1/3/00 |
| | If no data in the corresponding or higher load ranges exists in the lookback period, the MPC is used. | 75.33(c)(6) | DS2 1/3/00 |
| | Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a) | DS3 3/31/02 |



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Miscellaneous NOx Data Substitution

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For Non-QA data blocks that cross quarter boundaries, the missing data block ends or starts with the quarter. | Reporting Instructions II(C)(12) | DS3 6/30/03 7/1/03 |
| | For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) | DS3 8/6/03 |

Appendix D Fuel Flow Rate Missing Data Verification Checklist

Single Fuel Hours, Load Based: Appendix D

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | Non-QA data is substituted with the average of the lookback period at the corresponding load range when only the same fuel was combusted. | App. D 2.4.2.2.1 | DS1 1/24/99 |
| | Non-QA data is substituted with the average of the lookback period at the next higher available load range when only the same fuel was combusted if no data in the corresponding load range exists. | App. D 2.4.2.2.1 | DS2 1/2/00 |
| | Non-QA data is substituted with the a maximum potential flow rate if no data in the lookback period at the corresponding or higher load range when only the same fuel was combusted exists. | App. D 2.4.2.2.1 | DS2 1/1/99 |
| | Substitution routines have a maximum lookback period of 26280 hours. | App. D 2.4.3 | DS3 6/30/03 |

Co-Fired Fuel Hours, Load Based: Appendix D

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | Non-QA data is substituted with the maximum in the lookback period at the corresponding load range when the same fuel is co-fired with another fuel. | App. D 2.4.2.3.1 App. D 2.4.2.3.3 | DS1 1/1/99 |
| | Non-QA data is substituted with the maximum in the lookback period at the next higher available load range when the same fuel is co-fired with another fuel. | App. D 2.4.2.3.1 App. D 2.4.2.3.3 | DS2 1/3/00 |
| | Non-QA data is substituted with a maximum potential flow rate if no data in the lookback period at the corresponding or higher load range when the same fuel is co-fired with another fuel exists. | App. D 2.4.2.3.1 App. D 2.4.2.3.3 | DS1 1/1/99 |
| | Substitution routines have a maximum lookback period of 26280 hours. | App. D 2.4.3 | DS3 6/30/03 |

Note: If Maximum Heat Rate is exceeded, manual adjustment of Fuel Flows is allowed so that reported Heat Rate equals the maximum. (App. D 2.4.2.3.4)

Fuel Specific NOx Missing Data Verification Checklist



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Initial NOx Data Substitution: 75.31

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the corresponding load range. | 75.31(c)(1) | DS1 1/1/99 |
| | Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the next higher available load range if prior data does not exist in the corresponding load range. | 75.31(c)(2) | DS2 4/3/99 |
| | Prior to 2160 QA hours, non-QA data is substituted with the MPC if previous data does not exist in the corresponding or higher load ranges. | 75.31(c)(3) | DS1 1/1/99 |
| | Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) | DS3 12/30/01 |

Fuel Specific NOx Data Substitution: 75.33

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For non-QA data blocks less than or equal to 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(1)(i)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) | DS1 4/20/99 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(1)(ii)(A)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) | DS1 5/31/99 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period in the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(1)(ii)(B)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) | DS1 5/31/99 |
| | For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(2)(i)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) | DS1 6/16/99 |



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| | | | |
|---|---|---|---|
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the 95th percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(2)(ii)(A)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) | DS1<br>6/17/99 |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95th percentile of the lookback period in the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(2)(ii)(B)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) | DS1<br>6/17/99 |
| | For non-QA data blocks with an availability greater than or equal to 80% and less than 90%, non-QA data is substituted with the maximum value in the lookback period at the corresponding load range. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(3)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) | DS1<br>6/21/99 |
| | For non-QA data blocks with an availability below 80%, non-QA data is substituted with a fuel specific MPC. | 75.33(c)(4)<br>75.33(c)(8)(iii) | DS1<br>7/31/99 |
| | If no data in the lookback period exists for the corresponding load range, the maximum value at the next higher available load range is used. Historical data is separated into fuel specific pools with co-fired hours either treated as a separate fuel or the fuel with the highest emission rate. | 75.33(c)(5)<br>75.33(c)(8)(i)<br>75.33(c)(8)(ii) | DS1<br>7/31/99 |
| | If no data in the corresponding or higher load ranges exists in the lookback period, the fuel specific MPC is used. | 75.33(c)(6)<br>75.33(c)(8)(iii) | DS1<br>1/30/00 |
| | Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a)<br>75.33(c)(8) | DS3<br>3/31/02 |



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Miscellaneous Fuel Specific NOx Data Substitution

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For Non-QA data blocks that cross quarter boundaries, the missing data block ends or starts with the quarter. | Reporting Instructions II(C)(12) | DS3 6/30/03 7/1/03 |
| | For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) | DS3 8/6/03 |

Season Specific NOx Missing Data Verification Checklist

Initial NOx Data Substitution: 75.31

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.31(c)(1) 75.74(c)(7) | DS1 1/1/99 |
| | Prior to 2160 QA hours, non-QA data is substituted with the average of the lookback period in the next higher available load range if prior data does not exist in the corresponding load range. Historical data is separated into season specific pools. | 75.31(c)(2) 75.74(c)(7) | DS2 4/3/99 |
| | Prior to 2160 QA hours, non-QA data is substituted with the MPC if previous data does not exist in the corresponding or higher load ranges. Historical data is separated into season specific pools. | 75.31(c)(3) 75.74(c)(7) | DS1 1/31/99 |
| | Initial data substitution routines are to be used no more than 26280 clock hours after certification. | 75.31(a) | DS3 12/30/01 |

Season Specific NOx Data Substitution: 75.33

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For non-QA data blocks less than or equal to 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(1)(i) 75.34(a)(2) 75.74(c)(7) | DS1 4/20/99 |
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the 90$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. Historical data is separated into season specific pools. | 75.33(c)(1)(ii)(A) 75.34(a)(2) 75.74(c)(7) | DS1 5/31/99 |



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| | | | |
|---|---|---|---|
| | For non-QA data blocks greater than 24 hours with an availability of 95% or greater, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 90$^{th}$ percentile of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(1)(ii)(B)<br>75.34(a)(2)<br>75.74(c)(7) | DS1<br>5/31/99 |
| | For non-QA data blocks less than or equal to 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(2)(i)<br>75.34(a)(2)<br>75.74(c)(7) | DS1<br>6/16/99 |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the 95$^{th}$ percentile of the lookback period in the corresponding load range if the substitution value is greater than the average of the data from the hour before and after the outage. Historical data is separated into season specific pools. | 75.33(c)(2)(ii)(A)<br>75.34(a)(2)<br>75.74(c)(7) | DS1<br>6/17/99 |
| | For non-QA data blocks greater than 8 hours with an availability greater than or equal to 90% and less than 95%, non-QA data is substituted with the average of the data from the hour before and after the outage if the substitution value is greater than the 95$^{th}$ percentile of the lookback period in the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(2)(ii)(B)<br>75.34(a)(2)<br>75.74(c)(7) | DS1<br>6/17/99 |
| | For non-QA data blocks with an availability greater than or equal to 80% and less than 90%, non-QA data is substituted with the maximum value in the lookback period at the corresponding load range. Historical data is separated into season specific pools. | 75.33(c)(3)<br>75.34(a)(2)<br>75.74(c)(7) | DS1<br>6/21/99 |
| | For non-QA data blocks with an availability below 80%, non-QA data is substituted with an MPC. | 75.33(c)(4)<br>75.74(c)(7) | DS1<br>7/31/99 |
| | If no data in the lookback period exists for the corresponding load range, the maximum value at the next higher available load range is used. Historical data is separated into season specific pools. | 75.33(c)(5)<br>75.34(a)(2)<br>75.74(c)(7) | DS1<br>7/31/99 |
| | If no data in the corresponding or higher load ranges exists in the lookback period, the MPC is used. | 75.33(c)(6)<br>75.34(a)(2)<br>75.74(c)(7) | DS1<br>1/30/00 |
| | Substitution routines have a maximum lookback period of 26280 hours. | 75.33(a)<br>75.34(a)(2)<br>75.74(c)(7) | DS3<br>3/31/02 |



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Miscellaneous Season Specific NOx Data Substitution

| P/F | Description | Regulation | Test |
|---|---|---|---|
| | For Non-QA data blocks that cross quarter boundaries, the missing data block ends or starts with the quarter. | Reporting Instructions II(C)(12) | DS3 6/30/03 7/1/03 |
| | For non-combusting periods within an outage, the non-combusting hours are not counted in the size of the non-QA block. | Reporting Instructions II(C)(12) | DS3 8/6/03 |



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U003 40CFR75-PNG

Formula Verification Examples

| | | | |
|---|---|---|---|
| **Unit Name:** | **CRICKET VALLEY ENERGY CENTER** | **Oris Code:** | **57185** |
| **Date/ Time:** | **3/8/2020 HOUR 0600** | **Unit /Stack #** | **U003** |

**Formula** **19-1**
**Parameter** **NOx lb/mmBtu for gas**

| Fd dscf/mmbtu | K units lb/dscf-ppm Nox | NOx ppmv | O2 dry % | **NOx lb/mmBtu** | BAF | **Bias adj. NOx lb/mmBtu** |
|---|---|---|---|---|---|---|
| 8710 | 1.194E-07 | 10.85 | 14.05 | **0.0344** | 1.000 | **0.0344** |

**Formula** **F-20**
**Parameter** **Heat Input - gas**

| CT Total NG hscf/hr | CT Op Time hr | DB Total NG hscf/hr | DB Op Time hr | **Total NG hscf** |
|---|---|---|---|---|
| 12085.7 | 1 | 4263.7 | 1.00 | **16349.4** |

| NG GCV Btu/hscf | mmBtu/Btu | CT Heat input mmBtu | DB Heat input mmBtu | **Total Heat input mmBtu** |
|---|---|---|---|---|
| 104500 | 1.00E-06 | 1263.0 | 445.6 | **1708.6** |

**Formula** **F-24A**
**Parameter** **NOx lb/hr** **gas**

| NOx lb/mmBtu | CT Heat input mmBtu/hr | DB Heat input mmBtu/hr | **NOx lb/hr** | BAF | **Bias adj. NOx lb/hr** |
|---|---|---|---|---|---|
| 0.034 | 1263.0 | 445.6 | **58.7** | 1.000 | **58.7** |

**Formula** **G-4**
**Parameter** **CO2 ton/hr** **gas**

| Fc scf/mmbtu | CT HI gas mmBtu/hr | DB HI gas mmBtu/hr | M Wt CO2 g/g-mole | Conversion 1/385 scf CO2/lbmole | Convers lb/ton | **CO2 Ton/hr** |
|---|---|---|---|---|---|---|
| 1040 | 1263.0 | 445.6 | 44 | 2.60E-03 | 2000 | **101.6** |

**Formula** **D-5**
**Parameter** **SO2 lb/hr** **gas**

| CT HI gas mmBtu/hr | DB HI gas mmBtu/hr | SO2 EF lb/mmBtu | **SO2 lb/hr** |
|---|---|---|---|
| 1263.0 | 445.6 | 0.0006 | **1.03** |

# Cricket Valley Energy Center

Dover Plains, NY

## Turbine 3- Daily 40CFR75 Emissions & Operations Report

March 8, 2020

| Hour | O2 % | NOx ppm | NOx lb/mmBtu | Bias Factor | Bias Adj NOx lb/mmBtu | NOx lbs | SO2 lbs | CO2 tons | Gas Flow hscf/hr | Nat Gas GCV Btu/hscf | Heat Input mmBtu/hr | Turbine On-Time | Total Megawatts | Bin Load Range |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 00 | 14.09 | 11.16 | 0.0356 | 1.000 | 0.0356 | 60.9 | 1.03 | 101.6 | 16349.4 | 104500 | 1708.6 | 1.00 | 80.1 | 4 |
| 01 | 14.07 | 11.08 | 0.0353 | 1.000 | 0.0353 | 60.3 | 1.03 | 101.6 | 16349.4 | 104500 | 1708.6 | 1.00 | 80.0 | 4 |
| 02 | 14.06 | 10.98 | 0.0349 | 1.000 | 0.0349 | 59.7 | 1.03 | 101.6 | 16349.5 | 104500 | 1708.6 | 1.00 | 79.9 | 4 |
| 03 | 14.05 | 10.88 | 0.0345 | 1.000 | 0.0345 | 59.0 | 1.03 | 101.6 | 16349.4 | 104500 | 1708.6 | 1.00 | 80.1 | 4 |
| 04 | 14.05 | 10.74 | 0.0341 | 1.000 | 0.0341 | 58.0 | 1.02 | 101.0 | 16263.7 | 104500 | 1699.6 | 1.00 | 79.7 | 4 |
| 05 | 14.06 | 10.81 | 0.0344 | 1.000 | 0.0344 | 58.4 | 1.02 | 101.0 | 16263.7 | 104500 | 1699.6 | 1.00 | 79.8 | 4 |
| 06 | 14.05 | 10.85 | 0.0344 | 1.000 | 0.0344 | 58.7 | 1.03 | 101.6 | 16349.4 | 104500 | 1708.6 | 1.00 | 80.3 | 4 |
| 07 | 14.06 | 10.80 | 0.0343 | 1.000 | 0.0343 | 58.3 | 1.02 | 101.0 | 16263.7 | 104500 | 1699.6 | 1.00 | 79.5 | 4 |
| 08 | 13.79 | 12.31 | 0.0376 | 1.000 | 0.0376 | 68.3 | 1.09 | 107.9 | 17378.1 | 104500 | 1816.0 | 1.00 | 97.6 | 5 |
| 09 | 13.24 | 13.65 | 0.0387 | 1.000 | 0.0387 | 88.0 | 1.37 | 135.1 | 22092.4 | 104500 | 2308.7 | 1.00 | 168.2 | 9 |
| 10 | 13.10 | 14.16 | 0.0395 | 1.000 | 0.0395 | 101.1 | 1.54 | 152.1 | 25263.8 | 104500 | 2640.1 | 1.00 | 209.8 | 10 |
| 11 | 13.02 | 19.05 | 0.0525 | 1.000 | 0.0525 | 137.1 | 1.57 | 155.1 | 27662.9 | 104500 | 2890.8 | 1.00 | 236.1 | 10 |
| 12 | 13.04 | 19.45 | 0.0538 | 1.000 | 0.0538 | 134.9 | 1.51 | 149.1 | 27835.2 | 104500 | 2908.8 | 1.00 | 237.2 | 10 |
| 13 | 13.05 | 19.27 | 0.0534 | 1.000 | 0.0534 | 131.1 | 1.47 | 145.9 | 23485.7 | 104500 | 2454.3 | 1.00 | 236.3 | 10 |
| 14 | 13.07 | 19.06 | 0.0529 | 1.000 | 0.0529 | 129.9 | 1.48 | 145.8 | 27664.0 | 104500 | 2890.9 | 1.00 | 235.4 | 10 |
| 15 | 13.09 | 18.82 | 0.0524 | 1.000 | 0.0524 | 127.7 | 1.46 | 144.8 | 23314.3 | 104500 | 2436.3 | 1.00 | 234.3 | 10 |
| 16 | 13.11 | 18.68 | 0.0521 | 1.000 | 0.0521 | 126.9 | 1.46 | 144.8 | 23314.3 | 104500 | 2436.3 | 1.00 | 233.6 | 10 |
| 17 | 13.11 | 18.59 | 0.0519 | 1.000 | 0.0519 | 126.4 | 1.46 | 144.8 | 23314.3 | 104500 | 2436.3 | 1.00 | 233.6 | 10 |
| 18 | 13.07 | 18.62 | 0.0517 | 1.000 | 0.0517 | 128.0 | 1.49 | 147.2 | 27663.8 | 104500 | 2890.9 | 1.00 | 235.7 | 10 |
| 19 | 13.03 | 18.72 | 0.0517 | 1.000 | 0.0517 | 139.4 | 1.62 | 160.3 | 27809.9 | 104500 | 2906.1 | 1.00 | 237.5 | 10 |
| 20 | 13.00 | 18.23 | 0.0502 | 1.000 | 0.0502 | 146.4 | 1.75 | 173.3 | 27915.9 | 104500 | 2917.2 | 1.00 | 238.9 | 10 |
| 21 | 13.02 | 18.34 | 0.0506 | 1.000 | 0.0506 | 147.1 | 1.75 | 172.9 | 27835.2 | 104500 | 2908.8 | 1.00 | 238.0 | 10 |
| 22 | 13.01 | 18.61 | 0.0513 | 1.000 | 0.0513 | 149.3 | 1.75 | 172.9 | 27835.2 | 104500 | 2908.8 | 1.00 | 238.2 | 10 |
| 23 | 13.00 | 18.54 | 0.0510 | 1.000 | 0.0510 | 148.8 | 1.75 | 173.4 | 27920.9 | 104500 | 2917.8 | 1.00 | 238.6 | 10 |

# CeDAR 1-Hour Data

Cricket Valley Energy Center

Data for 3/8/2020 12 AM thru 3/8/2020 11 PM

| Timestamp | (Turbine 3) CT Nat Gas Flow hscf/hr 1-Hr | (Turbine 3) DB Nat Gas Flow hscf/hr 1-Hr | (Turbine 3) DB Nat Gas Flow On-Time 1-Hr | (Turbine 3) 75-Total Gas Flow hscf/hr 1-Hr | (Turbine 3) Unit On-Time 1-Hr |
|---|---|---|---|---|---|
| 3/8/20 12 AM | 12085.7 | 4263.7 | 1.00 | 16349.4 | 1.00 |
| 3/8/20 1 AM | 12085.7 | 4263.7 | 1.00 | 16349.4 | 1.00 |
| 3/8/20 2 AM | 12085.7 | 4263.8 | 1.00 | 16349.5 | 1.00 |
| 3/8/20 3 AM | 12085.7 | 4263.7 | 1.00 | 16349.4 | 1.00 |
| 3/8/20 4 AM | 12000.0 | 4263.7 | 1.00 | 16263.7 | 1.00 |
| 3/8/20 5 AM | 12000.0 | 4263.7 | 1.00 | 16263.7 | 1.00 |
| 3/8/20 6 AM | 12085.7 | 4263.7 | 1.00 | 16349.4 | 1.00 |
| 3/8/20 7 AM | 12000.0 | 4263.7 | 1.00 | 16263.7 | 1.00 |
| 3/8/20 8 AM | 13114.3 | 4263.8 | 1.00 | 17378.1 | 1.00 |
| 3/8/20 9 AM | 17828.6 | 4263.8 | 0.92 | 22092.4 | 1.00 |
| 3/8/20 10 AM | 21000.0 | 4263.8 | 0.82 | 25263.8 | 1.00 |
| 3/8/20 11 AM | 23400.0 | 4262.9 | 0.37 | 27662.9 | 1.00 |
| 3/8/20 12 PM | 23571.4 | 4263.8 | 0.10 | 27835.2 | 1.00 |
| 3/8/20 1 PM | 23485.7 | 295.9 <13> | 0.00 | 23485.7 | 1.00 |
| 3/8/20 2 PM | 23400.0 | 4264.0 | 0.02 | 27664.0 | 1.00 |
| 3/8/20 3 PM | 23314.3 | 38.2 <13> | 0.00 | 23314.3 | 1.00 |
| 3/8/20 4 PM | 23314.3 | 116.9 <13> | 0.00 | 23314.3 | 1.00 |
| 3/8/20 5 PM | 23314.3 | 103.3 <13> | 0.00 | 23314.3 | 1.00 |
| 3/8/20 6 PM | 23400.0 | 4263.8 | 0.07 | 27663.8 | 1.00 |
| 3/8/20 7 PM | 23571.4 | 4238.5 | 0.53 | 27809.9 | 1.00 |
| 3/8/20 8 PM | 23657.1 | 4258.8 | 1.00 | 27915.9 | 1.00 |
| 3/8/20 9 PM | 23571.4 | 4263.8 | 1.00 | 27835.2 | 1.00 |
| 3/8/20 10 PM | 23571.4 | 4263.8 | 1.00 | 27835.2 | 1.00 |
| 3/8/20 11 PM | 23657.1 | 4263.8 | 1.00 | 27920.9 | 1.00 |
| Average (all) | 18900.0 | 3574.9 | 0.66 | 22451.8 | 1.00 |
| Total (all) | -- | -- | 15.83 | 538844.1 | 24.00 |
| Minimum (all) | 12000.0 | 38.2 | 0.00 | 16263.7 | 1.00 |
| Maximum (all) | 23657.1 | 4264.0 | 1.00 | 27920.9 | 1.00 |
| Average (valid values only) | 18900.0 | 4262.2 | 0.66 | 22451.8 | 1.00 |
| Total (valid values only) | -- | -- | 15.83 | 538844.1 | 24.00 |
| Count (valid values only) | 24 | 20 | 24 | 24 | 24 |

<13> = Down

U003 40CFR60-PNG

Formula Verification Examples

**Unit Name:** **CRICKET VALLEY ENERGY CENTER** **Oris Code:** **57185**
**Date/ Time:** **3/8/2020 HOUR 0600** **Unit /Stack #** **U003**

**Formula** **19-1**
**Parameter** **NOx lb/mmBtu for gas**

| Fd dscf/mmbtu | K units lb/dscf-ppm Nox | NOx ppmv | O2 dry % | **NOx lb/mmBtu** |
|---|---|---|---|---|
| 8710 | 1.194E-07 | 10.85 | 14.05 | **0.0344** |

**Formula** **F-20**
**Parameter** **Heat Input - gas**

| CT Total NG hscf/hr | CT Op Time hr | DB Total NG hscf/hr | DB Op Time hr | Total PNG hscf | PNG GCV Btu/hscf | mmBtu/Btu | **Total Heat input mmBtu** |
|---|---|---|---|---|---|---|---|
| 12085.7 | 1.00 | 4263.7 | 1.00 | 16349.4 | 104500 | 1.00E-06 | **1708.6** |

| CT Total PNG klb/hr | PNG Density klb/hscf | CT Op Time hr | Total CT PNG hscf | PNG GCV Btu/hscf | mmBtu/Btu | **CT Heat input mmBtu** |
|---|---|---|---|---|---|---|
| 50.8 | 0.0042 | 1 | 12085.7 | 104500 | 1.00E-06 | **1263.0** |

| DB Total PNG kscf/hr | conversion hscf/kscf | DB Op Time hr | Total DB PNG hscf | PNG GCV Btu/hscf | mmBtu/Btu | **DB Heat input mmBtu** |
|---|---|---|---|---|---|---|
| 426.4 | 10.0 | 1 | 4264.0 | 104500 | 1.00E-06 | **445.6** |

**Parameter** **NOx ppm@15% O2**

| NOx ppm | O2 dry % | **NOx ppm corr** |
|---|---|---|
| 10.85 | 14.05 | **9.35** |

**Parameter** **NOx lb/hr** **gas**

| NOx lb/mmBtu | CT Heat input mmBtu/hr | DB Heat input mmBtu/hr | **NOx lb/hr** |
|---|---|---|---|
| 0.0344 | 1263.0 | 445.6 | **58.78** |

**Parameter** **CO ppm@15% O2**

**Formula** **19-1**
**Parameter** **CO lb/mmBtu for gas**

| Fc scf CO2/mmbtu | K ppmvd) | CO MW lb/lb-mol | CO ppmv | O2 dry % | **CO lb/mmBtu** |
|---|---|---|---|---|---|
| 8710 | 2.59E-09 | 28 | 43.70 | 14.05 | **0.0842** |

| CO ppm | O2 dry % | **CO ppm corr** |
|---|---|---|
| 43.70 | 14.05 | **37.64** |

**Parameter** **CO lb/hr** **gas**

| CO lb/mmBtu | CT Heat input mmBtu/hr | DB Heat input mmBtu/hr | **CO lb/hr** |
|---|---|---|---|
| 0.0842 | 1263.0 | 445.6 | **143.86** |

U003 40CFR60-PNG

**Formula** **19-1**
**Parameter** **NH3 lb/mmBtu for gas**

| Fc scf CO2/mmbtu | K ppmvd) | NH3 MW lb/lb-mol | NH3 ppmv | O2 dry % | **NH3 lb/mmBtu** |
|---|---|---|---|---|---|
| 8710 | 2.59E-09 | 17.03 | 0.98 | 14.05 | **0.0011** |

| NH3 ppm | O2 dry % | **NH3 ppm corr** |
|---|---|---|
| 0.98 | 14.05 | **0.84** |

**Parameter** **CO lb/hr** **gas**

| NH3 lb/mmBtu | CT Heat input mmBtu/hr | DB Heat input mmBtu/hr | **NH3 lb/hr** |
|---|---|---|---|
| 0.0011 | 1263.0 | 445.6 | **1.88** |

**Parameter** **PM10/PM2.5 lb/hr** **gas**

| CT HI gas mmBtu/hr | CT PM10/PM2.5 EF lb/mmBtu | **CT PM10/PM2.5 lb/hr** | DB HI gas mmBtu/hr | DB PM10/PM2.5 EF lb/mmBtu | **DB PM10/PM2.5 lb/hr** | **Total PM10/PM2.5 lb/hr** |
|---|---|---|---|---|---|---|
| 1263.0 | 0.0005 | **0.63** | 445.6 | 0.0005 | **0.22** | **0.85** |

**Parameter** **VOC lb/hr** **gas**

| CT HI gas mmBtu/hr | VOC EF lb/mmBtu | **CT VOC lb/hr** | DB HI gas mmBtu/hr | VOC EF lb/mmBtu | **DB VOC lb/hr** | **Total VOC lb/hr** |
|---|---|---|---|---|---|---|
| 1263.0 | 0.0002 | **0.25** | 445.6 | 0.0002 | **0.09** | **0.34** |

**Parameter** **H2SO4 lb/hr** **gas**

| CT HI gas mmBtu/hr | H2SO4 EF lb/mmBtu | **CT H2SO4 lb/hr** | DB HI gas mmBtu/hr | H2SO4 EF lb/mmBtu | **DB H2SO4 lb/hr** | **Total H2SO4 lb/hr** |
|---|---|---|---|---|---|---|
| 1263.0 | 0.0001 | **0.13** | 445.6 | 0.0001 | **0.04** | **0.17** |

# Cricket Valley Energy Center

Dover Plains, NY

## Turbine 3- Daily Emissions Report

March 8, 2020

**Hourly Emission Limits**
Normal Ops NOx ppm @15% O2 - 2 | Normal Ops CO ppm @15% O2 - 2 | NH3 Slip ppm @15% O2 - 5

**30-Day Rolling Emission Limits**
**NOx ppm @15% O2 - <Null>**

| Hour | O2 % | NOx ppm | NOx ppm @15% O2 | NOx lb/mmBtu | NOx lbs | CO ppm | CO ppm @15% O2 | CO lb/mmBtu | CO lbs | NH3 Slip ppm | NH3 Slip ppm @15% O2 | NH3 Slip lb/mmBtu | NH3 Slip lbs | Process Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 00 | 14.09 | 11.16 | 9.67 | 0.0356 | 60.82 | 37.78 | 32.73 | 0.0732 | 125.06 | 0.76 | 0.66 | 0.0009 | 1.54 | Hot SU |
| 01 | 14.07 | 11.08 | 9.57 | 0.0353 | 60.31 | 39.27 | 33.92 | 0.0759 | 129.68 | 0.80 | 0.69 | 0.0009 | 1.54 | Hot SU |
| 02 | 14.06 | 10.98 | 9.47 | 0.0349 | 59.63 | 41.81 | 36.06 | 0.0807 | 137.88 | 0.84 | 0.72 | 0.0010 | 1.71 | Hot SU |
| 03 | 14.05 | 10.88 | 9.37 | 0.0345 | 58.94 | 41.53 | 35.77 | 0.0800 | 136.68 | 0.86 | 0.74 | 0.0010 | 1.71 | Hot SU |
| 04 | 14.05 | 10.74 | 9.25 | 0.0341 | 57.95 | 53.39 | 45.99 | 0.1029 | 174.89 | 0.94 | 0.81 | 0.0011 | 1.87 | Hot SU |
| 05 | 14.06 | 10.81 | 9.32 | 0.0344 | 58.47 | 47.15 | 40.67 | 0.0910 | 154.66 | 0.96 | 0.83 | 0.0011 | 1.87 | Hot SU |
| 06 | 14.05 | 10.85 | 9.35 | 0.0344 | 58.78 | 43.70 | 37.64 | 0.0842 | 143.86 | 0.98 | 0.84 | 0.0011 | 1.88 | Hot SU |
| 07 | 14.06 | 10.80 | 9.32 | 0.0343 | 58.29 | 45.71 | 39.43 | 0.0882 | 149.90 | 1.03 | 0.89 | 0.0012 | 2.03 | Hot SU |
| 08 | 13.79 | 12.31 | 10.22 | 0.0376 | 68.28 | 21.80 | 18.09 | 0.0405 | 73.55 | 0.73 | 0.61 | 0.0008 | 1.46 | Hot SU |
| 09 | 13.24 | 13.65 | 10.51 | 0.0387 | 87.96 | 0.99 | 0.76 | 0.0017 | 3.87 | 0.45 | 0.35 | 0.0005 | 1.13 | Hot SU |
| 10 | 13.10 | 14.16 | 10.71 | 0.0395 | 101.11 | 0.63 | 0.48 | 0.0011 | 2.81 | 0.46 | 0.35 | 0.0005 | 1.28 | Hot SU |
| 11 | 13.02 | 19.05 | 14.26 | 0.0525 | 137.03 | 0.60 | 0.45 | 0.0010 | 2.62 | **OOR** | **OOR** | **OOR** | **OOR** | Hot SU |
| 12 | 13.04 | 19.45 | 14.60 | 0.0538 | 134.92 | 0.60 | 0.45 | 0.0010 | 2.51 | **OOR** | **OOR** | **OOR** | **OOR** | Hot SU |
| 13 | 13.05 | 19.27 | 14.48 | 0.0534 | 131.06 | 0.57 | 0.43 | 0.0010 | 2.45 | **OOR** | **OOR** | **OOR** | **OOR** | Hot SU |
| 14 | 13.07 | 19.06 | 14.36 | 0.0529 | 129.83 | 0.56 | 0.42 | 0.0009 | 2.21 | **OOR** | **OOR** | **OOR** | **OOR** | Hot SU |
| 15 | 13.09 | 18.82 | 14.22 | 0.0524 | 127.66 | 0.55 | 0.42 | 0.0009 | 2.19 | **OOR** | **OOR** | **OOR** | **OOR** | Hot SU |
| 16 | 13.11 | 18.68 | 14.15 | 0.0521 | 126.93 | 0.53 | 0.40 | 0.0009 | 2.19 | **OOR** | **OOR** | **OOR** | **OOR** | Hot SU |
| 17 | 13.11 | 18.59 | 14.08 | 0.0519 | 126.45 | 0.53 | 0.40 | 0.0009 | 2.19 | **OOR** | **OOR** | **OOR** | **OOR** | Hot SU |
| 18 | 13.07 | 18.62 | 14.03 | 0.0517 | 128.03 | 0.47 | 0.35 | 0.0008 | 1.99 | **OOR** | **OOR** | **OOR** | **OOR** | Hot SU |
| 19 | 13.03 | 18.72 | 14.03 | 0.0517 | 139.49 | 0.50 | 0.37 | 0.0008 | 2.16 | **OOR** | **OOR** | **OOR** | **OOR** | Hot SU |
| 20 | 13.00 | 18.23 | 13.61 | 0.0502 | 146.44 | 0.49 | 0.37 | 0.0008 | 2.34 | **OOR** | **OOR** | **OOR** | **OOR** | Hot SU |
| 21 | 13.02 | 18.34 | 13.73 | 0.0506 | 147.19 | 0.48 | 0.36 | 0.0008 | 2.33 | **OOR** | **OOR** | **OOR** | **OOR** | Hot SU |
| 22 | 13.01 | 18.61 | 13.92 | 0.0513 | 149.22 | 0.50 | 0.37 | 0.0008 | 2.33 | **OOR** | **OOR** | **OOR** | **OOR** | Hot SU |
| 23 | 13.00 | 18.54 | 13.85 | 0.0510 | 148.80 | 0.49 | 0.37 | 0.0008 | 2.34 | **OOR** | **OOR** | **OOR** | **OOR** | Hot SU |
| Average | 13.43 | 15.48 | 12.09 | 0.0445 | 104.32 | 15.86 | 13.61 | 0.0305 | 52.61 | 0.80 | 0.68 | 0.0009 | 1.64 | |
| Total | | | | | 2503.59 | | | | 1262.69 | | | | 18.02 | |
| 30-Day | | | **NSD** | | | | | | | | | | | |

# Cricket Valley Energy Center

Dover Plains, NY

## Turbine 3- Daily Mass Emissions Report

March 8, 2020

| Hour | NOx lbs | CO lbs | PM10/PM2.5 lbs | NH3 Slip lbs | VOC lbs | H2SO4 lbs | Turbine On-Time |
|---|---|---|---|---|---|---|---|
| 00 | 60.82 | 125.06 | 0.85 | 1.54 | 0.34 | 0.17 | 1.00 |
| 01 | 60.31 | 129.68 | 0.85 | 1.54 | 0.34 | 0.17 | 1.00 |
| 02 | 59.63 | 137.88 | 0.85 | 1.71 | 0.34 | 0.17 | 1.00 |
| 03 | 58.94 | 136.68 | 0.85 | 1.71 | 0.34 | 0.17 | 1.00 |
| 04 | 57.95 | 174.89 | 0.85 | 1.87 | 0.34 | 0.17 | 1.00 |
| 05 | 58.47 | 154.66 | 0.85 | 1.87 | 0.34 | 0.17 | 1.00 |
| 06 | 58.78 | 143.86 | 0.85 | 1.88 | 0.34 | 0.17 | 1.00 |
| 07 | 58.29 | 149.90 | 0.85 | 2.03 | 0.34 | 0.17 | 1.00 |
| 08 | 68.28 | 73.55 | 0.91 | 1.46 | 0.36 | 0.18 | 1.00 |
| 09 | 87.96 | 3.87 | 1.13 | 1.13 | 0.45 | 0.23 | 1.00 |
| 10 | 101.11 | 2.81 | 1.28 | 1.28 | 0.51 | 0.25 | 1.00 |
| 11 | 137.03 | 2.62 | 1.30 | **OOR** | 0.52 | 0.25 | 1.00 |
| 12 | 134.92 | 2.51 | 1.25 | **OOR** | 0.50 | 0.25 | 1.00 |
| 13 | 131.06 | 2.45 | 1.23 | **OOR** | 0.49 | 0.25 | 1.00 |
| 14 | 129.83 | 2.21 | 1.22 | **OOR** | 0.49 | 0.24 | 1.00 |
| 15 | 127.66 | 2.19 | 1.22 | **OOR** | 0.49 | 0.24 | 1.00 |
| 16 | 126.93 | 2.19 | 1.22 | **OOR** | 0.49 | 0.24 | 1.00 |
| 17 | 126.45 | 2.19 | 1.22 | **OOR** | 0.49 | 0.24 | 1.00 |
| 18 | 128.03 | 1.99 | 1.24 | **OOR** | 0.50 | 0.24 | 1.00 |
| 19 | 139.49 | 2.16 | 1.35 | **OOR** | 0.54 | 0.27 | 1.00 |
| 20 | 146.44 | 2.34 | 1.46 | **OOR** | 0.58 | 0.29 | 1.00 |
| 21 | 147.19 | 2.33 | 1.45 | **OOR** | 0.58 | 0.29 | 1.00 |
| 22 | 149.22 | 2.33 | 1.45 | **OOR** | 0.58 | 0.29 | 1.00 |
| 23 | 148.80 | 2.34 | 1.46 | **OOR** | 0.58 | 0.29 | 1.00 |
| Average | 104.32 | 52.61 | 1.13 | 1.64 | 0.45 | 0.23 | |
| Total | 2503.59 | 1262.69 | 27.19 | 18.02 | 10.87 | 5.40 | 24.00 |

# Cricket Valley Energy Center

Dover Plains, NY

## Turbine 3- Daily Operations & EMS Inlet Emissions Report

March 8, 2020

| Hour | SCR NOx ppm | SCR O2 % | CO Cat CO ppm | CT Nat Gas Flow klb | CT Heat Input mmBtu | DB Nat Gas Flow kscf | DB Heat Input mmBtu | Total Heat Input mmBtu | GT Megawatt Hours | ST Megawatt Hours | Process Status |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 00 | 10.81 | 8.67 | 44.84 | 50.8 | 1263.0 | 426.4 | 445.6 | 1708.6 | 80.1 | **Down** | Hot SU |
| 01 | 10.77 | 13.74 | 46.45 | 50.8 | 1263.0 | 426.4 | 445.6 | 1708.6 | 80.0 | **Down** | Hot SU |
| 02 | 10.74 | 13.73 | 49.14 | 50.8 | 1263.0 | 426.4 | 445.6 | 1708.6 | 79.9 | **Down** | Hot SU |
| 03 | 10.62 | 13.72 | 48.87 | 50.8 | 1263.0 | 426.4 | 445.6 | 1708.6 | 80.1 | **Down** | Hot SU |
| 04 | 10.48 | 13.73 | 61.93 | 50.4 | 1254.0 | 426.4 | 445.6 | 1699.6 | 79.7 | **Down** | Hot SU |
| 05 | 10.57 | 13.73 | 55.23 | 50.4 | 1254.0 | 426.4 | 445.6 | 1699.6 | 79.8 | **Down** | Hot SU |
| 06 | 10.64 | 13.72 | 51.13 | 50.8 | 1263.0 | 426.4 | 445.6 | 1708.6 | 80.3 | **Down** | Hot SU |
| 07 | 10.64 | 13.74 | 53.48 | 50.4 | 1254.0 | 426.4 | 445.6 | 1699.6 | 79.5 | **Down** | Hot SU |
| 08 | 12.10 | 13.45 | 24.71 | 55.1 | 1370.4 | 426.4 | 445.6 | 1816.0 | 97.6 | **Down** | Hot SU |
| 09 | 13.30 | 12.90 | 0.73 | 74.9 | 1863.1 | 392.3 | 410.0 | 2273.1 | 168.2 | **Down** | Hot SU |
| 10 | 14.04 | 12.76 | 0.28 | 88.2 | 2194.5 | 349.6 | 365.4 | 2559.9 | 209.8 | **Down** | Hot SU |
| 11 | 19.37 | 12.61 | 0.26 | 98.3 | 2445.3 | 157.7 | 164.8 | 2610.1 | 236.1 | **Down** | Hot SU |
| 12 | 19.82 | 12.62 | 0.20 | 99.0 | 2463.2 | 42.6 | 44.6 | 2507.8 | 237.2 | **Down** | Hot SU |
| 13 | 19.61 | 12.64 | 0.25 | 98.6 | 2454.3 | **Down** | **Down** | 2454.3 | 236.3 | **Down** | Hot SU |
| 14 | 19.36 | 12.66 | 0.24 | 98.3 | 2445.3 | 8.5 | 8.9 | 2454.2 | 235.4 | **Down** | Hot SU |
| 15 | 19.07 | 12.68 | 0.25 | 97.9 | 2436.3 | **Down** | **Down** | 2436.3 | 234.3 | **Down** | Hot SU |
| 16 | 18.97 | 12.70 | 0.24 | 97.9 | 2436.3 | **Down** | **Down** | 2436.3 | 233.6 | **Down** | Hot SU |
| 17 | 18.86 | 12.70 | 0.23 | 97.9 | 2436.3 | **Down** | **Down** | 2436.3 | 233.6 | **Down** | Hot SU |
| 18 | 18.93 | 12.66 | 0.18 | 98.3 | 2445.3 | 29.8 | 31.2 | 2476.5 | 235.7 | **Down** | Hot SU |
| 19 | 19.15 | 12.61 | 0.18 | 99.0 | 2463.2 | 224.7 | 234.7 | 2697.9 | 237.5 | **Down** | Hot SU |
| 20 | 18.67 | 12.59 | 0.17 | 99.4 | 2472.2 | 425.9 | 445.0 | 2917.2 | 238.9 | **Down** | Hot SU |
| 21 | 18.79 | 12.60 | 0.16 | 99.0 | 2463.2 | 426.4 | 445.6 | 2908.8 | 238.0 | **Down** | Hot SU |
| 22 | 19.07 | 12.59 | 0.14 | 99.0 | 2463.2 | 426.4 | 445.6 | 2908.8 | 238.2 | **Down** | Hot SU |
| 23 | 19.01 | 12.59 | 0.14 | 99.4 | 2472.2 | 426.4 | 445.6 | 2917.8 | 238.6 | **Down** | Hot SU |
| Average | 15.56 | 12.84 | 18.31 | 79.4 | 1975.1 | 337.4 | 352.6 | 2268.9 | 174.5 | **Down** | |
| Total | | | | 1905.4 | 47401.3 | 6747.9 | 7051.8 | 54453.1 | 4188.4 | **Down** | |

Formula Verification Examples

| | | | |
|---|---|---|---|
| **Unit Name:** | **CRICKET VALLEY ENERGY CENTER** | **Oris Code:** | **57185** |
| **Date/ Time:** | **03/08/2020 HOUR 0600** | **Unit /Stack #** | **U003** |

**Formula** **Conversion**
**Parameter** **CO2 metric tons-PNG**

| CO2 (Eq. G-4) tons | conversion factor tons/metric ton | **CO2 metric tons** | GWP Factor | **CO2e (CO2) metric tons** |
|---|---|---|---|---|
| 101.6 | 1.1023 | **92.17** | 1 | **92.17** |

**Formula** **C-10**
**Parameter** **CH4 metric tons-PNG**

| Total CT HI mmBtu | Total DB HI mmBtu | CH4 EF kgCH4/mmBtu | Conversion metric ton/kg | **CH4 metric tons** | GWP Factor | **CO2e (CH4) metric tons** |
|---|---|---|---|---|---|---|
| 1263.0 | 445.6 | 0.001 | 0.001 | **0.00171** | 25 | **0.04275** |

**Formula** **C-10**
**Parameter** **N2O metric tons-PNG**

| Total CT HI mmBtu | Total DB HI mmBtu | N2O EF kgN2O/mmBtu | Conversion metric ton/kg | **N2O metric tons** | GWP Factor | **CO2e (N2O) metric tons** |
|---|---|---|---|---|---|---|
| 1263.0 | 445.6 | 0.0001 | 0.001 | **0.00017** | 298 | **0.05066** |

**Parameter** **CO2e metric tons-PNG**

| CO2e (CO2) metric tons | CO2e (CH4) metric tons | CO2e(N2O) metric tons | **CO2e (total) metric tons** |
|---|---|---|---|
| 92.2 | 0.04275 | 0.05066 | **92.26341** |

# Cricket Valley Energy Center

Dover Plains, NY

## Turbine 3- Daily GHG Emissions Report

March 8, 2020

| Hour | Nat Gas GCV Btu/scf | Heat Input mmBtu | CO2 tons | CO2 Metric Tons | N2O Metric Tons | CH4 Metric Tons | N2O (CO2e) Metric Tons | CH4 (CO2e) Metric Tons | Total CO2e Metric Tons | Turbine On-Time |
|---|---|---|---|---|---|---|---|---|---|---|
| 00 | 1045.0 | 1708.6 | 101.6 | 92.17 | 0.00017 | 0.00171 | 0.05066 | 0.04275 | 92.26341 | 1.00 |
| 01 | 1045.0 | 1708.6 | 101.6 | 92.17 | 0.00017 | 0.00171 | 0.05066 | 0.04275 | 92.26341 | 1.00 |
| 02 | 1045.0 | 1708.6 | 101.6 | 92.17 | 0.00017 | 0.00171 | 0.05066 | 0.04275 | 92.26341 | 1.00 |
| 03 | 1045.0 | 1708.6 | 101.6 | 92.17 | 0.00017 | 0.00171 | 0.05066 | 0.04275 | 92.26341 | 1.00 |
| 04 | 1045.0 | 1699.6 | 101.0 | 91.63 | 0.00017 | 0.00170 | 0.05066 | 0.04250 | 91.72316 | 1.00 |
| 05 | 1045.0 | 1699.6 | 101.0 | 91.63 | 0.00017 | 0.00170 | 0.05066 | 0.04250 | 91.72316 | 1.00 |
| 06 | 1045.0 | 1708.6 | 101.6 | 92.17 | 0.00017 | 0.00171 | 0.05066 | 0.04275 | 92.26341 | 1.00 |
| 07 | 1045.0 | 1699.6 | 101.0 | 91.63 | 0.00017 | 0.00170 | 0.05066 | 0.04250 | 91.72316 | 1.00 |
| 08 | 1045.0 | 1816.0 | 107.9 | 97.89 | 0.00018 | 0.00182 | 0.05364 | 0.04550 | 97.98914 | 1.00 |
| 09 | 1045.0 | 2273.1 | 135.1 | 122.56 | 0.00023 | 0.00227 | 0.06854 | 0.05675 | 122.68529 | 1.00 |
| 10 | 1045.0 | 2559.9 | 152.1 | 137.98 | 0.00026 | 0.00256 | 0.07748 | 0.06400 | 138.12148 | 1.00 |
| 11 | 1045.0 | 2610.1 | 155.1 | 140.71 | 0.00026 | 0.00261 | 0.07748 | 0.06525 | 140.85273 | 1.00 |
| 12 | 1045.0 | 2507.8 | 149.1 | 135.26 | 0.00025 | 0.00250 | 0.07450 | 0.06250 | 135.39700 | 1.00 |
| 13 | 1045.0 | 2454.3 | 145.9 | 132.36 | 0.00025 | 0.00245 | 0.07450 | 0.06125 | 132.49575 | 1.00 |
| 14 | 1045.0 | 2454.2 | 145.8 | 132.27 | 0.00024 | 0.00246 | 0.07152 | 0.06150 | 132.40302 | 1.00 |
| 15 | 1045.0 | 2436.3 | 144.8 | 131.36 | 0.00024 | 0.00244 | 0.07152 | 0.06100 | 131.49252 | 1.00 |
| 16 | 1045.0 | 2436.3 | 144.8 | 131.36 | 0.00024 | 0.00244 | 0.07152 | 0.06100 | 131.49252 | 1.00 |
| 17 | 1045.0 | 2436.3 | 144.8 | 131.36 | 0.00024 | 0.00244 | 0.07152 | 0.06100 | 131.49252 | 1.00 |
| 18 | 1045.0 | 2476.5 | 147.2 | 133.54 | 0.00024 | 0.00248 | 0.07152 | 0.06200 | 133.67352 | 1.00 |
| 19 | 1045.0 | 2697.9 | 160.3 | 145.42 | 0.00027 | 0.00269 | 0.08046 | 0.06725 | 145.56771 | 1.00 |
| 20 | 1045.0 | 2917.2 | 173.3 | 157.22 | 0.00029 | 0.00292 | 0.08642 | 0.07300 | 157.37942 | 1.00 |
| 21 | 1045.0 | 2908.8 | 172.9 | 156.85 | 0.00029 | 0.00291 | 0.08642 | 0.07275 | 157.00917 | 1.00 |
| 22 | 1045.0 | 2908.8 | 172.9 | 156.85 | 0.00029 | 0.00291 | 0.08642 | 0.07275 | 157.00917 | 1.00 |
| 23 | 1045.0 | 2917.8 | 173.4 | 157.31 | 0.00029 | 0.00292 | 0.08642 | 0.07300 | 157.46942 | 1.00 |
| Average | 1045.0 | | | | | | | | | |
| Total | | 54453.1 | 3236.4 | 2936.04 | 0.00542 | 0.05447 | 1.61516 | 1.36175 | 2939.01691 | 24.00 |

# APPENDIX 6

# RELATIVE ACCURACY TEST AUDIT REPORT

# RELATIVE ACCURACY TEST AUDIT
# FOR THE
# GENERAL ELECTRIC, 7F.05,
# UNIT #U-00003 CEMS
# PREPARED FOR
# CRICKET VALLEY ENERGY CENTER, LLC
# AT THE
# CRICKET VALLEY ENERGY CENTER
# DOVER PLAINS, NEW YORK
# APRIL 4, 2020

## Report Date: April 28, 2020



**Corporate Headquarters**
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012

AIR HYGIENE, INC.

(918) 307-8865 or (888) 461-8778
www.airhygiene.com

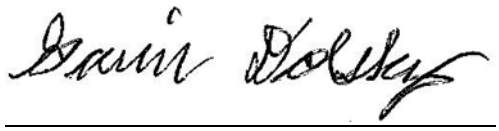
**Remote Testing Offices**
Las Vegas, NV 89156
Ft. Worth, TX 76028
Humble, TX 77338
Shreveport, LA 71115
Miami, FL 33101
Pittsburgh, PA 15205

# RELATIVE ACCURACY TEST AUDIT
# FOR THE
# GENERAL ELECTRIC, 7F.05,
# UNIT #U-00003 CEMS
# PREPARED FOR
# CRICKET VALLEY ENERGY CENTER, LLC
# AT THE
# CRICKET VALLEY ENERGY CENTER
# DOVER PLAINS, NEW YORK
# APRIL 4, 2020

Prepared and Reviewed by:



Darin Grimes
Sr. Testing Solutions Specialist



Gavin Dolsky, QI
Staff Engineer – Report Manager

I, 

Matt McBride, QSTI
Sr. Project Manager
certify that this testing was conducted and this report was created in conformance with the requirements of ASTM D7036

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# Relative Accuracy Test Audit
# General Electric, 7F.05, Unit #U-00003 CEMS
# Cricket Valley Energy Center, LLC
# Cricket Valley Energy Center
# Dover Plains, New York
# April 4, 2020

## 1.0 INTRODUCTION

Air Hygiene International, Inc. (Air Hygiene) has completed the Relative Accuracy Test Audit (RATA) for nitrogen oxides (NOx), carbon monoxide (CO), ammonia ($NH_3$), and oxygen ($O_2$) from the exhaust of the General Electric, 7F.05, Unit #U-00003 for Cricket Valley Energy Center, LLC at the Cricket Valley Energy Center in Dover Plains, New York. This report details the background, results, process description, and the sampling/analysis methodology of the stack sampling survey conducted on April 4, 2020.

The accumulated data from the RATA provides the figures for evaluating the acceptability of the operation of the on-site continuous emission monitoring system (CEMS) for the monitoring of NOx, CO, $NH_3$, and $O_2$ from the General Electric, 7F.05, Unit #U-00003 for Cricket Valley Energy Center, LLC at the Cricket Valley Energy Center in Dover Plains, New York.

## 1.1 TEST PURPOSE AND OBJECTIVES

The purpose of the test was to perform the initial certification RATA on the CEMS that serves the General Electric, 7F.05, Unit #U-00003 for Cricket Valley Energy Center, LLC at the Cricket Valley Energy Center in Dover Plains, New York. Reference method (RM) testing followed the Code of Federal Regulations (CFR), Title 40 (40 CFR), Part 60 (40 CFR 60), Appendix A, Methods 1, 3A, 7E, 10, 19; and 40 CFR 63, Appendix A, Method 320. RM values are compared with the on-site CEMS to document performance as required in the 40 CFR 60, Appendix B, Performance Specifications (PS) and 40 CFR 75 Appendix A and B. All relative accuracies were established on-site and were governed by the following sets of rules:

In accordance with 40 CFR 60, Appendix B, PS 2, Section 13.2, the NOx and $NH_3$ RATA results are acceptable if the relative accuracy (RA) does not exceed 20.0 percent when average emissions during the test are greater than 50 percent of the emission standard or alternative relative accuracy (ARA) does not exceed 10.0 percent when the average emissions during the test are less than 50 percent of the emission standard. Part 60 further requires that the unit be operating at greater than 50 percent of normal load.

In accordance with 40 CFR 75, Appendix A, Section 3.3.2(a) and (b), the NOx RATA results are acceptable if the relative accuracy (RA) does not exceed 10.0 percent or if during the RATA the average NOx emission rate is less than or equal to 0.200 lb/MMBtu and the average difference between the CEMS and reference method (RM) values does not exceed 0.020 lb/MMBtu. Passing this set of criteria requires the CEMS to be retested after no more than two operating quarters. Alternatively, in accordance with 40 CFR 75, Appendix B, Section 2.3.1.2(a) and (f), and Appendix B, Figure 2, the NOx RATA results are acceptable if the RA does not exceed 7.5 percent or if during the RATA the average NOx emission rate is less than or equal to 0.200 lb/MMBtu and the average difference between the CEMS and RM values does not exceed 0.015 lb/MMBtu. Passing this set of criteria allows the CEMS to be retested after four operating quarters or at least within eight calendar quarters.

In accordance with 40 CFR 60, Appendix B, PS 3, Section 13.2, the $O_2$ RATA results are acceptable if the relative accuracy (RA) does not exceed 20.0 percent or if the average difference between the CEMS and reference method (RM) values does not exceed plus or minus 1.0 percent of the measured value.

In accordance with 40 CFR 60, Appendix B, PS 4 and 4A, Sections 13.2 of each, the CO relative accuracy (RA) test results are acceptable if the RA does not exceed 10.0 percent, if the average difference between the CEMS and reference method (RM) values plus the 2.5 percent confidence coefficient (2.5%CC) does not exceed 5.0 parts per million (ppm), or if the alternative relative accuracy (ARA) does not exceed 5.0 percent. Part 60 further requires that the unit be operating at greater than 50 percent of normal load.

## 1.2 SUMMARY OF TEST PROGRAM

The following list details pertinent information related to this specific project:

1.2.1 Participating Organizations
- New York State Department of Environmental Conservation (NYSDEC)
- Cricket Valley Energy Center, LLC
- Custom Instrumentation Services Corporation (CiSCO)
- Bechtel
- Air Hygiene

1.2.2 Industry
- Electric Utility / Electric Services

1.2.3 Air Permit and Federal Requirements
- Permit Number: 3-1326-00275/00009
- DEC ID: 3132600275
- 40 CFR 60, Appendix B, Performance Specifications (PS)
- 40 CFR 75, Appendix A and B

1.2.4 Plant Location
- Cricket Valley Energy Center in Dover Plains, New York
  - GPS Coordinates [Latitude 41.67616, Longitude -73.576914]
  - 2241 Route NY 22, Dover Plains, New York 12522
  - Federal Registry System / Facility Registry Service (FRS) No. – 110043333372
  - Source Classification Code (SCC) – 20100209

1.2.5 Equipment Tested
- General Electric, 7F.05, Unit #U-00003
  - NOx Analyzer (TAPI T200M, Serial No. 1014)
  - $NH_3$ Analyzer (TAPI T200M, Serial No. 1049)
  - CO Analyzer (TAPI T300M, Serial No. 520)
  - $O_2$ Analyzer (TAPI T803, Serial No. 151)

1.2.6 Emission Points
- Exhaust from the General Electric, 7F.05, Unit #U-00003
- For all gases, one sample point in the exhaust duct from the General Electric, 7F.05, Unit #U-00003, determined after conducting a stratification test

1.2.7 Emission Parameters Measured
- NOx
- CO
- $NH_3$
- $O_2$

1.2.8 Date of Emission Test
- April 4, 2020

1.2.9 Federal Certifications

- Stack Testing Accreditation Council AETB Certificate No. 3796.02
- International Standard ISO/IEC 17025:2005 Certificate No. 3796.01

## 1.3 KEY PERSONNEL

| | | |
|---|---|---|
| Cricket Valley Energy Center, LLC: | Marc Duquette (mduquette@cricketvalley.com) | 617-320-5219 |
| Bechtel: | Chris Putman (csputman@bechtel.com) | 703-429-6923 |
| CiSCO: | Reginald Williams (rwilliams@ciscocems.com) | 720-419-0177 |
| Air Hygiene: | Matt McBride (mmcbride@airhygiene.com) | 918-307-8865 |
| Air Hygiene: | Swanson Bierman | 918-307-8865 |
| Air Hygiene: | Jeremy Johnson | 918-307-8865 |

## 2.0 SUMMARY OF TEST RESULTS

Results from the sampling conducted on Cricket Valley Energy Center, LLC's General Electric, 7F.05, Unit #U-00003 located at the Cricket Valley Energy Center on April 4, 2020 are summarized in the following table and relate only to the items tested.

**TABLE 2.1**
**SUMMARY OF GENERAL ELECTRIC, 7F.05, UNIT #U-00003 RATA RESULTS**

| Pollutant | Units | Criteria | | | Results | Passed / Test Frequency |
|---|---|---|---|---|---|---|
| | | CFR | Specification / Section | Standard | | |
| NOx | ppmvd@15%$O_2$ | Part 60 | Appendix B, Performance Specification 2, Section 13.2 | RA ≤ 20%, or ARA ≤ 10% | RA = 14.33% | YES / ANNUAL |
| NOx | lb/hr | Part 60 | Appendix B, Performance Specification 2, Section 13.2 | RA ≤ 20%, or ARA ≤ 10% | RA = 11.59% | YES / ANNUAL |
| NOx | lb/MMBtu | Part 75 | Appendix A, Section 3.3.2(a),(b)<br>Appendix B, Section 2.3.1.2(a),(f), Figure 2 | RA ≤ 10%, or if lb/MMBtu ≤ 0.200, d ≤ ±0.020 lb/MMBtu<br>Annual Incentive RA ≤ 7.5%, or if lb/MMBtu ≤ 0.2, d ≤ ±0.015 lb/MMBtu | RA = 15.05%<br>RM = 0.01 lb/MMBtu<br>d = -0.001 lb/MMBtu<br>BAF=1.000 | YES / ANNUAL |
| $O_2$ | %vd | Part 60 | Appendix B, Performance Specification 3, Section 13.2 | RA ≤ 20%, or d ≤ ±1.0% | RA = 0.08%<br>d = 0.0 % | YES / ANNUAL |
| CO | ppmvd@15%$O_2$ | Part 60 | Appendix B, Performance Specification 4, 4A, from all Section 13.2 | RA ≤ 10%, or d + 2.5% CC ≤ ±5 ppmv, or ARA ≤ 5% | RA = 131.72%<br>\|d\|+2.5%CC = 0.2 ppm | YES / ANNUAL |
| CO | lb/hr | Part 60 | Appendix B, Performance Specification 4, 4A Section 13.2 | RA ≤ 10%, or d + 2.5% CC ≤ ±5 lb/hr, or ARA ≤ 5% | RA = 131.78%<br>\|d\|+2.5%CC = 0.2 ppm (\|d\|+2.5%CC = 0.9 lb/hr) | YES / ANNUAL |
| $NH_3$ | ppmvd@15%$O_2$ | Assumed Part 60 | Appendix B, Performance Specification 2, Section 13.2 | RA ≤ 20%, or ARA ≤ 10% | ARA = 4.34% | YES / ANNUAL |
| $NH_3$ | lb/hr | Part 60 | Appendix B, Performance Specification 2, Section 13.2 | RA ≤ 20%, or ARA ≤ 10% | ARA = 3.84% | YES / ANNUAL |
| Load | MW | Part 60 | Appendix B, Performance Specifications | > 50% max load | 351.5 | WITHIN TOLERANCE |
| Load | MW | Part 75 | Appendix A and B | normal load range | 351.5 | WITHIN TOLERANCE |

Notes: RA = relative accuracy, ARA = alternative relative accuracy, RM = reference method value, d = difference between RM and CEMS value, CC = confidence coefficient, v = velocity, BAF = bias adjustment factor

The RATA passed for all pollutants (NOx, CO, $NH_3$, and $O_2$) in all units (ppm@15%$O_2$, lb/hr, lb/MMBtu, and %) under all 40 CFR 60 and 40 CFR 75 criteria.

Specifically, NOx in units of ppm@15%$O_2$ and lb/hr, passed 40 CFR 60 criteria with an RA less than 20 percent. NOx in units of lb/MMBtu passed the 40 CFR 75 alternative annual incentive criteria with an emissions rate of less than 0.200 lb/MMBtu and a difference between the RM and CEMS analyzers of less than 0.015 lb/MMBtu. Also the Bias Adjustment Factor test resulted in an adjustment factor equal to 1.0 (no adjustment required). $O_2$ in units of % passed the 40 CFR 60 criteria with an RA less than 20 percent. CO in units of ppm@15%$O_2$ and lb/hr passed the 40 CFR 60 alternative criteria with a concentration difference between the RM and CEMS analyzers plus the confidence coefficient of less than 5 ppm and 5 lb/hr respectively. $NH_3$ in units of ppm@15%$O_2$ and lb/hr passed the 40 CFR 60 alternative criteria with an ARA less than 10 percent.

Unit load was within the 40 CFR 60 required criteria of greater than 50 percent of the maximum load and also fell within the normal load criteria as defined by the plants Quality Control and Monitoring Plan which defined the upper and lower boundary on the unit and the normal and secondary normal load ranges.

The results of all measured pollutant emissions were below the required limits. All testing was performed without any real or apparent errors. All testing was conducted according to the approved testing protocol.

# 3.0 SOURCE OPERATION

## 3.1 PROCESS DESCRIPTION

Cricket Valley Energy Center, LLC (CVEC) owns and operates the Cricket Valley Energy Center located at 2241 ST RTE 22 in Dover Plains, New York. Located on the Cricket Valley Energy Center are three General Electric (GE) 7F.05 Combustion Turbine Generators (CTGs), designated as U-00001, U-00002, and U-0003, and each unit is equipped with one heat recovery steam generator (HRSG) with supplemental duct firing. Each unit is rated at 381 megawatts (MW). The nominal MW per unit as per the NYSDEC Permit ID 3-1326-00275/00009 is identified as 333 MW.

A single, dedicated dry extraction based continuous emissions monitoring system (CEMS) is installed on each unit. The CEMS configurations include nitrogen oxide (NOx) analyzers, ammonia ($NH_3$) analyzers, carbon monoxide (CO) analyzers, diluent gas oxygen ($O_2$) analyzers, and data acquisition and handling systems (DAHS).

## 3.2 SAMPLING LOCATION

The CTG stack is vertical, circular, and measures 19 feet (ft) (228 inches) in diameter at the test ports which are approximately 265.8 ft above grade level with an exit elevation of approximately 282.5 ft above grade level. The test ports are located approximately 70.8 ft (850 inches) downstream and approximately 16.7 ft (200.4 inches) upstream from the nearest disturbances. Air Hygiene has field verified the measurable dimensions. Non-field verified dimensions are provided by Cricket Valley Energy Center, LLC. All exhaust samples for gaseous emissions were continuously drawn from the exhaust system at the sample ports from a single point determined after conducting a stratification test. During the stratification test three points were traversed from each of the four ports. The probe was allowed to remain at a point for two times the system response time.

# 4.0 SAMPLING AND ANALYTICAL PROCEDURES

## 4.1 TEST METHODS

The emission test on the General Electric, 7F.05, Unit #U-00003 at the Cricket Valley Energy Center was performed following United States Environmental Protection Agency (EPA) methods described by the Code of Federal Regulations (CFR). Table 4.1 outlines the specific methods performed on April 4, 2020.

**TABLE 4.1**
**SUMMARY OF SAMPLING METHODS**

| Pollutant or Parameter | Sampling Method | Analysis Method |
|---|---|---|
| Sample Point Location | EPA Method 1 | Equal Area Method |
| Oxygen | EPA Method 3A | Paramagnetic Cell |
| Nitrogen Oxides | EPA Method 7E | Chemiluminescent Analyzer |
| Carbon Monoxide | EPA Method 10 | Nondispersive Infrared Analyzer |
| Stack Flow Rate | EPA Method 19 | Dry Oxygen F Factor |
| Ammonia and Moisture | EPA Method 320 | Fourier Transform Infrared |

## 4.2 INSTRUMENT CONFIGURATION AND OPERATIONS FOR GAS ANALYSIS

The sampling and analysis procedures used during these tests conform with the methods outlined in the Code of Federal Regulations (CFR), Title 40, Part 60, Appendix A, Methods 1, 3A, 7E, 10, 19; and 40 CFR 63, Appendix A, Method 320.

Figure 4.1 depicts the sample system used for the real-time gas analyzer tests. The gas sample was continuously pulled through the probe and transported, via heat-traced Teflon® tubing, to a heated head pump and into the FTIR then to a stainless steel minimum-contact condenser designed to dry the sample. Transportation of the sample, through Teflon® tubing, continued into the sample manifold within the mobile laboratory / portable analyzer via a stainless steel/Teflon® diaphragm pump. From the manifold, the sample was partitioned to the real-time analyzers through rotameters that controlled the flow rate of the sample.

Figure 4.1 shows that the sample system was also equipped with a separate path through which a calibration gas could be delivered to the probe and back through the entire sampling system. This allowed for convenient performance of system bias checks as required by the testing methods.

All instruments were housed in a climate controlled, trailer-mounted mobile laboratory. Gaseous calibration standards were provided in aluminum cylinders with the concentrations certified by the vendor. EPA Protocol No. 1 was used to determine the cylinder concentrations where applicable (i.e. NOx calibration gases).

Table 4.2 provides a description of the analyzers used for the instrument portion of the tests. All data from the continuous monitoring instruments were recorded on a Logic Beach Portable Data Logging System which retrieves calibrated electronic data from each instrument every one second and reports an average of the collected data every 30 seconds. For target compounds measured with the Fourier transform infrared (FTIR) spectrometer, interferograms consisting of 28 co-added scans were recorded continuously during the test periods, and provided approximately 30-second average concentrations. Spectral data was analyzed by the MKS MG2000 software.

Ten test runs of approximately 21 minutes each were conducted on the General Electric, 7F.05, Unit #U-00003 for NOx, CO, $NH_3$, and $O_2$.

The stack gas analysis for $O_2$ concentrations was performed in accordance with procedures set forth in EPA Method 3A. The $O_2$ analyzer uses a paramagnetic cell detector.

EPA Method 7E was used to determine concentrations of NOx. A chemiluminescent analyzer was used to determine the nitrogen oxides concentration in the gas stream. A $NO_2$ in nitrogen certified gas cylinder was used to verify at least a 90 percent $NO_2$ conversion on the day of the test.

CO emission concentrations were quantified in accordance with procedures set forth in EPA Method 10. A continuous nondispersive infrared (NDIR) analyzer was used for this purpose.

An MKS Instruments - MultiGas™ Fourier Transform Infrared (FTIR) spectrometer, or equivalent, was used for $NH_3$ and $H_2O$ analysis per EPA Method 320. The FTIR spectrometer spectral resolution was 0.5 $cm^{-1}$. The system employed a silicon carbide infrared source at 1200ºC, a helium neon reference laser, beam splitters, potassium bromide (KBr) cell window, front-surface optical transfer mirrors, and multi-pass absorption cells. MCT detectors were used and cooled with liquid nitrogen in order to maintain a constant temperature of 77 Kelvin. The approximately 5.11-meter multi-pass path cells incorporated aspheric, aberration-correcting mirrors to increase the optical throughput and the detection sensitivity. Transducers and thermocouples were connected directly to the insulated sample cells that provide the pressure and temperatures of the sample streams. During testing, the temperature of the absorption cells was set at 191ºC. Elevated temperature prevented gas condensation within the cell and minimized compound adhesion to the cell walls and mirrors. The volume of the absorption cell was 0.5 liters, so at a sample gas flow rate of 4.0 liters per minute, the sample gas in the cell is refreshed approximately four times each minute. Interferograms consisting of 28 co-added scans were recorded continuously during the test periods, and provided approximately 30-second average concentrations.

**TABLE 4.2**
**ANALYTICAL INSTRUMENTATION**

| Parameter | Manufacturer and Model | Range | Sensitivity | Detection Principle |
|---|---|---|---|---|
| NOx | THERMO 42 series | User may select up to 5,000 ppm | 0.1 ppm | Thermal reduction of $NO_2$ to NO. Chemiluminescence of reaction of NO with $O_3$. Detection by PMT. Inherently linear for listed ranges. |
| CO | THERMO 48 series | User may select up to 10,000 ppm | 0.1 ppm | Infrared absorption, gas filter correlation detector, microprocessor based linearization. |
| $NH_3$ and $H_2O$ | MKS 2030 | User may select from multiple ranges | 0.1 ppm | Fourier Transform Infrared – FTIR |
| $O_2$ | SERVOMEX 1440 | 0-25% | 0.1% | Paramagnetic cell, inherently linear. |

# APPENDIX A

# TEST RESULTS AND CALCULATIONS

**TABLE A.1:**
**EMISSIONS TESTING SCHEDULE**

| Unit | Load | Test Type | Run | Date | Start | Stop | Time Sync |
|---|---|---|---|---|---|---|---|
| U-00003 | Base Load | Stratification Test | 1 | 04/04/20 | 7:28:21 | 8:07:21 | DAHS |
| U-00003 | Base Load | Gas RATA | 1 | 04/04/20 | 17:23:02 | 17:43:32 | DAHS |
| U-00003 | Base Load | Gas RATA | 2 | 04/04/20 | 17:52:02 | 18:12:32 | DAHS |
| U-00003 | Base Load | Gas RATA | 3 | 04/04/20 | 18:20:04 | 18:40:34 | DAHS |
| U-00003 | Base Load | Gas RATA | 4 | 04/04/20 | 18:51:19 | 19:11:49 | DAHS |
| U-00003 | Base Load | Gas RATA | 5 | 04/04/20 | 19:20:23 | 19:40:53 | DAHS |
| U-00003 | Base Load | Gas RATA | 6 | 04/04/20 | 19:48:23 | 20:08:53 | DAHS |
| U-00003 | Base Load | Gas RATA | 7 | 04/04/20 | 20:20:13 | 20:40:43 | DAHS |
| U-00003 | Base Load | Gas RATA | 8 | 04/04/20 | 20:49:13 | 21:09:43 | DAHS |
| U-00003 | Base Load | Gas RATA | 9 | 04/04/20 | 21:17:13 | 21:37:43 | DAHS |
| U-00003 | Base Load | Gas RATA | 10 | 04/04/20 | 21:50:13 | 22:10:43 | DAHS |

**Cricket Valley Energy Center, LLC**
**April 4, 2020**
**General Electric, 7F.05, Unit #U-00003**
**$O_2$ RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (%vd) | (%vd) | (diff) | ($diff^2$) |
| 1 | 17:23 - 17:43 | YES | 349.6 | 13.08 | 13.08 | 0.00 | 0.00 |
| 2 | 17:52 - 18:12 | NO | 349.8 | 13.04 | 13.08 | | |
| 3 | 18:20 - 18:40 | YES | 350.4 | 13.07 | 13.07 | 0.00 | 0.00 |
| 4 | 18:51 - 19:11 | YES | 350.7 | 13.05 | 13.06 | -0.01 | 0.00 |
| 5 | 19:20 - 19:40 | YES | 351.5 | 13.08 | 13.05 | 0.03 | 0.00 |
| 6 | 19:48 - 20:08 | YES | 351.9 | 13.05 | 13.04 | 0.01 | 0.00 |
| 7 | 20:20 - 20:40 | YES | 352.7 | 13.02 | 13.03 | -0.01 | 0.00 |
| 8 | 20:49 - 21:09 | YES | 353.0 | 13.01 | 13.02 | -0.01 | 0.00 |
| 9 | 21:17 - 21:37 | YES | 353.1 | 13.01 | 13.02 | -0.01 | 0.00 |
| 10 | 21:50 - 22:10 | YES | 351.8 | 13.02 | 13.02 | 0.00 | 0.00 |
| 11 | | NO | | | | | |
| 12 | | NO | | | | | |
| | **Total** | | **3164.7** | **117.38** | **117.39** | **-0.01** | **0.00** |
| | **Average** | | **351.6** | **13.04** | **13.04** | **0.00** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.01 |
| T-value | 2.306 |
| Confidence Coefficient | 0.01 |

| | |
|---|---|
| **Average Difference =** | **0.0** |
| **Relative Accuracy =** | **0.1%** |

Part 60, Appendix B, Performance Specification 3,
13.2 CEMS Relative Accuracy Performance Specification. The RA of the CEMS must be no greater than 20 percent of the mean value of the reference method (RM) data. The results are also acceptable if the absolute value of the difference between the mean RM value and the mean CEMS value is less than or equal to 1.0 percent O2 (or CO2).

**Cricket Valley Energy Center, LLC**
**April 4, 2020**
**General Electric, 7F.05, Unit #U-00003**
**NOx RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (ppmvd@15%$O_2$) | (ppmvd@15%$O_2$) | (diff) | (diff$^2$) |
| 1 | 17:23 - 17:43 | YES | 349.6 | 1.51 | 1.70 | -0.19 | 0.04 |
| 2 | 17:52 - 18:12 | YES | 349.8 | 1.53 | 1.70 | -0.17 | 0.03 |
| 3 | 18:20 - 18:40 | YES | 350.4 | 1.52 | 1.70 | -0.18 | 0.03 |
| 4 | 18:51 - 19:11 | YES | 350.7 | 1.53 | 1.70 | -0.17 | 0.03 |
| 5 | 19:20 - 19:40 | YES | 351.5 | 1.51 | 1.70 | -0.19 | 0.04 |
| 6 | 19:48 - 20:08 | YES | 351.9 | 1.34 | 1.55 | -0.21 | 0.04 |
| 7 | 20:20 - 20:40 | YES | 352.7 | 1.50 | 1.73 | -0.23 | 0.05 |
| 8 | 20:49 - 21:09 | YES | 353.0 | 1.40 | 1.60 | -0.20 | 0.04 |
| 9 | 21:17 - 21:37 | YES | 353.1 | 1.48 | 1.70 | -0.22 | 0.05 |
| 10 | 21:50 - 22:10 | NO | 351.8 | 1.47 | 1.70 | | |
| 11 | | NO | | | | | |
| 12 | | NO | | | | | |
| | **Total** | | **3162.7** | **13.32** | **15.08** | **-1.76** | **0.35** |
| | **Average** | | **351.4** | **1.48** | **1.68** | **-0.20** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.02 |
| T-value | 2.306 |
| Confidence Coefficient | 0.02 |

**Relative Accuracy = 14.3%**

Part 60, Appendix B, Performance Specification 2,
8.4.1 RA Test Period. Conduct the RA test according to the procedure given in Sections 8.4.2 through 8.4.6 while the affected facility is operating at more than 50 percent of normal load, or as specified in an applicable subpart.
13.2 Relative Accuracy Performance Specification. The RA of the CEMS must be no greater than 20 percent when RM is used in the denominator of Eq. 2-6 (average emissions during test are greater than 50 percent of the emission standard) or 10 percent when the applicable emission standard (permit limit) is used in the denominator of Eq. 2-6 (average emissions during test are less than 50 percent of the emission standard).
Eq. 2.6 RA=([|d|+|CC|]*100)/RM

**Cricket Valley Energy Center, LLC**
**April 4, 2020**
**General Electric, 7F.05, Unit #U-00003**
**CO RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (ppmvd@15%$O_2$) | (ppmvd@15%$O_2$) | (diff) | (diff$^2$) |
| 1 | 17:23 - 17:43 | YES | 349.6 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | 17:52 - 18:12 | YES | 349.8 | 0.10 | 0.00 | 0.10 | 0.01 |
| 3 | 18:20 - 18:40 | YES | 350.4 | 0.13 | 0.00 | 0.13 | 0.02 |
| 4 | 18:51 - 19:11 | YES | 350.7 | 0.17 | 0.00 | 0.17 | 0.03 |
| 5 | 19:20 - 19:40 | YES | 351.5 | 0.10 | 0.00 | 0.10 | 0.01 |
| 6 | 19:48 - 20:08 | NO | 351.9 | 0.20 | 0.00 | | |
| 7 | 20:20 - 20:40 | YES | 352.7 | 0.15 | 0.00 | 0.15 | 0.02 |
| 8 | 20:49 - 21:09 | YES | 353.0 | 0.15 | 0.00 | 0.15 | 0.02 |
| 9 | 21:17 - 21:37 | YES | 353.1 | 0.15 | 0.00 | 0.15 | 0.02 |
| 10 | 21:50 - 22:10 | YES | 351.8 | 0.15 | 0.00 | 0.15 | 0.02 |
| 11 | | NO | | | | | |
| 12 | | NO | | | | | |
| | **Total** | | **3162.6** | **1.10** | **0.00** | **1.10** | **0.15** |
| | **Average** | | **351.4** | **0.12** | **0.00** | **0.12** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.05 |
| T-value | 2.306 |
| Confidence Coefficient | 0.04 |

| | |
|---|---|
| **Relative Accuracy =** | **131.7%** |
| **\|d (difference in ppm)\| + CC =** | **0.16** |

Part 60, Appendix B, Performance Specification 4,
1.2.1 This specification is for evaluating the acceptability of carbon monoxide (CO) continuous emission monitoring systems (CEMS) at the time of installation or soon after and whenever specified in an applicable subpart of the regulations. This specification was developed primarily for CEMS having span values of 1,000 ppmv CO.
13.2 Relative Accuracy. The RA of the CEMS must be no greater than 10 percent when the average RM value is used to calculate RA or 5 percent when the applicable emission standard (permit limit) is used to calculate RA.

Part 60, Appendix B, Performance Specification 4A,
1.2.1 This specification is for evaluating the acceptability of carbon monoxide (CO) continuous emission monitoring systems (CEMS) at the time of installation or soon after and whenever specified in an applicable subpart of the regulations. This specification was developed primarily for CEMS that comply with low emission standards (less than 200 ppmv).
13.2 Relative Accuracy. The RA of the CEMS must be no greater than 10 percent when the average RM value is used to calculate RA, 5 percent when the applicable emission standard (permit limit) is used to calculate RA, or within 5 ppmv when the RA is calculated as the absolute average difference between the RM and CEMS plus the 2.5 percent confidence coefficient.

**Cricket Valley Energy Center, LLC**
**April 4, 2020**
**General Electric, 7F.05, Unit #U-00003**
**$NH_3$ RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (ppmvd@15%$O_2$) | (ppmvd@15%$O_2$) | (diff) | (diff$^2$) |
| 1 | 17:23 - 17:43 | YES | 349.6 | 1.18 | 0.97 | 0.21 | 0.04 |
| 2 | 17:52 - 18:12 | YES | 349.8 | 1.25 | 0.97 | 0.28 | 0.08 |
| 3 | 18:20 - 18:40 | NO | 350.4 | 1.27 | 0.99 | | |
| 4 | 18:51 - 19:11 | YES | 350.7 | 1.23 | 0.98 | 0.25 | 0.06 |
| 5 | 19:20 - 19:40 | YES | 351.5 | 0.94 | 0.98 | -0.04 | 0.00 |
| 6 | 19:48 - 20:08 | YES | 351.9 | 0.83 | 1.18 | -0.35 | 0.12 |
| 7 | 20:20 - 20:40 | YES | 352.7 | 0.72 | 1.02 | -0.30 | 0.09 |
| 8 | 20:49 - 21:09 | YES | 353.0 | 0.94 | 1.21 | -0.27 | 0.08 |
| 9 | 21:17 - 21:37 | YES | 353.1 | 0.94 | 0.99 | -0.05 | 0.00 |
| 10 | 21:50 - 22:10 | YES | 351.8 | 1.02 | 1.00 | 0.02 | 0.00 |
| 11 | | NO | | | | | |
| 12 | | NO | | | | | |
| | **Total** | | **3164.1** | **9.03** | **9.30** | **-0.27** | **0.48** |
| | **Average** | | **351.6** | **1.00** | **1.03** | **-0.03** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.24 |
| T-value | 2.306 |
| Confidence Coefficient | 0.19 |

| | |
|---|---|
| **Relative Accuracy =** | **21.6%** |
| **Applicable Standard =** | **5.00** |
| **Alternative Relative Accuracy =** | **4.3%** |

Part 60, Appendix B, Performance Specification 2,
8.4.1 RA Test Period. Conduct the RA test according to the procedure given in Sections 8.4.2 through 8.4.6 while the affected facility is operating at more than 50 percent of normal load, or as specified in an applicable subpart.
13.2 Relative Accuracy Performance Specification. The RA of the CEMS must be no greater than 20 percent when RM is used in the denominator of Eq. 2-6 (average emissions during test are greater than 50 percent of the emission standard) or 10 percent when the applicable emission standard (permit limit) is used in the denominator of Eq. 2-6 (average emissions during test are less than 50 percent of the emission standard).
Eq. 2.6 RA=([|d|+|CC|]*100)/RM

**Cricket Valley Energy Center, LLC**
**April 4, 2020**
**General Electric, 7F.05, Unit #U-00003**
**NOx RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (lb/hr) | (lb/hr) | (diff) | ($diff^2$) |
| 1 | 17:23 - 17:43 | YES | 349.6 | 13.58 | 14.93 | -1.35 | 1.81 |
| 2 | 17:52 - 18:12 | YES | 349.8 | 13.76 | 14.93 | -1.17 | 1.38 |
| 3 | 18:20 - 18:40 | YES | 350.4 | 13.68 | 14.89 | -1.21 | 1.46 |
| 4 | 18:51 - 19:11 | YES | 350.7 | 13.77 | 14.88 | -1.11 | 1.23 |
| 5 | 19:20 - 19:40 | YES | 351.5 | 13.59 | 14.94 | -1.35 | 1.82 |
| 6 | 19:48 - 20:08 | YES | 351.9 | 12.14 | 13.61 | -1.47 | 2.16 |
| 7 | 20:20 - 20:40 | YES | 352.7 | 13.61 | 15.29 | -1.68 | 2.82 |
| 8 | 20:49 - 21:09 | YES | 353.0 | 12.67 | 14.13 | -1.46 | 2.14 |
| 9 | 21:17 - 21:37 | YES | 353.1 | 13.38 | 15.07 | -1.69 | 2.86 |
| 10 | 21:50 - 22:10 | NO | 351.8 | 13.34 | 15.09 | | |
| 11 | | NO | | | | | |
| 12 | | NO | | | | | |
| | **Total** | | **3162.7** | **120.18** | **132.67** | **-12.49** | **17.68** |
| | **Average** | | **351.4** | **13.35** | **14.74** | **-1.39** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.21 |
| T-value | 2.306 |
| Confidence Coefficient | 0.16 |

**Relative Accuracy = 11.6%**

Part 60, Appendix B, Performance Specification 2,
8.4.1 RA Test Period. Conduct the RA test according to the procedure given in Sections 8.4.2 through 8.4.6 while the affected facility is operating at more than 50 percent of normal load, or as specified in an applicable subpart.
13.2 Relative Accuracy Performance Specification. The RA of the CEMS must be no greater than 20 percent when RM is used in the denominator of Eq. 2-6 (average emissions during test are greater than 50 percent of the emission standard) or 10 percent when the applicable emission standard (permit limit) is used in the denominator of Eq. 2-6 (average emissions during test are less than 50 percent of the emission standard).
Eq. 2.6 RA=([|d|+|CC|]*100)/RM

**Cricket Valley Energy Center, LLC**
**April 4, 2020**
**General Electric, 7F.05, Unit #U-00003**
**CO RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (lb/hr) | (lb/hr) | (diff) | ($diff^2$) |
| 1 | 17:23 - 17:43 | YES | 349.6 | 0.02 | 0.00 | 0.02 | 0.00 |
| 2 | 17:52 - 18:12 | YES | 349.8 | 0.55 | 0.00 | 0.55 | 0.30 |
| 3 | 18:20 - 18:40 | YES | 350.4 | 0.70 | 0.00 | 0.70 | 0.50 |
| 4 | 18:51 - 19:11 | YES | 350.7 | 0.93 | 0.00 | 0.93 | 0.86 |
| 5 | 19:20 - 19:40 | YES | 351.5 | 0.54 | 0.00 | 0.54 | 0.29 |
| 6 | 19:48 - 20:08 | NO | 351.9 | 1.09 | 0.00 | | |
| 7 | 20:20 - 20:40 | YES | 352.7 | 0.83 | 0.00 | 0.83 | 0.69 |
| 8 | 20:49 - 21:09 | YES | 353.0 | 0.84 | 0.00 | 0.84 | 0.71 |
| 9 | 21:17 - 21:37 | YES | 353.1 | 0.82 | 0.00 | 0.82 | 0.67 |
| 10 | 21:50 - 22:10 | YES | 351.8 | 0.81 | 0.00 | 0.81 | 0.66 |
| 11 | | NO | | | | | |
| 12 | | NO | | | | | |
| | **Total** | | **3162.6** | **6.05** | **0.00** | **6.05** | **4.68** |
| | **Average** | | **351.4** | **0.67** | **0.00** | **0.67** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.28 |
| T-value | 2.306 |
| Confidence Coefficient | 0.21 |

| | |
|---|---|
| **Relative Accuracy =** | **131.8%** |
| **\|d (difference in lb/hr)\| + CC =** | **0.89** |

Part 60, Appendix B, Performance Specification 4,
1.2.1 This specification is for evaluating the acceptability of carbon monoxide (CO) continuous emission monitoring systems (CEMS) at the time of installation or soon after and whenever specified in an applicable subpart of the regulations. This specification was developed primarily for CEMS having span values of 1,000 ppmv CO.
13.2 Relative Accuracy. The RA of the CEMS must be no greater than 10 percent when the average RM value is used to calculate RA or 5 percent when the applicable emission standard (permit limit) is used to calculate RA.

Part 60, Appendix B, Performance Specification 4A,
1.2.1 This specification is for evaluating the acceptability of carbon monoxide (CO) continuous emission monitoring systems (CEMS) at the time of installation or soon after and whenever specified in an applicable subpart of the regulations. This specification was developed primarily for CEMS that comply with low emission standards (less than 200 ppmv).
13.2 Relative Accuracy. The RA of the CEMS must be no greater than 10 percent when the average RM value is used to calculate RA, 5 percent when the applicable emission standard (permit limit) is used to calculate RA, or within 5 ppmv when the RA is calculated as the absolute average difference between the RM and CEMS plus the 2.5 percent confidence coefficient.

**Cricket Valley Energy Center, LLC**
**April 4, 2020**
**General Electric, 7F.05, Unit #U-00003**
**$NH_3$ RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (lb/hr) | (lb/hr) | (diff) | ($diff^2$) |
| 1 | 17:23 - 17:43 | YES | 349.6 | 3.93 | 3.09 | 0.84 | 0.70 |
| 2 | 17:52 - 18:12 | YES | 349.8 | 4.15 | 3.10 | 1.05 | 1.11 |
| 3 | 18:20 - 18:40 | NO | 350.4 | 4.23 | 3.17 | | |
| 4 | 18:51 - 19:11 | YES | 350.7 | 4.10 | 3.16 | 0.94 | 0.89 |
| 5 | 19:20 - 19:40 | YES | 351.5 | 3.13 | 3.11 | 0.02 | 0.00 |
| 6 | 19:48 - 20:08 | YES | 351.9 | 2.77 | 3.79 | -1.02 | 1.05 |
| 7 | 20:20 - 20:40 | YES | 352.7 | 2.40 | 3.32 | -0.92 | 0.85 |
| 8 | 20:49 - 21:09 | YES | 353.0 | 3.14 | 3.93 | -0.79 | 0.63 |
| 9 | 21:17 - 21:37 | YES | 353.1 | 3.16 | 3.25 | -0.09 | 0.01 |
| 10 | 21:50 - 22:10 | YES | 351.8 | 3.41 | 3.28 | 0.13 | 0.02 |
| 11 | | NO | | | | | |
| 12 | | NO | | | | | |
| | **Total** | | **3164.1** | **30.19** | **30.03** | **0.16** | **5.26** |
| | **Average** | | **351.6** | **3.35** | **3.34** | **0.02** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.81 |
| T-value | 2.306 |
| Confidence Coefficient | 0.62 |

| | |
|---|---|
| **Relative Accuracy =** | **19.1%** |
| **Applicable Standard* =** | **16.66** |
| **Alternative Relative Accuracy =** | **3.8%** |

* Value calculated using the Applicable Standard of 5 ppm@15%$O_2$ and the average stack flow and $O_2$ concentration for the first three runs.

$$NH_3\ {}^{lb}/_{hr} = \frac{(20.9 - \%O_2) * C_{adj} * Q_s * MW}{(20.9 - 15) * 10^6 * G} = \frac{(20.9 - 13.06) * 5 * 56{,}704{,}028 * 17.03}{(20.9 - 15) * 10^6 * 385.23}$$
$$= 16.66$$

Part 60, Appendix B, Performance Specification 2,
8.4.1 RA Test Period. Conduct the RA test according to the procedure given in Sections 8.4.2 through 8.4.6 while the affected facility is operating at more than 50 percent of normal load, or as specified in an applicable subpart.
13.2 Relative Accuracy Performance Specification. The RA of the CEMS must be no greater than 20 percent when RM is used in the denominator of Eq. 2-6 (average emissions during test are greater than 50 percent of the emission standard) or 10 percent when the applicable emission standard (permit limit) is used in the denominator of Eq. 2-6 (average emissions during test are less than 50 percent of the emission standard).
Eq. 2.6 RA=([|d|+|CC|]*100)/RM

**Cricket Valley Energy Center, LLC**
**April 4, 2020**
**General Electric, 7F.05, Unit #U-00003**
**NOx RATA Data Sheet**
**Cricket Valley Energy Center**

| RUN # | RUN TIME | USED | UNIT LOAD | RM | CEMS | RM-CEMS | |
|---|---|---|---|---|---|---|---|
| | | | (MW) | (lb/MMBtu) | (lb/MMBtu) | (diff) | ($diff^2$) |
| 1 | 17:23 - 17:43 | YES | 349.6 | 0.0056 | 0.0063 | -0.0007 | 0.0000 |
| 2 | 17:52 - 18:12 | YES | 349.8 | 0.0056 | 0.0063 | -0.0007 | 0.0000 |
| 3 | 18:20 - 18:40 | YES | 350.4 | 0.0056 | 0.0062 | -0.0006 | 0.0000 |
| 4 | 18:51 - 19:11 | YES | 350.7 | 0.0056 | 0.0062 | -0.0006 | 0.0000 |
| 5 | 19:20 - 19:40 | YES | 351.5 | 0.0056 | 0.0063 | -0.0007 | 0.0000 |
| 6 | 19:48 - 20:08 | YES | 351.9 | 0.0050 | 0.0057 | -0.0007 | 0.0000 |
| 7 | 20:20 - 20:40 | YES | 352.7 | 0.0055 | 0.0064 | -0.0009 | 0.0000 |
| 8 | 20:49 - 21:09 | YES | 353.0 | 0.0051 | 0.0059 | -0.0008 | 0.0000 |
| 9 | 21:17 - 21:37 | YES | 353.1 | 0.0054 | 0.0063 | -0.0009 | 0.0000 |
| 10 | 21:50 - 22:10 | NO | 351.8 | 0.0054 | 0.0063 | | |
| 11 | | NO | | | | | |
| 12 | | NO | | | | | |
| | **Total** | | **3162.7** | **0.0490** | **0.0556** | **-0.0066** | **0.0000** |
| | **Average** | | **351.4** | **0.0054** | **0.0062** | **-0.0007** | |

| | |
|---|---|
| Number of Runs | 9 |
| Standard Deviation | 0.0001 |
| T-value | 2.306 |
| Confidence Coefficient | 0.0001 |

**Relative Accuracy = 15.05%**

If the mean difference is less than or equal to the absolute value of the confidence coefficient, then the Bias Test passes and the bias adjustment factor is not applicable.

| | |
|---|---|
| Mean Difference = | -0.0007 |
| Confidence Coefficient = | 0.0001 |

BAF = 1 + (abs. value mean difference/avg. CEMS reading)

| | |
|---|---|
| Average CEMS Reading = | 0.0062 |
| **BAF =** | **1.000** |

Part 75, Appendix A,
3.3.2 Relative Accuracy for NOX-Diluent Continuous Emission Monitoring Systems
(a) The relative accuracy for NOX-diluent continuous emission monitoring systems shall not exceed 10.0 percent.
(b) For affected units where the average of the reference method measurements of NOX emission rate (this means lb/MMBtu) during the relative accuracy test audit is less than or equal to 0.200 lb/mmBtu, the difference between the mean value of the continuous emission monitoring system measurements and the reference method mean value shall not exceed ±0.020 lb/mmBtu, wherever the relative accuracy specification of 10.0 percent is not achieved.

7.6.5 Bias Adjustment
(b) For single-load RATAs of SO2 pollutant concentration monitors, NOX concentration monitoring systems, and NOX-diluent monitoring systems and for the single-load flow RATAs required or allowed under section 6.5.2 of this appendix and sections 2.3.1.3(b) and 2.3.1.3(c) of Appendix B to this part, the appropriate BAF is determined directly from the RATA results at normal load, using Equation A-12. Notwithstanding, when a NOX concentration CEMS or an SO2 CEMS or a NOX-diluent CEMS installed on a low-emitting affected unit (i.e., average SO2 or NOX concentration during the RATA ≦ 250 ppm or average NOX emission rate ≦ 0.200 lb/mmBtu) meets the normal 10.0 percent relative accuracy specification (as calculated using Equation A-10) or the alternate relative accuracy specification in section 3.3 of this appendix for low-emitters, but fails the bias test, the BAF may either be determined using Equation A-12, or a default BAF of 1.111 may be used.

Part 75, Appendix B,
2.3.1.2 Reduced RATA Frequencies. Relative accuracy test audits of primary and redundant backup SO2 pollutant concentration monitors, CO2 pollutant concentration monitors (including O2 monitors used to determine CO2 emissions), CO2 or O2 diluent monitors used to determine heat input, moisture monitoring systems, NOX concentration monitoring systems, flow monitors, NOX-diluent monitoring systems or SO2-diluent monitoring systems may be performed annually (i.e., once every four successive QA operating quarters, rather than once every two successive QA operating quarters) if any of the following conditions are met for the specific monitoring system involved:
(a) The relative accuracy during the audit of an SO2 or CO2 pollutant concentration monitor (including an O2 pollutant monitor used to measure CO2 using the procedures in appendix F to this part), or of a CO2 or O2 diluent monitor used to determine heat input, or of a NOX concentration monitoring system, or of a NOX-diluent monitoring system, or of an SO2-diluent continuous emissions monitoring system is ≤ 7.5 percent;

(f) For units with low NOX emission rates (average NOX emission rate measured by the reference method during the RATA ≤ 0.200 lb/mmBtu), when a NOX-diluent continuous emission monitoring system fails to achieve a relative accuracy ≤ 7.5 percent, but the monitoring system mean value from the RATA, calculated using Equation A-7 in appendix A to this part, is within ± 0.015 lb/mmBtu of the reference method mean value;

Figure 2 to Appendix B of Part 75_Relative Accuracy Test Frequency Incentive System.

| RATA | Semiannual(percent)(1) | Annual(1) |
|---|---|---|
| SO2 or NOX(3) | 7.5% < RA ≤ 10.0% or ± 15.0 ppm(2) | RA ≤ 7.5% or ± 12.0 ppm(2) |
| SO2-diluent | 7.5% < RA ≤ 10.0% or ± 0.030 lb/mmBtu(2) | RA ≤ 7.5% or ± 0.025 lb/mmBtu(2) |
| NOX-diluent | 7.5% < RA ≤ 10.0% or ± 0.020 lb/mmBtu(2) | RA ≤ 7.5% or ± 0.015 lb/mmBtu(2) |
| Flow | 7.5% < RA ≤ 10.0% or ± 2.0 fps(2) | RA ≤ 7.5% or ± 1.5 fps |
| CO2 or O2 | 7.5% < RA ≤ 10.0% or ± 1.0% CO2/O2(2) | RA ≤ 7.5% or ± 0.7% CO2/O2(2) |
| Moisture | 7.5% < RA ≤ 10.0% or ± 1.5% H2O(2) | RA ≤ 7.5% or ± 1.0% H2O(2) |

(1) The deadline for the next RATA is the end of the second (if semiannual) or fourth (if annual) successive QA operating quarter following the quarter in which the CEMS was last tested. Exclude calendar quarters with fewer than 168 unit operating hours (or, for common stacks and bypass stacks, exclude quarters with fewer than 168 stack operating hours) in determining the RATA deadline. For SO2 monitors, QA operating quarters in which only very low sulfur fuel as defined in § 72.2, is combusted may also be excluded. However, the exclusion of calendar quarters is limited as follows: the deadline for the next RATA shall be no more than 8 calendar quarters after the quarter in which a RATA was last performed.
(2) The difference between monitor and reference method mean values applies to moisture monitors, CO2, and O2 monitors, low emitters, or low flow, only.
(3) A NOX concentration monitoring system used to determine NOX mass emissions under § 75.71.

# Calculations, Formulas, and Constants

The following information supports the spreadsheets for this testing project.

**Given Data:**

Ideal Gas Conversion Factor = 385.23 SCF/lb-mol at 68 deg F & 14.696 psia

Fuel Heating Value is based upon Air Hygiene's fuel gas calculation sheet. All calculations are based upon a correction to 68 deg F & 14.696 psia

High Heating Values (HHV) are used for the Fuel Heating Value, F-Factor, and Fuel Flow Data per EPA requirements.

**ASTM D 3588**

| | |
|---|---|
| Molecular Weight of NOx (lb/lb-mole) = | 46.01 |
| Molecular Weight of CO (lb/lb-mole) = | 28.00 |
| Molecular Weight of $SO_2$ (lb/lb-mole) = | 64.00 |
| Molecular Weight of THC (propane) (lb/lb-mole) = | 44.00 |
| Molecular Weight of VOC (methane) (lb/lb-mole) = | 16.00 |
| Molecular Weight of $NH_3$ (lb/lb-mole) = | 17.03 |
| Molecular Weight of HCHO (lb/lb-mole) = | 30.03 |
| Molecular Weight of $CO_2$ (lb/lb-mole) = | 44.01 |

**40CFR60, App. A., RM 19, Table 19-1**

| | |
|---|---|
| Conversion Constant for NOx = | 0.0000001194351 |
| Conversion Constant for CO = | 0.0000000726839 |
| Conversion Constant for $SO_2$ = | 0.0000001661345 |
| Conversion Constant for THC = | 0.0000001142175 |
| Conversion Constant for VOC (methane) = | 0.0000000415336 |
| Conversion Constant for $NH_3$ = | 0.0000000442074 |
| Conversion Constant for HCHO = | 0.0000000779534 |
| Conversion Constant for $CO_2$ = | 0.0000001142434 |

NOTE: units are lb/ppm*ft$^3$

**Formulas:**

1. Corrected Raw Average ($C_{Gas}$), 40CFR60, App. A, RM 7E, Eq. 7E-5 (08/15/06)

$$C_{Gas} = (C_{Avg} - C_O) \times \left( \frac{C_{MA}}{C_M - C_O} \right)$$

2. Correction to % $O_2$, 40CFR60, App. A, RM 20, Eq. 20-5 (11/26/02)

$$C_{adj} = C_{Gas(Target)} \times \left( \frac{20.9\% - AdjFactor}{20.9\% - C_{Gas(O2)}} \right)$$

3. Correction to % $O_2$ and ISO Conditions

$$C_{ISO} = C_{Adj} \times \sqrt{\frac{P_r}{P_o}} \times e^{(19 \times (H_O - 0.00633))} \times \left( \frac{288}{T_a} \right)^{1.53}$$

4. Method 19 stack exhaust flow (scfh) [ref. EPA EMC FAQ Method 19]

$$Q_S = \left( \frac{FFactor \times Q_f \times HHV}{1{,}000{,}000} \right) \times \left( \frac{20.9\%}{20.9\% - C_{Gas(O2)}} \right)$$

5. Emission Rate in lb/hr

$$E_{lb/hr} = \frac{C_{Gas}}{10^6} \times \frac{Q_S \times MW}{G}$$

6. Emission Rate in tons per year

$$E_{ton/yr} = \frac{E_{lb/hr} \times hr_{year}}{2000}$$

7. Emission Concentration in lb/MMBtu ($O_2$ based)

$$E_{lb/MMBtu} = \frac{C_{Gas} \times F_d Factor \times Conv_C \times 20.9\%}{20.9\% - C_{Gas(O2)}}$$

8. Emission Concentration in g/hp*hr

$$E_{g/hp \cdot hr} = \frac{E_{lb/hr} \times 453.6}{mw \times 1341.022} or \frac{E_{lb/hr} \times 453.6}{hp}$$

**RATA SHEET CALCULATIONS**

d = Reference Method Data - CEMS Data

$S_d$ = Standard Deviation

CC = Confident Coefficient

n = number of runs

$t_{0.025}$ = 2.5 percent confidence coefficient T-values

RA = relative accuracy

ARA = alternative relative accuracy

BAF = Bias adjustment factor

| n | t | n | t | n | t |
|---|---|---|---|---|---|
| 2 | 12.706 | 7 | 2.447 | 12 | 2.201 |
| 3 | 4.303 | 8 | 2.365 | 13 | 2.179 |
| 4 | 3.182 | 9 | 2.306 | 14 | 2.160 |
| 5 | 2.776 | 10 | 2.262 | 15 | 2.145 |
| 6 | 2.571 | 11 | 2.228 | 16 | 2.131 |

1. Difference

$$d = \sum_{i=1}^{n} d_i$$

2. Standard Deviation

$$S_d = \sqrt{\frac{\sum_{i=1}^{n} d_i^2 - \left[ \frac{\left( \sum_{i=1}^{n} d_i \right)^2}{n} \right]}{n-1}}$$

3. Confident Coefficient

$$CC = t_{0.025} \times \frac{S_d}{\sqrt{n}}$$

4. Relative Accuracy

$$RA = \frac{|d_{AVG}| + |CC|}{RM_{AVG}} \times 100$$

5. Alternative Relative Accuracy

$$ARA = \frac{|d_{AVG}| + |CC|}{AS} \times 100$$

5. Bias Adjustment Factor

$$BAF = 1 + \left( \frac{|d_{AVG}|}{CEM_{AVG}} \right)$$

**RM 7E, (08-15-06), 12.1 Nomenclature. The terms used in the equations are defined as follows:**

ACE = Analyzer calibration error, percent of calibration span.
$B_{WS}$ = Moisture content of sample gas as measured by Method 4 or other approved method, percent/100.
$C_{Avg}$ = Average unadjusted gas concentration indicated by data recorder for the test run.
$C_D$ = Pollutant concentration adjusted to dry conditions.
$C_{Dir}$ = Measured concentration of a calibration gas (low, mid, or high) when introduced in direct calibration mode.
$C_{Gas}$ = Average effluent gas concentration adjusted for bias.
$C_M$ = Average of initial and final system calibration bias (or 2-point system calibration error) check responses for the upscale calibration gas.
$C_{MA}$ = Actual concentration of the upscale calibration gas, ppmv.
$C_O$ = Average of the initial and final system calibration bias (or 2-point system calibration error) check responses from the low-level (or zero) calibration gas.
$C_S$ = Measured concentration of a calibration gas (low, mid, or high) when introduced in system calibration mode.
$C_{SS}$ = Concentration of NOx measured in the spiked sample.
$C_{Spike}$ = Concentration of NOx in the undiluted spike gas.
$C_{Calc}$ = Calculated concentration of NOx in the spike gas diluted in the sample.
$C_V$ = Manufacturer certified concentration of a calibration gas (low, mid, or high).
$C_W$ = Pollutant concentration measured under moist sample conditions, wet basis.
CS = Calibration span.
D = Drift assessment, percent of calibration span.
$E_p$ = The predicted response for the low-level and mid-level gases based on a linear response line between the zero and high-level response.
$Eff_{NO2}$ = $NO_2$ to NO converter efficiency, percent.
H = High calibration gas, designator.
L = Low calibration gas, designator.
M = Mid calibration gas, designator.
NOFinal = The average NO concentration observed with the analyzer in the NO mode during the converter efficiency test in Section 16.2.2.
NOxCorr = The NOx concentration corrected for the converter efficiency.
NOxFinal = The final NOx concentration observed during the converter efficiency test in Section 16.2.2.
NOxPeak = The highest NOx concentration observed during the converter efficiency test in Section 16.2.2.
$Q_{Spike}$ = Flow rate of spike gas introduced in system calibration mode, L/min.
$Q_{Total}$ = Total sample flow rate during the spike test, L/min.
R = Spike recovery, percent.
SB = System bias, percent of calibration span.
$SB_i$ = Pre-run system bias, percent of calibration span.
$SB_f$ = Post-run system bias, percent of calibration span.
SB / $D_{Alt}$ = Alternative absolute difference criteria to pass bias and/or drift checks.
SCE = System calibration error, percent of calibration span.
$SCE_i$ = Pre-run system calibration error, percent of calibration span.
$SCE_{final}$ = Post-run system calibration error, percent of calibration span.
Z = Zero calibration gas, designator.

**40CFR60.355(b)(1), (09-20-06), Nomenclature. The terms used in the equations are defined as follows:**

$P_r$ = reference combustor inlet absolute pressure at 101.3 kilopascals ambient pressure, mm Hg
$P_o$ = observed combustor inlet absolute pressure at test, mm Hg
$H_o$ = observed humidity of ambient air, g $H_2O$/g air
e = transcendental constant, 2.718
$T_a$ = ambient temperature, K

**Small Engine and FTIR Nomenclature. The terms used in the equations are defined as follows:**

bhp = brake horsepower
hp = horsepower
$Q_{sys}$ = system flow (lpm)
$Q_m$ = matrix spike flow (lpm)

**RM 19, (07-29-06), 12.1 Nomenclature. The terms used in the equations are defined as follows:**

AdjFactor = Percent oxygen or carbon dioxide adjustment applied to a target pollutant
$B_{wa}$ = Moisture fraction of ambient air, percent.
Btu = British thermal unit
$\%_C$ = Concentration of carbon from an ultimate analysis of fuel, weight percent.
$\%_{CO2d}$,$\%_{CO2w}$ = Concentration of carbon dioxide on a dry and wet basis, respectively, percent.
CIP / CDP = Combustor inlet pressure / compressor discharge pressure (mm Hg); note, some manufactures reference as PCD.
E = Pollutant emission rate, ng/J (lb/million Btu).
$E_a$ = Average pollutant rate for the specified performance test period, ng/J (lb/million Btu).
$E_{ao}$, $E_{ai}$ = Average pollutant rate of the control device, outlet and inlet, respectively, for the performance test period, ng/J (lb/million Btu).
$E_{bi}$ = Pollutant rate from the steam generating unit, ng/J (lb/million Btu).
$E_{bo}$ = Pollutant emission rate from the steam generating unit, ng/J (lb/million Btu).
$E_{ci}$ = Pollutant rate in combined effluent, ng/J (lb/million Btu).
$E_{co}$ = Pollutant emission rate in combined effluent, ng/J (lb/million Btu).
$E_d$ = Average pollutant rate for each sampling period (e.g.,24-hr Method 6B sample or 24-hr fuel sample) or for each fuel lot (e.g., amount of fuel bunkered), ng/J (lb/million Btu).
$E_{di}$ = Average inlet $SO_2$ rate for each sampling period d, ng/J (lb/million Btu).
$E_g$ = Pollutant rate from gas turbine, ng/J (lb/million Btu).
$E_{ga}$ = Daily geometric average pollutant rate, ng/J (lbs/million Btu) or ppm corrected to 7 percent $O_2$.
$E_{jo}$,$E_{ji}$ = Matched pair hourly arithmetic average pollutant rate, outlet and inlet, respectively, ng/J (lb/million Btu) or ppm corrected to 7 percent $O_2$.
$E_h$ = Hourly average pollutant, ng/J (lb/million Btu).
$E_{hj}$ = Hourly arithmetic average pollutant rate for hour "j," ng/J (lb/million Btu) or ppm corrected to 7 percent $O_2$.
EXP = Natural logarithmic base (2.718) raised to the value enclosed by brackets.
Fc = Ratio of the volume of carbon dioxide produced to the gross calorific value of the fuel from Method 19
$F_d$, $F_w$, $F_c$ = Volumes of combustion components per unit of heat content, scm/J (scf/million Btu).
$ft^3$ = cubic feet
G = ideal gas conversion factor
(385.23 SCF/lb-mol at 68 deg F & 14.696 psia)
GCM = gross Btu per SCF (constant, compound based)
GCV = Gross calorific value of the fuel consistent with the ultimate analysis, kJ/kg (Btu/lb).
$GCV_p$, $GCV_r$ = Gross calorific value for the product and raw fuel lots, respectively, dry basis, kJ/kg (Btu/lb).
$\%_H$ = Concentration of hydrogen from an ultimate analysis of fuel, weight percent.
$H_b$ = Heat input rate to the steam generating unit from fuels fired in the steam generating unit, J/hr (million Btu/hr).
$H_g$ = Heat input rate to gas turbine from all fuels fired in the gas turbine, J/hr (million Btu/hr).
$\%_{H2O}$ = Concentration of water from an ultimate analysis of fuel, weight percent.
$H_r$ = Total numbers of hours in the performance test period (e.g., 720 hours for 30-day performance test period).
K = volume of combustion component per pound of component (constant)
K = Conversion factor, $10^{-5}$ (kJ/J)/(%) [$10^6$ Btu/million Btu].
$K_c$ = (9.57 scm/kg)/% [(1.53 scf/lb)/%].
$K_{cc}$ = (2.0 scm/kg)/% [(0.321 scf/lb)/%].
$K_{hd}$ = (22.7 scm/kg)/% [(3.64 scf/lb)/%].
$K_{hw}$ = (34.74 scm/kg)/% [(5.57 scf/lb)/%].
$K_n$ = (0.86 scm/kg)/% [(0.14 scf/lb)/%].
$K_o$ = (2.85 scm/kg)/% [(0.46 scf/lb)/%].
$K_s$ = (3.54 scm/kg)/% [(0.57 scf/lb)/%].
$K_{sulfur}$ = $2x10^4$ Btu/wt%-MMBtu
$K_w$ = (1.30 scm/kg)/% [(0.21 scf/lb)/%].
lb = pound
ln = Natural log of indicated value.
$L_p$,$L_r$ = Weight of the product and raw fuel lots, respectively, metric ton (ton).
$\%_N$ = Concentration of nitrogen from an ultimate analysis of fuel, weight percent.
$M_{\%}$ = mole percent
mol = mole
MW = molecular weight (lb/lb-mol)
$MW_{AIR}$ = molecular weight of air ( 28.9625 lb/lb-mole)[1]
NCM = net Btu per SCF (constant based on compound)
$\%_O$ = Concentration of oxygen from an ultimate analysis of fuel, weight percent.
$\%_{O2d}$, $\%_{O2w}$ = Concentration of oxygen on a dry and wet basis, respectively, percent.
$P_B$ = barometric pressure, in Hg
$P_s$ = Potential SO2 emissions, percent.
$\%_S$ = Sulfur content of as-fired fuel lot, dry basis, weight percent.
$S_e$ = Standard deviation of the hourly average pollutant rates for each performance test period, ng/J (lb/million Btu).
$\%_{Sf}$ = Concentration of sulfur from an ultimate analysis of fuel, weight percent.
S(wt%) = weight percent of sulfur, per lab analysis by appropriate ASTM standard
$S_i$ = Standard deviation of the hourly average inlet pollutant rates for each performance test period, ng/J (lb/million Btu).
$S_o$ = Standard deviation of the hourly average emission rates for each performance test period, ng/J (lb/million Btu).
$\%S_p$, $\%S_r$ = Sulfur content of the product and raw fuel lots respectively, dry basis, weight percent.
SCF = standard cubic feet
SH = specific humidity, pounds of water per pound of air
$t_{0.95}$ = Values shown in Table 19-3 for the indicated number of data points n.
$T_{amb}$ = ambient temperature, °F
W/D Factor = 1.0236 = conv. at 14.696 psia and
68 deg F (ref. Civil Eng. Ref. Manual, 7th Ed.)
$X_{CO2}$=$CO_2$ Correction factor, percent.
$X_k$ = Fraction of total heat input from each type of fuel k.

**EXAMPLE CALCULATIONS (INFORMATION)**

**Specific Humidity ($RH_{sp}$)**

Note: RHsp (gr/lb) calculated using temperature, relative humidity, and barometric pressure with psychrometric chart, psychrometric calculator, or built in psychrometric algorithm.

$$RH_{sp}(lb/lb) = \left[\left(\frac{gr}{lb}\right) \times \frac{lb}{7000\ gr}\right]$$

$RH_{sp}$= 36.54 gr / lb x 1 lb / 7000 gr = 0.005221 lb $H_2O$ / lb Air

**EXAMPLE CALCULATIONS (CALIBRATION)**

**Analyzer Calibration Error**

RM 7E, (02-27-14), 12.2 Analyzer Calibration Error. For non-dilution systems, use Equation 7E-1 to calculate the analyzer calibration error for the low-, mid-, and high-level calibration gases. (calc for NOx analyzer mid gas, if applicable)

$$ACE = \left(\frac{C_{Dir} - C_V}{CS}\right) \times 100$$ Eq. 7E-1

ACE = (4.56 ppm - 4.55 ppm) / 8.90 ppm x 100 = 0.11 %

**EXAMPLE CALCULATIONS (BIAS, DRIFT, AND CORRECTED RAW AVERAGE)**

**System Bias**

RM 7E, (02-27-14), 12.3 System Bias. For non-dilution systems, use Equation 7E-2 to calculate the system bias separately for the low-level and upscale calibration gases. (calc for NOx analyzer upscale gas, Run 1 initial bias, if applicable)

$$SB = \left(\frac{C_S - C_{Dir}}{CS}\right) \times 100$$ Eq. 7E-2

SB = (4.58 ppm - 4.56 ppm) / 8.90 ppm x 100 = 0.22 %

**Drift Assessment**

RM 7E, (02-27-14), 12.5 Drift Assessment. Use Equation 7E-4 to separately calculate the low-level and upscale drift over each test run. (calc for NOx analyzer upscale drift, Run 1, if applicable)

$$D = \left|SB_{final} - SB_t\right|$$ Eq. 7E-4

D = | 0.00 % - 0.22 % | = 0.22 %

**Alternative Drift and Bias**

RM 7E, (02-27-14), 13.2 / 13.3 System Bias and Drift. Alternatively, the results are acceptable if |Cs – Cdir| is ≤ 0.5 ppmv or if |Cs – Cv| is ≤ 0.5 ppmv (as applicable). (calc for NOx analyzer initial upscale, Run 1, if applicable)

$$SB/D_{Alt} = \left|C_S - C_{Dir}\right|$$ Eq. Section 13.2 and 13.3

$SB / D_{Alt}$ = | 4.58 ppm - 4.56 ppm | = 0.02 ppm

**Bias Adjusted Average**

RM 7E, (02-27-14), 12.6 Effluent Gas Concentration. For each test run, calculate Cavg, the arithmetic average of all valid NOx concentration values (e.g., 1-minute averages). Then adjust the value of Cavg for bias, using Equation 7E-5b. (calc for NOx analyzer, Run 1, if applicable)

$$C_{Gas} = \left(C_{Avg} - C_O\right) \times \left(\frac{C_{MA}}{C_M - C_O}\right)$$ Eq. 7E-5b

$C_{Gas}$ = (1.96 ppm - -0.09 ppm) (4.55 ppm / 4.57 ppm - -0.09 ppm) = 2.00 ppm

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (RUNS)**

**Stack Exhaust Flow ($Q_S$) - RM19**

$$Q_S = \left(\frac{FFactor \times Q_f \times HHV}{1{,}000{,}000}\right) \times \left(\frac{20.9\%}{20.9\% - C_{Gas\,(O2)}}\right)$$

Note: Equation presented in EPA Emission Measurement Center (EMC), Frequently Asked Questions (FAQ) for Method 19

$Q_S$ = 8,710.00 SCF/MMBtu x 2,322,450.00 SCF/hr x 1,050.00 Btu/SCF x MMBtu/$10^6$ Btu x (20.90% / (20.9% - 13.1 %)) = 56,738,224.23 SCFH

**Moisture Correction**

RM 7E, (02-27-14), 12.10 Moisture Correction. Use Equation 7E-10 if your measurements need to be corrected to a dry basis. (calc for NOx analyzer, Run 1, if applicable) Note: Calculations may not match as Run 1 results are typically also bias adjusted

$$C_W = C_D \times (1 - B_{WS})$$

$$C_D = \frac{C_W}{1 - B_{WS}}$$ Eq. 7E-10

$C_D$ = 1.84 ppmvw / (1 - 0.08) = 2.00 ppmvd or inversely, $C_W$ = 2.00 ppmvd x (1 - 0.08) = 1.84 ppmvw

**Diluent-Corrected Pollutant Concentration, $O_2$ Based**

RM 20, (11-26-02), 7.3.1 Correction of Pollutant Concentration Using $O_2$ Concentration. Calculate the $O_2$ corrected pollutant concentration, as follows: (calc for NOx gas, Run 1, if applicable) [now contained in applicable Subpart]

$$C_{adj} = C_{Gas\,(Target)} \times \left(\frac{20.9\% - AdjFactor}{20.9\% - C_{Gas\,(O2)}}\right)$$ Eq. 20-4

$C_{adj}$ = 2.00 ppm x (20.9% - 15.00 %) / (20.9% - 13.08 %) = 1.51 ppm@15%$O_2$

**Emissions Rate (lb/hr)**

Calculation for pound per hour emission rate. Calculate, as follows: (calc for NOx gas Run 1, if applicable)

$$E_{lb/hr} = \frac{C_{Gas}}{10^6} \times \frac{Q_S \times MW}{G}$$

$E_{lb/hr}$ = 2.00 ppmvd / $10^6$ ppm/part x 56,738,224 DSCFH x 46.01 lb/lb-mol / 385.23 SCF/lb-mol = 13.58 lb/hr

**Emissions Rate (lb/MMBtu)**

RM 19, (02-27-14), 12.2 Emission Rates of PM, $SO_2$, and NOx. Select from the following sections the applicable procedure to compute the PM, $SO_2$, or NOx emission rate (E) in ng/J (lb/million Btu). (calc for NOx gas Run 1, if applicable)

**Oxygen Based**

12.2.1 Oxygen-Based F Factor, Dry Basis. When measurements are on a dry basis for both $O_2$ ($\%O_2d$) and pollutant (Cd) concentrations, use the following equation:

$$E_{lb/MMBtu} = \frac{C_{Gas} \times F_d Factor \times Conv_C \times 20.9\%}{20.9\% - C_{Gas(O2)}}$$ Eq. 19-1

$E_{lb/MMBtu}$ = 2.00 ppm x 8,710.00 SCF/MMBtu x 0.0000001194 lb/ppm*$ft^3$ x 20.9% / (20.9% - 13.08 %) = 0.006 lb/MMBtu

**Conversion Constant**

Convc for NOx

$$Conv_c(lb/ppm \cdot ft^3) = \frac{\frac{MW}{G}}{10^6}$$

$Conv_c$ = (46.01 lb/lb•mole x lb•mole/385.23 SCF) / $10^6$ = 0.0000001194 lb/ppm-$ft^3$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

**EXAMPLE CALCULATIONS (RATA RESULTS)**

**Difference (d)**

40 CFR 75, App A, (12-17-09), 7.3.1 Arithmetic Mean. Calculate the arithmetic mean of the differences, d , of a data set as follows. (calc for NOx lb/MMBtu data, if applicable. Note: This is an example calculation which may not have any bearing on the actual test requirements.)

$$d = \sum_{i=1}^{n} d_i$$ Eq. A-7

d = 0.005 lb/MMBtu - 0.006 lb/MMBtu = -0.001 lb/MMBtu

**Standard Deviation**

40 CFR 75, App A, (12-17-09), 7.3.2 Standard Deviation. Calculate the standard deviation, Sd, of a data set as follows:
(calc for NOx lb/MMBtu data, if applicable. Note: This is an example calculation which may not have any bearing on the actual test requirements.)

$$S_d = \sqrt{\frac{\sum_{i=1}^{n} d_i^2 - \frac{\left[\left(\sum_{i=1}^{n} d_i\right)^2\right]}{n}}{n-1}}$$ Eq. A-8

$$S_d = \sqrt{\frac{0.000 \text{ lb/MMBtu}^2 - \frac{(-0.007 \text{ lb/MMBtu})^2}{9}}{9 - 1}} = 0.000 \text{ lb/MMBtu}$$

**Confidence Coefficient**

40 CFR 75, App A, (12-17-09), 7.3.3 Confidence Coefficient. Calculate the confidence coefficient (one-tailed), cc, of a data set as follows. (calc for NOx lb/MMBtu data, if applicable. Note: This is an example calculation which may not have any bearing on the actual test requirements.)

$$CC = t_{0.025} \times \frac{S_d}{\sqrt{n}}$$ Eq. A-9

CC = 2.306 x $\frac{0.000 \text{ lb/MMBtu}}{\sqrt{9}}$ = 0.000 lb/MMBtu

| T-Values | n | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| | $t_{0.025}$ | 12.706 | 4.303 | 3.182 | 2.776 | 2.571 | 2.447 | 2.365 | 2.306 |

2.5 percent confidence coefficients

**Relative Accuracy**

40 CFR 75, App A, (12-17-09), 7.3.4 Relative Accuracy. Calculate the relative accuracy of a data set using the following equation. (calc for NOx lb/MMBtu data, if applicable. Note: This is an example calculation which may not have any bearing on the actual test requirements.)

$$RA = \frac{|d_{AVG}| + |CC|}{RM_{AVG}} \times 100$$ Eq. A-10

RA = $\frac{|-0.001 \text{ lb/MMBtu}| + |0.000 \text{ lb/MMBtu}|}{0.005 \text{ lb/MMBtu}}$ x 100 = 15.05 %

**Bias Adjustment Factor (BAF)**

40 CFR 75, App A, (12-17-09), 7.6.5 Bias Adjustment. (a) If the monitor or monitoring system fails to meet the bias test requirement, adjust the value obtained from the monitor using the following equation: (calc for NOx lb/MMBtu data, if applicable. Note: This is an example calculation which may not have any bearing on the actual test requirements.)

$$BAF = 1 + \left(\frac{|d_{AVG}|}{CEM_{AVG}}\right)$$ Eq. A-12

$d_{AVG}$= -0.001 < |CC| = 0.000 ⇨ BAF = 1 + $\frac{|\quad| \text{ lb/MMBtu}}{\text{lb/MMBtu}}$ = 1.000 lb/MMBtu

Note: BAF only applies if the mean difference (d) is greater than the absolute value of the confidence coefficient.

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

# APPENDIX B

# CEMS AND REFERENCE METHOD DATA

# Cricket Valley Energy Center, LLC

| | |
|---|---|
| **Air Permit Number:** | 3-1326-00275/00009 |
| **Plant Name or Location:** | Cricket Valley Energy Center |
| **Date:** | April 4, 2020 |
| **Project Number:** | cis-19-cricketvalley.ny-start#1 |
| **Manufacturer & Equipment:** | General Electric |
| **Model:** | 7F.05 |
| **Unit Number:** | U-00003 |
| **Test Load:** | Base Load |
| **Tester(s) / Test Unit(s):** | MM/215 |

| | | RUN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **UNITS** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
| **Start Time** | hh:mm:ss | 17:23:02 | 17:52:02 | 18:20:04 | 18:51:19 | 19:20:23 | 19:48:23 | 20:20:13 | 20:49:13 | 21:17:13 | 21:50:13 |
| **End Time** | hh:mm:ss | 17:43:32 | 18:12:32 | 18:40:34 | 19:11:49 | 19:40:53 | 20:08:53 | 20:40:43 | 21:09:43 | 21:37:43 | 22:10:43 |
| **Bar. Pressure** | in. Hg | 29.47 | 29.48 | 29.48 | 29.49 | 29.49 | 29.50 | 29.51 | 29.51 | 29.52 | 29.52 |
| **Amb. Temp.** | °F | 60 | 58 | 58 | 57 | 56 | 56 | 53 | 53 | 52 | 52 |
| **Rel. Humidity** | % | 47 | 50 | 52 | 54 | 56 | 58 | 64 | 66 | 66 | 67 |
| **Spec. Humidity** | lb water / lb air | 0.005221 | 0.005168 | 0.005377 | 0.005384 | 0.005385 | 0.005577 | 0.005514 | 0.005688 | 0.005478 | 0.005562 |
| **Turbine Fuel Flow** | SCFH | 2,322,450 | 2,324,900 | 2,327,760 | 2,327,760 | 2,331,020 | 2,335,100 | 2,339,180 | 2,342,860 | 2,344,080 | 2,346,940 |
| **Total Fuel Flow** | SCFH | 2,322,450 | 2,324,900 | 2,327,760 | 2,327,760 | 2,331,020 | 2,335,100 | 2,339,180 | 2,342,860 | 2,344,080 | 2,346,940 |
| **Power Output** | megawatts | 349.6 | 349.8 | 350.4 | 350.7 | 351.5 | 351.9 | 352.7 | 353.0 | 353.1 | 351.8 |
| **$O_2$ CEMS Data** | %vd | 13.08 | 13.08 | 13.07 | 13.06 | 13.05 | 13.04 | 13.03 | 13.02 | 13.02 | 13.02 |
| **NOx CEMS Data** | ppmvd@15%$O_2$ | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.55 | 1.73 | 1.60 | 1.70 | 1.70 |
| | lb/hr | 14.93 | 14.93 | 14.89 | 14.88 | 14.94 | 13.61 | 15.29 | 14.13 | 15.07 | 15.09 |
| | lb/MMBtu | 0.0063 | 0.0063 | 0.0062 | 0.0062 | 0.0063 | 0.0057 | 0.0064 | 0.0059 | 0.0063 | 0.0063 |
| **CO CEMS Data** | ppmvd@15%$O_2$ | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | lb/hr | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **$NH_3$ CEMS Data** | ppmvd@15%$O_2$ | 0.97 | 0.97 | 0.99 | 0.98 | 0.98 | 1.18 | 1.02 | 1.21 | 0.99 | 1.00 |
| | lb/hr | 3.09 | 3.10 | 3.17 | 3.16 | 3.11 | 3.79 | 3.32 | 3.93 | 3.25 | 3.28 |
| **$NH_3$ RM Data** | ppmvd@15%$O_2$ | 1.18 | 1.25 | 1.27 | 1.23 | 0.94 | 0.83 | 0.72 | 0.94 | 0.94 | 1.02 |
| | lb/hr | 3.93 | 4.15 | 4.23 | 4.10 | 3.13 | 2.77 | 2.40 | 3.14 | 3.16 | 3.41 |

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# CEMS AND REFERENCE METHOD DATA

## CEMS Data
## (provided by Cricket Valley Energy Center LLC)

**Relative Accuracy Test Data**
**CEMS Results (NOx)**
**General Electric, 7F.05, Unit #U-00003**

| | |
|---|---|
| Parameter: | Oxides of Nitrogen |
| Date of Test: | April 4, 2020 |
| Reference Method: | EPA Method 7E |
| CEMS Analyzer Type: | Chemiluminescence |
| Manufacturer: | TAPI |
| Model #: | T200M |
| Serial #: | 1014 |

| RUN # | RUN TIME | UNIT LOAD | CONCENTRATIONS | | RATES | |
|---|---|---|---|---|---|---|
| | | (MW) | (ppmvd) | (ppmvd@15%$O_2$) | (lb/hr) | (lb/MMBtu) |
| 1 | 17:23 - 17:43 | 349.6 | | 1.70 | 14.93 | 0.0063 |
| 2 | 17:52 - 18:12 | 349.8 | | 1.70 | 14.93 | 0.0063 |
| 3 | 18:20 - 18:40 | 350.4 | | 1.70 | 14.89 | 0.0062 |
| 4 | 18:51 - 19:11 | 350.7 | | 1.70 | 14.88 | 0.0062 |
| 5 | 19:20 - 19:40 | 351.5 | | 1.70 | 14.94 | 0.0063 |
| 6 | 19:48 - 20:08 | 351.9 | | 1.55 | 13.61 | 0.0057 |
| 7 | 20:20 - 20:40 | 352.7 | | 1.73 | 15.29 | 0.0064 |
| 8 | 20:49 - 21:09 | 353.0 | | 1.60 | 14.13 | 0.0059 |
| 9 | 21:17 - 21:37 | 353.1 | | 1.70 | 15.07 | 0.0063 |
| 10 | 21:50 - 22:10 | 351.8 | | 1.70 | 15.09 | 0.0063 |
| 11 | | | | | | |
| 12 | | | | | | |

**Relative Accuracy Test Data**
**CEMS Results (CO)**
**General Electric, 7F.05, Unit #U-00003**

| | |
|---|---|
| Parameter: | Carbon Monoxide |
| Date of Test: | April 4, 2020 |
| Reference Method: | EPA Method 10 |
| CEMS Analyzer Type: | Infrared Absorption |
| Manufacturer: | TAPI |
| Model #: | T300M |
| Serial #: | 520 |

| RUN # | RUN TIME | UNIT LOAD | CONCENTRATIONS | | RATES | |
|---|---|---|---|---|---|---|
| | | (MW) | (ppmvd) | (ppmvd@15%$O_2$) | (lb/hr) | (lb/MMBtu) |
| 1 | 17:23 - 17:43 | 349.6 | | 0.00 | 0.00 | |
| 2 | 17:52 - 18:12 | 349.8 | | 0.00 | 0.00 | |
| 3 | 18:20 - 18:40 | 350.4 | | 0.00 | 0.00 | |
| 4 | 18:51 - 19:11 | 350.7 | | 0.00 | 0.00 | |
| 5 | 19:20 - 19:40 | 351.5 | | 0.00 | 0.00 | |
| 6 | 19:48 - 20:08 | 351.9 | | 0.00 | 0.00 | |
| 7 | 20:20 - 20:40 | 352.7 | | 0.00 | 0.00 | |
| 8 | 20:49 - 21:09 | 353.0 | | 0.00 | 0.00 | |
| 9 | 21:17 - 21:37 | 353.1 | | 0.00 | 0.00 | |
| 10 | 21:50 - 22:10 | 351.8 | | 0.00 | 0.00 | |
| 11 | | | | | | |
| 12 | | | | | | |

**Relative Accuracy Test Data**
**CEMS Results ($NH_3$)**
**General Electric, 7F.05, Unit #U-00003**

| | |
|---|---|
| Parameter: | Ammonia |
| Date of Test: | April 4, 2020 |
| Reference Method: | EPA Method 7E |
| CEMS Analyzer Type: | Dual NOx w/ NH3 conversion |
| Manufacturer: | TAPI |
| Model #: | T200M |
| Serial #: | 1049 |

| RUN # | RUN TIME | UNIT LOAD | CONCENTRATIONS | | RATES | |
|---|---|---|---|---|---|---|
| | | (MW) | (ppmvd) | (ppmvd@15%$O_2$) | (lb/hr) | (lb/MMBtu) |
| 1 | 17:23 - 17:43 | 349.6 | | 0.97 | 3.09 | |
| 2 | 17:52 - 18:12 | 349.8 | | 0.97 | 3.10 | |
| 3 | 18:20 - 18:40 | 350.4 | | 0.99 | 3.17 | |
| 4 | 18:51 - 19:11 | 350.7 | | 0.98 | 3.16 | |
| 5 | 19:20 - 19:40 | 351.5 | | 0.98 | 3.11 | |
| 6 | 19:48 - 20:08 | 351.9 | | 1.18 | 3.79 | |
| 7 | 20:20 - 20:40 | 352.7 | | 1.02 | 3.32 | |
| 8 | 20:49 - 21:09 | 353.0 | | 1.21 | 3.93 | |
| 9 | 21:17 - 21:37 | 353.1 | | 0.99 | 3.25 | |
| 10 | 21:50 - 22:10 | 351.8 | | 1.00 | 3.28 | |
| 11 | | | | | | |
| 12 | | | | | | |

**Relative Accuracy Test Data**
**CEMS Results ($O_2$)**
**General Electric, 7F.05, Unit #U-00003**

| | |
|---|---|
| Parameter: | Oxygen |
| Date of Test: | April 4, 2020 |
| Reference Method: | EPA Method 3A |
| CEMS Analyzer Type: | Paramagnetic Cell |
| Manufacturer: | TAPI |
| Model #: | T802 |
| Serial #: | 151 |

| RUN # | RUN TIME | UNIT LOAD (MW) | CONC. (%vd) |
|---|---|---|---|
| 1 | 17:23 - 17:43 | 349.6 | 13.08 |
| 2 | 17:52 - 18:12 | 349.8 | 13.08 |
| 3 | 18:20 - 18:40 | 350.4 | 13.07 |
| 4 | 18:51 - 19:11 | 350.7 | 13.06 |
| 5 | 19:20 - 19:40 | 351.5 | 13.05 |
| 6 | 19:48 - 20:08 | 351.9 | 13.04 |
| 7 | 20:20 - 20:40 | 352.7 | 13.03 |
| 8 | 20:49 - 21:09 | 353.0 | 13.02 |
| 9 | 21:17 - 21:37 | 353.1 | 13.02 |
| 10 | 21:50 - 22:10 | 351.8 | 13.02 |
| 11 | | | |
| 12 | | | |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 4/4/2020 5:23 PM thru 4/4/2020 5:43 PM

| Timestamp | (Turbine 3) NOx ppm @15% O2 1-Min | (Turbine 3) 75-NOx lb/mmBtu 1-Min | (Turbine 3) NOx lb/hr 1-Min | (Turbine 3) CO ppm @15% O2 1-Min | (Turbine 3) CO lb/hr 1-Min | (Turbine 3) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|
| 4/4 17:23 | 1.72 | 0.0063 | 14.94 | 0.00 | 0.00 | 0.96 |
| 4/4 17:24 | 1.71 | 0.0063 | 14.94 | 0.00 | 0.00 | 0.96 |
| 4/4 17:25 | 1.71 | 0.0063 | 15.00 | 0.00 | 0.00 | 0.95 |
| 4/4 17:26 | 1.71 | 0.0063 | 15.11 | 0.00 | 0.00 | 0.96 |
| 4/4 17:27 | 1.71 | 0.0063 | 15.00 | 0.00 | 0.00 | 0.96 |
| 4/4 17:28 | 1.70 | 0.0063 | 14.94 | 0.00 | 0.00 | 0.96 |
| 4/4 17:29 | 1.70 | 0.0063 | 14.94 | 0.00 | 0.00 | 0.96 |
| 4/4 17:30 | 1.71 | 0.0063 | 15.11 | 0.00 | 0.00 | 0.97 |
| 4/4 17:31 | 1.71 | 0.0063 | 15.06 | 0.00 | 0.00 | 0.97 |
| 4/4 17:32 | 1.68 | 0.0062 | 14.65 | 0.00 | 0.00 | 0.97 |
| 4/4 17:33 | 1.67 | 0.0062 | 14.71 | 0.00 | 0.00 | 0.97 |
| 4/4 17:34 | 1.67 | 0.0062 | 14.82 | 0.00 | 0.00 | 0.97 |
| 4/4 17:35 | 1.68 | 0.0062 | 14.87 | 0.00 | 0.00 | 0.97 |
| 4/4 17:36 | 1.67 | 0.0062 | 14.71 | 0.00 | 0.00 | 0.97 |
| 4/4 17:37 | 1.68 | 0.0062 | 14.71 | 0.00 | 0.00 | 0.97 |
| 4/4 17:38 | 1.71 | 0.0063 | 15.00 | 0.00 | 0.00 | 0.97 |
| 4/4 17:39 | 1.72 | 0.0063 | 15.11 | 0.00 | 0.00 | 0.96 |
| 4/4 17:40 | 1.72 | 0.0063 | 15.00 | 0.00 | 0.00 | 0.97 |
| 4/4 17:41 | 1.71 | 0.0063 | 14.89 | 0.00 | 0.00 | 0.97 |
| 4/4 17:42 | 1.70 | 0.0063 | 14.94 | 0.00 | 0.00 | 0.97 |
| 4/4 17:43 | 1.70 | 0.0063 | 15.06 | 0.00 | 0.00 | 0.96 |
| Average (all) | 1.70 | 0.0063 | 14.93 | 0.00 | 0.00 | 0.97 |
| Total (all) | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 1.67 | 0.0062 | 14.65 | 0.00 | 0.00 | 0.95 |
| Maximum (all) | 1.72 | 0.0063 | 15.11 | 0.00 | 0.00 | 0.97 |
| Average (valid values only) | 1.70 | 0.0063 | 14.93 | 0.00 | 0.00 | 0.97 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 4/4/2020 5:23 PM thru 4/4/2020 5:43 PM

| Timestamp | (Turbine 3) NH3 Slip lb/hr 1-Min | (Turbine 3) 60-O2 % 1-Min | (Turbine 3) Total Gas Flow hscf/hr 1-Min | (Turbine 3) GT Megawatts 1-Min | (Turbine 3) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 4/4 17:23 | 3.08 | 13.08 | 23142.9 | 230.2 | 349.7 |
| 4/4 17:24 | 3.08 | 13.08 | 23142.9 | 229.9 | 349.3 |
| 4/4 17:25 | 3.10 | 13.08 | 23228.6 | 230.3 | 349.7 |
| 4/4 17:26 | 3.12 | 13.08 | 23400.0 | 230.2 | 349.7 |
| 4/4 17:27 | 3.10 | 13.08 | 23228.6 | 230.2 | 349.6 |
| 4/4 17:28 | 3.08 | 13.08 | 23142.9 | 230.3 | 349.8 |
| 4/4 17:29 | 3.08 | 13.08 | 23142.9 | 230.2 | 349.7 |
| 4/4 17:30 | 3.12 | 13.08 | 23400.0 | 230.2 | 349.7 |
| 4/4 17:31 | 3.11 | 13.08 | 23314.3 | 230.1 | 349.5 |
| 4/4 17:32 | 3.07 | 13.08 | 23057.1 | 230.2 | 349.7 |
| 4/4 17:33 | 3.08 | 13.08 | 23142.9 | 230.2 | 349.7 |
| 4/4 17:34 | 3.11 | 13.08 | 23314.3 | 230.0 | 349.4 |
| 4/4 17:35 | 3.12 | 13.08 | 23400.0 | 230.1 | 349.6 |
| 4/4 17:36 | 3.08 | 13.08 | 23142.9 | 230.1 | 349.5 |
| 4/4 17:37 | 3.08 | 13.08 | 23142.9 | 230.0 | 349.5 |
| 4/4 17:38 | 3.10 | 13.08 | 23228.6 | 230.4 | 349.9 |
| 4/4 17:39 | 3.12 | 13.08 | 23400.0 | 230.0 | 348.9 |
| 4/4 17:40 | 3.10 | 13.08 | 23228.6 | 230.2 | 349.7 |
| 4/4 17:41 | 3.07 | 13.08 | 23057.1 | 230.1 | 349.6 |
| 4/4 17:42 | 3.08 | 13.08 | 23142.9 | 230.2 | 349.7 |
| 4/4 17:43 | 3.11 | 13.08 | 23314.3 | 230.2 | 349.7 |
| Average (all) | 3.09 | 13.08 | 23224.5 | 230.2 | 349.6 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 3.07 | 13.08 | 23057.1 | 229.9 | 348.9 |
| Maximum (all) | 3.12 | 13.08 | 23400.0 | 230.4 | 349.9 |
| Average (valid values only) | 3.09 | 13.08 | 23224.5 | 230.2 | 349.6 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 4/4/2020 5:52 PM thru 4/4/2020 6:12 PM

| Timestamp | (Turbine 3) NOx ppm @15% O2 1-Min | (Turbine 3) 75-NOx lb/mmBtu 1-Min | (Turbine 3) NOx lb/hr 1-Min | (Turbine 3) CO ppm @15% O2 1-Min | (Turbine 3) CO lb/hr 1-Min | (Turbine 3) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|
| 4/4 17:52 | 1.71 | 0.0063 | 15.11 | 0.00 | 0.00 | 0.96 |
| 4/4 17:53 | 1.71 | 0.0063 | 15.06 | 0.00 | 0.00 | 0.97 |
| 4/4 17:54 | 1.69 | 0.0062 | 14.71 | 0.00 | 0.00 | 0.97 |
| 4/4 17:55 | 1.67 | 0.0061 | 14.47 | 0.00 | 0.00 | 0.97 |
| 4/4 17:56 | 1.66 | 0.0061 | 14.58 | 0.00 | 0.00 | 0.97 |
| 4/4 17:57 | 1.67 | 0.0062 | 14.87 | 0.00 | 0.00 | 0.97 |
| 4/4 17:58 | 1.69 | 0.0062 | 14.71 | 0.00 | 0.00 | 0.97 |
| 4/4 17:59 | 1.71 | 0.0063 | 14.94 | 0.00 | 0.00 | 0.96 |
| 4/4 18:00 | 1.73 | 0.0064 | 15.29 | 0.00 | 0.00 | 0.96 |
| 4/4 18:01 | 1.74 | 0.0064 | 15.41 | 0.00 | 0.00 | 0.95 |
| 4/4 18:02 | 1.74 | 0.0064 | 15.18 | 0.00 | 0.00 | 0.96 |
| 4/4 18:03 | 1.72 | 0.0063 | 14.94 | 0.00 | 0.00 | 0.96 |
| 4/4 18:04 | 1.71 | 0.0063 | 15.00 | 0.00 | 0.00 | 0.95 |
| 4/4 18:05 | 1.71 | 0.0063 | 15.11 | 0.00 | 0.00 | 0.96 |
| 4/4 18:06 | 1.69 | 0.0062 | 14.82 | 0.00 | 0.00 | 0.97 |
| 4/4 18:07 | 1.69 | 0.0062 | 14.65 | 0.00 | 0.00 | 0.97 |
| 4/4 18:08 | 1.70 | 0.0063 | 14.94 | 0.00 | 0.00 | 0.97 |
| 4/4 18:09 | 1.71 | 0.0063 | 15.06 | 0.00 | 0.00 | 0.97 |
| 4/4 18:10 | 1.72 | 0.0063 | 15.11 | 0.00 | 0.00 | 0.97 |
| 4/4 18:11 | 1.71 | 0.0063 | 14.94 | 0.00 | 0.00 | 0.98 |
| 4/4 18:12 | 1.69 | 0.0062 | 14.71 | 0.00 | 0.00 | 0.97 |
| Average (all) | 1.70 | 0.0063 | 14.93 | 0.00 | 0.00 | 0.97 |
| Total (all) | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 1.66 | 0.0061 | 14.47 | 0.00 | 0.00 | 0.95 |
| Maximum (all) | 1.74 | 0.0064 | 15.41 | 0.00 | 0.00 | 0.98 |
| Average (valid values only) | 1.70 | 0.0063 | 14.93 | 0.00 | 0.00 | 0.97 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 4/4/2020 5:52 PM thru 4/4/2020 6:12 PM

| Timestamp | (Turbine 3) NH3 Slip lb/hr 1-Min | (Turbine 3) 60-O2 % 1-Min | (Turbine 3) Total Gas Flow hscf/hr 1-Min | (Turbine 3) GT Megawatts 1-Min | (Turbine 3) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 4/4 17:52 | 3.12 | 13.08 | 23400.0 | 230.4 | 350.0 |
| 4/4 17:53 | 3.11 | 13.08 | 23314.3 | 230.4 | 349.9 |
| 4/4 17:54 | 3.08 | 13.08 | 23142.9 | 230.2 | 349.7 |
| 4/4 17:55 | 3.08 | 13.08 | 23142.9 | 230.4 | 350.0 |
| 4/4 17:56 | 3.11 | 13.08 | 23314.3 | 230.4 | 350.0 |
| 4/4 17:57 | 3.12 | 13.08 | 23400.0 | 230.5 | 350.0 |
| 4/4 17:58 | 3.08 | 13.08 | 23142.9 | 230.4 | 350.0 |
| 4/4 17:59 | 3.08 | 13.08 | 23142.9 | 230.2 | 349.7 |
| 4/4 18:00 | 3.11 | 13.08 | 23314.3 | 230.4 | 350.0 |
| 4/4 18:01 | 3.13 | 13.08 | 23485.7 | 230.5 | 350.1 |
| 4/4 18:02 | 3.08 | 13.08 | 23142.9 | 230.3 | 349.9 |
| 4/4 18:03 | 3.08 | 13.08 | 23142.9 | 230.5 | 350.1 |
| 4/4 18:04 | 3.10 | 13.08 | 23228.6 | 230.3 | 349.9 |
| 4/4 18:05 | 3.12 | 13.08 | 23400.0 | 230.4 | 350.0 |
| 4/4 18:06 | 3.11 | 13.08 | 23314.3 | 230.2 | 349.5 |
| 4/4 18:07 | 3.07 | 13.08 | 23057.1 | 230.3 | 349.1 |
| 4/4 18:08 | 3.08 | 13.08 | 23142.9 | 230.5 | 349.2 |
| 4/4 18:09 | 3.11 | 13.08 | 23314.3 | 230.2 | 349.2 |
| 4/4 18:10 | 3.12 | 13.08 | 23400.0 | 230.5 | 349.0 |
| 4/4 18:11 | 3.08 | 13.08 | 23142.9 | 230.3 | 349.6 |
| 4/4 18:12 | 3.08 | 13.08 | 23142.9 | 230.4 | 349.9 |
| Average (all) | 3.10 | 13.08 | 23249.0 | 230.4 | 349.8 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 3.07 | 13.08 | 23057.1 | 230.2 | 349.0 |
| Maximum (all) | 3.13 | 13.08 | 23485.7 | 230.5 | 350.1 |
| Average (valid values only) | 3.10 | 13.08 | 23249.0 | 230.4 | 349.8 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 4/4/2020 6:20 PM thru 4/4/2020 6:40 PM

| Timestamp | (Turbine 3) NOx ppm @15% O2 1-Min | (Turbine 3) 75-NOx lb/mmBtu 1-Min | (Turbine 3) NOx lb/hr 1-Min | (Turbine 3) CO ppm @15% O2 1-Min | (Turbine 3) CO lb/hr 1-Min | (Turbine 3) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|
| 4/4 18:20 | 1.69 | 0.0062 | 14.71 | 0.00 | 0.00 | 0.99 |
| 4/4 18:21 | 1.70 | 0.0062 | 14.76 | 0.00 | 0.00 | 0.99 |
| 4/4 18:22 | 1.70 | 0.0063 | 15.06 | 0.00 | 0.00 | 0.98 |
| 4/4 18:23 | 1.71 | 0.0063 | 15.11 | 0.00 | 0.00 | 0.98 |
| 4/4 18:24 | 1.71 | 0.0063 | 14.94 | 0.00 | 0.00 | 0.98 |
| 4/4 18:25 | 1.70 | 0.0063 | 14.94 | 0.00 | 0.00 | 0.98 |
| 4/4 18:26 | 1.69 | 0.0062 | 14.82 | 0.00 | 0.00 | 0.97 |
| 4/4 18:27 | 1.71 | 0.0063 | 15.11 | 0.00 | 0.00 | 0.98 |
| 4/4 18:28 | 1.70 | 0.0063 | 15.00 | 0.00 | 0.00 | 0.98 |
| 4/4 18:29 | 1.71 | 0.0063 | 15.00 | 0.00 | 0.00 | 0.97 |
| 4/4 18:30 | 1.72 | 0.0063 | 15.06 | 0.00 | 0.00 | 0.97 |
| 4/4 18:31 | 1.74 | 0.0064 | 15.35 | 0.00 | 0.00 | 0.97 |
| 4/4 18:32 | 1.73 | 0.0064 | 15.29 | 0.00 | 0.00 | 0.98 |
| 4/4 18:33 | 1.71 | 0.0063 | 14.94 | 0.00 | 0.00 | 0.99 |
| 4/4 18:34 | 1.68 | 0.0062 | 14.76 | 0.00 | 0.00 | 0.99 |
| 4/4 18:35 | 1.67 | 0.0062 | 14.87 | 0.00 | 0.00 | 0.99 |
| 4/4 18:36 | 1.67 | 0.0061 | 14.63 | 0.00 | 0.00 | 1.00 |
| 4/4 18:37 | 1.66 | 0.0061 | 14.47 | 0.00 | 0.00 | 1.01 |
| 4/4 18:38 | 1.65 | 0.0061 | 14.52 | 0.00 | 0.00 | 1.00 |
| 4/4 18:39 | 1.67 | 0.0061 | 14.58 | 0.00 | 0.00 | 1.00 |
| 4/4 18:40 | 1.68 | 0.0062 | 14.87 | 0.00 | 0.00 | 0.99 |
| Average (all) | 1.70 | 0.0062 | 14.89 | 0.00 | 0.00 | 0.99 |
| Total (all) | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 1.65 | 0.0061 | 14.47 | 0.00 | 0.00 | 0.97 |
| Maximum (all) | 1.74 | 0.0064 | 15.35 | 0.00 | 0.00 | 1.01 |
| Average (valid values only) | 1.70 | 0.0062 | 14.89 | 0.00 | 0.00 | 0.99 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 4/4/2020 6:20 PM thru 4/4/2020 6:40 PM

| Timestamp | (Turbine 3) NH3 Slip lb/hr 1-Min | (Turbine 3) 60-O2 % 1-Min | (Turbine 3) Total Gas Flow hscf/hr 1-Min | (Turbine 3) GT Megawatts 1-Min | (Turbine 3) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 4/4 18:20 | 3.08 | 13.08 | 23142.9 | 230.6 | 350.3 |
| 4/4 18:21 | 3.10 | 13.07 | 23228.6 | 230.6 | 350.2 |
| 4/4 18:22 | 3.11 | 13.07 | 23314.3 | 230.5 | 350.1 |
| 4/4 18:23 | 3.12 | 13.08 | 23400.0 | 230.5 | 350.2 |
| 4/4 18:24 | 3.08 | 13.08 | 23142.9 | 230.6 | 350.3 |
| 4/4 18:25 | 3.08 | 13.08 | 23142.9 | 230.6 | 350.3 |
| 4/4 18:26 | 3.11 | 13.07 | 23314.3 | 230.8 | 350.5 |
| 4/4 18:27 | 3.12 | 13.08 | 23400.0 | 230.7 | 350.4 |
| 4/4 18:28 | 3.10 | 13.07 | 23228.6 | 230.8 | 350.4 |
| 4/4 18:29 | 3.10 | 13.06 | 23228.6 | 230.9 | 350.6 |
| 4/4 18:30 | 3.11 | 13.06 | 23314.3 | 231.0 | 350.8 |
| 4/4 18:31 | 3.12 | 13.06 | 23400.0 | 230.7 | 350.4 |
| 4/4 18:32 | 3.11 | 13.07 | 23314.3 | 230.7 | 350.4 |
| 4/4 18:33 | 3.08 | 13.07 | 23142.9 | 230.8 | 350.5 |
| 4/4 18:34 | 3.10 | 13.07 | 23228.6 | 230.8 | 350.5 |
| 4/4 18:35 | 3.36 | 13.07 | 23400.0 | 230.8 | 350.5 |
| 4/4 18:36 | 3.36 | 13.07 | 23400.0 | 230.8 | 350.5 |
| 4/4 18:37 | 3.32 | 13.07 | 23142.9 | 230.6 | 350.3 |
| 4/4 18:38 | 3.33 | 13.07 | 23228.6 | 230.9 | 350.7 |
| 4/4 18:39 | 3.35 | 13.07 | 23314.3 | 230.8 | 350.5 |
| 4/4 18:40 | 3.36 | 13.07 | 23400.0 | 230.7 | 350.2 |
| Average (all) | 3.17 | 13.07 | 23277.6 | 230.7 | 350.4 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 3.08 | 13.06 | 23142.9 | 230.5 | 350.1 |
| Maximum (all) | 3.36 | 13.08 | 23400.0 | 231.0 | 350.8 |
| Average (valid values only) | 3.17 | 13.07 | 23277.6 | 230.7 | 350.4 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 4/4/2020 6:51 PM thru 4/4/2020 7:11 PM

| Timestamp | (Turbine 3) NOx ppm @15% O2 1-Min | (Turbine 3) 75-NOx lb/mmBtu 1-Min | (Turbine 3) NOx lb/hr 1-Min | (Turbine 3) CO ppm @15% O2 1-Min | (Turbine 3) CO lb/hr 1-Min | (Turbine 3) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|
| 4/4 18:51 | 1.65 | 0.0061 | 14.47 | 0.00 | 0.00 | 0.99 |
| 4/4 18:52 | 1.65 | 0.0061 | 14.58 | 0.00 | 0.00 | 0.99 |
| 4/4 18:53 | 1.66 | 0.0061 | 14.63 | 0.00 | 0.00 | 0.99 |
| 4/4 18:54 | 1.67 | 0.0062 | 14.76 | 0.00 | 0.00 | 0.99 |
| 4/4 18:55 | 1.67 | 0.0062 | 14.71 | 0.00 | 0.00 | 0.99 |
| 4/4 18:56 | 1.69 | 0.0062 | 14.76 | 0.00 | 0.00 | 0.98 |
| 4/4 18:57 | 1.72 | 0.0063 | 15.11 | 0.00 | 0.00 | 0.97 |
| 4/4 18:58 | 1.75 | 0.0064 | 15.29 | 0.00 | 0.00 | 0.97 |
| 4/4 18:59 | 1.75 | 0.0064 | 15.18 | 0.00 | 0.00 | 0.96 |
| 4/4 19:00 | 1.74 | 0.0064 | 15.18 | 0.00 | 0.00 | 0.96 |
| 4/4 19:01 | 1.75 | 0.0064 | 15.29 | 0.00 | 0.00 | 0.96 |
| 4/4 19:02 | 1.75 | 0.0064 | 15.41 | 0.00 | 0.00 | 0.96 |
| 4/4 19:03 | 1.74 | 0.0064 | 15.18 | 0.00 | 0.00 | 0.97 |
| 4/4 19:04 | 1.71 | 0.0063 | 15.00 | 0.00 | 0.00 | 0.98 |
| 4/4 19:05 | 1.69 | 0.0062 | 14.76 | 0.00 | 0.00 | 0.99 |
| 4/4 19:06 | 1.68 | 0.0062 | 14.93 | 0.00 | 0.00 | 0.99 |
| 4/4 19:07 | 1.66 | 0.0061 | 14.58 | 0.00 | 0.00 | 1.00 |
| 4/4 19:08 | 1.66 | 0.0061 | 14.47 | 0.00 | 0.00 | 1.00 |
| 4/4 19:09 | 1.66 | 0.0061 | 14.52 | 0.00 | 0.00 | 1.00 |
| 4/4 19:10 | 1.68 | 0.0062 | 14.87 | 0.00 | 0.00 | 1.00 |
| 4/4 19:11 | 1.69 | 0.0062 | 14.87 | 0.00 | 0.00 | 1.00 |
| Average (all) | 1.70 | 0.0062 | 14.88 | 0.00 | 0.00 | 0.98 |
| Total (all) | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 1.65 | 0.0061 | 14.47 | 0.00 | 0.00 | 0.96 |
| Maximum (all) | 1.75 | 0.0064 | 15.41 | 0.00 | 0.00 | 1.00 |
| Average (valid values only) | 1.70 | 0.0062 | 14.88 | 0.00 | 0.00 | 0.98 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 4/4/2020 6:51 PM thru 4/4/2020 7:11 PM

| Timestamp | (Turbine 3) NH3 Slip lb/hr 1-Min | (Turbine 3) 60-O2 % 1-Min | (Turbine 3) Total Gas Flow hscf/hr 1-Min | (Turbine 3) GT Megawatts 1-Min | (Turbine 3) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 4/4 18:51 | 3.08 | 13.06 | 23142.9 | 231.1 | 350.9 |
| 4/4 18:52 | 3.11 | 13.06 | 23314.3 | 230.7 | 350.4 |
| 4/4 18:53 | 3.12 | 13.06 | 23400.0 | 230.9 | 350.6 |
| 4/4 18:54 | 3.10 | 13.07 | 23228.6 | 230.7 | 350.4 |
| 4/4 18:55 | 3.08 | 13.07 | 23142.9 | 230.8 | 350.5 |
| 4/4 18:56 | 3.10 | 13.06 | 23228.6 | 230.9 | 350.7 |
| 4/4 18:57 | 3.12 | 13.06 | 23400.0 | 231.0 | 350.7 |
| 4/4 18:58 | 3.11 | 13.06 | 23314.3 | 231.1 | 350.8 |
| 4/4 18:59 | 3.08 | 13.06 | 23142.9 | 230.9 | 350.7 |
| 4/4 19:00 | 3.08 | 13.06 | 23142.9 | 231.1 | 350.9 |
| 4/4 19:01 | 3.11 | 13.06 | 23314.3 | 231.1 | 350.9 |
| 4/4 19:02 | 3.13 | 13.06 | 23485.7 | 231.0 | 350.8 |
| 4/4 19:03 | 3.08 | 13.06 | 23142.9 | 231.0 | 350.8 |
| 4/4 19:04 | 3.10 | 13.06 | 23228.6 | 231.1 | 350.9 |
| 4/4 19:05 | 3.10 | 13.06 | 23228.6 | 231.1 | 350.9 |
| 4/4 19:06 | 3.13 | 13.06 | 23485.7 | 231.1 | 350.9 |
| 4/4 19:07 | 3.35 | 13.06 | 23314.3 | 231.2 | 351.0 |
| 4/4 19:08 | 3.32 | 13.06 | 23142.9 | 231.2 | 351.0 |
| 4/4 19:09 | 3.33 | 13.06 | 23228.6 | 231.2 | 351.0 |
| 4/4 19:10 | 3.36 | 13.06 | 23400.0 | 231.2 | 350.4 |
| 4/4 19:11 | 3.36 | 13.06 | 23400.0 | 230.9 | 350.3 |
| Average (all) | 3.16 | 13.06 | 23277.6 | 231.0 | 350.7 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 3.08 | 13.06 | 23142.9 | 230.7 | 350.3 |
| Maximum (all) | 3.36 | 13.07 | 23485.7 | 231.2 | 351.0 |
| Average (valid values only) | 3.16 | 13.06 | 23277.6 | 231.0 | 350.7 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 4/4/2020 7:20 PM thru 4/4/2020 7:40 PM

| Timestamp | (Turbine 3) NOx ppm @15% O2 1-Min | (Turbine 3) 75-NOx lb/mmBtu 1-Min | (Turbine 3) NOx lb/hr 1-Min | (Turbine 3) CO ppm @15% O2 1-Min | (Turbine 3) CO lb/hr 1-Min | (Turbine 3) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|
| 4/4 19:20 | 1.69 | 0.0062 | 14.82 | 0.00 | 0.00 | 0.98 |
| 4/4 19:21 | 1.69 | 0.0062 | 14.71 | 0.00 | 0.00 | 0.98 |
| 4/4 19:22 | 1.70 | 0.0062 | 14.76 | 0.00 | 0.00 | 0.98 |
| 4/4 19:23 | 1.71 | 0.0063 | 15.11 | 0.00 | 0.00 | 0.98 |
| 4/4 19:24 | 1.71 | 0.0063 | 15.11 | 0.00 | 0.00 | 0.98 |
| 4/4 19:25 | 1.71 | 0.0063 | 15.00 | 0.00 | 0.00 | 0.98 |
| 4/4 19:26 | 1.72 | 0.0063 | 15.00 | 0.00 | 0.00 | 0.97 |
| 4/4 19:27 | 1.72 | 0.0063 | 15.06 | 0.00 | 0.00 | 0.97 |
| 4/4 19:28 | 1.73 | 0.0064 | 15.41 | 0.00 | 0.00 | 0.97 |
| 4/4 19:29 | 1.72 | 0.0063 | 15.00 | 0.00 | 0.00 | 0.98 |
| 4/4 19:30 | 1.70 | 0.0063 | 15.00 | 0.00 | 0.00 | 0.98 |
| 4/4 19:31 | 1.67 | 0.0062 | 14.82 | 0.00 | 0.00 | 0.98 |
| 4/4 19:32 | 1.68 | 0.0062 | 14.93 | 0.00 | 0.00 | 0.98 |
| 4/4 19:33 | 1.69 | 0.0062 | 14.87 | 0.00 | 0.00 | 0.98 |
| 4/4 19:34 | 1.69 | 0.0062 | 14.76 | 0.00 | 0.00 | 0.98 |
| 4/4 19:35 | 1.70 | 0.0062 | 14.76 | 0.00 | 0.00 | 0.98 |
| 4/4 19:36 | 1.70 | 0.0063 | 15.11 | 0.00 | 0.00 | 0.98 |
| 4/4 19:37 | 1.70 | 0.0063 | 15.17 | 0.00 | 0.00 | 0.98 |
| 4/4 19:38 | 1.70 | 0.0062 | 14.76 | 0.00 | 0.00 | 0.99 |
| 4/4 19:39 | 1.68 | 0.0062 | 14.76 | 0.00 | 0.00 | 0.98 |
| 4/4 19:40 | 1.69 | 0.0062 | 14.82 | 0.00 | 0.00 | 0.98 |
| Average (all) | 1.70 | 0.0063 | 14.94 | 0.00 | 0.00 | 0.98 |
| Total (all) | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 1.67 | 0.0062 | 14.71 | 0.00 | 0.00 | 0.97 |
| Maximum (all) | 1.73 | 0.0064 | 15.41 | 0.00 | 0.00 | 0.99 |
| Average (valid values only) | 1.70 | 0.0063 | 14.94 | 0.00 | 0.00 | 0.98 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 4/4/2020 7:20 PM thru 4/4/2020 7:40 PM

| Timestamp | (Turbine 3) NH3 Slip lb/hr 1-Min | (Turbine 3) 60-O2 % 1-Min | (Turbine 3) Total Gas Flow hscf/hr 1-Min | (Turbine 3) GT Megawatts 1-Min | (Turbine 3) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 4/4 19:20 | 3.11 | 13.05 | 23314.3 | 231.5 | 351.2 |
| 4/4 19:21 | 3.08 | 13.05 | 23142.9 | 231.6 | 351.4 |
| 4/4 19:22 | 3.10 | 13.04 | 23228.6 | 231.5 | 351.3 |
| 4/4 19:23 | 3.12 | 13.05 | 23400.0 | 231.6 | 351.5 |
| 4/4 19:24 | 3.12 | 13.05 | 23400.0 | 231.3 | 351.1 |
| 4/4 19:25 | 3.10 | 13.05 | 23228.6 | 231.6 | 351.4 |
| 4/4 19:26 | 3.10 | 13.05 | 23228.6 | 231.5 | 351.4 |
| 4/4 19:27 | 3.11 | 13.05 | 23314.3 | 231.3 | 351.1 |
| 4/4 19:28 | 3.13 | 13.05 | 23485.7 | 231.5 | 351.4 |
| 4/4 19:29 | 3.10 | 13.05 | 23228.6 | 231.5 | 351.5 |
| 4/4 19:30 | 3.10 | 13.05 | 23228.6 | 231.7 | 351.6 |
| 4/4 19:31 | 3.11 | 13.04 | 23314.3 | 231.7 | 351.6 |
| 4/4 19:32 | 3.13 | 13.05 | 23485.7 | 231.7 | 351.7 |
| 4/4 19:33 | 3.12 | 13.05 | 23400.0 | 231.7 | 351.6 |
| 4/4 19:34 | 3.10 | 13.04 | 23228.6 | 231.6 | 351.5 |
| 4/4 19:35 | 3.10 | 13.04 | 23228.6 | 231.6 | 351.6 |
| 4/4 19:36 | 3.12 | 13.04 | 23400.0 | 231.7 | 351.6 |
| 4/4 19:37 | 3.13 | 13.04 | 23485.7 | 231.8 | 351.7 |
| 4/4 19:38 | 3.10 | 13.04 | 23228.6 | 231.8 | 351.8 |
| 4/4 19:39 | 3.10 | 13.04 | 23228.6 | 231.8 | 351.5 |
| 4/4 19:40 | 3.11 | 13.04 | 23314.3 | 231.9 | 351.4 |
| Average (all) | 3.11 | 13.05 | 23310.2 | 231.6 | 351.5 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 3.08 | 13.04 | 23142.9 | 231.3 | 351.1 |
| Maximum (all) | 3.13 | 13.05 | 23485.7 | 231.9 | 351.8 |
| Average (valid values only) | 3.11 | 13.05 | 23310.2 | 231.6 | 351.5 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 4/4/2020 7:48 PM thru 4/4/2020 8:08 PM

| Timestamp | (Turbine 3) NOx ppm @15% O2 1-Min | (Turbine 3) 75-NOx lb/mmBtu 1-Min | (Turbine 3) NOx lb/hr 1-Min | (Turbine 3) CO ppm @15% O2 1-Min | (Turbine 3) CO lb/hr 1-Min | (Turbine 3) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|
| 4/4 19:48 | 1.67 | 0.0061 | 14.52 | 0.00 | 0.00 | 0.99 |
| 4/4 19:49 | 1.68 | 0.0062 | 14.87 | 0.00 | 0.00 | 0.99 |
| 4/4 19:50 | 1.69 | 0.0062 | 14.93 | 0.00 | 0.00 | 0.98 |
| 4/4 19:51 | 1.69 | 0.0062 | 14.76 | 0.00 | 0.00 | 0.98 |
| 4/4 19:52 | 1.71 | 0.0063 | 15.00 | 0.00 | 0.00 | 0.98 |
| 4/4 19:53 | 1.72 | 0.0063 | 15.06 | 0.00 | 0.00 | 0.98 |
| 4/4 19:54 | 1.74 | 0.0064 | 15.41 | 0.00 | 0.00 | 0.98 |
| 4/4 19:55 | 1.74 | 0.0064 | 15.29 | 0.00 | 0.00 | 0.98 |
| 4/4 19:56 | 1.73 | 0.0064 | 15.24 | 0.00 | 0.00 | 0.98 |
| 4/4 19:57 | 1.72 | 0.0063 | 15.06 | 0.00 | 0.00 | 0.98 |
| 4/4 19:58 | 1.70 | 0.0063 | 15.17 | 0.00 | 0.00 | 0.99 |
| 4/4 19:59 | 1.62 | 0.0060 | 14.44 | 0.00 | 0.00 | 1.03 |
| 4/4 20:00 | 1.47 | 0.0054 | 12.86 | 0.00 | 0.00 | 1.10 |
| 4/4 20:01 | 1.31 | 0.0048 | 11.47 | 0.00 | 0.00 | 1.24 |
| 4/4 20:02 | 1.25 | 0.0046 | 11.03 | 0.00 | 0.00 | 1.37 |
| 4/4 20:03 | 1.24 | 0.0046 | 11.07 | 0.00 | 0.00 | 1.51 |
| 4/4 20:04 | 1.25 | 0.0046 | 10.95 | 0.00 | 0.00 | 1.59 |
| 4/4 20:05 | 1.28 | 0.0047 | 11.19 | 0.00 | 0.00 | 1.61 |
| 4/4 20:06 | 1.34 | 0.0049 | 11.75 | 0.00 | 0.00 | 1.58 |
| 4/4 20:07 | 1.42 | 0.0052 | 12.56 | 0.00 | 0.00 | 1.51 |
| 4/4 20:08 | 1.49 | 0.0055 | 13.14 | 0.00 | 0.00 | 1.43 |
| Average (all) | 1.55 | 0.0057 | 13.61 | 0.00 | 0.00 | 1.18 |
| Total (all) | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 1.24 | 0.0046 | 10.95 | 0.00 | 0.00 | 0.98 |
| Maximum (all) | 1.74 | 0.0064 | 15.41 | 0.00 | 0.00 | 1.61 |
| Average (valid values only) | 1.55 | 0.0057 | 13.61 | 0.00 | 0.00 | 1.18 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 4/4/2020 7:48 PM thru 4/4/2020 8:08 PM

| Timestamp | (Turbine 3) NH3 Slip lb/hr 1-Min | (Turbine 3) 60-O2 % 1-Min | (Turbine 3) Total Gas Flow hscf/hr 1-Min | (Turbine 3) GT Megawatts 1-Min | (Turbine 3) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 4/4 19:48 | 3.10 | 13.04 | 23228.6 | 231.8 | 351.7 |
| 4/4 19:49 | 3.12 | 13.05 | 23400.0 | 231.8 | 351.6 |
| 4/4 19:50 | 3.13 | 13.04 | 23485.7 | 231.9 | 351.8 |
| 4/4 19:51 | 3.10 | 13.05 | 23228.6 | 231.8 | 351.7 |
| 4/4 19:52 | 3.10 | 13.05 | 23228.6 | 232.0 | 351.9 |
| 4/4 19:53 | 3.11 | 13.05 | 23314.3 | 231.9 | 351.8 |
| 4/4 19:54 | 3.13 | 13.05 | 23485.7 | 231.8 | 351.7 |
| 4/4 19:55 | 3.11 | 13.05 | 23314.3 | 232.0 | 351.9 |
| 4/4 19:56 | 3.10 | 13.05 | 23228.6 | 231.9 | 351.8 |
| 4/4 19:57 | 3.11 | 13.04 | 23314.3 | 231.9 | 351.8 |
| 4/4 19:58 | 3.13 | 13.04 | 23485.7 | 232.0 | 351.9 |
| 4/4 19:59 | 3.37 | 13.04 | 23485.7 | 232.2 | 352.0 |
| 4/4 20:00 | 3.57 | 13.05 | 23228.6 | 232.0 | 352.0 |
| 4/4 20:01 | 4.06 | 13.04 | 23314.3 | 232.0 | 352.0 |
| 4/4 20:02 | 4.56 | 13.04 | 23400.0 | 232.0 | 352.0 |
| 4/4 20:03 | 4.81 | 13.04 | 23485.7 | 232.1 | 352.1 |
| 4/4 20:04 | 5.24 | 13.04 | 23228.6 | 232.2 | 352.2 |
| 4/4 20:05 | 5.24 | 13.04 | 23228.6 | 232.3 | 352.3 |
| 4/4 20:06 | 5.04 | 13.04 | 23400.0 | 232.1 | 352.0 |
| 4/4 20:07 | 4.83 | 13.04 | 23571.4 | 232.2 | 352.0 |
| 4/4 20:08 | 4.54 | 13.04 | 23314.3 | 232.2 | 351.9 |
| Average (all) | 3.79 | 13.04 | 23351.0 | 232.0 | 351.9 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 3.10 | 13.04 | 23228.6 | 231.8 | 351.6 |
| Maximum (all) | 5.24 | 13.05 | 23571.4 | 232.3 | 352.3 |
| Average (valid values only) | 3.79 | 13.04 | 23351.0 | 232.0 | 351.9 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 4/4/2020 8:20 PM thru 4/4/2020 8:40 PM

| Timestamp | (Turbine 3) NOx ppm @15% O2 1-Min | (Turbine 3) 75-NOx lb/mmBtu 1-Min | (Turbine 3) NOx lb/hr 1-Min | (Turbine 3) CO ppm @15% O2 1-Min | (Turbine 3) CO lb/hr 1-Min | (Turbine 3) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|
| 4/4 20:20 | 1.67 | 0.0061 | 14.74 | 0.00 | 0.00 | 1.28 |
| 4/4 20:21 | 1.73 | 0.0064 | 15.29 | 0.00 | 0.00 | 1.19 |
| 4/4 20:22 | 1.79 | 0.0066 | 15.77 | 0.00 | 0.00 | 1.11 |
| 4/4 20:23 | 1.82 | 0.0067 | 16.01 | 0.00 | 0.00 | 1.05 |
| 4/4 20:24 | 1.84 | 0.0068 | 16.37 | 0.00 | 0.00 | 1.01 |
| 4/4 20:25 | 1.84 | 0.0068 | 16.31 | 0.00 | 0.00 | 0.99 |
| 4/4 20:26 | 1.82 | 0.0067 | 16.01 | 0.00 | 0.00 | 0.97 |
| 4/4 20:27 | 1.79 | 0.0066 | 15.77 | 0.00 | 0.00 | 0.96 |
| 4/4 20:28 | 1.76 | 0.0065 | 15.59 | 0.00 | 0.00 | 0.97 |
| 4/4 20:29 | 1.72 | 0.0064 | 15.46 | 0.00 | 0.00 | 0.97 |
| 4/4 20:30 | 1.69 | 0.0062 | 14.82 | 0.00 | 0.00 | 0.98 |
| 4/4 20:31 | 1.67 | 0.0062 | 14.82 | 0.00 | 0.00 | 0.99 |
| 4/4 20:32 | 1.66 | 0.0061 | 14.58 | 0.00 | 0.00 | 0.99 |
| 4/4 20:33 | 1.67 | 0.0062 | 14.93 | 0.00 | 0.00 | 1.00 |
| 4/4 20:34 | 1.67 | 0.0062 | 14.87 | 0.00 | 0.00 | 1.00 |
| 4/4 20:35 | 1.67 | 0.0062 | 14.82 | 0.00 | 0.00 | 1.00 |
| 4/4 20:36 | 1.69 | 0.0062 | 14.87 | 0.00 | 0.00 | 1.00 |
| 4/4 20:37 | 1.70 | 0.0063 | 15.17 | 0.00 | 0.00 | 1.00 |
| 4/4 20:38 | 1.70 | 0.0063 | 15.17 | 0.00 | 0.00 | 1.00 |
| 4/4 20:39 | 1.69 | 0.0062 | 14.82 | 0.00 | 0.00 | 1.00 |
| 4/4 20:40 | 1.69 | 0.0062 | 14.87 | 0.00 | 0.00 | 0.99 |
| Average (all) | 1.73 | 0.0064 | 15.29 | 0.00 | 0.00 | 1.02 |
| Total (all) | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 1.66 | 0.0061 | 14.58 | 0.00 | 0.00 | 0.96 |
| Maximum (all) | 1.84 | 0.0068 | 16.37 | 0.00 | 0.00 | 1.28 |
| Average (valid values only) | 1.73 | 0.0064 | 15.29 | 0.00 | 0.00 | 1.02 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 4/4/2020 8:20 PM thru 4/4/2020 8:40 PM

| Timestamp | (Turbine 3) NH3 Slip lb/hr 1-Min | (Turbine 3) 60-O2 % 1-Min | (Turbine 3) Total Gas Flow hscf/hr 1-Min | (Turbine 3) GT Megawatts 1-Min | (Turbine 3) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 4/4 20:20 | 4.11 | 13.04 | 23571.4 | 232.6 | 352.5 |
| 4/4 20:21 | 3.82 | 13.04 | 23314.3 | 232.6 | 352.4 |
| 4/4 20:22 | 3.58 | 13.04 | 23314.3 | 232.4 | 352.2 |
| 4/4 20:23 | 3.35 | 13.04 | 23314.3 | 232.5 | 352.5 |
| 4/4 20:24 | 3.37 | 13.04 | 23485.7 | 232.6 | 352.5 |
| 4/4 20:25 | 3.12 | 13.04 | 23400.0 | 232.7 | 352.6 |
| 4/4 20:26 | 3.11 | 13.04 | 23314.3 | 232.6 | 352.6 |
| 4/4 20:27 | 3.11 | 13.04 | 23314.3 | 232.8 | 352.9 |
| 4/4 20:28 | 3.12 | 13.04 | 23400.0 | 232.6 | 352.5 |
| 4/4 20:29 | 3.14 | 13.03 | 23571.4 | 232.8 | 352.8 |
| 4/4 20:30 | 3.11 | 13.03 | 23314.3 | 232.7 | 352.7 |
| 4/4 20:31 | 3.11 | 13.03 | 23314.3 | 232.7 | 352.7 |
| 4/4 20:32 | 3.11 | 13.03 | 23314.3 | 232.8 | 353.0 |
| 4/4 20:33 | 3.37 | 13.03 | 23485.7 | 232.7 | 352.7 |
| 4/4 20:34 | 3.36 | 13.03 | 23400.0 | 232.8 | 352.8 |
| 4/4 20:35 | 3.35 | 13.03 | 23314.3 | 232.9 | 352.9 |
| 4/4 20:36 | 3.36 | 13.03 | 23400.0 | 232.9 | 352.9 |
| 4/4 20:37 | 3.37 | 13.03 | 23485.7 | 232.7 | 352.8 |
| 4/4 20:38 | 3.37 | 13.03 | 23485.7 | 232.9 | 352.9 |
| 4/4 20:39 | 3.35 | 13.03 | 23314.3 | 233.0 | 352.3 |
| 4/4 20:40 | 3.12 | 13.03 | 23400.0 | 232.6 | 352.5 |
| Average (all) | 3.32 | 13.03 | 23391.8 | 232.7 | 352.7 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 3.11 | 13.03 | 23314.3 | 232.4 | 352.2 |
| Maximum (all) | 4.11 | 13.04 | 23571.4 | 233.0 | 353.0 |
| Average (valid values only) | 3.32 | 13.03 | 23391.8 | 232.7 | 352.7 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 4/4/2020 8:49 PM thru 4/4/2020 9:09 PM

| Timestamp | (Turbine 3) NOx ppm @15% O2 1-Min | (Turbine 3) 75-NOx lb/mmBtu 1-Min | (Turbine 3) NOx lb/hr 1-Min | (Turbine 3) CO ppm @15% O2 1-Min | (Turbine 3) CO lb/hr 1-Min | (Turbine 3) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|
| 4/4 20:49 | 1.29 | 0.0048 | 11.51 | 0.00 | 0.00 | 1.30 |
| 4/4 20:50 | 1.26 | 0.0046 | 11.11 | 0.00 | 0.00 | 1.45 |
| 4/4 20:51 | 1.26 | 0.0046 | 11.07 | 0.00 | 0.00 | 1.56 |
| 4/4 20:52 | 1.27 | 0.0047 | 11.23 | 0.00 | 0.00 | 1.61 |
| 4/4 20:53 | 1.31 | 0.0048 | 11.47 | 0.00 | 0.00 | 1.60 |
| 4/4 20:54 | 1.37 | 0.0050 | 12.04 | 0.00 | 0.00 | 1.56 |
| 4/4 20:55 | 1.44 | 0.0053 | 12.81 | 0.00 | 0.00 | 1.48 |
| 4/4 20:56 | 1.51 | 0.0056 | 13.38 | 0.00 | 0.00 | 1.39 |
| 4/4 20:57 | 1.59 | 0.0059 | 14.10 | 0.00 | 0.00 | 1.30 |
| 4/4 20:58 | 1.68 | 0.0062 | 14.87 | 0.00 | 0.00 | 1.20 |
| 4/4 20:59 | 1.77 | 0.0065 | 15.70 | 0.00 | 0.00 | 1.13 |
| 4/4 21:00 | 1.82 | 0.0067 | 16.07 | 0.00 | 0.00 | 1.06 |
| 4/4 21:01 | 1.83 | 0.0068 | 16.25 | 0.00 | 0.00 | 1.02 |
| 4/4 21:02 | 1.83 | 0.0068 | 16.31 | 0.00 | 0.00 | 0.98 |
| 4/4 21:03 | 1.83 | 0.0067 | 16.19 | 0.00 | 0.00 | 0.97 |
| 4/4 21:04 | 1.80 | 0.0066 | 15.89 | 0.00 | 0.00 | 0.95 |
| 4/4 21:05 | 1.78 | 0.0066 | 15.77 | 0.00 | 0.00 | 0.95 |
| 4/4 21:06 | 1.75 | 0.0065 | 15.59 | 0.00 | 0.00 | 0.95 |
| 4/4 21:07 | 1.73 | 0.0064 | 15.41 | 0.00 | 0.00 | 0.97 |
| 4/4 21:08 | 1.71 | 0.0063 | 15.22 | 0.00 | 0.00 | 0.97 |
| 4/4 21:09 | 1.68 | 0.0062 | 14.82 | 0.00 | 0.00 | 0.99 |
| Average (all) | 1.60 | 0.0059 | 14.13 | 0.00 | 0.00 | 1.21 |
| Total (all) | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 1.26 | 0.0046 | 11.07 | 0.00 | 0.00 | 0.95 |
| Maximum (all) | 1.83 | 0.0068 | 16.31 | 0.00 | 0.00 | 1.61 |
| Average (valid values only) | 1.60 | 0.0059 | 14.13 | 0.00 | 0.00 | 1.21 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 4/4/2020 8:49 PM thru 4/4/2020 9:09 PM

| Timestamp | (Turbine 3) NH3 Slip lb/hr 1-Min | (Turbine 3) 60-O2 % 1-Min | (Turbine 3) Total Gas Flow hscf/hr 1-Min | (Turbine 3) GT Megawatts 1-Min | (Turbine 3) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 4/4 20:49 | 4.32 | 13.03 | 23400.0 | 233.0 | 353.0 |
| 4/4 20:50 | 4.83 | 13.03 | 23571.4 | 232.8 | 352.8 |
| 4/4 20:51 | 5.06 | 13.03 | 23485.7 | 233.1 | 353.1 |
| 4/4 20:52 | 5.26 | 13.03 | 23314.3 | 232.9 | 352.9 |
| 4/4 20:53 | 5.26 | 13.02 | 23314.3 | 232.8 | 352.9 |
| 4/4 20:54 | 5.06 | 13.02 | 23485.7 | 232.9 | 353.0 |
| 4/4 20:55 | 4.83 | 13.02 | 23571.4 | 233.0 | 353.1 |
| 4/4 20:56 | 4.54 | 13.03 | 23314.3 | 233.1 | 353.2 |
| 4/4 20:57 | 4.30 | 13.02 | 23314.3 | 233.0 | 353.1 |
| 4/4 20:58 | 3.84 | 13.02 | 23400.0 | 233.0 | 353.1 |
| 4/4 20:59 | 3.62 | 13.03 | 23571.4 | 233.0 | 353.1 |
| 4/4 21:00 | 3.36 | 13.03 | 23400.0 | 233.0 | 353.1 |
| 4/4 21:01 | 3.35 | 13.02 | 23314.3 | 233.1 | 353.2 |
| 4/4 21:02 | 3.12 | 13.02 | 23400.0 | 233.1 | 353.2 |
| 4/4 21:03 | 3.14 | 13.02 | 23571.4 | 233.0 | 353.1 |
| 4/4 21:04 | 3.13 | 13.02 | 23485.7 | 232.8 | 352.9 |
| 4/4 21:05 | 3.11 | 13.02 | 23314.3 | 232.9 | 353.0 |
| 4/4 21:06 | 3.12 | 13.03 | 23400.0 | 233.2 | 353.3 |
| 4/4 21:07 | 3.13 | 13.02 | 23485.7 | 233.1 | 353.3 |
| 4/4 21:08 | 3.14 | 13.03 | 23571.4 | 232.9 | 352.6 |
| 4/4 21:09 | 3.11 | 13.03 | 23314.3 | 233.1 | 352.8 |
| Average (all) | 3.93 | 13.02 | 23428.6 | 233.0 | 353.0 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 3.11 | 13.02 | 23314.3 | 232.8 | 352.6 |
| Maximum (all) | 5.26 | 13.03 | 23571.4 | 233.2 | 353.3 |
| Average (valid values only) | 3.93 | 13.02 | 23428.6 | 233.0 | 353.0 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 4/4/2020 9:17 PM thru 4/4/2020 9:37 PM

| Timestamp | (Turbine 3) NOx ppm @15% O2 1-Min | (Turbine 3) 75-NOx lb/mmBtu 1-Min | (Turbine 3) NOx lb/hr 1-Min | (Turbine 3) CO ppm @15% O2 1-Min | (Turbine 3) CO lb/hr 1-Min | (Turbine 3) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|
| 4/4 21:17 | 1.71 | 0.0063 | 15.22 | 0.00 | 0.00 | 1.00 |
| 4/4 21:18 | 1.71 | 0.0063 | 15.06 | 0.00 | 0.00 | 1.00 |
| 4/4 21:19 | 1.71 | 0.0063 | 15.11 | 0.00 | 0.00 | 0.99 |
| 4/4 21:20 | 1.70 | 0.0063 | 15.17 | 0.00 | 0.00 | 1.00 |
| 4/4 21:21 | 1.69 | 0.0062 | 14.98 | 0.00 | 0.00 | 1.00 |
| 4/4 21:22 | 1.68 | 0.0062 | 14.82 | 0.00 | 0.00 | 1.00 |
| 4/4 21:23 | 1.67 | 0.0062 | 14.82 | 0.00 | 0.00 | 1.00 |
| 4/4 21:24 | 1.69 | 0.0062 | 14.87 | 0.00 | 0.00 | 0.99 |
| 4/4 21:25 | 1.71 | 0.0063 | 15.22 | 0.00 | 0.00 | 0.99 |
| 4/4 21:26 | 1.73 | 0.0064 | 15.35 | 0.00 | 0.00 | 0.98 |
| 4/4 21:27 | 1.73 | 0.0064 | 15.29 | 0.00 | 0.00 | 0.98 |
| 4/4 21:28 | 1.72 | 0.0063 | 15.11 | 0.00 | 0.00 | 0.98 |
| 4/4 21:29 | 1.72 | 0.0063 | 15.22 | 0.00 | 0.00 | 0.98 |
| 4/4 21:30 | 1.71 | 0.0063 | 15.22 | 0.00 | 0.00 | 0.98 |
| 4/4 21:31 | 1.70 | 0.0063 | 15.06 | 0.00 | 0.00 | 0.99 |
| 4/4 21:32 | 1.68 | 0.0062 | 14.87 | 0.00 | 0.00 | 1.00 |
| 4/4 21:33 | 1.68 | 0.0062 | 14.93 | 0.00 | 0.00 | 1.00 |
| 4/4 21:34 | 1.68 | 0.0062 | 14.98 | 0.00 | 0.00 | 1.00 |
| 4/4 21:35 | 1.68 | 0.0062 | 14.87 | 0.00 | 0.00 | 1.00 |
| 4/4 21:36 | 1.70 | 0.0063 | 15.11 | 0.00 | 0.00 | 1.00 |
| 4/4 21:37 | 1.71 | 0.0063 | 15.17 | 0.00 | 0.00 | 0.99 |
| Average (all) | 1.70 | 0.0063 | 15.07 | 0.00 | 0.00 | 0.99 |
| Total (all) | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 1.67 | 0.0062 | 14.82 | 0.00 | 0.00 | 0.98 |
| Maximum (all) | 1.73 | 0.0064 | 15.35 | 0.00 | 0.00 | 1.00 |
| Average (valid values only) | 1.70 | 0.0063 | 15.07 | 0.00 | 0.00 | 0.99 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 4/4/2020 9:17 PM thru 4/4/2020 9:37 PM

| Timestamp | (Turbine 3) NH3 Slip lb/hr 1-Min | (Turbine 3) 60-O2 % 1-Min | (Turbine 3) Total Gas Flow hscf/hr 1-Min | (Turbine 3) GT Megawatts 1-Min | (Turbine 3) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 4/4 21:17 | 3.38 | 13.02 | 23571.4 | 233.4 | 353.5 |
| 4/4 21:18 | 3.35 | 13.02 | 23314.3 | 233.5 | 353.6 |
| 4/4 21:19 | 3.12 | 13.02 | 23400.0 | 233.4 | 353.6 |
| 4/4 21:20 | 3.37 | 13.02 | 23485.7 | 233.4 | 353.6 |
| 4/4 21:21 | 3.38 | 13.02 | 23571.4 | 233.3 | 353.6 |
| 4/4 21:22 | 3.35 | 13.02 | 23314.3 | 233.2 | 353.4 |
| 4/4 21:23 | 3.35 | 13.02 | 23314.3 | 233.1 | 353.2 |
| 4/4 21:24 | 3.12 | 13.02 | 23400.0 | 233.5 | 353.7 |
| 4/4 21:25 | 3.14 | 13.02 | 23571.4 | 233.1 | 353.2 |
| 4/4 21:26 | 3.12 | 13.02 | 23400.0 | 233.3 | 353.4 |
| 4/4 21:27 | 3.11 | 13.02 | 23314.3 | 233.3 | 353.3 |
| 4/4 21:28 | 3.12 | 13.02 | 23400.0 | 233.3 | 353.3 |
| 4/4 21:29 | 3.14 | 13.02 | 23571.4 | 233.2 | 353.2 |
| 4/4 21:30 | 3.14 | 13.02 | 23571.4 | 233.1 | 353.1 |
| 4/4 21:31 | 3.11 | 13.02 | 23314.3 | 233.4 | 353.4 |
| 4/4 21:32 | 3.36 | 13.02 | 23400.0 | 233.5 | 353.4 |
| 4/4 21:33 | 3.37 | 13.02 | 23485.7 | 233.3 | 352.1 |
| 4/4 21:34 | 3.38 | 13.02 | 23571.4 | 233.3 | 352.0 |
| 4/4 21:35 | 3.36 | 13.02 | 23400.0 | 233.4 | 352.2 |
| 4/4 21:36 | 3.36 | 13.02 | 23400.0 | 233.3 | 352.1 |
| 4/4 21:37 | 3.13 | 13.02 | 23485.7 | 233.4 | 352.3 |
| Average (all) | 3.25 | 13.02 | 23440.8 | 233.3 | 353.1 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 3.11 | 13.02 | 23314.3 | 233.1 | 352.0 |
| Maximum (all) | 3.38 | 13.02 | 23571.4 | 233.5 | 353.7 |
| Average (valid values only) | 3.25 | 13.02 | 23440.8 | 233.3 | 353.1 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 4/4/2020 9:50 PM thru 4/4/2020 10:10 PM

| Timestamp | (Turbine 3) NOx ppm @15% O2 1-Min | (Turbine 3) 75-NOx lb/mmBtu 1-Min | (Turbine 3) NOx lb/hr 1-Min | (Turbine 3) CO ppm @15% O2 1-Min | (Turbine 3) CO lb/hr 1-Min | (Turbine 3) NH3 Slip ppm @15% O2 1-Min |
|---|---|---|---|---|---|---|
| 4/4 21:50 | 1.72 | 0.0063 | 15.17 | 0.00 | 0.00 | 0.98 |
| 4/4 21:51 | 1.71 | 0.0063 | 15.28 | 0.00 | 0.00 | 0.99 |
| 4/4 21:52 | 1.70 | 0.0063 | 15.17 | 0.00 | 0.00 | 0.99 |
| 4/4 21:53 | 1.68 | 0.0062 | 14.87 | 0.00 | 0.00 | 1.00 |
| 4/4 21:54 | 1.68 | 0.0062 | 14.87 | 0.00 | 0.00 | 1.00 |
| 4/4 21:55 | 1.68 | 0.0062 | 14.98 | 0.00 | 0.00 | 1.00 |
| 4/4 21:56 | 1.69 | 0.0062 | 14.98 | 0.00 | 0.00 | 1.00 |
| 4/4 21:57 | 1.68 | 0.0062 | 14.82 | 0.00 | 0.00 | 1.01 |
| 4/4 21:58 | 1.68 | 0.0062 | 14.87 | 0.00 | 0.00 | 1.00 |
| 4/4 21:59 | 1.69 | 0.0062 | 14.93 | 0.00 | 0.00 | 1.00 |
| 4/4 22:00 | 1.71 | 0.0063 | 15.22 | 0.00 | 0.00 | 1.00 |
| 4/4 22:01 | 1.71 | 0.0063 | 15.11 | 0.00 | 0.00 | 1.00 |
| 4/4 22:02 | 1.70 | 0.0063 | 15.06 | 0.00 | 0.00 | 1.00 |
| 4/4 22:03 | 1.70 | 0.0063 | 15.11 | 0.00 | 0.00 | 0.99 |
| 4/4 22:04 | 1.70 | 0.0063 | 15.22 | 0.00 | 0.00 | 1.00 |
| 4/4 22:05 | 1.70 | 0.0063 | 15.17 | 0.00 | 0.00 | 1.00 |
| 4/4 22:06 | 1.71 | 0.0063 | 15.11 | 0.00 | 0.00 | 0.99 |
| 4/4 22:07 | 1.71 | 0.0063 | 15.11 | 0.00 | 0.00 | 0.98 |
| 4/4 22:08 | 1.73 | 0.0064 | 15.46 | 0.00 | 0.00 | 0.98 |
| 4/4 22:09 | 1.72 | 0.0063 | 15.22 | 0.00 | 0.00 | 0.99 |
| 4/4 22:10 | 1.70 | 0.0063 | 15.11 | 0.00 | 0.00 | 1.00 |
| Average (all) | 1.70 | 0.0063 | 15.09 | 0.00 | 0.00 | 1.00 |
| Total (all) | -- | -- | -- | -- | -- | -- |
| Minimum (all) | 1.68 | 0.0062 | 14.82 | 0.00 | 0.00 | 0.98 |
| Maximum (all) | 1.73 | 0.0064 | 15.46 | 0.00 | 0.00 | 1.01 |
| Average (valid values only) | 1.70 | 0.0063 | 15.09 | 0.00 | 0.00 | 1.00 |
| Total (valid values only) | -- | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 | 21 |

# CeDAR 1-Minute Data

Cricket Valley Energy Center

Data for 4/4/2020 9:50 PM thru 4/4/2020 10:10 PM

| Timestamp | (Turbine 3) NH3 Slip lb/hr 1-Min | (Turbine 3) 60-O2 % 1-Min | (Turbine 3) Total Gas Flow hscf/hr 1-Min | (Turbine 3) GT Megawatts 1-Min | (Turbine 3) Total Megawatts 1-Min |
|---|---|---|---|---|---|
| 4/4 21:50 | 3.13 | 13.02 | 23485.7 | 233.5 | 351.8 |
| 4/4 21:51 | 3.15 | 13.02 | 23657.1 | 233.5 | 351.8 |
| 4/4 21:52 | 3.13 | 13.02 | 23485.7 | 233.5 | 351.8 |
| 4/4 21:53 | 3.36 | 13.02 | 23400.0 | 233.5 | 351.8 |
| 4/4 21:54 | 3.36 | 13.02 | 23400.0 | 233.3 | 351.6 |
| 4/4 21:55 | 3.38 | 13.02 | 23571.4 | 233.5 | 351.8 |
| 4/4 21:56 | 3.38 | 13.02 | 23571.4 | 233.3 | 351.6 |
| 4/4 21:57 | 3.35 | 13.02 | 23314.3 | 233.6 | 351.9 |
| 4/4 21:58 | 3.36 | 13.02 | 23400.0 | 233.6 | 351.9 |
| 4/4 21:59 | 3.37 | 13.02 | 23485.7 | 233.5 | 351.8 |
| 4/4 22:00 | 3.38 | 13.02 | 23571.4 | 233.4 | 351.7 |
| 4/4 22:01 | 3.36 | 13.02 | 23400.0 | 233.5 | 351.7 |
| 4/4 22:02 | 3.35 | 13.02 | 23314.3 | 233.5 | 351.8 |
| 4/4 22:03 | 3.12 | 13.02 | 23400.0 | 233.7 | 351.9 |
| 4/4 22:04 | 3.38 | 13.02 | 23571.4 | 233.7 | 351.9 |
| 4/4 22:05 | 3.37 | 13.02 | 23485.7 | 233.6 | 351.8 |
| 4/4 22:06 | 3.12 | 13.02 | 23400.0 | 233.7 | 351.9 |
| 4/4 22:07 | 3.12 | 13.02 | 23400.0 | 233.6 | 351.7 |
| 4/4 22:08 | 3.14 | 13.02 | 23571.4 | 233.7 | 351.8 |
| 4/4 22:09 | 3.14 | 13.02 | 23571.4 | 233.5 | 351.7 |
| 4/4 22:10 | 3.36 | 13.02 | 23400.0 | 233.6 | 351.7 |
| Average (all) | 3.28 | 13.02 | 23469.4 | 233.5 | 351.8 |
| Total (all) | -- | -- | -- | -- | -- |
| Minimum (all) | 3.12 | 13.02 | 23314.3 | 233.3 | 351.6 |
| Maximum (all) | 3.38 | 13.02 | 23657.1 | 233.7 | 351.9 |
| Average (valid values only) | 3.28 | 13.02 | 23469.4 | 233.5 | 351.8 |
| Total (valid values only) | -- | -- | -- | -- | -- |
| Count (valid values only) | 21 | 21 | 21 | 21 | 21 |

# CEMS AND REFERENCE METHOD DATA

## Reference Method Data

**Relative Accuracy Test Data**
**Reference Method Results (NOx)**
**General Electric, 7F.05, Unit #U-00003**

| | |
|---|---|
| Parameter: | Oxides of Nitrogen |
| Date of Test: | April 4, 2020 |
| Reference Method: | EPA Method 7E |
| RM Analyzer Type: | Chemiluminescence |
| Manufacturer: | |
| Model #: | THERMO 42 series |
| Serial #: | INST-NX-0049 |

| RUN # | RUN TIME | UNIT LOAD | CONCENTRATIONS | | RATES | |
|---|---|---|---|---|---|---|
| | | (MW) | (ppmvd) | (ppmvd@15%$O_2$) | (lb/hr) | (lb/MMBtu) |
| 1 | 17:23 - 17:43 | 349.6 | | 1.51 | 13.58 | 0.0056 |
| 2 | 17:52 - 18:12 | 349.8 | | 1.53 | 13.76 | 0.0056 |
| 3 | 18:20 - 18:40 | 350.4 | | 1.52 | 13.68 | 0.0056 |
| 4 | 18:51 - 19:11 | 350.7 | | 1.53 | 13.77 | 0.0056 |
| 5 | 19:20 - 19:40 | 351.5 | | 1.51 | 13.59 | 0.0056 |
| 6 | 19:48 - 20:08 | 351.9 | | 1.34 | 12.14 | 0.0050 |
| 7 | 20:20 - 20:40 | 352.7 | | 1.50 | 13.61 | 0.0055 |
| 8 | 20:49 - 21:09 | 353.0 | | 1.40 | 12.67 | 0.0051 |
| 9 | 21:17 - 21:37 | 353.1 | | 1.48 | 13.38 | 0.0054 |
| 10 | 21:50 - 22:10 | 351.8 | | 1.47 | 13.34 | 0.0054 |
| 11 | | | | | | |
| 12 | | | | | | |

**Relative Accuracy Test Data**
**Reference Method Results (CO)**
**General Electric, 7F.05, Unit #U-00003**

| | |
|---|---|
| Parameter: | Carbon Monoxide |
| Date of Test: | April 4, 2020 |
| Reference Method: | EPA Method 10 |
| RM Analyzer Type: | Infrared Absorption |
| Manufacturer: | |
| Model #: | THERMO 48 series |
| Serial #: | INST-CO-0030 |

| RUN # | RUN TIME | UNIT LOAD | CONCENTRATIONS | | RATES | |
|---|---|---|---|---|---|---|
| | | (MW) | (ppmvd) | (ppmvd@15%$O_2$) | (lb/hr) | (lb/MMBtu) |
| 1 | 17:23 - 17:43 | 349.6 | | 0.00 | 0.02 | |
| 2 | 17:52 - 18:12 | 349.8 | | 0.10 | 0.55 | |
| 3 | 18:20 - 18:40 | 350.4 | | 0.13 | 0.70 | |
| 4 | 18:51 - 19:11 | 350.7 | | 0.17 | 0.93 | |
| 5 | 19:20 - 19:40 | 351.5 | | 0.10 | 0.54 | |
| 6 | 19:48 - 20:08 | 351.9 | | 0.20 | 1.09 | |
| 7 | 20:20 - 20:40 | 352.7 | | 0.15 | 0.83 | |
| 8 | 20:49 - 21:09 | 353.0 | | 0.15 | 0.84 | |
| 9 | 21:17 - 21:37 | 353.1 | | 0.15 | 0.82 | |
| 10 | 21:50 - 22:10 | 351.8 | | 0.15 | 0.81 | |
| 11 | | | | | | |
| 12 | | | | | | |

**Relative Accuracy Test Data**
**Reference Method Results ($NH_3$)**
**General Electric, 7F.05, Unit #U-00003**

| | |
|---|---|
| Parameter: | Ammonia |
| Date of Test: | April 4, 2020 |
| Reference Method: | EPA Method 027 |
| RM Analyzer Type: | Fourier Transform infared |
| Manufacturer: | MKS |
| Model #: | 2030 |
| Serial #: | INST-IR-0004 |

| RUN # | RUN TIME | UNIT LOAD | CONCENTRATIONS | | RATES | |
|---|---|---|---|---|---|---|
| | | (MW) | (ppmvd) | (ppmvd@15%$O_2$) | (lb/hr) | (lb/MMBtu) |
| 1 | 17:23 - 17:43 | 349.6 | | 1.18 | 3.93 | |
| 2 | 17:52 - 18:12 | 349.8 | | 1.25 | 4.15 | |
| 3 | 18:20 - 18:40 | 350.4 | | 1.27 | 4.23 | |
| 4 | 18:51 - 19:11 | 350.7 | | 1.23 | 4.10 | |
| 5 | 19:20 - 19:40 | 351.5 | | 0.94 | 3.13 | |
| 6 | 19:48 - 20:08 | 351.9 | | 0.83 | 2.77 | |
| 7 | 20:20 - 20:40 | 352.7 | | 0.72 | 2.40 | |
| 8 | 20:49 - 21:09 | 353.0 | | 0.94 | 3.14 | |
| 9 | 21:17 - 21:37 | 353.1 | | 0.94 | 3.16 | |
| 10 | 21:50 - 22:10 | 351.8 | | 1.02 | 3.41 | |
| 11 | | | | | | |
| 12 | | | | | | |

**Relative Accuracy Test Data**
**Reference Method Results ($O_2$)**
**General Electric, 7F.05, Unit #U-00003**

| | |
|---|---|
| Parameter: | Oxygen |
| Date of Test: | April 4, 2020 |
| Reference Method: | EPA Method 3A |
| RM Analyzer Type: | Paramagnetic Cell |
| Manufacturer: Model #: | SERVOMEX 1440 |
| Serial #: | INST-O2-0033 |

| RUN # | RUN TIME | UNIT LOAD (MW) | CONC. (%vd) |
|---|---|---|---|
| 1 | 17:23 - 17:43 | 349.6 | 13.08 |
| 2 | 17:52 - 18:12 | 349.8 | 13.04 |
| 3 | 18:20 - 18:40 | 350.4 | 13.07 |
| 4 | 18:51 - 19:11 | 350.7 | 13.05 |
| 5 | 19:20 - 19:40 | 351.5 | 13.08 |
| 6 | 19:48 - 20:08 | 351.9 | 13.05 |
| 7 | 20:20 - 20:40 | 352.7 | 13.02 |
| 8 | 20:49 - 21:09 | 353.0 | 13.01 |
| 9 | 21:17 - 21:37 | 353.1 | 13.01 |
| 10 | 21:50 - 22:10 | 351.8 | 13.02 |
| 11 | | | |
| 12 | | | |

**Cricket Valley Energy Center, LLC**
**April 4, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,322,450 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,322,450 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.47 | in. Hg |
| Relative Humidity | 47 | % |
| Ambient Temperature | 60 | °F |
| Specific Humidity | 0.005221 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 349.6 | megawatts |
| Stack Exhaust Flow (M19) | 56,738,224 | SCFH |

Base Load Load, Run - 1

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 04/04/20 17:23:02 | 9120 | 13.05 | 1.99 | -0.45 | 2.02 | 7.97 |
| 04/04/20 17:23:32 | 9150 | 13.06 | 1.99 | -0.45 | 1.89 | 8.01 |
| 04/04/20 17:24:02 | 9180 | 13.06 | 1.97 | -0.45 | 1.79 | 8.05 |
| 04/04/20 17:24:32 | 9210 | 13.05 | 1.97 | -0.45 | 1.70 | 8.08 |
| 04/04/20 17:25:02 | 9240 | 13.05 | 1.98 | -0.45 | 1.65 | 8.12 |
| 04/04/20 17:25:32 | 9270 | 13.05 | 1.98 | -0.45 | 1.58 | 8.16 |
| 04/04/20 17:26:02 | 9300 | 13.05 | 1.98 | -0.45 | 1.56 | 8.19 |
| 04/04/20 17:26:32 | 9330 | 13.05 | 1.98 | -0.45 | 1.56 | 8.20 |
| 04/04/20 17:27:02 | 9360 | 13.05 | 1.96 | -0.45 | 1.53 | 8.22 |
| 04/04/20 17:27:32 | 9390 | 13.05 | 1.95 | -0.45 | 1.50 | 8.22 |
| 04/04/20 17:28:02 | 9420 | 13.05 | 1.94 | -0.45 | 1.49 | 8.25 |
| 04/04/20 17:28:32 | 9450 | 13.06 | 1.95 | -0.46 | 1.46 | 8.29 |
| 04/04/20 17:29:02 | 9480 | 13.05 | 1.97 | -0.46 | 1.45 | 8.29 |
| 04/04/20 17:29:32 | 9510 | 13.05 | 1.97 | -0.44 | 1.44 | 8.27 |
| 04/04/20 17:30:02 | 9540 | 13.05 | 1.97 | -0.45 | 1.41 | 8.21 |
| 04/04/20 17:30:32 | 9570 | 13.05 | 1.96 | -0.45 | 1.38 | 8.21 |
| 04/04/20 17:31:02 | 9600 | 13.05 | 1.96 | -0.45 | 1.34 | 8.19 |
| 04/04/20 17:31:32 | 9630 | 13.05 | 1.95 | -0.45 | 1.34 | 8.20 |
| 04/04/20 17:32:02 | 9660 | 13.05 | 1.94 | -0.45 | 1.33 | 8.18 |
| 04/04/20 17:32:32 | 9690 | 13.05 | 1.92 | -0.45 | 1.33 | 8.16 |
| 04/04/20 17:33:02 | 9720 | 13.05 | 1.93 | -0.45 | 1.31 | 8.15 |
| 04/04/20 17:33:32 | 9750 | 13.04 | 1.93 | -0.46 | 1.35 | 8.17 |
| 04/04/20 17:34:02 | 9780 | 13.05 | 1.94 | -0.46 | 1.33 | 8.18 |
| 04/04/20 17:34:32 | 9810 | 13.05 | 1.96 | -0.44 | 1.32 | 8.17 |
| 04/04/20 17:35:02 | 9840 | 13.05 | 1.96 | -0.43 | 1.34 | 8.18 |
| 04/04/20 17:35:32 | 9870 | 13.05 | 1.94 | -0.45 | 1.33 | 8.19 |
| 04/04/20 17:36:02 | 9900 | 13.05 | 1.93 | -0.44 | 1.31 | 8.19 |
| 04/04/20 17:36:32 | 9930 | 13.05 | 1.93 | -0.43 | 1.33 | 8.21 |
| 04/04/20 17:37:02 | 9960 | 13.05 | 1.97 | -0.44 | 1.33 | 8.21 |
| 04/04/20 17:37:32 | 9990 | 13.05 | 1.97 | -0.43 | 1.32 | 8.22 |
| 04/04/20 17:38:02 | 10020 | 13.05 | 1.99 | -0.43 | 1.34 | 8.23 |
| 04/04/20 17:38:32 | 10050 | 13.05 | 1.98 | -0.47 | 1.35 | 8.23 |
| 04/04/20 17:39:02 | 10080 | 13.05 | 2.01 | -0.43 | 1.34 | 8.25 |
| 04/04/20 17:39:32 | 10110 | 13.05 | 2.01 | -0.44 | 1.36 | 8.26 |
| 04/04/20 17:40:02 | 10140 | 13.05 | 2.00 | -0.43 | 1.35 | 8.26 |
| 04/04/20 17:40:32 | 10170 | 13.05 | 1.99 | -0.42 | 1.36 | 8.27 |
| 04/04/20 17:41:02 | 10200 | 13.05 | 1.95 | -0.44 | 1.37 | 8.29 |
| 04/04/20 17:41:32 | 10230 | 13.05 | 1.95 | -0.41 | 1.37 | 8.29 |
| 04/04/20 17:42:02 | 10260 | 13.05 | 1.95 | -0.45 | 1.39 | 8.31 |
| 04/04/20 17:42:32 | 10290 | 13.05 | 1.98 | -0.44 | 1.38 | 8.31 |
| 04/04/20 17:43:02 | 10320 | 13.04 | 1.98 | -0.44 | 1.38 | 8.31 |
| 04/04/20 17:43:32 | 10350 | 13.05 | 1.97 | -0.44 | 1.37 | 8.32 |
| **RAW AVERAGE** | | **13.05** | **1.96** | **-0.44** | **1.44** | **8.21** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0033 | INST-NX-0049 | INST-CO-0030 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.03 | -0.07 | -0.45 | |
| | **Final Zero** | -0.01 | -0.11 | -0.45 | |
| | **Avg. Zero** | -0.02 | -0.09 | -0.45 | |
| | **Initial UpScale** | 11.93 | 4.58 | 5.26 | |
| | **Final UpScale** | 11.98 | 4.56 | 5.47 | |
| | **Avg. UpScale** | 11.96 | 4.57 | 5.37 | |
| **Upscale Cal Gas** | | 11.98 | 4.55 | 5.22 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 13.08 | 2.00 | 0.00 | 1.57 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.51 | 0.00 | 1.18 |
| Emission Rate (lb/hr) | N/A | 13.58 | 0.02 | 3.93 |
| Emission Rate (lb/MMBtu) | N/A | 0.0056 | 0.000 | 0.002 |

**Cricket Valley Energy Center, LLC**
**April 4, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,324,900 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,324,900 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.48 | in. Hg |
| Relative Humidity | 50 | % |
| Ambient Temperature | 58 | °F |
| Specific Humidity | 0.005168 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 349.8 | megawatts |
| Stack Exhaust Flow (M19) | 56,561,737 | SCFH |

Base Load Load, Run - 2

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 04/04/20 17:52:02 | 10860 | 12.95 | 2.08 | -0.34 | 1.28 | 7.84 |
| 04/04/20 17:52:32 | 10890 | 12.97 | 2.04 | -0.35 | 1.33 | 7.91 |
| 04/04/20 17:53:02 | 10920 | 12.99 | 2.01 | -0.37 | 1.39 | 7.97 |
| 04/04/20 17:53:32 | 10950 | 13.00 | 2.00 | -0.38 | 1.44 | 8.01 |
| 04/04/20 17:54:02 | 10980 | 13.00 | 1.97 | -0.35 | 1.44 | 7.96 |
| 04/04/20 17:54:32 | 11010 | 13.01 | 1.95 | -0.38 | 1.50 | 8.00 |
| 04/04/20 17:55:02 | 11040 | 13.01 | 1.94 | -0.38 | 1.56 | 8.01 |
| 04/04/20 17:55:32 | 11070 | 13.01 | 1.95 | -0.35 | 1.57 | 8.04 |
| 04/04/20 17:56:02 | 11100 | 13.01 | 1.95 | -0.34 | 1.61 | 8.07 |
| 04/04/20 17:56:32 | 11130 | 13.01 | 1.95 | -0.34 | 1.62 | 8.09 |
| 04/04/20 17:57:02 | 11160 | 13.01 | 1.98 | -0.35 | 1.61 | 8.12 |
| 04/04/20 17:57:32 | 11190 | 13.02 | 1.98 | -0.36 | 1.64 | 8.12 |
| 04/04/20 17:58:02 | 11220 | 13.02 | 1.98 | -0.37 | 1.63 | 8.15 |
| 04/04/20 17:58:32 | 11250 | 13.02 | 1.97 | -0.36 | 1.65 | 8.16 |
| 04/04/20 17:59:02 | 11280 | 13.02 | 1.98 | -0.34 | 1.65 | 8.19 |
| 04/04/20 17:59:32 | 11310 | 13.02 | 2.03 | -0.35 | 1.63 | 8.21 |
| 04/04/20 18:00:02 | 11340 | 13.03 | 2.03 | -0.34 | 1.63 | 8.20 |
| 04/04/20 18:00:32 | 11370 | 13.02 | 2.05 | -0.31 | 1.58 | 8.19 |
| 04/04/20 18:01:02 | 11400 | 13.03 | 2.02 | -0.36 | 1.59 | 8.18 |
| 04/04/20 18:01:32 | 11430 | 13.02 | 2.04 | -0.31 | 1.57 | 8.18 |
| 04/04/20 18:02:02 | 11460 | 13.02 | 2.04 | -0.30 | 1.58 | 8.17 |
| 04/04/20 18:02:32 | 11490 | 13.03 | 2.02 | -0.27 | 1.57 | 8.16 |
| 04/04/20 18:03:02 | 11520 | 13.03 | 1.99 | -0.29 | 1.54 | 8.13 |
| 04/04/20 18:03:32 | 11550 | 13.02 | 2.00 | -0.29 | 1.54 | 8.11 |
| 04/04/20 18:04:02 | 11580 | 13.03 | 2.00 | -0.26 | 1.54 | 8.08 |
| 04/04/20 18:04:32 | 11610 | 13.03 | 2.00 | -0.25 | 1.50 | 8.07 |
| 04/04/20 18:05:02 | 11640 | 13.03 | 1.98 | -0.27 | 1.53 | 8.07 |
| 04/04/20 18:05:32 | 11670 | 13.03 | 1.99 | -0.25 | 1.51 | 8.08 |
| 04/04/20 18:06:02 | 11700 | 13.03 | 1.96 | -0.27 | 1.52 | 8.08 |
| 04/04/20 18:06:32 | 11730 | 13.02 | 1.96 | -0.27 | 1.50 | 8.10 |
| 04/04/20 18:07:02 | 11760 | 13.03 | 1.99 | -0.26 | 1.51 | 8.11 |
| 04/04/20 18:07:32 | 11790 | 13.03 | 1.97 | -0.25 | 1.51 | 8.11 |
| 04/04/20 18:08:02 | 11820 | 13.02 | 1.98 | -0.23 | 1.48 | 8.13 |
| 04/04/20 18:08:32 | 11850 | 13.02 | 2.03 | -0.24 | 1.49 | 8.13 |
| 04/04/20 18:09:02 | 11880 | 13.02 | 2.01 | -0.22 | 1.47 | 8.14 |
| 04/04/20 18:09:32 | 11910 | 13.02 | 2.03 | -0.22 | 1.49 | 8.14 |
| 04/04/20 18:10:02 | 11940 | 13.03 | 2.00 | -0.21 | 1.49 | 8.15 |
| 04/04/20 18:10:32 | 11970 | 13.02 | 1.97 | -0.22 | 1.50 | 8.17 |
| 04/04/20 18:11:02 | 12000 | 13.02 | 1.99 | -0.21 | 1.47 | 8.17 |
| 04/04/20 18:11:32 | 12030 | 13.02 | 1.98 | -0.19 | 1.47 | 8.17 |
| 04/04/20 18:12:02 | 12060 | 13.02 | 1.96 | -0.20 | 1.48 | 8.19 |
| 04/04/20 18:12:32 | 12090 | 13.03 | 1.97 | -0.20 | 1.48 | 8.19 |
| **RAW AVERAGE** | | **13.02** | **1.99** | **-0.30** | **1.53** | **8.11** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0033 | INST-NX-0049 | INST-CO-0030 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.01 | -0.11 | -0.45 | |
| | **Final Zero** | -0.02 | -0.05 | -0.45 | |
| | **Avg. Zero** | -0.02 | -0.08 | -0.45 | |
| | **Initial UpScale** | 11.98 | 4.56 | 5.47 | |
| | **Final UpScale** | 11.93 | 4.54 | 5.62 | |
| | **Avg. UpScale** | 11.96 | 4.55 | 5.55 | |
| **Upscale Cal Gas** | | 11.98 | 4.55 | 5.22 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 13.04 | 2.04 | 0.13 | 1.66 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.53 | 0.10 | 1.25 |
| Emission Rate (lb/hr) | N/A | 13.76 | 0.55 | 4.15 |
| Emission Rate (lb/MMBtu) | N/A | 0.0056 | 0.000 | 0.002 |

**Cricket Valley Energy Center, LLC**
**April 4, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,327,760 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,327,760 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.48 | in. Hg |
| Relative Humidity | 52 | % |
| Ambient Temperature | 58 | °F |
| Specific Humidity | 0.005377 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 350.4 | megawatts |
| Stack Exhaust Flow (M19) | 56,812,123 | SCFH |

Base Load Load, Run - 3

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 04/04/20 18:20:04 | 90 | 13.02 | 1.94 | -0.21 | 1.44 | 7.86 |
| 04/04/20 18:20:34 | 120 | 13.03 | 1.97 | -0.22 | 1.47 | 7.90 |
| 04/04/20 18:21:04 | 150 | 13.03 | 1.97 | -0.22 | 1.54 | 7.95 |
| 04/04/20 18:21:34 | 180 | 13.03 | 1.98 | -0.22 | 1.56 | 8.00 |
| 04/04/20 18:22:04 | 210 | 13.03 | 1.99 | -0.20 | 1.56 | 7.94 |
| 04/04/20 18:22:34 | 240 | 13.03 | 2.01 | -0.22 | 1.61 | 7.97 |
| 04/04/20 18:23:04 | 270 | 13.04 | 2.02 | -0.19 | 1.61 | 7.99 |
| 04/04/20 18:23:34 | 300 | 13.04 | 2.00 | -0.21 | 1.64 | 8.02 |
| 04/04/20 18:24:04 | 330 | 13.04 | 1.97 | -0.23 | 1.65 | 8.06 |
| 04/04/20 18:24:34 | 360 | 13.04 | 1.96 | -0.22 | 1.64 | 8.08 |
| 04/04/20 18:25:04 | 390 | 13.05 | 1.95 | -0.21 | 1.65 | 8.09 |
| 04/04/20 18:25:34 | 420 | 13.05 | 1.97 | -0.20 | 1.67 | 8.11 |
| 04/04/20 18:26:04 | 450 | 13.04 | 1.97 | -0.22 | 1.66 | 8.13 |
| 04/04/20 18:26:34 | 480 | 13.04 | 1.99 | -0.19 | 1.65 | 8.14 |
| 04/04/20 18:27:04 | 510 | 13.04 | 2.00 | -0.19 | 1.64 | 8.17 |
| 04/04/20 18:27:34 | 540 | 13.05 | 1.99 | -0.20 | 1.64 | 8.16 |
| 04/04/20 18:28:04 | 570 | 13.04 | 1.98 | -0.19 | 1.64 | 8.19 |
| 04/04/20 18:28:34 | 600 | 13.04 | 1.99 | -0.20 | 1.64 | 8.20 |
| 04/04/20 18:29:04 | 630 | 13.03 | 1.99 | -0.21 | 1.62 | 8.22 |
| 04/04/20 18:29:34 | 660 | 13.03 | 2.00 | -0.20 | 1.63 | 8.22 |
| 04/04/20 18:30:04 | 690 | 13.03 | 2.02 | -0.20 | 1.62 | 8.25 |
| 04/04/20 18:30:34 | 720 | 13.03 | 2.04 | -0.25 | 1.61 | 8.28 |
| 04/04/20 18:31:04 | 750 | 13.03 | 2.04 | -0.20 | 1.59 | 8.27 |
| 04/04/20 18:31:34 | 780 | 13.03 | 2.01 | -0.20 | 1.58 | 8.27 |
| 04/04/20 18:32:04 | 810 | 13.04 | 2.02 | -0.20 | 1.56 | 8.25 |
| 04/04/20 18:32:34 | 840 | 13.04 | 1.98 | -0.22 | 1.55 | 8.23 |
| 04/04/20 18:33:04 | 870 | 13.05 | 1.97 | -0.22 | 1.49 | 8.22 |
| 04/04/20 18:33:34 | 900 | 13.04 | 1.97 | -0.21 | 1.51 | 8.19 |
| 04/04/20 18:34:04 | 930 | 13.04 | 1.96 | -0.18 | 1.47 | 8.16 |
| 04/04/20 18:34:34 | 960 | 13.04 | 1.92 | -0.18 | 1.49 | 8.17 |
| 04/04/20 18:35:04 | 990 | 13.03 | 1.93 | -0.17 | 1.50 | 8.16 |
| 04/04/20 18:35:34 | 1020 | 13.03 | 1.94 | -0.19 | 1.47 | 8.15 |
| 04/04/20 18:36:04 | 1050 | 13.04 | 1.93 | -0.20 | 1.46 | 8.15 |
| 04/04/20 18:36:34 | 1080 | 13.03 | 1.92 | -0.16 | 1.48 | 8.14 |
| 04/04/20 18:37:04 | 1110 | 13.04 | 1.91 | -0.19 | 1.46 | 8.15 |
| 04/04/20 18:37:34 | 1140 | 13.04 | 1.91 | -0.21 | 1.45 | 8.16 |
| 04/04/20 18:38:04 | 1170 | 13.04 | 1.93 | -0.22 | 1.44 | 8.16 |
| 04/04/20 18:38:34 | 1200 | 13.04 | 1.93 | -0.21 | 1.44 | 8.16 |
| 04/04/20 18:39:04 | 1230 | 13.04 | 1.95 | -0.19 | 1.42 | 8.16 |
| 04/04/20 18:39:34 | 1260 | 13.04 | 1.97 | -0.18 | 1.41 | 8.17 |
| 04/04/20 18:40:04 | 1290 | 13.04 | 1.98 | -0.19 | 1.41 | 8.18 |
| 04/04/20 18:40:34 | 1320 | 13.04 | 1.98 | -0.19 | 1.40 | 8.18 |
| **RAW AVERAGE** | | **13.04** | **1.97** | **-0.20** | **1.55** | **8.13** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0033 | INST-NX-0049 | INST-CO-0030 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.02 | -0.05 | -0.45 | |
| | **Final Zero** | -0.02 | -0.09 | -0.35 | |
| | **Avg. Zero** | -0.02 | -0.07 | -0.40 | |
| | **Initial UpScale** | 11.93 | 4.54 | 5.62 | |
| | **Final UpScale** | 11.97 | 4.54 | 5.64 | |
| | **Avg. UpScale** | 11.95 | 4.54 | 5.63 | |
| **Upscale Cal Gas** | | 11.98 | 4.55 | 5.22 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 13.07 | 2.02 | 0.17 | 1.68 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.52 | 0.13 | 1.27 |
| Emission Rate (lb/hr) | N/A | 13.68 | 0.70 | 4.23 |
| Emission Rate (lb/MMBtu) | N/A | 0.0056 | 0.000 | 0.002 |

**Cricket Valley Energy Center, LLC**
**April 4, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,327,760 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,327,760 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.49 | in. Hg |
| Relative Humidity | 54 | % |
| Ambient Temperature | 57 | °F |
| Specific Humidity | 0.005384 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 350.7 | megawatts |
| Stack Exhaust Flow (M19) | 56,651,096 | SCFH |

Base Load Load, Run - 4

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 04/04/20 18:51:19 | 480 | 12.95 | 1.95 | -0.09 | 1.47 | 7.94 |
| 04/04/20 18:51:49 | 510 | 12.96 | 1.96 | -0.08 | 1.52 | 7.98 |
| 04/04/20 18:52:19 | 540 | 12.97 | 1.97 | -0.11 | 1.55 | 7.94 |
| 04/04/20 18:52:49 | 570 | 12.98 | 1.95 | -0.13 | 1.55 | 8.03 |
| 04/04/20 18:53:19 | 600 | 12.98 | 1.96 | -0.12 | 1.56 | 7.99 |
| 04/04/20 18:53:49 | 630 | 12.99 | 1.95 | -0.13 | 1.59 | 8.00 |
| 04/04/20 18:54:19 | 660 | 13.00 | 1.98 | -0.10 | 1.62 | 8.03 |
| 04/04/20 18:54:49 | 690 | 13.00 | 1.96 | -0.13 | 1.62 | 8.05 |
| 04/04/20 18:55:19 | 720 | 13.00 | 1.96 | -0.11 | 1.62 | 8.06 |
| 04/04/20 18:55:49 | 750 | 13.01 | 1.99 | -0.11 | 1.61 | 8.09 |
| 04/04/20 18:56:19 | 780 | 13.01 | 2.00 | -0.12 | 1.64 | 8.10 |
| 04/04/20 18:56:49 | 810 | 13.01 | 2.03 | -0.10 | 1.64 | 8.11 |
| 04/04/20 18:57:19 | 840 | 13.01 | 2.04 | -0.08 | 1.62 | 8.13 |
| 04/04/20 18:57:49 | 870 | 13.01 | 2.06 | -0.10 | 1.63 | 8.14 |
| 04/04/20 18:58:19 | 900 | 13.01 | 2.05 | -0.08 | 1.62 | 8.15 |
| 04/04/20 18:58:49 | 930 | 13.01 | 2.05 | -0.10 | 1.60 | 8.16 |
| 04/04/20 18:59:19 | 960 | 13.00 | 2.03 | -0.09 | 1.61 | 8.17 |
| 04/04/20 18:59:49 | 990 | 13.01 | 2.04 | -0.10 | 1.58 | 8.20 |
| 04/04/20 19:00:19 | 1020 | 13.01 | 2.03 | -0.10 | 1.58 | 8.23 |
| 04/04/20 19:00:49 | 1050 | 13.01 | 2.05 | -0.11 | 1.57 | 8.26 |
| 04/04/20 19:01:19 | 1080 | 13.01 | 2.05 | -0.10 | 1.58 | 8.26 |
| 04/04/20 19:01:49 | 1110 | 13.01 | 2.05 | -0.10 | 1.54 | 8.24 |
| 04/04/20 19:02:19 | 1140 | 13.01 | 2.02 | -0.07 | 1.51 | 8.22 |
| 04/04/20 19:02:49 | 1170 | 13.00 | 2.03 | -0.09 | 1.51 | 8.21 |
| 04/04/20 19:03:19 | 1200 | 13.01 | 2.00 | -0.08 | 1.47 | 8.19 |
| 04/04/20 19:03:49 | 1230 | 13.02 | 1.99 | -0.07 | 1.45 | 8.17 |
| 04/04/20 19:04:19 | 1260 | 13.01 | 1.98 | -0.07 | 1.43 | 8.15 |
| 04/04/20 19:04:49 | 1290 | 13.02 | 1.96 | -0.06 | 1.46 | 8.13 |
| 04/04/20 19:05:19 | 1320 | 13.01 | 1.95 | -0.05 | 1.43 | 8.13 |
| 04/04/20 19:05:49 | 1350 | 13.01 | 1.98 | -0.04 | 1.44 | 8.13 |
| 04/04/20 19:06:19 | 1380 | 13.02 | 1.96 | -0.04 | 1.43 | 8.14 |
| 04/04/20 19:06:49 | 1410 | 13.01 | 1.95 | -0.04 | 1.40 | 8.16 |
| 04/04/20 19:07:19 | 1440 | 13.02 | 1.93 | -0.03 | 1.40 | 8.15 |
| 04/04/20 19:07:49 | 1470 | 13.01 | 1.93 | -0.05 | 1.41 | 8.15 |
| 04/04/20 19:08:19 | 1500 | 13.01 | 1.94 | -0.04 | 1.40 | 8.15 |
| 04/04/20 19:08:49 | 1530 | 13.02 | 1.95 | -0.05 | 1.38 | 8.16 |
| 04/04/20 19:09:19 | 1560 | 13.01 | 1.96 | -0.04 | 1.40 | 8.16 |
| 04/04/20 19:09:49 | 1590 | 13.01 | 1.97 | -0.05 | 1.36 | 8.17 |
| 04/04/20 19:10:19 | 1620 | 13.01 | 1.97 | -0.06 | 1.38 | 8.18 |
| 04/04/20 19:10:49 | 1650 | 13.01 | 1.99 | -0.01 | 1.37 | 8.18 |
| 04/04/20 19:11:19 | 1680 | 13.01 | 1.97 | -0.04 | 1.36 | 8.19 |
| 04/04/20 19:11:49 | 1710 | 13.01 | 2.00 | -0.01 | 1.34 | 8.19 |
| **RAW AVERAGE** | | **13.00** | **1.99** | **-0.08** | **1.51** | **8.13** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0033 | INST-NX-0049 | INST-CO-0030 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.02 | -0.09 | -0.35 | |
| | **Final Zero** | -0.02 | -0.08 | -0.32 | |
| | **Avg. Zero** | -0.02 | -0.09 | -0.34 | |
| | **Initial UpScale** | 11.97 | 4.54 | 5.64 | |
| | **Final UpScale** | 11.91 | 4.56 | 5.60 | |
| | **Avg. UpScale** | 11.94 | 4.55 | 5.62 | |
| **Upscale Cal Gas** | | 11.98 | 4.55 | 5.22 | |

| **EMISSIONS DATA** | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 13.05 | 2.04 | 0.23 | 1.64 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.53 | 0.17 | 1.23 |
| **Emission Rate (lb/hr)** | N/A | 13.77 | 0.93 | 4.10 |
| **Emission Rate (lb/MMBtu)** | N/A | 0.0056 | 0.000 | 0.002 |

**Cricket Valley Energy Center, LLC**
**April 4, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,331,020 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,331,020 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.49 | in. Hg |
| Relative Humidity | 56 | % |
| Ambient Temperature | 56 | °F |
| Specific Humidity | 0.005385 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 351.5 | megawatts |
| Stack Exhaust Flow (M19) | 56,958,068 | SCFH |

Base Load Load, Run - 5

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 04/04/20 19:20:23 | 300 | 12.99 | 1.93 | -0.11 | 1.15 | 7.51 |
| 04/04/20 19:20:53 | 330 | 13.00 | 1.93 | -0.08 | 1.14 | 7.79 |
| 04/04/20 19:21:23 | 360 | 13.00 | 1.92 | -0.11 | 1.18 | 7.87 |
| 04/04/20 19:21:53 | 390 | 13.01 | 1.95 | -0.11 | 1.20 | 7.92 |
| 04/04/20 19:22:23 | 420 | 13.01 | 1.95 | -0.13 | 1.23 | 7.94 |
| 04/04/20 19:22:53 | 450 | 13.01 | 1.96 | -0.11 | 1.26 | 7.97 |
| 04/04/20 19:23:23 | 480 | 13.01 | 1.98 | -0.14 | 1.25 | 7.92 |
| 04/04/20 19:23:53 | 510 | 13.02 | 1.97 | -0.14 | 1.26 | 8.01 |
| 04/04/20 19:24:23 | 540 | 13.02 | 1.97 | -0.17 | 1.26 | 7.96 |
| 04/04/20 19:24:53 | 570 | 13.02 | 1.97 | -0.11 | 1.26 | 7.97 |
| 04/04/20 19:25:23 | 600 | 13.02 | 1.97 | -0.11 | 1.28 | 8.00 |
| 04/04/20 19:25:53 | 630 | 13.01 | 1.97 | -0.12 | 1.29 | 8.05 |
| 04/04/20 19:26:23 | 660 | 13.01 | 1.98 | -0.13 | 1.27 | 8.06 |
| 04/04/20 19:26:53 | 690 | 13.01 | 2.01 | -0.16 | 1.26 | 8.08 |
| 04/04/20 19:27:23 | 720 | 13.02 | 1.99 | -0.13 | 1.24 | 8.09 |
| 04/04/20 19:27:53 | 750 | 13.02 | 2.00 | -0.16 | 1.26 | 8.10 |
| 04/04/20 19:28:23 | 780 | 13.02 | 1.99 | -0.17 | 1.25 | 8.11 |
| 04/04/20 19:28:53 | 810 | 13.01 | 2.00 | -0.16 | 1.22 | 8.13 |
| 04/04/20 19:29:23 | 840 | 13.01 | 1.96 | -0.14 | 1.21 | 8.13 |
| 04/04/20 19:29:53 | 870 | 13.01 | 1.93 | -0.13 | 1.19 | 8.14 |
| 04/04/20 19:30:23 | 900 | 13.02 | 1.92 | -0.14 | 1.18 | 8.15 |
| 04/04/20 19:30:53 | 930 | 13.02 | 1.93 | -0.16 | 1.18 | 8.17 |
| 04/04/20 19:31:23 | 960 | 13.02 | 1.94 | -0.17 | 1.16 | 8.17 |
| 04/04/20 19:31:53 | 990 | 13.02 | 1.93 | -0.14 | 1.15 | 8.17 |
| 04/04/20 19:32:23 | 1020 | 13.02 | 1.95 | -0.18 | 1.13 | 8.19 |
| 04/04/20 19:32:53 | 1050 | 13.02 | 1.95 | -0.15 | 1.14 | 8.23 |
| 04/04/20 19:33:23 | 1080 | 13.02 | 1.94 | -0.16 | 1.14 | 8.24 |
| 04/04/20 19:33:53 | 1110 | 13.02 | 1.96 | -0.14 | 1.11 | 8.23 |
| 04/04/20 19:34:23 | 1140 | 13.02 | 1.92 | -0.16 | 1.08 | 8.24 |
| 04/04/20 19:34:53 | 1170 | 13.02 | 1.95 | -0.16 | 1.06 | 8.22 |
| 04/04/20 19:35:23 | 1200 | 13.02 | 1.96 | -0.15 | 1.05 | 8.21 |
| 04/04/20 19:35:53 | 1230 | 13.01 | 1.97 | -0.14 | 1.02 | 8.20 |
| 04/04/20 19:36:23 | 1260 | 13.01 | 1.96 | -0.12 | 1.02 | 8.19 |
| 04/04/20 19:36:53 | 1290 | 13.01 | 1.97 | -0.11 | 1.02 | 8.18 |
| 04/04/20 19:37:23 | 1320 | 13.01 | 1.96 | -0.08 | 1.03 | 8.17 |
| 04/04/20 19:37:53 | 1350 | 13.02 | 1.95 | -0.10 | 1.01 | 8.16 |
| 04/04/20 19:38:23 | 1380 | 13.02 | 1.93 | -0.07 | 0.99 | 8.14 |
| 04/04/20 19:38:53 | 1410 | 13.01 | 1.93 | -0.12 | 0.99 | 8.15 |
| 04/04/20 19:39:23 | 1440 | 13.02 | 1.95 | -0.08 | 0.97 | 8.16 |
| 04/04/20 19:39:53 | 1470 | 13.02 | 1.95 | -0.09 | 0.97 | 8.15 |
| 04/04/20 19:40:23 | 1500 | 13.02 | 1.96 | -0.08 | 0.99 | 8.16 |
| 04/04/20 19:40:53 | 1530 | 13.02 | 1.98 | -0.07 | 0.96 | 8.16 |
| **RAW AVERAGE** | | **13.01** | **1.96** | **-0.13** | **1.14** | **8.09** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0033 | INST-NX-0049 | INST-CO-0030 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.02 | -0.08 | -0.32 | |
| | **Final Zero** | -0.02 | -0.06 | -0.23 | |
| | **Avg. Zero** | -0.02 | -0.07 | -0.28 | |
| | **Initial UpScale** | 11.91 | 4.56 | 5.60 | |
| | **Final UpScale** | 11.93 | 4.53 | 5.51 | |
| | **Avg. UpScale** | 11.92 | 4.55 | 5.56 | |
| **Upscale Cal Gas** | | 11.98 | 4.55 | 5.22 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 13.08 | 2.00 | 0.13 | 1.24 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.51 | 0.10 | 0.94 |
| Emission Rate (lb/hr) | N/A | 13.59 | 0.54 | 3.13 |
| Emission Rate (lb/MMBtu) | N/A | 0.0056 | 0.000 | 0.001 |

**Cricket Valley Energy Center, LLC**
**April 4, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,335,100 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,335,100 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.50 | in. Hg |
| Relative Humidity | 58 | % |
| Ambient Temperature | 56 | °F |
| Specific Humidity | 0.005577 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 351.9 | megawatts |
| Stack Exhaust Flow (M19) | 56,851,602 | SCFH |

Base Load Load, Run - 6

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 04/04/20 19:48:23 | 1980 | 13.01 | 1.87 | -0.06 | 0.97 | 7.97 |
| 04/04/20 19:48:53 | 2010 | 13.01 | 1.90 | -0.04 | 0.99 | 8.04 |
| 04/04/20 19:49:23 | 2040 | 13.01 | 1.91 | -0.03 | 1.00 | 8.07 |
| 04/04/20 19:49:53 | 2070 | 13.01 | 1.90 | -0.05 | 1.01 | 8.08 |
| 04/04/20 19:50:23 | 2100 | 13.01 | 1.88 | -0.06 | 1.01 | 8.10 |
| 04/04/20 19:50:53 | 2130 | 13.01 | 1.91 | -0.06 | 1.01 | 8.08 |
| 04/04/20 19:51:23 | 2160 | 13.02 | 1.92 | -0.04 | 1.03 | 8.08 |
| 04/04/20 19:51:53 | 2190 | 13.01 | 1.93 | -0.01 | 1.02 | 8.06 |
| 04/04/20 19:52:23 | 2220 | 13.01 | 1.95 | -0.04 | 1.02 | 8.05 |
| 04/04/20 19:52:53 | 2250 | 13.01 | 1.96 | -0.01 | 1.01 | 8.02 |
| 04/04/20 19:53:23 | 2280 | 13.01 | 1.97 | -0.04 | 1.04 | 8.02 |
| 04/04/20 19:53:53 | 2310 | 13.02 | 1.99 | -0.01 | 1.04 | 8.02 |
| 04/04/20 19:54:23 | 2340 | 13.02 | 1.99 | -0.03 | 1.05 | 8.03 |
| 04/04/20 19:54:53 | 2370 | 13.02 | 1.99 | -0.02 | 1.06 | 8.06 |
| 04/04/20 19:55:23 | 2400 | 13.02 | 1.99 | -0.02 | 1.06 | 8.08 |
| 04/04/20 19:55:53 | 2430 | 13.01 | 1.98 | -0.01 | 1.06 | 8.07 |
| 04/04/20 19:56:23 | 2460 | 13.01 | 1.98 | -0.01 | 1.06 | 8.08 |
| 04/04/20 19:56:53 | 2490 | 13.01 | 1.97 | 0.00 | 1.05 | 8.09 |
| 04/04/20 19:57:23 | 2520 | 13.01 | 1.96 | -0.01 | 1.03 | 8.10 |
| 04/04/20 19:57:53 | 2550 | 13.01 | 1.97 | -0.02 | 1.03 | 8.10 |
| 04/04/20 19:58:23 | 2580 | 13.02 | 1.94 | 0.00 | 1.04 | 8.10 |
| 04/04/20 19:58:53 | 2610 | 13.02 | 1.89 | -0.01 | 1.03 | 8.12 |
| 04/04/20 19:59:23 | 2640 | 13.02 | 1.69 | 0.00 | 1.04 | 8.13 |
| 04/04/20 19:59:53 | 2670 | 13.01 | 1.56 | -0.01 | 1.05 | 8.14 |
| 04/04/20 20:00:23 | 2700 | 13.01 | 1.49 | 0.01 | 1.03 | 8.17 |
| 04/04/20 20:00:53 | 2730 | 13.02 | 1.42 | -0.04 | 1.01 | 8.18 |
| 04/04/20 20:01:23 | 2760 | 13.02 | 1.39 | -0.05 | 1.02 | 8.20 |
| 04/04/20 20:01:53 | 2790 | 13.01 | 1.39 | -0.02 | 1.03 | 8.19 |
| 04/04/20 20:02:23 | 2820 | 13.01 | 1.38 | 0.00 | 1.04 | 8.59 |
| 04/04/20 20:02:53 | 2850 | 13.01 | 1.41 | -0.02 | 1.01 | 8.51 |
| 04/04/20 20:03:23 | 2880 | 13.01 | 1.39 | -0.03 | 0.99 | 8.35 |
| 04/04/20 20:03:53 | 2910 | 13.02 | 1.41 | -0.01 | 0.99 | 8.26 |
| 04/04/20 20:04:23 | 2940 | 13.02 | 1.41 | -0.04 | 0.99 | 8.25 |
| 04/04/20 20:04:53 | 2970 | 13.01 | 1.43 | -0.05 | 1.00 | 8.25 |
| 04/04/20 20:05:23 | 3000 | 13.01 | 1.46 | -0.07 | 0.97 | 8.27 |
| 04/04/20 20:05:53 | 3030 | 13.01 | 1.50 | 0.11 | 0.99 | 8.27 |
| 04/04/20 20:06:23 | 3060 | 13.01 | 1.55 | 0.51 | 0.97 | 8.27 |
| 04/04/20 20:06:53 | 3090 | 13.01 | 1.61 | 0.33 | 0.98 | 8.25 |
| 04/04/20 20:07:23 | 3120 | 13.01 | 1.67 | 0.32 | 0.95 | 8.23 |
| 04/04/20 20:07:53 | 3150 | 13.02 | 1.71 | 0.23 | 0.92 | 8.20 |
| 04/04/20 20:08:23 | 3180 | 13.01 | 1.76 | 0.16 | 0.93 | 8.20 |
| 04/04/20 20:08:53 | 3210 | 13.02 | 1.77 | 0.11 | 0.92 | 8.19 |
| **RAW AVERAGE** | | **13.01** | **1.74** | **0.02** | **1.01** | **8.15** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0033 | INST-NX-0049 | INST-CO-0030 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.02 | -0.06 | -0.23 | |
| | **Final Zero** | -0.04 | -0.09 | -0.32 | |
| | **Avg. Zero** | -0.03 | -0.08 | -0.28 | |
| | **Initial UpScale** | 11.93 | 4.53 | 5.51 | |
| | **Final UpScale** | 11.96 | 4.57 | 5.55 | |
| | **Avg. UpScale** | 11.95 | 4.55 | 5.53 | |
| **Upscale Cal Gas** | | 11.98 | 4.55 | 5.22 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 13.05 | 1.79 | 0.26 | 1.10 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.34 | 0.20 | 0.83 |
| Emission Rate (lb/hr) | N/A | 12.14 | 1.09 | 2.77 |
| Emission Rate (lb/MMBtu) | N/A | 0.0050 | 0.000 | 0.001 |

**Cricket Valley Energy Center, LLC**
**April 4, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,339,180 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,339,180 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.51 | in. Hg |
| Relative Humidity | 64 | % |
| Ambient Temperature | 53 | °F |
| Specific Humidity | 0.005514 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 352.7 | megawatts |
| Stack Exhaust Flow (M19) | 56,758,347 | SCFH |

Base Load Load, Run - 7

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 04/04/20 20:20:13 | 270 | 13.00 | 1.87 | -0.07 | 0.86 | 7.87 |
| 04/04/20 20:20:43 | 300 | 13.00 | 1.91 | -0.10 | 0.90 | 7.90 |
| 04/04/20 20:21:13 | 330 | 13.00 | 1.93 | -0.11 | 0.92 | 7.95 |
| 04/04/20 20:21:43 | 360 | 13.00 | 1.98 | -0.12 | 0.95 | 7.98 |
| 04/04/20 20:22:13 | 390 | 13.00 | 2.01 | -0.12 | 0.96 | 7.96 |
| 04/04/20 20:22:43 | 420 | 13.00 | 2.03 | -0.10 | 0.94 | 8.05 |
| 04/04/20 20:23:13 | 450 | 13.00 | 2.05 | -0.13 | 0.94 | 7.99 |
| 04/04/20 20:23:43 | 480 | 13.00 | 2.06 | -0.12 | 0.94 | 8.01 |
| 04/04/20 20:24:13 | 510 | 13.01 | 2.07 | -0.14 | 0.94 | 8.02 |
| 04/04/20 20:24:43 | 540 | 13.01 | 2.07 | -0.11 | 0.93 | 8.02 |
| 04/04/20 20:25:13 | 570 | 13.00 | 2.07 | -0.11 | 0.94 | 8.01 |
| 04/04/20 20:25:43 | 600 | 13.00 | 2.06 | -0.13 | 0.92 | 8.01 |
| 04/04/20 20:26:13 | 630 | 13.01 | 2.05 | -0.13 | 0.91 | 7.98 |
| 04/04/20 20:26:43 | 660 | 13.01 | 2.02 | -0.09 | 0.93 | 7.97 |
| 04/04/20 20:27:13 | 690 | 13.01 | 2.00 | -0.14 | 0.92 | 7.97 |
| 04/04/20 20:27:43 | 720 | 13.01 | 2.00 | -0.10 | 0.93 | 7.98 |
| 04/04/20 20:28:13 | 750 | 13.01 | 1.98 | -0.11 | 0.88 | 8.00 |
| 04/04/20 20:28:43 | 780 | 13.01 | 1.94 | -0.10 | 0.91 | 8.00 |
| 04/04/20 20:29:13 | 810 | 13.00 | 1.95 | -0.12 | 0.89 | 7.99 |
| 04/04/20 20:29:43 | 840 | 13.00 | 1.92 | -0.12 | 0.89 | 8.02 |
| 04/04/20 20:30:13 | 870 | 13.01 | 1.92 | -0.09 | 0.88 | 8.05 |
| 04/04/20 20:30:43 | 900 | 13.01 | 1.90 | -0.10 | 0.88 | 8.07 |
| 04/04/20 20:31:13 | 930 | 13.00 | 1.88 | -0.11 | 0.89 | 8.08 |
| 04/04/20 20:31:43 | 960 | 13.00 | 1.89 | -0.11 | 0.88 | 8.45 |
| 04/04/20 20:32:13 | 990 | 13.01 | 1.92 | -0.10 | 0.86 | 8.33 |
| 04/04/20 20:32:43 | 1020 | 13.00 | 1.94 | -0.11 | 0.85 | 8.18 |
| 04/04/20 20:33:13 | 1050 | 13.01 | 1.93 | -0.08 | 0.86 | 8.14 |
| 04/04/20 20:33:43 | 1080 | 13.01 | 1.93 | -0.11 | 0.84 | 8.12 |
| 04/04/20 20:34:13 | 1110 | 13.01 | 1.91 | -0.11 | 0.85 | 8.12 |
| 04/04/20 20:34:43 | 1140 | 13.01 | 1.90 | -0.11 | 0.84 | 8.14 |
| 04/04/20 20:35:13 | 1170 | 13.01 | 1.91 | -0.10 | 0.84 | 8.14 |
| 04/04/20 20:35:43 | 1200 | 13.00 | 1.91 | -0.11 | 0.84 | 8.15 |
| 04/04/20 20:36:13 | 1230 | 13.01 | 1.92 | -0.13 | 0.82 | 8.15 |
| 04/04/20 20:36:43 | 1260 | 13.00 | 1.93 | -0.10 | 0.83 | 8.15 |
| 04/04/20 20:37:13 | 1290 | 13.00 | 1.94 | -0.09 | 0.82 | 8.18 |
| 04/04/20 20:37:43 | 1320 | 13.00 | 1.93 | -0.10 | 0.84 | 8.17 |
| 04/04/20 20:38:13 | 1350 | 13.00 | 1.93 | -0.08 | 0.83 | 8.18 |
| 04/04/20 20:38:43 | 1380 | 13.00 | 1.94 | -0.12 | 0.82 | 8.18 |
| 04/04/20 20:39:13 | 1410 | 13.00 | 1.91 | -0.12 | 0.82 | 8.21 |
| 04/04/20 20:39:43 | 1440 | 12.99 | 1.92 | -0.12 | 0.81 | 8.24 |
| 04/04/20 20:40:13 | 1470 | 13.00 | 1.94 | -0.14 | 0.80 | 8.19 |
| 04/04/20 20:40:43 | 1500 | 13.00 | 1.94 | -0.13 | 0.79 | 8.19 |
| **RAW AVERAGE** | | **13.00** | **1.96** | **-0.11** | **0.88** | **8.08** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0033 | INST-NX-0049 | INST-CO-0030 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.04 | -0.09 | -0.32 | |
| | **Final Zero** | -0.03 | -0.10 | -0.35 | |
| | **Avg. Zero** | -0.04 | -0.10 | -0.34 | |
| | **Initial UpScale** | 11.96 | 4.57 | 5.55 | |
| | **Final UpScale** | 11.96 | 4.54 | 5.43 | |
| | **Avg. UpScale** | 11.96 | 4.56 | 5.49 | |
| **Upscale Cal Gas** | | 11.98 | 4.55 | 5.22 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 13.02 | 2.01 | 0.20 | 0.96 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.50 | 0.15 | 0.72 |
| Emission Rate (lb/hr) | N/A | 13.61 | 0.83 | 2.40 |
| Emission Rate (lb/MMBtu) | N/A | 0.0055 | 0.000 | 0.001 |

**Cricket Valley Energy Center, LLC**
**April 4, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,342,860 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,342,860 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.51 | in. Hg |
| Relative Humidity | 66 | % |
| Ambient Temperature | 53 | °F |
| Specific Humidity | 0.005688 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 353.0 | megawatts |
| Stack Exhaust Flow (M19) | 56,775,373 | SCFH |

Base Load Load, Run - 8

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 04/04/20 20:49:13 | 2010 | 12.98 | 1.35 | -0.12 | 1.04 | 7.94 |
| 04/04/20 20:49:43 | 2040 | 12.98 | 1.35 | -0.12 | 1.09 | 7.97 |
| 04/04/20 20:50:13 | 2070 | 12.99 | 1.35 | -0.14 | 1.09 | 7.92 |
| 04/04/20 20:50:43 | 2100 | 12.99 | 1.35 | -0.14 | 1.09 | 8.02 |
| 04/04/20 20:51:13 | 2130 | 12.99 | 1.35 | -0.13 | 1.10 | 7.96 |
| 04/04/20 20:51:43 | 2160 | 12.99 | 1.38 | -0.13 | 1.11 | 7.99 |
| 04/04/20 20:52:13 | 2190 | 12.99 | 1.41 | -0.12 | 1.14 | 8.00 |
| 04/04/20 20:52:43 | 2220 | 13.00 | 1.43 | -0.13 | 1.16 | 8.03 |
| 04/04/20 20:53:13 | 2250 | 13.00 | 1.46 | -0.15 | 1.19 | 8.07 |
| 04/04/20 20:53:43 | 2280 | 13.00 | 1.52 | -0.12 | 1.16 | 8.08 |
| 04/04/20 20:54:13 | 2310 | 13.00 | 1.56 | -0.15 | 1.19 | 8.10 |
| 04/04/20 20:54:43 | 2340 | 12.99 | 1.61 | -0.14 | 1.22 | 8.32 |
| 04/04/20 20:55:13 | 2370 | 13.00 | 1.64 | -0.16 | 1.20 | 8.22 |
| 04/04/20 20:55:43 | 2400 | 13.00 | 1.72 | -0.16 | 1.17 | 8.15 |
| 04/04/20 20:56:13 | 2430 | 13.00 | 1.77 | -0.14 | 1.20 | 8.11 |
| 04/04/20 20:56:43 | 2460 | 12.99 | 1.79 | -0.17 | 1.20 | 8.12 |
| 04/04/20 20:57:13 | 2490 | 13.00 | 1.84 | -0.15 | 1.20 | 8.15 |
| 04/04/20 20:57:43 | 2520 | 13.00 | 1.89 | -0.15 | 1.22 | 8.18 |
| 04/04/20 20:58:13 | 2550 | 12.99 | 1.96 | -0.17 | 1.19 | 8.17 |
| 04/04/20 20:58:43 | 2580 | 12.99 | 2.00 | -0.17 | 1.17 | 8.16 |
| 04/04/20 20:59:13 | 2610 | 13.00 | 2.05 | -0.18 | 1.19 | 8.15 |
| 04/04/20 20:59:43 | 2640 | 13.00 | 2.07 | -0.16 | 1.17 | 8.18 |
| 04/04/20 21:00:13 | 2670 | 13.01 | 2.09 | -0.17 | 1.18 | 8.16 |
| 04/04/20 21:00:43 | 2700 | 13.00 | 2.09 | -0.17 | 1.14 | 8.15 |
| 04/04/20 21:01:13 | 2730 | 13.01 | 2.10 | -0.18 | 1.14 | 8.11 |
| 04/04/20 21:01:43 | 2760 | 13.01 | 2.10 | -0.16 | 1.13 | 8.24 |
| 04/04/20 21:02:13 | 2790 | 13.01 | 2.11 | -0.15 | 1.15 | 8.28 |
| 04/04/20 21:02:43 | 2820 | 13.00 | 2.09 | -0.18 | 1.14 | 8.17 |
| 04/04/20 21:03:13 | 2850 | 13.00 | 2.08 | -0.15 | 1.14 | 8.31 |
| 04/04/20 21:03:43 | 2880 | 13.00 | 2.06 | -0.17 | 1.15 | 8.47 |
| 04/04/20 21:04:13 | 2910 | 13.00 | 2.06 | -0.16 | 1.13 | 8.18 |
| 04/04/20 21:04:43 | 2940 | 13.00 | 2.03 | -0.18 | 1.13 | 8.09 |
| 04/04/20 21:05:13 | 2970 | 13.00 | 2.01 | -0.15 | 1.11 | 8.06 |
| 04/04/20 21:05:43 | 3000 | 13.00 | 1.99 | -0.18 | 1.12 | 8.08 |
| 04/04/20 21:06:13 | 3030 | 13.00 | 1.99 | -0.18 | 1.15 | 8.09 |
| 04/04/20 21:06:43 | 3060 | 13.00 | 1.97 | -0.17 | 1.14 | 8.09 |
| 04/04/20 21:07:13 | 3090 | 13.01 | 1.95 | -0.18 | 1.13 | 8.11 |
| 04/04/20 21:07:43 | 3120 | 13.00 | 1.93 | -0.19 | 1.12 | 8.13 |
| 04/04/20 21:08:13 | 3150 | 13.00 | 1.92 | -0.17 | 1.12 | 8.10 |
| 04/04/20 21:08:43 | 3180 | 13.01 | 1.91 | -0.18 | 1.13 | 8.10 |
| 04/04/20 21:09:13 | 3210 | 13.01 | 1.87 | -0.19 | 1.18 | 8.52 |
| 04/04/20 21:09:43 | 3240 | 13.01 | 1.87 | -0.17 | 1.13 | 8.31 |
| **RAW AVERAGE** | | **13.00** | **1.81** | **-0.16** | **1.15** | **8.14** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0033 | INST-NX-0049 | INST-CO-0030 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.03 | -0.10 | -0.35 | |
| | **Final Zero** | -0.03 | -0.08 | -0.42 | |
| | **Avg. Zero** | -0.03 | -0.09 | -0.39 | |
| | **Initial UpScale** | 11.96 | 4.54 | 5.43 | |
| | **Final UpScale** | 11.97 | 4.54 | 5.41 | |
| | **Avg. UpScale** | 11.97 | 4.54 | 5.42 | |
| **Upscale Cal Gas** | | 11.98 | 4.55 | 5.22 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| **Corrected Raw Average (ppm/% dry basis)** | 13.01 | 1.87 | 0.20 | 1.25 |
| **Concentration (ppm@ 15%$O_2$)** | N/A | 1.40 | 0.15 | 0.94 |
| **Emission Rate (lb/hr)** | N/A | 12.67 | 0.84 | 3.14 |
| **Emission Rate (lb/MMBtu)** | N/A | 0.0051 | 0.000 | 0.001 |

**Cricket Valley Energy Center, LLC**
**April 4, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,344,080 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,344,080 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.52 | in. Hg |
| Relative Humidity | 66 | % |
| Ambient Temperature | 52 | °F |
| Specific Humidity | 0.005478 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 353.1 | megawatts |
| Stack Exhaust Flow (M19) | 56,765,276 | SCFH |

Base Load Load, Run - 9

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 04/04/20 21:17:13 | 3690 | 12.99 | 1.86 | -0.20 | 1.05 | 8.01 |
| 04/04/20 21:17:43 | 3720 | 12.99 | 1.87 | -0.21 | 1.05 | 7.96 |
| 04/04/20 21:18:13 | 3750 | 12.99 | 1.87 | -0.19 | 1.09 | 8.04 |
| 04/04/20 21:18:43 | 3780 | 12.99 | 1.88 | -0.17 | 1.09 | 7.96 |
| 04/04/20 21:19:13 | 3810 | 12.99 | 1.89 | -0.17 | 1.14 | 8.03 |
| 04/04/20 21:19:43 | 3840 | 12.99 | 1.88 | -0.16 | 1.15 | 7.96 |
| 04/04/20 21:20:13 | 3870 | 13.00 | 1.88 | -0.20 | 1.15 | 8.03 |
| 04/04/20 21:20:43 | 3900 | 12.99 | 1.89 | -0.19 | 1.17 | 7.98 |
| 04/04/20 21:21:13 | 3930 | 12.99 | 1.89 | -0.19 | 1.19 | 7.99 |
| 04/04/20 21:21:43 | 3960 | 13.00 | 1.89 | -0.17 | 1.21 | 8.01 |
| 04/04/20 21:22:13 | 3990 | 13.00 | 1.87 | -0.20 | 1.20 | 8.04 |
| 04/04/20 21:22:43 | 4020 | 13.00 | 1.87 | -0.20 | 1.22 | 8.03 |
| 04/04/20 21:23:13 | 4050 | 12.99 | 1.89 | -0.19 | 1.22 | 8.05 |
| 04/04/20 21:23:43 | 4080 | 12.99 | 1.90 | -0.19 | 1.21 | 8.06 |
| 04/04/20 21:24:13 | 4110 | 13.00 | 1.93 | -0.17 | 1.22 | 8.06 |
| 04/04/20 21:24:43 | 4140 | 13.00 | 1.95 | -0.18 | 1.22 | 8.07 |
| 04/04/20 21:25:13 | 4170 | 13.00 | 1.97 | -0.19 | 1.22 | 8.09 |
| 04/04/20 21:25:43 | 4200 | 13.00 | 1.97 | -0.20 | 1.20 | 8.12 |
| 04/04/20 21:26:13 | 4230 | 13.00 | 1.96 | -0.19 | 1.21 | 8.12 |
| 04/04/20 21:26:43 | 4260 | 13.00 | 1.95 | -0.19 | 1.21 | 8.13 |
| 04/04/20 21:27:13 | 4290 | 13.00 | 1.94 | -0.21 | 1.21 | 8.13 |
| 04/04/20 21:27:43 | 4320 | 13.00 | 1.94 | -0.20 | 1.22 | 8.14 |
| 04/04/20 21:28:13 | 4350 | 13.00 | 1.95 | -0.18 | 1.18 | 8.14 |
| 04/04/20 21:28:43 | 4380 | 13.00 | 1.96 | -0.19 | 1.18 | 8.15 |
| 04/04/20 21:29:13 | 4410 | 13.00 | 1.96 | -0.20 | 1.17 | 8.15 |
| 04/04/20 21:29:43 | 4440 | 13.00 | 1.93 | -0.16 | 1.17 | 8.17 |
| 04/04/20 21:30:13 | 4470 | 13.00 | 1.93 | -0.19 | 1.17 | 8.19 |
| 04/04/20 21:30:43 | 4500 | 13.00 | 1.92 | -0.20 | 1.17 | 8.22 |
| 04/04/20 21:31:13 | 4530 | 13.01 | 1.91 | -0.23 | 1.19 | 8.23 |
| 04/04/20 21:31:43 | 4560 | 13.00 | 1.91 | -0.18 | 1.17 | 8.25 |
| 04/04/20 21:32:13 | 4590 | 13.01 | 1.88 | -0.21 | 1.16 | 8.26 |
| 04/04/20 21:32:43 | 4620 | 13.00 | 1.88 | -0.19 | 1.16 | 8.27 |
| 04/04/20 21:33:13 | 4650 | 13.00 | 1.90 | -0.22 | 1.14 | 8.28 |
| 04/04/20 21:33:43 | 4680 | 13.01 | 1.91 | -0.22 | 1.12 | 8.30 |
| 04/04/20 21:34:13 | 4710 | 13.00 | 1.90 | -0.22 | 1.12 | 8.29 |
| 04/04/20 21:34:43 | 4740 | 13.00 | 1.93 | -0.21 | 1.10 | 8.29 |
| 04/04/20 21:35:13 | 4770 | 13.01 | 1.92 | -0.20 | 1.14 | 8.29 |
| 04/04/20 21:35:43 | 4800 | 13.00 | 1.92 | -0.20 | 1.09 | 8.28 |
| 04/04/20 21:36:13 | 4830 | 13.00 | 1.94 | -0.17 | 1.07 | 8.25 |
| 04/04/20 21:36:43 | 4860 | 13.00 | 1.95 | -0.22 | 1.07 | 8.22 |
| 04/04/20 21:37:13 | 4890 | 13.00 | 1.94 | -0.19 | 1.06 | 8.19 |
| 04/04/20 21:37:43 | 4920 | 13.00 | 1.95 | -0.18 | 1.04 | 8.17 |
| **RAW AVERAGE** | | **13.00** | **1.91** | **-0.19** | **1.16** | **8.13** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0033 | INST-NX-0049 | INST-CO-0030 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.03 | -0.08 | -0.42 | |
| | **Final Zero** | -0.04 | -0.12 | -0.41 | |
| | **Avg. Zero** | -0.04 | -0.10 | -0.42 | |
| | **Initial UpScale** | 11.97 | 4.54 | 5.41 | |
| | **Final UpScale** | 11.97 | 4.55 | 5.44 | |
| | **Avg. UpScale** | 11.97 | 4.55 | 5.43 | |
| **Upscale Cal Gas** | | 11.98 | 4.55 | 5.22 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 13.01 | 1.97 | 0.20 | 1.26 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.48 | 0.15 | 0.94 |
| Emission Rate (lb/hr) | N/A | 13.38 | 0.82 | 3.16 |
| Emission Rate (lb/MMBtu) | N/A | 0.0054 | 0.000 | 0.001 |

**Cricket Valley Energy Center, LLC**
**April 4, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Fuel Data**

| | | |
|---|---|---|
| Fuel Fd factor | 8,710 | SCF exh/MMBtu |
| Fuel Heating Value (HHV) | 1,050 | Btu/SCF fuel |
| Turbine Fuel Flow | 2,346,940 | SCFH |
| Duct Burner Fuel Flow | 0 | SCFH |
| Total Fuel Flow | 2,346,940 | SCFH |

**Weather Data**

| | | |
|---|---|---|
| Barometric Pressure | 29.52 | in. Hg |
| Relative Humidity | 67 | % |
| Ambient Temperature | 52 | °F |
| Specific Humidity | 0.005562 | lb $H_2O$ / lb air |

**Unit Data**

| | | |
|---|---|---|
| Unit Load | 351.8 | megawatts |
| Stack Exhaust Flow (M19) | 56,928,973 | SCFH |

Base Load Load, Run - 10

| Date/Time (mm/dd/yy hh:mm:ss) | Elapsed Time (seconds) | $O_2$ (%) | NOx (ppmvd) | CO (ppmvd) | $NH_3$ (ppmvw) | $H_2O$ (%) |
|---|---|---|---|---|---|---|
| 04/04/20 21:50:13 | 362 | 12.98 | 1.80 | -0.17 | 1.26 | 7.84 |
| 04/04/20 21:50:43 | 392 | 12.98 | 1.82 | -0.14 | 1.27 | 7.92 |
| 04/04/20 21:51:13 | 422 | 12.99 | 1.81 | -0.19 | 1.27 | 7.96 |
| 04/04/20 21:51:43 | 452 | 12.99 | 1.81 | -0.15 | 1.26 | 8.00 |
| 04/04/20 21:52:13 | 482 | 13.00 | 1.81 | -0.18 | 1.27 | 7.93 |
| 04/04/20 21:52:43 | 512 | 13.00 | 1.81 | -0.16 | 1.27 | 8.03 |
| 04/04/20 21:53:13 | 542 | 13.00 | 1.80 | -0.16 | 1.24 | 7.95 |
| 04/04/20 21:53:43 | 572 | 13.00 | 1.82 | -0.20 | 1.25 | 8.02 |
| 04/04/20 21:54:13 | 602 | 13.00 | 1.83 | -0.16 | 1.24 | 7.93 |
| 04/04/20 21:54:43 | 632 | 13.00 | 1.86 | -0.17 | 1.27 | 8.00 |
| 04/04/20 21:55:13 | 662 | 13.00 | 1.85 | -0.17 | 1.27 | 7.93 |
| 04/04/20 21:55:43 | 692 | 13.00 | 1.87 | -0.18 | 1.25 | 8.02 |
| 04/04/20 21:56:13 | 722 | 13.00 | 1.89 | -0.14 | 1.26 | 7.92 |
| 04/04/20 21:56:43 | 752 | 13.00 | 1.87 | -0.16 | 1.27 | 8.02 |
| 04/04/20 21:57:13 | 782 | 13.00 | 1.88 | -0.16 | 1.23 | 7.93 |
| 04/04/20 21:57:43 | 812 | 13.00 | 1.88 | -0.17 | 1.31 | 8.03 |
| 04/04/20 21:58:13 | 842 | 13.00 | 1.88 | -0.14 | 1.27 | 7.97 |
| 04/04/20 21:58:43 | 872 | 13.00 | 1.90 | -0.20 | 1.25 | 7.96 |
| 04/04/20 21:59:13 | 902 | 13.00 | 1.91 | -0.17 | 1.25 | 8.03 |
| 04/04/20 21:59:43 | 932 | 13.00 | 1.94 | -0.18 | 1.27 | 7.99 |
| 04/04/20 22:00:13 | 962 | 13.00 | 1.93 | -0.19 | 1.27 | 8.00 |
| 04/04/20 22:00:43 | 992 | 13.00 | 1.93 | -0.19 | 1.30 | 8.03 |
| 04/04/20 22:01:13 | 1022 | 13.00 | 1.93 | -0.18 | 1.27 | 8.04 |
| 04/04/20 22:01:43 | 1052 | 13.00 | 1.93 | -0.15 | 1.25 | 8.05 |
| 04/04/20 22:02:13 | 1082 | 13.00 | 1.91 | -0.16 | 1.27 | 8.05 |
| 04/04/20 22:02:43 | 1112 | 13.00 | 1.92 | -0.21 | 1.24 | 8.06 |
| 04/04/20 22:03:13 | 1142 | 12.99 | 1.93 | -0.20 | 1.25 | 8.07 |
| 04/04/20 22:03:43 | 1172 | 12.99 | 1.93 | -0.21 | 1.24 | 8.07 |
| 04/04/20 22:04:13 | 1202 | 12.99 | 1.92 | -0.21 | 1.25 | 8.06 |
| 04/04/20 22:04:43 | 1232 | 12.99 | 1.91 | -0.21 | 1.21 | 8.05 |
| 04/04/20 22:05:13 | 1262 | 12.99 | 1.93 | -0.23 | 1.26 | 8.07 |
| 04/04/20 22:05:43 | 1292 | 13.00 | 1.92 | -0.20 | 1.24 | 8.09 |
| 04/04/20 22:06:13 | 1322 | 13.00 | 1.93 | -0.23 | 1.23 | 8.11 |
| 04/04/20 22:06:43 | 1352 | 12.99 | 1.94 | -0.21 | 1.19 | 8.12 |
| 04/04/20 22:07:13 | 1382 | 12.99 | 1.95 | -0.20 | 1.22 | 8.12 |
| 04/04/20 22:07:43 | 1412 | 13.00 | 1.97 | -0.22 | 1.20 | 8.14 |
| 04/04/20 22:08:13 | 1442 | 13.00 | 1.97 | -0.23 | 1.19 | 8.14 |
| 04/04/20 22:08:43 | 1472 | 12.99 | 1.96 | -0.22 | 1.18 | 8.14 |
| 04/04/20 22:09:13 | 1502 | 13.00 | 1.95 | -0.24 | 1.20 | 8.14 |
| 04/04/20 22:09:43 | 1532 | 13.00 | 1.92 | -0.21 | 1.25 | 8.51 |
| 04/04/20 22:10:13 | 1562 | 13.00 | 1.93 | -0.20 | 1.20 | 8.46 |
| 04/04/20 22:10:43 | 1592 | 13.00 | 1.92 | -0.22 | 1.19 | 8.32 |
| **RAW AVERAGE** | | **13.00** | **1.90** | **-0.19** | **1.25** | **8.05** |

| | | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|---|
| | **Serial Number:** | INST-O2-0033 | INST-NX-0049 | INST-CO-0030 | INST-IR-0008 |
| | | **(%)** | **(ppmvd)** | **(ppmvd)** | |
| **Bias** | **Initial Zero** | -0.04 | -0.12 | -0.41 | |
| | **Final Zero** | -0.05 | -0.10 | -0.40 | |
| | **Avg. Zero** | -0.05 | -0.11 | -0.41 | |
| | **Initial UpScale** | 11.97 | 4.55 | 5.44 | |
| | **Final UpScale** | 11.94 | 4.53 | 5.34 | |
| | **Avg. UpScale** | 11.96 | 4.54 | 5.39 | |
| **Upscale Cal Gas** | | 11.98 | 4.55 | 5.22 | |

| EMISSIONS DATA | $O_2$ | NOx | CO | $NH_3$ |
|---|---|---|---|---|
| Corrected Raw Average (ppm/% dry basis) | 13.02 | 1.96 | 0.20 | 1.36 |
| Concentration (ppm@ 15%$O_2$) | N/A | 1.47 | 0.15 | 1.02 |
| Emission Rate (lb/hr) | N/A | 13.34 | 0.81 | 3.41 |
| Emission Rate (lb/MMBtu) | N/A | 0.0054 | 0.000 | 0.001 |

# APPENDIX C

# CALIBRATION GAS CERTIFICATIONS

**Cricket Valley Energy Center, LLC**
**April 4, 2020**
**General Electric, 7F.05, Unit #U-00003**
**AETB/QI and PGVP RATA Data Sheet**
**Cricket Valley Energy Center**

**AirEmissionTestingData - Level 3**

| QILastName | QIFirstName | QIMiddleInitial | AETBName | AETBPhoneNumber | AETBEmail | ExamDate | ProviderName | ProviderEmail |
|---|---|---|---|---|---|---|---|---|
| McBride | Matthew | S | Air Hygiene International Inc | 888-461-8778 | info@airhygiene.com | 01/27/2019 | Source Evaluation Society | qstiprogram@gmail.com |

**ProtocolGasData - Level 3**

| GasLevelCode | GasTypeCode | CylinderIdentifier | VendorIdentifier | ExpirationDate |
|---|---|---|---|---|
| LOW | ZERO | | | |
| HIGH | BALN,CO2,O2 | CC721614 | G12018 | 11/11/2026 |
| MID | BALN,CO2,O2 | CC716390 | G12020 | 2/23/2028 |
| HIGH | BALN,CO,NO,NOX | EB0040961 | G12019 | 10/30/2022 |
| MID | BALN,CO,NO,NOX | CC727541 | G12019 | 9/3/2022 |
| | | | | |

Assay Laboratory: Red Ball TGS
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150

# CERTIFICATE OF ANALYSIS
## (Zero Ambient Nitrogen)

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0058639 | **Certification Date:** | 02/25/2020 |
| **Product ID Number:** | 121026 | **Expiration Date:** | 02/23/2028 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | RBTGS-Shreveport-LA |
| **COA #** | EB0058639.20200225-0 | **Lot Number:** | EB0058639.20200225 |
| **Customer PO. NO.:** | | **Tracking Number:** | 074332593 |
| **Customer:** | | **Previous Certification Dates:** | |

**This mixture is for laboratory use only, not for drug, household or other use.**
**This mixture is certified in Mole % to be within ±2% of the actual number reported with a confidence of 95%.**
**This mixture was manufactured by scale; weights traceable to N.I.S.T. Certificate #822/266926-02.**
**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

**Composing Material: Zero Ambient Nitrogen, Cert., Sz152**

| Component | Specification | Concentration |
|---|---|---|
| Nitrogen | Balance | Balance |
| Oxygen as Impurity | <1.0 PPM | <1.0 PPM |
| Carbon Dioxide as Impurity | <0.5 PPM | <0.5 PPM |
| Carbon Monoxide as Impurity | <0.5 PPM | <0.5 PPM |
| Total Oxides of Nitrogen as Impurity | <0.1 PPM | <0.1 PPM |
| Sulfur Dioxide as Impurity | <0.1 PPM | <0.1 PPM |
| Total Hydrocarbons as Impurity | <0.1 PPM | <0.1 PPM |

Red Ball Technical Gas Service
PGVP Vendor ID # G12020
Information and Ordering
800-551-8150
Fax (318-425-6309)

Accreditation #62754

Anthony Cyr
Assistant Operations Manager

26068-000-G27-JQ11-00004
**Red Ball Technical Gas Service**
**555 Craig Kennedy Way**
**Shreveport, LA 71107**
**800-551-8150**
**PGVP Vendor ID # G12019**

PJLA Calibration and Testing
**Accreditation #62754**

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0098845 | **Certification Date:** | 05/03/2019 |
| **Product ID Number:** | 124731 | **Expiration Date:** | 05/02/2022 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0098845.20190416-0 | **Lot Number:** | EB0098845.20190416 |
| **Customer PO. NO.:** | | **Tracking Number:** | 095689140 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Nitrogen Dioxide** | **48.7 PPM** | ±0.6 PPM | FTIR | 04/26/2019, 05/03/2019 |

Air Balance

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0003640 | EB0003640.20190102 | 03/20/2022 | GMIS | AIR | NO2 | 87.8 PPM | 1.061 | C1579010.01 |
| EB0096848 | EB0096848.20190102 | 03/21/2022 | GMIS | AIR | NO2 | 61.1 PPM | 1.072 | C1579010.01 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NO2 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 04/26/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Brandon Theus**
**Laboratory Supervisor**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

26068-000-G27-JQ11-00004
**Red Ball Technical Gas Service**
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**800-551-8150**
**PGVP Vendor ID # G12019**

PJLA Calibration and Testing
**Accreditation #62754**

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | CC727541 | **Certification Date:** | 09/04/2019 |
| **Product ID Number:** | 125564 | **Expiration Date:** | 09/03/2022 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | CC727541.20190821-0 | **Lot Number:** | CC727541.20190821 |
| **Customer PO. NO.:** | | **Tracking Number:** | 098853162 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Monoxide** | **5.22 PPM** | ±0.07 PPM | FTIR | 08/27/2019 |
| **Nitric Oxide** | **4.51 PPM** | ±0.06 PPM | Chemiluminescence | 08/27/2019, 09/04/2019 |
| Total Oxides of Nitrogen | 4.55 PPM | | | |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| ALM047128 | ALM047128.20171116 | 11/08/2022 | GMIS | N2 | NO | 9.7 PPM | 1.06 | 12100115 |
| CC238352 | CC238352.20180209 | 07/18/2022 | GMIS | N2 | NO | 5.68 PPM | 1.131 | 12100115 |
| EB0076031 | EB0076031.20190205 | 05/27/2027 | GMIS | N2 | CO | 18.7 PPM | 1.036 | 091002 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NO | Chemiluminescence | Thermo | T42C | 42C-68400-360 | 08/09/2019 |
| CO | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 08/26/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

LaMeka Dennis

**LaMeka Dennis**
**Operations Manager**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

26068-000-G27-JQ11-00004
**Red Ball Technical Gas Service**
**555 Craig Kennedy Way**
**Shreveport, LA 71107**
**800-551-8150**
**PGVP Vendor ID # G12019**

PJLA Calibration and Testing
**Accreditation #62754**

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0040961 | **Certification Date:** | 10/31/2019 |
| **Product ID Number:** | 124737 | **Expiration Date:** | 10/30/2022 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0040961.20191017-0 | **Lot Number:** | EB0040961.20191017 |
| **Customer PO. NO.:** | | **Tracking Number:** | 065159907 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Monoxide** | **9.1 PPM** | ±0.12 PPM | FTIR | 10/30/2019 |
| **Nitric Oxide** | **8.8 PPM** | ±0.10 PPM | Chemiluminescence | 10/23/2019, 10/31/2019 |
| Total Oxides of Nitrogen | 8.9 PPM | | | |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| ALM005307 | ALM0053007.20181025 | 10/09/2022 | GMIS | N2 | NO | 34.2 PPM | 1.062 | 1684B |
| CC202290 | CC202290.20160721 | 01/11/2025 | GMIS | N2 | CO | 12.14 PPM | 1.033 | 091002 |
| EB0076031 | EB0076031.20190205 | 05/27/2027 | GMIS | N2 | CO | 18.7 PPM | 1.036 | 091002 |
| EB0089797 | EB0089797.20171116 | 11/09/2022 | GMIS | N2 | NO | 9.8 PPM | 1.085 | 12100115 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NO | Chemiluminescence | Thermo | T42C | 42C-68400-360 | 10/18/2019 |
| CO | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 09/30/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Amisha Jewitt**
**Analytical Chemist**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

26068-000-G27-JQ11-00004
**Red Ball Technical Gas Service**
**555 Craig Kennedy Way**
**Shreveport, LA 71107**
**800-551-8150**
**PGVP Vendor ID # G12020**

PJLA Calibration and Testing
**Accreditation #62754**

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | CC716390 | **Certification Date:** | 02/25/2020 |
| **Product ID Number:** | 124606 | **Expiration Date:** | 02/23/2028 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | CC716390.20200220-0 | **Lot Number:** | CC716390.20200220 |
| **Customer PO. NO.:** | | **Tracking Number:** | 098496532 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Dioxide** | **8.91 %** | ±0.03 % | NDIR | 02/25/2020 |
| **Oxygen** | **11.98 %** | ±0.07 % | MPA | 02/24/2020 |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0007908 | EB0007908.20190327 | 06/18/2027 | GMIS | N2 | CO2 | 9.5 % | 0.191 | C1579010.02 |
| EB0080793 | EB0080793.20180118 | 07/21/2026 | GMIS | N2 | O2 | 11.97 % | 0.507 | 071001 |
| EB0087693 | EB0087693.20180504 | 07/21/2026 | GMIS | N2 | O2 | 24 % | 0.497 | 071001 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| O2 | MPA | Thermo | 410i | 1162980025 | 02/11/2020 |
| CO2 | NDIR | Thermo | 410i | 1162980025 | 02/25/2020 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Amisha Jewitt**
**Analytical Chemist**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

26068-000-G27-JQ11-00004
**Red Ball Technical Gas Service**
**555 Craig Kennedy Way**
**Shreveport, LA 71107**
**800-551-8150**
**PGVP Vendor ID # G12018**

PJLA Calibration and Testing
**Accreditation #62754**

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | CC721614 | **Certification Date:** | 11/13/2018 |
| **Product ID Number:** | 124605 | **Expiration Date:** | 11/11/2026 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | CC721614.20181109-0 | **Lot Number:** | CC721614.20181109 |
| **Customer PO. NO.:** | | **Tracking Number:** | 098499636 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Dioxide** | **19.0 %** | ±0.16 % | NDIR | 11/13/2018 |
| **Oxygen** | **21.0 %** | ±0.12 % | MPA | 11/13/2018 |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| EB0004987 | EB0004987.20180323 | 07/15/2026 | GMIS | N2 | CO2 | 19.5 % | 0.767 | 101001 |
| EB0005996 | EB0005996.20170209 | 05/09/2026 | GMIS | N2 | O2 | 20 % | 0.077 | 071001 |
| EB0032246 | EB0032246.20170209 | 08/05/2025 | GMIS | N2 | O2 | 24 % | 0.502 | 071001 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| O2 | MPA | Thermo | 410i | 1162980025 | 11/06/2018 |
| CO2 | NDIR | Thermo | 410i | 1162980025 | 10/24/2018 |

## SMART-CERT

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**Amisha Jewitt**
**Analytical Chemist**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

26068-000-G27-JQ11-00004

**Red Ball Technical Gas Service**
**555 Craig Kennedy Way**
**Shreveport, LA 71107**
**800-551-8150**
**PGVP Vendor ID # G12020**

PJLA Calibration and Testing
**Accreditation #62754**

# CERTIFIED GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0093359 | **Certification Date:** | 03/26/2020 |
| **Product ID Number:** | 125123 | **Expiration Date:** | 03/26/2021 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | EB0093359.20200325-0 | **Lot Number:** | EB0093359.20200325 |
| **Customer PO. NO.:** | | **Tracking Number:** | 095486048 |
| **Customer:** | | **Previous Certification Dates:** | |

**This mixture is for laboratory use only, not for drug, household or other use.**
**This mixture is certified in Mole % to be within ±2% of the actual number reported with a confidence of 95%.**
**This mixture was manufactured by scale; weights traceable to N.I.S.T. Certificate #822/266926-02.**
**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle |
|---|---|---|---|
| **Ammonia** | **48.9 PPM** | ± 2% NIST | FTIR |
| **Sulfur Hexafluoride** | **9.74 PPM** | ± 2% NIST | FTIR |
| Nitrogen | Balance | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| SA18481 | 70086910005 | 04/12/2020 | PS | N2 | NH3 | 21.1 PPM | 1.2 | 73248226 |
| EB0079029 | EB0079029 | 06/27/2020 | PS | N2 | SF6 | 10.1 PPM | 5 | 191064 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NH3 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | |
| SF6 | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | |

## SMART-CERT

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**Brandon Theus**
**Laboratory Supervisor**
Assay Laboratory: Red Ball TGS
Version 02-G, Revised on 2017-07-02

# APPENDIX D

# QUALITY ASSURANCE AND QUALITY CONTROL DATA

# QA/QC PROGRAM

AIR HYGIENE ensures the quality and validity of its emission measurement and reporting procedures through a rigorous quality assurance (QA) program. The program is developed and administered by an internal QA team and encompasses six major areas:

1. Field Qualifications
2. QA reviews of reports, laboratory work, and field testing;
3. Equipment calibration and maintenance;
4. Chain-of-custody;
5. Training; and
6. Knowledge of current test methods

## Field Qualifications

Air Hygiene personnel are required to gain and maintain competence with testing methods and techniques according to their job titles and the roles they play during field testing events. Qualifications for each job description include:

Staff Technician - An entry level position with responsibility to test on the stack by performing duties that include: keep trucks and trailers stocked and clean, travel to and from job site, be the "hands of the test" on the stack; stay on a stack during the sample test, set up and tear down equipment on-site, perform maintenance on equipment in the shop and on-site.

Test Technician or Specialist - Acts as the "hands of the test" on the stack by performing duties that include: stay on a stack during the sample test, migrate to the testing trailer and learn the different analyzers and testing methods used on site, set up and tear down testing equipment on site, learn the system for testing from Testing Managers and Project Managers, travel to and from job site; including driving responsibilities under DOT requirements, follow directions of Testing Managers and Project Managers, learn the proper way to conduct on-site test of stationary stacks

Test Manager or Engineer - Directs and coordinates all aspects of a successful test by performing the following duties personally or through subordinate supervisors including: operating analyzers and consoles during testing along with QA/QC procedures, supervise set up and tear down of equipment on site, writing, reviewing, and revising final test reports, working with the client or state personnel while on the job site, managing pre-test checklists and onsite testing procedures, diagnose and repair any problems that may arise with the equipment, safely operate a man lift and drive a truck with or without a trailer, act as crew leader in the field, write protocols and reports, maintain project log of services performed on the job, verify all equipment needed for a job was loaded on the trailer. Test Managers must hold at least one QSTI certificate.

Project Manager - Directs and coordinates all aspects of a successful test by performing the following duties personally or through subordinate supervisors including: operating analyzers and consoles during testing along with QA/QC procedures, supervise set up and tear down of equipment on site, writing, reviewing, and revising final test reports, working with the client or state personnel while on the job site, managing pre-test checklists and onsite testing procedures, diagnose and repair any problems that may arise with the equipment, safely operate a man lift and drive a truck with or without a trailer, act as crew leader in the field, write protocols and reports, maintain project log of services performed on the job, verify all equipment needed for a job was loaded on the trailer. Project Managers typically hold QSTI certificates in Groups 1 through 4.

## QA Reviews

Air Hygiene's review procedure includes review of each source test report, along with laboratory and fieldwork, by the QA Team. The most important review is the one that takes place before a test program begins. The QA Team works closely with technical division personnel to prepare and review test protocols. Test protocol review includes selection of appropriate test procedures, evaluation of interferences or other restrictions that might preclude use of standard test procedures, and evaluation and/or development of alternate procedures.

## Equipment Calibration and Maintenance

The equipment used to conduct the emission measurements is maintained according to the manufacturer's instructions to ensure proper operation. In addition to the maintenance program, calibrations are carried out on each measurement device according to the schedule outlined by the Environmental Protection Agency. Quality control checks are also conducted in the field for each test program. In conformance with ASTM D7036 Section 15.3.15, all metering and monitoring equipment meets or exceeds the uncertainty criteria contained in the method language that pertains to that equipment.

### Chain-of-Custody

Air Hygiene maintains full chain-of-custody documentation on all samples and data sheets. In addition to normal documentation of changes between field sample custodians, laboratory personnel, and field test personnel, Air Hygiene documents every individual who handles any test component in the field (e.g., probe wash, impinger loading and recovery, filter loading and recovery, etc.). Samples are stored in a locked area to which only Air Hygiene personnel have access. Field data sheets are secured at Air Hygiene's offices upon return from the field.

### Training

Personnel's training is essential to ensure quality testing. Air Hygiene has formal and informal training programs, which include:

1. Attendance at EPA-sponsored training courses
2. Enrollment in EPA correspondence courses
3 A requirement for all technicians to read and understand Air Hygiene's QA manual
4. In-house training and QA meetings on a regular basis
5. Maintenance of training records

### Knowledge of Current Test Methods

With the constant updating of standard test methods and the wide variety of emerging test procedures, it is essential that any qualified source tester keep abreast of new developments. Air Hygiene subscribes to services, which provide updates on EPA reference methods, rules, and regulations. Additionally, source test personnel regularly attend and present papers at testing and emission-related seminars and conferences. Air Hygiene personnel maintain membership in the Air and Waste Management Association and the American Industrial Hygiene Association.

### Reproduction and Distribution Policy

Reproducing portions of this test report may omit critical or substantial documentation or be taken out of context and due care must be exercised in this regard. Furthermore, this test report and its associated data shall not be reproduced in full or in part without the written consent of the customer.

### Data Provided by Client

Data provided by the Client is clearly identified in the report. Air Hygiene accepts data provided by the Client as accurate.

# COMBUSTION TESTING QUALITY ASSURANCE ACTIVITIES

In conformance with ASTM D7036 Section 15.3.11 and 13, all testing was performed without any real or apparent errors, with the exception of those that would be listed in Section 2.0 of this report. In addition, all testing was conducted according to the approved testing protocol, test methods, Air Hygiene Quality Manual, or ASTM D7036, with the exception of specifics noted in Section 2.0 of this report. A number of quality assurance activities were undertaken before, during, and after this testing project. This section of the report combined with the documentation in Appendix C describes each of those activities.

Each instrument's response was checked and adjusted in the field prior to the collection of data via multi-point calibration. The instrument's linearity was checked by adjusting its zero and span responses to zero nitrogen and an upscale calibration gas in the range of the expected concentrations. The instrument response was then challenged with other calibration gases of known concentration and accepted as being linear if the response of the other calibration gases agreed within plus or minus two percent of the range of predicted values. $NO_2$ to NO conversion was checked via direct connect with an EPA Protocol certified concentration of $NO_2$ in a balance of air or nitrogen. Conversion was verified to be between 90 and 110 percent.

After each test run, the analyzers were checked for zero and span drift. This allowed each test run to be bracketed by calibrations and documents the precision of the data just collected. The criterion for acceptable data is that the instrument drift is no more than three percent of the full-scale response. The quality assurance worksheets in the following pages summarize all multipoint calibration checks and zero to span checks performed during the tests. These worksheets (as prepared from the data records of Appendix A) show that no drifts in excess of three percent occurred in the zero to span checks following each test run.

The sampling systems were leak checked by demonstrating that a vacuum greater than 10 in Hg could be held for at least one minute with a decline of less than one inch of Hg. A leak test was conducted after the sample system was set up and before the system was dismantled. This test was conducted to ensure that ambient air had not diluted the sample. Any leakage detected prior to the tests would be repaired and another leak check conducted before testing commenced. No leaks were found during the pre or post-test leak checks.

The absence of leaks in the sampling system was also verified by a sampling system bias check. The sampling system's integrity was tested by comparing the responses of the analyzers to the calibration gases introduced via two paths. The first path was directly into the analyzer and the second path via the sample system at the sample probe. Any difference in the instrument responses by these two methods was attributed to sampling system bias or leakage. The criterion for acceptance is agreement within five percent of the span of the analyzer.

The control gases used to calibrate the instruments were analyzed and certified by the compressed gas vendors to plus or minus one percent accuracy for all gases. EPA Protocol No. 1 was used, where applicable to assign the concentration values traceable to the National Institute of Standards and Technology (NIST), Standard Reference Materials (SRM's). The gas calibration sheets as prepared by the vendor are contained in Appendix C.

Air Hygiene collected and reported the enclosed test data in accordance with the procedures and quality assurance activities described in this test report. Air Hygiene makes no warranty as to the suitability of the test methods. Air Hygiene also assumes no liability relating to the interpretation and use of the test data.

## INSTRUMENTAL ANALYSIS
## QUALITY ASSURANCE DATA

Date: April 4, 2020
Company: Cricket Valley Energy Center, LLC
Location: Dover Plains, New York
Techs: MM / SB / JJ

### Sample System Leak Check

| Date | Sample System | Leak Rate (l/min) |
|---|---|---|
| April 4, 2020 | 1 | 0 |

# Accredited Laboratory

A2LA has accredited

## AIR HYGIENE INTERNATIONAL, INC.

*Broken Arrow, OK*

for technical competence in the field of

## Environmental Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets the A2LA *R219 – Specific Requirements – TNI Field Sampling and Measurement Organization Accreditation Program*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 18th day of December 2019

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3796.01
Valid to August 31, 2021

*For the tests to which this accreditation applies, please refer to the laboratory's Envrionmental Scope of Accreditation.*

26068-000-G27-JQ11-00004

STAC STACK TESTING ACCREDITATION COUNCIL

A2LA American Association for Laboratory Accreditation

# *Accredited Air Emission Testing Body*

A2LA has accredited

## AIR HYGIENE INTERNATIONAL, INC.

In recognition of the successful completion of the joint A2LA and Stack Testing Accreditation Council (STAC) evaluation process, this laboratory is accredited to perform testing activities in compliance with ASTM D7036:2004 - Standard Practice for Competence of Air Emission Testing Bodies.

Presented this 18th day of December 2019.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3796.02
Valid to August 31, 2021

*This accreditation program is not included under the A2LA ILAC Mutual Recognition Arrangement.*

26068-000-G27-JQ11-00004

# SOURCE EVALUATION SOCIETY

## Qualified Source Testing Individual

LET IT BE KNOWN THAT

## MATTHEW S. McBRIDE

HAS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED EXPERIENCE REQUIREMENTS IN ACCORDANCE WITH THE GUIDELINES ISSUED BY THE SES QUALIFIED SOURCE TEST INDIVIDUAL REVIEW BOARD FOR

***GASEOUS POLLUTANTS INSTRUMENTAL SAMPLING METHODS***

ISSUED THIS 27TH DAY OF JANAURY 2019 AND EFFECTIVE UNTIL JANUARY 26TH, 2024

*Peter R. Westlin, QSTI/QSTO Review Board*

*Peter S. Pakalnis, QSTI/QSTO Review Board*

*Tina Sanderson, QSTI/QSTO Review Board*

*J. Wade Bice, QSTI/QSTO Review Board*

*Karen D. Kajiya-Mills , QSTI/QSTO Review Board*

*Bruce Randall QSTI/QSTO Review Board*

**CERTIFICATE NO. 2014-847**

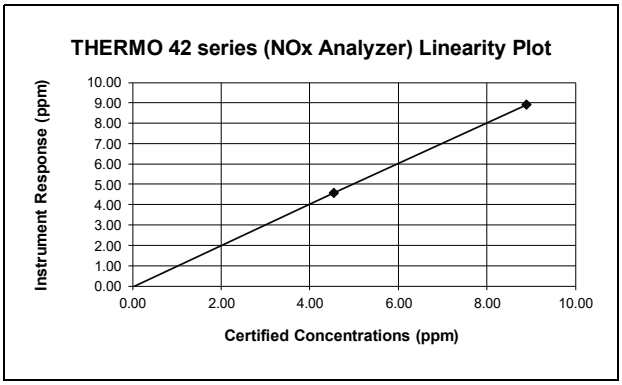
26068-000-G27-JQ11-00004

**Calibration Date: April 4, 2020** **Location: Cricket Valley Energy Center - Unit U-00003**

**Client: Cricket Valley Energy Center, LLC**

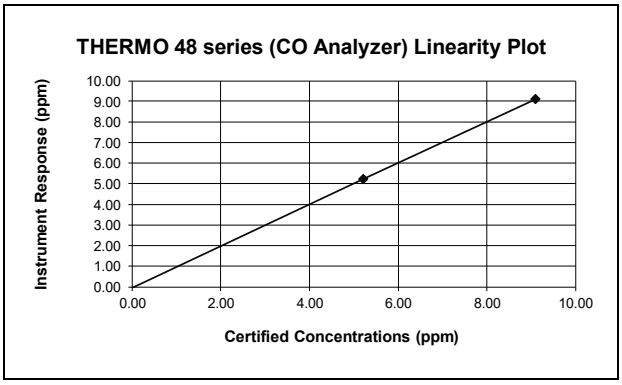
NOx Span (ppm) = 8.90

| THERMO 42 series (NOx Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Absolute Conc. (ppm) | Pass (±2%, ≤0.5ppm) |
| 0.00 | -0.02 | -0.22 | 0.02 | YES (%) |
| 4.55 | 4.56 | 0.11 | 0.01 | YES (%) |
| 8.90 | 8.91 | 0.11 | 0.01 | YES (%) |
| Linearity = 0.997 | | | | |



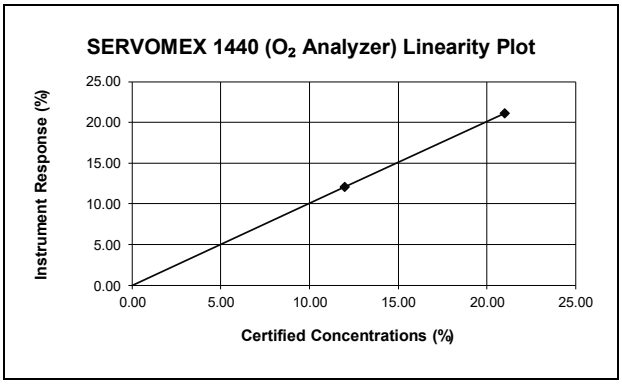

CO Span (ppm) = 9.10

| THERMO 48 series (CO Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (ppm) | Instrument Response (ppm) | Calibration Error (%) | Absolute Conc. (ppm) | Pass (±2%, ≤0.5ppm) |
| 0.00 | -0.03 | -0.33 | 0.03 | YES (%) |
| 5.22 | 5.24 | 0.22 | 0.02 | YES (%) |
| 9.10 | 9.12 | 0.22 | 0.02 | YES (%) |
| Linearity = 0.994 | | | | |




$O_2$ Span (%) = 21.00

| SERVOMEX 1440 ($O_2$ Analyzer) | | | | |
|---|---|---|---|---|
| Certified Concentration (%) | Instrument Response (%) | Calibration Error (%) | Absolute Conc. (%) | Pass (±2%, ≤0.5%) |
| 0.00 | -0.03 | -0.14 | 0.03 | YES (%) |
| 11.98 | 12.08 | 0.48 | 0.10 | YES (%) |
| 21.00 | 21.10 | 0.48 | 0.10 | YES (%) |
| Linearity = 0.994 | | | | |



**NOx Converter Efficiency**

**Date:** April 4, 2020

**Analyzer:** INST-NX-0049

RM 7E, (02-27-14), Sections 7.1.4; 8.2.4.1; 12.7; and 13.5 Introduce $NO_2$ to the analyzer and record the NOx concentration displayed. ... Calculate the converter efficiency using Equation 7E-7. The specification for converter efficiency must be met. ... Air Hygiene also references ALT-0013 for specific $NO_2$ concentration (40-60 ppm) and EPA Traceability Protocol requirements (±2%).

| | | |
|---|---|---|
| **Audit Gas:** | $NO_2$ Concentration ($C_v$), ppmvd | **48.70** |
| **Converter Efficiency Calculations:** | | |
| | Analyzer Reading, NO Channel, ppmvd | **2.05** |
| | Analyzer Reading, NOx Channel, ppmvd | **48.30** |
| | Analyzer Reading, $NO_2$ Channel ($C_{Dir(NO2)}$), ppmvd | **46.25** |
| | Converter Efficiency, % | **94.97** |

RM 7E, (02-27-14), 13.5 $NO_2$ to NO Conversion Efficiency Test (as applicable). The $NO_2$ to NO conversion efficiency, calculated according to Equation 7E-7, must be greater than or equal to 90 percent.

$$Eff_{NO2} = \left(\frac{C_{Dir}}{C_V}\right) \times 100$$

Eq. 7E-7 = $\frac{46.25 \text{ ppmvd}}{48.70 \text{ ppmvd}}$ x 100 = 94.97%

| Date/Time | Elapsed Time | NOx | NO |
|---|---|---|---|
| mm/dd/yy hh:mm:ss | Seconds | ppmvd | ppmvd |
| 04/04/20 06:41:59 | 290 | 47.81 | 2.24 |
| 04/04/20 06:42:09 | 300 | 47.90 | 2.22 |
| 04/04/20 06:42:19 | 310 | 47.92 | 2.17 |
| 04/04/20 06:42:29 | 320 | 47.97 | 2.13 |
| 04/04/20 06:42:39 | 330 | 48.11 | 2.17 |
| 04/04/20 06:42:49 | 340 | 48.09 | 2.11 |
| 04/04/20 06:42:59 | 350 | 48.15 | 2.15 |
| 04/04/20 06:43:09 | 360 | 48.18 | 2.04 |
| 04/04/20 06:43:19 | 370 | 48.21 | 2.09 |
| ***04/04/20 06:43:29*** | ***380*** | ***48.30*** | ***2.05*** |
| 04/04/20 06:43:39 | 390 | 47.30 | 2.04 |

**Cricket Valley Energy Center, LLC**
**April 4, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - PRE TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ (%) |
|---|---|---|---|
| 04/04/20 | 8:13:35 | CTS_0056.LAB | 9.3888 |
| 04/04/20 | 8:14:05 | CTS_0057.LAB | 9.3800 |
| 04/04/20 | 8:14:35 | CTS_0058.LAB | 9.3968 |
| 04/04/20 | 8:15:06 | CTS_0059.LAB | 9.3958 |
| 04/04/20 | 8:15:35 | CTS_0060.LAB | 9.1846 |

**PRE TEST AVERAGE** **9.35**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - POST TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ (%) |
|---|---|---|---|
| 04/04/20 | 22:19:36 | CTSB_0005.LAB | 9.1693 |
| 04/04/20 | 22:19:51 | CTSB_0006.LAB | 9.1726 |
| 04/04/20 | 22:20:06 | CTSB_0007.LAB | 9.1679 |
| 04/04/20 | 22:20:21 | CTSB_0008.LAB | 9.2035 |
| 04/04/20 | 22:20:36 | CTSB_0009.LAB | 9.2232 |

**POST TEST AVERAGE** **9.19**

**Analyzer Make:** MKS **Analyzer Model:** 2030

$CO_2$ Cylinder Conc. % = 8.91

| Run ID | Instrument Response (%) | Error (%) | Pass / Fail ±5% |
|---|---|---|---|
| Pre Test | 9.35 | 4.93 | PASS |
| Post Test | 9.19 | 3.11 | PASS |

**Cricket Valley Energy Center, LLC**
**April 4, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - PRE TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ (ppm) |
|---|---|---|---|
| 04/04/20 | 17:19:11 | CTS2_0034.LAB | 48.8800 |
| 04/04/20 | 17:19:25 | CTS2_0035.LAB | 49.0412 |
| 04/04/20 | 17:19:38 | CTS2_0036.LAB | 49.1998 |
| 04/04/20 | 17:19:51 | CTS2_0037.LAB | 49.0355 |
| 04/04/20 | 17:20:04 | CTS2_0038.LAB | 48.8412 |

**PRE TEST AVERAGE** **49.00**

**CALIBRATION TRANSFER SPECTRA (CTS SCAN) - POST TEST**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ (ppm) |
|---|---|---|---|
| 04/04/20 | 22:23:51 | CTSB_0022.LAB | 48.8442 |
| 04/04/20 | 22:24:06 | CTSB_0023.LAB | 48.9079 |
| 04/04/20 | 22:24:21 | CTSB_0024.LAB | 48.9559 |
| 04/04/20 | 22:24:36 | CTSB_0025.LAB | 49.1306 |
| 04/04/20 | 22:24:52 | CTSB_0026.LAB | 49.0504 |

**POST TEST AVERAGE** **48.98**

**Analyzer Make:** MKS **Analyzer Model:** 2030

$NH_3$ Cylinder Conc. ppm = 48.90

| Run ID | Instrument Response (%) | Error (%) | Pass / Fail ±5% |
|---|---|---|---|
| Pre Test | 49.00 | 0.20 | PASS |
| Post Test | 48.98 | 0.16 | PASS |

**Cricket Valley Energy Center, LLC**
**April 4, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

## Calibration Gas #1

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $NH_3$ ppmvd | $SF_6$ ppmvd |
|---|---|---|---|---|
| 04/04/20 | 22:23:36 | CTSB_0021.LAB | 48.6860 | 10.2153 |
| 04/04/20 | 22:23:51 | CTSB_0022.LAB | 48.8442 | 10.2344 |
| 04/04/20 | 22:24:06 | CTSB_0023.LAB | 48.9079 | 10.2258 |
| 04/04/20 | 22:24:21 | CTSB_0024.LAB | 48.9559 | 10.2266 |
| 04/04/20 | 22:24:36 | CTSB_0025.LAB | 49.1306 | 10.2361 |
| 04/04/20 | 22:24:52 | CTSB_0026.LAB | 49.0504 | 10.2319 |
| 04/04/20 | 22:25:07 | CTSB_0027.LAB | 49.2306 | 10.2347 |
| 04/04/20 | 22:25:21 | CTSB_0028.LAB | 49.3683 | 10.2500 |
| **RAW AVERAGE** | | | **49.022** | **10.232** |

## Run #1: Pre-Spike - Native

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vw | $H_2O$ (%) | $NH_3$ ppmvw | $SF_6$ ppmvw |
|---|---|---|---|---|---|---|
| 04/04/20 | 22:33:07 | CTSB_0059.LAB | 4.2651 | 8.0915 | 1.7034 | 0.0031 |
| 04/04/20 | 22:33:22 | CTSB_0060.LAB | 4.2581 | 8.0522 | 1.6518 | 0.0006 |
| 04/04/20 | 22:33:37 | CTSB_0061.LAB | 4.2569 | 8.0492 | 1.6485 | 0.0005 |
| 04/04/20 | 22:33:52 | CTSB_0062.LAB | 4.2668 | 8.0498 | 1.6222 | 0.0055 |
| 04/04/20 | 22:34:07 | CTSB_0063.LAB | 4.2573 | 8.0426 | 1.6220 | 0.0024 |
| 04/04/20 | 22:34:23 | CTSB_0064.LAB | 4.2685 | 8.0301 | 1.5906 | 0.0007 |
| 04/04/20 | 22:34:37 | CTSB_0065.LAB | 4.2654 | 8.0021 | 1.5668 | 0.0006 |
| 04/04/20 | 22:34:52 | CTSB_0066.LAB | 4.2621 | 7.9999 | 1.5285 | 0.0029 |
| **RAW AVERAGE** | | | **4.263** | **8.040** | **1.617** | **0.002** |

**Cricket Valley Energy Center, LLC**
**April 4, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Run #1: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vw | $H_2O$ (%) | $SF_6$ ppmvw | $NH_3$ ppmvw |
|---|---|---|---|---|---|---|
| 04/04/20 | 22:42:08 | CTSB_0095.LAB | 4.0305 | 7.7345 | 0.4942 | 4.0626 |
| 04/04/20 | 22:42:23 | CTSB_0096.LAB | 4.0376 | 7.7651 | 0.4936 | 3.9688 |
| 04/04/20 | 22:42:38 | CTSB_0097.LAB | 4.0265 | 7.7695 | 0.4924 | 3.8900 |
| 04/04/20 | 22:42:53 | CTSB_0098.LAB | 4.0318 | 7.7804 | 0.4903 | 3.8319 |
| 04/04/20 | 22:43:08 | CTSB_0099.LAB | 4.0295 | 7.7827 | 0.4932 | 3.7853 |
| 04/04/20 | 22:43:23 | CTSB_0100.LAB | 4.0320 | 7.7839 | 0.4908 | 3.7585 |
| 04/04/20 | 22:43:38 | CTSB_0101.LAB | 4.0306 | 7.7898 | 0.4911 | 3.7281 |
| 04/04/20 | 22:43:53 | CTSB_0102.LAB | 4.0265 | 7.8091 | 0.4895 | 3.6937 |
| **RAW AVERAGE** | | | **4.031** | **7.777** | **0.492** | **3.840** |

**Run #2: Pre-Spike - Native**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vw | $H_2O$ (%) | $NH_3$ ppmvw | $SF_6$ ppmvw |
|---|---|---|---|---|---|---|
| 04/04/20 | 22:50:54 | CTSB_0130.LAB | 4.2396 | 8.2340 | 2.0941 | -0.0001 |
| 04/04/20 | 22:51:09 | CTSB_0131.LAB | 4.2403 | 8.2160 | 2.1179 | 0.0008 |
| 04/04/20 | 22:51:24 | CTSB_0132.LAB | 4.2486 | 8.2090 | 2.1412 | 0.0024 |
| 04/04/20 | 22:51:39 | CTSB_0133.LAB | 4.2342 | 8.2068 | 2.1433 | -0.0008 |
| 04/04/20 | 22:51:54 | CTSB_0134.LAB | 4.2542 | 8.2003 | 2.1307 | -0.0022 |
| 04/04/20 | 22:52:09 | CTSB_0135.LAB | 4.2522 | 8.1828 | 2.1243 | 0.0014 |
| 04/04/20 | 22:52:24 | CTSB_0136.LAB | 4.2411 | 8.1773 | 2.1472 | -0.0002 |
| 04/04/20 | 22:52:39 | CTSB_0137.LAB | 4.2396 | 8.1662 | 2.1328 | 0.0024 |
| **RAW AVERAGE** | | | **4.244** | **8.199** | **2.129** | **0.000** |

**Run #2: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vw | $H_2O$ (%) | $SF_6$ ppmvw | $NH_3$ ppmvw |
|---|---|---|---|---|---|---|
| 04/04/20 | 22:57:09 | CTSB_0155.LAB | 3.9651 | 7.5314 | 0.6428 | 4.7842 |
| 04/04/20 | 22:57:24 | CTSB_0156.LAB | 3.9720 | 7.5465 | 0.6399 | 4.7476 |
| 04/04/20 | 22:57:39 | CTSB_0157.LAB | 3.9729 | 7.5444 | 0.6386 | 4.7329 |
| 04/04/20 | 22:57:54 | CTSB_0158.LAB | 3.9720 | 7.5525 | 0.6383 | 4.7125 |
| 04/04/20 | 22:58:09 | CTSB_0159.LAB | 3.9839 | 7.5531 | 0.6353 | 4.6664 |
| 04/04/20 | 22:58:24 | CTSB_0160.LAB | 3.9788 | 7.5556 | 0.6350 | 4.6419 |
| 04/04/20 | 22:58:39 | CTSB_0161.LAB | 3.9650 | 7.5462 | 0.6362 | 4.6560 |
| 04/04/20 | 22:58:54 | CTSB_0162.LAB | 3.9846 | 7.5573 | 0.6376 | 4.6419 |
| **RAW AVERAGE** | | | **3.974** | **7.548** | **0.638** | **4.698** |

**Cricket Valley Energy Center, LLC**
**April 4, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

**Run #3: Pre-Spike - Native**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vw | $H_2O$ (%) | $NH_3$ ppmvw | $SF_6$ ppmvw |
|---|---|---|---|---|---|---|
| 04/04/20 | 23:07:25 | CTSB_0196.LAB | 4.2362 | 8.2356 | 2.3106 | -0.0032 |
| 04/04/20 | 23:07:40 | CTSB_0197.LAB | 4.2394 | 8.2289 | 2.2898 | -0.0001 |
| 04/04/20 | 23:07:55 | CTSB_0198.LAB | 4.2442 | 8.2331 | 2.2394 | 0.0009 |
| 04/04/20 | 23:08:10 | CTSB_0199.LAB | 4.2396 | 8.2368 | 2.2280 | -0.0019 |
| 04/04/20 | 23:08:25 | CTSB_0200.LAB | 4.2420 | 8.2425 | 2.2314 | -0.0026 |
| 04/04/20 | 23:08:41 | CTSB_0201.LAB | 4.2276 | 8.2344 | 2.2072 | -0.0007 |
| 04/04/20 | 23:08:55 | CTSB_0202.LAB | 4.2453 | 8.2493 | 2.2149 | -0.0016 |
| 04/04/20 | 23:09:11 | CTSB_0203.LAB | 4.2382 | 8.2375 | 2.2017 | -0.0002 |
| **RAW AVERAGE** | | | **4.239** | **8.237** | **2.240** | **-0.001** |

**Run #3: Spike A**

| Date (mm/dd/yy) | Time hh:mm:ss | Spectrum File Name | $CO_2$ %vw | $H_2O$ (%) | $SF_6$ ppmvw | $NH_3$ ppmvw |
|---|---|---|---|---|---|---|
| 04/04/20 | 23:14:56 | CTSB_0226.LAB | 3.9947 | 7.7115 | 0.6039 | 4.7754 |
| 04/04/20 | 23:15:11 | CTSB_0227.LAB | 3.9852 | 7.7072 | 0.6030 | 4.7017 |
| 04/04/20 | 23:15:26 | CTSB_0228.LAB | 3.9962 | 7.6977 | 0.6019 | 4.6277 |
| 04/04/20 | 23:15:41 | CTSB_0229.LAB | 4.0000 | 7.6946 | 0.6026 | 4.5903 |
| 04/04/20 | 23:15:56 | CTSB_0230.LAB | 4.0006 | 7.6932 | 0.6006 | 4.5569 |
| 04/04/20 | 23:16:11 | CTSB_0231.LAB | 3.9865 | 7.6945 | 0.6026 | 4.5112 |
| 04/04/20 | 23:16:26 | CTSB_0232.LAB | 4.0004 | 7.6688 | 0.5990 | 4.4850 |
| 04/04/20 | 23:16:41 | CTSB_0233.LAB | 3.9826 | 7.6760 | 0.6022 | 4.4402 |
| **RAW AVERAGE** | | | **3.993** | **7.693** | **0.602** | **4.586** |

**Cricket Valley Energy Center, LLC**
**April 4, 2020**
**General Electric, 7F.05, Unit #U-00003**
**Cricket Valley Energy Center**

| Parameter | Unit | Run 1 | Run 2 | Run 3 |
|---|---|---|---|---|
| Concentration of $NH_3$ Cylinder | ppmvd | 49.02 | 49.02 | 49.02 |
| Concentration of $SF_6$ Cylinder | ppmvd | 10.23 | 10.23 | 10.23 |

Spike A

| | | | | |
|---|---|---|---|---|
| Stack $CO_2$ Concentration | %vw | 4.263 | 4.244 | 4.239 |
| Stack $H_2O$ Concentration | % | 8.040 | 8.199 | 8.237 |
| Stack $NH_3$ Concentration | ppmvw | 1.617 | 2.129 | 2.240 |
| Stack $SF_6$ Concentration | ppmvw | 0.002 | 0.000 | -0.001 |
| Stack + Spike $CO_2$ Concentration | %vw | 4.031 | 3.974 | 3.993 |
| Stack + Spike $H_2O$ Concentration | % | 7.777 | 7.548 | 7.693 |
| Stack + Spike $NH_3$ Concentration | ppmvw | 3.840 | 4.698 | 4.586 |
| Stack + Spike $SF_6$ Concentration | ppmvw | 0.492 | 0.638 | 0.602 |
| Dilution Ratio | | 0.052 | 0.067 | 0.064 |
| Ideal $NH_3$ Spike Yield | ppmvd | 4.222 | 5.469 | 5.410 |
| Percent Recovery $NH_3$ | % | 97.73% | 88.29% | 85.85% |

| DRIFT AND BIAS CHECK AND RESPONSE TIME CALCULATOR | | |
|---|---|---|
| **Strat Test Pre and Post QA/QC Check** | **$O_2$** | **NOx** |
| **Initial Zero** | -0.01 | -0.06 |
| **Final Zero** | 0.00 | -0.01 |
| **Avg. Zero** | | -0.04 |
| **Initial UpScale** | 11.92 | 4.47 |
| **Final UpScale** | 11.96 | 4.39 |
| **Avg. UpScale** | 11.94 | 4.43 |
| **Sys Resp (Zero)** | -0.03 | -0.02 |
| **Sys Resp (Upscale)** | 12.08 | 4.56 |
| **Upscale Cal Gas** | 11.98 | 4.55 |
| **Initial Zero Bias** | 0.10% | -0.45% |
| **Final Zero Bias** | 0.14% | 0.11% |
| **Zero Drift** | 0.05% | 0.56% |
| **Initial Upscale Bias** | -0.76% | -1.01% |
| **Final Upscale Bias** | -0.57% | -1.91% |
| **Upscale Drift** | 0.19% | 0.90% |
| Alternative Specification Abs Diff **Initial Zero** | 0.02 | 0.04 |
| Alternative Specification Abs Diff **Final Zero** | 0.03 | 0.01 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.16 | 0.09 |
| Alternative Specification Abs Diff **Final Upscale** | 0.12 | 0.17 |
| **Calibration Span** | 21.00 | 8.90 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 |
| **5% of Cal. Span (bias)** | 1.05 | 0.45 |

| | | |
|---|---|---|
| **Respone Time (min)** | 1.2 | 1.5 |
| **Sys. Response (min)** | 1.5 | |

| Date/Time mm/dd/yy hh:mm:ss | z | $O_2$ %-10 | s | z | NOx ppm-10 | s | INJECTIONS |
|---|---|---|---|---|---|---|---|
| 04/04/20 07:22:31 | | **12.03** | | | 2.01 | | x |
| 04/04/20 07:22:41 | | **12.04** | | | 2.02 | | |
| 04/04/20 07:22:51 | | **11.86** | | | 2.01 | | |
| 04/04/20 07:23:01 | | 3.44 | | | 2.02 | | |
| 04/04/20 07:23:11 | x | **0.27** | | | 2.32 | | |
| 04/04/20 07:23:21 | | **0.07** | | | 3.48 | | |
| 04/04/20 07:23:31 | | **0.04** | | | **4.27** | x | |
| 04/04/20 07:23:41 | | **0.02** | | | **4.29** | | |
| 04/04/20 07:23:51 | | **0.01** | | | **4.47** | | |
| 04/04/20 07:24:01 | | **0.00** | | | **4.47** | | x |
| 04/04/20 07:24:11 | | **0.00** | | | **4.46** | | |
| 04/04/20 07:24:21 | | **-0.01** | | | **4.45** | | |
| 04/04/20 07:24:31 | | **-0.01** | | | **4.48** | | |
| 04/04/20 07:24:41 | | **-0.02** | | | **4.50** | | |
| 04/04/20 07:24:51 | | 4.46 | | | **4.51** | | |
| 04/04/20 07:25:01 | | 10.92 | | | **4.53** | | |
| 04/04/20 07:25:11 | | **11.75** | x | | 4.22 | | |
| 04/04/20 07:25:21 | | **11.84** | | | 1.96 | | |
| 04/04/20 07:25:31 | | **11.87** | | x | **0.09** | | |
| 04/04/20 07:25:41 | | **11.88** | | | **0.05** | | |
| 04/04/20 07:25:51 | | **11.91** | | | **-0.03** | | |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 1** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 13.05 | 1.96 | -0.44 |
| **Corrected Average** | 13.08 | 2.00 | 0.00 |
| **Initial Zero** | -0.03 | -0.07 | -0.45 |
| **Final Zero** | -0.01 | -0.11 | -0.45 |
| **Avg. Zero** | -0.02 | -0.09 | -0.45 |
| **Initial UpScale** | 11.93 | 4.58 | 5.26 |
| **Final UpScale** | 11.98 | 4.56 | 5.47 |
| **Avg. UpScale** | 11.96 | 4.57 | 5.37 |
| **Sys Resp (Zero)** | -0.03 | -0.02 | -0.03 |
| **Sys Resp (Upscale)** | 12.08 | 4.56 | 5.24 |
| **Upscale Cal Gas** | 11.98 | 4.55 | 5.22 |
| **Initial Zero Bias** | 0.00% | -0.56% | -4.62% |
| **Final Zero Bias** | 0.10% | -0.96% | -4.62% |
| **Zero Drift** | 0.10% | 0.39% | 0.00% |
| **Initial Upscale Bias** | -0.71% | 0.22% | 0.22% |
| **Final Upscale Bias** | -0.48% | 0.00% | 2.53% |
| **Upscale Drift** | 0.24% | 0.22% | 2.31% |
| Alternative Specification Abs Diff **Initial Zero** | 0.00 | 0.05 | 0.42 |
| Alternative Specification Abs Diff **Final Zero** | 0.02 | 0.09 | 0.42 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.15 | 0.02 | 0.02 |
| Alternative Specification Abs Diff **Final Upscale** | 0.10 | 0.00 | 0.23 |
| **Calibration Span** | 21.00 | 8.90 | 9.10 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 |
| **5% of Cal. Span (bias)** | 1.05 | 0.45 | 0.46 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 2** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 13.02 | 1.99 | -0.30 |
| **Corrected Average** | 13.04 | 2.04 | 0.13 |
| **Initial Zero** | -0.01 | -0.11 | -0.45 |
| **Final Zero** | -0.02 | -0.05 | -0.45 |
| **Avg. Zero** | -0.02 | -0.08 | -0.45 |
| **Initial UpScale** | 11.98 | 4.56 | 5.47 |
| **Final UpScale** | 11.93 | 4.54 | 5.62 |
| **Avg. UpScale** | 11.96 | 4.55 | 5.55 |
| **Sys Resp (Zero)** | -0.03 | -0.02 | -0.03 |
| **Sys Resp (Upscale)** | 12.08 | 4.56 | 5.24 |
| **Upscale Cal Gas** | 11.98 | 4.55 | 5.22 |
| **Initial Zero Bias** | 0.10% | -0.96% | -4.62% |
| **Final Zero Bias** | 0.05% | -0.34% | -4.62% |
| **Zero Drift** | 0.05% | 0.62% | 0.00% |
| **Initial Upscale Bias** | -0.48% | 0.00% | 2.53% |
| **Final Upscale Bias** | -0.71% | -0.22% | 4.18% |
| **Upscale Drift** | 0.24% | 0.22% | 1.65% |
| Alternative Specification Abs Diff **Initial Zero** | 0.02 | 0.09 | 0.42 |
| Alternative Specification Abs Diff **Final Zero** | 0.01 | 0.03 | 0.42 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.10 | 0.00 | 0.23 |
| Alternative Specification Abs Diff **Final Upscale** | 0.15 | 0.02 | 0.38 |
| **Calibration Span** | 21.00 | 8.90 | 9.10 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 |
| **5% of Cal. Span (bias)** | 1.05 | 0.45 | 0.46 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 3** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 13.04 | 1.97 | -0.20 |
| **Corrected Average** | 13.07 | 2.02 | 0.17 |
| **Initial Zero** | -0.02 | -0.05 | -0.45 |
| **Final Zero** | -0.02 | -0.09 | -0.35 |
| **Avg. Zero** | -0.02 | -0.07 | -0.40 |
| **Initial UpScale** | 11.93 | 4.54 | 5.62 |
| **Final UpScale** | 11.97 | 4.54 | 5.64 |
| **Avg. UpScale** | 11.95 | 4.54 | 5.63 |
| **Sys Resp (Zero)** | -0.03 | -0.02 | -0.03 |
| **Sys Resp (Upscale)** | 12.08 | 4.56 | 5.24 |
| **Upscale Cal Gas** | 11.98 | 4.55 | 5.22 |
| **Initial Zero Bias** | 0.05% | -0.34% | -4.62% |
| **Final Zero Bias** | 0.05% | -0.79% | -3.52% |
| **Zero Drift** | 0.00% | 0.46% | 1.10% |
| **Initial Upscale Bias** | -0.71% | -0.22% | 4.18% |
| **Final Upscale Bias** | -0.52% | -0.22% | 4.40% |
| **Upscale Drift** | 0.19% | 0.00% | 0.22% |
| Alternative Specification Abs Diff **Initial Zero** | 0.01 | 0.03 | 0.42 |
| Alternative Specification Abs Diff **Final Zero** | 0.01 | 0.07 | 0.32 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.15 | 0.02 | 0.38 |
| Alternative Specification Abs Diff **Final Upscale** | 0.11 | 0.02 | 0.40 |
| **Calibration Span** | 21.00 | 8.90 | 9.10 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 |
| **5% of Cal. Span (bias)** | 1.05 | 0.45 | 0.46 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 4** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 13.00 | 1.99 | -0.08 |
| **Corrected Average** | 13.05 | 2.04 | 0.23 |
| **Initial Zero** | -0.02 | -0.09 | -0.35 |
| **Final Zero** | -0.02 | -0.08 | -0.32 |
| **Avg. Zero** | -0.02 | -0.09 | -0.34 |
| **Initial UpScale** | 11.97 | 4.54 | 5.64 |
| **Final UpScale** | 11.91 | 4.56 | 5.60 |
| **Avg. UpScale** | 11.94 | 4.55 | 5.62 |
| **Sys Resp (Zero)** | -0.03 | -0.02 | -0.03 |
| **Sys Resp (Upscale)** | 12.08 | 4.56 | 5.24 |
| **Upscale Cal Gas** | 11.98 | 4.55 | 5.22 |
| **Initial Zero Bias** | 0.05% | -0.79% | -3.52% |
| **Final Zero Bias** | 0.05% | -0.67% | -3.19% |
| **Zero Drift** | 0.00% | 0.12% | 0.33% |
| **Initial Upscale Bias** | -0.52% | -0.22% | 4.40% |
| **Final Upscale Bias** | -0.81% | 0.00% | 3.96% |
| **Upscale Drift** | 0.29% | 0.22% | 0.44% |
| Alternative Specification Abs Diff **Initial Zero** | 0.01 | 0.07 | 0.32 |
| Alternative Specification Abs Diff **Final Zero** | 0.01 | 0.06 | 0.29 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.11 | 0.02 | 0.40 |
| Alternative Specification Abs Diff **Final Upscale** | 0.17 | 0.00 | 0.36 |
| **Calibration Span** | 21.00 | 8.90 | 9.10 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 |
| **5% of Cal. Span (bias)** | 1.05 | 0.45 | 0.46 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 5** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 13.01 | 1.96 | -0.13 |
| **Corrected Average** | 13.08 | 2.00 | 0.13 |
| **Initial Zero** | -0.02 | -0.08 | -0.32 |
| **Final Zero** | -0.02 | -0.06 | -0.23 |
| **Avg. Zero** | -0.02 | -0.07 | -0.28 |
| **Initial UpScale** | 11.91 | 4.56 | 5.60 |
| **Final UpScale** | 11.93 | 4.53 | 5.51 |
| **Avg. UpScale** | 11.92 | 4.55 | 5.56 |
| **Sys Resp (Zero)** | -0.03 | -0.02 | -0.03 |
| **Sys Resp (Upscale)** | 12.08 | 4.56 | 5.24 |
| **Upscale Cal Gas** | 11.98 | 4.55 | 5.22 |
| **Initial Zero Bias** | 0.05% | -0.67% | -3.19% |
| **Final Zero Bias** | 0.05% | -0.45% | -2.20% |
| **Zero Drift** | 0.00% | 0.22% | 0.99% |
| **Initial Upscale Bias** | -0.81% | 0.00% | 3.96% |
| **Final Upscale Bias** | -0.71% | -0.34% | 2.97% |
| **Upscale Drift** | 0.10% | 0.34% | 0.99% |
| Alternative Specification Abs Diff **Initial Zero** | 0.01 | 0.06 | 0.29 |
| Alternative Specification Abs Diff **Final Zero** | 0.01 | 0.04 | 0.20 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.17 | 0.00 | 0.36 |
| Alternative Specification Abs Diff **Final Upscale** | 0.15 | 0.03 | 0.27 |
| **Calibration Span** | 21.00 | 8.90 | 9.10 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 |
| **5% of Cal. Span (bias)** | 1.05 | 0.45 | 0.46 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 6** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 13.01 | 1.74 | 0.02 |
| **Corrected Average** | 13.05 | 1.79 | 0.26 |
| **Initial Zero** | -0.02 | -0.06 | -0.23 |
| **Final Zero** | -0.04 | -0.09 | -0.32 |
| **Avg. Zero** | -0.03 | -0.08 | -0.28 |
| **Initial UpScale** | 11.93 | 4.53 | 5.51 |
| **Final UpScale** | 11.96 | 4.57 | 5.55 |
| **Avg. UpScale** | 11.95 | 4.55 | 5.53 |
| **Sys Resp (Zero)** | -0.03 | -0.02 | -0.03 |
| **Sys Resp (Upscale)** | 12.08 | 4.56 | 5.24 |
| **Upscale Cal Gas** | 11.98 | 4.55 | 5.22 |
| **Initial Zero Bias** | 0.05% | -0.45% | -2.20% |
| **Final Zero Bias** | -0.05% | -0.79% | -3.19% |
| **Zero Drift** | 0.10% | 0.34% | 0.99% |
| **Initial Upscale Bias** | -0.71% | -0.34% | 2.97% |
| **Final Upscale Bias** | -0.57% | 0.11% | 3.41% |
| **Upscale Drift** | 0.14% | 0.45% | 0.44% |
| Alternative Specification Abs Diff **Initial Zero** | 0.01 | 0.04 | 0.20 |
| Alternative Specification Abs Diff **Final Zero** | 0.01 | 0.07 | 0.29 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.15 | 0.03 | 0.27 |
| Alternative Specification Abs Diff **Final Upscale** | 0.12 | 0.01 | 0.31 |
| **Calibration Span** | 21.00 | 8.90 | 9.10 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 |
| **5% of Cal. Span (bias)** | 1.05 | 0.45 | 0.46 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 7** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 13.00 | 1.96 | -0.11 |
| **Corrected Average** | 13.02 | 2.01 | 0.20 |
| **Initial Zero** | -0.04 | -0.09 | -0.32 |
| **Final Zero** | -0.03 | -0.10 | -0.35 |
| **Avg. Zero** | -0.04 | -0.10 | -0.34 |
| **Initial UpScale** | 11.96 | 4.57 | 5.55 |
| **Final UpScale** | 11.96 | 4.54 | 5.43 |
| **Avg. UpScale** | 11.96 | 4.56 | 5.49 |
| **Sys Resp (Zero)** | -0.03 | -0.02 | -0.03 |
| **Sys Resp (Upscale)** | 12.08 | 4.56 | 5.24 |
| **Upscale Cal Gas** | 11.98 | 4.55 | 5.22 |
| **Initial Zero Bias** | -0.05% | -0.79% | -3.19% |
| **Final Zero Bias** | -0.01% | -0.90% | -3.52% |
| **Zero Drift** | 0.03% | 0.11% | 0.33% |
| **Initial Upscale Bias** | -0.57% | 0.11% | 3.41% |
| **Final Upscale Bias** | -0.57% | -0.22% | 2.09% |
| **Upscale Drift** | 0.00% | 0.34% | 1.32% |
| Alternative Specification Abs Diff **Initial Zero** | 0.01 | 0.07 | 0.29 |
| Alternative Specification Abs Diff **Final Zero** | 0.00 | 0.08 | 0.32 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.12 | 0.01 | 0.31 |
| Alternative Specification Abs Diff **Final Upscale** | 0.12 | 0.02 | 0.19 |
| **Calibration Span** | 21.00 | 8.90 | 9.10 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 |
| **5% of Cal. Span (bias)** | 1.05 | 0.45 | 0.46 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 8** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 13.00 | 1.81 | -0.16 |
| **Corrected Average** | 13.01 | 1.87 | 0.20 |
| **Initial Zero** | -0.03 | -0.10 | -0.35 |
| **Final Zero** | -0.03 | -0.08 | -0.42 |
| **Avg. Zero** | -0.03 | -0.09 | -0.39 |
| **Initial UpScale** | 11.96 | 4.54 | 5.43 |
| **Final UpScale** | 11.97 | 4.54 | 5.41 |
| **Avg. UpScale** | 11.97 | 4.54 | 5.42 |
| **Sys Resp (Zero)** | -0.03 | -0.02 | -0.03 |
| **Sys Resp (Upscale)** | 12.08 | 4.56 | 5.24 |
| **Upscale Cal Gas** | 11.98 | 4.55 | 5.22 |
| **Initial Zero Bias** | -0.01% | -0.90% | -3.52% |
| **Final Zero Bias** | 0.00% | -0.67% | -4.29% |
| **Zero Drift** | 0.01% | 0.22% | 0.77% |
| **Initial Upscale Bias** | -0.57% | -0.22% | 2.09% |
| **Final Upscale Bias** | -0.52% | -0.22% | 1.87% |
| **Upscale Drift** | 0.05% | 0.00% | 0.22% |
| Alternative Specification Abs Diff **Initial Zero** | 0.00 | 0.08 | 0.32 |
| Alternative Specification Abs Diff **Final Zero** | 0.00 | 0.06 | 0.39 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.12 | 0.02 | 0.19 |
| Alternative Specification Abs Diff **Final Upscale** | 0.11 | 0.02 | 0.17 |
| **Calibration Span** | 21.00 | 8.90 | 9.10 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 |
| **5% of Cal. Span (bias)** | 1.05 | 0.45 | 0.46 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 9** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 13.00 | 1.91 | -0.19 |
| **Corrected Average** | 13.01 | 1.97 | 0.20 |
| **Initial Zero** | -0.03 | -0.08 | -0.42 |
| **Final Zero** | -0.04 | -0.12 | -0.41 |
| **Avg. Zero** | -0.04 | -0.10 | -0.42 |
| **Initial UpScale** | 11.97 | 4.54 | 5.41 |
| **Final UpScale** | 11.97 | 4.55 | 5.44 |
| **Avg. UpScale** | 11.97 | 4.55 | 5.43 |
| **Sys Resp (Zero)** | -0.03 | -0.02 | -0.03 |
| **Sys Resp (Upscale)** | 12.08 | 4.56 | 5.24 |
| **Upscale Cal Gas** | 11.98 | 4.55 | 5.22 |
| **Initial Zero Bias** | 0.00% | -0.67% | -4.29% |
| **Final Zero Bias** | -0.05% | -1.12% | -4.18% |
| **Zero Drift** | 0.05% | 0.45% | 0.11% |
| **Initial Upscale Bias** | -0.52% | -0.22% | 1.87% |
| **Final Upscale Bias** | -0.52% | -0.11% | 2.20% |
| **Upscale Drift** | 0.00% | 0.11% | 0.33% |
| Alternative Specification Abs Diff **Initial Zero** | 0.00 | 0.06 | 0.39 |
| Alternative Specification Abs Diff **Final Zero** | 0.01 | 0.10 | 0.38 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.11 | 0.02 | 0.17 |
| Alternative Specification Abs Diff **Final Upscale** | 0.11 | 0.01 | 0.20 |
| **Calibration Span** | 21.00 | 8.90 | 9.10 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 |
| **5% of Cal. Span (bias)** | 1.05 | 0.45 | 0.46 |

| DRIFT AND BIAS CHECK | | | |
|---|---|---|---|
| **Base Load Load, Run - 10** | **$O_2$** | **NOx** | **CO** |
| **Raw Average** | 13.00 | 1.90 | -0.19 |
| **Corrected Average** | 13.02 | 1.96 | 0.20 |
| **Initial Zero** | -0.04 | -0.12 | -0.41 |
| **Final Zero** | -0.05 | -0.10 | -0.40 |
| **Avg. Zero** | -0.05 | -0.11 | -0.41 |
| **Initial UpScale** | 11.97 | 4.55 | 5.44 |
| **Final UpScale** | 11.94 | 4.53 | 5.34 |
| **Avg. UpScale** | 11.96 | 4.54 | 5.39 |
| **Sys Resp (Zero)** | -0.03 | -0.02 | -0.03 |
| **Sys Resp (Upscale)** | 12.08 | 4.56 | 5.24 |
| **Upscale Cal Gas** | 11.98 | 4.55 | 5.22 |
| **Initial Zero Bias** | -0.05% | -1.12% | -4.18% |
| **Final Zero Bias** | -0.10% | -0.90% | -4.07% |
| **Zero Drift** | 0.05% | 0.22% | 0.11% |
| **Initial Upscale Bias** | -0.52% | -0.11% | 2.20% |
| **Final Upscale Bias** | -0.67% | -0.34% | 1.10% |
| **Upscale Drift** | 0.14% | 0.22% | 1.10% |
| Alternative Specification Abs Diff **Initial Zero** | 0.01 | 0.10 | 0.38 |
| Alternative Specification Abs Diff **Final Zero** | 0.02 | 0.08 | 0.37 |
| Alternative Specification Abs Diff **Initial Upscale** | 0.11 | 0.01 | 0.20 |
| Alternative Specification Abs Diff **Final Upscale** | 0.14 | 0.03 | 0.10 |
| **Calibration Span** | 21.00 | 8.90 | 9.10 |
| **3% of Cal. Span (drift)** | 0.63 | 0.27 | 0.27 |
| **5% of Cal. Span (bias)** | 1.05 | 0.45 | 0.46 |

# AIR HYGIENE

## RATA - FIELD DATA SHEET

| | |
|---|---|
| Company: | Cricket Valley |
| Location: | Cricket Valley |
| Date: | 4/4/20 Project Code: |
| Unit Make and Model: | GE |
| Unit Number: | 4 |
| Serial Number: | |
| Data Recorded By: | MM |
| Tested With AHI Unit(s): | Truck(s): 215 Trailer(s): 187 |
| LDEQ Warmup/Cal Req: | On (Day/Time): 4/4/20 Cal (Day/Time): 2:00 |

Stack Dia. = _____
Measured By: _____
Measured With: _____

| CYLINDER SERIAL NUMBERS | | $O_2$ | NOx | CO |
|---|---|---|---|---|
| | Low | EB0058629 | | |
| | Mid | CC716390 | CC722541 | |
| | High | CC01614 | EB0046961 | |

| CYLINDER SERIAL NUMBERS | | NH3 THC | $CO_2$ | $SO_2$ |
|---|---|---|---|---|
| | Low | | | |
| | Mid | | | |
| | High | EB0043354 | | |

| RUN INFORMATION | Run #1 | Run #2 | Run #3 | Run #4 | Run #5 | Run #6 | Run #7 | Run #8 | Run #9 | Run #10 | Run #11 | Run #12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Time Start (hh:mm:ss) | 17:23:02 | 17:52:02 | 18:21:02 | 18:51:02 | 19:20:25 | 19:48:23 | 20:20:13 | 20:49:13 | 21:17:13 | 21:50:13 | | |
| Time Stop (hh:mm:ss) | 17:43:32 | 18:12:32 | 18:41:32 | 19:11:32 | 19:46:53 | 20:08:53 | 20:40:43 | 21:05:43 | 21:31:43 | 22:10:43 | | |
| Rated Power (MW or hp) | | | | | | | | | | | | |
| Actual Power (MW or hp) | | | | | | | | | | | | |
| Barometric Pressure (in. Hg) | 29.47 | 29.48 | 29.48 | 29.49 | 29.49 | 29.50 | 29.51 | 29.51 | 29.52 | 29.52 | | |
| Ambient Temperature (°F) | 60 | 59 | 58 | 57 | 56 | 56 | 53 | 53 | 52 | 52 | | |
| Relative Humidity (%) | 47 | 50 | 52 | 54 | 56 | 58 | 64 | 66 | 66 | 67 | | |
| CEMS DATA for $O_2$ | | | | | | | | | | | | |
| CEMS DATA for NOx | | | | | | | | | | | | |
| CEMS DATA for CO | | | | | | | | | | | | |
| CEMS DATA for $SO_2$ | | | | | | | | | | | | |

| CALIBRATION | $O_2$ | | NOx | | CO | | $SO_2$ | |
|---|---|---|---|---|---|---|---|---|
| | Conc. | Actual | Conc. | Actual | Conc. | Actual | Conc. | Actual |
| Zero Gas | 0.0 | -.03 | 0.0 | -.02 | 0.0 | -.03 | | |
| Low Gas | 11.98 | 12.02 | 4.55 | 4.56 | 5.22 | 5.24 | | |
| Mid Gas | 21.00 | 21.10 | 8.90 | 8.91 | 9.10 | 9.12 | | |
| High Gas | | | | | | | | |

| $NO_2$ CONVERSION | |
|---|---|
| $NO_2$ Gas (ppm) | 48.7 |
| NO Reading (ppm) | 2.05 |
| NOx Reading (ppm) | 48.3 |
| Cylinder Num | EB0043354 |

| BIAS | $O_2$ | | NOx | | CO | | $SO_2$ | |
|---|---|---|---|---|---|---|---|---|
| | Zero | Mid | Zero | Mid | Zero | Mid | Zero | Mid |
| Initial Run #1 | -.03 | 11.93 | -.07 | 4.58 | -.45 | 5.26 | | |
| Run #1 / Run #2 | -.01 | 11.98 | -.11 | 4.56 | -.45 | 5.47 | | |
| Run #2 / Run #3 | -.02 | 11.93 | -.05 | 4.54 | -.45 | 5.62 | | |
| Run #3 / Run #4 | -.02 | 11.97 | -.09 | 4.54 | -.35 | 5.64 | | |
| Run #4 / Run #5 | -.02 | 11.91 | -.08 | 4.56 | -.32 | 5.60 | | |
| Run #5 / Run #6 | -.02 | 11.93 | -.06 | 4.53 | -.23 | 5.57 | | |
| Run #6 / Run #7 | -.04 | 11.90 | -.09 | 4.57 | -.32 | 5.55 | | |
| Run #7 / Run #8 | -.03 | 11.96 | -.10 | 4.51 | -.35 | 5.43 | | |
| Run #8 / Run #9 | -.03 | 11.94 | -.08 | 4.54 | -.42 | 5.41 | | |
| Run #9 / Run #10 | -.04 | 11.97 | -.12 | 4.59 | -.41 | 5.44 | | |
| Run #10 / Run #11 | -.05 | 11.94 | -.10 | 4.53 | -.40 | 5.36 | | |
| Run #11 / Run #12 | | | | | | | | |
| Run #12 Final | | | | | | | | |
| Bias Gas Actual Conc. | | | | | | | | |

| REPORT INFORMATION | INSTRUMENT | SERIAL # |
|---|---|---|
| $O_2$ | Servo | 02-0033 |
| NOx | 42C | NX-0045 |
| CO | 48C | CO-0032 |
| THC NH3 | NK2030 | JR.0028 |
| $CO_2$ | | |
| $SO_2$ | | |

| RESPONSE TIME | TIME (hh:mm) | RESP (min) |
|---|---|---|
| Gas Inject | / / | |
| 1st Inst. @ 95% | / / | |
| 2nd Inst. @ 95% | / / | / / |

# APPENDIX E

# STRATIFICATION TEST DATA

| Source Information | |
|---|---|
| **Company** | Cricket Valley Energy Center, LLC |
| **Plant Name** | Cricket Valley Energy Center |
| **Equipment** | General Electric (GE) 7F.05 Combustion Turbine |
| **Location** | Dover Plains, New York |

| Test Information | |
|---|---|
| **Date** | 04/04/20 |
| **Project #** | cis-19-cricketvalley.ny-start#1 |
| **Unit Number** | U-00003 |
| **Load** | Base Load |
| **Number of Ports Available** | 4 |
| **Number of Ports Used** | 4 |

**Stack and Test Type**

- ○ Isokinetic Traverse (Wet Chemistry Testing)
- ○ Velocity Traverse (Flow and Flow RATA Test)
- ○ Stratification Traverse (Compliance Test) ☐ RM 20
- ◉ **Stratification Traverse (RATA)** ☐ Part 60 ☑ Part 75

**Circular Stack**

Created with Traverse-AHI v20190211

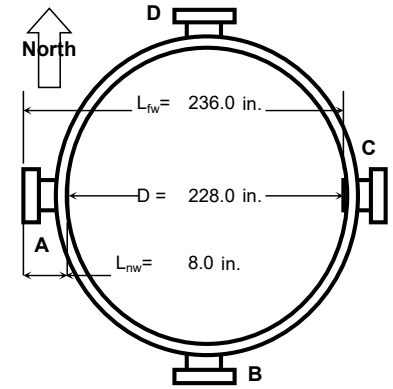
# METHOD 1 - STRATIFICATION TEST FOR A CIRCULAR SOURCE

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center, LLC | **Date** | 04/04/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | cis-19-cricketvalley.ny-start#1 |
| **Equipment** | General Electric (GE) 7F.05 Combustion Turbine | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Circular Stack or Duct Diameter** | | | |
|---|---|---|---|
| **Distance to Far Wall of Stack** | ($L_{fw}$) | 236.00 | in. |
| **Distance to Near Wall of Stack** | ($L_{nw}$) | 8.00 | in.* |
| **Diameter of Stack** | (D) | 228.00 | in. |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ |

*assume 8 in. reference (must be measured and verified in field)

| **Distance from Disturbances to Port** | | | |
|---|---|---|---|
| **Distance Upstream** | (A) | 200.40 | in. |
| **Diameters Upstream** | ($A_D$) | 0.88 | diameters |
| **Distance Downstream** | (B) | 850.00 | in. |
| **Diameters Downstream** | ($B_D$) | 3.73 | diameters |



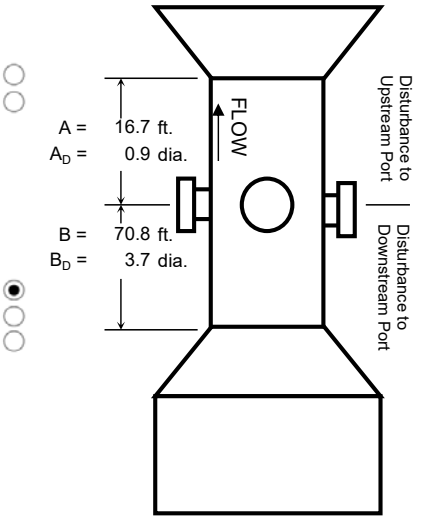

**Number of Traverse Points Required**

| Diameters to Flow Disturbance | | Minimum Number of[1] Traverse Points | | Minimum Number of Traverse Points Comp Stratification | |
|---|---|---|---|---|---|
| Down ($B_D$) | Up ($A_D$) | Particulate | Velocity | Criteria | Points |
| Stream | Stream | Points | Points | | |
| 2.00-4.99 | 0.50-1.24 | 24 | 16 | RM 7E 8.1.2 | 12 RM1 pts |
| 5.00-5.99 | 1.25-1.49 | 20 | 16 | Alt 7E 8.1.2 | 3 points |
| 6.00-6.99 | 1.50-1.74 | 16 | 12 | | |
| 7.00-7.99 | 1.75-1.99 | 12 | 12 | | |
| >= 8.00 | >=2.00 | 8 or 12[2] | 8 or 12[2] | **Minimum Number of** | |
| Upstream Spec | | 24 | 16 | **Traverse Points** | |
| Downstream Spec | | 24 | 16 | **RATA Stratification** | |
| Traverse Pts Required | | 24 | 16 | **Criteria** | **Points** |

[1] Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.

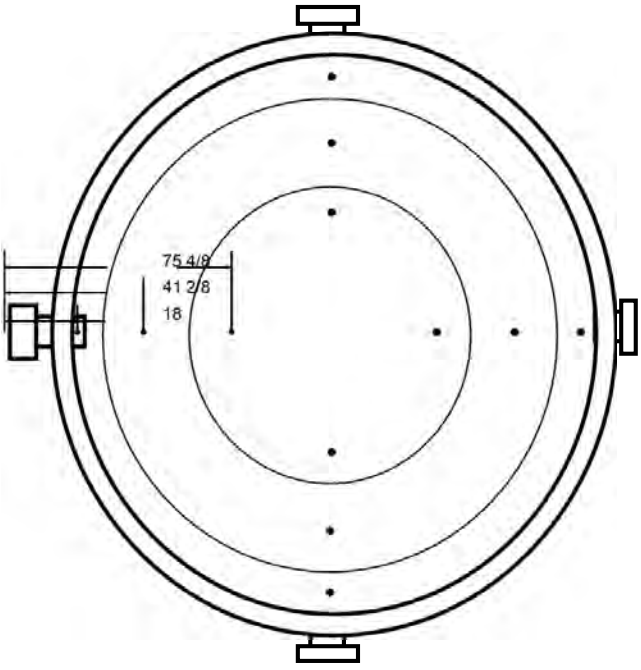
[2] 8 for Circular Stacks 12 to 24 inches
12 for Circular Stacks over 24 inches

| | | |
|---|---|---|
| ○ | Part75/60 | 12 RM1 pts |
| ○ | 75 abrv (a) | 3 points |
| ○ | 75 abrv (b) | 6 points |
| | | points |




| **Number of Traverse Points Used** | | | | |
|---|---|---|---|---|
| 4 | **Ports by** | 3 | **Pts / port** | **Stratification Traverse (RATA)** |
| 12 | **Pts Used** | 12 | **Required** | |

| **Traverse Point Locations** | | | |
|---|---|---|---|
| **Traverse Point Number** | **Percent of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
| | % | in. | in. |
| **1** | 4.4% | 10 | 18 |
| **2** | 14.6% | 33 2/8 | 41 2/8 |
| **3** | 29.6% | 67 4/8 | 75 4/8 |
| **4** | | | |
| **5** | | | |
| **6** | | | |
| **7** | | | |
| **8** | | | |
| **9** | | | |
| **10** | | | |
| **11** | | | |
| **12** | | | |
| **13** | | | |
| **14** | | | |
| **15** | | | |
| **16** | | | |
| **17** | | | |
| **18** | | | |
| **19** | | | |
| **20** | | | |
| **21** | | | |
| **22** | | | |
| **23** | | | |
| **24** | | | |



# STRATIFICATION TRAVERSE (RATA) RESULTS

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center, LLC | **Date** | 04/04/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | cis-19-cricketvalley.ny-start#1 |
| **Equipment** | General Electric (GE) 7F.05 Combustion Turbine | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Stack Dimensions** | | | | **Traverse Data** | | | |
|---|---|---|---|---|---|---|---|
| **Diameter or Length of Stack** | (D) | 228.00 | in. | 4 | **Ports by** | 3 | **Pts / port** |
| **Width of Stack** | (W) | | in. | 12 | **Pts Used** | 12 | **Required** |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ | **Run Start** | 7:28:21 | **Run End** | 8:07:21 |

| **Traverse Point** | **Time Per Point** | **Point Start Time** | **Point Stop Time (Reading)** | **$O_2$** | **Percent Difference** | **NOx** | **Percent Difference** |
|---|---|---|---|---|---|---|---|
| | min. | hh:mm:ss | hh:mm:ss | % | % | ppm | % |
| D-3 | 3.00 | 7:28:21 | 7:31:21 | 12.04 | **0.04%** | 1.98 | **2.33%** |
| D-2 | 3.00 | 7:31:21 | 7:34:21 | 12.04 | **0.04%** | 1.94 | 0.26% |
| D-1 | 3.00 | 7:34:21 | 7:37:21 | 12.04 | **0.04%** | 1.95 | 0.78% |
| C-3 | 5.00 | 7:37:21 | 7:42:21 | 12.05 | **0.04%** | 1.95 | 0.78% |
| C-2 | 3.00 | 7:41:21 | 7:44:21 | 12.05 | **0.04%** | 1.93 | 0.26% |
| C-1 | 3.00 | 7:44:21 | 7:47:21 | 12.05 | **0.04%** | 1.91 | 1.29% |
| B-3 | 4.00 | 7:47:21 | 7:51:21 | 12.04 | **0.04%** | 1.91 | 1.29% |
| B-2 | 3.00 | 7:51:21 | 7:54:21 | 12.04 | **0.04%** | 1.93 | 0.26% |
| B-1 | 3.00 | 7:54:21 | 7:57:21 | 12.05 | **0.04%** | 1.96 | 1.29% |
| A-3 | 4.00 | 7:57:21 | 8:01:21 | 12.05 | **0.04%** | 1.92 | 0.78% |
| A-2 | 3.00 | 8:01:21 | 8:04:21 | 12.05 | **0.04%** | 1.93 | 0.26% |
| A-1 | 3.00 | 8:04:21 | 8:07:21 | 12.04 | **0.04%** | 1.91 | 1.29% |
| **Average** | | | | 12.05 | | 1.94 | |

# RATA SAMPLE POINTS FOR CIRCULAR STACK

| | | | |
|---|---|---|---|
| **Company** | Cricket Valley Energy Center, LLC | **Date** | 04/04/20 |
| **Plant Name** | Cricket Valley Energy Center | **Project #** | cis-19-cricketvalley.ny-start#1 |
| **Equipment** | General Electric (GE) 7F.05 Combustion Turbine | **# of Ports Available** | 4 |
| **Location** | Dover Plains, New York | **# of Ports Used** | 4 |

| **Stack Dimensions** | | | | **Traverse Data** | | | |
|---|---|---|---|---|---|---|---|
| **Diameter or Length of Stack** | (D) | 228.00 | in. | 4 | **Ports by** | 3 | **Pts / port** |
| **Width of Stack** | (W) | | in. | 12 | **Pts Used** | 12 | **Required** |
| **Area of Stack** | ($A_s$) | 283.53 | $ft^2$ | **Run Start** | 7:28:21 | **Run End** | 8:07:21 |

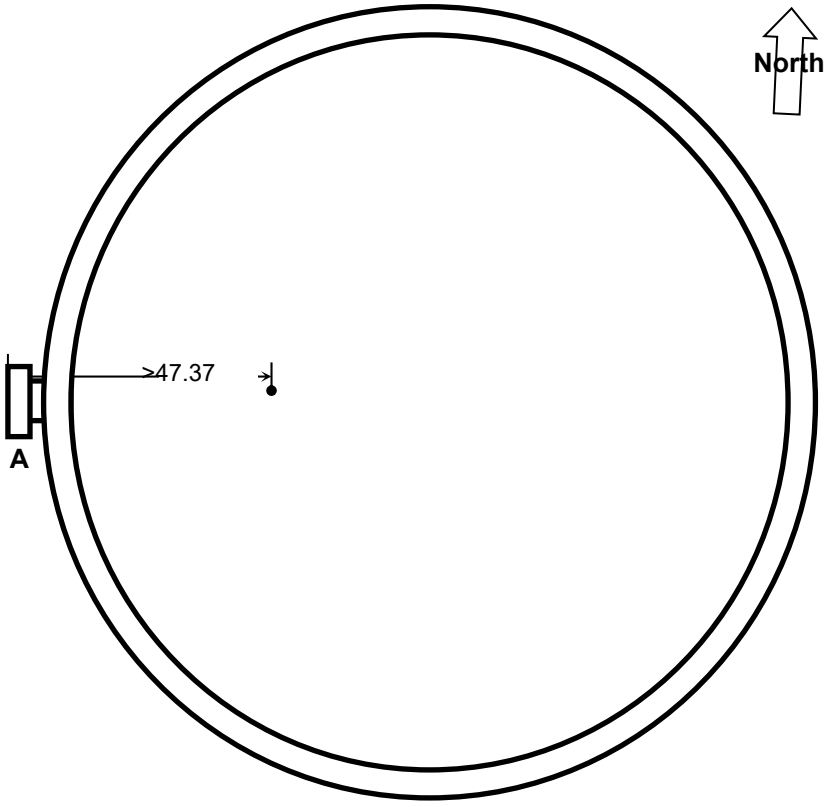
**40 CFR 75 Criteria**

| **Stratification Results** | |
|---|---|
| **Maximum Percent Difference** | 0.04 % for $O_2$ |
| **Maximum Pollutant Conc. Diff.** | 0.04 ppm for NOx |
| **Maximum Diluent Conc. Diff.** | 0.01 % for $O_2$ |
| **Stratification Conclusions** | |
| **Comparison** | at least one diluent/pollutant |
| **Stack Diameter** | D > 93.6 in. |

Under Part 75 criteria at least one measured pollutant or diluent demonstrates a non-stratified stack with subsequent testing from a single point located at least one meter away from the stack wall.

| **Traverse Point Number** | **Percent of Stack Diameter** | **Distance from Inside Wall** | **Distance Including Reference Length** |
|---|---|---|---|
| | % | in. | in. |
| **1** | >17.27% | >39.37 | >47.37 |
| **2** | | | |
| **3** | | | |

Test Type
- ☐ Moisture, for MW
- ☐ Moisture, for wet-to-dry
- ☑ Gas
- ☐ e 6.5.6.3(a) points?
- ☐ 5.6(b)(2) alt. points could apply



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**end of report**

# APPENDIX 7

# FUEL FLOWMETER ACCURACY TEST/PRIMARY ELEMENT VISUAL INSPECTION DOCUMENTATION

26068-000-G27-JQ11-00004

Endress+Hauser

People for Process Automation

# Certificate

Flow Calibration with Adjustment

30436784

American Association for Laboratory Accreditation, Cert. No 1897.01

Calibration laboratory accredited according to ISO/IEC 17025:2005

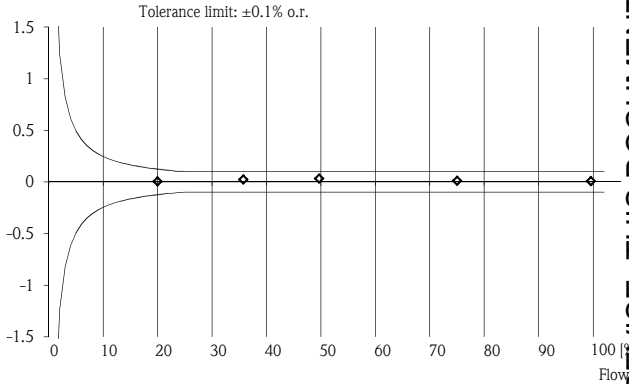
| | |
|---|---|
| 3003821102<br>Purchase order number | FCP-7.1.F / gravimetric<br>Calibration rig/Method |
| CORETECH INDUSTRIAL CORPORATION<br>Customer | 4776.682 lb/min ( ≙ 100%)<br>Calibrated full scale |
| US-3005985002-10 / Endress+Hauser Flowtec<br>Order N°/Manufacturer | Service interface<br>Calibrated output |
| PROMASS 83 F 6"<br>Transmitter/Sensor | 0.90011<br>Calibration factor |
| N600E816000 / N600E816000<br>Serial N° | 15<br>Zero point |
| 125T3664G001, GE PO# 610575460/3<br>Tag N° | 71.2 °F ±0.11 °F<br>Water temperature |
| New<br>Condition | 0.048 %<br>Expanded uncertainty of measurement |

| Flow [%] | Flow [lb/min] | Duration [s] | m target [lb] | m meas. [lb] | Δ o.r.* [%] | Outp.** [mA] |
|---|---|---|---|---|---|---|
| 20.0 | 953.972 | 60.2 | 957.184 | 957.219 | 0.004 | 7.20 |
| 35.7 | 1705.92 | 35.2 | 1000.72 | 1000.94 | 0.022 | 9.72 |
| 49.7 | 2371.62 | 30.2 | 1193.67 | 1194.06 | 0.033 | 11.95 |
| 75.0 | 3583.86 | 30.2 | 1803.81 | 1803.99 | 0.010 | 16.01 |
| 99.6 | 4755.55 | 30.2 | 2394.30 | 2394.52 | 0.009 | 19.93 |
| – | – | – | – | – | – | – |
| – | – | – | – | – | – | – |
| – | – | – | – | – | – | – |
| – | – | – | – | – | – | – |
| – | – | – | – | – | – | – |

*o.r.: of reading

**Calculated value (4 - 20 mA)

Measured error % o.r.




For detailed data concerning output specifications of the unit under test, see Technical Information (TI), chapter Performance characteristics.

Calibration, traceable to NIST, has been completed on the instruments used in the equipment calibration process (see attached listing).

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approx. 95%. The expanded uncertainty of measurement includes uncertainty components of the reference, the calibration method, the environment and of the device under test. A typical value is used for the uncertainty component of the device

GE Power Generation — GENERAL ELECTRIC COMPANY GREENVILLE, S.C.

VENDOR SUPPLIED DRAWING

GE NOT TO REVISE. GE REVISION LEVEL IS AS SHOWN ON THIS APPLIQUE. THIS DOCUMENT IS FILED UNDER THE GE DRAWING NUMBER.

THIS DOCUMENT SHALL BE REVISED IN ITS ENTIRETY. ALL SHEETS OF THIS DOCUMENT ARE THE SAME REVISION LEVEL AS INDICATED IN THIS VENDOR SUPPLIED DRAWING APPLIQUE.

FIRST MADE FOR: MLI: 0639 1 OF 2

| GE SIGNATURES | DATE | GE DRAWING NUMBER | REV. |
|---|---|---|---|
| CHECKED: | | 130V5924 | - |
| ISSUED: | | | |

Scott Newcomer

06-11-2018
Date of calibration

S. Newcomer
Operator

Endress+Hauser Flowtec, Division USA
2330 Endress Place
Greenwood, IN 46143

This certificate shall not be published or reproduced other than in full, except with the prior written approval of the issuing laboratory.



CRICKET VALLEY ENERGY CENTER
BECHTEL INFRASTRUCTURE AND POWER CORPORATION
PURCHASE ORDER NO: 26068-230-POA-MS00-00001
EQUIPMENT SCOPE: GAS TURBINE

GE Proprietary Information - Class II (Internal) US EAR - NLR

VENDOR SUPPLIED - GE NOT TO REVISE. THIS DOCUMENT IS FILED UNDER THE GE DRAWING NUMBER AND GE REVISION LEVEL.

26068-000-G27-JQ11-00004

Endress+Hauser
People for Process Automation

# Certificate Addendum

| | |
|---|---|
| CORETECH INDUSTRIAL CORPORATION | 12020 - BALLSTON SPA |
| Customer name | Customer address |
| Endress+Hauser Flowtec, Div. USA | 6" |
| Manufacturer | Nominal diameter |
| US-3005985002-10 / 83F1F-CP77/0 | FCP-7.1.F |
| Customer order N°/Order code | Calibration rig |
| N600E816000 / N600E816000 | 30436784 |
| Serial N° | Record N° |
| New | 06-11-2018 |
| Condition | Calibration date |
| - | 0.048 % |
| Customer specified calibration due date | Uncertainty of measurement (o.r.%) |
| PRD-TI-024 | |
| Calibration work procedure | |

## Instruments used in the calibration rig:

| Asset N° | Manufacturer | Model | Description | NIST/Cert N° | Cal. date | Cal. due date |
|---|---|---|---|---|---|---|
| F10795 | Endress+Hauser | PMC71-AAA1P1 | Pressure Gauge (Measure Inlet) | 008909 | 05-24-2018 | 05-31-2019 |
| F10796 | Endress+Hauser | PMC71-AAA1P1 | Pressure Gauge (Measure Inlet) | 008910 | 05-24-2018 | 05-31-2019 |
| F10797 | Endress+Hauser | PMC71-AAA1P1 | Pressure Gauge (Measure Outlet) | 008911 | 05-24-2018 | 05-31-2019 |
| F10798 | Endress+Hauser | TST434-K1B3A0 | RTD - Ambient | 008920 | 05-24-2018 | 05-31-2019 |
| F10799 | Endress+Hauser | TST310-A3A1A3 | RTD - Measuring Section | 008912 | 05-24-2018 | 05-31-2019 |
| F10800 | Endress+Hauser | TST310-A3A1A3 | RTD - Measuring Section | 008913 | 05-24-2018 | 05-31-2019 |
| F10801 | Endress+Hauser | TST310-A3A1A3 | RTD - 4000 kg Tank | 008914 | 05-24-2018 | 05-31-2019 |
| F10802 | Endress+Hauser | TST310-A3A1A3 | RTD - 4000 kg Tank | 008915 | 05-24-2015 | 05-31-2019 |
| F10803 | Endress+Hauser | TST310-A3A1A3 | RTD - Master Tower | 008917 | 05-24-2018 | 05-31-2019 |
| F10804 | Endress+Hauser | TST310-A3A1A3 | RTD - Master Tower | 008916 | 05-24-2018 | 05-31-2019 |
| F10806 | Endress+Hauser | TST310-A3A1A3 | RTD - 400 kg Tank | 008918 | 05-24-2018 | 05-31-2019 |
| F10807 | Endress+Hauser | TST310-A3A1A3 | RTD - 400 kg Tank | 008919 | 05-24-2018 | 05-31-2019 |
| F10808 | Endress+Hauser | - | Large Scale Diverter | 008905 | 05-10-2018 | 05-31-2019 |
| F10809 | Beckhoff | KL1501 | Counter/Timer | 008907 / 00890 | 05-24-2018 | 05-31-2019 |
| F10810 | Beckhoff | KL1501 | Counter/Timer | 008906 | 05-24-2018 | 05-31-2019 |
| F10811 | Endress+Hauser | - | Small Scale Diverter | 008904 | 05-10-2018 | 05-31-2019 |
| F10813 | HBM | DMP 40 | Digital Scale Amplifier and scales | 008903 | 05-10-2018 | 05-31-2019 |
| - | - | - | - | - | - | - |

Calibration traceable to NIST has been completed on the instrument listed above by using known working procedures and standards certified by the manufacturers and/or secondary testing laboratories to traceable to NIST. This calibration has been completed using standards having a minimum accuracy of at least four times greater than the instrument listed above. This calibration was conducted in accordance with ISO 17025:2005 and ANSI/NCSL Z540-1. Reported uncertainties represent expanded uncertainties expressed at approximately 95% confidence level using a coverage factor of k=2.

Debbie Carver

ilac-MRA A2LA ACCREDITED

Certified according to ISO 17025:2005
Certification N° 1897.01

Debbie Carver
Calibration supervisor

Endress+Hauser Flowtec, Division USA
2330 Endress Place
Greenwood, IN 46143



GE Proprietary Information - Class II (Internal) US EAR - NLR

ENDRESS + HAUSER INC.
2350 Endress Place
Greenwood, IN 46143
Phone: (888)ENDRESS

Endress+Hauser
People for Process Automation

# CERTIFICATE OF COMPLIANCE

CUSTOMER NAME : CORETECH INDUSTRIAL CORPORATION

CUSTOMER P.O.#: 111611

ALL ITEMS FURNISHED WITH THIS SHIPMENT ARE IN COMPLIANCE WITH THE MODEL NUMBERS ORDERED ON THE REFERENCED PURCHASE ORDER, AND PUBLISHED ENDRESS+HAUSER SPECIFICATION REQUIREMENTS.
THE INSTRUMENT(S) PROVIDED ARE MANUFACTURED, TESTED, AND INSPECTED IN ACCORDANCE WITH ACCEPTED INDUSTRY MANUFACTURING PRACTICES, ISO9001 GUIDELINES, THE GRAVIMETRIC METHOD USED IN ACCORDANCE WITH ASME MFC 9M:2006 AND ENDRESS+HAUSER SPECIFICATIONS.

ENDRESS+HAUSER SALES ORDER NUMBER: 3800374688

Signed and Dated By: Gregg Miller 02/12/2020
(Dispatching Manager)

| S.O. LINE | MODEL NUMBER | QTY | EXT. MODEL NUMBER | TAG NUMBER | SERIAL NUMBER |
|---|---|---|---|---|---|
| 10 | 83F1F-CP77/0 | 1 | 83F1F-CABSBGR4BABN+Z1 | 125T3664G001<br>GE PO#<br>610575460/2 | N4012116000 |

EMERSON

**24 February, 2018**

**Emerson Automation Solutions**
8200 Market Blvd
Chanhassen, MN U.S. 55317-9786

**Calibration Data Sheet Consistent with ISO 10474 3.1 or EN 10204 3.1**

## Customer Information

**Name:** FORNEY CORP
**PO:** 790542

## Manufacturer Information

**Sales Order:** 5116125
**Line:** 3

## Device Information

**Device Type:** Pressure Transmitter
**Customer Ref/ID:** N/A
**Serial No:** 0011953

**Model No:** 3051SMV5M13G3R2A11A1AC12C2E5M5Q4

**Module Serial No:** 14966796
**Output:** Linear
**Device ID:** 33193

## Calibration Information

**Factory:** Chanhassen, MN, USA
**Station Name:** CHAN_DPFLOW_CALIBRATION_01
**Operator ID:** 45565
**Calibration Date:** 02/23/2018 08:47:14 AM

Internal Ref #: 30073092

## Permanent Tag Information

DUCT BURNER
FLOW TRANSMITTER

## Wire-On Tag Information

### Attached Models

0305RC92B21B4

### Equipment Used

| EqNumber: | EqName: | CalDueDate: |
|---|---|---|
| E3-58610 | Load Box | 7/20/2018 2:17:00PM |
| E3-60655 | Multimeter | 9/20/2018 3:07:00PM |
| E3-60786 | Precision Resistance Decade | 7/9/2018 10:38:00AM |
| P3-54917 | Pressure Controller | 4/12/2018 1:13:00PM |
| P3-55113 | Pressure Controller | 5/2/2018 10:27:00AM |

**Calibration Data**

**DP**

Reference of Calibration: Differential

Range: 0.000 TO 150.000 InH2O@68degF

Damping: 0.40 seconds

| % of Range | Applied Pressure | Requested Applied Pressure | Digital Output (InH2O@68degF) | % Span Error | Pass/Fail |
|---|---|---|---|---|---|
| 99.994 | 5.409 PSI | 149.99050 InH2O@68degF | 149.99210 | 0.00107 | PASS |
| 79.991 | 4.327 PSI | 119.98680 InH2O@68degF | 119.98590 | -0.00060 | PASS |
| 59.989 | 3.245 PSI | 89.98320 InH2O@68degF | 89.96931 | -0.00926 | PASS |
| 39.986 | 2.163 PSI | 59.97956 InH2O@68degF | 59.96970 | -0.00657 | PASS |
| 19.984 | 1.081 PSI | 29.97591 InH2O@68degF | 29.97540 | -0.00034 | PASS |
| 0.000 | 0.000 PSI | 0.00000 InH2O@68degF | -0.00136 | -0.00091 | PASS |

**SP**

Reference of Calibration: Gauge

Range: 0.000 TO 100.000 PSI

Damping: 0.40 seconds

| % of Range | Applied Pressure | Requested Applied Pressure | Digital Output (PSI) | % Span Error | Pass/Fail |
|---|---|---|---|---|---|
| 100.000 | 100.000 PSI | 100.00000 PSI | 99.99935 | -0.00065 | PASS |
| 80.000 | 80.000 PSI | 80.00000 PSI | 79.99359 | -0.00641 | PASS |
| 60.000 | 60.000 PSI | 60.00000 PSI | 59.99270 | -0.00730 | PASS |
| 40.000 | 40.000 PSI | 40.00000 PSI | 39.99899 | -0.00101 | PASS |
| 20.000 | 20.000 PSI | 20.00000 PSI | 19.99092 | -0.00908 | PASS |
| 0.000 | 0.000 PSI | 0.00000 PSI | -0.00486 | -0.00486 | PASS |

**PT**

Range: 0.000 TO 150.000 DEG F

Damping: 0.40 seconds

| % of Range | Applied Resistence | Applied Resistence | Digital Output (DEG F) | Error (DEG F) | Pass/Fail |
|---|---|---|---|---|---|
| 100.000 | 125.373 Ohms | 150.00000 DEG F | 149.97640 | -0.02360 | PASS |
| 80.000 | 118.969 Ohms | 120.00000 DEG F | 119.98160 | -0.01840 | PASS |
| 60.000 | 112.533 Ohms | 90.00000 DEG F | 89.99405 | -0.00595 | PASS |
| 40.000 | 106.066 Ohms | 60.00000 DEG F | 60.01852 | 0.01852 | PASS |
| 20.000 | 99.566 Ohms | 30.00000 DEG F | 30.03536 | 0.03536 | PASS |
| 0.000 | 93.033 Ohms | 0.00000 DEG F | 0.02816 | 0.02816 | PASS |

This is to certify that the listed product meets the applicable Rosemount Specifications. Measuring and test equipment used in the manufacture and inspection of the listed product are traceable to the National Institute of Standards and Technology. The calibration system was designed to meet the intent of ANSI Z540-1-1994.

Heather Matthiesen
Quality Manager

**From:** Keiper, Evan
**To:** Carr, Peter
**Cc:** Relange, Julien (GE Power); Habib Alfraiheen; Reginald Williams
**Subject:** RE: Orifice Plate Inspection Statement
**Date:** Friday, April 10, 2020 12:22:24 PM

---

Peter,

As the responsible I&C Startup lead on the project, I can attest that the Unit 3 duct burner fuel flow meter including the orifice run was installed correctly onsite and no nonconformances or defects were noted during its initial checkout and placement into operation. Similarly, the orifice plate and transmitter taps were installed per design and are correctly orientated for proper fuel flow measurement. I have also reviewed the AGA calibration records related to the Unit 3 fuel flow meter and noted no issues.

Regards,

Evan Keiper
Bechtel Infrastructure and Power Corp.
Cricket Valley Energy Center
Startup Instrumentation & Controls
D: 571-392-6330
M: 234-207-0424

Level 3 - Bechtel Internal and Selected External Distribution

[redacted]





# APPENDIX 8

# GAS CYLINDER CERTIFICATION SHEETS

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E03NI99E15A09J6 | Reference Number: | 122-401543888-1 |
| Cylinder Number: | ALM-026215 | Cylinder Volume: | 144.4 CF |
| Laboratory: | 124 - Durham (SAP) - NC | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | B22019 | Valve Outlet: | 660 |
| Gas Code: | CO,NO,NOX,BALN | Certification Date: | Jul 22, 2019 |

**Expiration Date: Jul 22, 2027**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| NOX | 180.0 PPM | 177.0 PPM | G1 | +/- 0.6% NIST Traceable | 07/15/2019, 07/22/2019 |
| NITRIC OXIDE | 180.0 PPM | 176.7 PPM | G1 | +/- 0.6% NIST Traceable | 07/15/2019, 07/22/2019 |
| CARBON MONOXIDE | 1700 PPM | 1707 PPM | G1 | +/- 1.0% NIST Traceable | 07/15/2019 |
| NITROGEN | Balance | | | - | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 18060130 | KAL004288 | 249.9 PPM NITRIC OXIDE/NITROGEN | +/- 0.4% | Nov 08, 2023 |
| PRM | PRM | D562879 | 10.01 PPM NITROGEN DIOXIDE/AIR | +/- 1.9% | Aug 17, 2018 |
| GMIS | 124206889114 | CC322698 | 4.432 PPM NITROGEN DIOXIDE/NITROGEN | +/- 2.0% | Aug 15, 2021 |
| NTRM | 09010339 | KAL004580 | 970.0 PPM CARBON MONOXIDE/NITROGEN | +/- 0.4% | May 14, 2021 |

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| Nicolet 6700 AHR0801549 CO | FTIR | Jun 27, 2019 |
| Nicolet 6700 AHR0801549 NO | FTIR | Jun 27, 2019 |
| Nicolet 6700 AHR0801549 NO | FTIR | Jun 27, 2019 |

**Triad Data Available Upon Request**

**Signature on file**

**Approved for Release**

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E03NI99E15A09J6 | Reference Number: | 122-401543888-1 |
| Cylinder Number: | SG9147577BAL | Cylinder Volume: | 144.4 CF |
| Laboratory: | 124 - Durham (SAP) - NC | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | B22019 | Valve Outlet: | 660 |
| Gas Code: | CO,NO,NOX,BALN | Certification Date: | Jul 22, 2019 |

**Expiration Date: Jul 22, 2027**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| NOX | 180.0 PPM | 176.9 PPM | G1 | +/- 0.6% NIST Traceable | 07/15/2019, 07/22/2019 |
| NITRIC OXIDE | 180.0 PPM | 176.8 PPM | G1 | +/- 0.6% NIST Traceable | 07/15/2019, 07/22/2019 |
| CARBON MONOXIDE | 1700 PPM | 1711 PPM | G1 | +/- 0.6% NIST Traceable | 07/15/2019 |
| NITROGEN | Balance | | | - | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 18060130 | KAL004288 | 249.9 PPM NITRIC OXIDE/NITROGEN | +/- 0.4% | Nov 08, 2023 |
| PRM | PRM | D562879 | 10.01 PPM NITROGEN DIOXIDE/AIR | +/- 1.9% | Aug 17, 2018 |
| GMIS | 124206889114 | CC322698 | 4.432 PPM NITROGEN DIOXIDE/NITROGEN | +/- 2.0% | Aug 15, 2021 |
| NTRM | 09010339 | KAL004580 | 970.0 PPM CARBON MONOXIDE/NITROGEN | +/- 0.4% | May 14, 2021 |

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| Nicolet 6700 AHR0801549 CO | FTIR | Jun 27, 2019 |
| Nicolet 6700 AHR0801549 NO | FTIR | Jun 27, 2019 |
| Nicolet 6700 AHR0801549 NO | FTIR | Jun 27, 2019 |

**Triad Data Available Upon Request**

**Signature on file**

**Approved for Release**

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI99E15A0131 | Reference Number: | 122-401515527-1 |
| Cylinder Number: | CC338501 | Cylinder Volume: | 144.3 CF |
| Laboratory: | 124 - Durham (SAP) - NC | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | B22019 | Valve Outlet: | 660 |
| Gas Code: | NO,NOX,BALN | Certification Date: | Jun 19, 2019 |

**Expiration Date: Jun 19, 2022**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| NOX | 9.000 PPM | 8.879 PPM | G1 | +/- 0.9% NIST Traceable | 06/12/2019, 06/19/2019 |
| NITRIC OXIDE | 9.000 PPM | 8.841 PPM | G1 | +/- 0.9% NIST Traceable | 06/12/2019, 06/19/2019 |
| NITROGEN | Balance | | | - | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 16060622 | CC442581 | 50.42 PPM NITRIC OXIDE/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060622 | CC442581 NOx | 50.49 PPM NOx/NITROGEN | +/- 0.8% | Jun 27, 2020 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| THERMO NO 42I-1308857345 | Chemiluminescence | May 22, 2019 |
| THERMO NOX 42I-1308857345 | Chemiluminescence | May 22, 2019 |

**Triad Data Available Upon Request**

**Signature on file**

**Approved for Release**

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI99E15A0131 | Reference Number: | 122-401545928-1 |
| Cylinder Number: | CC409686 | Cylinder Volume: | 144.3 CF |
| Laboratory: | 124 - Durham (SAP) - NC | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | B22019 | Valve Outlet: | 660 |
| Gas Code: | NO,NOX,BALN | Certification Date: | Jul 24, 2019 |

**Expiration Date: Jul 24, 2022**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| NOX | 9.000 PPM | 8.819 PPM | G1 | +/- 0.9% NIST Traceable | 07/17/2019, 07/24/2019 |
| NITRIC OXIDE | 9.000 PPM | 8.791 PPM | G1 | +/- 0.9% NIST Traceable | 07/17/2019, 07/24/2019 |
| NITROGEN | Balance | | | - | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 16060612 | CC442569 | 50.42 PPM NITRIC OXIDE/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060612 | CC442569 NOx | 50.49 PPM NOx/NITROGEN | +/- 0.8% | Jun 27, 2020 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| THERMO NO 42I-1308857345 | Chemiluminescence | Jul 18, 2019 |
| THERMO NOX 42I-1308857345 | Chemiluminescence | Jul 18, 2019 |

**Triad Data Available Upon Request**

**Signature on file**

**Approved for Release**

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI99E15A2039 | Reference Number: | 160-401543673-1 |
| Cylinder Number: | CC512404 | Cylinder Volume: | 144.3 CF |
| Laboratory: | 124 - Plumsteadville - PA | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | A12019 | Valve Outlet: | 350 |
| Gas Code: | CO,BALN | Certification Date: | Jul 17, 2019 |

**Expiration Date: Jul 17, 2027**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| CARBON MONOXIDE | 7.000 PPM | 7.044 PPM | G1 | +/- 0.7% NIST Traceable | 07/17/2019 |
| NITROGEN | Balance | | | - | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 08011106 | KAL003958 | 9.855 PPM CARBON MONOXIDE/NITROGEN | +/- 0.5% | May 24, 2024 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| MKS FTIR - CO - 000928781 | FTIR | Jul 02, 2019 |

**Triad Data Available Upon Request**

**Signature on file**

**Approved for Release**

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI99E15A2039 | Reference Number: | 160-401543673-1 |
| Cylinder Number: | EB0092627 | Cylinder Volume: | 144.3 CF |
| Laboratory: | 124 - Plumsteadville - PA | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | A12019 | Valve Outlet: | 350 |
| Gas Code: | CO,BALN | Certification Date: | Jul 17, 2019 |

**Expiration Date: Jul 17, 2027**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| CARBON MONOXIDE | 7.000 PPM | 6.980 PPM | G1 | +/- 0.7% NIST Traceable | 07/17/2019 |
| NITROGEN | Balance | | | - | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 08011106 | KAL003958 | 9.855 PPM CARBON MONOXIDE/NITROGEN | +/- 0.5% | May 24, 2024 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| MKS FTIR - CO - 000928781 | FTIR | Jul 02, 2019 |

**Triad Data Available Upon Request**

**Signature on file**

**Approved for Release**

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI78E15A0124 | Reference Number: | 160-401435090-1 |
| Cylinder Number: | ALMO47793 | Cylinder Volume: | 146.3 CF |
| Laboratory: | 124 - Plumsteadville - PA | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | A12019 | Valve Outlet: | 590 |
| Gas Code: | O2,BALN | Certification Date: | Mar 04, 2019 |

**Expiration Date: Mar 04, 2027**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| OXYGEN | 22.00 % | 22.20 % | G1 | +/- 0.4% NIST Traceable | 03/04/2019 |
| NITROGEN | Balance | | | - | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 16060507 | CC401541 | 23.204 % OXYGEN/NITROGEN | 0.2% | Dec 24, 2021 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| SIEMENS OXYMAT 61 S01062 O2 | PARAMAGNETIC | Feb 18, 2019 |

**Triad Data Available Upon Request**

**Signature on file**

**Approved for Release**

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI78E15A0124 | Reference Number: | 160-401525182-1 |
| Cylinder Number: | CC270907 | Cylinder Volume: | 146.3 CF |
| Laboratory: | 124 - Plumsteadville - PA | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | A12019 | Valve Outlet: | 590 |
| Gas Code: | O2,BALN | Certification Date: | Jun 17, 2019 |

**Expiration Date: Jun 17, 2027**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| OXYGEN | 22.00 % | 22.22 % | G1 | +/- 0.3% NIST Traceable | 06/17/2019 |
| NITROGEN | Balance | | | - | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| SIEMENS OXYMAT 6 - W5951 - O2 | PARAMAGNETIC | May 23, 2019 |

**Triad Data Available Upon Request**

**Signature on file**

**Approved for Release**

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E02NI99E15A0131 | Reference Number: | 122-401550341-1 |
| Cylinder Number: | CC415620 | Cylinder Volume: | 144.3 CF |
| Laboratory: | 124 - Durham (SAP) - NC | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | B22019 | Valve Outlet: | 660 |
| Gas Code: | NO,NOX,BALN | Certification Date: | Aug 01, 2019 |

**Expiration Date: Aug 01, 2022**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| NOX | 9.000 PPM | 9.053 PPM | G1 | +/- 1.0% NIST Traceable | 07/25/2019, 08/01/2019 |
| NITRIC OXIDE | 9.000 PPM | 9.036 PPM | G1 | +/- 0.9% NIST Traceable | 07/25/2019, 08/01/2019 |
| NITROGEN | Balance | | | - | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 16060612 | CC442569 | 50.42 PPM NITRIC OXIDE/NITROGEN | +/- 0.8% | Jun 27, 2020 |
| NTRM | 16060612 | CC442569 NOx | 50.49 PPM NOx/NITROGEN | +/- 0.8% | Jun 27, 2020 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| THERMO NO 42I-1308857345 | Chemiluminescence | Jul 18, 2019 |
| THERMO NOX 42I-1308857345 | Chemiluminescence | Jul 18, 2019 |

**Triad Data Available Upon Request**

**Signature on file**

**Approved for Release**

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E03NI99E15A09J6 | Reference Number: | 122-401722350-1 |
| Cylinder Number: | CC435700 | Cylinder Volume: | 144.4 CF |
| Laboratory: | 124 - Durham (SAP) - NC | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | B22020 | Valve Outlet: | 660 |
| Gas Code: | CO,NO,NOX,BALN | Certification Date: | Feb 11, 2020 |

**Expiration Date: Feb 11, 2028**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| NOX | 180.0 PPM | 180.2 PPM | G1 | +/- 1.2% NIST Traceable | 02/04/2020, 02/11/2020 |
| NITRIC OXIDE | 180.0 PPM | 180.1 PPM | G1 | +/- 1.2% NIST Traceable | 02/04/2020, 02/11/2020 |
| CARBON MONOXIDE | 1700 PPM | 1679 PPM | G1 | +/- 1.1% NIST Traceable | 02/04/2020 |
| NITROGEN | Balance | | | - | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 17060225 | EB0079096 | 100.3 PPM NITRIC OXIDE/NITROGEN | +/- 1.0% | Jul 23, 2023 |
| PRM | PRM | D562879 | 10.01 PPM NITROGEN DIOXIDE/AIR | +/- 1.9% | Aug 17, 2018 |
| GMIS | 124206889114 | CC322698 | 4.432 PPM NITROGEN DIOXIDE/NITROGEN | +/- 2.0% | Aug 15, 2021 |
| NTRM | 09010339 | KAL004580 | 970.0 PPM CARBON MONOXIDE/NITROGEN | +/- 0.4% | May 14, 2021 |

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| Nicolet 6700 AHR0801549 CO | FTIR | Jan 08, 2020 |
| Nicolet 6700 AHR0801549 NO | FTIR | Feb 05, 2020 |
| Nicolet 6700 AHR0801549 NO | FTIR | Feb 05, 2020 |

**Triad Data Available Upon Request**

**Signature on file**

**Approved for Release**

26068-000-G27-JQ11-00004
**Red Ball Technical Gas Service**
**555 Craig Kennedy Way**
**Shreveport, LA 71107**
**800-551-8150**
**PGVP Vendor ID # G12019**

PJLA Calibration and Testing
**Accreditation #62754**

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | CC712750 | **Certification Date:** | 06/28/2019 |
| **Product ID Number:** | 125597 | **Expiration Date:** | 06/27/2022 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | CC712750.20190613-0 | **Lot Number:** | CC712750.20190613 |
| **Customer PO. NO.:** | | **Tracking Number:** | 097026895 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Monoxide** | **48.8 PPM** | ±0.13 PPM | FTIR | 06/19/2019 |
| **Nitric Oxide** | **49.4 PPM** | ±0.5 PPM | Chemiluminescence | 06/19/2019, 06/28/2019 |
| Total Oxides of Nitrogen | 49.7 PPM | | | |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| FF18347 | 04-L-68 | 04/04/2021 | SRM | N2 | CO | 49.136 PPM | 0.132 | 1678c |
| CC238430 | CC238430.20181025 | 02/03/2027 | GMIS | N2 | NO | 92 PPM | 1.06 | 12100115 |
| CC726153 | CC726153.20190328 | 06/04/2027 | GMIS | N2 | CO | 48.6 PPM | 0.239 | 1678c |
| EB0049172 | EB0049172.20181025 | 02/05/2022 | GMIS | N2 | NO | 34 PPM | 1.104 | 12100115 |
| EB0078547 | EB0078547.20171228 | 07/17/2026 | GMIS | N2 | NO | 62.4 PPM | 1.064 | 12100115 |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NO | Chemiluminescence | Thermo | 42i-HL | 1152610017 | 06/05/2019 |
| CO | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 06/06/2019 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Jasmine Godfrey**
**Analytical Chemist**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

26068-000-G27-JQ11-00004
**Red Ball Technical Gas Service**
**555 Craig Kennedy Way**
**Shreveport, LA 71107**
**800-551-8150**
**PGVP Vendor ID # G12018**

PJLA Calibration and Testing
**Accreditation #62754**

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | CC719253 | **Certification Date:** | 09/26/2018 |
| **Product ID Number:** | 124122 | **Expiration Date:** | 09/24/2026 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | - Shreveport - LA |
| **COA #** | CC719253.20180910-0 | **Lot Number:** | CC719253.20180910 |
| **Customer PO. NO.:** | | **Tracking Number:** | 098490608 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle | Assayed On |
|---|---|---|---|---|
| **Carbon Monoxide** | **113.0 PPM** | ±0.9 PPM | FTIR | 09/24/2018 |
| **Nitric Oxide** | **109.4 PPM** | ±0.8 PPM | Chemiluminescence | 09/17/2018, 09/26/2018 |
| Total Oxides of Nitrogen | 110.8 PPM | | | |
| Nitrogen | Balance | | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Serial Number | Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|---|
| CC349590 | CC349590.20170821 | 12/03/2025 | GMIS | N2 | NO | 294 PPM | 0.451 | 2735 |
| EB0024184 | EB0024184.20171228 | 05/22/2026 | GMIS | N2 | NO | 91 PPM | 1.061 | 12100115 |
| EB0059475 | EB0059475.20180102 | 09/18/2026 | GMIS | N2 | CO | 710 PPM | 0.635 | 1681B |

## Analytical Instrumentation

| Component | Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| NO | Chemiluminescence | Thermo | 42i-HL | 1152610017 | 08/31/2018 |
| CO | FTIR | MKS | MKS 2031DJG2EKVS13T | 017146467 | 09/24/2018 |

## SMART-CERT

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

**Anthony Cyr**
**Assistant Operations Manager**
Assay Laboratory: Red Ball TGS
Version 02-J, Revised on 2018-09-17

HiQ® Certificate / Certificat HiQ®

LINDE CANADA LIMITED
530 Watson St. East
Whitby, ON, Canada L1N 5R9

# CERTIFICATE OF ANALYSIS — EPA PROTOCOL MIXTURE

Purchase order # 110585036
Lot # 1263941
Cylinder Number: EB 0049417

PGVP ID # L12013
Procedure: G1
Gas Type Code: OC2
Cylinder pressure: 2000 psig

**Certification date**
August 12, 2013

**Expiration Date**
August 13, 2021

## ANALYTICAL RESULTS

| Component | Requested Concentration ± blending tolerance | Date of Assay | Mean Concentration | Certified Concentration Uncertainty expressed at 95% confidence |
|---|---|---|---|---|
| Carbon Dioxide | 5 % ± 5% | August 12, 2013 | 5.01 % | 5.01 ± 0.02 % |
| Oxygen | 6 % ± 5% | August 9, 2013 | 6.03 % | 6.03 ± 0.01 % |

BALANCE GAS: Nitrogen

## REFERENCE STANDARDS

| Component | Type | Serial Number | Reference Number | Concentration | Expiration Date |
|---|---|---|---|---|---|
| Carbon Dioxide | GMIS | SX 21992 | 1187915 | 10 ± 0.02 % | August 20, 2013 |
| | NTRM | SG 9916842 | 101001 | 19.98 ± 0.14 % | April 15, 2016 |
| Oxygen | GMIS | SX 31579 | 1107503 | 9.975 ± 0.06 % | August 18, 2013 |
| | NTRM | CC 237234 | 071001 | 24.12 ± 0.12 % | March 27, 2017 |

## CERTIFICATION INSTRUMENTS

| Component | Make/Model | Measurement Principle | Serial Number | Last Calibration |
|---|---|---|---|---|
| Carbon Dioxide | SICK MCS 100E | Infrared Photometer | 04310670 | August 1, 2013 |
| Oxygen | Servomex 04100 C1 | Paramagnetic Sensor | 392350 | August 9, 2013 |

THIS STANDARD IS NIST TRACEABLE. IT WAS CERTIFIED ACCORDING TO THE 2012 EPA PROTOCOL *PROCEDURE*

DO NOT USE THIS CYLINDER WHEN THE PRESSURE FALLS BELOW 100 PSIG

Analyst: Keith Cybulski Signature _____ Date 08/12/13

Notes:

Tel: 1-(866) 385-5349 Fax:1-(866) 385-5347 service@lindecanada.com

**Assay Laboratory: Red Ball TGS**
**555 Craig Kennedy Way**
**Shreveport, LA 71107**
**800-551-8150**

# EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Cylinder Number:** | EB0053431 | **Certification Date**: | 06/15/2015 |
| **Product ID Number:** | 124822 | **Expiration Date:** | 06/13/2023 |
| **Cylinder Pressure:** | 1900 PSIG | **MFG Facility:** | RBTGS-Shreveport-LA |
| **COA #** | EB0053431.20150611-0 | **Lot Number:** | EB0053431.20150611 |
| **Customer PO. NO.:** | | **Tracking Number:** | 074201901 |
| **Customer:** | | **Previous Certification Dates:** | |

This calibration standard has been certified per the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531, using procedure G1.

**Do Not Use This Cylinder Below 100 psig (0.7 Megapascal).**

## Certified Concentration(s)

| Component | Concentration | Uncertainty | Analytical Principle |
|---|---|---|---|
| **Oxygen** | **13.46 %** | ±0.06 % | MPA |
| Nitrogen | Balance | | |

**Analytical Measurement Data Available Online.**

## Reference Standard(s)

| Lot | Expiration | Type | Balance | Component | Concentration | Uncertainty(%) | NIST Reference |
|---|---|---|---|---|---|---|---|
| EB0055414.20140228-1C | 10/07/2022 | GMIS | N2 | O2 | 23.8 % | 0.505 | 071001 |
| LD131022.115903.1G | 10/07/2022 | GMIS | N2 | O2 | 11.97 % | 0.527 | 071001 |

## Analytical Instrumentation

| Component | Analytical Principle | Make | Model | Serial | MPC Date |
|---|---|---|---|---|---|
| O2 | MPA | Horiba | VA-3013 | H0000P11 | 5/22/2015 12:35:56 PM |

**Red Ball Technical Gas Service**
**PGVP Vendor ID # G12015**
**Information and Ordering**
**800-551-8150**
**Fax (318-425-6309)**

**Accreditation #62754**

LaMeka Dennis
**Assistant Operations Manager**

# <<<<END OF DOCUMENT>>>>

# APPENDIX J: CEMS MONITORING PLAN

**CUSTOM INSTRUMENTATION SERVICES CORPORATION**

# CRICKET VALLEY ENERGY CENTER
# DOVER PLAINS, NEW YORK
# ORIS CODE: 57185
# UNITS U-00001, U-00002, and U-00003

## 40 CFR 75 MONITORING PLAN

**PREPARED FOR: CRICKET VALLEY ENERGY CENTER**

**PREPARED BY: CUSTOM INSTRUMENTATION SERVICES, CORP.**

Date: May 17, 2019
Revision B

**7841 SOUTH WHEELING COURT • ENGLEWOOD, COLORADO 80112**
**TEL: (303) 790-1000 FAX: (303) 790-1000**

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## PART 1

- **SUPPLEMENTAL INFORMATION**
- **LIST OF EXPECTED DATA TYPES FOR QUARTERLY SUBMISSION FILE**
- **EMISSIONS COLLECTION & MONITORING PLAN SYSTEM (ECMPS) ELECTRONIC MONITORING PLAN PRINTOUT**

**CRICKET VALLEY ENERGY CENTER**
**DOVER PLAINS, NEW YORK**
**ORIS CODE: 57185**
**UNITS U-00001, U-00002, and U-00003**

**40CFR75 MONITORING PLAN**

**SUPPLEMENTAL INFORMATION**

## FACILITY DESCRIPTION

Cricket Valley Energy Center is a facility located in Dover Plains, New York. The facility consists of three natural gas-fired combined cycle electric generating units identified as U-00001, U-00002, and U-00003. This monitoring plan document pertains to the three General Electric (GE) Model 7FA.05 combustion turbine generators (CTGs) operating in combined-cycle mode with supplemental firing of the heat recovery steam generators (HRSGs) which has a generating capacity of 1,000 MW. Natural gas will be the sole fuel fired in the CTGs and duct burners. In addition to the air emitting equipment, the Facility will include three steam turbine generators (STGs), an air cooled condenser (ACC) and associated auxiliary equipment and systems. Each combined cycle generating unit consisting of the CTG, HRSG and STG will be exhausted through its own stack. Both dry-low $NO_X$ burners (DLNB) and Selective Catalytic Reduction (SCR) are used for $NO_X$ control on the all three Units. Exhaust gases from the turbines are discharged into the atmosphere through a stack approximately 282.5 feet above grade. A dedicated CEMS will monitor $NO_X$, and $O_2$ emissions and gas fuel flow from each of the three units.

This monitoring plan document pertains to the Continuous Emission Monitoring Systems (CEMS) for oxides of nitrogen ($NO_x$) and oxygen ($O_2$) that will be used to demonstrate continuous compliance with the reporting requirements set forth in Title 40 Code of Federal Regulations (CFR), Part 75.

## GAS-FIRED STATUS

The combustion turbine generators will be fired exclusively with pipeline quality natural gas. Therefore, the Units will qualify as "gas-fired" under the definitions in 40 CFR §72.2 and are exempt from opacity monitoring requirements per 40 CFR §75.14(c).

## $SO_2$ EMISSION CALCULATIONS

U-00001, U-00002, and U-00003 will utilize natural gas to fire the gas turbines. The natural gas fuel meets the definition of "pipeline natural gas" in 40 CFR §72.2 (i.e., contains 0.5 grains or less of total sulfur per 100 standard cubic feet). In addition, it must either be composed of at least 70 percent methane by volume or have a gross calorific value between 950 and 1100 Btu per standard cubic foot. Therefore, the National Allowance Data Base (NADB) default emission rate of 0.0006 pounds of $SO_2$ per million British thermal units and heat input will be used to calculate $SO_2$ mass emissions as per 40 CFR Part 75 Appendix D, Formula D-5.

## $CO_2$ EMISSION CALCULATIONS

Carbon dioxide mass emissions will be calculated based on fuel flow as per the procedures in 40 CFR Part 75, Appendix G, Formula G-4.

## $NO_X$ AND HEAT INPUT MONITORING SYSTEM DESCRIPTION

Units U-00001, U-00002, and U-00003 extractive continuous emission monitoring system at the Cricket Valley Energy Center was manufactured by Custom Instrumentation Services Corporation of Englewood, Colorado. The portion of the CEMS used for 40 CFR Part 75 includes a $NO_X$ and $O_2$ analyzer, programmable logic controller (PLC) and a data acquisition and handling system (DAHS). All analyses are on a "dry" basis from undiluted samples. Heat input is calculated using fuel flow (scf/hr) and the gross calorific value (Btu/scf) as per the procedures in 40 CFR Part 75, Appendix F, Section 5.5.2.

## DATA TYPES

Data is written on an hourly basis to a Microsoft SQL Server database by CISCO CeDAR CEMS software, exported quarterly to an Extensible Mark-up Language (XML) file with CISCO Breez75x software, and submitted quarterly to the U.S. Environmental Protection Agency using their Emissions and Collection Monitoring Plan System (ECMPS) software. The following values are recorded on an hourly basis:

- $NO_X$ ppm.
- Percent $O_2$.
- Natural gas fuel flow.
- Turbine load

In addition, fuel heating values (Btu/scf) are entered in the DAHS from fuel analysis performed according to 40 CFR 75 Appendix D, Section 2.3.4. These two values are used to calculate heat input on an hourly basis. $NO_X$ lb/MMBtu is calculated using 40 CFR 75 Appendix F, Equation F-5, and $SO_2$ and $CO_2$ mass emissions are calculated based on fuel flow. Calibration results for the $NO_X$ and $O_2$ analyzers are recorded daily.

## MISSING DATA PROCEDURES

The DAHS will use the standard missing data procedures in 40 CFR Part 75.

- For periods of missing $NO_X$ and/or $O_2$ data, the $NO_X$ emission rate (lb/MMBtu) will be substituted based on load following 40 CFR Part 75, Subpart D. When required, the maximum $NO_X$ emission rate (MER) will be substituted during the missing period.
- For periods of missing gas flow the missing data procedures for $NO_X$ and $SO_2$ in 40 CFR §75.33 and 40 CFR Part 75, Appendix D, Section 2.4 will be used.
- For periods of missing fuel flow rate (hscf/hr) the data will be substituted based on lookback procedures as per 40 CFR Part 75, Appendix D §2.4.2.2.1.
- The maximum potential fuel flow rate will be substituted if no data in the lookback period at the corresponding or higher load range when only the same fuel was combusted exists.
- The Substitution routines have a maximum lookback period of 26280 hours.

## $NO_X$ CONTROL EQUIPMENT

The emission control system for $NO_X$ consists of dry low $NO_X$ burner (DLNB) and selective catalytic reduction (SCR) during natural gas firing.

## VALUES IN MONITORING PLAN

The $NO_X$ maximum potential concentration (MPC) of 150 ppm is used as per 40 CFR 75 Appendix A, Section 2.1.2, Table 2-2. The dual range $NO_X$ analyzers have span low and high values set to 10 ppm and 200 ppm, respectively. The full-scale range of the $NO_X$ analyzers is 10 ppm and 200 ppm. The $O_2$ span and range will be 25 percent. The maximum expected concentrations (MEC) for the low range of the analyzer is 2 ppm as stated in the New York State Department of Environmental Conservation Permit No. 3-1326-00275/00009. The majority of readings will fall between 20 - 80 percent of the analyzer range. The maximum emission rate (MER) was determined using the EPA Table value in Table 2-2 as per 40 CFR Part 75, Appendix A 2.1.2.1 (a) Option 2. The 150 ppm MPC, 19% $O_2$, and 8710 $F_d$ factor were used to calculate the $NO_X$ MER value as 1.716 lb/MMBtu using formula F-5.

To meet the 40 CFR 75 initial certification and ongoing quality assurance criteria calibration error tests and linearities will be performed. Calibration (zero and mid/high) and linearity (low, mid and high) gas levels will be based on the aforementioned span values, where zero, low-, mid- and high-level gases correspond to 0 to 20; 20 to 30; 50 to 60; and 80 to 100 percentages of span, respectively. All gases will meet the EPA Protocol Gas Verification Program (PGVP) requirements. Detailed information is provided in the attached Certification Protocol.

## CRICKET VALLEY ENERGY CENTER
## ORIS CODE: 57185

### LIST OF EXPECTED DATA TYPES FOR QUARTERLY SUBMISSION FILE

| Description |
|---|
| **Unit Characteristics** |
| Facility Identification |
| Facility Location and Identification Information |
| Unit |
| Unit Capacity |
| Unit Control |
| Unit Fuel |
| Unit Program |
| Reporting Frequency |
| **Emission Data** |
| Heat Input |
| $NO_X$ Emission Rate Data (lb/MMBtu) |
| Heat Input Rate (MMBtu/hr) |
| $SO_2$ Mass Emissions Rate (lb/hr) |
| $CO_2$ Mass Emissions Rate (tons/yr) |
| Daily Calibration Test Data and Results |
| Unit Operating Parameters |
| **Monitoring Plan** |
| Methods |
| Components |
| Systems. |
| Formulas |
| Defaults |
| Non-Flow Span |
| Load Data |
| Location Attributes |
| **QA/Certification Test Data** |
| 7-Day Calibration Error Test |
| Linearity Test |
| Linearity Check Results |
| RATA and Bias Test |
| Cycle Time Test |
| Fuel Flowmeter Accuracy Test |
| Transmitter/Transducer Test |
| Online/Offline Calibration Test (Optional) |
| Miscellaneous Tests |
| **QA/Certification Event** |

# CRICKET VALLEY ENERGY CENTER
# ORIS CODE: 57185

## ELECTRONIC MONITORING PLAN PRINTOUT

## Facility Name: Cricket Valley Energy Center

### Facility Details

| | |
|---|---|
| Facility ID (ORISPL): | 57185 |
| Monitoring Plan Location IDs: | U001 |
| State: | NY |
| County: | Dutchess County |
| Latitude: | 41.6762 |
| Longitude: | -73.5806 |

### Reporting Frequency

| Monitoring Plan Location IDs | Reporting Frequency | Begin Quarter | End Quarter |
|---|---|---|---|
| U001 | Q - Quarterly | 2019 QTR 3 | |

### Monitoring Location Attributes

| Unit/Stack/Pipe Identifier | Duct Indicator | Ground Elevation | Stack Height | Cross Area Exit | Cross Area Flow | Material Code | Shape Code | Begin Date | End Date |
|---|---|---|---|---|---|---|---|---|---|
| U001 | | 435 | 283 | 284 | | OTHER | ROUND | 09/01/2019 | |

### Unit Operation Information

| Unit Identifier | Non-Load Based Ind | Commence Commercial Operation Date | Commence Operation Date | Boiler/Turbine Type | | | Max Heat Input | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Code | Begin Date | End Date | Value (mmBtu) | Begin Date | End Date |
| U001 | 0 | 05/01/2019 | | CC | 05/01/2019 | | 2587.8 | 05/01/2019 | |

**Unit Type Codes:** CC - Combined cycle

## Unit Program Information

| Unit Identifier | Program Code | Unit Class | Unit Monitor Certification Begin Date | Unit Monitor Certification Deadline |
|---|---|---|---|---|
| U001 | ARP | P2 | 05/01/2019 | |
| | CSNOX | A | 05/01/2019 | |
| | CSOSG2 | A | 05/01/2019 | |
| | CSSO2G1 | A | 05/01/2019 | |

## Unit Fuel

| Unit Identifier | Fuel Type | Fuel Indicator | Demonstration Method for GCV | Demonstration Method for Daily Sulfur | Ozone Season Indicator | Begin Date | End Date |
|---|---|---|---|---|---|---|---|
| U001 | PNG | P | | | | 05/01/2019 | |

**Fuel Type Codes:** PNG - Pipeline Natural Gas

**Fuel Indicator Codes:** P - Primary

## Unit Controls

| Unit Identifier | Parameter | Control Equipment | Original Ind | Seasonal Ind | Installation Date | Optimization Date | Retirement Date |
|---|---|---|---|---|---|---|---|
| U001 | NOX | DLNB | Y | | | | |
| | NOX | SCR | Y | | | | |

**Control Equipment Descriptions:** SCR - Selective Catalytic Reduction

DLNB - Dry Low NOx Burners

## Monitoring Method

| Unit/Stack/Pipe Identifier | Parameter | Methodology | Substitute Data Approach | Bypass Approach Code | Begin Date/Hour | End Date/Hour |
|---|---|---|---|---|---|---|
| U001 | CO2 | AD | SPTS | | 09/01/2019 00 | |
| | HI | AD | SPTS | | 09/01/2019 00 | |
| | NOX | NOXR | | | 09/01/2019 00 | |
| | NOXR | CEM | SPTS | | 09/01/2019 00 | |
| | OP | EXP | | | 09/01/2019 00 | |
| | SO2 | AD | SPTS | | 09/01/2019 00 | |

**Parameter Codes:** SO2 - SO2 Hourly Mass Rate (lb/hr)
OP - Opacity
NOXR - NOx Emission Rate (lb/mmBtu)
NOX - NOx Hourly Mass Rate (lb/hr)
HI - Heat Input Rate (mmBtu/hr)
CO2 - CO2 Hourly Mass Rate (ton/hr)

**Methodology Codes:** NOXR - NOx Mass Calculated from NOx Emission Rate
EXP - Exempt
CEM - Continuous Emission Monitor
AD - Appendix D

**Substitute Data Codes:** SPTS - Standard Part 75 for Missing Data

## Monitoring System / Analytical Components

| Unit/Stack /Pipe Identifier | System | | | | | Component | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ID | Type | Des | Begin Date/Hour | End Date/Hour | ID | Type | SAM | BAS | Manufacturer | Model or Version | Serial Number | Begin Date/Hour | End Date/Hour | Hg Convert Indicator |
| U001 | G10 | GAS | P | 05/01/2019 00 | | 170 | GFFM | COR | | ENDRESS+HAUSER | PROMASS 83F 6" | N301CF16000 | 05/01/2019 00 | | |
| | | | | | | 175 | GFFM | ORF | | FLUIDIC TECHNIQUES | 6" 300# | FAB-3206-1 | 05/01/2019 00 | | |
| | | | | | | D01 | DAHS | | | CISCO CEMS | CEDAR BREEZ75X | N/A | 05/01/2019 00 | | |
| | | | | | | PL1 | PLC | | | ALLEN BRADLEY | CONTROLOGIX | N/A | 05/01/2019 00 | | |
| | N10 | NOX | P | 09/01/2019 00 | | 110 | NOX | EXT | D | TELEDYNE | T200M | 1012 | 09/01/2019 00 | | |
| | | | | | | 120 | O2 | EXT | D | TELEDYNE | T802M | 128 | 09/01/2019 00 | | |
| | | | | | | D01 | DAHS | | | CISCO CEMS | CEDAR BREEZ75X | N/A | 09/01/2019 00 | | |
| | | | | | | PL1 | PLC | | | ALLEN BRADLEY | CONTROLOGIX | N/A | 09/01/2019 00 | | |
| | | | | | | PR1 | PRB | EXT | | CISCO CEMS | EP750 | 10011081-1 | 09/01/2019 00 | | |

**System Types Descriptions:**
GAS - Gas Fuel Flow
NOX - NOx Emission Rate

**System Designations Descriptions:**
P - Primary

**Sample Acquisition Method (SAM):**
ORF - Orifice
EXT - Dry Extractive
COR - Coriolis

**Component Types Descriptions:**
GFFM - Gas Fuel Flowmeter
DAHS - Data Acquisition and Handling System
PLC - Programmable Logic Controller
NOX - NOx Concentration
O2 - O2 Concentration
PRB - Probe

## Monitoring System Fuel Flow

| Unit/Stack/Pipe Identifier | System ID | Fuel Code | Max Fuel Flow Rate | Units of Measure | Source Code | Begin Date/Hour | End Date/Hour |
|---|---|---|---|---|---|---|---|
| U001 | G10 | PNG | 27375.6 | HSCF | UMX | 05/01/2019 00 | |

**System Fuel Codes Descriptions:** PNG - Pipeline Natural Gas
**Units of Measure Descriptions:** HSCF - Hundred Standard Cubic Feet / Hour
**Source Codes Descriptions:** UMX - Unit Maximum Rate

## Analyzer Range Data

| Unit/Stack/Pipe Identifier | Component Type | Component ID | Range Code | Dual Range Indicator | Begin Date/Hour | End Date/Hour |
|---|---|---|---|---|---|---|
| U001 | NOX | 110 | Auto Ranging | Y | 09/01/2019 00 | |
| | O2 | 120 | High Range | | 09/01/2019 00 | |

**Component Types Descriptions:** NOX - NOx Concentration
O2 - O2 Concentration

## Emissions Formulas

| Unit/Stack/Pipe Identifier | Parameter | Formula ID | Formula Code | Formula | Begin Date/Hour | End Date/Hour |
|---|---|---|---|---|---|---|
| U001 | NOXR | 11G | F-5 | | 09/01/2019 00 | |
| | NOX | 11M | F-24A | | 09/01/2019 00 | |
| | FGAS | 12G | N-GAS | | 05/01/2019 00 | |
| | HI | 13G | F-20 | | 05/01/2019 00 | |
| | SO2 | 15G | D-5 | | 09/01/2019 00 | |
| | CO2 | 16G | G-4 | | 09/01/2019 00 | |

**Parameter Codes Descriptions:** NOXR - NOx Emission Rate (lb/mmBtu)
NOX - NOx Hourly Mass Rate (lb/hr)
FGAS - Gas Hourly Flow Rate (hscf)
HI - Heat Input Rate (mmBtu/hr)
SO2 - SO2 Hourly Mass Rate (lb/hr)
CO2 - CO2 Hourly Mass Rate (ton/hr)

**Formula Codes Descriptions:** N-GAS - FGAS (net gas flow rate)

G-4 - CO2 (from HI, Fc)

F-5 - NOXR/SO2R (from NOX or SO2 dry, O2 dry, Fd)

F-24A - NOX (from NOX rate, HI)

F-20 - HI (same as D-6)

D-5 - SO2 (from gas SO2 emission rate, HI)

## Span Values

| Unit/Stack /Pipe Identifier | Comp Type | Scale | Method | MPC/ MPF | MEC | Span Value | Full-Scale Range | Units of Measure | Scale Transition Point | Def. High Range Value | Flow Full Range (SCFH) | | Flow Span Value (SCFH) | | Begin Date/Hour | End Date/Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| U001 | NOX | H | TB | 150.0 | | 2.0 | 200.000 | 200.000 | PPM | 9.0 | | | | | 09/01/2019 00 | |
| | NOX | L | PL | | | 2.0 | 10.000 | 10.000 | PPM | 9.0 | | | | | 09/01/2019 00 | |
| | O2 | H | | | | | 25.000 | 25.000 | PCT | | | | | | 09/01/2019 00 | |

**Component Types Descriptions:** NOX - NOx Concentration

O2 - O2 Concentration

**Span Method Codes Descriptions:** TB - Table Defaults from Part 75 or 40 CFR Part 63, Subpart UUUUU, Appendix A

PL - Permit Limit for NOX MEC

**Units of Measure Descriptions:** PPM - Parts per Million

PCT - Percentage

## Unit/Stack/Pipe Load or Operating Level Information

| Unit/Stack/Pipe Identifier | Maximum Hourly Load | Units of Measure | Upper Bound of Range of Operation | Lower Bound of Range of Operation | Designated Normal Op. Level | Second Most Frequently Used Op. Level | Second Normal Indicator | Load Analysis Date | Begin Date/Hour | End Date/Hour |
|---|---|---|---|---|---|---|---|---|---|---|
| U001 | 385 | MW | 381 | 241 | High | Mid | Yes | | 05/01/2019 00 | |

**Units of Measure Descriptions:** MW - Megawatt

## Monitoring Defaults

| Unit/Stack/Pipe Identifier | Parameter | Value | Units of Measure | Purpose Code | Fuel Type | Operating Condition | Source of Value | Begin Date/Hour | End Date/Hour |
|---|---|---|---|---|---|---|---|---|---|
| U001 | NORX | 1.7160 | LBMMBTU | MD | NFS | A | DEF | 09/01/2019 00 | |
| | O2X | 19.0000 | PCT | DC | NFS | A | DEF | 09/01/2019 00 | |

**Parameter Codes Descriptions:** O2X - Maximum O2 Concentration (pct)
NORX - Maximum NOx Emission Rate (lb/mmBtu)

**Units of Measure Descriptions:** PCT - Percentage
LBMMBTU - Pounds / mmBtu

**Purpose Codes Descriptions:** MD - Missing Data (or Unmonitored Bypass Stack or Emergency Fuel) Default
DC - Diluent Cap

**Fuel Type Codes Descriptions:** NFS - Non-Fuel Specific

**Operating Conditions Descriptions:** A - Any Hour

**Source Codes Descriptions:** DEF - Default Value from Part 75

## Facility Name: Cricket Valley Energy Center

### Facility Details

| | |
|---|---|
| Facility ID (ORISPL): | 57185 |
| Monitoring Plan Location IDs: | U002 |
| State: | NY |
| County: | Dutchess County |
| Latitude: | 41.6762 |
| Longitude: | -73.5806 |

### Reporting Frequency

| Monitoring Plan Location IDs | Reporting Frequency | Begin Quarter | End Quarter |
|---|---|---|---|
| U002 | Q - Quarterly | 2019 QTR 3 | |

### Monitoring Location Attributes

| Unit/Stack/Pipe Identifier | Duct Indicator | Ground Elevation | Stack Height | Cross Area Exit | Cross Area Flow | Material Code | Shape Code | Begin Date | End Date |
|---|---|---|---|---|---|---|---|---|---|
| U002 | | 435 | 283 | 284 | | OTHER | ROUND | 09/01/2019 | |

### Unit Operation Information

| Unit Identifier | Non-Load Based Ind | Commence Commercial Operation Date | Commence Operation Date | Boiler/Turbine Type | | | Max Heat Input | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Code | Begin Date | End Date | Value (mmBtu) | Begin Date | End Date |
| U002 | 0 | 05/01/2019 | | CC | 05/01/2019 | | 2587.8 | 05/01/2019 | |

**Unit Type Codes:** CC - Combined cycle

## Unit Program Information

| Unit Identifier | Program Code | Unit Class | Unit Monitor Certification Begin Date | Unit Monitor Certification Deadline |
|---|---|---|---|---|
| U002 | ARP | P2 | 05/01/2019 | |
| | CSNOX | A | 05/01/2019 | |
| | CSOSG2 | A | 05/01/2019 | |
| | CSSO2G1 | A | 05/01/2019 | |

## Unit Fuel

| Unit Identifier | Fuel Type | Fuel Indicator | Demonstration Method for GCV | Demonstration Method for Daily Sulfur | Ozone Season Indicator | Begin Date | End Date |
|---|---|---|---|---|---|---|---|
| U002 | PNG | P | | | | 05/01/2019 | |

**Fuel Type Codes:** PNG - Pipeline Natural Gas

**Fuel Indicator Codes:** P - Primary

## Unit Controls

| Unit Identifier | Parameter | Control Equipment | Original Ind | Seasonal Ind | Installation Date | Optimization Date | Retirement Date |
|---|---|---|---|---|---|---|---|
| U002 | NOX | DLNB | Y | | | | |
| | NOX | SCR | Y | | | | |

**Control Equipment Descriptions:** SCR - Selective Catalytic Reduction

DLNB - Dry Low NOx Burners

## Monitoring Method

| Unit/Stack/Pipe Identifier | Parameter | Methodology | Substitute Data Approach | Bypass Approach Code | Begin Date/Hour | End Date/Hour |
|---|---|---|---|---|---|---|
| U002 | CO2 | AD | SPTS | | 09/01/2019 00 | |
| | HI | AD | SPTS | | 09/01/2019 00 | |
| | NOX | NOXR | | | 09/01/2019 00 | |
| | NOXR | CEM | SPTS | | 09/01/2019 00 | |
| | OP | EXP | | | 09/01/2019 00 | |
| | SO2 | AD | SPTS | | 09/01/2019 00 | |

**Parameter Codes:**
SO2 - SO2 Hourly Mass Rate (lb/hr)
OP - Opacity
NOXR - NOx Emission Rate (lb/mmBtu)
NOX - NOx Hourly Mass Rate (lb/hr)
HI - Heat Input Rate (mmBtu/hr)
CO2 - CO2 Hourly Mass Rate (ton/hr)

**Methodology Codes:**
NOXR - NOx Mass Calculated from NOx Emission Rate
EXP - Exempt
CEM - Continuous Emission Monitor
AD - Appendix D

**Substitute Data Codes:**
SPTS - Standard Part 75 for Missing Data

## Monitoring System / Analytical Components

| Unit/Stack /Pipe Identifier | System | | | | | Component | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ID | Type | Des | Begin Date/Hour | End Date/Hour | ID | Type | SAM | BAS | Manufacturer | Model or Version | Serial Number | Begin Date/Hour | End Date/Hour | Hg Converter Indicator |
| U002 | G20 | GAS | P | 05/01/2019 00 | | 270 | GFFM | COR | | ENDRESS+HAUSER | PROMASS 83F 6" | N4012116000 | 05/01/2019 00 | | |
| | | | | | | 275 | GFFM | ORF | | FLUIDIC TECHNIQUES | LATER6" 300# | FAB-3206-2 | 05/01/2019 00 | | |
| | | | | | | D01 | DAHS | | | CISCO CEMS | CEDAR BREEZ75X | N/A | 05/01/2019 00 | | |
| | | | | | | PL2 | PLC | | | ALLEN BRADLEY | CONTROLOGIX | N/A | 05/01/2019 00 | | |
| | N20 | NOX | P | 09/01/2019 00 | | 210 | NOX | EXT | D | TELEDYNE | T200M | 1013 | 09/01/2019 00 | | |
| | | | | | | 220 | O2 | EXT | D | TELEDYNE | T802M | 129 | 09/01/2019 00 | | |
| | | | | | | D01 | DAHS | | | CISCO CEMS | CEDAR BREEZ75X | N/A | 09/01/2019 00 | | |
| | | | | | | PL2 | PLC | | | ALLEN BRADLEY | CONTROLOGIX | N/A | 09/01/2019 00 | | |
| | | | | | | PR2 | PRB | EXT | | CISCO CEMS | EP750 | 10011081-2 | 09/01/2019 00 | | |

**System Types Descriptions:**
GAS - Gas Fuel Flow
NOX - NOx Emission Rate

**System Designations Descriptions:**
P - Primary

**Sample Acquisition Method (SAM):**
ORF - Orifice
EXT - Dry Extractive
COR - Coriolis

**Component Types Descriptions:**
GFFM - Gas Fuel Flowmeter
DAHS - Data Acquisition and Handling System
PLC - Programmable Logic Controller
NOX - NOx Concentration
O2 - O2 Concentration
PRB - Probe

## Monitoring System Fuel Flow

| Unit/Stack/Pipe Identifier | System ID | Fuel Code | Max Fuel Flow Rate | Units of Measure | Source Code | Begin Date/Hour | End Date/Hour |
|---|---|---|---|---|---|---|---|
| U002 | G20 | PNG | 27375.6 | HSCF | UMX | 05/01/2019 00 | |

**System Fuel Codes Descriptions:** PNG - Pipeline Natural Gas

**Units of Measure Descriptions:** HSCF - Hundred Standard Cubic Feet / Hour

**Source Codes Descriptions:** UMX - Unit Maximum Rate

## Analyzer Range Data

| Unit/Stack/Pipe Identifier | Component Type | Component ID | Range Code | Dual Range Indicator | Begin Date/Hour | End Date/Hour |
|---|---|---|---|---|---|---|
| U002 | NOX | 210 | Auto Ranging | Y | 09/01/2019 00 | |
| | O2 | 220 | High Range | | 09/01/2019 00 | |

**Component Types Descriptions:** NOX - NOx Concentration

O2 - O2 Concentration

## Emissions Formulas

| Unit/Stack/Pipe Identifier | Parameter | Formula ID | Formula Code | Formula | Begin Date/Hour | End Date/Hour |
|---|---|---|---|---|---|---|
| U002 | NOXR | 21G | F-5 | | 09/01/2019 00 | |
| | NOX | 21M | F-24A | | 09/01/2019 00 | |
| | FGAS | 22G | N-GAS | HSCF/HR (GAS) = (S#(G10-170)+S#(G10-175)) | 05/01/2019 00 | |
| | HI | 23G | F-20 | | 05/01/2019 00 | |
| | SO2 | 25G | D-5 | | 09/01/2019 00 | |
| | CO2 | 26G | G-4 | | 09/01/2019 00 | |

**Parameter Codes Descriptions:** NOXR - NOx Emission Rate (lb/mmBtu)

NOX - NOx Hourly Mass Rate (lb/hr)

FGAS - Gas Hourly Flow Rate (hscf)

HI - Heat Input Rate (mmBtu/hr)

SO2 - SO2 Hourly Mass Rate (lb/hr)

CO2 - CO2 Hourly Mass Rate (ton/hr)

**Formula Codes Descriptions:** N-GAS - FGAS (net gas flow rate)
G-4 - CO2 (from HI, Fc)

F-5 - NOXR/SO2R (from NOX or SO2 dry, O2 dry, Fd)

F-24A - NOX (from NOX rate, HI)

F-20 - HI (same as D-6)

D-5 - SO2 (from gas SO2 emission rate, HI)

## Span Values

| Unit/Stack /Pipe Identifier | Comp Type | Scale | Method | MPC/ MPF | MEC | Span Value | Full-Scale Range | Units of Measure | Scale Transition Point | Def. High Range Value | Flow Full Range (SCFH) | Flow Span Value (SCFH) | Begin Date/Hour | End Date/Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| U002 | NOX | H | TB | 150.0 | 2.0 | 200.000 | 200.000 | PPM | 9.0 | | | | 09/01/2019 00 | |
| | NOX | L | PL | | 2.0 | 10.000 | 10.000 | PPM | 9.0 | | | | 09/01/2019 00 | |
| | O2 | H | | | | 25.000 | 25.000 | PCT | | | | | 09/01/2019 00 | |

**Component Types Descriptions:** NOX - NOx Concentration
O2 - O2 Concentration

**Span Method Codes Descriptions:** TB - Table Defaults from Part 75 or 40 CFR Part 63, Subpart UUUUU, Appendix A
PL - Permit Limit for NOX MEC

**Units of Measure Descriptions:** PPM - Parts per Million
PCT - Percentage

## Unit/Stack/Pipe Load or Operating Level Information

| Unit/Stack/Pipe Identifier | Maximum Hourly Load | Units of Measure | Upper Bound of Range of Operation | Lower Bound of Range of Operation | Designated Normal Op. Level | Second Most Frequently Used Op. Level | Second Normal Indicator | Load Analysis Date | Begin Date/Hour | End Date/Hour |
|---|---|---|---|---|---|---|---|---|---|---|
| U002 | 385 | MW | 381 | 241 | High | Mid | Yes | | 05/01/2019 00 | |

**Units of Measure Descriptions:** MW - Megawatt

## Monitoring Defaults

| Unit/Stack/Pipe Identifier | Parameter | Value | Units of Measure | Purpose Code | Fuel Type | Operating Condition | Source of Value | Begin Date/Hour | End Date/Hour |
|---|---|---|---|---|---|---|---|---|---|
| U002 | NORX | 1.7160 | LBMMBTU | MD | NFS | A | DEF | 09/01/2019 00 | |
| | O2X | 19.0000 | PCT | DC | NFS | A | DEF | 09/01/2019 00 | |

**Parameter Codes Descriptions:** O2X - Maximum O2 Concentration (pct)
NORX - Maximum NOx Emission Rate (lb/mmBtu)

**Units of Measure Descriptions:** PCT - Percentage
LBMMBTU - Pounds / mmBtu

**Purpose Codes Descriptions:** MD - Missing Data (or Unmonitored Bypass Stack or Emergency Fuel) Default
DC - Diluent Cap

**Fuel Type Codes Descriptions:** NFS - Non-Fuel Specific

**Operating Conditions Descriptions:** A - Any Hour

**Source Codes Descriptions:** DEF - Default Value from Part 75

## Facility Name: Cricket Valley Energy Center

### Facility Details

| | |
|---|---|
| Facility ID (ORISPL): | 57185 |
| Monitoring Plan Location IDs: | U003 |
| State: | NY |
| County: | Dutchess County |
| Latitude: | 41.6762 |
| Longitude: | -73.5806 |

### Reporting Frequency

| Monitoring Plan Location IDs | Reporting Frequency | Begin Quarter | End Quarter |
|---|---|---|---|
| U003 | Q - Quarterly | 2019 QTR 3 | |

### Monitoring Location Attributes

| Unit/Stack/Pipe Identifier | Duct Indicator | Ground Elevation | Stack Height | Cross Area Exit | Cross Area Flow | Material Code | Shape Code | Begin Date | End Date |
|---|---|---|---|---|---|---|---|---|---|
| U003 | | 435 | 283 | 284 | | OTHER | ROUND | 09/01/2019 | |

### Unit Operation Information

| Unit | Non-Load | Commence Commercial | Commence | Boiler/Turbine Type | | | Max Heat Input | | |
|---|---|---|---|---|---|---|---|---|---|
| Identifier | Based Ind | Operation Date | Operation Date | Code | Begin Date | End Date | Value (mmBtu) | Begin Date | End Date |
| U003 | 0 | 05/01/2019 | | CC | 05/01/2019 | | 2587.8 | 05/01/2019 | |

**Unit Type Codes:** CC - Combined cycle

## Unit Program Information

| Unit Identifier | Program Code | Unit Class | Unit Monitor Certification Begin Date | Unit Monitor Certification Deadline |
|---|---|---|---|---|
| U003 | ARP | P2 | 05/01/2019 | |
| | CSNOX | A | 05/01/2019 | |
| | CSOSG2 | A | 05/01/2019 | |
| | CSSO2G1 | A | 05/01/2019 | |

## Unit Fuel

| Unit Identifier | Fuel Type | Fuel Indicator | Demonstration Method for GCV | Demonstration Method for Daily Sulfur | Ozone Season Indicator | Begin Date | End Date |
|---|---|---|---|---|---|---|---|
| U003 | PNG | P | | | | 05/01/2019 | |

**Fuel Type Codes:** PNG - Pipeline Natural Gas

**Fuel Indicator Codes:** P - Primary

## Unit Controls

| Unit Identifier | Parameter | Control Equipment | Original Ind | Seasonal Ind | Installation Date | Optimization Date | Retirement Date |
|---|---|---|---|---|---|---|---|
| U003 | NOX | DLNB | Y | | | | |
| | NOX | SCR | Y | | | | |

**Control Equipment Descriptions:** SCR - Selective Catalytic Reduction

DLNB - Dry Low NOx Burners

## Monitoring Method

| Unit/Stack/Pipe Identifier | Parameter | Methodology | Substitute Data Approach | Bypass Approach Code | Begin Date/Hour | End Date/Hour |
|---|---|---|---|---|---|---|
| U003 | CO2 | AD | SPTS | | 09/01/2019 00 | |
| | HI | AD | SPTS | | 09/01/2019 00 | |
| | NOX | NOXR | | | 09/01/2019 00 | |
| | NOXR | CEM | SPTS | | 09/01/2019 00 | |
| | OP | EXP | | | 09/01/2019 00 | |
| | SO2 | AD | SPTS | | 09/01/2019 00 | |

**Parameter Codes:** SO2 - SO2 Hourly Mass Rate (lb/hr)
OP - Opacity
NOXR - NOx Emission Rate (lb/mmBtu)
NOX - NOx Hourly Mass Rate (lb/hr)
HI - Heat Input Rate (mmBtu/hr)
CO2 - CO2 Hourly Mass Rate (ton/hr)

**Methodology Codes:** NOXR - NOx Mass Calculated from NOx Emission Rate
EXP - Exempt
CEM - Continuous Emission Monitor
AD - Appendix D

**Substitute Data Codes:** SPTS - Standard Part 75 for Missing Data

## Monitoring System / Analytical Components

| Unit/Stack /Pipe Identifier | System | | | | | Component | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ID | Type | Des | Begin Date/Hour | End Date/Hour | ID | Type | SAM | BAS | Manufacturer | Model or Version | Serial Number | Begin Date/Hour | End Date/Hour | Hg Converter Indicator |
| U003 | G30 | GAS | P | 05/01/2019 00 | | 370 | GFFM | COR | | ENDRESS+HAUSER | PROMASS 83F 6" | N600E816000 | 05/01/2019 00 | | |
| | | | | | | 375 | GFFM | ORF | | FLUIDIC TECHNIQUES | 6" 300# | FAB-3206-3 | 05/01/2019 00 | | |
| | | | | | | D01 | DAHS | | | CISCO CEMS | CEDAR BREEZ75X | N/A | 05/01/2019 00 | | |
| | | | | | | PL3 | PLC | | | ALLEN BRADLEY | CONTROLOGIX | N/A | 05/01/2019 00 | | |
| | N30 | NOX | P | 09/01/2019 00 | | 310 | NOX | EXT | D | TELEDYNE | T200M | 1014 | 09/01/2019 00 | | |
| | | | | | | 320 | O2 | EXT | D | TELEDYNE | T802M | 151 | 09/01/2019 00 | | |
| | | | | | | D01 | DAHS | | | CISCO CEMS | CEDAR BREEZ75X | N/A | 09/01/2019 00 | | |
| | | | | | | PL3 | PLC | | | ALLEN BRADLEY | CONTROLOGIX | N/A | 09/01/2019 00 | | |
| | | | | | | PR3 | PRB | EXT | | CISCO CEMS | EP750 | 10011081-3 | 09/01/2019 00 | | |

**System Types Descriptions:**
GAS - Gas Fuel Flow
NOX - NOx Emission Rate

**System Designations Descriptions:**
P - Primary

**Sample Acquisition Method (SAM):**
ORF - Orifice
EXT - Dry Extractive
COR - Coriolis

**Component Types Descriptions:**
GFFM - Gas Fuel Flowmeter
DAHS - Data Acquisition and Handling System
PLC - Programmable Logic Controller
NOX - NOx Concentration
O2 - O2 Concentration
PRB - Probe

## Monitoring System Fuel Flow

| Unit/Stack/Pipe Identifier | System ID | Fuel Code | Max Fuel Flow Rate | Units of Measure | Source Code | Begin Date/Hour | End Date/Hour |
|---|---|---|---|---|---|---|---|
| U003 | G30 | PNG | 27375.6 | HSCF | UMX | 05/01/2019 00 | |

**System Fuel Codes Descriptions:** PNG - Pipeline Natural Gas

**Units of Measure Descriptions:** HSCF - Hundred Standard Cubic Feet / Hour

**Source Codes Descriptions:** UMX - Unit Maximum Rate

## Analyzer Range Data

| Unit/Stack/Pipe Identifier | Component Type | Component ID | Range Code | Dual Range Indicator | Begin Date/Hour | End Date/Hour |
|---|---|---|---|---|---|---|
| U003 | NOX | 310 | Auto Ranging | Y | 09/01/2019 00 | |
| | O2 | 320 | High Range | | 09/01/2019 00 | |

**Component Types Descriptions:** NOX - NOx Concentration

O2 - O2 Concentration

## Emissions Formulas

| Unit/Stack/Pipe Identifier | Parameter | Formula ID | Formula Code | Formula | Begin Date/Hour | End Date/Hour |
|---|---|---|---|---|---|---|
| U003 | NOXR | 31G | F-5 | | 09/01/2019 00 | |
| | NOX | 31M | F-24A | | 09/01/2019 00 | |
| | FGAS | 32G | N-GAS | HSCF/HR (GAS) = (S#(G10-170)+S#(G10-175)) | 05/01/2019 00 | |
| | HI | 33G | F-20 | | 05/01/2019 00 | |
| | SO2 | 35G | D-5 | | 09/01/2019 00 | |
| | CO2 | 36G | G-4 | | 09/01/2019 00 | |

**Parameter Codes Descriptions:** NOXR - NOx Emission Rate (lb/mmBtu)

NOX - NOx Hourly Mass Rate (lb/hr)

FGAS - Gas Hourly Flow Rate (hscf)

HI - Heat Input Rate (mmBtu/hr)

SO2 - SO2 Hourly Mass Rate (lb/hr)

CO2 - CO2 Hourly Mass Rate (ton/hr)

**Formula Codes Descriptions:** N-GAS - FGAS (net gas flow rate)
G-4 - CO2 (from HI, Fc)

F-5 - NOXR/SO2R (from NOX or SO2 dry, O2 dry, Fd)

F-24A - NOX (from NOX rate, HI)

F-20 - HI (same as D-6)

D-5 - SO2 (from gas SO2 emission rate, HI)

## Span Values

| Unit/Stack /Pipe Identifier | Comp Type | Scale | Method | MPC/ MPF | MEC | Span Value | Full-Scale Range | Units of Measure | Scale Transition Point | Def. High Range Value | Flow Full Range (SCFH) | Flow Span Value (SCFH) | Begin Date/Hour | End Date/Hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| U003 | NOX | H | TB | 150.0 | 2.0 | 200.000 | 200.000 | PPM | 9.0 | | | | 09/01/2019 00 | |
| | NOX | L | PL | | 2.0 | 10.000 | 10.000 | PPM | 9.0 | | | | 09/01/2019 00 | |
| | O2 | H | | | | 25.000 | 25.000 | PCT | | | | | 09/01/2019 00 | |

**Component Types Descriptions:** NOX - NOx Concentration
O2 - O2 Concentration

**Span Method Codes Descriptions:** TB - Table Defaults from Part 75 or 40 CFR Part 63, Subpart UUUUU, Appendix A
PL - Permit Limit for NOX MEC

**Units of Measure Descriptions:** PPM - Parts per Million
PCT - Percentage

## Unit/Stack/Pipe Load or Operating Level Information

| Unit/Stack/Pipe Identifier | Maximum Hourly Load | Units of Measure | Upper Bound of Range of Operation | Lower Bound of Range of Operation | Designated Normal Op. Level | Second Most Frequently Used Op. Level | Second Normal Indicator | Load Analysis Date | Begin Date/Hour | End Date/Hour |
|---|---|---|---|---|---|---|---|---|---|---|
| U003 | 385 | MW | 381 | 284 | High | Mid | Yes | | 05/01/2019 00 | |

**Units of Measure Descriptions:** MW - Megawatt

## Monitoring Defaults

| Unit/Stack/Pipe Identifier | Parameter | Value | Units of Measure | Purpose Code | Fuel Type | Operating Condition | Source of Value | Begin Date/Hour | End Date/Hour |
|---|---|---|---|---|---|---|---|---|---|
| U003 | NORX | 1.7160 | LBMMBTU | MD | NFS | A | DEF | 09/01/2019 00 | |
| | O2X | 19.0000 | PCT | DC | NFS | A | DEF | 09/01/2019 00 | |

**Parameter Codes Descriptions:** O2X - Maximum O2 Concentration (pct)
NORX - Maximum NOx Emission Rate (lb/mmBtu)

**Units of Measure Descriptions:** PCT - Percentage
LBMMBTU - Pounds / mmBtu

**Purpose Codes Descriptions:** MD - Missing Data (or Unmonitored Bypass Stack or Emergency Fuel) Default
DC - Diluent Cap

**Fuel Type Codes Descriptions:** NFS - Non-Fuel Specific

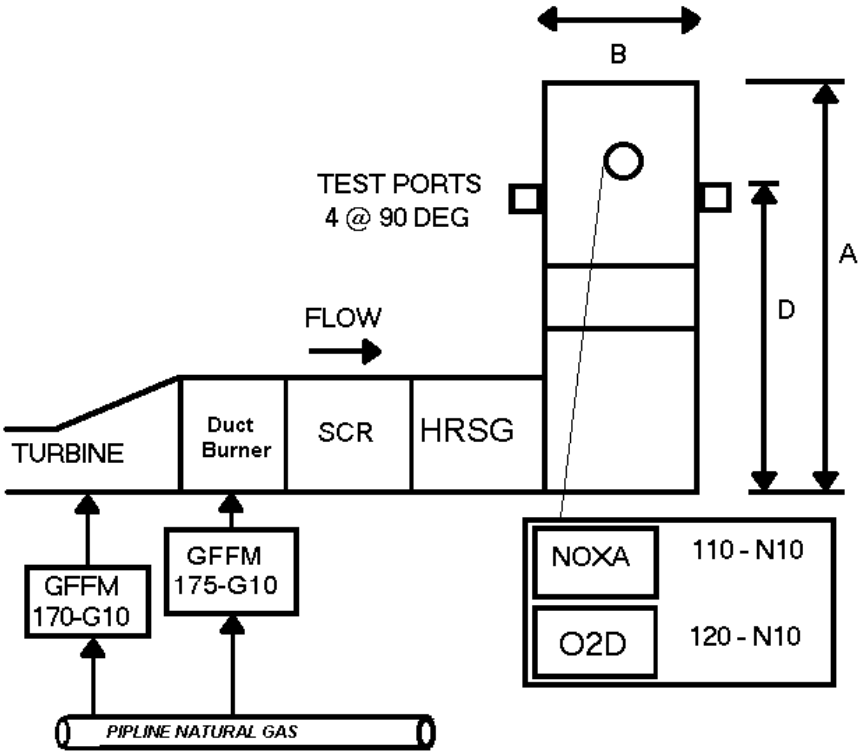
**Operating Conditions Descriptions:** A - Any Hour

**Source Codes Descriptions:** DEF - Default Value from Part 75

## PART 2

- **SCHEMATIC DIAGRAMS / CEMS SAMPLE LOCATION**
- **DATA FLOW DIAGRAM**

**CRICKET VALLEY ENERGY CENTER**
**ORIS CODE: 57185**
**UNIT U-00001**
**SCHEMATIC DIAGRAM / CEMS SAMPLE LOCATION**



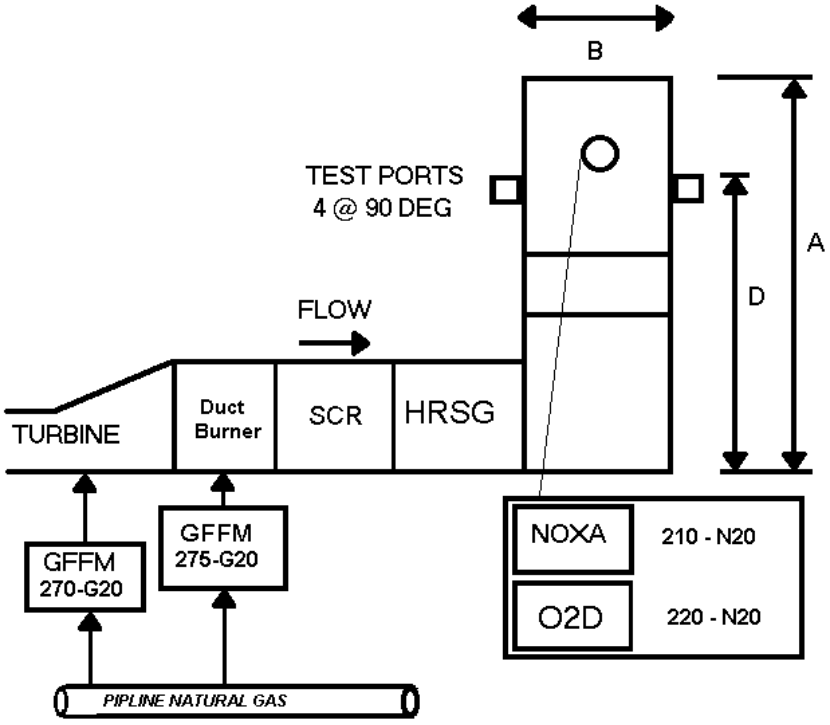

MONITOR LOCATION INFORMATION
A –STACK HEIGHT ABOVE GRADE – 282.5 FEET
B –STACK INSIDE DIAMETER AT TEST PORT – 19.0 FEET
C - INSIDE CROSS-SECTIONAL AREA AT TEST PORT –284 $FT^2$
D1 - CEMS SAMPLE PROBE ELEVATION
1. ABOVE GRADE – 266.5 FEET
2. ABOVE LAST DISTURBANCE
    A. FEET – 121.4
    B. STACK DIAMETERS – 6.39
3. PRIOR TO STACK EXIT
    A. FEET – 16.0
    B. STACK DIAMETERS – 0.8

D2 - EPA TEST PORT ELEVATION
1. ABOVE GRADE – 267.0 FEET
2. ABOVE LAST DISTURBANCE
    A. FEET – 121.9
    B. STACK DIAMETERS – 6.41
3. PRIOR TO STACK EXIT
    A. FEET – 15.5
    B. STACK DIAMETERS – 19.0

E –INSIDE CROSS-SECTIONAL AREA AT FLUE EXIT – 284 $FT^2$
F - STACK BASE ELEVATION – 435 FEET ABOVE MEAN SEA LEVEL

**CRICKET VALLEY ENERGY CENTER**
**ORIS CODE: 57185**
**UNIT U-00002**

## SCHEMATIC DIAGRAM / CEMS SAMPLE LOCATION



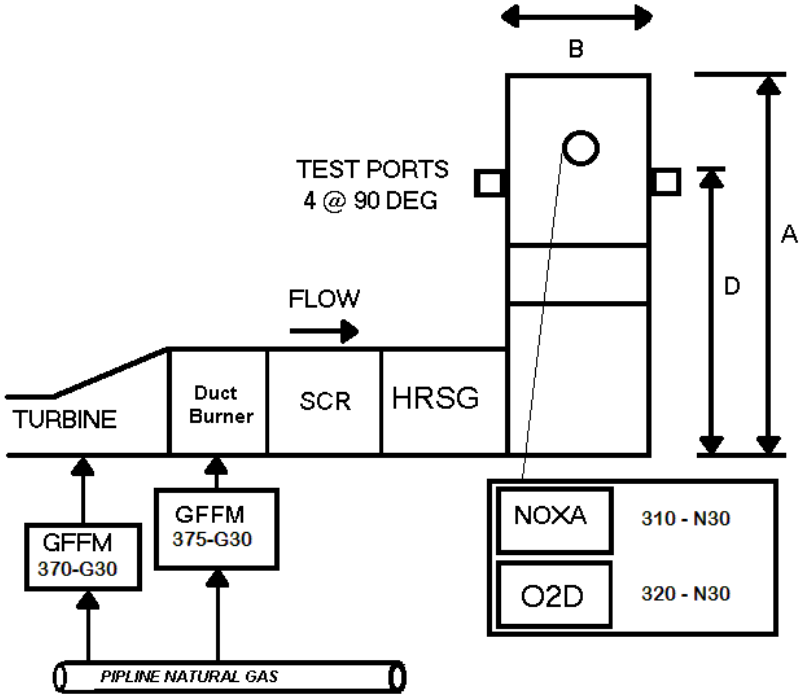

MONITOR LOCATION INFORMATION
A –STACK HEIGHT ABOVE GRADE – 282.5 FEET
B –STACK INSIDE DIAMETER AT TEST PORT – 19.0 FEET
C - INSIDE CROSS-SECTIONAL AREA AT TEST PORT –284 $FT^2$
D1 - CEMS SAMPLE PROBE ELEVATION
1. ABOVE GRADE – 266.5 FEET
2. ABOVE LAST DISTURBANCE
    A. FEET – 121.4
    B. STACK DIAMETERS – 6.39
3. PRIOR TO STACK EXIT
    A. FEET – 16.0
    B. STACK DIAMETERS – 0.8

D2 - EPA TEST PORT ELEVATION
1. ABOVE GRADE – 267.0 FEET
2. ABOVE LAST DISTURBANCE
    A. FEET – 121.9
    B. STACK DIAMETERS – 6.41
3. PRIOR TO STACK EXIT
    A. FEET – 15.5
    B. STACK DIAMETERS – 19.0

E –INSIDE CROSS-SECTIONAL AREA AT FLUE EXIT – 284 $FT^2$
F - STACK BASE ELEVATION – 435 FEET ABOVE MEAN SEA LEVEL

**CRICKET VALLEY ENERGY CENTER**
**ORIS CODE: 57185**
**UNIT U-00003**

## SCHEMATIC DIAGRAM / CEMS SAMPLE LOCATION



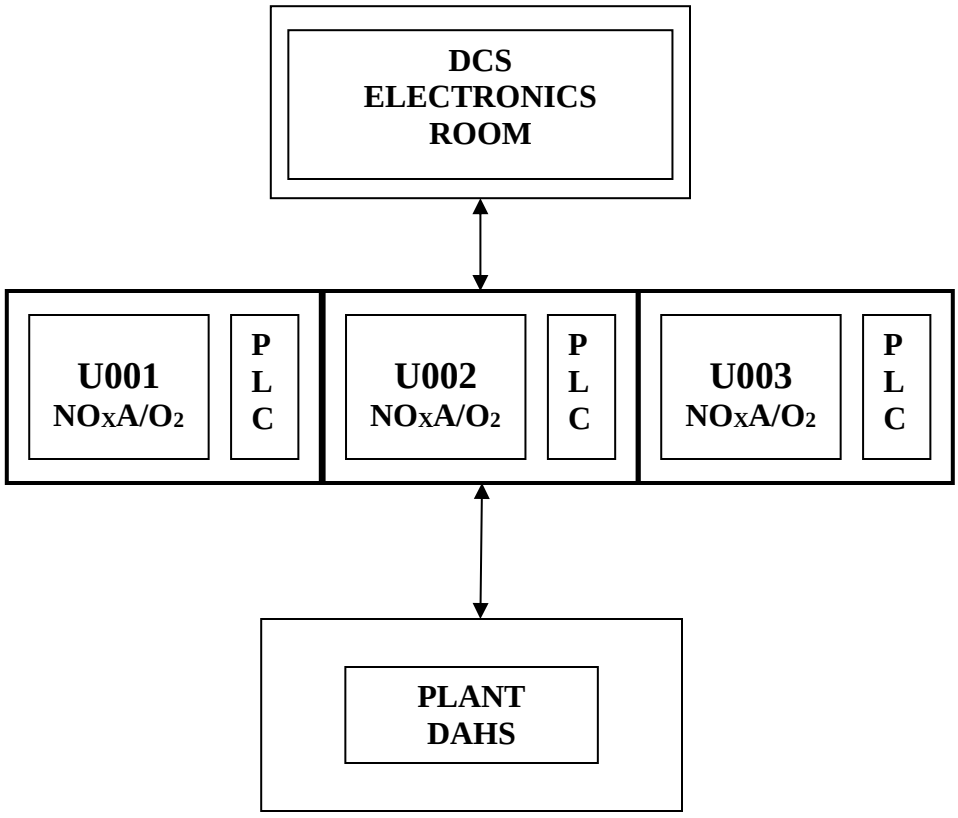

MONITOR LOCATION INFORMATION
A –STACK HEIGHT ABOVE GRADE – 282.5 FEET
B –STACK INSIDE DIAMETER AT TEST PORT – 19.0 FEET
C - INSIDE CROSS-SECTIONAL AREA AT TEST PORT –284 $FT^2$
D1 - CEMS SAMPLE PROBE ELEVATION
1. ABOVE GRADE – 266.5 FEET
2. ABOVE LAST DISTURBANCE
    A. FEET – 121.4
    B. STACK DIAMETERS – 6.39
3. PRIOR TO STACK EXIT
    A. FEET – 16.0
    B. STACK DIAMETERS – 0.8

D2 - EPA TEST PORT ELEVATION
1. ABOVE GRADE – 267.0 FEET
2. ABOVE LAST DISTURBANCE
    A. FEET – 121.9
    B. STACK DIAMETERS – 6.41
3. PRIOR TO STACK EXIT
    A. FEET – 15.5
    B. STACK DIAMETERS – 19.0

E –INSIDE CROSS-SECTIONAL AREA AT FLUE EXIT – 284 $FT^2$
F - STACK BASE ELEVATION – 435 FEET ABOVE MEAN SEA LEVEL

**CRICKET VALLEY ENERGY CENTER**
**ORIS CODE: 57185**

**DATA FLOW DIAGRAM**




- PLC
  - COLLECTS $NO_X$ AND $O_2$ READINGS
  - CONTROLS CEMS FUNCTIONS (i.e., CALIBRATION)
  - COLLECTS FUEL FLOW AND MW SIGNALS FROM PLANT
  - TRANSMITS DATA TO DAHS VIA DATA ETHERNET

- DAHS COMPUTER:
  - CALCULATES 1 HOUR DATABASE
  - PERFORMS MISSING DATA ROUTINES
  - LOGS CALIBRATIONS
  - CREATES XML FILES
  - PERFORMS MASS EMISSIONS CALCULATIONS
  - CALCULATES HEAT INPUT BASED ON FUEL FLOW AND GCV

- PERIPHERALS
  - PRINTER
  - EXTERNAL HARD DRIVE FOR DATA BACKUP

# ATTACHMENT 1

# CERTIFICATION TEST PROTOCOL

# ATTACHMENT 2

# FUEL FLOWMETER DOCUMENTS

# Combustion Turbine Fuel Meters

Endress+Hauser

People for Process Automation

# Standard Density Calibration with Adjustment

31128647-4374500-5130590

PROMASS 83 F 6"
Transmitter/Sensor

N301CF16000
Serial N°

FCP-7.1.F
Calibration rig

C0 = -2138.5 C1 = 1.8178E+8
Density coefficient

C2 = -87071 C3 = 8543.6
Density coefficient

| Medium | Temp. [°F] | ρ target [kg/m³] | ρ meas. [kg/m³] | Δρ [kg/m³] | Freq. [Hz] |
|---|---|---|---|---|---|
| Air | 70.1 | 1.20 | 1.20 | 0.00 | 290.1 |
| Water | 67.3 | 999.07 | 999.07 | 0.00 | 239.7 |
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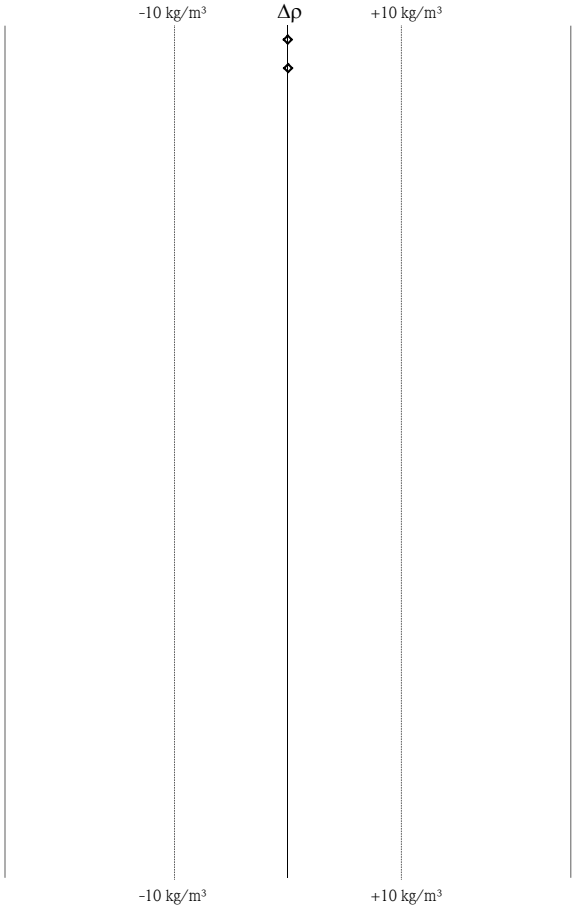


Endress+Hauser Flowtec operates ISO/IEC 17025 accredited calibration facilities in Reinach (CH), Cernay (FR), Greenwood (USA), Aurangabad (IN), Suzhou (CN) and Itatiba (BR).

Scott Newcomer

03-14-2018
Date of calibration

S. Newcomer
Operator

Endress+Hauser Flowtec, Division USA
2330 Endress Place
Greenwood, IN 46143

Certified acc. to
ISO 9001, Reg.-N° 030502.2
ISO 14001, Reg.-N° EMS561046

Endress+Hauser
People for Process Automation

# Certificate

Flow Calibration with Adjustment

30427954

American Association for Laboratory Accreditation, Cert. No 1897.01

Calibration laboratory accredited according to ISO/IEC 17025:2005

| | |
|---|---|
| 3800368764<br>Purchase order number | FCP-7.1.F / gravimetric<br>Calibration rig/Method |
| CORETECH INDUSTRIAL CORPORATION<br>Customer | 4776.682 lb/min ( ≙ 100%)<br>Calibrated full scale |
| US-3005947899-10 / Endress+Hauser Flowtec<br>Order N°/Manufacturer | Service interface<br>Calibrated output |
| PROMASS 83 F 6"<br>Transmitter/Sensor | 0.90972<br>Calibration factor |
| N301CF16000 / N301CF16000<br>Serial N° | -35<br>Zero point |
| Manufacture for GE, Supplier:Core Tech<br>Tag N° | 66.9 °F ±0.12 °F<br>Water temperature |
| New<br>Condition | 0.048 %<br>Expanded uncertainty of measurement |

| Flow [%] | Flow [lb/min] | Duration [s] | m target [lb] | m meas. [lb] | Δ o.r.* [%] | Outp.** [mA] |
|---|---|---|---|---|---|---|
| 20.0 | 956.801 | 60.3 | 961.151 | 961.091 | -0.006 | 7.20 |
| 35.5 | 1696.51 | 35.3 | 997.569 | 997.711 | 0.014 | 9.68 |
| 49.6 | 2367.42 | 30.3 | 1194.72 | 1194.68 | -0.003 | 11.93 |
| 75.2 | 3592.07 | 30.3 | 1813.13 | 1812.86 | -0.015 | 16.03 |
| 99.0 | 4727.02 | 30.3 | 2385.52 | 2385.44 | -0.003 | 19.83 |
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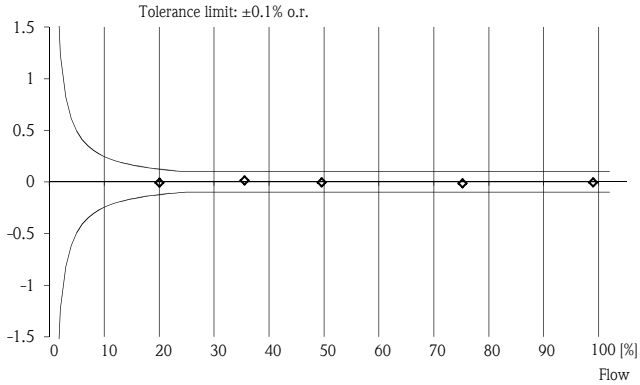
*o.r.: of reading

**Calculated value (4 - 20 mA)

Measured error % o.r.




For detailed data concerning output specifications of the unit under test, see Technical Information (TI), chapter Performance characteristics.

Calibration, traceable to NIST, has been completed on the instruments used in the equipment calibration process (see attached listing).

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approx. 95%. The expanded uncertainty of measurement includes uncertainty components of the reference, the calibration method, the environment and of the device under test. A typical value is used for the uncertainty component of the device

Scott Newcomer

03-14-2018
Date of calibration

S. Newcomer
Operator

This certificate shall not be published or reproduced other than in full, except with the prior written approval of the issuing laboratory.

Endress+Hauser Flowtec, Division USA
2330 Endress Place
Greenwood, IN 46143

# Certificate Addendum

Endress+Hauser
People for Process Automation

| | |
|---|---|
| CORETECH INDUSTRIAL CORPORATION | 12020 - BALLSTON SPA |
| Customer name | Customer address |
| Endress+Hauser Flowtec, Div. USA | 6" |
| Manufacturer | Nominal diameter |
| US-3005947899-10 / 83F1F-CP77/0 | FCP-7.1.F |
| Customer order N°/Order code | Calibration rig |
| N301CF16000 / N301CF16000 | 30427954 |
| Serial N° | Record N° |
| New | 03-14-2018 |
| Condition | Calibration date |
| - | 0.048 % |
| Customer specified calibration due date | Uncertainty of measurement (o.r.%) |
| PRD-TI-024 | |
| Calibration work procedure | |

## Instruments used in the calibration rig:

| Asset N° | Manufacturer | Model | Description | NIST/Cert N° | Cal. date | Cal. due date |
|---|---|---|---|---|---|---|
| F10795 | Endress+Hauser | PMC71-AAA1P1 | Pressure Gauge (Measure Inlet) | 008066 | 05-19-2017 | 06-01-2018 |
| F10796 | Endress+Hauser | PMC71-AAA1P1 | Pressure Gauge (Measure Inlet) | 008067 | 05-19-2017 | 06-01-2018 |
| F10797 | Endress+Hauser | PMC71-AAA1P1 | Pressure Gauge (Measure Outlet) | 008068 | 05-19-2017 | 06-01-2018 |
| F10798 | Endress+Hauser | TST434-K1B3A0 | RTD - Ambient | 008078 | 05-19-2017 | 06-01-2018 |
| F10799 | Endress+Hauser | TST310-A3A1A3 | RTD - Measuring Section | 008069 | 05-19-2017 | 06-01-2018 |
| F10800 | Endress+Hauser | TST310-A3A1A3 | RTD - Measuring Section | 008070 | 05-19-2017 | 06-01-2018 |
| F10801 | Endress+Hauser | TST310-A3A1A3 | RTD - 4000 kg Tank | 008072 | 05-19-2017 | 06-01-2018 |
| F10802 | Endress+Hauser | TST310-A3A1A3 | RTD - 4000 kg Tank | 008073 | 05-19-2017 | 06-01-2018 |
| F10803 | Endress+Hauser | TST310-A3A1A3 | RTD - Master Tower | 008075 | 05-19-2017 | 06-01-2018 |
| F10804 | Endress+Hauser | TST310-A3A1A3 | RTD - Master Tower | 008074 | 05-19-2017 | 06-01-2018 |
| F10806 | Endress+Hauser | TST310-A3A1A3 | RTD - 400 kg Tank | 008076 | 05-19-2017 | 06-01-2018 |
| F10807 | Endress+Hauser | TST310-A3A1A3 | RTD - 400 kg Tank | 008077 | 05-19-2017 | 06-01-2018 |
| F10808 | Endress+Hauser | - | Large Scale Diverter | 008062 | 05-19-2017 | 06-01-2018 |
| F10809 | Beckhoff | KL1501 | Counter/Timer | 008064 | 05-19-2017 | 06-01-2018 |
| F10810 | Beckhoff | KL1501 | Counter/Timer | 008063 | 05-19-2017 | 06-01-2018 |
| F10811 | Endress+Hauser | - | Small Scale Diverter | 008061 | 05-19-2017 | 06-01-2018 |
| F10813 | HBM | DMP 40 | Digital Scale Amplifier and scales | 008060 | 05-19-2017 | 06-01-2018 |
| - | - | - | - | - | - | - |

Calibration traceable to NIST has been completed on the instrument listed above by using known working procedures and standards certified by the manufacturers and/or secondary testing laboratories to traceable to NIST. This calibration has been completed using standards having a minimum accuracy of at least four times greater than the instrument listed above. This calibration was conducted in accordance with ISO 17025:2005 and ANSI/NCSL Z540-1. Reported uncertainties represent expanded uncertainties expressed at approximately 95% confidence level using a coverage factor of k=2.

Debbie Carver

ilac-MRA A2LA ACCREDITED

Certified according to ISO 17025:2005
Certification N° 1897.01

Debbie Carver
Calibration supervisor

Endress+Hauser Flowtec, Division USA
2330 Endress Place
Greenwood, IN 46143

Endress+Hauser

People for Process Automation

# Abnahmeprüfzeugnis nach EN 10204 – 3.1
# Inspection certificate acc. to EN 10204 – 3.1

Zeugnis-Nr./Certificate No. US – 3005947899



Es wird bescheinigt, dass die gelieferten Erzeugnisse den Vereinbarungen bei der Bestellung entsprechen. Darüber hinaus wird bescheinigt, dass bei der Herstellung der nachstehend aufgeführten Erzeugnisse die vorgeschriebenen Prüfungen und/oder die zusätzlich aufgeführten Prüfungen nach den bestehenden Prüfvorgaben durchgeführt und die erforderlichen Freigaben erteilt wurden. Die unten aufgeführten Prüfungen wurden durch eine dazu autorisierte Person durchgeführt.

It is certified that the products supplied are in compliance with the requirements of the order. Furthermore, it is confirmed that during the manufacturing of the subsequently listed products the specified inspections and/or the additionally ordered tests have been performed according to the valid procedures and the necessary releases have been given. The subsequently listed inspections have been performed by especially authorized personnel.

| | | |
|---|---|---|
| Kunde/Customer | : | CORETECH INDUSTRIAL CORPORATION<br>US – 12020 – BALLSTON SPA |
| Kunden Bestell-Nr./Customer Order No. | : | 111063 |
| E+H-Auftrags-Nr./E+H Order No. | : | 3800368764 |

| Pos./Item | Menge/Qty. | Produktbezeichnung/Description |
|---|---|---|
| 10 | 1 | 83F1F-CP77/0<br>PROMASS 83 F 6"<br>S/N.: N301CF16000<br>Tag-Nr.: Manufacture for GE, Supplier:Core Tech |

**Abnahmeprüfzeugnisse nach EN 10204 – 3.1/Inspection Certificates acc. to EN 10204 – 3.1:**
Messrohr/Measuring tube: 51588, Franz Iten AG
Verteilerstück/Flow splitter: 270138, Bächler Feintech AG
Prozessanschluss/Process connection: 16CT12819, Jiangyin Unique Flange Manufacturing Co., Ltd.

Datum/Date 03-15-2018

Endress+Hauser Flowtec, Division USA
Greenwood, IN 46143 USA

Chris Brown

Abnahmebeauftragter
Inspector

Dieses Dokument wurde elektronisch nach EN 10204 erstellt und ist ohne Unterschrift gültig.
This document was generated electronically acc. to EN 10204 and is valid without signature.

Endress+Hauser

People for Process Automation

# Parameter Setting

30409322-4374500

| | |
|---|---|
| 3800368764 | PROMASS 83 F |
| Purchase order number | Transmitter/Sensor |
| 3005947899-10 / Endress+Hauser Flowtec | 6" |
| Order N°/Manufacturer | Nominal diameter |
| 83F1F-CP77/0 | Manufacture for GE, Supplier:Core Tech |
| Order code | Tag N° |
| N301CF16000 | |
| Serial N° | |

The below parameters are set according to your order.
Please refer to the Operating Manual for any parameters not mentioned.

| | |
|---|---|
| Communication type | MODBUS RS485 |
| Device software | V3.06.10 |
| Device address | 247 |
| | |
| <u>Current output 1</u> | |
| Current span | 4-20 mA US |
| Value 0/4 mA | 0 lb/min |
| Value 20 mA | 4800 lb/min |
| Time constant | 1 s |
| Failsafe mode | Minimum current |
| | |
| <u>Pulse output 1</u> | |
| Pulse value | 200 lb |
| Pulse width | 100 ms |
| Output signal | passive/positive |
| Failsafe mode | Fallback value |

03-13-2018
Date

Endress+Hauser Flowtec, Division USA
2330 Endress Place
Greenwood, IN 46143

Endress+Hauser

People for Process Automation

# Standard Density Calibration with Adjustment

31129417-4401946-5132403

| | |
|---|---|
| PROMASS 83 F 6" | C0 = -2134.6 C1 = 1.8192E+8 |
| Transmitter/Sensor | Density coefficient |
| N4012116000 | C2 = -87141 C3 = 8550.4 |
| Serial N° | Density coefficient |
| FCP-7.1.F | |
| Calibration rig | |

| Medium | Temp. [°F] | ρ target [kg/m³] | ρ meas. [kg/m³] | Δρ [kg/m³] | Freq. [Hz] |
|---|---|---|---|---|---|
| Air | 70.3 | 1.20 | 1.20 | 0.00 | 290.5 |
| Water | 68.4 | 998.92 | 998.92 | 0.00 | 239.9 |
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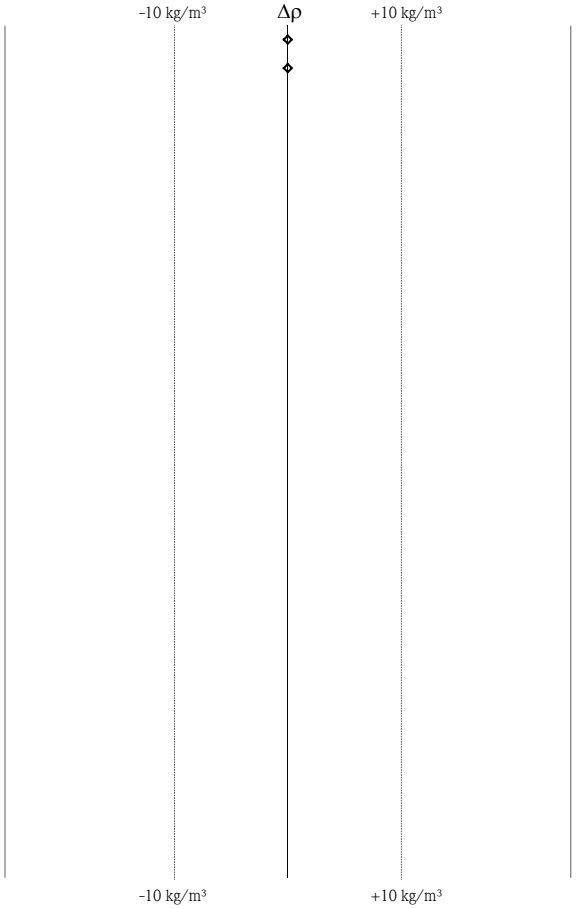
Measuring precision · Tolerance limit - - - - -




Endress+Hauser Flowtec operates ISO/IEC 17025 accredited calibration facilities in Reinach (CH), Cernay (FR), Greenwood (USA), Aurangabad (IN), Suzhou (CN) and Itatiba (BR).

Scott Newcomer

04-09-2018
Date of calibration

S. Newcomer
Operator

Endress+Hauser Flowtec, Division USA
2330 Endress Place
Greenwood, IN 46143

Certified acc. to
ISO 9001, Reg.-N° 030502.2
ISO 14001, Reg.-N° EMS561046

Endress+Hauser
People for Process Automation

# Certificate

Flow Calibration with Adjustment

30430257

American Association for Laboratory Accreditation, Cert. No 1897.01

Calibration laboratory accredited according to ISO/IEC 17025:2005

| | |
|---|---|
| 3800374688<br>Purchase order number | FCP-7.1.F / gravimetric<br>Calibration rig/Method |
| CORETECH INDUSTRIAL CORPORATION<br>Customer | 4776.682 lb/min ( ≙ 100%)<br>Calibrated full scale |
| US-3005965821-10 / Endress+Hauser Flowtec<br>Order N°/Manufacturer | Service interface<br>Calibrated output |
| PROMASS 83 F 6"<br>Transmitter/Sensor | 0.90798<br>Calibration factor |
| N4012116000 / N4012116000<br>Serial N° | 17<br>Zero point |
| 125T3664G001, GE PO# 610575460/2<br>Tag N° | 68.4 °F ±0.11 °F<br>Water temperature |
| New<br>Condition | 0.048 %<br>Expanded uncertainty of measurement |

| Flow [%] | Flow [lb/min] | Duration [s] | m target [lb] | m meas. [lb] | Δ o.r.* [%] | Outp.** [mA] |
|---|---|---|---|---|---|---|
| 20.0 | 953.135 | 60.3 | 957.461 | 957.767 | 0.032 | 7.19 |
| 35.6 | 1701.59 | 35.3 | 1000.63 | 1000.63 | 0.000 | 9.70 |
| 50.2 | 2398.77 | 30.3 | 1210.39 | 1210.52 | 0.011 | 12.04 |
| 75.2 | 3592.23 | 30.3 | 1812.98 | 1813.10 | 0.007 | 16.03 |
| 99.3 | 4742.11 | 30.3 | 2393.59 | 2393.54 | -0.002 | 19.88 |
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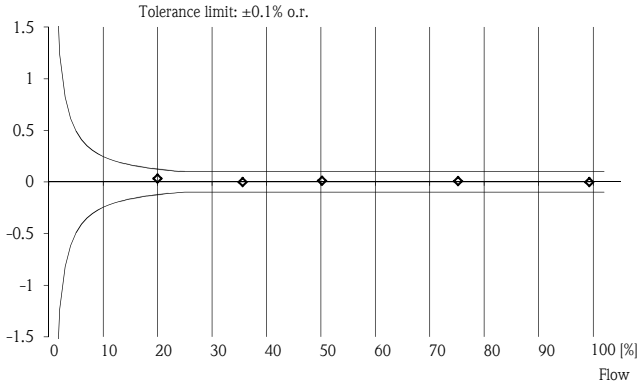
*o.r.: of reading

**Calculated value (4 - 20 mA)

Measured error % o.r.




For detailed data concerning output specifications of the unit under test, see Technical Information (TI), chapter Performance characteristics.

Calibration, traceable to NIST, has been completed on the instruments used in the equipment calibration process (see attached listing).

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approx. 95%. The expanded uncertainty of measurement includes uncertainty components of the reference, the calibration method, the environment and of the device under test. A typical value is used for the uncertainty component of the device

Scott Newcomer

04-09-2018
Date of calibration

S. Newcomer
Operator

This certificate shall not be published or reproduced other than in full, except with the prior written approval of the issuing laboratory.

Endress+Hauser Flowtec, Division USA
2330 Endress Place
Greenwood, IN 46143

# Certificate Addendum

Endress+Hauser
People for Process Automation

| | |
|---|---|
| CORETECH INDUSTRIAL CORPORATION | 12020 - BALLSTON SPA |
| Customer name | Customer address |
| Endress+Hauser Flowtec, Div. USA | 6" |
| Manufacturer | Nominal diameter |
| US-3005965821-10 / 83F1F-CP77/0 | FCP-7.1.F |
| Customer order N°/Order code | Calibration rig |
| N4012116000 / N4012116000 | 30430257 |
| Serial N° | Record N° |
| New | 04-09-2018 |
| Condition | Calibration date |
| - | 0.048 % |
| Customer specified calibration due date | Uncertainty of measurement (o.r.%) |
| PRD-TI-024 | |
| Calibration work procedure | |

## Instruments used in the calibration rig:

| Asset N° | Manufacturer | Model | Description | NIST/Cert N° | Cal. date | Cal. due date |
|---|---|---|---|---|---|---|
| F10795 | Endress+Hauser | PMC71-AAA1P1 | Pressure Gauge (Measure Inlet) | 008066 | 05-19-2017 | 06-01-2018 |
| F10796 | Endress+Hauser | PMC71-AAA1P1 | Pressure Gauge (Measure Inlet) | 008067 | 05-19-2017 | 06-01-2018 |
| F10797 | Endress+Hauser | PMC71-AAA1P1 | Pressure Gauge (Measure Outlet) | 008068 | 05-19-2017 | 06-01-2018 |
| F10798 | Endress+Hauser | TST434-K1B3A0 | RTD - Ambient | 008078 | 05-19-2017 | 06-01-2018 |
| F10799 | Endress+Hauser | TST310-A3A1A3 | RTD - Measuring Section | 008069 | 05-19-2017 | 06-01-2018 |
| F10800 | Endress+Hauser | TST310-A3A1A3 | RTD - Measuring Section | 008070 | 05-19-2017 | 06-01-2018 |
| F10801 | Endress+Hauser | TST310-A3A1A3 | RTD - 4000 kg Tank | 008072 | 05-19-2017 | 06-01-2018 |
| F10802 | Endress+Hauser | TST310-A3A1A3 | RTD - 4000 kg Tank | 008073 | 05-19-2017 | 06-01-2018 |
| F10803 | Endress+Hauser | TST310-A3A1A3 | RTD - Master Tower | 008075 | 05-19-2017 | 06-01-2018 |
| F10804 | Endress+Hauser | TST310-A3A1A3 | RTD - Master Tower | 008074 | 05-19-2017 | 06-01-2018 |
| F10806 | Endress+Hauser | TST310-A3A1A3 | RTD - 400 kg Tank | 008076 | 05-19-2017 | 06-01-2018 |
| F10807 | Endress+Hauser | TST310-A3A1A3 | RTD - 400 kg Tank | 008077 | 05-19-2017 | 06-01-2018 |
| F10808 | Endress+Hauser | - | Large Scale Diverter | 008062 | 05-19-2017 | 06-01-2018 |
| F10809 | Beckhoff | KL1501 | Counter/Timer | 008064 | 05-19-2017 | 06-01-2018 |
| F10810 | Beckhoff | KL1501 | Counter/Timer | 008063 | 05-19-2017 | 06-01-2018 |
| F10811 | Endress+Hauser | - | Small Scale Diverter | 008061 | 05-19-2017 | 06-01-2018 |
| F10813 | HBM | DMP 40 | Digital Scale Amplifier and scales | 008748 | 03-16-2018 | 06-01-2018 |
| - | - | - | - | - | - | - |

Calibration traceable to NIST has been completed on the instrument listed above by using known working procedures and standards certified by the manufacturers and/or secondary testing laboratories to traceable to NIST. This calibration has been completed using standards having a minimum accuracy of at least four times greater than the instrument listed above. This calibration was conducted in accordance with ISO 17025:2005 and ANSI/NCSL Z540-1. Reported uncertainties represent expanded uncertainties expressed at approximately 95% confidence level using a coverage factor of k=2.

Debbie Carver

ilac-MRA A2LA ACCREDITED

Certified according to ISO 17025:2005
Certification N° 1897.01

Debbie Carver
Calibration supervisor

Endress+Hauser Flowtec, Division USA
2330 Endress Place
Greenwood, IN 46143

Endress+Hauser

People for Process Automation

# Abnahmeprüfzeugnis nach EN 10204 – 3.1
# Inspection certificate acc. to EN 10204 – 3.1

Zeugnis-Nr./Certificate No. US – 3005965821



Es wird bescheinigt, dass die gelieferten Erzeugnisse den Vereinbarungen bei der Bestellung entsprechen. Darüber hinaus wird bescheinigt, dass bei der Herstellung der nachstehend aufgeführten Erzeugnisse die vorgeschriebenen Prüfungen und/oder die zusätzlich aufgeführten Prüfungen nach den bestehenden Prüfvorgaben durchgeführt und die erforderlichen Freigaben erteilt wurden. Die unten aufgeführten Prüfungen wurden durch eine dazu autorisierte Person durchgeführt.

It is certified that the products supplied are in compliance with the requirements of the order. Furthermore, it is confirmed that during the manufacturing of the subsequently listed products the specified inspections and/or the additionally ordered tests have been performed according to the valid procedures and the necessary releases have been given. The subsequently listed inspections have been performed by especially authorized personnel.

| | | |
|---|---|---|
| Kunde/Customer | : | CORETECH INDUSTRIAL CORPORATION<br>US – 12020 – BALLSTON SPA |
| Kunden Bestell-Nr./Customer Order No. | : | 111611 |
| E+H-Auftrags-Nr./E+H Order No. | : | 3800374688 |

| Pos./Item | Menge/Qty. | Produktbezeichnung/Description |
|---|---|---|
| 10 | 1 | 83F1F-CP77/0<br>PROMASS 83 F 6"<br>S/N.: N4012116000<br>Tag-Nr.: 125T3664G001, GE PO# 610575460/2 |

**Abnahmeprüfzeugnisse nach EN 10204 – 3.1/Inspection Certificates acc. to EN 10204 – 3.1:**
Messrohr/Measuring tube: 51588, Franz Iten AG
Verteilerstück/Flow splitter: 272967, Bächler Feintech AG
Prozessanschluss/Process connection: 16CT12819, Jiangyin Unique Flange Manufacturing Co., Ltd.

Datum/Date 04-10-2018

Endress+Hauser Flowtec, Division USA
Greenwood, IN 46143 USA

Chris Brown

Abnahmebeauftragter
Inspector

Dieses Dokument wurde elektronisch nach EN 10204 erstellt und ist ohne Unterschrift gültig.
This document was generated electronically acc. to EN 10204 and is valid without signature.

Endress+Hauser

People for Process Automation

# Parameter Setting

30411757-4401946

| | |
|---|---|
| 3800374688 | PROMASS 83 F |
| Purchase order number | Transmitter/Sensor |
| 3005965821-10 / Endress+Hauser Flowtec | 6" |
| Order N°/Manufacturer | Nominal diameter |
| 83F1F-CP77/0 | 125T3664G001, GE PO# 610575460/2 |
| Order code | Tag N° |
| N4012116000 | |
| Serial N° | |

The below parameters are set according to your order.
Please refer to the Operating Manual for any parameters not mentioned.

| | |
|---|---|
| Communication type | MODBUS RS485 |
| Device software | V3.06.10 |
| Device address | 247 |
| | |
| Current output 1 | |
| Current span | 4-20 mA US |
| Value 0/4 mA | 0 lb/min |
| Value 20 mA | 4800 lb/min |
| Time constant | 1 s |
| Failsafe mode | Minimum current |
| | |
| Pulse output 1 | |
| Pulse value | 200 lb |
| Pulse width | 100 ms |
| Output signal | passive/positive |
| Failsafe mode | Fallback value |

04-09-2018

Date

Endress+Hauser Flowtec, Division USA
2330 Endress Place
Greenwood, IN 46143

# Duct Burner Fuel Meters

CALIBRATION OF:

(3) 6” 300# AGA METER RUNS

TAG NUMBER: B10255-341-01

SERIAL NO.: FAB-3206-1
SERIAL NO.: FAB-3206-2
SERIAL NO.: FAB-3206-3

FOR:

FLUIDIC TECHNIQUES, LP

PURCHASE ORDER NUMBER: 60160, JOB FAB-3206

JANUARY 2018 - REPORT NUMBER: 2181FLT006-R1

CERTIFIED BY

Philip S. Stacy

ALDEN RESEARCH LABORATORY, INC.

30 SHREWSBURY STREET

HOLDEN, MASSACHUSETTS 01520

All Client supplied information and calibration results are considered proprietary and confidential to the Client. If a third party is a witness during calibrations or if the Client requests transmittal of data to a third party, Alden considers that the Client has waived confidentiality for the Witness.

In the event the Client distributes any report issued by Alden outside its own organization, such report shall be used in its entirety, unless Alden approves a summary or abridgment for distribution.

No advertising or publicity containing any reference to Alden or any employee, either directly or by implication, shall be made use of by Client without Alden's written approval.

## INTRODUCTION

Meters referenced within this report were calibrated at Alden Research Laboratory, Inc. (Alden). Alden's standard test procedures in QMSM-01 Revision 8 were used for testing. Flow meter performance is presented in both tabular and graphical format.

## FLOW ELEMENT INSTALLATION

Each meter under test (MUT) was installed in one of the four test lines in the Allen High Reynolds Number Facility, which is shown in plan view in Figure 1. One or two 300 horsepower centrifugal pumps, which are used singularly or in parallel, provide a maximum head of about 130 ft at a flow of about 44 $ft^3$/second in Line 2. A separate pump provides a maximum head of about 300 ft at a flow of about 12 $ft^3$/s in Lines 3 and 4. Water is provided from a heated 180,000 gallon sump under the test floor. The Gravimetric Method was used to measure flow.

The detailed piping arrangement, immediately upstream and downstream of the flow element, including all significant fittings and pipe lengths, is shown in the included figures. Careful attention was given to align the flow element with the test line piping, and to assure no gaskets between flanged sections protruded into the flow. Vents were provided at critical locations of the test line to purge the system of air.

## TEST PROCEDURE

After checking the installation, water was introduced into the system to equalize line and primary element temperature to water temperature. The downstream control valve was then closed and vent valves in the test line were opened to remove air from the system.

Prior to the test run, the control valve was set to produce the desired flow, while the flow was directed to waste. Sufficient time was allowed to stabilize both the flow and the instrument readings, after which the weigh tank discharge valve was closed and the weigh tank scale indicator and the electric timer were both zeroed. To begin the test run, flow was diverted into the weigh tank, which automatically started the timer.

At the start of the water collection a computer based data acquisition system was activated to read the meter output, such that the meter output was averaged while the weigh tank was filling. At the end of the run, flow was diverted away from the weigh tank and the timer and data acquisition system were stopped to terminate the test run. The weight of water in the tank, elapsed time, water temperature, and

average meter output were recorded on a data sheet. The data were entered into the computer to determine the flow and the results were plotted so that each test run was evaluated before the next run began. The control valve was then adjusted to the next flow and the procedure repeated.

## FLOW MEASUREMENT METHOD

Flow was measured by the gravimetric method using a tank mounted on scales having capacities of 1,000, 10,000 and 100,000 pounds with resolution of 0.1, 0.2 and 1.0 pound, respectively. Alden's flow meter calibrations using the gravimetric flow measurement method comply with ASME/ANSI MFC-9M-1988 Measurement of Liquid Flow in Closed Conduits by Weighing Method. Water passing through the flow element was diverted into the tank with a hydraulically operated knife edge passing through a rectangular jet produced by a diverter head box. A Hewlett-Packard 10 MHz Frequency Counter with a resolution 0.001 sec was started upon flow diversion into the tank by an optical switch, which is positioned at the center of the jet. The timer was stopped upon flow diversion back to waste and the elapsed diversion time was recorded. An RTD thermometer measured water temperature to allow calculation of water density. Volumetric flow was calculated by Equation (1).

$$q_a = \frac{W}{T\rho_w B_c} \tag{1}$$

where $q_a$ = actual flow, $ft^3/sec$

$W$ = mass of water collected, $lb_m$

$T$ = time, sec

$\rho_w$ = water density, $lb_m/ft^3$

$B_c$ = buoyancy correction, $1-\rho_a/\rho_w$

The buoyancy correction includes air density calculated by perfect gas laws with the standard barometric pressure, a relative humidity of 75%, and measured air temperature. The weigh tank is periodically calibrated to full scale using 10,000 lbm of cast iron weights, whose calibration is traceable to NIST. Flow calculations are computerized to assure consistency. Weigh tank calibration data and water density as a function of temperature, are stored on disk file. Data were recorded manually and on disk file for later review and reporting.

## DISCHARGE COEFFICIENT CALCULATIONS

If applicable, the MUT discharge coefficient, C, is defined by Equation (2) and plotted versus pipe or throat Reynolds number. Calculations of the discharge coefficient of differential producing flow meters are in accordance with ASME/ANSI MFC-3M-2004 Measurement of Fluid Flow in Pipes Using Orifice, Nozzle and Venturi, and ASME 19.5-2004 Flow Measurement. The discharge coefficient relates the theoretical flow to the actual flow.

$$C = \frac{q_a}{q_{th}} = \frac{q_a}{F_a K_M \sqrt{\Delta h}} \quad (2)$$

where $C$ = discharge coefficient, dimensionless

$q_{th}$ = theoretical flow, $ft^3/sec$

$F_a$ = thermal expansion factor, dimensionless

$\Delta h$ = differential head, ft at line temperature

$K_M$ = meter constant, $ft^{2.5}/sec$

The theoretical proportionality constant, $K_M$, between flow and square root of differential head is a function of the meter throat area, the ratio of throat to pipe diameter, and the local gravitational constant, as defined by Equation (3).

$$K_M = \frac{a_t \sqrt{2 g_l}}{\sqrt{1-\beta^4}} \quad (3)$$

where $a_t$ = throat area, $\pi d^2/4$, $ft^2$

$d$ = throat diameter, ft

$g_l$ = local gravitational constant, 32.1625 $ft/sec^2$ at Alden

$\beta$ = ratio of throat to pipe diameter, d/D, dimensionless

$D$ = pipe diameter, ft

The effect of fluid properties, viscosity and density, on the discharge coefficient is determined by Reynolds number, the ratio of inertia to viscous forces. Pipe Reynolds number, $R_D$, or throat Reynolds number, $R_d$ is determined by Equation (4).

$$R_D = \frac{q_a D}{a_p \gamma} \qquad \left(R_d = \frac{q_a d}{a_t \gamma}\right) \tag{4}$$

where $a_p$ = pipe area, $\pi D^2/4$, ft$^2$, (throat area $a_t = \pi d^2/4$, ft$^2$)

$\gamma$ = kinematic viscosity, ft$^2$/sec

## HEAD LOSS CALCULATION

If applicable , to determine the unrecoverable head loss if the MUT, pairs of pressure taps were installed approximately two pipe diameters upstream and ten pipe diameters downstream of the flow meter. This gross head loss was measured during the determination of the discharge coefficient. Thereafter, the flow meter was removed from the test line and the head loss due to the pipe was measured over a similar range of flows to determine the unique coefficients of $k_p$ and n in Equation 5 below.

$$k_p = \frac{\Delta H_{fric}}{{q_a}^n} \tag{5}$$

Where:

$k_p$ = friction loss coefficient, ft$^{5/2}$/s

$\Delta H_{fric}$ = pipe friction loss, feet

$q_a$ = actual flow, ft$^3$/sec

n = Coefficient

Equivalent pipe losses were calculated by solving Equation 5 for pipe loss, $DH_{fric}$:

$$\Delta H_{fric} = k_p {q_a}^n \tag{6}$$

Pipe losses, characterized by Equation 6 were subtracted from the measured gross loss for the calculation of meter unrecoverable head loss as shown by Equation (7). The meter unrecoverable head loss is presented as a percent of the meter differential head.

$$\Delta H_{net\ meter} = \Delta H_{static} - \Delta H_{fric} \quad (7)$$

where: $\Delta H_{net}$ = meter unrecoverable head loss, feet

$\Delta H_{static}$ = measured static head difference, feet

## FLOW METER SIGNAL RECORDING

The MUT indicated flow was recorded at the end of each weigh tank run. The method employed was according to the requirements of each meter and may include; gating the meter to totalize collected gallons, interrogating a mA output, totalized pulses, or manual reading of the MUT display. For MUT producing a differential pressure, the secondary element, which converts the primary element signal into engineering units, was one of several "Smart" differential pressure transmitters having a range of 250 inches of water column, 1,000 inches of water column and 100 psi. Each transmitter was calibrated with a pneumatic or a hydraulic dead weight tester having an accuracy of 0.02% of reading. Transmitter signals were recorded by a PC based data acquisition system having a 16 bit A to D board. Transmitter calibrations were conducted with the PC system such that an end to end calibration was achieved. Transmitter output was read simultaneously with the diversion of flow into the weigh tank at a rate of about 34 Hz for each test run (flow) and averaged to obtain a precise differential head. Average transmitter reading was converted to feet of flowing water using a linear regression analysis of the calibration data and line water temperatures to calculate appropriate specific weight.

## TEST RESULTS

The results are presented in tabular and graphical format. The calculated flow, meter signal and meter performance are listed in the table(s) in the following pages.

Analysis indicates that the flow measurement uncertainty is within 0.25% of the true value for each test run. Calibrations of the test instrumentation (temperature, time, weight, and length measurements) are traceable to the National Institute of Standards and Technology (formerly the National Bureau of Standards) and Alden's Quality Assurance Program is designed to meet ANSI/NCSL Z540-1-1994 "Calibration Laboratories and Test Equipment-General Requirements" (supercedes MIL-STD-45662A).

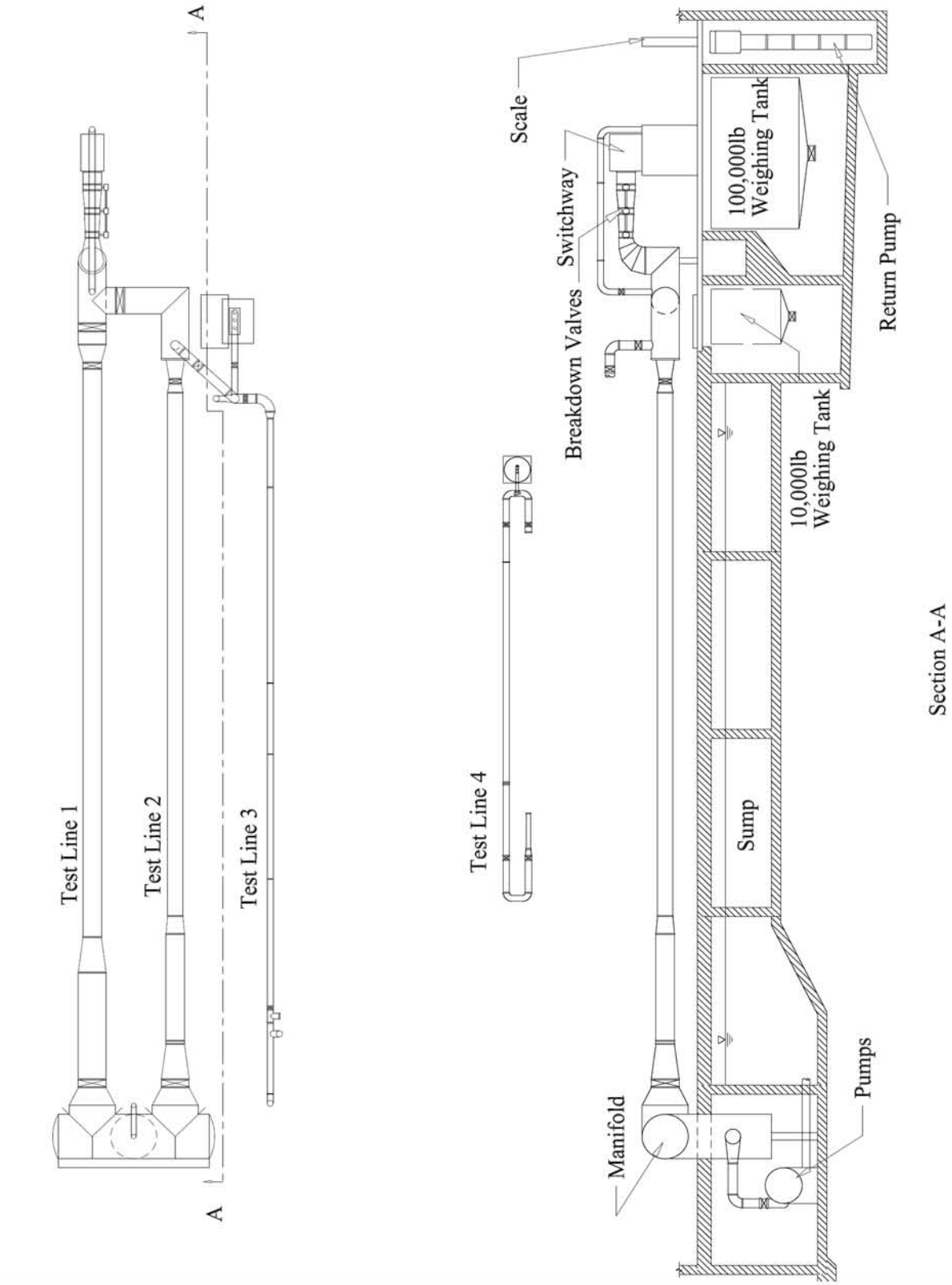
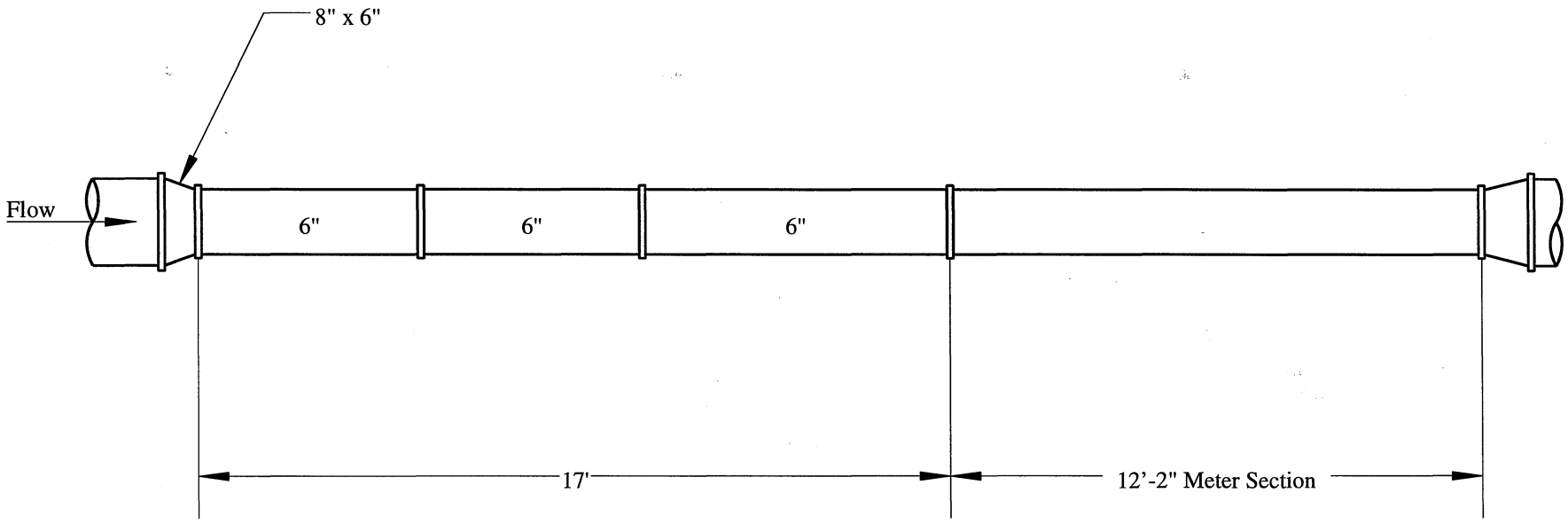



Figure 1

Allen High Reynolds Number Facility Test Lines 1, 2, 3 and 4

# Plan View Allen Facility Line 3




FLUIDIC TECHNIQUES, LP
Purchase Order Number: 60160, JOB: FAB-3206
6" - 300# AGA METER RUNS
January 2018

# FLUIDIC TECHNIQUES, LP

Purchase Order Number: 60160, JOB: FAB-3206
6" - 300# AGA METER RUN
Serial Number: JOB: FAB-3206-1
Tag Number: B10255-341-01

CALIBRATION
DATE: January 22, 2018
PIPE DIAMETER = 6.0650
THROAT DIAMETER = 3.8490

TAP SET 1

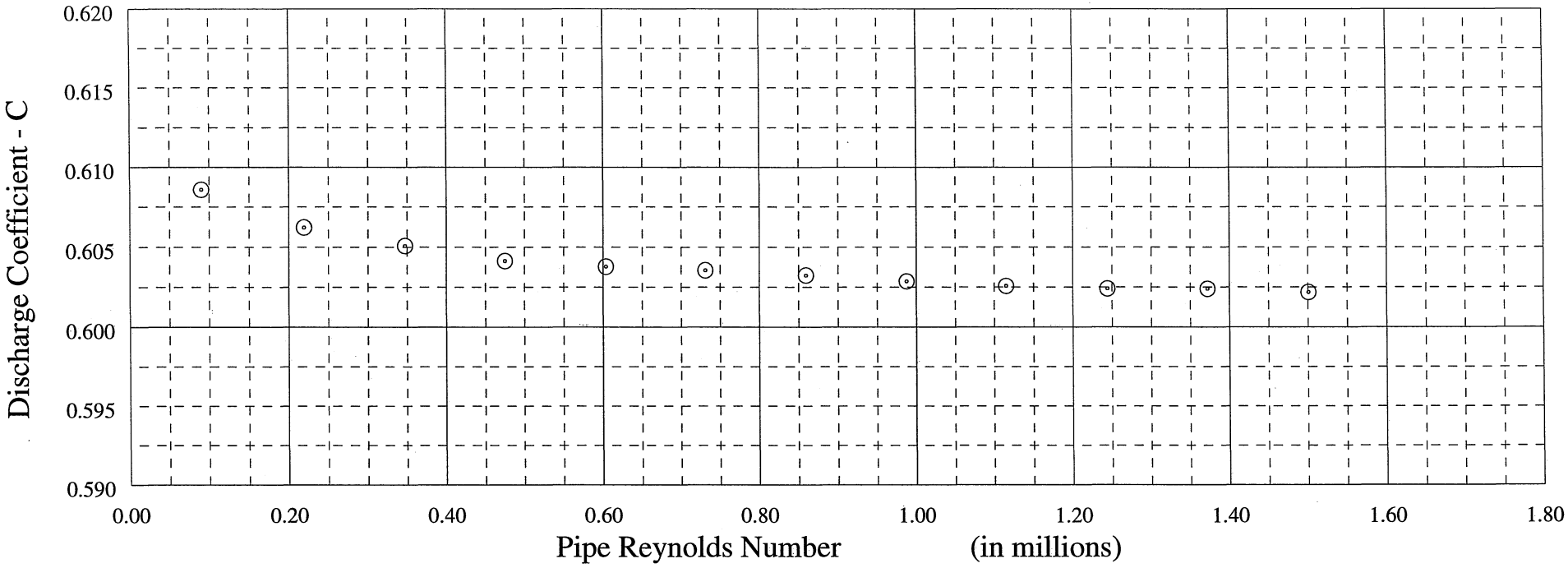
| Run # | Line Temp Deg F | Air Temp Deg F | Net Weight lb. | Run Duration secs. | Output [see note] | Flow GPM | H Line FT H20 | Pipe Rey. # x 10^6 | Coef |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 106 | 72 | 9528 | 37.102 | 4.958~ | 1863. | 94.737 | 1.5008 | 0.6022 |
| 2 | 106 | 71 | 9517 | 40.500 | 9.577~ | 1705. | 79.254 | 1.3722 | 0.6024 |
| 3 | 106 | 72 | 9469 | 44.418 | 8.237~ | 1547. | 65.232 | 1.2444 | 0.6024 |
| 4 | 106 | 73 | 9550 | 49.898 | 7.024~ | 1388. | 52.540 | 1.1154 | 0.6026 |
| 5 | 106 | 73 | 9508 | 56.054 | 5.943~ | 1230. | 41.231 | 0.9879 | 0.6029 |
| 6 | 106 | 74 | 9456 | 64.022 | 4.986~ | 1071. | 31.220 | 0.8594 | 0.6033 |
| 7 | 106 | 74 | 9448 | 75.159 | 4.161~ | 912.2 | 22.593 | 0.7312 | 0.6036 |
| 8 | 106 | 73 | 9436 | 90.902 | 7.881~ | 753.3 | 15.395 | 0.6039 | 0.6038 |
| 9 | 106 | 72 | 9434 | 115.521 | 5.636~ | 592.6 | 9.517 | 0.4749 | 0.6041 |
| 10 | 106 | 73 | 7182 | 120.252 | 3.939~ | 433.4 | 5.074 | 0.3474 | 0.6051 |
| 11 | 106 | 73 | 4524 | 120.165 | 7.996~ | 273.2 | 2.009 | 0.2190 | 0.6062 |
| 12 | 106 | 73 | 2789 | 180.165 | 3.008~ | 112.3 | 0.337 | 0.0900 | 0.6086 |

~ dp transmitter volts

The data reported on herein was obtained by measuring equipment the calibration of which is traceable to NIST , following the installation and test procedures referenced in this report, resulting in a flow measurement uncertainty of +/- 0.25% or less.

CALIBRATED BY: DAV

CERTIFIED BY:




$$q_a = C F_a K_M \sqrt{\Delta h}$$

| | | | |
|---|---|---|---|
| $q_a$ = | Actual Flow ($ft^3$/sec) | | |
| C = | Discharge Coefficient ( Dimensionless ) | | |
| $\Delta h$ = | Pressure Differential ( Feet of Water at Run Temperature ) | | |
| $K_M$ = | Meter Constant = $\frac{a\sqrt{2g}}{\sqrt{1 - ß^4}}$ | = | 0.7080 |
| $F_a$ = | Average Thermal Expansion Factor | = | 1.0007 |
| a = | Throat Area ($ft^2$) | = | 0.0808 |
| g = | Local Acceleration of Gravity (ft/$sec^2$) | = | 32.1625 |
| ß = | Ratio of Throat to Pipe Diameter ( Dimensionless ) | = | 0.6346 |
| | Pipe Diameter ( Inches ) | = | 6.0650 |
| | Throat Diameter ( Inches ) | = | 3.8490 |

Dimensions By: FLUIDIC TECHNIQUES, LP

FLUIDIC TECHNIQUES, LP
Purchase Order Number: 60160, JOB: FAB-3206
6" - 300# AGA METER RUN
Serial Number: JOB: FAB-3206-1
Tag Number: B10255-341-01
January 22, 2018

TAP SET 1

Certified By:

# FLUIDIC TECHNIQUES, LP

Purchase Order Number: 60160, JOB: FAB-3206
6" - 300# AGA METER RUN
Serial Number: JOB: FAB-3206-1
Tag Number: B10255-341-01

CALIBRATION
DATE: January 22, 2018
PIPE DIAMETER = 6.0650
THROAT DIAMETER = 3.8490

TAP SET 2

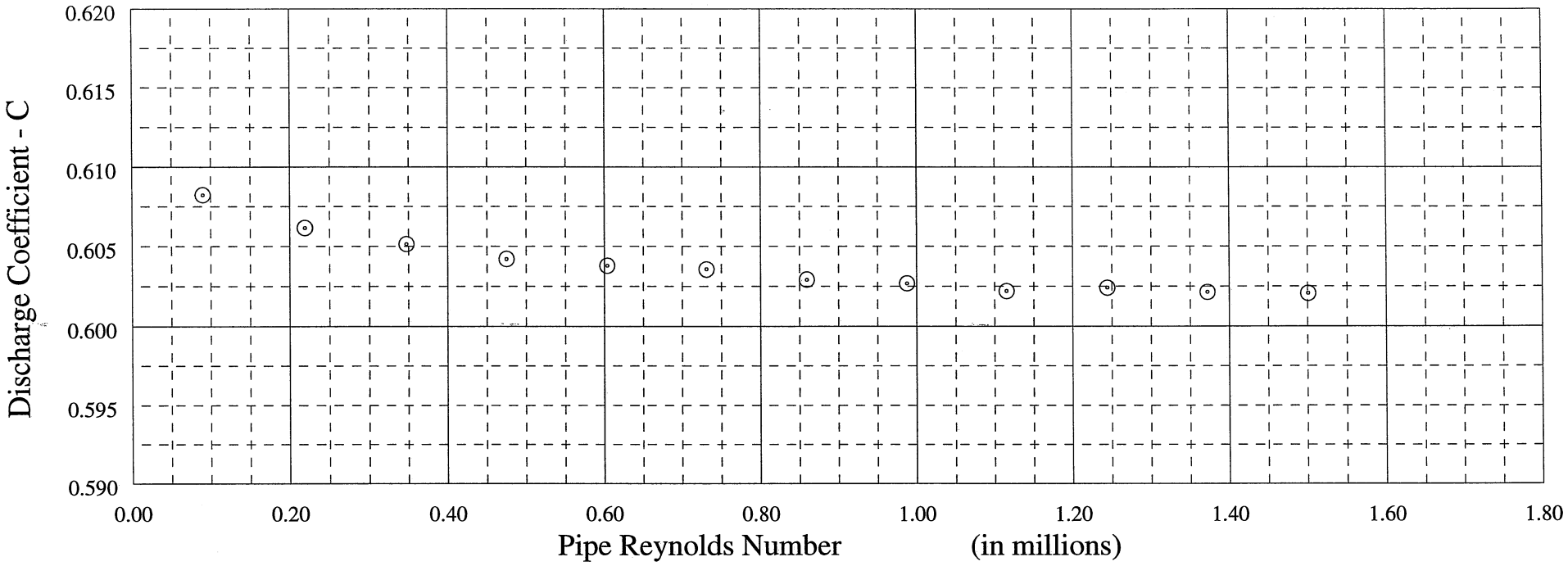
| Run # | Line Temp Deg F | Air Temp Deg F | Net Weight lb. | Run Duration secs. | Output [see note] | Flow GPM | H Line FT H20 | Pipe Rey. # x 10^6 | Coef |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 106 | 72 | 9528 | 37.102 | 4.953~ | 1863. | 94.773 | 1.5008 | 0.6021 |
| 2 | 106 | 71 | 9517 | 40.500 | 9.574~ | 1705. | 79.326 | 1.3722 | 0.6021 |
| 3 | 106 | 72 | 9469 | 44.418 | 8.229~ | 1547. | 65.233 | 1.2444 | 0.6024 |
| 4 | 106 | 73 | 9550 | 49.898 | 7.023~ | 1388. | 52.606 | 1.1154 | 0.6022 |
| 5 | 106 | 73 | 9508 | 56.054 | 5.940~ | 1230. | 41.256 | 0.9879 | 0.6027 |
| 6 | 106 | 74 | 9456 | 64.022 | 4.985~ | 1071. | 31.253 | 0.8594 | 0.6029 |
| 7 | 106 | 74 | 9448 | 75.159 | 4.159~ | 912.2 | 22.593 | 0.7312 | 0.6036 |
| 8 | 106 | 73 | 9436 | 90.902 | 7.885~ | 753.3 | 15.394 | 0.6039 | 0.6038 |
| 9 | 106 | 72 | 9434 | 115.521 | 5.638~ | 592.6 | 9.515 | 0.4749 | 0.6042 |
| 10 | 106 | 73 | 7182 | 120.252 | 3.940~ | 433.4 | 5.073 | 0.3474 | 0.6052 |
| 11 | 106 | 73 | 4524 | 120.165 | 7.997~ | 273.2 | 2.009 | 0.2190 | 0.6062 |
| 12 | 106 | 73 | 2789 | 180.165 | 3.006~ | 112.3 | 0.337 | 0.0900 | 0.6082 |

~ dp transmitter volts

The data reported on herein was obtained by measuring equipment the calibration of which is traceable to NIST , following the installation and test procedures referenced in this report, resulting in a flow measurement uncertainty of +/- 0.25% or less.

CALIBRATED BY: DAV

CERTIFIED BY:




$$q_a = C F_a K_M \sqrt{\Delta h}$$

| | | | |
|---|---|---|---|
| $q_a$ = | Actual Flow ($ft^3$/sec) | | |
| C = | Discharge Coefficient ( Dimensionless ) | | |
| $\Delta h$ = | Pressure Differential ( Feet of Water at Run Temperature ) | | |
| $K_M$ = | Meter Constant = $\frac{a\sqrt{2g}}{\sqrt{1 - ß^4}}$ | = | 0.7080 |
| $F_a$ = | Average Thermal Expansion Factor | = | 1.0007 |
| a = | Throat Area ($ft^2$) | = | 0.0808 |
| g = | Local Acceleration of Gravity (ft/$sec^2$) | = | 32.1625 |
| ß = | Ratio of Throat to Pipe Diameter ( Dimensionless ) | = | 0.6346 |
| | Pipe Diameter ( Inches ) | = | 6.0650 |
| | Throat Diameter ( Inches ) | = | 3.8490 |

Dimensions By: FLUIDIC TECHNIQUES, LP

FLUIDIC TECHNIQUES, LP
Purchase Order Number: 60160, JOB: FAB-3206
6" - 300# AGA METER RUN
Serial Number: JOB: FAB-3206-1
Tag Number: B10255-341-01
January 22, 2018

TAP SET 2

Certified By:

# FLUIDIC TECHNIQUES, LP

Purchase Order Number: 60160, JOB: FAB-3206
6" - 300# AGA METER RUN
Serial Number: JOB: FAB-3206-2
Tag Number: B10255-341-01

CALIBRATION
DATE: January 23, 2018
PIPE DIAMETER = 6.0650
THROAT DIAMETER = 3.8470

TAP SET 1

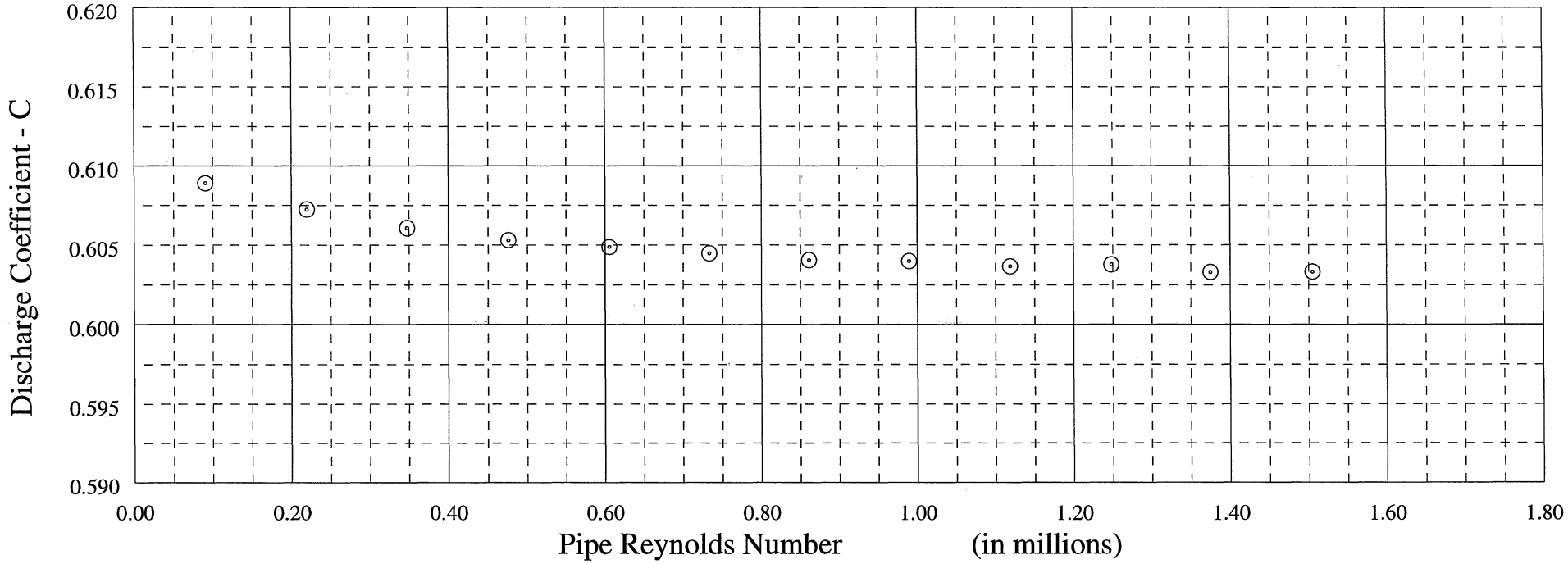
| Run # | Line Temp Deg F | Air Temp Deg F | Net Weight lb. | Run Duration secs. | Output [see note] | Flow GPM | H Line FT H20 | Pipe Rey. # x 10^6 | Coef |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 106 | 71 | 9560 | 37.180 | 4.962~ | 1866. | 94.855 | 1.5051 | 0.6033 |
| 2 | 106 | 72 | 9676 | 41.146 | 9.584~ | 1706. | 79.331 | 1.3752 | 0.6033 |
| 3 | 106 | 73 | 9471 | 44.344 | 8.247~ | 1550. | 65.338 | 1.2481 | 0.6038 |
| 4 | 106 | 73 | 9534 | 49.774 | 7.027~ | 1390. | 52.573 | 1.1185 | 0.6037 |
| 5 | 106 | 73 | 9514 | 56.082 | 5.939~ | 1231. | 41.190 | 0.9895 | 0.6040 |
| 6 | 106 | 73 | 9497 | 64.284 | 4.987~ | 1072. | 31.232 | 0.8612 | 0.6041 |
| 7 | 106 | 74 | 9483 | 75.319 | 4.166~ | 913.6 | 22.650 | 0.7334 | 0.6045 |
| 8 | 106 | 73 | 9424 | 90.643 | 7.893~ | 754.5 | 15.425 | 0.6055 | 0.6049 |
| 9 | 106 | 73 | 9410 | 115.079 | 5.640~ | 593.4 | 9.528 | 0.4761 | 0.6053 |
| 10 | 106 | 73 | 7194 | 120.436 | 3.938~ | 433.4 | 5.071 | 0.3478 | 0.6061 |
| 11 | 106 | 73 | 4562 | 121.077 | 8.001~ | 273.4 | 2.010 | 0.2192 | 0.6073 |
| 12 | 106 | 74 | 2793 | 180.325 | 3.011~ | 112.4 | 0.338 | 0.0901 | 0.6089 |

~ dp transmitter volts

The data reported on herein was obtained by measuring equipment the calibration of which is traceable to NIST , following the installation and test procedures referenced in this report, resulting in a flow measurement uncertainty of +/- 0.25% or less.

CALIBRATED BY: DAV

CERTIFIED BY:




$$q_a = C F_a K_M \sqrt{\Delta h}$$

| | | | |
|---|---|---|---|
| $q_a$ = | Actual Flow ($ft^3$/sec) | | |
| C = | Discharge Coefficient ( Dimensionless ) | | |
| $\Delta h$ = | Pressure Differential ( Feet of Water at Run Temperature ) | | |
| $K_M$ = | Meter Constant = $\frac{a\sqrt{2g}}{\sqrt{1 - ß^4}}$ | = | 0.7071 |
| $F_a$ = | Average Thermal Expansion Factor | = | 1.0007 |
| a = | Throat Area ($ft^2$) | = | 0.0807 |
| g = | Local Acceleration of Gravity (ft/$sec^2$) | = | 32.1625 |
| ß = | Ratio of Throat to Pipe Diameter ( Dimensionless ) | = | 0.6343 |
| | Pipe Diameter ( Inches ) | = | 6.0650 |
| | Throat Diameter ( Inches ) | = | 3.8470 |

Dimensions By: FLUIDIC TECHNIQUES, LP

FLUIDIC TECHNIQUES, LP
Purchase Order Number: 60160, JOB: FAB-3206
6" - 300# AGA METER RUN
Serial Number: JOB: FAB-3206-2
Tag Number: B10255-341-01
January 23, 2018

TAP SET 1

Certified By:

# FLUIDIC TECHNIQUES, LP

Purchase Order Number: 60160, JOB: FAB-3206
6" - 300# AGA METER RUN
Serial Number: JOB: FAB-3206-2
Tag Number: B10255-341-01

CALIBRATION
DATE: January 23, 2018
PIPE DIAMETER = 6.0650
THROAT DIAMETER = 3.8470

TAP SET 2

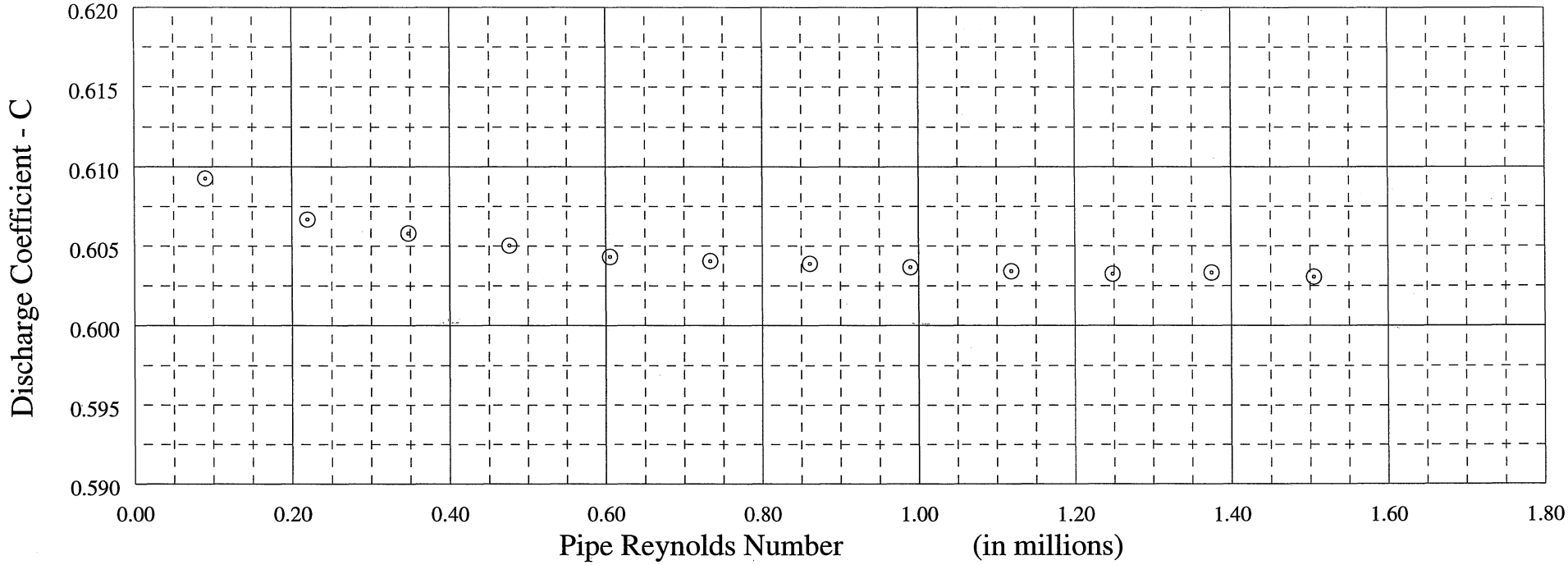
| Run # | Line Temp Deg F | Air Temp Deg F | Net Weight lb. | Run Duration secs. | Output [see note] | Flow GPM | H Line FT H20 | Pipe Rey. # x 10^6 | Coef |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 106 | 71 | 9560 | 37.180 | 4.958~ | 1866. | 94.936 | 1.5051 | 0.6031 |
| 2 | 106 | 72 | 9676 | 41.146 | 9.573~ | 1706. | 79.324 | 1.3752 | 0.6033 |
| 3 | 106 | 73 | 9471 | 44.344 | 8.249~ | 1550. | 65.452 | 1.2481 | 0.6033 |
| 4 | 106 | 73 | 9534 | 49.774 | 7.024~ | 1390. | 52.618 | 1.1185 | 0.6034 |
| 5 | 106 | 73 | 9514 | 56.082 | 5.938~ | 1231. | 41.234 | 0.9895 | 0.6037 |
| 6 | 106 | 73 | 9497 | 64.284 | 4.985~ | 1072. | 31.249 | 0.8612 | 0.6039 |
| 7 | 106 | 74 | 9483 | 75.319 | 4.167~ | 913.6 | 22.681 | 0.7334 | 0.6041 |
| 8 | 106 | 73 | 9424 | 90.643 | 7.907~ | 754.5 | 15.453 | 0.6055 | 0.6043 |
| 9 | 106 | 73 | 9410 | 115.079 | 5.646~ | 593.4 | 9.536 | 0.4761 | 0.6050 |
| 10 | 106 | 73 | 7194 | 120.436 | 3.941~ | 433.4 | 5.076 | 0.3478 | 0.6058 |
| 11 | 106 | 73 | 4562 | 121.077 | 8.012~ | 273.4 | 2.014 | 0.2192 | 0.6067 |
| 12 | 106 | 74 | 2793 | 180.325 | 3.007~ | 112.4 | 0.338 | 0.0901 | 0.6093 |

~ dp transmitter volts

The data reported on herein was obtained by measuring equipment the calibration of which is traceable to NIST , following the installation and test procedures referenced in this report, resulting in a flow measurement uncertainty of +/- 0.25% or less.

CALIBRATED BY: DAV

CERTIFIED BY:




$$q_a = C F_a K_M \sqrt{\triangle h}$$

| | | | |
|---|---|---|---|
| $q_a$ = | Actual Flow ($ft^3$/sec) | | |
| C = | Discharge Coefficient ( Dimensionless ) | | |
| $\triangle h$ = | Pressure Differential ( Feet of Water at Run Temperature ) | | |
| $K_M$ = | Meter Constant = $\frac{a\sqrt{2g}}{\sqrt{1 - ß^4}}$ | = | 0.7071 |
| $F_a$ = | Average Thermal Expansion Factor | = | 1.0007 |
| a = | Throat Area ($ft^2$) | = | 0.0807 |
| g = | Local Acceleration of Gravity ($ft/sec^2$) | = | 32.1625 |
| ß = | Ratio of Throat to Pipe Diameter ( Dimensionless ) | = | 0.6343 |
| | Pipe Diameter ( Inches ) | = | 6.0650 |
| | Throat Diameter ( Inches ) | = | 3.8470 |

Dimensions By: FLUIDIC TECHNIQUES, LP

FLUIDIC TECHNIQUES, LP
Purchase Order Number: 60160, JOB: FAB-3206
6" - 300# AGA METER RUN
Serial Number: JOB: FAB-3206-2
Tag Number: B10255-341-01
January 23, 2018

TAP SET 2

Certified By:

# FLUIDIC TECHNIQUES, LP

Purchase Order Number: 60160, JOB: FAB-3206
6" - 300# AGA METER RUN
Serial Number: JOB: FAB-3206-3
Tag Number: B10255-341-01

CALIBRATION
DATE: January 23, 2018
PIPE DIAMETER = 6.0650
THROAT DIAMETER = 3.8480

TAP SET 1

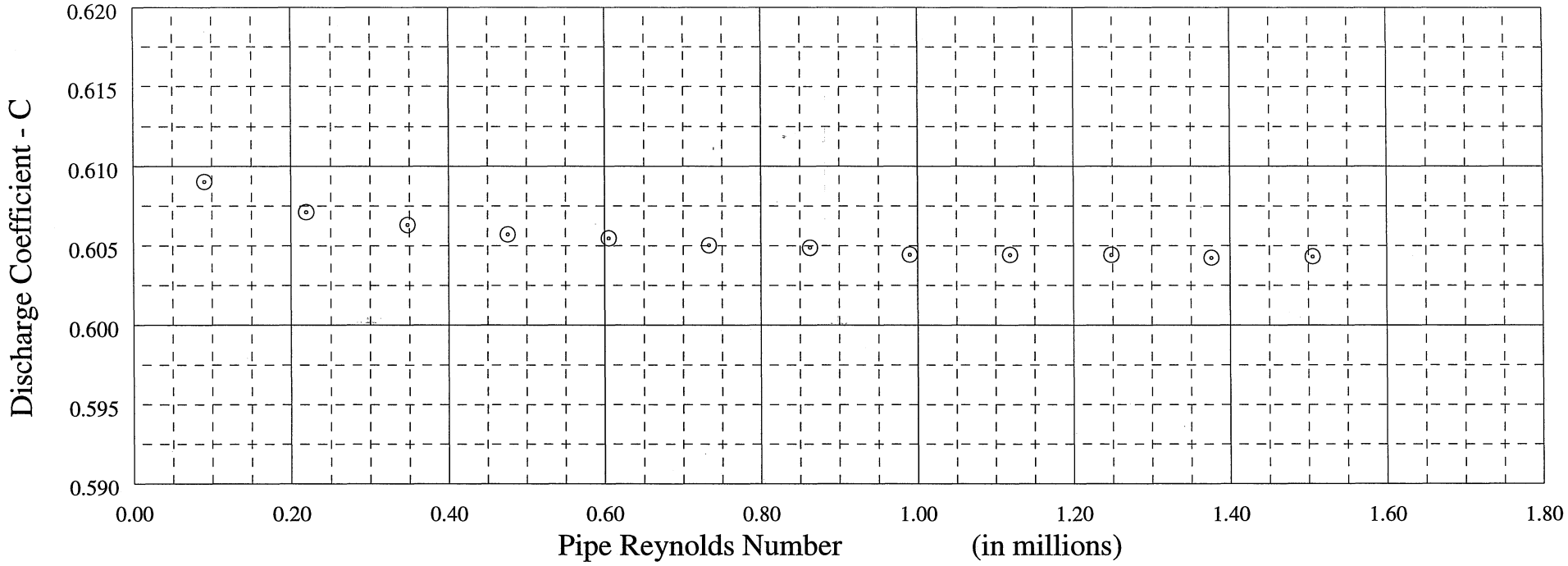
| Run # | Line Temp Deg F | Air Temp Deg F | Net Weight lb. | Run Duration secs. | Output [see note] | Flow GPM | H Line FT H20 | Pipe Rey. # x 10^6 | Coef |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 106 | 74 | 9511 | 36.955 | 4.954~ | 1867. | 94.592 | 1.5057 | 0.6043 |
| 2 | 106 | 74 | 9525 | 40.470 | 9.564~ | 1708. | 79.125 | 1.3763 | 0.6043 |
| 3 | 106 | 74 | 9497 | 44.446 | 8.231~ | 1550. | 65.172 | 1.2483 | 0.6044 |
| 4 | 106 | 74 | 9486 | 49.480 | 7.016~ | 1391. | 52.466 | 1.1189 | 0.6044 |
| 5 | 106 | 74 | 9531 | 56.139 | 5.934~ | 1232. | 41.138 | 0.9900 | 0.6045 |
| 6 | 106 | 71 | 9482 | 64.088 | 4.983~ | 1073. | 31.199 | 0.8628 | 0.6049 |
| 7 | 106 | 72 | 9500 | 75.479 | 4.158~ | 913.4 | 22.566 | 0.7331 | 0.6050 |
| 8 | 106 | 73 | 9434 | 90.762 | 7.871~ | 754.3 | 15.369 | 0.6055 | 0.6055 |
| 9 | 106 | 73 | 9424 | 115.264 | 5.630~ | 593.3 | 9.500 | 0.4760 | 0.6057 |
| 10 | 106 | 74 | 7184 | 120.247 | 3.935~ | 433.5 | 5.063 | 0.3476 | 0.6063 |
| 11 | 106 | 74 | 4537 | 120.528 | 7.983~ | 273.1 | 2.005 | 0.2190 | 0.6071 |
| 12 | 106 | 74 | 2798 | 180.274 | 3.013~ | 112.6 | 0.339 | 0.0903 | 0.6090 |

~ dp transmitter volts

The data reported on herein was obtained by measuring equipment the calibration of which is traceable to NIST , following the installation and test procedures referenced in this report, resulting in a flow measurement uncertainty of +/- 0.25% or less.

CALIBRATED BY: DAV

CERTIFIED BY:




$$q_a = C F_a K_M \sqrt{\Delta h}$$

| | | | |
|---|---|---|---|
| $q_a$ = | Actual Flow ($ft^3$/sec) | | |
| C = | Discharge Coefficient ( Dimensionless ) | | |
| $\Delta h$ = | Pressure Differential ( Feet of Water at Run Temperature ) | | |
| $K_M$ = | Meter Constant = $\frac{a\sqrt{2g}}{\sqrt{1 - ß^4}}$ | = | 0.7076 |
| $F_a$ = | Average Thermal Expansion Factor | = | 1.0007 |
| a = | Throat Area ($ft^2$) | = | 0.0808 |
| g = | Local Acceleration of Gravity ($ft/sec^2$) | = | 32.1625 |
| ß = | Ratio of Throat to Pipe Diameter ( Dimensionless ) | = | 0.6345 |
| | Pipe Diameter ( Inches ) | = | 6.0650 |
| | Throat Diameter ( Inches ) | = | 3.8480 |

Dimensions By: FLUIDIC TECHNIQUES, LP

FLUIDIC TECHNIQUES, LP
Purchase Order Number: 60160, JOB: FAB-3206
6" - 300# AGA METER RUN
Serial Number: JOB: FAB-3206-3
Tag Number: B10255-341-01
January 23, 2018

TAP SET 1

Certified By:

# FLUIDIC TECHNIQUES, LP

Purchase Order Number: 60160, JOB: FAB-3206
6" - 300# AGA METER RUN
Serial Number: JOB: FAB-3206-3
Tag Number: B10255-341-01

CALIBRATION
DATE: January 23, 2018
PIPE DIAMETER = 6.0650
THROAT DIAMETER = 3.8480

TAP SET 2

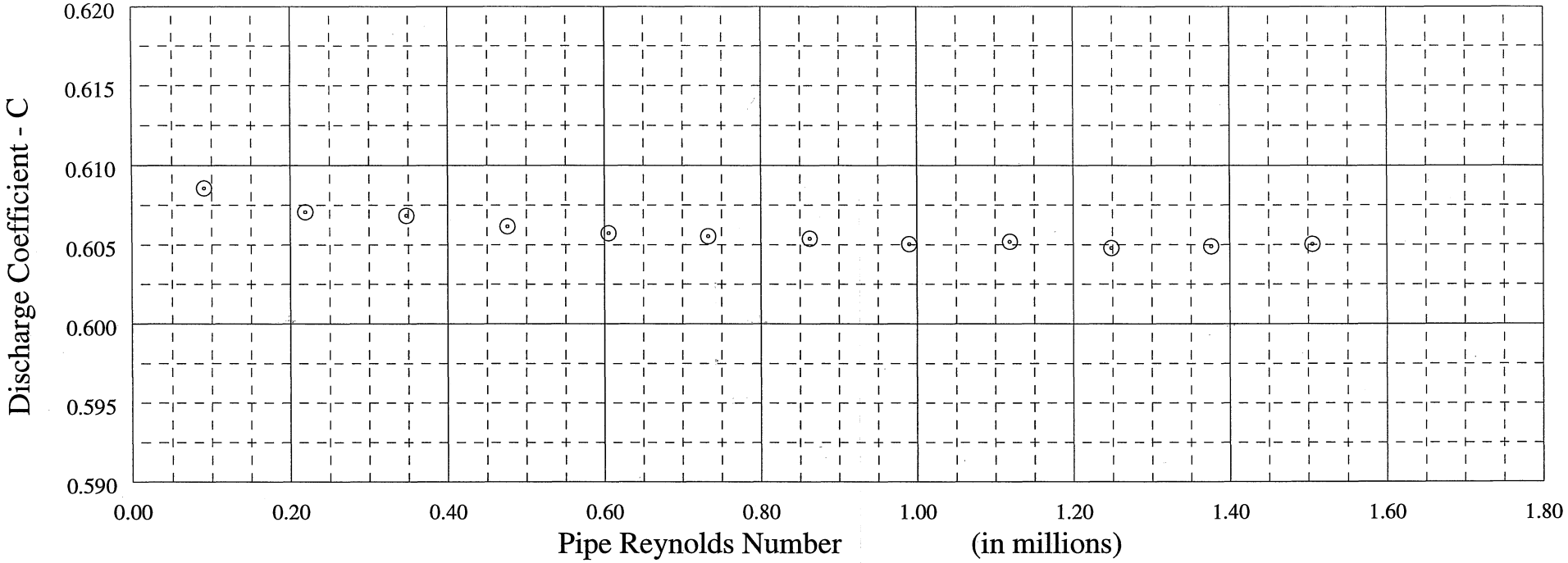
| Run # | Line Temp Deg F | Air Temp Deg F | Net Weight lb. | Run Duration secs. | Output [see note] | Flow GPM | H Line FT H20 | Pipe Rey. # x 10^6 | Coef |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 106 | 74 | 9511 | 36.955 | 4.941~ | 1867. | 94.371 | 1.5057 | 0.6050 |
| 2 | 106 | 74 | 9525 | 40.470 | 9.538~ | 1708. | 78.958 | 1.3763 | 0.6049 |
| 3 | 106 | 74 | 9497 | 44.446 | 8.215~ | 1550. | 65.096 | 1.2483 | 0.6048 |
| 4 | 106 | 74 | 9486 | 49.480 | 6.998~ | 1391. | 52.337 | 1.1189 | 0.6052 |
| 5 | 106 | 74 | 9531 | 56.139 | 5.921~ | 1232. | 41.060 | 0.9900 | 0.6050 |
| 6 | 106 | 71 | 9482 | 64.088 | 4.975~ | 1073. | 31.148 | 0.8628 | 0.6054 |
| 7 | 106 | 72 | 9500 | 75.479 | 4.153~ | 913.4 | 22.529 | 0.7331 | 0.6055 |
| 8 | 106 | 73 | 9434 | 90.762 | 7.870~ | 754.3 | 15.356 | 0.6055 | 0.6057 |
| 9 | 106 | 73 | 9424 | 115.264 | 5.627~ | 593.3 | 9.486 | 0.4760 | 0.6062 |
| 10 | 106 | 74 | 7184 | 120.247 | 3.933~ | 433.5 | 5.054 | 0.3476 | 0.6069 |
| 11 | 106 | 74 | 4537 | 120.528 | 7.984~ | 273.1 | 2.005 | 0.2190 | 0.6071 |
| 12 | 106 | 74 | 2798 | 180.274 | 3.012~ | 112.6 | 0.339 | 0.0903 | 0.6086 |

~ dp transmitter volts

The data reported on herein was obtained by measuring equipment the calibration of which is traceable to NIST , following the installation and test procedures referenced in this report, resulting in a flow measurement uncertainty of +/- 0.25% or less.

CALIBRATED BY: DAV

CERTIFIED BY:




$$q_a = C F_a K_M \sqrt{\Delta h}$$

| | | | |
|---|---|---|---|
| $q_a$ = | Actual Flow ($ft^3$/sec) | | |
| C = | Discharge Coefficient ( Dimensionless ) | | |
| $\Delta h$ = | Pressure Differential ( Feet of Water at Run Temperature ) | | |
| $K_M$ = | Meter Constant = $\frac{a\sqrt{2g}}{\sqrt{1 - ß^4}}$ | = | 0.7076 |
| $F_a$ = | Average Thermal Expansion Factor | = | 1.0007 |
| a = | Throat Area ($ft^2$) | = | 0.0808 |
| g = | Local Acceleration of Gravity (ft/$sec^2$) | = | 32.1625 |
| ß = | Ratio of Throat to Pipe Diameter ( Dimensionless ) | = | 0.6345 |
| | Pipe Diameter ( Inches ) | = | 6.0650 |
| | Throat Diameter ( Inches ) | = | 3.8480 |

Dimensions By: FLUIDIC TECHNIQUES, LP

FLUIDIC TECHNIQUES, LP
Purchase Order Number: 60160, JOB: FAB-3206
6" - 300# AGA METER RUN
Serial Number: JOB: FAB-3206-3
Tag Number: B10255-341-01
January 23, 2018

TAP SET 2

Certified By:

## THERMAL EXPANSION FACTOR

The dimensions of a differential producing flow meter are affected by the operating temperature, requiring a Thermal Expansion Factor ($F_a$) to be included in the calculations. The calculation requires the temperature at which the meter dimensions were measured be known. If this information is not available, an ambient temperature of 68˚ F is assumed. The Thermal Expansion Factor is calculated according to the American Society of Mechanical Engineers Standard ASME MFC-3M-1989, Equation 17 (pg 11).

$$F_a = 1 + \frac{2}{1-\beta^4}\left(\alpha_{PE} - \beta^4{}_{meas}\ \propto_p\right)(t - t_{meas})$$

where $\beta$ = ratio of throat diameter to pipe diameter, dimensionless

$\alpha_{PE}$ = thermal expansion factor of primary element, (in./in./°F)

$\propto_p$ = thermal expansion factor of pipe, (in./in./°F)

$t$ = temperature of flowing fluid, ˚F

$t_{meas}$ = temperature of measurements, ˚F

Thermal expansion factors, α, excerpted from MFC-3M-1989, are listed in the Table below for six typically used materials at three temperatures. Linear interpolation is used to determine the coefficients at flowing temperature.

Mean Coefficient of Thermal Expansion = $\frac{A}{10^6}$ (in./in./°F)

| Material | Coef. | -50 ˚F | 70 ˚F | 200 ˚F |
|---|---|---|---|---|
| Bronze 4-10 | A | 9.15 | 9.57 | 10.03 |
| 300 Series Stainless Steel | A | 8.90 | 9.11 | 9.34 |
| Monel | A | 7.15 | 7.48 | 7.84 |
| .2 to 1.1% C Steel | A | 5.80 | 6.07 | 6.38 |
| 5% Chrome Moly | A | 5.45 | 5.73 | 6.04 |
| 410 to 430 Stainless Steel | A | 5.00 | 5.24 | 5.50 |

## WATER DENSITY*

| Temperature Fahrenheit | Density $lb_m / ft^3$ | Temperature Fahrenheit | Density $lb_m / ft^3$ | Temperature Fahrenheit | Density $lb_m / ft^3$ |
|---|---|---|---|---|---|
| 32 | 62.4179 | 62 | 62.3549 | 92 | 62.0903 |
| 33 | 62.4201 | 63 | 62.3489 | 93 | 62.0788 |
| 34 | 62.4220 | 64 | 62.3427 | 94 | 62.0671 |
| 35 | 62.4235 | 65 | 62.3363 | 95 | 62.0552 |
| 36 | 62.4246 | 66 | 62.3296 | 96 | 62.0432 |
| 37 | 62.4255 | 67 | 62.3228 | 97 | 62.0311 |
| 38 | 62.4260 | 68 | 62.3157 | 98 | 62.0188 |
| 39 | 62.4262 | 69 | 62.3084 | 99 | 62.0063 |
| 40 | 62.4261 | 70 | 62.3010 | 100 | 61.9937 |
| 41 | 62.4257 | 71 | 62.2933 | 101 | 61.9810 |
| 42 | 62.4250 | 72 | 62.2855 | 102 | 61.9681 |
| 43 | 62.4240 | 73 | 62.2774 | 103 | 61.9551 |
| 44 | 62.4227 | 74 | 62.2692 | 104 | 61.9419 |
| 45 | 62.4211 | 75 | 62.2608 | 105 | 61.9286 |
| 46 | 62.4193 | 76 | 62.2522 | 106 | 61.9151 |
| 47 | 62.4171 | 77 | 62.2434 | 107 | 61.9015 |
| 48 | 62.4147 | 78 | 62.2344 | 108 | 61.8878 |
| 49 | 62.4121 | 79 | 62.2252 | 109 | 61.8739 |
| 50 | 62.4092 | 80 | 62.2159 | 110 | 61.8599 |
| 51 | 62.4060 | 81 | 62.2063 | 111 | 61.8458 |
| 52 | 62.4025 | 82 | 62.1966 | 112 | 61.8315 |
| 53 | 62.3988 | 83 | 62.1868 | 113 | 61.8172 |
| 54 | 62.3949 | 84 | 62.1767 | 114 | 61.8027 |
| 55 | 62.3907 | 85 | 62.1665 | 115 | 61.7880 |
| 56 | 62.3863 | 86 | 62.1561 | 116 | 61.7733 |
| 57 | 62.3816 | 87 | 62.1456 | 117 | 61.7584 |
| 58 | 62.3768 | 88 | 62.1348 | 118 | 61.7434 |
| 59 | 62.3716 | 89 | 62.1239 | 119 | 61.7284 |
| 60 | 62.3663 | 90 | 62.1129 | 120 | 61.7132 |
| 61 | 62.3607 | 91 | 62.1017 | 121 | 61.6978 |

* Distilled water values used in all calculation

EMERSON

**24 February, 2018**

**Emerson Automation Solutions**
8200 Market Blvd
Chanhassen, MN U.S. 55317-9786

**Calibration Data Sheet Consistent with ISO 10474 3.1 or EN 10204 3.1**

## Customer Information

**Name:** FORNEY CORP
**PO:** 790542

## Manufacturer Information

**Sales Order:** 5116125
**Line:** 1

## Device Information

**Device Type:** Pressure Transmitter
**Customer Ref/ID:** N/A
**Serial No:** 0011949

**Model No:** 3051SMV5M13G3R2A11A1AC12C2E5M5Q4

**Module Serial No:** 18019960
**Output:** Linear
**Device ID:** 33194

## Calibration Information

**Factory:** Chanhassen, MN, USA
**Station Name:** CHAN_DPFLOW_CALIBRATION_01
**Operator ID:** 59869
**Calibration Date:** 02/23/2018 08:22:01 AM

Internal Ref #: 30073090

## Permanent Tag Information

DUCT BURNER
FLOW TRANSMITTER

## Wire-On Tag Information

### Attached Models

0305RC92B21B4

### Equipment Used

| EqNumber: | EqName: | CalDueDate: |
|---|---|---|
| E3-58610 | Load Box | 7/20/2018 2:17:00PM |
| E3-60655 | Multimeter | 9/20/2018 3:07:00PM |
| E3-60786 | Precision Resistance Decade | 7/9/2018 10:38:00AM |
| P3-54917 | Pressure Controller | 4/12/2018 1:13:00PM |
| P3-55113 | Pressure Controller | 5/2/2018 10:27:00AM |

**Calibration Data**

**DP**

Reference of Calibration: Differential

Range: 0.000 TO 150.000 InH2O@68degF

Damping: 0.40 seconds

| % of Range | Applied Pressure | Requested Applied Pressure | Digital Output (InH2O@68degF) | % Span Error | Pass/Fail |
|---|---|---|---|---|---|
| 99.994 | 5.409 PSI | 149.99050 InH2O@68degF | 149.98700 | -0.00233 | PASS |
| 79.991 | 4.327 PSI | 119.98680 InH2O@68degF | 119.98820 | 0.00093 | PASS |
| 59.989 | 3.245 PSI | 89.98320 InH2O@68degF | 89.97474 | -0.00564 | PASS |
| 39.986 | 2.163 PSI | 59.97956 InH2O@68degF | 59.97218 | -0.00492 | PASS |
| 19.984 | 1.081 PSI | 29.97591 InH2O@68degF | 29.97556 | -0.00023 | PASS |
| 0.000 | 0.000 PSI | 0.00000 InH2O@68degF | -0.00493 | -0.00329 | PASS |

**SP**

Reference of Calibration: Gauge

Range: 0.000 TO 100.000 PSI

Damping: 0.40 seconds

| % of Range | Applied Pressure | Requested Applied Pressure | Digital Output (PSI) | % Span Error | Pass/Fail |
|---|---|---|---|---|---|
| 100.000 | 100.000 PSI | 100.00000 PSI | 100.00050 | 0.00050 | PASS |
| 80.000 | 80.000 PSI | 80.00000 PSI | 80.00269 | 0.00269 | PASS |
| 60.000 | 60.000 PSI | 60.00000 PSI | 60.00123 | 0.00123 | PASS |
| 40.000 | 40.000 PSI | 40.00000 PSI | 40.00577 | 0.00577 | PASS |
| 20.000 | 20.000 PSI | 20.00000 PSI | 20.00554 | 0.00554 | PASS |
| 0.000 | 0.000 PSI | 0.00000 PSI | 0.00476 | 0.00476 | PASS |

**PT**

Range: 0.000 TO 150.000 DEG F

Damping: 0.40 seconds

| % of Range | Applied Resistence | Applied Resistence | Digital Output (DEG F) | Error (DEG F) | Pass/Fail |
|---|---|---|---|---|---|
| 100.000 | 125.373 Ohms | 150.00000 DEG F | 149.98980 | -0.01020 | PASS |
| 80.000 | 118.969 Ohms | 120.00000 DEG F | 119.97740 | -0.02260 | PASS |
| 60.000 | 112.533 Ohms | 90.00000 DEG F | 90.00949 | 0.00949 | PASS |
| 40.000 | 106.066 Ohms | 60.00000 DEG F | 59.98681 | -0.01319 | PASS |
| 20.000 | 99.566 Ohms | 30.00000 DEG F | 29.95533 | -0.04467 | PASS |
| 0.000 | 93.033 Ohms | 0.00000 DEG F | -0.03553 | -0.03553 | PASS |

This is to certify that the listed product meets the applicable Rosemount Specifications. Measuring and test equipment used in the manufacture and inspection of the listed product are traceable to the National Institute of Standards and Technology. The calibration system was designed to meet the intent of ANSI Z540-1-1994.



Heather Matthiesen
Quality Manager

EMERSON

**24 February, 2018**

**Emerson Automation Solutions**
8200 Market Blvd
Chanhassen, MN U.S. 55317-9786

**Calibration Data Sheet Consistent with ISO 10474 3.1 or EN 10204 3.1**

## Customer Information

**Name:** FORNEY CORP
**PO:** 790542

## Manufacturer Information

**Sales Order:** 5116125
**Line:** 3

## Device Information

**Device Type:** Pressure Transmitter
**Customer Ref/ID:** N/A
**Serial No:** 0011952

**Model No:** 3051SMV5M13G3R2A11A1AC12C2E5M5Q4

**Module Serial No:** 18018756
**Output:** Linear
**Device ID:** 33342

## Calibration Information

**Factory:** Chanhassen, MN, USA
**Station Name:** CHAN_DPFLOW_CALIBRATION_02
**Operator ID:** 71573
**Calibration Date:** 02/24/2018 04:39:28 AM

Internal Ref #: 30073091

## Permanent Tag Information

DUCT BURNER
FLOW TRANSMITTER

## Wire-On Tag Information

### Attached Models

0305RC92B21B4

### Equipment Used

| EqNumber: | EqName: | CalDueDate: |
|---|---|---|
| E3-58786 | Load Box | 6/20/2018 10:40:00AM |
| E3-59313 | Multimeter | 3/20/2018 2:03:00PM |
| E3-60787 | Precision Resistance Decade | 6/9/2018 3:57:00PM |
| P3-55112 | Pressure Controller | 5/2/2018 8:18:00AM |
| P3-55114 | Pressure Controller | 5/2/2018 10:04:00AM |
| P3-55115 | Pressure Controller | 5/2/2018 11:00:00AM |

**Calibration Data**

**DP**

Reference of Calibration: Differential

Range: 0.000 TO 150.000 InH2O@68degF

Damping: 0.40 seconds

| % of Range | Applied Pressure | Requested Applied Pressure | Digital Output (InH2O@68degF) | % Span Error | Pass/Fail |
|---|---|---|---|---|---|
| 99.994 | 5.409 PSI | 149.99050 InH2O@68degF | 149.98920 | -0.00087 | PASS |
| 79.991 | 4.327 PSI | 119.98680 InH2O@68degF | 119.97230 | -0.00967 | PASS |
| 59.989 | 3.245 PSI | 89.98320 InH2O@68degF | 89.97919 | -0.00267 | PASS |
| 39.986 | 2.163 PSI | 59.97956 InH2O@68degF | 59.97625 | -0.00221 | PASS |
| 19.984 | 1.081 PSI | 29.97591 InH2O@68degF | 29.96889 | -0.00468 | PASS |
| 0.000 | 0.000 PSI | 0.00000 InH2O@68degF | 0.00153 | 0.00102 | PASS |

**SP**

Reference of Calibration: Gauge

Range: 0.000 TO 100.000 PSI

Damping: 0.40 seconds

| % of Range | Applied Pressure | Requested Applied Pressure | Digital Output (PSI) | % Span Error | Pass/Fail |
|---|---|---|---|---|---|
| 100.000 | 100.000 PSI | 100.00000 PSI | 99.99738 | -0.00262 | PASS |
| 80.000 | 80.000 PSI | 80.00000 PSI | 79.99007 | -0.00993 | PASS |
| 60.000 | 60.000 PSI | 60.00000 PSI | 59.98510 | -0.01490 | PASS |
| 40.000 | 40.000 PSI | 40.00000 PSI | 39.98647 | -0.01353 | PASS |
| 20.000 | 20.000 PSI | 20.00000 PSI | 19.99307 | -0.00693 | PASS |
| 0.000 | 0.000 PSI | 0.00000 PSI | -0.00645 | -0.00645 | PASS |

**PT**

Range: 0.000 TO 150.000 DEG F

Damping: 0.40 seconds

| % of Range | Applied Resistence | Applied Resistence | Digital Output (DEG F) | Error (DEG F) | Pass/Fail |
|---|---|---|---|---|---|
| 100.000 | 125.373 Ohms | 150.00000 DEG F | 150.00770 | 0.00770 | PASS |
| 80.000 | 118.969 Ohms | 120.00000 DEG F | 119.97980 | -0.02020 | PASS |
| 60.000 | 112.533 Ohms | 90.00000 DEG F | 89.99532 | -0.00468 | PASS |
| 40.000 | 106.066 Ohms | 60.00000 DEG F | 59.99119 | -0.00881 | PASS |
| 20.000 | 99.566 Ohms | 30.00000 DEG F | 30.02257 | 0.02257 | PASS |
| 0.000 | 93.033 Ohms | 0.00000 DEG F | -0.00505 | -0.00505 | PASS |

This is to certify that the listed product meets the applicable Rosemount Specifications. Measuring and test equipment used in the manufacture and inspection of the listed product are traceable to the National Institute of Standards and Technology. The calibration system was designed to meet the intent of ANSI Z540-1-1994.



Heather Matthiesen
Quality Manager

**24 February, 2018**

**Emerson Automation Solutions**
8200 Market Blvd
Chanhassen, MN U.S. 55317-9786

**Calibration Data Sheet Consistent with ISO 10474 3.1 or EN 10204 3.1**

## Customer Information

**Name:** FORNEY CORP
**PO:** 790542

## Manufacturer Information

**Sales Order:** 5116125
**Line:** 3

## Device Information

**Device Type:** Pressure Transmitter
**Customer Ref/ID:** N/A
**Serial No:** 0011953

**Model No:** 3051SMV5M13G3R2A11A1AC12C2E5M5Q4

**Module Serial No:** 14966796
**Output:** Linear
**Device ID:** 33193

## Calibration Information

**Factory:** Chanhassen, MN, USA
**Station Name:** CHAN_DPFLOW_CALIBRATION_01
**Operator ID:** 45565
**Calibration Date:** 02/23/2018 08:47:14 AM

Internal Ref #: 30073092

## Permanent Tag Information

DUCT BURNER
FLOW TRANSMITTER

## Wire-On Tag Information

### Attached Models

0305RC92B21B4

### Equipment Used

| EqNumber: | EqName: | CalDueDate: |
|---|---|---|
| E3-58610 | Load Box | 7/20/2018 2:17:00PM |
| E3-60655 | Multimeter | 9/20/2018 3:07:00PM |
| E3-60786 | Precision Resistance Decade | 7/9/2018 10:38:00AM |
| P3-54917 | Pressure Controller | 4/12/2018 1:13:00PM |
| P3-55113 | Pressure Controller | 5/2/2018 10:27:00AM |

**Calibration Data**

**DP**

Reference of Calibration: Differential

Range: 0.000 TO 150.000 InH2O@68degF

Damping: 0.40 seconds

| % of Range | Applied Pressure | Requested Applied Pressure | Digital Output (InH2O@68degF) | % Span Error | Pass/Fail |
|---|---|---|---|---|---|
| 99.994 | 5.409 PSI | 149.99050 InH2O@68degF | 149.99210 | 0.00107 | PASS |
| 79.991 | 4.327 PSI | 119.98680 InH2O@68degF | 119.98590 | -0.00060 | PASS |
| 59.989 | 3.245 PSI | 89.98320 InH2O@68degF | 89.96931 | -0.00926 | PASS |
| 39.986 | 2.163 PSI | 59.97956 InH2O@68degF | 59.96970 | -0.00657 | PASS |
| 19.984 | 1.081 PSI | 29.97591 InH2O@68degF | 29.97540 | -0.00034 | PASS |
| 0.000 | 0.000 PSI | 0.00000 InH2O@68degF | -0.00136 | -0.00091 | PASS |

**SP**

Reference of Calibration: Gauge

Range: 0.000 TO 100.000 PSI

Damping: 0.40 seconds

| % of Range | Applied Pressure | Requested Applied Pressure | Digital Output (PSI) | % Span Error | Pass/Fail |
|---|---|---|---|---|---|
| 100.000 | 100.000 PSI | 100.00000 PSI | 99.99935 | -0.00065 | PASS |
| 80.000 | 80.000 PSI | 80.00000 PSI | 79.99359 | -0.00641 | PASS |
| 60.000 | 60.000 PSI | 60.00000 PSI | 59.99270 | -0.00730 | PASS |
| 40.000 | 40.000 PSI | 40.00000 PSI | 39.99899 | -0.00101 | PASS |
| 20.000 | 20.000 PSI | 20.00000 PSI | 19.99092 | -0.00908 | PASS |
| 0.000 | 0.000 PSI | 0.00000 PSI | -0.00486 | -0.00486 | PASS |

**PT**

Range: 0.000 TO 150.000 DEG F

Damping: 0.40 seconds

| % of Range | Applied Resistence | Applied Resistence | Digital Output (DEG F) | Error (DEG F) | Pass/Fail |
|---|---|---|---|---|---|
| 100.000 | 125.373 Ohms | 150.00000 DEG F | 149.97640 | -0.02360 | PASS |
| 80.000 | 118.969 Ohms | 120.00000 DEG F | 119.98160 | -0.01840 | PASS |
| 60.000 | 112.533 Ohms | 90.00000 DEG F | 89.99405 | -0.00595 | PASS |
| 40.000 | 106.066 Ohms | 60.00000 DEG F | 60.01852 | 0.01852 | PASS |
| 20.000 | 99.566 Ohms | 30.00000 DEG F | 30.03536 | 0.03536 | PASS |
| 0.000 | 93.033 Ohms | 0.00000 DEG F | 0.02816 | 0.02816 | PASS |

This is to certify that the listed product meets the applicable Rosemount Specifications. Measuring and test equipment used in the manufacture and inspection of the listed product are traceable to the National Institute of Standards and Technology. The calibration system was designed to meet the intent of ANSI Z540-1-1994.



Heather Matthiesen
Quality Manager

# ATTACHMENT 3

# FUEL ANALYSIS DOCUMENT

9.3 Delivery Point Conforming Gas Quality Maximums. The gas to be made available to or on behalf of Shipper at the Delivery Point(s) on Transporter's system, as measured at the applicable monitoring point, shall not exceed any of the following maximum average daily requirements unless Transporter and Delivery Point Operator that would be receiving such non-conforming gas otherwise agree:

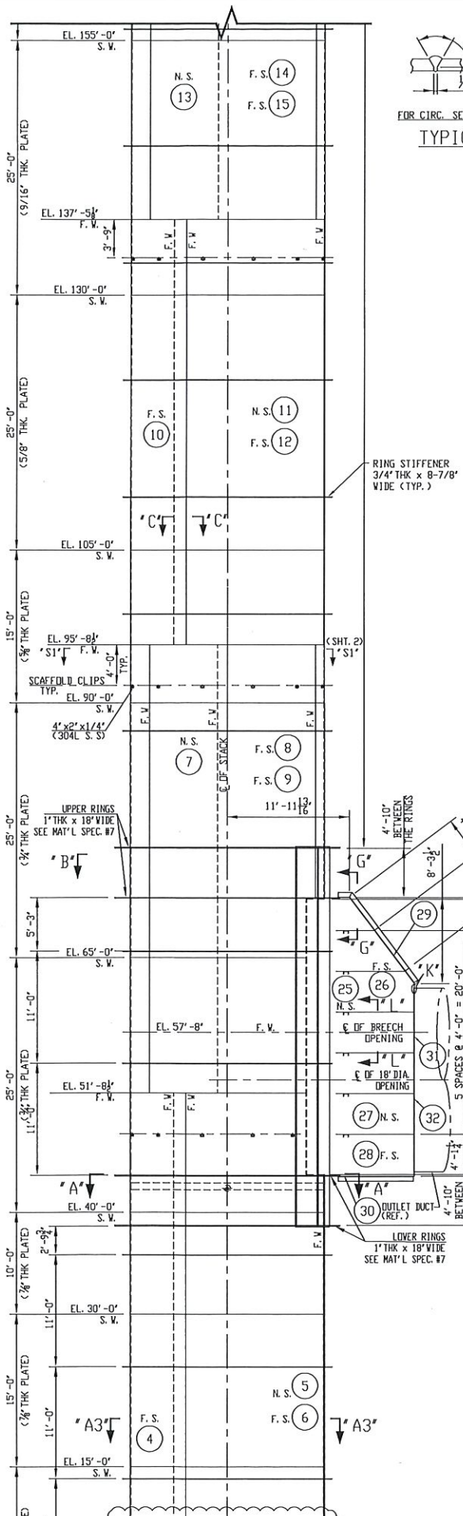
a) Heating Value - one thousand one hundred ten (1,110) Btu's per cubic foot; and
b) Wobbe Index - one thousand three hundred seventy three (1,373) Btu's per cubic foot through 12/31/2011; one thousand four hundred (1,400) Btu's per cubic foot on and after 1/1/2012; and
c) Cricondentherm Hydrocarbon Dew Point - fifteen (15) degrees Fahrenheit; and
d) Non-methane Hydrocarbons (C2+) - eight and one-quarter percent (8.25%) by volume through 12/31/2011; twelve percent (12%) by volume on and after 1/1/2012: and
e) Heavy Hydrocarbons (C4+) - one and one half percent (1.5%) by volume; and
f) Temperature - one hundred twenty (120) degrees Fahrenheit; and
g) Sulfur - one and one quarter (1.25) grains per one hundred cubic feet; and
h) Hydrogen Sulfide - one quarter (0.25) grain per one hundred cubic feet; and
i) Oxygen - two-tenths of one percent (0.2%) by volume; and
j) Carbon Dioxide - two percent (2.0%) by volume; and
k) Nitrogen and Oxygen - two and one-half percent (2.5%) by volume of a combined total of nitrogen and oxygen components through 12/31/2011; two and three-quarters percent (2.75%) by volume of a combined total of nitrogen and oxygen components on and after 1/1/2012; and
l) Carbon Dioxide and Nitrogen - Not more than four percent (4%) by volume of a combined total of carbon dioxide and nitrogen components, and
m) Entrained Water - four (4) pounds per million cubic feet, at a pressure base of fourteen and seventy-three hundredths (14.73) pounds per square inch and a temperature of sixty (60) degrees Fahrenheit as determined by dew-point apparatus approved by the National Institute of Standards and Technology or such other apparatus as may be mutually agreed upon; and
n) Polychlorinated Biphenyl (PCB) - one-tenth (0.1) part PCB per billion parts natural gas.

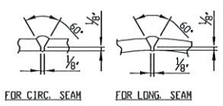
The limitations set forth above in this Section 9.3 shall each apply independently.

# ATTACHMENT 4

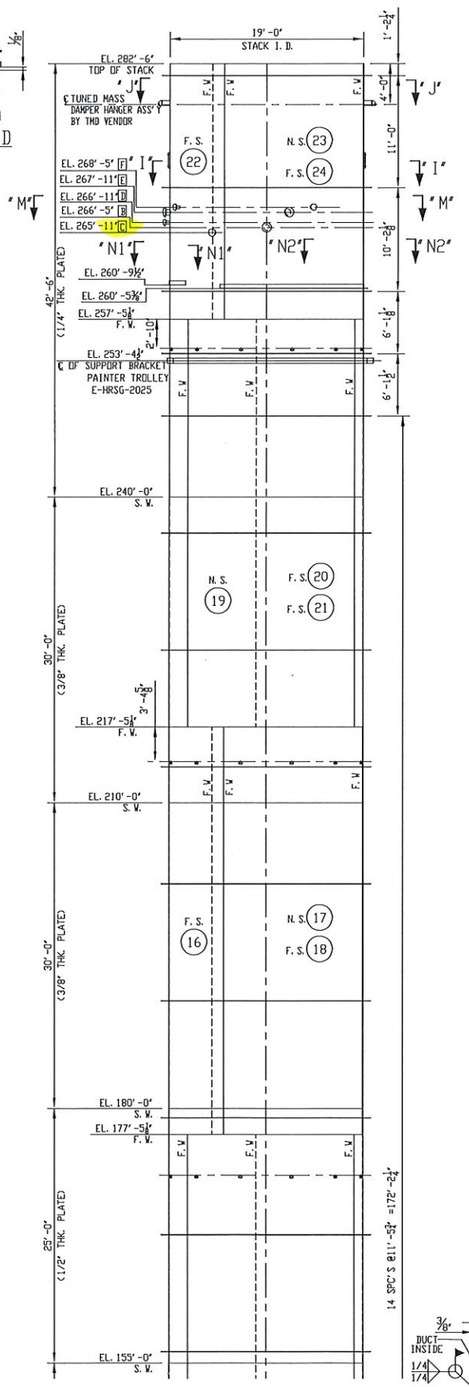
# STACK DRAWINGS

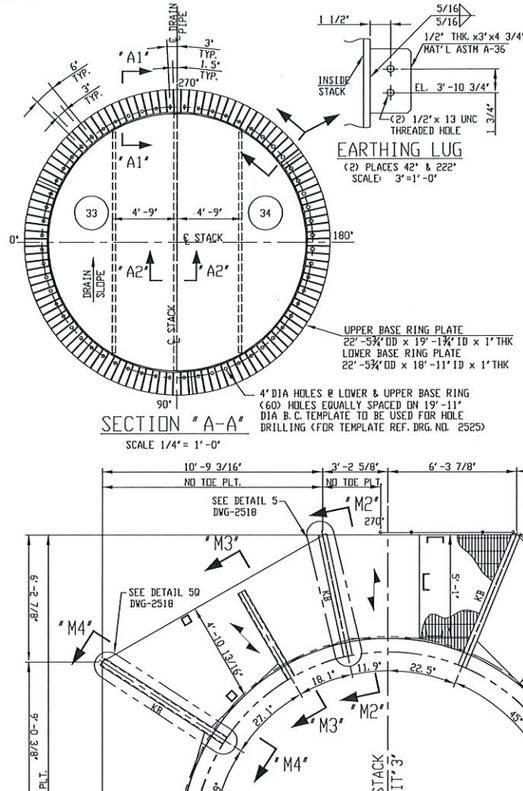
IHG-000201-DOJO-2521




TYPICAL SHOP WELD
SCALE 6"=1'-0"

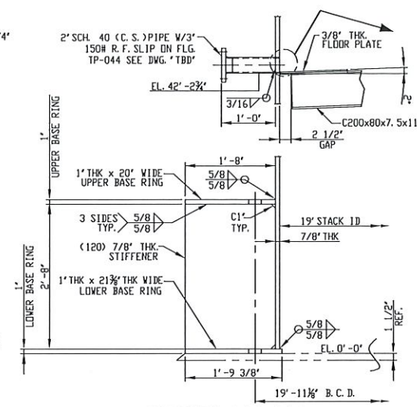



SECTION "A-A"
SCALE 1/4" = 1'-0"

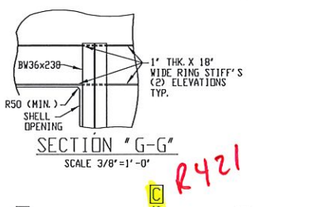



EARTHING LUG
(2) PLACES 42° & 222°
SCALE: 3"=1'-0"

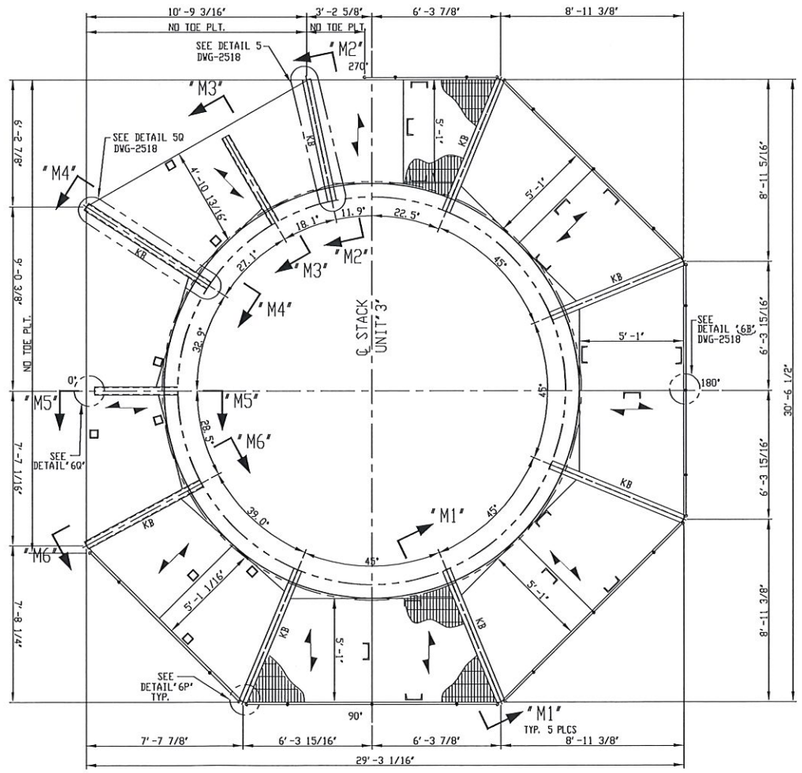



SECTION "A1-A1"
SCALE 1"=1'-0"

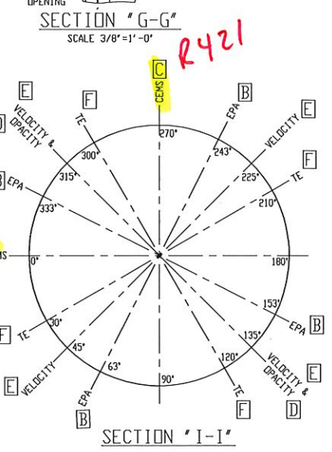
SECTION "A2-A2"
SCALE: 3"=1'-0"




SECTION "G-G"
SCALE 3/8"=1'-0"

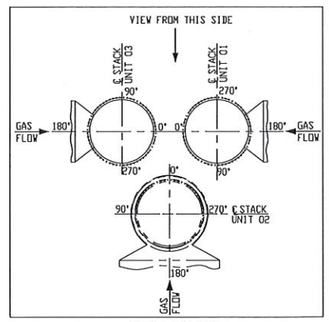



SECTION "M-M"
T.O.S. EL. 261'-3½"
SCALE: 3/8"=1'-0"



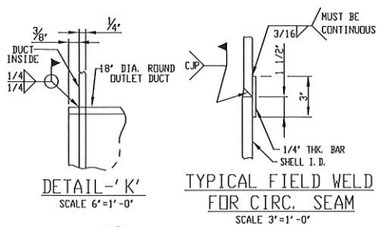

SECTION "I-I"

TEST PORT ORIENTATIONS
(ALL PORT DETAILS REF. DWG. 2516 UNIT2)
SCALE 1/4" = 1'-0"




KEY PLAN
(SCALE: 1/16"=1'-0")




DETAIL-'K'
SCALE 6"=1'-0"




TYPICAL FIELD WELD FOR CIRC. SEAM
SCALE 3"=1'-0"




## NOTES:

1. FOR GENERAL NOTES, MATERIAL SPEC'S, ERECTOR NOTES AND REFERENCE DRAWINGS SEE DRAWING IHG-000201-DOJO-2515.

| | | | | |
|---|---|---|---|---|
| D | PERSONNEL PROTECTION REMOVED THUS REVISED AS CLOUDED MARK. | | | |
| | SKD | AP | SD | 20JAN18 |
| C | SCALLOPED CLIPS ADDED & TMD UPDATED AS CLOUD MARKED. | | | |
| | SKD | AP | SD | 07NOV17 |
| B | REVISED AS CLOUD MARKED | | | |
| | SKD | JP | SD | 27OCT17 |
| A | INITIAL ISSUE | | | |
| | SKD | CJ | SD | 18JUN17 |
| | DRAWN BY | CHECKED BY | APPROVED BY | DATE |

CONTRACT NO.: IHG-000201 UNIT NO.: 03

HRSG STACK 03 ARRANGEMENT - RIGHT SIDE ELEVATION
CRICKET VALLEY ENERGY CENTER
BECHTEL INFRASTRUCTURE AND POWER CORPORATION
PURCHASE ORDER NO: 26068-230-POA-MS00-00001

IHG-000201-DOJO-2520

GAS FLOW

EL. 155'-0" S.V.
EL. 137'-5½" F.V.
EL. 130'-0" S.V.
EL. 105'-0" S.V.
EL. 95'-8½" F.V. (DWG. 2521)
EL. 90'-0" S.V.
EL. 65'-0" S.V.
EL. 57'-8" F.V.
EL. 51'-8½" F.V.
EL. 40'-0" S.V.
EL. 30'-0" S.V.
EL. 15'-0" S.V.

25'-0" (9/16" THK PLATE)
25'-0" (5/8" THK PLATE)
15'-0" (5/8" THK PLATE)
25'-0" (3/4" THK PLATE)
25'-0" (3/4" THK PLATE)
25'-0" (3/4" THK PLATE)
10'-0" (7/8" THK PLATE)
15'-0" (7/8" THK PLATE)
15'-0" (7/8" THK PLATE)

RING STIFFENER 3/4" THK x 8-7/8" WIDE (TYP.)
4'-0" TYP.
SCAFFOLD CLIPS TYP.
4"x2"x1/4" (304L S.S)
UPPER RINGS 1" THK x 18" WIDE SEE MAT'L SPEC. #7
LOWER RINGS 1" THK x 18" WIDE SEE MAT'L SPEC. #7
4'-10" BETWEEN THE RINGS
OUTLET DUCT (REF.)
11'-11 13/16"
27'-4" OUTSIDE PLATE
27'-0" BREECH OPENING
5 SPACES @ 4'-0" = 20'-0"
8'-3½"
4'-1¼"
5'-0 7/16"
43'-6¾"
℄ OF STACK
℄ OF BREECH OPENING
℄ OF 18' DIA OPENING

N.S. 14, 15 · F.S. 13 · N.S. 11, 12 · F.S. 10 · N.S. 8, 9 · F.S. 7 · N.S. 5, 6 · F.S. 4 · N.S. 29 · F.S. 25, 26 · N.S. 31, 32 · F.S. 27, 28 · N.S. 30

'A3' 'A3' · 'B' 'B' · 'G' 'G' · 'K' 'K' · 'L' 'L' · 'C' 'C' · 'S1'

19'-0" STACK I.D.

EL. 282'-6" TOP OF STACK
'J' 'J'
TUNED MASS DAMPER HANGER ASS'Y BY THD VENDOR
'I' 'I'
EL. 267'-10"
EL. 267'-4"
EL. 266'-4"
EL. 265'-10"
EL. 265'-4"
L5x5x3/8 PLATFORM SUPPORT RING
EL. 259'-10⅝"
EL. 257'-5½" F.V.
EL. 253'-4½" ℄ OF SUPPORT BRACKET PAINTER TROLLEY E-HRSG-2025
EL. 240'-0" S.V.
EL. 217'-5½" F.V.
EL. 210'-0" S.V.
EL. 180'-0" S.V.
EL. 177'-5½" F.V.
EL. 155'-0" S.V.
'M' 'M'

1'-2¾" · 4'-0" · 11'-0" · 10'-10⅝" · 5'-2⅝" · 2'-7" · 6'-4⅞"
42'-6" (1¼" THK PLATE)
30'-0" (3/8" THK PLATE)
25'-0" (1/2" THK PLATE)
14 SPC'S @ 11'-5⅜" = 172'-2¼"
3'-8½"

N.S. 22 · F.S. 23, 24 · N.S. 20, 21 · F.S. 19 · F.S. 17, 18 · N.S. 16

'A1' 'A1' · 'A2' 'A2' · 'I' 'I' · 'M' 'M'

## SECTION "A-A"
SCALE 1/4" = 1'-0"

C DRAIN PIPE · 6" TYP. · 3" TYP. · 1½" TYP. · 90° TYP.
INSIDE STACK
5/16 5/16 1/2" THK. x3"x4 3/4" MAT'L ASTM A-36
EL. 3'-10 3/4"
(2) 1/2"x 13 UNC THREADED HOLE
1 3/4"

## EARTHING LUG
(2) PLACES 42° & 222°
SCALE: 3"=1'-0"

33 · 34 · 4'-9" · 4'-9" · ℄ STACK · 180° · 0° · 270°
DRAIN SLOPE
UPPER BASE RING PLATE 22'-5¾" OD x 19'-1¾" ID x 1" THK
LOWER BASE RING PLATE 22'-5¾" OD x 18'-11" ID x 1" THK
4" DIA HOLES @ LOWER & UPPER BASE RING (60) HOLES EQUALLY SPACED ON 19'-11" DIA B.C. TEMPLATE TO BE USED FOR HOLE DRILLING (FOR TEMPLATE REF. DRG. NO. 2525)

2" SCH. 40 (C.S.) PIPE W/3" 150# R.F. SLIP ON FLG. TP-039 SEE DWG. 'TBD'
3/16 · 3/8" THK FLOOR PLATE · 1'-0" · 2 1/2" GAP · C200x80x7.5x11
SCALE 3"=1'-0"

SEAL 3/8 · 3/8" THK FLOOR · 2"x1/4" THK. ROLLED BAR · 3/16

33 · 34 · C.J.P. · 3/16 3-12 · C200x80x7.5x11

## SECTION "A2-A2"
SCALE: 3"=1'-0"

1'-8" · 1" THK x 20' WIDE UPPER BASE RING · 5/8 5/8 · 3 SIDES TYP. 5/8 5/8 · C1 TYP. · (120) 7/8" THK STIFFENER · 7/8" THK · 1" THK x 21⅜" THK WIDE LOWER BASE RING · 1½" REF. · 5/8 5/8 EL. 0'-0" · 1'-9 3/8" · 19'-11⅛" B.C.D. · 19' STACK I.D.
1' UPPER BASE RING · 1' LOWER BASE RING · 2'-8"

BV36x238 · 1" THK. X 18" WIDE RING STIFF'S (2) ELEVATIONS TYP. · R50 (MIN.) SHELL OPENING

## SECTION "G-G"
SCALE 3/8"=1'-0"

## SECTION "A1-A1"
SCALE 1"=1'-0"

60° · ½" · FOR CIRC. SEAM · FOR LONG. SEAM

## TYPICAL SHOP WELD
SCALE 6"=1'-0"

8'-11 5/16" · 9'-8 7/8" · 11'-5" · SEE DETAIL 5 DWG-2518 · 'M4' · 90° · 'M3' · 'M2' · 'M1' · 180° · 0° · 270° · 45° · 5'-1" · 5'-1 1/16" · 22.5° · 12.6° · 47.1° · 30.3° · 24.5° · 4'-7 7/8" · ℄ STACK UNIT 1' · SEE DETAIL '68' DWG-2518 · C250x90 (TYP.) · KB · TYP. 5 PLCS
8'-11 3/8" · 6'-3 7/8" · 6'-3 15/16" · 8'-6 1/16" · 30'-1 1/4"
12'-7 13/16" · 8'-11 5/16" · 8'-11 3/8" · 6'-7 1/8" · 8'-8 3/16" · 6'-9 3/16" · 8'-6 1/16" · 30'-6 1/2" · NO. 1 PLATE

## SECTION "M-M"
T.O.S. EL. 260'-8½"
SCALE: 3/8"=1'-0"

E VELOCITY · F TE · C CEMS · B EPA · E VELOCITY & OPACITY · D · 90° · 60° · 27° · 15° · 0° TE F · 330° · 297° · 285° · 270° · 255° · 207° · 195° · 180° · 117° · 105°

R42I R42I

## SECTION "I-I"
TEST PORT ORIENTATIONS
(ALL PORT DETAILS REF. DWG. 2516 UNIT 2)
SCALE 1/4" = 1'-0"

VIEW FROM THIS SIDE
℄ STACK UNIT 03 · ℄ STACK UNIT 01 · ℄ STACK UNIT 02 · GAS FLOW · 90° · 180° · 270° · 0° · N

## KEY PLAN
(SCALE: 1/16"=1'-0")

¼" · 3/8" · DUCT INSIDE 1/4 1/4 · 18' DIA. ROUND OUTLET DUCT

## DETAIL-'K'
SCALE 6"=1'-0"

MUST BE CONTINUOUS · 3/16 · C.J.P. · 1 1/2" · 2" · 1/4" THK. BAR · SHELL I.D.

## TYPICAL FIELD WELD FOR CIRC. SEAM
SCALE 3"=1'-0"

3" · 1 1/2" · 1/4" BAR · 8½" · 3/16 3-12

1'-6" · 5/16 5/16 TYP.

90° · 56° ALTERNATING FIELD WELD · 36° · 156° · 176° · 180° · 0° · 120° OVERLAPPING SECTIONS
FIELD WELD PC. MARKS 1 THROUGH 3 · PC. MARKS 7 THROUGH 9 · PC. MARKS 13 THROUGH 15 · PC. MARKS 19 THROUGH 21

## NOTES:

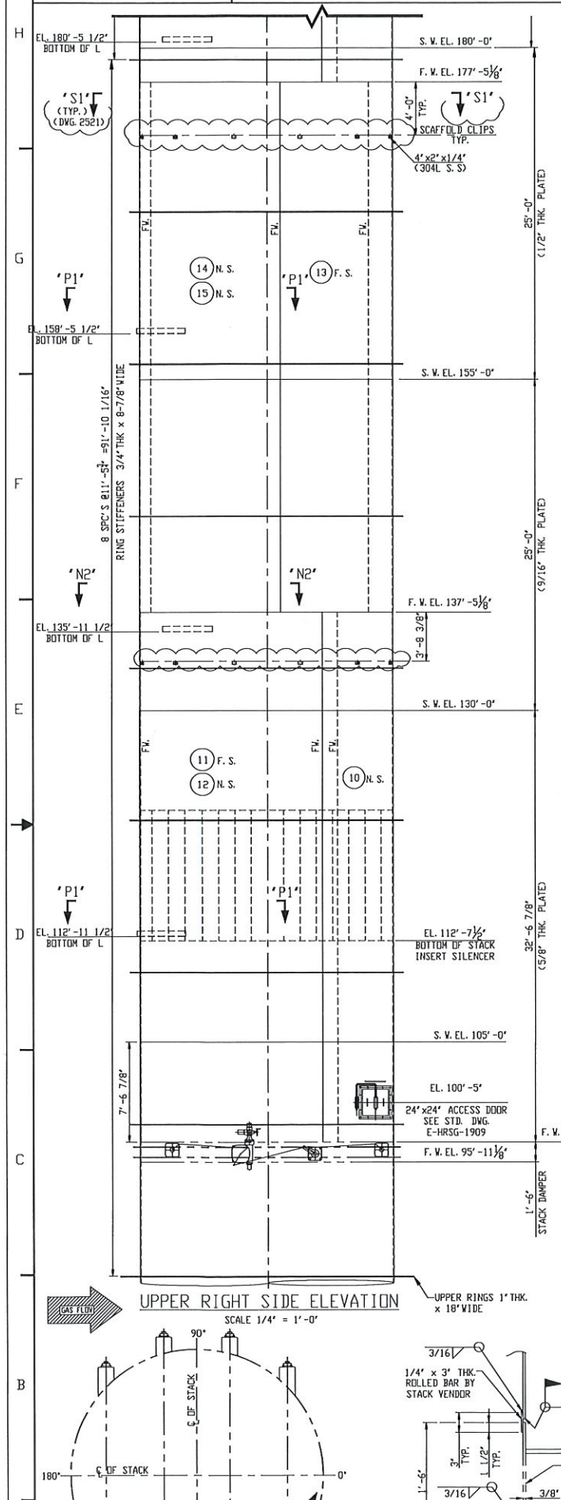
1. FOR GENERAL NOTES, MATERIAL SPEC'S, ERECTOR NOTES AND REFERENCE DRAWINGS SEE DRAWING IHG-000201-DOJO-2515.

| REV | DRAWN BY | CHECKED BY | APPROVED BY | DATE |
|---|---|---|---|---|
| D | PERSONNEL PROTECTION REMOVED THUS REVISED AS CLOUDED MARK. | SKB | AP | SD | 30JAN18 |
| C | SCALLOPED CLIPS ADDED & TKD UPDATED AS CLOUD MARKED. | SKB | AP | SD | 07NOV17 |
| B | REVISED AS CLOUDED MARKED. | SKB | IP | SD | 27OCT17 |
| A | INITIAL ISSUE | SKB | CJ | SD | 16JUN17 |

CONTRACT NO. : IHG-000201 · UNIT NO. : 01

HRSG STACK 01 ARRANGEMENT - RIGHT SIDE ELEVATION
CRICKET VALLEY ENERGY CENTER
BECHTEL INFRASTRUCTURE AND POWER CORPORATION
PURCHASE ORDER NO. 26068-220-PPA-MS00-00001

IHG-000201-DOJO-2516




A421

A421

NOTES:

1. FOR NOTES AND REFERENCE DRAWINGS SEE DRAWING IHG-000201-DOJO-2515

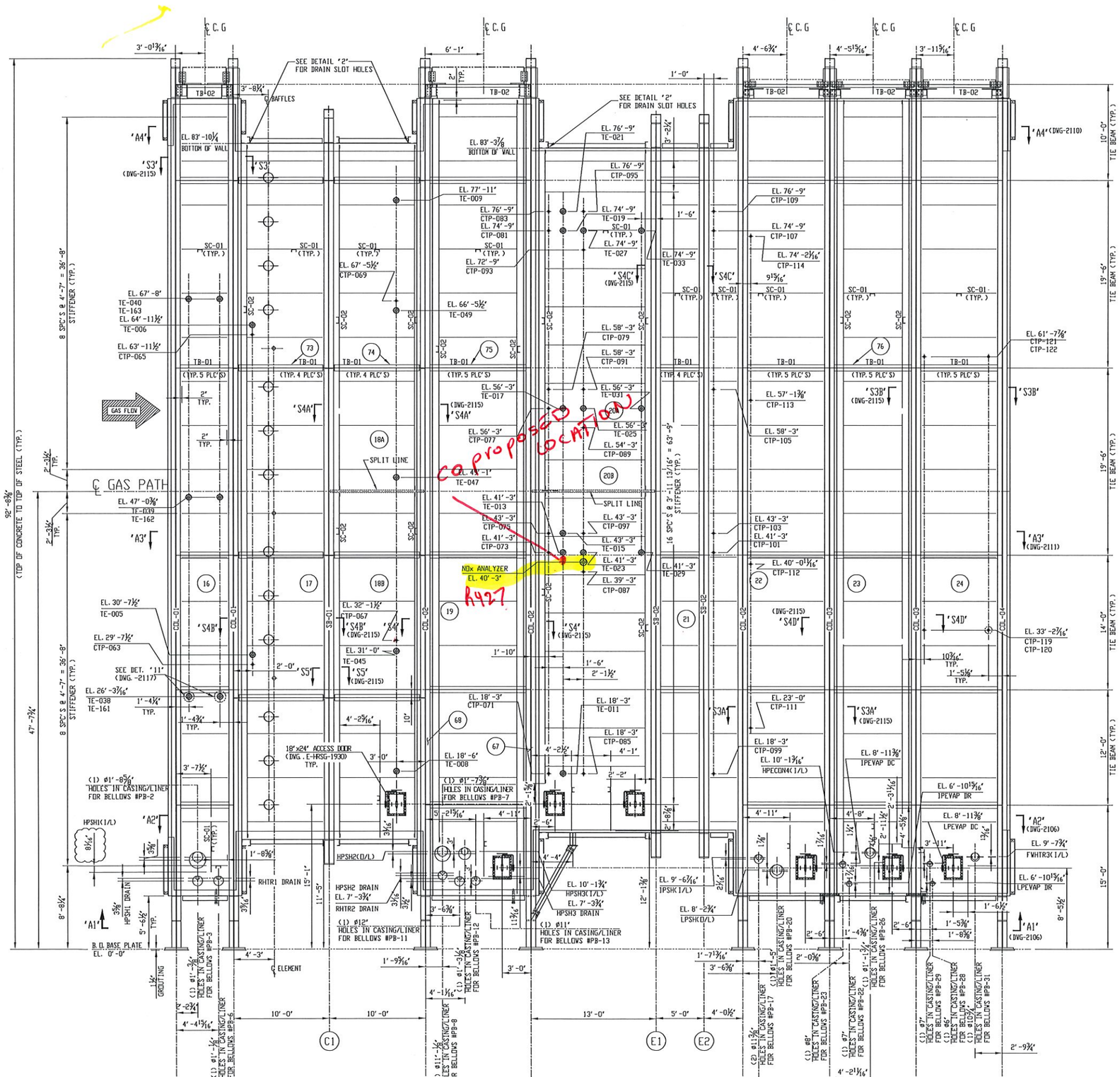
| | | | | |
|---|---|---|---|---|
| D | SCAFFOLD CLIP ADDED & TKD UPDATED AS CLOUD MARKED. | | | |
| | SKD | CJ | SD | 06NOV17 |
| C | BOTTOM L ELEVATION CHANGED, SECTION P2-P2 ADDED & HOLD REMOVED FROM TUNE MASS DAMPER. | | | |
| | SKD | CJ | SD | 27OCT17 |
| B | DUPLICATE DIMS. REMOVED, RING STIFF. THK. CORRECTED & OPACITY AND TE TEST PORT MODIFIED AS CLOUD MARKED | | | |
| | SKD | CJ | SD | 13JUNE17 |
| A | INITIAL ISSUE | | | |
| | SK | JP | SD | 29MAR17 |

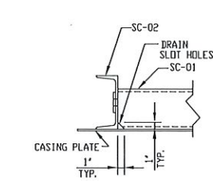
CONTRACT NO.: IHG-000201 UNIT NO.: 02

HRSG STACK ARRANGEMENT - RIGHT SIDE ELEVATION

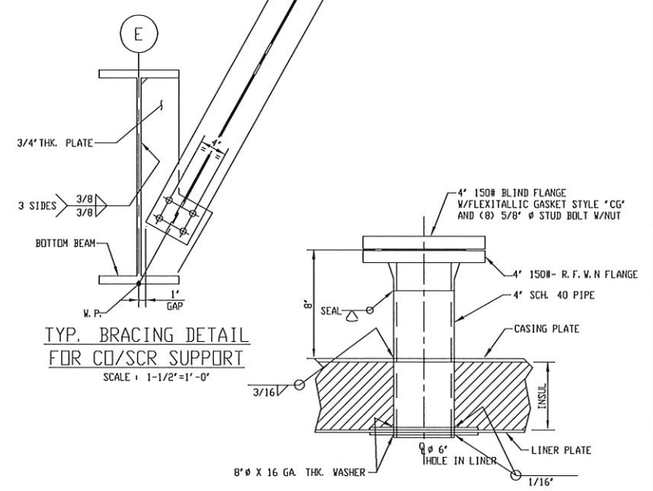
CRICKET VALLEY ENERGY CENTER
BECHTEL INFRASTRUCTURE AND POWER CORPORATION
PURCHASE ORDER NO: 26068-230-POA-MS00-00001
EQUIPMENT SCOPE: HRSG

IHG-000201-DODO-2102




DETAIL "2"
(DWG -2102 & -2104)
SCALE 1½"=1'-0"

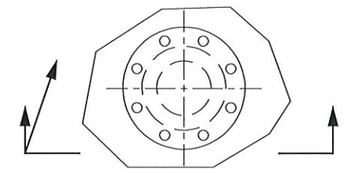



TYP. BRACING DETAIL FOR CO/SCR SUPPORT
SCALE : 1-1/2"=1'-0"









4" NOx ANALYZER CONNECTION DETAIL

NOTES:

1. FOR NOTES AND REFERENCE DRAWINGS SEE DRAWING IHG-000201-DODO-2100.

| | | | | |
|---|---|---|---|---|
| G | STIFFENER UPDATED | | | |
| | AG | CJ | SD | 26SEPT17 |
| F | NOx ANALYZER ADDED & REVISED AS CLOUDED | | | |
| | AG | CJ | SD | 07SEPT17 |
| E | REVISED AS CLOUD | | | |
| | AG | AP | SD | 08AUG17 |
| D | DETAIL MARKING & MATERIAL MARKING DELETED | | | |
| | AG | CJ | SD | 26JULY17 |
| C | TIE BEAM, ACCESS DOOR & TESTPORT LOCATION & ORIENTATION OF TIE-BEAM UPDATED | | | |
| | AG | CJ | SD | 18JULY17 |
| B | HOLD REMOVED & REVISED AS CLOUDED | | | |
| | AG | IP | SD | 7JULY17 |
| A | INITIAL ISSUE | | | |
| | SKD | RN | SD | 10MAR17 |
| | DRAWN BY | CHECKED BY | APPROVED BY | DATE |

CONTRACT NO. : IHG-000201 UNIT NO. : 01, 02, 03

HRSG BOILER CASING - RIGHT SIDE ELEVATION
CRICKET VALLEY ENERGY CENTER
BECHTEL INFRASTRUCTURE AND POWER CORPORATION
PURCHASE ORDER NO. 26068-230-POA-MS00-00001