AIR AND RADIATION ADMINISTRATION
DRAFT PART 70 OPERATING PERMIT

DOCKET # 24-031-0323

COMPANY: National Institute of Standards and Technology

LOCATION:

100 Bureau Drive
Gaithersburg, MD 20899

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MARYLAND DEPARTMENT OF THE ENVIRONMENT
AIR AND RADIATION ADMINISTRATION
AIR QUALITY PERMITS PROGRAM

TITLE V – PART 70 OPERATING PERMIT PROGRAM OVERVIEW

Title V of the Clean Air Act (amended) requires each state to implement a federally enforceable operating permit program for major sources of air pollution. This program, the Part 70 Permit Program, also known as the Title V Permit Program, is designed to provide a comprehensive administrative document (a Part 70 Operating Permit) that identifies all air emissions sources at a given facility and the federal air quality regulations applicable to those sources. The permit establishes the methodology by which the owner/operator will demonstrate compliance, and includes testing, monitoring, record-keeping, and reporting requirements for each emissions source.

A Part 70 Operating Permit does not authorize new construction, and does not add any new emissions limitations, standards, or work practices on an affected facility. There may, however, be additional testing, record keeping, monitoring, and reporting requirements. A Part 70 Operating Permit is a five-year renewable permit. A responsible official for each facility subject to a Part 70 Operating Permit is required to annually certify compliance with each applicable requirement for that facility.

When an application for a Part 70 Operating Permit is received, the Department will complete a technical review of the application and will prepare a draft Part 70 Operating Permit and Fact Sheet. The Fact Sheet will explain the basis and technical analysis used by the Department to develop the federally enforceable permit conditions, including the required testing, monitoring, record keeping, and reporting provisions for each emissions unit at the permitted facility. The Fact Sheet will also include a description of the facility operations and the current compliance status with applicable requirements. If there are any discrepancies between the Part 70 Operating Permit application and the draft permit, the Fact Sheet will contain a discussion of the inconsistencies and the final resolution.

Public Participation Process

The Part 70 Operating Permit Program provides the public, adjacent states, and EPA the opportunity to review and submit comments on draft permits. The public may also request a public hearing on the draft permit.

The purpose of a public hearing is to give interested parties the opportunity to submit comments for the record which are germane to the draft federally enforceable permit conditions. Comments made at the hearing, or in writing to the Department during the comment period, should address errors and deficiencies in the permit such as unidentified emissions units, incorrect or deficient regulation citation, deficient record keeping, monitoring, reporting or testing requirements and unresolved compliance issues. After the public comment period has closed, the Department will review the formal testimony as part of the final review and prepare a Response to Comments document which will be sent to the EPA along with the draft Part 70 Operating Permit and Fact Sheet.

Testimony on state-only requirements will be kept on file at the Department as part of the formal record, however, state-only rules and regulations are not federally enforceable, and therefore are not within the scope of the EPA review. The Department will keep a record of the identity of the commenters, their statements, a summary of the issues raised during the public comment period, and the Response to Comments document for at least five years.

Citizen Petition to EPA to Object to Permit Issuance

Interested parties may petition the EPA to object to the Part 70 Permit if the EPA has not already objected, within 60 days after the 45-day EPA review period has ended. The petition period will be posted on the EPA website. The EPA will only consider objections to the federally enforceable provisions of the draft permit which were raised with reasonable specificity during the public comment period, unless: (1) the petitioner demonstrates that it was impractical to raise the objections within the public comment period, or (2) the grounds for the objection arose after the comment period. If the EPA agrees with the petition, the Department will reopen, revise, or revoke the permit as determined.

Applicant Objection to Permit Issuance and Recourse

If the applicant objects to the federally enforceable permit conditions contained in the issued Part 70 Operating permit, the applicant at 15 days from receipt of the issued permit to request a contested case hearing ring. More information on that can be found in 40 CFR, Part 70, and COMAR 26.11.03.11.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
AIR AND RADIATION ADMINISTRATION

NOTICE OF INTENT TO ISSUE PART 70 OPERATING PERMIT, OPPORTUNITY TO SUBMIT WRITTEN COMMENTS OR TO REQUEST A PUBLIC HEARING

The Department of the Environment, Air and Radiation Administration (ARA) has completed its review of the application for a renewal Part 70 Operating Permit submitted by the National Institute of Standards and Technology located in Montgomery County, MD. The facility consists of six boilers, a fire research laboratory, five diesel fired emergency generators, one 8 MW natural gas fired combustion turbine rated at 87.97 MMBtu/hr, and one above ground gasoline storage tank.

The applicant is represented by:

Mr. Mark Liau, PE, Environmental Engineer
National Institute of Standards and Technology
100 Bureau Drive, MS 1730
Gaithersburg, MD 20899

The Department has prepared a draft Part 70 Operating Permit for review and is now ready to receive public comment. A docket containing the application, draft permit, and supporting documentation is available for review on the Department's website, under the Air Quality Permitting Page's Title V link under "Draft Title V Permits" and may be viewed here:

https://tinyurl.com/DraftTitleV

Interested persons may submit written comments or request a public hearing on the draft permit. Written comments must be received by the Department no later than 30 days from the date of this notice. Requests for a public hearing must be submitted in writing and must also be received by the Department no later than 30 days from the date of this notice.

Comments and requests for a public hearing will be accepted by the Department if they raise issues of law or material fact regarding applicable requirements of Title V of the Clean Air Act, and/or regulations implementing the Title V Program in Maryland found in COMAR.

A Request for public hearing shall include the following:

1) The name, mailing address, and telephone number of the person making the request;

2) The names and addresses of any other persons for whom the person making the request if representing; and

3) The reason why a hearing is requested, including the air quality concern that forms the basis for the request and how this concern relates to the person making the request.

All written comments and requests for a public hearing should be directed to the attention of Ms. Shannon Heafey via email at Shannon.heafey@maryland.gov or by post at Air Quality Permits Program, Air and Radiation Administration, 1800 Washington Boulevard Suite 720, Baltimore, Maryland 21230-1720. Further information may be obtained by calling Ms. Shannon Heafey at (410) 537-4433.

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
100 BUREAU DRIVE
GAITHERSBURG, MARYLAND 20899
PERMIT NO. 24-031-0323
PART 70 OPERATING PERMIT FACT SHEET

BACKGROUND

The National Institute of Standards and Technology (NIST) is a federal agency within the U.S. Department of Commerce. NIST's mission is to develop and promote measurements, standards, and technology. NIST's headquarters is located in Gaithersburg, Maryland on a 578-acre campus. The major sources of air emissions at this location are boilers used for comfort conditioning and a combined heat and power (cogeneration) plant. The primary SIC for this facility is 9199 – General Government, not elsewhere classified.

The following table summarizes the actual emissions from NIST based on its Annual Emission Certification Reports:

Table 1: Actual Emissions

Year	NO_x (TPY)	SO_x (TPY)	PM_{10} (TPY)	CO (TPY)	VOC (TPY)	Total HAP (TPY)
2022	27.88	1.60	7.42	37.00	3.67	0.25
2021	27.04	1.64	7.58	36.90	3.68	0.26
2020	23.40	1.31	6.24	33.84	2.68	0.03
2019	24.12	0.91	3.97	36.17	3.05	0.02
2018	19.15	0.24	0.72	28.93	1.90	0.03

The major source threshold for triggering Title V permitting requirements in Montgomery County is 25 tons per year for VOC, 25 tons for NOx, and 100 tons per year for any other criteria pollutants and 10 tons for a single HAP or 25 tons per year for total HAPS. Since the actual NOx emission from the facility are greater than the major source threshold, NIST is required to obtain a Title V – Part 70 Operating Permit under COMAR 26.11.03.01.

The initial Part 70 Operating Permit (Title V) for NIST was issued on May 12, 2003, and renewed various times. The current Title V permit was issued on May 1, 2018 with an expiration date of April 30, 2023. The NIST prepared a Title V renewal permit application, which was received at the Department on May 3, 2022. An administrative completeness review was conducted, and the application was deemed to be administratively complete. A completeness determination letter was sent to NIST on June 2, 2022, granting this facility an application shield.

GREENHOUSE GAS (GHG) EMISSIONS

NIST emits the following greenhouse gases (GHGs) related to Clean Air Act requirements: carbon dioxide, methane, and nitrous oxide. These GHGs originate from various processes, but primarily from boilers and the combined heat and power plant located within the NIST Gaithersburg campus. The facility has not triggered Prevention of Significant Deterioration (PSD) requirements for GHG emissions; therefore, there are

no applicable GHG Clean Air Act requirements. The Permittee shall quantify facility wide GHGs emissions and report them in accordance with Section 3 of the Part 70 permit.

The following table summarizes the actual emissions from the National Institute of Standards and Technology based on its Annual Emission Certification Reports:

Table 3: Actual Greenhouse Gases Emissions Summary

GHG	2022 (tpy CO_{2eq})	2021 (tpy CO_{2eq})	2020 (tpy CO_{2eq})	2019 (tpy CO_{2eq})	2018 (tpy CO_{2eq})
Carbon Dioxide (CO_2)	63,524	63,148	57,035	56,465	42,984
Methane (CH_4)	4.05	4.27	3.50	3.71	0.79
Nitrous Oxide (N_2O)	1.33	1.54	1.27	1.09	0.76

EMISSION UNIT IDENTIFICATION

The National Institute of Standards and Technology has identified the following emission units as being subject to Title V permitting requirements and having applicable requirements.

Table 2: Emission Unit Identification

Emissions Unit Number	MDE Registration Number	Emissions Unit Name and Description	Date of Installation
EU-1 (NIST Boiler #1)	031-0323-5-0108	One (1) 55 million Btu/hr Union Iron Works boiler e/w Low NO_X Burners firing natural gas as primary fuel and No. 2 fuel oil as back up.	1961 / 2013
EU-2 (NIST Boiler #2)	031-0323-5-0109	One (1) 55 million Btu/hr Union Iron Works boiler e/w Low NO_X Burners firing natural gas as primary fuel and No. 2 fuel oil as back up.	1961 / 2013
EU-3 (NIST Boiler #3)	031-0323-5-0110	One (1) 55 million Btu/hr Union Iron Works boiler e/w Low NO_X Burners firing natural gas as primary fuel and No. 2 fuel oil as back up.	1961 / 2013
EU-4 (NIST Boiler #4)	031-0323-5-0111	One (1) 55 million Btu/hr Union Iron Works boiler e/w Low NO_X Burners firing natural gas as primary fuel and No. 2 fuel oil as back up.	1961 / 2013
EU-5 (NIST	031-0323-5-0112	One (1) 99.8 million Btu/hr English boiler burning natural gas as primary fuel and	1997

Boiler #5)		No. 2 fuel oil as back up and equipped with low NOx burners.	
EU-6 (NIST Boiler #6)	031-0323-5-0113	One (1) 99.8 million Btu/hr English boiler burning natural gas as primary fuel and No. 2 fuel oil as back up and equipped with low NOx burners.	1997
EU-7	031-0323-6-0557	Fire Research Laboratory consisting of four (4) pre-heaters, four (4) bag houses, and four (4) scrubbers.	1999 and 2012
EU-8	031-0323-9-1177	One (1) 6,000-gallon aboveground gasoline storage tank.	2018
EU-9	031-0323-9-0630	One (1) diesel fired emergency generator rated at 1000 kilowatts.	2002
EU-10	031-0323-9-0898	One (1) diesel fired emergency generator rated at 500 kilowatts.	1999
EU-11	031-0323-5-2363	One (1) 8 MW Solar Taurus natural gas fired combustion turbine rated at 87.97 MMBtu/hr.	2019
EU-12	031-0323-5-2364	One (1) 50.78 MMBtu/hr Rentech natural gas fired HRSG equipped with low NO_x duct burners.	2019
EU-13	031-0323-9-1199	One (1) 1,250 KW diesel-fired emergency generator.	2020
EU-14	031-0323-9-1213	One (1) 500 KW natural gas-fired emergency generator.	2020
EU-15	031-0323-9-1214.	One (1) 500 KW natural gas-fired emergency generator.	2020

Federal Regulation Review

A. 40 CFR 60, Subpart KKKK – Standards of Performance for Stationary Combustion Turbines – Applies to the 8 MW Solar Taurus natural gas fired combustion turbine rated at 87.97 MMBtu/hr (Reg. No. -5-2363), and the 50.78 MMBtu/hr Rentech natural gas fired HRSG equipped with low NO_X duct burners (Reg. No.-5-2364), which are currently under construction. Installed August 2019.

B. 40 CFR Part 63, Subpart JJJJJJ – National Emissions Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers at Area Sources
As indicated in an email from Mr. Kevin Bald on November 20, 2012, NIST meet the definition of "gas fired boilers" in 40 CFR §63.11237 for all six (6) of their boilers (MDE Registration Nos. 031-0323-5-0108, 5-0109, 5-0110, 5-0111, 5-0112, and 5-0113). These units will only burn distillate oil as a back up if natural gas supplies are interrupted. Provided NIST follows the definition of "Period of natural gas curtailment or supply interruption" and "gas-fired boiler" found in 40 CFR

§63.11237, the requirements of 40 CFR 63, Subpart JJJJJJ will not apply to these boilers as per 40 CFR §63.11195(e).

C. 40 CFR Part 60, Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

Two (2) of the boilers (MDE Registration Nos. 031-0323-5-0112 and 5-0113) are subject to this regulation per 40 CFR §60.40c(a).

Four (4) of the boilers (MDE Registration Nos. 031-0323-5-0108, 5-0109, 5-0110, and 5-0111) are exempt from this regulation because they were installed prior to June 9, 1989 per 40 CFR §60.40c(a).

D. 40 CFR Part 63, Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
The two (2) emergency generators (MDE Registration Nos. 031-0323-9-0630 and 9-0898) are subject to this regulation.

E. 40 CFR Part 63, Subpart CCCCCC – National Emissions Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities
The one (1) 6,000-gallon underground gasoline storage tank (MDE Registration No. 031-0323-9-0684) is subject to this regulation.

OVERVIEW OF THE PART 70 PERMIT

The Fact Sheet is an informational document. If there are any discrepancies between the Fact Sheet and the Part 70 permit, the Part 70 permit is the enforceable document.

Section I of the Part 70 Permit contains a brief description of the facility and an inventory list of the emissions units for which applicable requirements are identified in Section IV of the permit.

Section II of the Part 70 Permit contains the general requirements that relate to administrative permit actions. This section includes the procedures for renewing, amending, reopening, and transferring permits, the relationship to permits to construct and approvals, and the general duty to provide information and to comply with all applicable requirements.

Section III of the Part 70 Permit contains the general requirements for testing, record keeping and reporting; and requirements that affect the facility as a whole, such as open burning, air pollution episodes, particulate matter from construction and demolition activities, asbestos provisions, ozone depleting substance provisions, general conformity, and acid rain permit. This section includes the requirement to report excess emissions and deviations, to submit an annual emissions certification report and an annual compliance certification report, and results of sampling and testing.

Section IV of the Part 70 Permit identifies the emissions standards, emissions limitations, operational limitations, and work practices applicable to each emissions unit located at the facility. For each standard, limitation, and work practice, the permit identifies the basis upon which the Permittee will demonstrate compliance. The basis will include testing, monitoring, record keeping, and reporting requirements. The demonstration may include one or more of these methods.

Section V of the Part 70 Permit contains a list of insignificant activities. These activities emit very small quantities of regulated air pollutants and do not require a permit to construct or registration with the Department. For insignificant activities that are subject to a requirement under the Clean Air Act, the requirement is listed under the activity.

Section VI of the Part 70 Permit contains State-only enforceable requirements. Section VI identifies requirements that are not based on the Clean Air Act, but solely on Maryland air pollution regulations. These requirements generally relate to the prevention of nuisances and implementation of Maryland's Air Toxics Program.

REGULATORY REVIEW/TECHNICAL REVIEW/COMPLIANCE METHODOLOGY

Emission Units – EU-1, EU-2, EU-3, and EU-4

Emissions Unit Number	MDE Registration Number	Emissions Unit Name and Description	Date of Installation
EU-1 Boiler #1	031-0323-5-0108	One (1) 55 million Btu/hr Union Iron Works boiler e/w Low NO_X Burners firing natural gas as primary fuel and No. 2 fuel oil as back up.	1961 / mod. 2013
EU-2 Boiler #2	031-0323-5-0109	One (1) 55 million Btu/hr Union Iron Works boiler e/w Low NO_X Burners firing natural gas as primary fuel and No. 2 fuel oil as back up.	1961 / mod. 2013
EU-3 Boiler #3	031-0323-5-0110	One (1) 55 million Btu/hr Union Iron Works boiler e/w Low NO_X Burners firing natural gas as primary fuel and No. 2 fuel oil as back up.	1961 / mod. 2013
EU-4 Boiler #4	031-0323-5-0111	One (1) 55 million Btu/hr Union Iron Works boiler e/w Low NO_X Burners firing natural gas as primary fuel and No. 2 fuel oil as back up.	1961 / mod. 2013

The above boilers were registered with the state as MDE Registration Nos. 031-0323-5-0108, 5-0109, 5-0110, and 5-0111 in 1972. These registrations were for four (4) 55 million Btu/hr Union Iron Works boilers burning natural gas as primary fuel and No. 2 fuel oil as backup during high demand periods in the winter. The boilers were modified in

May of 2013 with the installation of Low NO_X burners. The units were also designated as only firing No. 2 fuel oil as back up during periods of gas curtailment, gas supply interruption, startups, or periodic testing on liquid fuel. These boilers are not subject to National Emissions Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers at Area Sources (40 CFR Part 63, Subpart JJJJJJ). As long as these boilers meet the definitions of "gas fired boilers" and "periods of natural gas curtailment" as defined in 40 CFR §63.11237, they are exempt from this regulation.

Applicable Standards and Limits

A. Control of Visible Emissions

COMAR 26.11.09.05A(2) – Fuel Burning Equipment.

"(2) In Areas III and IV, a person may not cause or permit the discharge of emissions from any fuel burning equipment, other than water in an uncombined form, which is visible to human observers except that, for the purpose of demonstrating compliance using COM date, emissions that are visible to a human observer are those that are equal to or greater than 10 percent opacity." **[Reference: COMAR 26.11.09.05A(2)]**

COMAR 26.11.09.05A(3) – Exceptions.

"(3) Section A(1) and (2) of this regulation do not apply to emissions during load changing, soot blowing, start up, or adjustments or occasional cleaning of control equipment if:

(a) The visible emissions are not greater than 40 percent opacity; and
(b) The visible emissions do not occur for more than 6 consecutive minutes in any sixty-minute period." **[Reference: COMAR 26.11.09.05A(3)]**

Compliance Demonstration

The Permittee shall operate and maintain the boilers in a manner to prevent visible emissions. The Permittee shall have a qualified person visually observe the emissions from each boiler stack while the boiler is combusting oil every 168 hours of operation or at a minimum once per year. If visible emissions are observed, the Permittee shall (1) inspect the combustion control system and the boiler operations; (2) perform all necessary adjustments and/or repairs to the boiler within 48 hours of operation so that visible emissions are eliminated; and (3) document in writing the results of inspections, adjustments, and/or repairs to the boiler. If the visible emissions have not been eliminated after 48 hours of operation, the Permittee shall perform a Method 9 observation once daily when boilers are operating on No. 2 fuel oil for 18 minutes until corrective action has eliminated the visible emissions.

The Permittee shall keep maintenance records, records of the visible emissions observations, and documentation of any incidence of visible emissions and any corrective action taken. The Permittee shall report incidents of visible emissions in accordance with condition 4, Section III – "Report of Excess Emissions and Deviations."

Rationale for Periodic Monitoring Strategy
Visual observations during oil-fired operation using EPA Method 9 are sufficient for monitoring visible emissions. Boilers that burn natural gas fuel with No. 2 fuel oil as backup with a rated heat input capacity of more than 10 MMBtu/hr and less than 100 MMBtu/hr rarely have visible emissions if properly operated and maintained. Visible emissions are most likely to occur when the boilers are fired by No. 2 fuel oil. Method 9 observations are required when No. 2 fuel oil is being fired.

B. Control of Sulfur Oxides

COMAR 26.11.09.07A(2)(b) – Sulfur Content Limitations for Fuel.
"A person may not burn, sell, or make available for sale any fuel with a sulfur content by weight in excess of which otherwise exceeds the following limitations: (2) In Areas III and IV: (b) distillate fuel oils, 0.3 percent." **[Reference: COMAR 26.11.09.07A(2)(b)]**

Compliance Demonstration
The Permittee shall not accept deliveries of fuel oil with a sulfur content greater than allowed by the regulation. The Permittee shall obtain a certification from the fuel oil supplier indicating that the oil complies with the limitation on the sulfur content of the fuel oil. The Permittee shall retain copies of the fuel oil certification on site for at least five (5) years and shall make the copies available to the Department upon request.

Rationale for Periodic Monitoring Strategy
Fuel oil certifications are sufficient to demonstrate compliance with the applicable fuel sulfur limits. No additional monitoring is required.

C. Control of Nitrogen Oxides

The Permittee shall comply with one of C(1) & (2), or C(3) or C(4) below:

1. **COMAR 26.11.09.08 – Control of NO_X Emissions for Major Stationary Sources**
   COMAR 26.11.09.08B(1), Emission Standards and Requirements.

   (a) "A person who owns or operates an installation that causes NO_X emissions subject to this regulation is in compliance with this regulation if the person establishes compliance with the emissions standards in §B(1)(c) of this regulation."

   (c) "Emission Standards in Pounds of NO_X per Million Btu of heat input."(*)

Fuel	Tangential- Fired	Wall-Fired
Gas only	0.20	0.20
Gas/Oil	0.25	0.25
Coal (dry bottom)	0.38	0.38
Coal (wet bottom)	1.00	1.00

Note(*): The Permittee shall satisfy this requirement by meeting the more stringent NNSR limits cited under Part E(1) of this permit.

2. **COMAR 26.11.09.08B – <u>General Requirements and Conditions</u>**.
   (2) Demonstration of Compliance. "A person subject to a NO_X emission standard in this regulation shall demonstrate compliance as follows: (e) For a person who establishes compliance using a stack test, compliance shall be determined as averages of the stack test duration."

3. **COMAR 26.11.09.08B(5) – <u>Operator Training</u>**.
   (a) "For purposes of this regulation, the equipment operator to be trained may be the person who maintains the equipment and makes the necessary adjustments for efficient operation."

   (b) "The operator training course sponsored by the Department shall include an in-house training course that is approved by the Department."

4. **COMAR 26.11.09.08E – <u>Requirements for Fuel-Burning Equipment with a Rated Heat Input Capacity of 100 Million Btu Per Hour or Less</u>**.
   "A person who owns or operates fuel-burning equipment with a rated heat input capacity of 100 Million Btu per hour or less shall:
   (1) Submit to the Department an identification of each affected installation, the rated heat input capacity of each installation, and the type of fuel burned in each;
   (2) Perform a combustion analysis for each installation at least once each year and optimize combustion based on the analysis;
   (3) Maintain the results of the combustion analysis at the site for at least 2 years and make this data available to the Department and the EPA upon request;
   (4) Once every 3 years, require each operator of the installation to attend operator training programs on combustion optimization that are sponsored by the Department(*), the EPA, or equipment vendors; and
   (5) Prepare and maintain a record of training program attendance for each operator at the site, and make these records available to the Department upon request."

<u>Compliance Demonstration</u>

The Permittee may demonstrate compliance with the regulations in one of the following ways:

(1) If the Permittee chooses to comply with COMAR 26.11.09.08B(1)(c), the Permittee shall conduct a stack test to determine the NOx emissions rate on at least two (2) of the four (4) boilers while burning natural gas and while burning No. 2 fuel oil at least once prior to the expiration of the term of the permit. The Permittee shall submit a test protocol to the Department for approval at least 30 days prior to the proposed test date. The Permittee shall submit stack test results to the Department 45 days after the performance testing. The Permittee does not need to comply with the requirement to conduct a stack test if the Permittee chooses to comply with COMAR 26.11.09.08E or COMAR 26.11.09.08F.

Or

(2) If the Permittee chooses to comply with COMAR 26.11.09.08E, the Permittee shall perform a combustion analysis for each affected installation at least once each year and optimize combustion based on the analysis. Once every three year, the Permittee shall require each operator of the installation to attend operator training programs on combustion optimization that are sponsored by the Department, the EPA, or the equipment vendor and prepare and maintain records of the training program attendance for each operator. The Permittee shall submit to the Department an identification of each affected installation, the rated heat input capacity of each installation, and the type of fuel burned in each installation.

Or

(3) If the Permittee chooses to comply with COMAR 26.11.09.08F, the Permittee shall develop and implement an operating and maintenance plan to minimize NOx emissions based on the requirements of equipment vendors and other information including the source's operating and maintenance experience. Once every three years, the Permittee shall require each operator of the installation to attend operator training programs on combustion optimization that are sponsored by the Department, the EPA, or the equipment vendor and prepare and maintain records of the training program attendance for each operator. The Permittee shall submit to the Department an identification of each affected installation, the rated heat input capacity of each installation, and the type of fuel burned in each installation. If the installation that no longer qualifies as a space heater, the Permittee shall inform the Department not later than 60 days after the date when the fuel-burning equipment did not qualify and shall meet the applicable fuel-burning equipment RACT required in this regulation.

The Permittee shall maintain on-site all records of notifications, stack tests, combustion analysis, fuel use records, and operator training records as applicable.

Rationale for Periodic Monitoring Strategy
Stack test demonstrations, combustion analysis and operator training records, as applicable, are sufficient to demonstrate compliance with the NOx emissions standards.

D. <u>Operational Limitation</u>

(1) The Permittee shall burn liquid {No.2 fuel oil} fuel only during periods of gas curtailment, gas supply interruption, startup or periodic testing on liquid {No.2 fuel oil} fuel. Periodic testing of liquid {No.2 fuel oil} fuel shall not exceed a combined total of 48 hours per boiler during any calendar year. **[Reference: 40 CFR §63.11195(e) and §63.11237]**

(2) Except as otherwise provided in this part, each of the four (4) boilers EU # 1 - #4 equipped with low NO_X burners shall be operated in accordance with specifications included in the applications and any operating procedures

recommended by equipment vendors unless the Permittee obtains from the Department written authorization for alternative operating procedures. **[Reference: PTC No. 031-0323-5-0108 through -5-0111, issued January 17, 2019]**

Compliance Demonstration
The Permittee shall keep monthly records of the quantity of natural gas and No. 2 fuel oil burned with supporting documentation and submit the records to the Department with the annual emissions certification report.

Rationale for Periodic Monitoring Strategy
The monthly fuel records are sufficient to demonstrate that the Permittee is only burning fuel oil during periods of natural gas curtailment, emergencies, and periodic testing.

E. Non-Attainment New Source Review (NNSR) Limits

(1) In order to avoid triggering NNSR requirements, the Permittee shall not exceed the following NO_X emissions limits:

(c) For the Boilers EU # 1 though EU# 4: 0.1 lbs / MMBTU when burning natural gas; and 0.2 lbs / MMBTU when burning fuel oil.

(2) In order to prevent the NO_X emissions from the installation of the CHP Plant (the one (1) natural gas fired combustion turbine rated at 87.97 MMBtu/hr and the one (1) natural gas fired HRSG rated at 50.78 MMBtu/hr and equipped with low NO_X burners) from triggering a "Significant" net emissions increase for the facility as defined under COMAR 26.11.17.01B(26) and triggering the Nonattainment Provisions for Major New Sources and Modifications (NSR) under COMAR 26.11.17, the Permittee shall:

(b) Limit the combined total NO_X emissions from Boilers #1 - #4 to less than **10.8 TPY** for any 12-month consecutive period; unless prior approval is received from the Department, in order to satisfy the NNSR netting demonstration of the CHP. **[Reference: Permit to Construct PTC #031-0323-5-2363 & 5-2364, issued January 17, 2019]**

Compliance Demonstration
The Permittee shall demonstrate compliance with the NNSR limits by following the testing, monitoring, recordkeeping and reporting requirements to show compliance with the applicable standards/limits for the control of nitrogen oxide listed in Section 1.1.C. The Permittee shall maintain on-site all records of notifications, stack tests, combustion analysis, fuel use records, and operator training records as applicable.

Rationale for Periodic Monitoring Strategy
Stack test demonstrations, combustion analysis and operator training records, as applicable, are sufficient to demonstrate compliance with the NOx emissions standards.

Emission Units – EU-5 and EU-6

Emissions Unit Number	MDE Registration Number	Emissions Unit Name and Description	Date of Installation
EU-5 Boiler #5	031-0323-5-0112	One (1) 99.8 million Btu/hr English boiler burning natural gas as primary fuel and No. 2 fuel oil as back up and equipped with low NOx burners.	1997
EU-6 Boiler #6	031-0323-5-0113	One (1) 99.8 million Btu/hr English boiler burning natural gas as primary fuel and No. 2 fuel oil as back up and equipped with low NOx burners.	1997

Permits to Construct 031-0323-5-0112 and 5-0113 were issued on July 30, 1996 for the installation of two (2) 99.8 million Btu/hr Union Iron Works boilers natural gas-fired as primary fuel and No. 2 fuel oil as backup. Their primary purpose is to provide steam to heat the entire campus.

These boilers were installed in 1997 and are subject to New Source Performance Standards (NSPS) for Small Industrial, Commercial, and Institutional Steam Generating Units (40 CFR Part 60, Subpart Dc).

To avoid major non-attainment New Source Review (NSR), the Permittee accepted limits on NOx emissions rates of 0.1 lb/MMBtu while firing natural gas and 0.2 lb/MMBtu while firing No. 2 oil. In addition, total natural gas consumption by the two boilers was limited to 518 million cubic feet in any 12-month rolling period and total No. 2 fuel oil consumption was limited to 481,080 gallons in any 12-month rolling period. Included with the Title V renewal application received on May 1, 2012, the Permittee requested that the fuel restriction on natural gas be removed from the permit on the basis that these units are the newest and cleanest burning units and they have low NOx burner technology. This was not addressed in any prior permits.

Since the issuance of the original PTC for the boilers (PTC No. 15-5-1112 & 1113, issued July 30, 1996), the Department has changed the recommended synthetic minor limit language for this type of source. The Nonattainment New Sources (NNSR) synthetic-minor (S-M) conditions have been amended to agree with current MDE ARA permit program policy. The new S-M conditions clarify the emissions limit and

compliance methods while providing the Permittee greater flexibility of operation. This method is also consistent with other S-M conditions in the operating permit, i.e., those of the CHP plant.

Old Conditions under Table IV-2, 2.1D:
(2) Total natural gas consumption by the two boilers shall not exceed 518 million cubic feet in any 12-month rolling period.

(3) Total No. 2 fuel oil consumption by the two boilers shall not exceed 481,080 gallons in any 12-month rolling period.
[Reference: MDE Permit to Construct No. 15-5-1112N and 1113N issued on July 30, 1996]

New Conditions:
(2) In order to prevent the NO_X emissions from the two (2) 99.8 million Btu/hr boilers from triggering a "Significant" net increase for the facility as defined under COMAR 26.11.17.01 B (26) and thereby triggering the Nonattainment Provisions for Major New Sources and Modifications (NNSR) under COMAR 26.11.17, the Permittee shall limit the NO_X emissions from the boilers to less than 25 tons per year, for any 12-month consecutive period.

(3) In order to demonstrate compliance with the emissions limitation requirement for exemption from NNSR, the Permittee shall calculate and record the NOX emissions from the boilers, for each previous calendar month and a total for the previous 12 consecutive calendar months. The calculations and records shall be updated monthly, within the first 15 days of each following month
[Reference: COMAR 26.11.03.01H; 26.11.03.06C; & 26.11.17.01]

The Permittee performed NOx compliance testing on Boilers #5 and #6 in the years of July 2017 and April 2023. Tests were conducted separately while firing natural gas and No. 2 fuel oil. The boiler showed compliance with permit limits. Stack emissions test results were as follows:

Most recent stack test results

Year	Boiler 5	Boiler 6	Permit Limit
2017	gas: 0.06841 lb/MMBtu oil: 0.1014 lb/MMBtu	gas: 0.06577 lb/MMBtu oil: 0.139 lb/MMBtu	gas: 0.1 lb/MMBtu oil: 0.2 lb/MMBtu
2023	gas: 0.084 lb/MMBtu oil: 0.091 lb/MMBtu	gas: 0.076 lb/MMBtu oil: 0.168 lb/MMBtu	gas: 0.1 lb/MMBtu oil: 0.2 lb/MMBtu

These boilers are exempt from the National Emissions Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers at Area Sources (40 CFR

Part 63, Subpart JJJJJJ) as long as they meet the definitions of "gas fired boilers" and "periods of natural gas curtailment" as defined in 40 CFR §63.11237.

Applicable Standards and Limits

A. Control of Visible Emissions

COMAR 26.11.09.05A(2) – Fuel Burning Equipment.
"(2) In Areas III and IV, a person may not cause or permit the discharge of emissions from any fuel burning equipment, other than water in an uncombined form, which is visible to human observers except that, for the purpose of demonstrating compliance using COM date, emissions that are visible to a human observer are those that are equal to or greater than 10 percent opacity."

COMAR 26.11.09.05A(3) – Exceptions.
"(3) Section A(1) and (2) of this regulation do not apply to emissions during load changing, soot blowing, start up, or adjustments or occasional cleaning of control equipment if:
(a) The visible emissions are not greater than 40 percent opacity; and
(b) The visible emissions do not occur for more than 6 consecutive minutes in any sixty-minute period."

NSPS - 40 CFR § 60.43c – Standard for particulate matter (PM).
"No owner or operator of an affected facility that combusts coal, wood, or oil and has a heat input capacity of 8.7 MW (30 MMBtu/h) or greater shall cause to be discharged into the atmosphere from that affected facility any gases that exhibit greater than 20 percent opacity (6-minute average), except for one 6-minute period per hour of not more than 27 percent opacity." **[Reference: 40 CFR §60.43c(c)]**

Compliance Demonstration
The Permittee shall operate and maintain the boilers in a manner to prevent visible emissions. The Permittee shall have a qualified person visually observe the emissions from each boiler stack while the boiler is combusting oil every 168 hours of operation or at a minimum once per year. If visible emissions are observed, the Permittee shall (1) inspect the combustion control system and the boiler operations; (2) perform all necessary adjustments and/or repairs to the boiler within 48 hours of operation so that visible emissions are eliminated; and (3) document in writing the results of inspections, adjustments, and/or repairs to the boiler. If the visible emissions have not been eliminated after 48 hours of operation, the Permittee shall perform a Method 9 observation once daily when boilers are operating on No. 2 fuel oil for 18 minutes until corrective action has eliminated the visible emissions.

The Permittee shall keep maintenance records, records of the visible emissions observations, and documentation of any incidence of visible emissions and any corrective action taken. The Permittee shall report incidents of visible emissions in accordance with condition 4, Section III – "Report of Excess Emissions and Deviations."

Rationale for Periodic Monitoring Strategy
Visual observations during oil-fired operation using EPA Method 9 are sufficient for monitoring visible emissions. Boilers that burn natural gas fuel with No. 2 fuel oil as backup with a rated heat input capacity of more than 10 MMBtu/hr and less than 100 MMBtu/hr rarely have visible emissions if properly operated and maintained. Visible emissions are most likely to occur when the boilers are fired by No. 2 fuel oil. Method 9 observations are required when No. 2 fuel oil is being fired.

B. Control of Sulfur Oxides

(1) "A person may not burn, sell, or make available for sale any fuel with a sulfur content by weight in excess of or which otherwise exceeds the following limitations: (2) In Areas III and IV: (b) Distillate fuel oils, 0.3 percent;" **[Reference: COMAR 26.11.09.07A(2)]**

(2) "No owner or operator of an affected facility that combusts oil shall cause to be discharged into the atmosphere from that affected facility any gases that contain SO_2 in excess of 215 ng/J (0.50 lb/MMBtu) heat input from oil; or, as an alternative, no owner or operator of an affected facility that combusts oil shall combust oil in the affected facility that contains greater than 0.5 weight percent sulfur." **[Reference: 40 CFR §42c(d)]**

Note: Compliance demonstration with COMAR 26.11.09.07A(2)(b) will be used to comply with this standard.

Compliance Demonstration
The Permittee shall not accept deliveries of fuel oil with a sulfur content greater than allowed by the regulation. The Permittee shall obtain a certification from the fuel oil supplier indicating that the oil complies with the limitation on the sulfur content of the fuel oil. The Permittee shall maintain records of the analysis of the fuel oil used by the facility. A semi-annual report shall be submitted to the Department and the EPA in accordance with 40 CFR 60, Subpart Dc.

Rationale for Periodic Monitoring Strategy
Fuel oil certifications are sufficient to demonstrate compliance with the applicable fuel sulfur limits. No additional monitoring is required.

C. Control of Nitrogen Oxides

(1) The NOx emission rate shall not exceed 0.1 lb/MMBtu for natural gas firing and 0.2 lb/MMBtu for No. 2 oil firing. **[Reference: MDE Permit to Construct No. 15-5-1112N and 1113N issued on July 30, 1996]**

(2) The Permittee may demonstrate compliance with regulation COMAR 26.11.09.08 by complying with a NOx emission standard of 0.25 pounds of NOx per million Btu heat input. **[Reference: COMAR 26.11.09.08B(1)(c)]**

Note: Compliance with the NOx standard in Table IV-2, Section 2.1C(1) above will demonstrate compliance with COMAR 26.11.09.08B(1)(c).

Compliance Demonstration

The Permittee shall conduct a stack test to determine the NOx emissions rate on each of the boilers while burning natural gas and while burning No. 2 fuel oil at least once prior to the expiration of the term of this permit. The Permittee shall submit a test protocol to the Department for approval at least 30 days prior to the proposed test date. The Permittee shall submit stack test results to the Department within 45 days after the performance testing. The Permittee shall measure the NOx concentration of the flue gases from each boiler in accordance with the Title V operating permit conditions.

The Permittee shall maintain records of the stack tests and the results of the measured NOx content of the flue gas on site for at least five (5) years.

Rationale for Periodic Monitoring Strategy

Stack test results and flue gas measurements are sufficient to demonstrate compliance with this regulation.

D. Operational Limitations

(1) The boilers shall be fired with natural gas as primary fuel and No. 2 distillate oil as back-up fuel. **[Reference: MDE Permit to Construct No. 15-5-1112N and 1113N issued on July 30, 1996]**

(2) In order to prevent the NO_X emissions from the two (2) 99.8 million Btu/hr boilers from triggering a “Significant” net increase for the facility as defined under COMAR 26.11.17.01 B (26) and thereby triggering the Nonattainment Provisions for Major New Sources and Modifications (NNSR) under COMAR 26.11.17, the Permittee shall limit the NO_X emissions from the boilers to less than 25 tons per year, for any 12-month consecutive period.

(3) In order to demonstrate compliance with the emissions requirement for exemption from NNSR, the Permittee shall calculate and record the NO_X emissions from the boilers, for each previous calendar month and a total for the previous 12 consecutive calendar months. The calculations and records shall be updated monthly, within the first 15 days of each following month. **[Reference: COMAR 26.11.03.01H, … 26.11.03.06C & … 26.11.17.01]**

(4) The Permittee may burn liquid fuel only during periods of gas curtailment, gas supply emergencies, or periodic testing on liquid fuel. Periodic testing of liquid fuel shall not exceed a combined total of 48 hours during any calendar year. **[Reference: COMAR 26.11.02.09A and 40 CFR §63.11195(e) and §63.11237]**

Compliance Demonstration

The Permittee shall calculate the quantity of natural gas and No. 2 fuel oil burned for each 12-month rolling period in accordance with the Title V operating permit and

maintain these records on site. The Permittee shall submit the monthly quantity of natural gas and No. 2 fuel oil burned with the supporting documentation for the annual emissions certifications report.

Rationale for Periodic Monitoring Strategy
Documentation of the quantity of natural gas and No. 2 fuel oil burned is sufficient to demonstrate that the Permittee is not exceeding the natural gas and fuel oil restrictions.

Emission Units – EU-7

Emissions Unit Number	MDE Registration Number	Emissions Unit Name and Description	Date of Installation
EU-7	031-0323-6-0557	Fire Research Laboratory consisting of four (4) pre-heaters, four (4) baghouses, and four (4) scrubbers.	1999 and 2012

Permit to Construct 031-0323-6-0557 was issued on December 9, 1999 for the installation of two (2) baghouses and two (2) dry scrubbers for emissions control in the Fire Research Laboratory. This permit was superseded by a new permit issued on September 16, 2011. The new permit included the addition of two (2) preheaters each with a dry scrubber and a bag house as part of the expansion of the Fire Research Laboratory.

Applicable Standards and Limits

A. Control of Visible Emissions

"A person may not cause or permit the discharge of emissions from any installation or building, other than water in an uncombined form, which is visible to human observers." **[Reference: COMAR 26.11.06.02C(2)]**

Compliance Demonstration

The Permittee is required to perform a visual observation of the exhaust from each bag house once per month for a 6-minute period when a fire is burning (unless the Fire Research Laboratory is not in operation that month) to determine if there are any visible emissions. If visible emissions are observed from the baghouses, the Permittee shall perform the following: (1) inspect all control equipment that may affect visible emissions; (2) perform all necessary repairs and/or adjustments within 48 hours so that the visible emissions in the exhaust gases are eliminated; and (3) document, in writing, the results of the inspections and the repairs and/or adjustments made to the control equipment. If visible emissions have not been eliminated within 48 hours, the Permittee shall perform a Method 9 observation once

daily for an 18-minute period until corrective actions have eliminated the visible emissions.

The Permittee shall maintain a log on-site of the dates and results of the visible emissions observations for five (5) years and submit these records to the Department upon request.

Rationale for Periodic Monitoring Strategy
Visual observations during a fire using EPA Method 9 are sufficient for monitoring visible emissions.

B. Control of Particulate Matter

(1) "A person may not cause or permit to be discharged into the outdoor atmosphere from any other installation, particulate matter in excess of 0.03 gr/SCFD (68.7 mg/dscm)." **[Reference: COMAR 26.11.06.03B(2)]**

(2) "A person may not cause or permit any material to be handled, transported, or stored or a building, its appurtenances, or a road to be used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne." **[Reference: COMAR 26.11.06.03B(2)(a)]**

Compliance Demonstration
The Permittee is required to develop and maintain a preventative maintenance plan that is based on manufacturer's recommendations and prior facility maintenance experiences for the four (4) dry scrubbers and the four (4) baghouses that describes the maintenance activity and time scheduled for completing each activity. The Permittee shall perform maintenance activities within the time frames established in the plan and shall maintain a log with records of the dates and a description of the maintenance that was performed.

The Permittee shall maintain records of the following onsite for at least five (5) years and make them available to the Department upon request: (1) a copy of the preventative maintenance plan for each bag house and a record of the dates and descriptions of maintenance activity performed; (2) records of the bag house malfunctions that cause visible emissions and the corrective actions taken; and (2) records of the amount and types of material processed in the Fire Research Laboratory.

Rationale for Periodic Monitoring Strategy
The preventative maintenance plan and logs of maintenance activities and malfunctions are sufficient to demonstrate compliance with the particulate matter emissions standard.

C. Control of Sulfur Oxides

(1) "A person may not cause or permit the discharge into the atmosphere from installations other than fuel-burning equipment of gases containing more than 500 ppm of sulfur dioxide. Installations constructed before February 21, 1971, are limited to not more than 2,000 ppm sulfur dioxide." **[Reference: COMAR 26.11.06.05C(1)]**

(2) A person may not cause or permit the discharge into the atmosphere from installations other than fuel-burning equipment of gases containing sulfuric acid, sulfur trioxide, or any combination of them, greater than 35 milligrams per cubic meter reported as sulfuric acid. Any installation constructed before February 21, 1971, is limited to not more than 70 milligrams per cubic meter of sulfuric acid, sulfur trioxide, or any combination of them, reported as sulfuric acid." **[Reference: COMAR 26.11.06.05C(2)]**

Note: All calculations of emissions governed by this regulation shall be adjusted to standard conditions and 7 percent oxygen. **[Reference: COMAR 26.11.06.05A]**

Compliance Demonstration

The Permittee shall operate and maintain the four (4) dry scrubbers in accordance with manufacturer's recommendations. The Permittee is required to develop and maintain a preventative maintenance plan that is based on manufacturer's recommendations and prior facility maintenance experiences for the four (4) dry scrubbers and the four (4) baghouses that describes the maintenance activity and time scheduled for completing each activity. The Permittee shall perform maintenance activities within the time frames established in the plan and shall maintain a log with records of the dates and description of the maintenance that was performed. The Permittee shall maintain a log with records of the dates and a description of the maintenance that was performed. The Permittee shall submit records of the amount and types of material processed in the Fire Research Laboratory to the Department upon request.

Rationale *for Periodic Monitoring Strategy*

Records of maintenance activities are sufficient to demonstrate compliance with the sulfur oxides limitations.

D. Control of Nitrogen Oxides

"A person who owns or operates any installation other than fuel-burning equipment that causes NO_x emissions shall:

(1) Maintain good operating practices as recommended by the equipment vendor to minimize NO_x emissions;

(2) Prepare and implement a written in-house training program for all operators of these installations that include instruction on good operating and maintenance practices for the particular installation;

(3) Maintain and make available to the Department, upon request, the written in-house operator training program;

(4) Burn only gas in each installation, where gas is available, during the period May 1 through September 30 of each year; and

(5) Maintain operator training attendance records for each operator at the site for at least 2 years and make these records available to the Department upon request." **[Reference: COMAR 26.11.09.08J]**

Note: COMAR 26.11.09.08B(5) states that: (a) for the purpose of COMAR 26.11.09.08, the equipment operator to be trained may be the person who maintains the equipment and makes eth necessary adjustments for efficient operation; and (b) that the operator training course sponsored by the Department shall include an in-house training course that is approved by the Department.

Compliance Demonstration
The Permittee shall prepare, implement, and maintain a written in-house training program for all operators that include instruction on good operating and maintenance practices for the installation. The Permittee shall maintain the training records on site for at least two (2) years and make these records available to the Department upon request. The Permittee shall maintain annual fuel use records on site for at least three (3) years and make those records available to the Department upon request.

E. Control of VOC Emissions

"Except as provided in §E of this regulation, a person may not cause or permit the discharge of VOC from any installation constructed on or after May 12, 1972 in excess of 20 pounds (9.07 kilograms) per day unless the discharge is reduced by 85 percent or more overall." **[Reference: COMAR 26.11.06.06B(1)(b)]**

Compliance Demonstration
To demonstrate compliance with the VOC limit, the Permittee shall maintain records of all materials used in the Fire Research Laboratory and submit the records to the Department upon request. These records can be used to calculate total VOC emitted from the Fire Research Laboratory. The Permittee is also required to include all emissions from the Fire Research Laboratory in the annual emissions certification report required by the Title V permit.

F. Operational Limitations

(1) The pre-heaters shall be natural gas-fired only. **[Reference: Permit to Construct No. 031-0323-6-0557, Part D(2), issued on September 16, 2011]**

(2) The dry scrubbers must be in place and operated in accordance with manufacturer's specifications to meet the air toxics requirements. **[Reference: Permit to Construct No. 031-0323-6-0557, Part D(3), issued on September 16, 2011]**

(3) The exhaust from the National Fire Research Lab must vent through the pre-heater, dry scrubber, and bag house system. **Reference: Permit to Construct No. 031-0323-6-0557, Part D(4), issued on September 16, 2011]**

Compliance Demonstration
The Permittee shall maintain monthly fuel records of the amount of natural gas used in the Fire Research Laboratory and submit the records to the Department with the facility's annual Emissions Certification Report.

Rationale for Periodic Monitoring Strategy
Monthly records of fuel usage are sufficient to demonstrate compliance with this requirement.

Emission Units – EU-8

Emissions Unit Number	MDE Registration Number	Emissions Unit Name and Description	Date of Installation
EU-8	031-0323-9-1177	One (1) 6,000-gallon aboveground gasoline storage tank.	2018

MDE Registration No. 031-0323-9-1177 was issued on January 26, 2018 for the installation of one (1) 6,000 gallon aboveground gasoline storage tank equipped with a Stage 1 Vapor Recovery System. This was covered under an Air Quality general Permit to Construct for Small Gasoline Storage Tanks.

Applicable Standards and Limits

A. Control of VOC Emissions

(1) The Permittee may not cause or permit gasoline to be loaded into a stationary tank unless the loading system is equipped with a vapor balance line that is properly installed, maintained, and used. **[Reference: COMAR 26.11.13.04C(2)]**

(2) "A person may not cause or permit a gasoline or VOC having a TVP of 1.5 psia (10.3 kilonewtons/square meter) or greater to be loaded into any truck, railroad tank car, or other contrivance unless the:
   (a) Loading connections on the vapor lines are equipped with fittings that have no leaks and that automatically and immediately close upon disconnection to prevent release of gasoline or VOC from these fittings; and
   (b) Equipment is maintained and operated in a manner to prevent avoidable liquid leaks during loading and unloading operations." **[Reference: COMAR 26.11.13.04D]**

Compliance Demonstration

The Permittee shall visually inspect all components for leaks and retain a record of these leak inspections once a month during a delivery. If leaks are detected, the Permittee shall take corrective actions in accordance with the Title V operating permit. The Permittee shall maintain a record of all leak inspections on site for at least five (5) years and make the record available to the Department upon request.

Rationale for Periodic Monitoring Strategy

Monthly records of leak inspections and associated records are sufficient to determine demonstrate compliance with visible emissions standards.

B. Operational Limitations

(1) The Permittee shall limit the monthly gasoline throughput to less than an average of 10,000 gallons per month in any calendar year unless notification is provided to the Department within 30 days following any calendar year in which the average monthly gasoline throughput at the facility during the calendar year exceeds 10,000 gallons per month. **[Reference: COMAR 26.11.03.06C and COMAR 26.11.24.02C(1)]**

(2) The Permittee shall install and operate an approved system within one (1) year after any calendar year in which the average monthly gasoline throughput at the facility during the calendar year exceeds 10,000 gallons per month. **[Reference: COMAR 26.11.24.07D(2)]**

(3) The Permittee must meet the management standards specified in 40 CFR Part 63 subpart CCCCCC for a tank with less than 10,000 gallons per month throughput. **[Reference: 40 CFR §63.11116]**

Compliance Demonstration

The Permittee shall create and maintain records on monthly gasoline throughput and tank sizes and make the records available to the Department upon request. The Permittee shall notify the Department within 30 days and install and operate an approved system within one (1) year after any calendar year in which the average monthly gasoline throughput at the facility during the calendar month exceeds 10,000 gallons per month. The Permittee must maintain proper handling of gasoline to prevent vapor releases to the atmosphere for an extended period of time.

Rationale for Periodic Monitoring Strategy

Records of monthly gasoline throughput demonstrate compliance with the operational limitations.

Emission Units – EU-9 and EU-10

Emissions Unit Number	MDE Registration Number	Emissions Unit Name and Description	Date of Installation
EU-9	031-0323-9-0630	One (1) diesel fired emergency generator rated at 1000 kilowatts.	2002
EU-10	031-0323-9-0898	One (1) diesel fired emergency generator rated at 500 kilowatts.	1999

Permit to Construct 031-0323-9-0630 was issued on July 18, 2000 for the installation of one (1) diesel fired emergency generator rated at 1000 kilowatts and equipped with a catalytic converter and fabric filter. This permit was originally issued on July 18, 1996 but expired before the engine was installed.

MDE Registration No. 031-0323-9-0898 was included in the Part 70 operating permit in 2008 following MDE's notification that any emergency generators rated at 500 horsepower or greater must be included in the main body of the Title V permit since they were no longer considered insignificant emissions units.

These engines are subject to National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (40 CFR 63, Subpart ZZZZ).

Applicable Standards and Limits

A. Control of Visible Emissions
COMAR 26.11.09.05E – Stationary Internal Combustion Engine Powered Equipment.

"(2) Emissions During Idle Mode. A person may not cause or permit the discharge of emissions from any engine, operating at idle, greater than 10 percent opacity. **[Reference: COMAR 26.11.09.05E(2)]**

(3) Emissions During Operating Mode. A person may not cause or permit the discharge of emissions from any engine, operating at other than idle conditions, greater than 40 percent opacity. **[Reference: COMAR 26.11.09.05E(3)]**

(4) Exceptions.
(a) Section E(2) does not apply for a period of 2 consecutive minutes after a period of idling of 15 consecutive minutes for the purpose of clearing the exhaust system.
(b) Section E(2) does not apply to emissions resulting directly from cold engine start-up and warm-up for the following maximum periods:
(i) Engines that are idled continuously when not in service: 30 minutes;
(ii) All other engines: 15 minutes.
(c) Section E(2) and (3) does not apply while maintenance, repair, or testing is being performed by qualified mechanics." **[Reference: COMAR 26.11.09.05E(4)]**

Compliance Demonstration

The Permittee shall properly operate and maintain the engine in a manner to minimize visible emissions. The Permittee shall maintain an operational manual and preventative maintenance plan on site and maintain a record of the maintenance performed that relates to combustion performance. The Permittee shall report incidents of visible emissions in accordance with Section III of the Title V operating permit.

Rationale for Periodic Monitoring Strategy

A properly operated and maintained engine is not expected to produce visible emissions. Proper maintenance combined with a preventative maintenance plan is sufficient to demonstrate compliance with the visible emissions standards.

B. Control of Sulfur Oxides

"A person may not burn, sell, or make available for sale any fuel with a sulfur content by weight in excess of or which otherwise exceeds the following limitations: (2) In Areas III and IV: (b) Distillate fuel oils, 0.3 percent." **[Reference: COMAR 26.11.09.07A(2)(b)]**

Compliance Demonstration

The Permittee shall obtain a certification from the fuel supplier that the fuel oil is in compliance with the sulfur in fuel limitation. The Permittee shall retain fuel supplier certifications for at least five (5) years and shall submit them to the Department upon request.

Rationale for Periodic Monitoring Strategy

Fuel oil certifications are sufficient to demonstrate compliance with the applicable fuel sulfur limits. No additional monitoring is required.

C. Control of Nitrogen Oxides

"A person who owns or operates fuel-burning equipment with a capacity factor (as defined in 40 CFR Part 72.2) of 15 percent or less shall:

(a) Provide certification of the capacity factor of the equipment to the Department in writing;
(b) For fuel-burning equipment that operates more than 500 hours during a calendar year, perform a combustion analysis and optimize combustion at least once annually;
(c) Maintain the results of the combustion analysis at the site for at least 2 years and make these results available to the Department and the EPA upon request;
(d) Require each operator of an installation, except combustion turbines, to attend operator training programs at least once every 3 years, on combustion optimization that are sponsored by the Department, the EPA, or equipment vendors; and
(e) Maintain a record of training program attendance for each operator at the site, and make these records available to the Department upon request."

[Reference: COMAR 26.11.09.08G(1)]

Note: COMAR 26.11.09.08B(5) states that; (a) for the purpose of COMAR 26.11.09.08, the equipment operator to be trained may be the person who maintains the equipment and makes the necessary adjustments for efficient operation*;* and (b) that the operator training course sponsored by the Department shall include an in-house training course that is approved by the Department.

Compliance Demonstration

If either emergency generator operates more than 500 hours during a calendar year, the Permittee shall perform an annual combustion analysis that includes the measurement of CO, O2, and NOx in the flue gas and optimizes the combustion in accordance with manufacturer's recommendations. The Permittee shall maintain records of operation and fuel use on site for at least five (5) years and make them available to the Department upon request. If a combustion analysis is performed, the Permittee shall maintain the results of the combustion analysis and make them available to the Department and the EPA upon request. The Permittee shall maintain a record of training program attendance for each operator at the site and make these records available to the Department upon request. The Permittee shall provide certification of the capacity factor of the equipment to the Department in writing. The Permittee shall report incidents of visible emissions in accordance with Section III of the Title V operating permit.

Rationale for Periodic Monitoring Strategy

A preventative maintenance plan, maintenance records, operator training records, and combustion analysis, if applicable, are sufficient to demonstrate compliance with the nitrogen oxides standards.

D. Operational Limitations

(1) For each engine, the Permittee shall:

(a) Change the oil and filter every 500 hours of operation or annually, whichever comes first.

(b) Inspect the air cleaner every 1,000 hours of operation or annually, whichever comes first, and replace as necessary.

(c) Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

[Reference: 40 CFR §63.6603(a) and 40 CFR 63, Subpart ZZZZ, Table 2d, Item #4]

(2) *Requirements for emergency stationary RICE.* (1) If you own or operate an existing emergency stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions, a new or reconstructed emergency stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions that was installed on or after June 12, 2006, or an ***existing emergency stationary RICE located at an area source of HAP emissions***, you must operate the emergency stationary RICE according to the requirements in paragraphs (f)(1)(i) through (iii) of this section. Any operation other than emergency operation, maintenance and testing is prohibited. If you do not operate the engine according to the requirements in paragraphs (f)(1)(i) through (iii)[(*)]

of this section, the engine will not be considered an emergency engine under this subpart and will need to meet all requirements for non-emergency engines.

(i) There is no time limit on the use of emergency stationary RICE in emergency situations.

(ii) You may operate your emergency stationary RICE for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency RICE beyond 100 hours per year. **[Reference: 40 CFR §63.6640 (f)]**

Note(*): Effective May 2, 2016, emergency generators are no longer allowed to participate for emergency demand response operation unless they meet the requirements of a non-emergency generator of the same model year. This engine does not meet the standards for a non-emergency generator, therefore, operation for emergency demand response or during periods of voltage deviation, as was indicated under paragraphs (f)(1)(iii), are not permitted.

Compliance Demonstration
The Permittee shall develop a maintenance plan and maintain records of maintenance conducted on the emergency engines and after control treatment devices (if any). The Permittee shall keep records of the hours of operation of the engine recorded through a non-resettable hour meter. The Permittee must document how many hours are spent for non-emergency operation. If the Permittee operates the engine as part of a demand response operation, the Permittee shall keep records of the notification of the emergency situation, the date, the start time, and end time the engine was operated as part of the demand response.

Rationale for Periodic Monitoring Strategy
A maintenance plan, maintenance records, records of hours of operation and reason for operation, and documentation of demand response notifications are sufficient to demonstrate compliance with the operational limitations.

Emission Units – EU-11 and EU-12

Emissions Unit Number	MDE Registration	Emissions Unit Name and Description	Date of Installation

	Number		
EU-11	031-0323-5-2363	One (1) 8 MW Solar Taurus natural gas fired combustion turbine rated at 87.97 MMBtu/hr.	2019
EU-12	031-0323-5-2364	One (1) 50.78 MMBtu/hr Rentech natural gas fired HRSG equipped with low NOx duct burners.	2019

Applicable Standards and Limits

A. Control of Visible Emissions

Fuel Burning Equipment. – [COMAR 26.11.09.05(A)(1)]

"In Areas I, "In Areas III and IV, a person may not cause or permit the discharge of emissions from any fuel burning equipment, other than water in an uncombined form, which is visible to human observers except that, for the purpose of demonstrating compliance using COM data, emissions that are visible to a human observer are those that are equal to or greater than 10 percent opacity."

(2) COMAR 26.11.09.05A(3), Exceptions. "Section A(1) and (2) of this regulation do not apply to emissions during load changing, soot blowing, startup, or adjustments or occasional cleaning of control equipment if:
(a) The visible emissions are not greater than 40 percent opacity; and
(b) The visible emissions do not occur for more than 6 consecutive minutes in any sixty-minute period."

Compliance Demonstration

The Permittee is required to implement a preventative maintenance plan and maintain on site an operations manual and records of maintenance performed that relate to combustion performance. The Permittee shall properly operate and maintain the CT & HRSG in accordance with the manufacturer's recommendations and in a manner to assure compliance with the visible emissions standards and shall maintain logs of any visible emissions observations performed.
[Reference: COMAR 26.11.03.06C]

Rationale for Periodic Monitoring Strategy

A properly operated and maintained CT and HRSG, firing natural gas, is not expected to produce visible emissions. Proper maintenance combined with a preventative maintenance plan is sufficient to demonstrate compliance with the visible emissions standards.

B. Control of Sulfur Oxides

The Permittee must comply with one of the following:

(1) You must not cause to be discharged into the atmosphere from the subject stationary combustion turbine any gases which contain SO_2 in excess of 110

nanograms per Joule (ng/J) (0.90 pounds per megawatt-hour (lb/MWh)) gross output, or

(2) You must not burn in the subject stationary combustion turbine any fuel which contains total potential sulfur emissions in excess of 26 ng SO_2/J (0.060 lb SO_2/MMBtu) heat input. If your turbine simultaneously fires multiple fuels, each fuel must meet this requirement.

[Reference: 40 CFR Part 60, Subpart KKKK, §60.4330(a)(1) and (2). What emissions limits must I meet for sulfur dioxide (SO_2)?]

Compliance Demonstration

(1) The fuel quality characteristics in a current, valid purchase contract, tariff sheet or transportation contract for the fuel, specifying that … , the total sulfur content for natural gas use in continental areas is **20 grains of sulfur or less per 100 standard cubic feet** … , has potential sulfur emissions of less than less than 26 ng SO2/J (0.060 lb SO2/MMBtu) heat input for continental areas…

(2) The Permittee shall obtain a certification from the fuel supplier indicating that the fuel complies with the limitation on the sulfur content.

[Reference:40 CFR §60.4365(a) & COMAR 26.11.09.07]

Rationale for Periodic Monitoring Strategy

Fuel oil certifications are sufficient to demonstrate compliance with the applicable fuel sulfur limits. No additional monitoring is required.

C. Control of Nitrogen Oxides

40 CFR Part 60, Subpart KKKK Requirements

Applies to the CT:

(1) The Permittee "must meet the emission limits for NO_X specified in Table 1 to this subpart."

(2) "If you have two or more turbines that are connected to a single generator, each turbine must meet the emission limits for NO_X."

40 CFR Part 60, Subpart KKKK, Table 1 – Nitrogen Oxide Emission Limits for New Stationary Combustion Turbines.

Combustion Turbine Type	Combustion Turbine heat input at peak load (HHV)	NO_X emission standard
New turbine firing natural gas	> 50 MMBtu/h and ≤ 850 MMBtu/h	25 ppm at 15 percent O_2 or 150 ng/J of useful output (1.2 lb/MWh).

[Reference: 40 CFR Part 60, Subpart KKKK, Table 1 – Nitrogen Oxide Emission Limits for New Stationary Combustion Turbines]

{COMAR 26.11.09.08E applies only to the HRSG}

COMAR 26.11.09.08E – Requirements for Fuel-Burning Equipment with a Rated Heat Input capacity of 100 MMBtu Per Hour or Less.

"A person who owns or operates fuel-burning equipment with a rated heat input capacity of 100 MMBtu per hour or less shall:

(1) Submit to the Department an identification of each affected installation, the rated heat input capacity of each installation, and the type of fuel burned in each;

(2) Perform a combustion analysis for each installation at least once each year and optimize combustion based on the analysis; *{**Note:** Applies for units that operate more than 500 hour in a calendar year - Ref: Condition G(1) above.}*

(3) Maintain the results of the combustion analysis at the site for at least 2 years and make this data available to the Department and the EPA upon request;

(4) Once every 3 years, require each operator of the installation to attend operator training programs on combustion optimization that are sponsored by the Department, the EPA, or equipment vendors; and

(5) Prepare and maintain a record of training program attendance for each operator at the site, and make these records available to the Department upon request.

{COMAR 26.11.09.08G applies only to the Combustion Turbine}

COMAR 26.11.09.08G – Control of NO_X Emissions for Major Stationary Sources. "Requirements for Fuel-Burning Equipment with a Capacity Factor of 15 Percent or Less, and Combustion Turbines with a Capacity Factor Greater than 15 Percent.

Note(*2): The federal NO_X emissions limit under 40 CFR Subpart KKKK is more stringent than the State requirements and therefore takes precedence over COMAR 26.11.09.08G. However, the NSPS Subpart KKKK NO_X standard is superseded by the more conservative Permit to Construct NNSR limit, which is cited in **Section 6.1.(E)** of this permit.

Compliance *Demonstration*
[Initial Testing]
(1) The Permittee shall conduct the initial performance test within 60 days of achieving the maximum production rate at which the facility will operate but not later than 180 days after initial startup of the facility**.**
[Reference: 40 CFR §60.8(a)]

(2) The Permittee must conduct an initial NOx performance test, as required in §60.8. **[Reference: 40 CFR §60.4400(a)]**

[Periodic Testing]

Note(*): Conditions below applies to the CT that the Permittee has opted to use the alternative method to annual testing for demonstrating continuous compliance ("continuous parameter monitoring") for NOx as specified in 40 CFR § 60.4340 (b)(2).

(1) After the initial compliance test required under 40 CFR § 60.8, the owner or operator shall ***conduct a performance stack test for NO_X for each CT unit at least once every 5 years or at least once during the term of the operating permit(*)***. The Permittee shall conduct performance test for NOx in accordance with the methodologies specified in 40 CFR §§ 60.4340 & 60.4400.

(2) Performance tests shall be conducted and data reduced in accordance with the test methods and procedures contained in each applicable subpart unless the Administrator specifies or approves, in specific cases, an alternative reference method.

(3) The Permittee shall provide the Department at least 30 days prior notice of any performance test, except as specified under other subparts, to afford the Administrator the opportunity to have an observer present. If after 30 days' notice for an initially scheduled performance test, there is a delay (due to operational problems, etc.) in conducting the scheduled performance test, the owner or operator of an affected facility shall notify the Administrator (the Department) as soon as possible of any delay in the original test date, either by providing at least 7 days prior notice of the rescheduled date of the performance test, or by arranging a rescheduled date with the Administrator (the Department) by mutual agreement.

[Notifications]
(1) The Permittee shall notify the Department at least 30 days prior to any performance test, to afford the Department the opportunity to have an observer present. **[Reference: 40 CFR §60.8(d)]**
(2)The Permittee shall provide the Department with two copies of the test protocols at least 30 days prior to any scheduled performance tests. **[Reference: COMAR 26.11.01.04 & 40 CFR § 60.4340 (b)(2) & .4400]**

[CT NSPS Monitoring]
(1) The appropriate parameters must be continuously monitored and recorded during each run of the initial performance test required under 40 CFR §60.8, to establish acceptable operating values and ranges, for the purposes of the parameter monitoring plan as specified in 40 CFR §60.4355. The Permittee may supplement the performance test data with engineering analyses, design specifications, manufacturer's recommendations, and other relevant information to define the acceptable parametric ranges more precisely. **[Reference: 40 CFR §60.4355(a) and 40 CFR §60.4410]**

(2) For any lean premix stationary combustion turbine, the Permittee must continuously monitor the appropriate parameters to determine whether the turbine is operating in low-NOx mode.
[Reference: 40 CFR §60.4340(b)(2)(ii)]

[NO_X RACT Monitoring] applies only to the HRSG
The Permittee shall:
(1) Provide certification of the capacity factor of the equipment to the Department in writing;

(2) Perform a combustion analysis and optimize combustion at least once annually for fuel-burning equipment that operates more than 500 hours during a calendar year; and

(3) Submit to the Department an identification of each affected installation, the rated heat input capacity of each installation, and the type of fuel burned in each unit.
[Reference COMAR 26.11.09.08 G & E]

[Record Keeping]
(1) The Permittee shall maintain records and results of any tests performed in compliance with testing as required under 40 CFR § 60.8 and 40 CFR 60, Subpart KKKK and any other testing required under this permit.

(2) The Permittee shall maintain a copy of the parametric monitoring plan in accordance with § 60.4355, including records of pilot fuel valve position and report any incidence of "Minimum Pilot Mode" = OFF to indicate potential NO_X exceedances, as applicable, in accordance with the plan.
[Reference: 40 CFR 60, Subpart KKKK & COMAR 26.11.03.06C]

(3) The Permittee shall maintain records of all maintenance performed that relates to combustion performance, and records of all performance testing conducted.
[COMAR 26.11.03.06C]

(4)The Permittee shall maintain a record of training program attendance for each operator at the site and make these records available to the Department upon request COMAR 26.11.09.08 F & G.

(5) The Permittee shall maintain records of the results of the combustion analysis at the site for at least 2 years and make these results available to the Department and the EPA upon request; **[Reference: COMAR 26.11.09.08G & COMAR 26.11.03.06C]**

[Reporting]
Reporting under § 60.4375:
“(b) For each affected unit that performs performance tests in accordance with Sec. 60.4340(a), you must submit a written report of the results of each performance test

before the close of business on the 60th day following the completion of the performance test."

§60.4380 How are excess emissions and monitor downtime defined for NOx?
For the purpose of reports required under §60.7(c), periods of excess emissions and monitor downtime that must be reported are defined as follows:

(c) For turbines required to monitor combustion parameters or parameters that document proper operation of the NOx emission controls:

(1) An excess emission is a 4-hour rolling unit operating hour average in which any monitored parameter does not achieve the target value or is outside the acceptable range defined in the parameter monitoring plan for the unit.

(2) A period of monitor downtime is a unit operating hour in which any of the required parametric data are either not recorded or are invalid.
[Reference: 40 CFR 60, Subpart KKKK]

The Permittee shall report all periods of excess emissions in accordance with permit condition 4, Section III, Plant Wide Conditions, "Report of Excess Emissions and Deviations". **[Reference: COMAR 26.11.03.06C]**

Rationale for Periodic Monitoring Strategy
The NOx monitoring strategy cited above is stipulated by the federal and state regulations and are directly cited.

D. Operational Limitations

Except as otherwise provided in this part, the one (1) natural gas fired combustion turbine rated at 87.97 MMBtu/hr, the one (1) natural gas fired HRSG rated at 50.78 MMBtu/hr and equipped with low NO_X burners, and Boilers EU # 1 - #4 equipped with low NO_X burners shall be operated in accordance with specifications included in the applications and any operating procedures recommended by equipment vendors unless the Permittee obtains from the Department written authorization for alternative operating procedures.

[Reference: Permit to Construct PTC #031-0323-5-2363 & 5-2364, issued January 17, 2019]

Compliance Demonstration

[Record Keeping]

(1) The Permittee shall maintain records associated with the operations and maintenance plan and shall make them available to the Department upon request.

(2) The Permittee shall maintain monthly records of the following:

(a) Monthly amount of fuel combusted,

(b) Fuel supplier certifications,

(c) Combustion turbine & HRSG operating hours, and

(d) A verification of the capacity factor for the combustion turbine generator set, which shall include the heat input (in million British thermal units or equivalent units of measure) and/or electric output (expressed in MWe-hr). **[Reference: COMAR 26.11.03.06C & COMAR 26.11.02.19D]**

E. Non-Attainment New Source Review (NNSR) Limits

(1) In order to avoid triggering NNSR requirements, the Permittee shall not exceed the following NO_X emissions limits:

(a) For the combustion turbine (CT): 15 ppm on a dry volume basis (ppmvd) at 15 percent oxygen (O2);

(b) For the Heat Recovery Steam Generator (HRSG): 0.08 lb / MMBtu; and

(c) For the Boilers EU # 1 though EU# 4: 0.1 lbs / MMBTU when burning natural gas; and 0.2 lbs / MMBTU when burning fuel oil.

(2) In order to prevent the NO_X emissions from the installation of the CHP Plant (the one (1) natural gas fired combustion turbine rated at 87.97 MMBtu/hr and the one (1) natural gas fired HRSG rated at 50.78 MMBtu/hr and equipped with low NO_X burners) from triggering a "Significant" net emissions increase for the facility as defined under COMAR 26.11.17.01B(26) and triggering the Nonattainment Provisions for Major New Sources and Modifications (NSR) under COMAR 26.11.17, the Permittee shall:

(a) Limit NO_X emissions from the CHP Plant (Reg. No. 5-2363 & -5-2364) to no more than **30 TPY** for any 12-month consecutive period, unless prior approval is received from the Department; and

(b) Limit the combined total NO_X emissions from Boilers #1 - #4 to less than **10.8 TPY** for any 12-month consecutive period; unless prior approval is received from the Department, in order to satisfy the NNSR netting demonstration of the CHP.

(3) In order to demonstrate compliance with the annual emissions limitations, the Permittee shall calculate and record the CHP Plant and Boiler Nos. 1 – 4 NO_X emissions for each previous calendar month and a total for the previous 12 consecutive calendar months.

(4) Monthly records of the hours of operation, fuel use, NO_X emission calculations and supporting data, including emissions factors, for the CHP and Boiler Nos. 1 – 4 shall be kept on site for at least five (5) years and shall be made available to the Department upon request. **[Reference: PTC 031-0323-5-2363 & 5-2364, issued January 17, 2019]**

Compliance Demonstration

[Testing]
In order to demonstrate compliance with Non-attainment New Source Review (NNSR), PTC requirement, NO_X emission standard of 15 ppm on a dry volume basis (ppmvd) at 15 percent oxygen (O_2) for the CT and 0.08 lb/ MMBtu/hr for the HRSG, the Permittee shall conduct initial and periodic testing as described in Section C - Control of Nitrogen Oxides, above. **[Reference: PTC# 031-0323-5-2363 and 5-2364]**

[Monitoring]
The Permittee shall conduct performance test for NOx in accordance with the methodologies specified in 40 CFR §§ 60.4340 & 60.4400 including but not limited to the following:
§ 60.4340 - How do I demonstrate continuous compliance for NOx if I do not use water or steam injection?

{Note: The Permittee has selected to alternative methods to demonstrate continuous compliance for NOx. See below.}

"(b) As an alternative, you may install, calibrate, maintain and operate one of the following continuous monitoring systems:
"(2) Continuous parameter monitoring as follows:
(ii) For any lean premix stationary combustion turbine, you must continuously monitor the appropriate parameters to determine whether the unit is operating in low-NO_X mode. **[Reference: 40 CFR 60, Subpart KKKK, §§ 60.4340 & 60.4400]**

[Recordkeeping] ***{See Record Keeping Section 6.4 C Control of Nitrogen Oxides, above}***

Rationale for Periodic Monitoring Strategy
The initial and periodic testing as prescribed is sufficient to determine compliance with the NNSR emissions limits.

Emission Unit – EU-13

Emissions Unit Number	MDE Registration Number	Emissions Unit Name and Description	Date of Installation

EU-13	031-0323-9-1199	One (1) 1,250 KW diesel-fired emergency generator.	2020

Applicable Standards and Limits

A. Control of Visible Emissions

COMAR 26.11.09.05E – Stationary Internal Combustion Engine Powered Equipment.

"(2) Emissions During Idle Mode. A person may not cause or permit the discharge of emissions from any engine, operating at idle, greater than 10 percent opacity. **[Reference: COMAR 26.11.09.05E(2)]**

(3) Emissions During Operating Mode. A person may not cause or permit the discharge of emissions from any engine, operating at other than idle conditions, greater than 40 percent opacity. **[Reference: COMAR 26.11.09.05E(3)]**

(4) Exceptions.
(a) Section E(2) does not apply for a period of 2 consecutive minutes after a period of idling of 15 consecutive minutes for the purpose of clearing the exhaust system.
(b) Section E(3) does not apply to emissions resulting directly from cold engine start-up and warm-up for the following maximum periods:
(i) Engines that are idled continuously when not in service: 30 minutes;
(ii) All other engines: 15 minutes.
(c) Section E(2) and (3) does not apply while maintenance, repair, or testing is being performed by qualified mechanics." **[Reference: COMAR 26.11.09.05E(4)]**

Compliance Demonstration

The Permittee shall properly operate and maintain the engine in a manner to minimize visible emissions. The Permittee shall maintain an operational manual and preventative maintenance plan on site and maintain a record of the maintenance performed that relates to combustion performance. The Permittee shall report incidents of visible emissions in accordance with Section III of the Title V operating permit.

Rationale for Periodic Monitoring Strategy

A properly operated and maintained engine is not expected to produce visible emissions. Proper maintenance combined with a preventative maintenance plan is sufficient to demonstrate compliance with the visible emissions standards.

B. Control of Sulfur Oxides

"A person may not burn, sell, or make available for sale any fuel with a sulfur content by weight in excess of or which otherwise exceeds the following limitations: (2) In Areas III and IV: (b) Distillate fuel oils, 0.3 percent." **[Reference: COMAR 26.11.09.07A(2)(b)]**

Note: Installations subject to 40 CFR Part 60, Subpart IIII must comply with the fuel standards of §60.4207 which limit the maximum sulfur content of the fuel to 15 ppm beginning October 1, 2010.

Compliance Demonstration
The Permittee shall obtain a certification from the fuel supplier that the fuel oil is in compliance with the sulfur in fuel limitation. The Permittee shall retain fuel supplier certifications for at least five (5) years and shall submit them to the Department upon request.

Rationale for Periodic Monitoring Strategy
Fuel oil certifications are sufficient to demonstrate compliance with the applicable fuel sulfur limits. No additional monitoring is required.

C. Operational Limitations

(1) This source is subject to all applicable federal air pollution control requirements including, but not limited to, the following:

(a) All applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements included in federal New Source Performance Standards (NSPS) under 40 CFR Part 60 Subpart IIII for Stationary Compression Ignition Internal Combustion Engines,

(b) All applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements included in the National Emissions Standards for Hazardous Air Pollutants (NESHAP) promulgated under 40 CFR 63, Subparts A and ZZZZ for Reciprocating Internal Combustion Engines.

The Permittee shall meet the requirements of 40 CFR, Part 63, Subpart ZZZZ by meeting the requirements of 40 CFR, Part 60, Subpart IIII for the emergency generator. No further requirements apply to the emergency generator under 40 CFR, Part 63, Subpart ZZZZ. **[Reference: 40 CFR §63.6590(c)(1)]**

(2) Except as otherwise provided in this part, the emergency diesel generator shall be operated in accordance with specifications included in the application and any operating procedures recommended by equipment vendors unless the Permittee obtains from the Department written authorization for alternative operating procedures.

(3) The Permittee must operate and maintain an NSPS emergency diesel generator and control devices according to the manufacturer's written instructions or according to procedures developed by the owner or operator that are approved by the manufacturer. Additionally, the Permittee may change only those settings that are permitted by the manufacturer. The Permittee must also meet the

requirements of 40 CFR part 89, part 1039 for model year 2011 or later, part 94 and/or part 1068, as they may apply to an owner or operator. **[Ref: §60.4211(a)]**

(4) Beginning October 1, 2010, owners and operators (the Permittee) of a stationary source CI ICE subject to this subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must purchase diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel. **[Ref: §60.4207(b)]**

(5) In accordance with 40 CFR §60.4211(f), as owner/operator of an emergency stationary ICE, you must operate the emergency stationary ICE according to the requirements in paragraphs (f)(1) through (3) of this section. In order for the engine to be considered an emergency stationary ICE under this subpart, any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as described in paragraphs (f)(1) through (3) of this section, is prohibited. If you do not operate the engine according to the requirements in paragraphs (f)(1) through (3) of this section, the engine will not be considered an emergency engine under this subpart and must meet all requirements for non-emergency engines.

(f)(1) There is no time limit on the use of emergency stationary ICE in emergency situations.

(f)(2)(i) Emergency stationary ICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE beyond 100 hours per calendar year.

(*)**Note:** Effective May 2, 2016, emergency generators are no longer allowed to participate for emergency demand response operation unless they meet the requirements of a non-emergency generator of the same model year. This engine does not meet the standards for a non-emergency generator, therefore, operation for emergency demand response or during periods of voltage deviation are not permitted.

Compliance Demonstration

The Permittee shall develop a maintenance plan and maintain records of maintenance conducted on the emergency engines and after control treatment devices (if any). The Permittee shall keep records of the hours of operation of the engine recorded through a non-resettable hour meter. The Permittee must document how many hours are spent for non-emergency operation. If the Permittee operates the engine as part of a demand response operation, the Permittee shall

keep records of the notification of the emergency situation, the date, the start time, and end time the engine was operated as part of the demand response.

Rationale for Periodic Monitoring Strategy
A maintenance plan, maintenance records, records of hours of operation and reason for operation, and documentation of demand response notifications are sufficient to demonstrate compliance with the operational limitations.

Emission Units – EU-14 and EU-15

Emissions Unit Number	MDE Registration Number	Emissions Unit Name and Description	Date of Installation
EU-14	031-0323-9-1213	One (1) 500 KW natural gas-fired emergency generator.	2020
EU-15	031-0323-9-1214.	One (1) 500 KW natural gas-fired emergency generator.	2020

Applicable Standards and Limits

A. Control of Visible Emissions
COMAR 26.11.09.05E – Stationary Internal Combustion Engine Powered Equipment.

"(2) Emissions During Idle Mode. A person may not cause or permit the discharge of emissions from any engine, operating at idle, greater than 10 percent opacity. **[Reference: COMAR 26.11.09.05E(2)]**

(3) Emissions During Operating Mode. A person may not cause or permit the discharge of emissions from any engine, operating at other than idle conditions, greater than 40 percent opacity. **[Reference: COMAR 26.11.09.05E(3)]**

(4) Exceptions.
(a) Section E(2) does not apply for a period of 2 consecutive minutes after a period of idling of 15 consecutive minutes for the purpose of clearing the exhaust system.
(b) Section E(2) does not apply to emissions resulting directly from cold engine start-up and warm-up for the following maximum periods:
(i) Engines that are idled continuously when not in service: 30 minutes;
(ii) All other engines: 15 minutes.

(c) Section E(2) and (3) does not apply while maintenance, repair, or testing is being performed by qualified mechanics." **[Reference: COMAR 26.11.09.05E(4)]**

Compliance Demonstration
The Permittee shall properly operate and maintain the engine in a manner to minimize visible emissions. The Permittee shall maintain an operational manual and preventative maintenance plan on site and maintain a record of the maintenance performed that relates to combustion performance. The Permittee shall report incidents of visible emissions in accordance with Section III of the Title V operating permit.

Rationale for Periodic Monitoring Strategy
A properly operated and maintained engine is not expected to produce visible emissions. Proper maintenance combined with a preventative maintenance plan is sufficient to demonstrate compliance with the visible emissions standards.

B. Control of Nitrogen Oxides

COMAR 26.11.09.08G(1) – Requirements for Fuel-Burning Equipment with a Capacity Factor of 15 Percent or Less.

"A person who owns or operates fuel-burning equipment with a capacity factor (as defined in 40 CFR Part 72.2) of 15 percent or less shall:

(i) Require each operator of an installation, except combustion turbines, to attend operator training programs at least once every 3 years, on combustion optimization that are sponsored by the Department, the EPA, or equipment vendors; and

(ii) Maintain a record of training program attendance for each operator at the site, and make these records available to the Department upon request."

[Reference: COMAR 26.11.09.08G(1)]

Note: COMAR 26.11.09.08B(5) states that; (a) for the purpose of COMAR 26.11.09.08, the equipment operator to be trained may be the person who maintains the equipment and makes the necessary adjustments for efficient operation*;* and (b) that the operator training course sponsored by the Department shall include an in-house training course that is approved by the Department.

Compliance Demonstration
The Permittee shall follow the testing, monitoring, record keeping and reporting requirements used to show compliance with the operational limitations. The Permittee shall keep a maintenance plan and maintain records of maintenance conducted on the emergency engines and after control treatment devices (if any). The Permittee shall keep records of the hours of operation of the engine recorded through a non-resettable hour meter. The Permittee must document how many hours are spent for non-emergency operation. If the Permittee operates the engine as part of a demand response operation, the Permittee shall keep records of the notification of the emergency situation, the date, the start time, and end time the engine was operated as part of the demand response.

Rationale for Periodic Monitoring Strategy
A maintenance plan, maintenance records, records of hours of operation and reason for operation, and documentation of demand response notifications are sufficient to demonstrate compliance with the operational limitations.

C. Operational Limitations

(1) This source is subject to all applicable federal air pollution control requirements including, but not limited to, the following:

(a) All applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements included in federal New Source Performance Standards (NSPS) under 40 CFR Part 60 Subpart JJJJ for Stationary Spark Ignition Internal Combustion Engines, including the following:

§ 60.4230 Am I subject to this subpart?
(a) The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary spark ignition (SI) internal combustion engines (ICE) as specified in paragraphs (a)(1) through (6) of this section. For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator.
(ii) On or after January 1, 2009, for emergency engines.

Emission Standards for Owners and Operators
§ 60.4233 What emission standards must I meet if I am an owner or operator of a stationary SI internal combustion engine?

"(e) Owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 75 KW (100 HP) (except gasoline and rich burn engines that use LPG) must comply with the emission standards in Table 1 to this subpart for their stationary SI ICE."

Emission Standards for Owners and Operators
Table 1 to Subpart JJJJ of Part 60 - NO_X, CO, and VOC Emission Standards for…, and Stationary Emergency Engines >25 HP

Engine type and fuel	Maximum engine power	Manufacture date	Emission standards [a]					
			g/HP-hr			ppmvd at 15% O_2		
			NO_X	CO	VOC [d]	NO_X	CO	VOC [d]
Emergency	HP≥130	On or after 1/1/2009	**2.0**	**4.0**	**1.0**	**160**	**540**	**86**

a Owners and operators of stationary non-certified SI engines may choose to comply with the emission standards in units of either g/HP-hr or ppmvd at 15 percent O2.

b Owners and operators of new or reconstructed non-emergency lean burn SI stationary engines with a site rating of greater than or equal to 250 brake HP located at a major source that are meeting the requirements of 40 CFR part 63, subpart ZZZZ, Table 2a do not have to comply with the CO emission standards of Table 1 of this subpart.

d For purposes of this subpart, when calculating emissions of volatile organic compounds, emissions of formaldehyde should not be included.
[76 FR 37975, June 28, 2011}

§60.4234 How long must my engines meet the emission standards if I am a manufacturer of stationary SI internal combustion engines?
Owners and operators of stationary SI ICE must operate and maintain stationary SI ICE that achieve the emission standards as required in §60.4233 over the entire life of the engine.

Note: The Permittee shall comply with the emissions standard by installing engines that are certified to meet the emission standards.

(b) All applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements included in the National Emissions Standards for Hazardous Air Pollutants (NESHAP) promulgated under 40 CFR 63, Subparts A and ZZZZ for Reciprocating Internal Combustion Engines.

Note: The Permittee shall meet the requirements of 40 CFR, Part 63, Subpart ZZZZ by meeting the requirements of 40 CFR, Part 60, Subpart JJJJ. No further requirements apply to the emergency generators under 40 CFR, Part 63, Subpart ZZZZ. [Reference: 40 CFR §63.6590(c)(1)]

(2) The two (2) natural gas-fired emergency generators (SI ICEs) shall be operated in accordance with specifications included in the application and any operating procedures recommended by equipment vendors unless the Permittee obtains from the Department written authorization for alternative operating procedures.

(3) The two (2) natural gas-fired stand-by emergency generators (SI ICEs) shall be operated for emergency use, operational maintenance checks and readiness testing only.

(4) In accordance with 40 CFR §60.4243(d), non-emergency use of each NSPS emergency natural gas generator for the purpose of maintenance checks and readiness testing is limited to 100 hours per year or less unless prior approval is received from the Department.

Compliance Demonstration
The Permittee shall develop a maintenance plan and maintain records of maintenance conducted on the emergency engines and after control treatment

devices (if any). The Permittee shall keep records of the hours of operation of the engine recorded through a non-resettable hour meter. The Permittee must document how many hours are spent for non-emergency operation. If the Permittee operates the engine as part of a demand response operation, the Permittee shall keep records of the notification of the emergency situation, the date, the start time, and end time the engine was operated as part of the demand response.

Rationale for Periodic Monitoring Strategy
A maintenance plan, maintenance records, records of hours of operation and reason for operation, and documentation of demand response notifications are sufficient to demonstrate compliance with the operational limitations.

COMPLIANCE SCHEDULE

The National Institute of Standards and Technology is currently in compliance with all applicable air quality regulations.

COMPLIANCE ASSURANCE MONITORING (40 CFR 64)

Compliance Assurance Monitoring (CAM), as specified in 40 CFR, part 64, applies to any emission unit at a Title V major source that meets all of the following criteria:

(1) The emission unit is subject to a federally enforceable emissions limit or standard for a regulated pollutant;
(2) The emission unit uses a control device to achieve compliance with any such emission limit or standards; and
(3) The emission unit has the potential to emit pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source and must not otherwise be exempt from CAM.

The following emissions controls are used at the facility:

- MDE Registration Nos. 031-0323-5-0112 and 5-0113 (EU-5 and EU-6) – Low NOx burners on two (2) boilers for control of NOx emissions;
- MDE Registration No. 031-0323-6-0557 (EU-7) – pre-heaters, bag house filters and dry scrubbers to control particulate matter emissions.
- MDE Registration No. 031-0323-9-0684 (EU-8) – Stage I Vapor recovery system on the underground storage tank to control VOC emissions; and
- MDE Registration No. 031-0323-9-0630 (EU-9) – Catalytic converter and fabric filter on one (1) emergency generator to control CO, VOC, and PM.

The two (2) boilers (EU-5 and EU-6) are equipped with low NOx burners. When these boilers were permitted, the permit included NOx emissions limits (0.1 lb/MMBtu when firing natural gas and 0.2 lb/MMBtu when firing No. 2 fuel oil. They also include fuel

restrictions. These restrictions were in place to avoid triggering non-attainment New Source Review requirements. The fuel use restrictions prevent the installation from being a major source for NOx. The low NOx burners are used to keep the emissions down but with the fuel use restrictions, the potential to emit does not exceed the major source threshold. Furthermore, per Federal Register volume 62, page 54913, low NOx burners are not considered a "control device" in 40 CFR Part 64. CAM does not apply to these emission units.

The Fire Research Laboratory (EU-7) is equipped with pre-heaters, bag house filters, and dry scrubbers to control PM emissions. The Fire Research Laboratory has a PM emission limit of 0.03 grains per standard cubic foot of dry exhaust. Without control the potential to emit from the installation does not exceed major source thresholds. CAM does not apply to this emission unit.

The underground storage tank (EU-8) is equipped with a Stage I Vapor recovery system. This system is a requirement for the construction of the tank and should not be considered a separate control device. CAM does not apply to this emission unit.

The catalytic converter and fabric filter on the emergency generator (EU-9) is not used to achieve compliance with any federally enforceable emission limits. This equipment was voluntarily added by the company. The catalytic converter and fabric filter are not used to meet any NOx emissions limits. CAM does not apply to this emission unit.

The National Institute of Standards and Technology is exempt from CAM plan requirements since no individual installation with an add-on control device is a major source of any regulated pollutant before control.

TITLE IV – ACID RAIN

The National Institute of Standards and Technology is not subject to the Acid Rain Program requirements.

TITLE VI – OZONE DEPLETING SUBSTANCES

The National Institute of Standards and Technology is not subject to Title VI requirements.

SECTION 112(r) – ACCIDENTAL RELEASE

The National Institute of Standards and Technology is not subject to the requirements of Section 112(r).

PERMIT SHIELD

The National Institute of Standards and Technology requested a permit shield for all registered emissions units.

GREENHOUSE GAS (GHG) EMISSIONS

The National Institute of Standards and Technology emits the following greenhouse gases (GHGs) related to Clean Air Act requirements: carbon dioxide, methane, and nitrous oxide. These GHGs originate from various processes (i.e., vehicle refueling, fire research activities, internal combustion engines, and boilers) contained within the facility premises applicable to the National Institute of Standards and Technology. The facility has not triggered Prevention of Significant Deterioration (PSD) requirements for GHG emissions; therefore, there are no applicable GHG Clean Air Act requirements. The Permittee shall quantify facility wide GHGs emissions and report them in accordance with Section 3 of the Part 70 permit.

INSIGNIFICANT ACTIVITIES

This section provides a list of insignificant emissions units that were reported in the Title V permit application. The applicable Clean Air Act requirements, if any, are listed below the insignificant activity.

(1) No. 10 Stationary internal combustion engines with an output less than 500 brake horsepower (373 kilowatts) and which are not used to generate electricity for sale or for peak or load shaving;

The engines are subject to the following requirements:

(A) COMAR 26.11.09.05E(2), Emissions During Idle Mode: The Permittee may not cause or permit the discharge of emissions from any engine, operating at idle, greater than 10 percent opacity.

(B) COMAR 26.11.09.05E(3), Emissions During Operating Mode: The Permittee may not cause or permit the discharge of emissions from any engine, operating at other than idle conditions, greater than 40 percent opacity.

(C) Exceptions:

(i) COMAR 26.11.09.05E(2) does not apply for a period of 2 consecutive minutes after a period of idling of 15 consecutive minutes for the purpose of clearing the exhaust system.

(ii) COMAR 26.11.09.05E(2) does not apply to emissions resulting directly from cold engine start-up and warm-up for the following maximum periods:

(a) Engines that are idled continuously when not in service: 30 minutes
(b) all other engines: 15 minutes.

(iii) COMAR 26.11.09.05E(2) & (3) do not apply while maintenance, repair or testing is being performed by qualified mechanics.

(D) COMAR 26.11.36.03A(1), which establishes that the Permittee may not operate an emergency generator except for emergencies, testing and maintenance purposes.

(E) COMAR 26.11.36.03A(5), which establishes that the Permittee may not operate an emergency generator for testing and engine maintenance purposes between 12:01 a.m. and 2:00 p.m. on any day on which the Department forecasts that the air quality will be a code orange, code red, or code purple unless the engine fails a test and engine maintenance and a re-test are necessary.

(2) X Space heaters utilizing direct heat transfer and used solely for comfort heat;

(3) No. 3 Water cooling towers and water-cooling ponds unless used for evaporative cooling of water from barometric jets or barometric condensers, or used in conjunction with an installation requiring a permit to operate;

(4) X Commercial bakery ovens with a rated heat input capacity of less than 2,000,000 Btu per hour;

(5) X Kilns used for firing ceramic ware, heated exclusively by natural gas, liquefied petroleum gas, electricity, or any combination of these;

(6) X Die casting machines;

(7) X Photographic process equipment used to reproduce an image upon sensitized material through the use of radiant energy;

(8) X Equipment for drilling, carving, cutting, routing, turning, sawing, planing, spindle sanding, or disc sanding of wood or wood products;

(9) __X__ Brazing, soldering, or welding equipment, and cutting torches related to manufacturing and construction activities that emit HAP metals and not directly related to plant maintenance, upkeep and repair or maintenance shop activities;

(10) __X__ Equipment for washing or drying products fabricated from metal or glass, provided that no VOC is used in the process and that no oil or solid fuel is burned;

(11) __X__ Containers, reservoirs, or tanks used exclusively for electrolytic plating work, or electrolytic polishing, or electrolytic stripping of brass, bronze, cadmium, copper, iron, lead, nickel, tin, zinc, and precious metals;

(12) __X__ Containers, reservoirs, or tanks ≥ 55 gallons used exclusively for:

(a) __X__ Storage of butane, propane, or liquefied petroleum, or natural gas;

(b) No. __21__ Storage of lubricating oils;

(c) No. __19__ Storage of Numbers 1, 2, 4, 5, and 6 fuel oil and aviation jet engine fuel;

(d) No. __3__ The storage of VOC normally used as solvents, diluents, thinners, inks, colorants, paints, lacquers, enamels, varnishes, liquid resins, or other surface coatings and having individual capacities of between 55 - 2,000 gallons (7.6 cubic meters);

(13) __X__ Gaseous fuel-fired or electrically heated furnaces for heat treating glass or metals, the use of which does not involve molten materials;

(14) __X__ Charbroilers and pit barbecues as defined in COMAR 26.11.18.01 with a total cooking area of 5 square feet (0.46 square meter) or less;

(15) __X__ First aid and emergency medical care provided at the facility, including related activities such as sterilization and medicine preparation used in support of a manufacturing or production process;

(16) __X__ Firing and testing of military weapons and explosives;

(17) __X__ Comfort air conditioning subject to requirements of Title VI of the Clean Air Act;

(18) __X__ Laboratory fume hoods and vents;

(19) any other emissions unit, not listed in this section, with a potential to emit less than the "de minimus" levels listed in COMAR 26.11.02.10X (list and describe units):

No. 4 Nano –fabrication Laboratory wet benches (HCl and HF)

STATE ONLY ENFORCEABLE REQUIREMENTS

This section of the permit contains state-only enforceable requirements. The requirements in this section will not be enforced by the U.S. Environmental Protection Agency. The requirements in this section are not subject to COMAR 26.11.03 10 - Public Petitions for Review to EPA Regarding Part 70 Permits.

The Permittee is subject to the following State-only enforceable requirements:

1. Applicable Regulations:

(A) COMAR 26.11.06.08, Nuisance.
"An installation or premises may not be operated or maintained in such a manner that a nuisance or air pollution is created. Nothing in this regulation relating to the control of emissions may in any manner be construed as authorizing or permitting the creation of, or maintenance of, nuisance or air pollution."

(B) COMAR 26.11.06.09, Odors.
"A person may not cause or permit the discharge into the atmosphere of gases, vapors, or odors beyond the property line in such a manner that a nuisance or air pollution is created."

(C) COMAR 26.11.15.05, Control Technology Requirements.
"New or Reconstructed Installations. A person may not construct, reconstruct, operate, or cause to be constructed, reconstructed, or operated, any new installation or source that will discharge a toxic air pollutant to the atmosphere without installing and operating T-BACT."

(D) COMAR 26.11.15.06A, Ambient Impact Requirement.
"Requirements for New Installations, Sources, or Premises. (1) Except as provided in §A(2) of this regulation, a person may not construct, modify, or operate, or cause to be constructed, modified, or operated, any new installation or source without first demonstrating to the satisfaction of the Department using procedures established in this chapter that total allowable emissions from the premises of each toxic air pollutant discharged by the new installation or source will not unreasonably endanger human health."

(E) COMAR 26.11.36.03A(1), Applicability and General Requirements for Emergency Generators and Load Shaving Units.
"The owner or operator of an emergency generator may not operate the generator except for emergencies, testing, and maintenance purposes."

(F) COMAR 26.11.36.03A(4), Applicability and General Requirements for Emergency Generators and Load Shaving Units.
"The owner or operator of an emergency generator or load shaving unit may be subject to the federal standards for stationary internal combustion engines under 40 CFR Parts 60 and 63."

(G) COMAR 26.11.36.03A(5), Applicability and General Requirements for Emergency Generators and Load Shaving Units.
"The owner or operator of an emergency generator or load shaving unit may not operate the engine for testing and engine maintenance purposes between 12:01 a.m. and 2:00 p.m. on any day on which the Department forecasts that the air quality will be a code orange, code red, or code purple unless the engine fails a test and engine maintenance and a re-test are necessary."

2. Record Keeping and Reporting:

The Permittee shall submit to the Department, by April 1 of each year during the term of this permit, a written certification of the results of an analysis of emissions of toxic air pollutants from the Permittee's facility during the previous calendar year. The analysis shall include either:

(a) a statement that previously submitted compliance demonstrations for emissions of toxic air pollutants remain valid; or

(b) a revised compliance demonstration, developed in accordance with requirements included under COMAR 26.11.15 & 16, that accounts for changes in operations, analytical methods, emissions determinations, or other factors that have invalidated previous demonstrations.

Wes Moore
Governor

Serena McIlwain
Secretary

Air and Radiation Administration
1800 Washington Boulevard, Suite 720
Baltimore, MD 21230

[ ] Construction Permit

[X] DRAFT Part 70 Operating Permit

PERMIT NO. 24-031-0323

DATE ISSUED

PERMIT FEE To be paid in accordance with COMAR 26.11.02.19B(b)

EXPIRATION DATE April 30, 202x

LEGAL OWNER & ADDRESS

National Institute of Standards and Technology
100 Bureau Dr, MS 1730
Gaithersburg, Maryland, 20899
Attn: Mr. Mark Liau, P.E.
Environmental Engineer

SITE

National Institute of Standards and Technology
100 Bureau Dr, Bldg. 302
Gaithersburg, Maryland, 20899
Premises # 031-0323.
AI # 13355

SOURCE DESCRIPTION

Federal Research Facility.

This source is subject to the conditions described on the attached pages.

Program Manager

Director, Air and Radiation Administration

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY {AI# 13355}
100 BUREAU DRIVE
GAITHERSBURG, MARYLAND 20899
DRAFT PART 70 OPERATING PERMIT NO. 24-031-0323

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY {AI# 13355}
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GAITHERSBURG, MARYLAND 20899
DRAFT PART 70 OPERATING PERMIT NO. 24-031-0323

SECTION I SOURCE IDENTIFICATION

1. DESCRIPTION OF FACILITY

The National Institute of Standards and Technology (NIST) is a non-regulated federal agency with the U.S. Commerce Department's Technology Administration. NIST's mission is to develop and promote measurements, standards, and technology. NIST's headquarters are located in Gaithersburg, Maryland on a 578-acre campus. The major sources of air emissions at the facilities are boilers used for comfort conditioning. The primary SIC for this facility is 9199 – General Government, not elsewhere classified.

2. FACILITY INVENTORY LIST

Emissions Unit Number	MDE Registration Number	Emissions Unit Name and Description	Date of Installation
EU-1 (NIST Boiler #1)	031-0323-5-0108	One (1) 55 million Btu/hr Union Iron Works boiler e/w Low NO_X Burners firing natural gas as primary fuel and No. 2 fuel oil as back up.	1961 / 2013
EU-2 (NIST Boiler #2)	031-0323-5-0109	One (1) 55 million Btu/hr Union Iron Works boiler e/w Low NO_X Burners firing natural gas as primary fuel and No. 2 fuel oil as back up.	1961 / 2013
EU-3 (NIST Boiler #3)	031-0323-5-0110	One (1) 55 million Btu/hr Union Iron Works boiler e/w Low NO_X Burners firing natural gas as primary fuel and No. 2 fuel oil as back up.	1961 / 2013
EU-4 (NIST Boiler #4)	031-0323-5-0111	One (1) 55 million Btu/hr Union Iron Works boiler e/w Low NO_X Burners firing natural gas as primary fuel and No. 2 fuel oil as back up.	1961 / 2013
EU-5 (NIST Boiler #5)	031-0323-5-0112	One (1) 99.8 million Btu/hr English boiler burning natural gas as primary fuel and No. 2 fuel oil as back up and equipped with low NOx burners.	1997
EU-6 (NIST Boiler #6)	031-0323-5-0113	One (1) 99.8 million Btu/hr English boiler burning natural gas as primary fuel and No. 2 fuel oil as back up and equipped with low NOx burners.	1997
EU-7	031-0323-6-0557	Fire Research Laboratory consisting of four (4) pre-heaters, four (4) bag houses, and four (4) scrubbers.	1999 and 2012

EU-8	031-0323-9-1177	One (1) 6,000-gallon aboveground gasoline storage tank.	2018
EU-9	031-0323-9-0630	One (1) diesel fired emergency generator rated at 1000 kilowatts.	2002
EU-10	031-0323-9-0898	One (1) diesel fired emergency generator rated at 500 kilowatts.	1999
EU-11	031-0323-5-2363	One (1) 8 MW Solar Taurus natural gas fired combustion turbine rated at 87.97 MMBtu/hr.	2019
EU-12	031-0323-5-2364	One (1) 50.78 MMBtu/hr Rentech natural gas fired HRSG equipped with low NO_x duct burners.	2019
EU-13	031-0323-9-1199	One (1) 1,250 KW diesel-fired emergency generator.	2020
EU-14	031-0323-9-1213	One (1) 500 KW natural gas-fired emergency generator.	2020
EU-15	031-0323-9-1214.	One (1) 500 KW natural gas-fired emergency generator.	2020

SECTION II GENERAL CONDITIONS

1. DEFINITIONS

[COMAR 26.11.01.01] and [COMAR 26.11.02.01]

The words or terms in this Part 70 permit shall have the meanings established under COMAR 26.11.01 and .02 unless otherwise stated in this permit.

2. ACRONYMS

ARA	Air and Radiation Administration
BACT	Best Available Control Technology
Btu	British thermal unit
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CEM	Continuous Emissions Monitor
CFR	Code of Federal Regulations
CO	Carbon Monoxide
COMAR	Code of Maryland Regulations
EPA	United States Environmental Protection Agency
FR	Federal Register
gr	grains
HAP	Hazardous Air Pollutant
MACT	Maximum Achievable Control Technology
MDE	Maryland Department of the Environment
MVAC	Motor Vehicle Air Conditioner
NESHAPS	National Emission Standards for Hazardous Air Pollutants
NO_x	Nitrogen Oxides
NSPS	New Source Performance Standards
NSR	New Source Review
OTR	Ozone Transport Region
PM	Particulate Matter
PM10	Particulate Matter with Nominal Aerodynamic Diameter of 10 micrometers or less
ppm	parts per million
ppb	parts per billion
PSD	Prevention of Significant Deterioration
PTC	Permit to construct
PTO	Permit to operate (State)
SIC	Standard Industrial Classification
SO_2	Sulfur Dioxide
TAP	Toxic Air Pollutant
tpy	tons per year
VE	Visible Emissions
VOC	Volatile Organic Compounds

3. EFFECTIVE DATE

The effective date of the conditions in this Part 70 permit is the date of permit issuance, unless otherwise stated in the permit.

4. PERMIT EXPIRATION

[COMAR 26.11.03.13B(2)]

Upon expiration of this permit, the terms of the permit will automatically continue to remain in effect until a new Part 70 permit is issued for this facility provided that the Permittee has submitted a timely and complete application and has paid applicable fees under COMAR 26.11.02.16.

Otherwise, upon expiration of this permit the right of the Permittee to operate this facility is terminated.

5. PERMIT RENEWAL

[COMAR 26.11.03.02B(3)] and [COMAR 26.11.03.02E]

The Permittee shall submit to the Department a completed application for renewal of this Part 70 permit at least 12 months before the expiration of the permit. Upon submitting a completed application, the Permittee may continue to operate this facility pending final action by the Department on the renewal.

The Permittee, upon becoming aware that any relevant facts were omitted or incorrect information was submitted in the permit application, shall submit such supplementary facts or corrected information no later than 10 days after becoming aware that this occurred. The Permittee shall also provide additional information as necessary to address any requirements that become applicable to the facility after the date a completed application was submitted, but prior to the release of a draft permit. This information shall be submitted to the Department no later than 20 days after a new requirement has been adopted.

6. CONFIDENTIAL INFORMATION

[COMAR 26.11.02.02G]

In accordance with the provisions of the State Government Article, Sec. 10-611 et seq., Annotated Code of Maryland, all information submitted in an application shall be considered part of the public record and available for inspection and copying, unless the Permittee claims that the information is confidential when it is submitted to the Department. At the time of the request for inspection or copying, the Department will make a determination with regard to the confidentiality of the information. The Permittee, when requesting confidentiality,

shall identify the information in a manner specified by the Department and, when requested by the Department, promptly provide specific reasons supporting the claim of confidentiality. Information submitted to the Department without a request that the information be deemed confidential may be made available to the public. Subject to approval of the Department, the Permittee may provide a summary of confidential information that is suitable for public review. The content of this Part 70 permit is not subject to confidential treatment.

7. PERMIT ACTIONS

[COMAR 26.11.03.06E(3)] and [COMAR 26.11.03.20(A)]

This Part 70 permit may be revoked or reopened and revised for cause. The filing of an application by the Permittee for a permit revision or renewal; or a notification of termination, planned changes or anticipated noncompliance by the facility, does not stay a term or condition of this permit.

The Department shall reopen and revise, or revoke the Permittee's Part 70 permit under the following circumstances:

a. Additional requirements of the Clean Air Act become applicable to this facility and the remaining permit term is 3 years or more;

b. The Department or the EPA determines that this Part 70 permit contains a material mistake, or is based on false or inaccurate information supplied by or on behalf of the Permittee;

c. The Department or the EPA determines that this Part 70 permit must be revised or revoked to assure compliance with applicable requirements of the Clean Air Act; or

d. Additional requirements become applicable to an affected source under the Federal Acid Rain Program.

8. PERMIT AVAILABILITY

[COMAR 26.11.02.13G]

The Permittee shall maintain this Part 70 permit in the vicinity of the facility for which it was issued, unless it is not practical to do so, and make this permit immediately available to officials of the Department upon request.

9. REOPENING THE PART 70 PERMIT FOR CAUSE BY THE EPA

[COMAR 26.11.03.20B]

The EPA may terminate, modify, or revoke and reissue a permit for cause as prescribed in 40 CFR §70.7(g)

10. TRANSFER OF PERMIT

[COMAR 26.11.02.02E]

The Permittee shall not transfer this Part 70 permit except as provided in COMAR 26.11.03.15.

11. REVISION OF PART 70 PERMITS – GENERAL CONDITIONS

[COMAR 26.11.03.14] and [COMAR 26.11.03.06A(8)]

a. The Permittee shall submit an application to the Department to revise this Part 70 permit when required under COMAR 26.11.03.15 -.17.

b. When applying for a revision to a Part 70 permit, the Permittee shall comply with the requirements of COMAR 26.11.03.02 and .03 except that the application for a revision need include only information listed that is related to the proposed change to the source and revision to the permit. This information shall be sufficient to evaluate the proposed change and to determine whether it will comply with all applicable requirements of the Clean Air Act.

c. The Permittee may not change any provision of a compliance plan or schedule in a Part 70 permit as an administrative permit amendment or as a minor permit modification unless the change has been approved by the Department in writing.

d. A permit revision is not required for a change that is provided for in this permit relating to approved economic incentives, marketable permits, emissions trading, and other similar programs.

12. SIGNIFICANT PART 70 OPERATING PERMIT MODIFICATIONS

[COMAR 26.11.03.17]

The Permittee may apply to the Department to make a significant modification to its Part 70 Permit as provided in COMAR 26.11.03.17 and in accordance with the following conditions:

a. A significant modification is a revision to the federally enforceable provisions in the permit that does not qualify as an administrative permit amendment under COMAR 26.11.03.15 or a minor permit modification as defined under COMAR 26.11.03.16.

b. This permit does not preclude the Permittee from making changes, consistent with the provisions of COMAR 26.11.03, that would make the permit or particular terms and conditions of the permit irrelevant, such as by shutting down or reducing the level of operation of a source or of an emissions unit within the source. Air pollution control equipment shall not be shut down or its level of operation reduced if doing so would violate any term of this permit.

c. Significant permit modifications are subject to all requirements of COMAR 26.11.03 as they apply to permit issuance and renewal, including the requirements for applications, public participation, and review by affected states and EPA, except:

(1) An application need include only information pertaining to the proposed change to the source and modification of this permit, including a description of the change and modification, and any new applicable requirements of the Clean Air Act that will apply if the change occurs;

(2) Public participation, and review by affected states and EPA, is limited to only the application and those federally enforceable terms and conditions of the Part 70 permit that are affected by the significant permit modification.

d. As provided in COMAR 26.11.03.15B(5), an administrative permit amendment may be used to make a change that would otherwise require a significant permit modification if procedures for enhanced preconstruction review of the change are followed that satisfy the requirements of 40 CFR 70.7(d)(1)(v).

e. Before making a change that qualifies as a significant permit modification, the Permittee shall obtain all permits-to-construct and approvals required by COMAR 26.11.02.

f. The Permittee shall not make a significant permit modification that results in a violation of any applicable requirement of the Clean Air Act.

g. The permit shield in COMAR 26.11.03.23 applies to a final significant permit modification that has been issued by the Department, to the extent applicable under COMAR 26.11.03.23.

13. MINOR PERMIT MODIFICATIONS

[COMAR 26.11.03.16]

The Permittee may apply to the Department to make a minor modification to the federally enforceable provisions of this Part 70 permit as provided in COMAR 26.11.03.16 and in accordance with the following conditions:

a. A minor permit modification is a Part 70 permit revision that:

(1) Does not result in a violation of any applicable requirement of the Clean Air Act;

(2) Does not significantly revise existing federally enforceable monitoring, including test methods, reporting, record keeping, or compliance certification requirements except by:

(a) Adding new requirements,

(b) Eliminating the requirements if they are rendered meaningless because the emissions to which the requirements apply will no longer occur, or

(c) Changing from one approved test method for a pollutant and source category to another;

(3) Does not require or modify a:

(a) Case-by-case determination of a federally enforceable emissions standard,

(b) Source specific determination for temporary sources of ambient impacts, or

(c) Visibility or increment analysis;

(4) Does not seek to establish or modify a federally enforceable permit term or condition for which there is no corresponding underlying applicable requirement of the Clean Air Act, but that the Permittee has assumed to avoid an applicable requirement to which the source would otherwise be subject, including:

(a) A federally enforceable emissions standard applied to the source pursuant to COMAR 26.11.02.03 to avoid classification as a Title I modification; and

(b) An alternative emissions standard applied to an emissions unit pursuant to regulations promulgated under Section 112(i)(5) of the Clean Air Act

(5) Is not a Title I modification; and

(6) Is not required under COMAR 26.11.03.17 to be processed as a significant modification to this Part 70 permit.

b. Application for a Minor Permit Modification

The Permittee shall submit to the Department an application for a minor permit modification that satisfies the requirements of COMAR 26.11.03.03 which includes the following:

(1) A description of the proposed change, the emissions resulting from the change, and any new applicable requirements that will apply if the change is made;

(2) The proposed minor permit modification;

(3) Certification by a responsible official, in accordance with COMAR 26.11.02.02F, that:

(a) The proposed change meets the criteria for a minor permit modification, and

(b) The Permittee has obtained or applied for all required permits-to-construct required by COMAR 26.11.03.16 with respect to the proposed change;

(4) Completed forms for the Department to use to notify the EPA and affected states, as required by COMAR 26.11.03.07-.12.

c. Permittee's Ability to Make Change

(1) For changes proposed as minor permit modifications to this permit that will require the applicant to obtain a permit to construct, the permit to construct must be issued prior to the new change.

(2) During the period of time after the Permittee applies for a minor modification but before the Department acts in accordance with COMAR 26.11.03.16F(2):

(a) The Permittee shall comply with applicable requirements of the Clean Air Act related to the change and the permit terms and conditions described in the application for the minor modification.

(b) The Permittee is not required to comply with the terms and conditions in the permit it seeks to modify. If the Permittee fails

to comply with the terms and conditions in the application during this time, the terms and conditions of both this permit and the application for modification may be enforced against it.

d. The Permittee is subject to enforcement action if it is determined at any time that a change made under COMAR 26.11.03.16 is not within the scope of this regulation.

e. Minor permit modification procedures may be used for Part 70 permit modifications involving the use of economic incentives, marketable permits, emissions trading, and other similar approaches, but only to the extent that the minor permit modification procedures are explicitly provided for in regulations approved by the EPA as part of the Maryland SIP or in other applicable requirements of the Clean Air Act.

14. ADMINISTRATIVE PART 70 OPERATING PERMIT AMENDMENTS

[COMAR 26.11.03.15]

The Permittee may apply to the department to make an administrative permit amendment as provided in COMAR 26.11.03.15 and in accordance with the following conditions:

a. An application for an administrative permit amendment shall:

(1) Be in writing;

(2) Include a statement certified by a responsible official that the proposed amendment meets the criteria in COMAR 26.11.03.15 for an administrative permit amendment, and

(3) Identify those provisions of this part 70 permit for which the amendment is requested, including the basis for the request.

b. An administrative permit amendment:

(1) Is a correction of a typographical error;

(2) Identifies a change in the name, address, or phone number of a person identified in this permit, or a similar administrative change involving the Permittee or other matters which are not directly related to the control of air pollution;

(3) requires more frequent monitoring or reporting by the Permittee;

(4) Allows for a change in ownership or operational control of a source for which the Department determines that no other revision to the permit is necessary and is documented as per COMAR 26.11.03.15B(4);

(5) Incorporates into this permit the requirements from preconstruction review permits or approvals issued by the Department in accordance with COMAR 26.11.03.15B(5), but only if it satisfies 40 CFR 70.7(d)(1)(v);

(6) Incorporates any other type of change, as approved by the EPA, which is similar to those in COMAR 26.11.03.15B(1)—(4);

(7) Notwithstanding COMAR 26.11.03.15B(1)—(6), all modifications to acid rain control provisions included in this Part 70 permit are governed by applicable requirements promulgated under Title IV of the Clean Air Act; or

(8) Incorporates any change to a term or condition specified as State-only enforceable, if the Permittee has obtained all necessary permits-to-construct and approvals that apply to the change.

c. The Permittee may make the change addressed in the application for an administrative amendment upon receipt by the Department of the application, if all permits-to-construct or approvals otherwise required by COMAR 26.11.02 prior to making the change have first been obtained from the Department.

d. The permit shield in COMAR 26.11.03.23 applies to administrative permit amendments made under Section B(5) of COMAR 26.11.03.15 , but only after the Department takes final action to revise the permit.

e. The Permittee is subject to enforcement action if it is determined at any time that a change made under COMAR 26.11.03.15 is not within the scope of this regulation.

15. OFF-PERMIT CHANGES TO THIS SOURCE

[COMAR 26.11.03.19]
The Permittee may make off-permit changes to this facility as provided in COMAR 26.11.03.19 and in accordance with the following conditions:

a. The Permittee may make a change to this permitted facility that is not addressed or prohibited by the federally enforceable conditions of this Part 70 permit without obtaining a Part 70 permit revision if:

(1) The Permittee has obtained all permits and approvals required by COMAR 26.11.02 and .03;

(2) The change is not subject to any requirements under Title IV of the Clean Air Act;

(3) The change is not a Title I modification; and

(4) The change does not violate an applicable requirement of the Clean Air Act or a federally enforceable term or condition of the permit.

b. For a change that qualifies under COMAR 26.11.03.19, the Permittee shall provide contemporaneous written notice to the Department and the EPA, except for a change to an emissions unit or activity that is exempt from the Part 70 permit application, as provided in COMAR 26.11.03.04. This written notice shall describe the change, including the date it was made, any change in emissions, including the pollutants emitted, and any new applicable requirements of the Clean Air Act that apply as a result of the change.

c. Upon satisfying the requirements of COMAR 26.11.03.19, the Permittee may make the proposed change.

d. The Permittee shall keep a record describing:

(1) Changes made at the facility that result in emissions of a regulated air pollutant subject to an applicable requirement of the Clean Air Act , but not otherwise regulated under this permit; and

(2) The emissions resulting from those changes.

e. Changes that qualify under COMAR 26.11.03.19 are not subject to the requirements for Part 70 revisions.

f. The Permittee shall include each off-permit change under COMAR 26.11.03.19 in the application for renewal of the part 70 permit.

g. The permit shield in COMAR 26.11.03.23 does not apply to off-permit changes made under COMAR 26.11.03.19.

h. The Permittee is subject to enforcement action if it is determined that an off-permit change made under COMAR 26.11.03.19 is not within the scope of this regulation.

16. ON-PERMIT CHANGES TO SOURCES

[COMAR 26.11.03.18]

The Permittee may make on-permit changes that are allowed under Section 502(b)(10) of the Clean Air Act as provided in COMAR 26.11.03.18 and in accordance with the following conditions:

a. The Permittee may make a change to this facility without obtaining a revision to this Part 70 permit if:

(1) The change is not a Title I modification;

(2) The change does not result in emissions in excess of those expressly allowed under the federally enforceable provisions of the Part 70 permit for the permitted facility or for an emissions unit within the facility, whether expressed as a rate of emissions or in terms of total emissions;

(3) The Permittee has obtained all permits and approvals required by COMAR 26.11.02 and .03;

(4) The change does not violate an applicable requirement of the Clean Air Act;

(5) The change does not violate a federally enforceable permit term or condition related to monitoring, including test methods, record keeping, reporting, or compliance certification requirements;

(6) The change does not violate a federally enforceable permit term or condition limiting hours of operation, work practices, fuel usage, raw material usage, or production levels if the term or condition has been established to limit emissions allowable under this permit;

(7) If applicable, the change does not modify a federally enforceable provision of a compliance plan or schedule in this Part 70 permit unless the Department has approved the change in writing; and

(8) This permit does not expressly prohibit the change under COMAR 26.11.03.18.

b. The Permittee shall notify the Department and the EPA in writing of a proposed on-permit change under COMAR 26.11.03.18 not later than 7 days before the change is made. The written information shall include the following information:

(1) A description of the proposed change;

(2) The date on which the change is proposed to be made;

(3) Any change in emissions resulting from the change, including the pollutants emitted;

(4) Any new applicable requirement of the Clean Air Act; and

(5) Any permit term or condition that would no longer apply.

c. The responsible official of this facility shall certify in accordance with COMAR 26.11.02.02F that the proposed change meets the criteria for the use of on-permit changes under COMAR 26.11.03.18.

d. The Permittee shall attach a copy of each notice required by condition b. above to this Part 70 permit.

e. On-permit changes that qualify under COMAR 26.11.03.18 are not subject to the requirements for part 70 permit revisions.

f. Upon satisfying the requirements under COMAR 26.11.03.18, the Permittee may make the proposed change.

g. The permit shield in COMAR 26.11.03.23 does not apply to on-permit changes under COMAR 26.11.03.18.

h. The Permittee is subject to enforcement action if it is determined that an on-permit change made under COMAR 26.11.03.18 is not within the scope of the regulation or violates any requirement of the State air pollution control law.

17. FEE PAYMENT

[COMAR 26.11.02.16A(2) & (5)(b)]

a. The fee for this Part 70 permit is as prescribed in Regulation .19 of COMAR 26.11.02.

b. The fee is due on and shall be paid on or before each 12-month anniversary date of the permit.

c. Failure to pay the annual permit fee constitutes cause for revocation of the permit by the Department.

18. REQUIREMENTS FOR PERMITS-TO-CONSTRUCT AND APPROVALS

[COMAR 26.11.02.09.]

The Permittee may not construct or modify or cause to be constructed or modified any of the following sources without first obtaining, and having in current effect, the specified permits-to-construct and approvals:

a. New Source Review source, as defined in COMAR 26.11.01.01, approval required, except for generating stations constructed by electric companies;

b. Prevention of Significant Deterioration source, as defined in COMAR 26.11.01.01, approval required, except for generating stations constructed by electric companies;

c. New Source Performance Standard source, as defined in COMAR 26.11.01.01, permit to construct required, except for generating stations constructed by electric companies;

d. National Emission Standards for Hazardous Air Pollutants source, as defined in COMAR 26.11.01.01, permit to construct required, except for generating stations constructed by electric companies;

e. A stationary source of lead that discharges one ton per year or more of lead or lead compounds measured as elemental lead, permit to construct required, except for generating stations constructed by electric companies;

f. All stationary sources of air pollution, including installations and air pollution control equipment, except as listed in COMAR 26.11.02.10, permit to construct required;

g. In the event of a conflict between the applicability of (a.— e.) above and an exemption listed in COMAR 26.11.02.10, the provision that requires a permit applies.

h. Approval of a PSD or NSR source by the Department does not relieve the Permittee obtaining an approval from also obtaining all permits-to-construct required by (c. - g.) above.

19. CONSOLIDATION OF PROCEDURES FOR PUBLIC PARTICIPATION

[COMAR 26.11.02.11C] and [COMAR 26.11.03.01K]

The Permittee may request the Department to authorize special procedures for the Permittee to apply simultaneously, to the extent possible, for a permit to construct and a revision to this permit.

These procedures may provide for combined public notices, informational meetings, and public hearings for both permits but shall not adversely affect the rights of a person, including EPA and affected states, to obtain information about the application for a permit, to comment on an application, or to challenge a permit that is issued.

These procedures shall not alter any existing permit procedures or time frames.

20. PROPERTY RIGHTS

[COMAR 26.11.03.06E(4)]

This Part 70 permit does not convey any property rights of any sort, or any exclusive privileges.

21. SEVERABILITY

[COMAR 26.11.03.06A(5)]

If any portion of this Part 70 permit is challenged, or any term or condition deemed unenforceable, the remainder of the requirements of the permit continues to be valid.

22. INSPECTION AND ENTRY

[COMAR 26.11.03.06G(3)]

The Permittee shall allow employees and authorized representatives of the Department, the EPA, and local environmental health agencies, upon presentation of credentials or other documents as may be required by law, to:

a. Enter at a reasonable time without delay and without prior notification the Permittee's property where a Part 70 source is located, emissions-related activity is conducted, or records required by this permit are kept;

b. Have access to and make copies of records required by the permit;

c. Inspect all emissions units within the facility subject to the permit and all related monitoring systems, air pollution control equipment, and practices or operations regulated or required by the permit; and

d. Sample or monitor any substances or parameters at or related to the emissions units at the facility for the purpose of determining compliance with the permit.

23. DUTY TO PROVIDE INFORMATION

[COMAR 26.11.03.06E(5)]

The Permittee shall furnish to the Department, within a reasonable time specified by the Department, information requested in writing by the Department in order to determine whether the Permittee is in compliance with the federally enforceable conditions of this Part 70 permit, or whether cause exists for revising or revoking

the permit. Upon request, the Permittee shall also furnish to the Department records required to be kept under the permit.

For information claimed by the Permittee to be confidential and therefore potentially not disclosable to the public, the Department may require the Permittee to provide a copy of the records directly to the EPA along with a claim of confidentiality.

The Permittee shall also furnish to the Department, within a reasonable time specified by the Department, information or records requested in writing by the Department in order to determine if the Permittee is in compliance with the State-only enforceable conditions of this permit.

24. COMPLIANCE REQUIREMENTS

[COMAR 26.11.03.06E(1)] and [COMAR 26.11.03.06A(11)] and [COMAR 26.11.02.05]

The Permittee shall comply with the conditions of this Part 70 permit. Noncompliance with the permit constitutes a violation of the Clean Air Act, and/or the Environment Article Title 2 of the Annotated Code of Maryland and may subject the Permittee to:

a. Enforcement action,

b. Permit revocation or revision,

c. Denial of the renewal of a Part 70 permit, or

d. Any combination of these actions.

The conditions in this Part 70 permit are enforceable by EPA and citizens under the Clean Air Act except for the State-only enforceable conditions.

Under Environment Article Section 2-609, Annotated Code of Maryland, the Department may seek immediate injunctive relief against a person who violates this permit in such a manner as to cause a threat to human health or the environment.

25. CREDIBLE EVIDENCE

Nothing in this permit shall be interpreted to preclude the use of credible evidence to demonstrate noncompliance with any term of this permit.

26. NEED TO HALT OR REDUCE ACTIVITY NOT A DEFENSE

[COMAR 26.11.03.06E(2)]

The need to halt or reduce activity in order to comply with the conditions of this permit may not be used as a defense in an enforcement action.

27. CIRCUMVENTION

[COMAR 26.11.01.06]

The Permittee may not install or use any article, machine, equipment or other contrivance, the use of which, without resulting in a reduction in the total weight of emissions, conceals or dilutes emissions which would otherwise constitute a violation of any applicable air pollution control regulation.

28. PERMIT SHIELD

[COMAR 26.11.03.23]

A permit shield as described in COMAR 26.11.03.23 shall apply only to terms and conditions in this Part 70 permit that have been specifically identified as covered by the permit shield. Neither this permit nor COMAR 26.11.03.23 alters the following:

a. The emergency order provisions in Section 303 of the Clean Air Act, including the authority of EPA under that section;

b. The liability of the Permittee for a violation of an applicable requirement of the Clean Air Act before or when this permit is issued or for a violation that continues after issuance;

c. The requirements of the Acid Rain Program, consistent with Section 408(a) of the Clean Air Act;

d. The ability of the Department or EPA to obtain information from a source pursuant to Maryland law and Section 114 of the Clean Air Act; or

e. The authority of the Department to enforce an applicable requirement of the State air pollution control law that is not an applicable requirement of the Clean Air Act.

29. ALTERNATE OPERATING SCENARIOS

[COMAR 26.11.03.06A(9)]

For all alternate operating scenarios approved by the Department and contained within this permit, the Permittee, while changing from one approved scenario to another, shall contemporaneously record in a log maintained at the facility each scenario under which the emissions unit is operating and the date and time the scenario started and ended.

SECTION III PLANT WIDE CONDITIONS

1. PARTICULATE MATTER FROM CONSTRUCTION AND DEMOLITION

[COMAR 26.11.06.03D]

The Permittee shall not cause or permit any building, its appurtenances, or a road to be used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne.

2. OPEN BURNING

[COMAR 26.11.07]

Except as provided in COMAR 26.11.07.04, the Permittee shall not cause or permit an open fire from June 1 through August 31 of any calendar year. Prior to any open burning, the Permittee shall request and receive approval from the Department.

3. AIR POLLUTION EPISODE

[COMAR 26.11.05.04]

When requested by the Department, the Permittee shall prepare in writing standby emissions reduction plans, consistent with good industrial practice and safe operating procedures, for reducing emissions creating air pollution during periods of Alert, Warning, and Emergency of an air pollution episode.

4. REPORT OF EXCESS EMISSIONS AND DEVIATIONS

[COMAR 26.11.01.07] and [COMAR 26.11.03.06C(7)]
The Permittee shall comply with the following conditions for occurrences of excess emissions and deviations from requirements of this permit, including those in Section VI – State-only Enforceable Conditions:

a. Report any deviation from permit requirements that could endanger human health or the environment, by orally notifying the Department immediately upon discovery of the deviation;

b. Promptly report all occurrences of excess emissions that are expected to last for one hour or longer by orally notifying the Department of the onset and termination of the occurrence;

c. When requested by the Department the Permittee shall report all deviations from permit conditions, including those attributed to malfunctions as defined in COMAR 26.11.01.07A, within 5 days of the request by submitting a

written description of the deviation to the Department. The written report shall include the cause, dates and times of the onset and termination of the deviation, and an account of all actions planned or taken to reduce, eliminate, and prevent recurrence of the deviation;

d. The Permittee shall submit to the Department semi-annual monitoring reports that confirm that all required monitoring was performed, and that provide accounts of all deviations from permit requirements that occurred during the reporting periods. Reporting periods shall be January 1 through June 30 and July 1 through December 31, and reports shall be submitted within 30 days of the end of each reporting period. Each account of deviation shall include a description of the deviation, the dates and times of onset and termination, identification of the person who observed or discovered the deviation, causes and corrective actions taken, and actions taken to prevent recurrence. If no deviations from permit conditions occurred during a reporting period, the Permittee shall submit a written report that so states.

e. When requested by the Department, the Permittee shall submit a written report to the Department within 10 days of receiving the request concerning an occurrence of excess emissions. The report shall contain the information required in COMAR 26.11.01.07D(2).

5. ACCIDENTAL RELEASE PROVISIONS

[COMAR 26.11.03.03B(23)] and [40 CFR 68]

Should the Permittee become subject to 40 CFR 68 during the term of this permit, the Permittee shall submit risk management plans by the date specified in 40 CFR 68.150 and shall certify compliance with the requirements of 40 CFR 68 as part of the annual compliance certification as required by 40 CFR 70.
The Permittee shall initiate a permit revision or reopening according to the procedures of 40 CFR 70.7 to incorporate appropriate permit conditions into the Permittee's Part 70 permit.

6. GENERAL TESTING REQUIREMENTS

[COMAR 26.11.01.04]

The Department may require the Permittee to conduct, or have conducted, testing to determine compliance with this Part 70 permit. The Department, at its option, may witness or conduct these tests. This testing shall be done at a reasonable time, and all information gathered during a testing operation shall be provided to the Department.

7. EMISSIONS TEST METHODS

[COMAR 26.11.01.04]

Compliance with the emissions standards and limitations in this Part 70 permit shall be determined by the test methods designated and described below or other test methods submitted to and approved by the Department.

Reference documents of the test methods approved by the Department include the following:

a. 40 CFR 60, appendix A

b. 40 CFR 51, appendix M

c. The Department's Technical Memorandum 91-01 "Test Methods and Equipment Specifications for Stationary Sources", (January 1991), as amended through Supplement 3, (October 1, 1997)

8. EMISSIONS CERTIFICATION REPORT

[COMAR 26.11.01.05-1] and [COMAR 26.11.02.19C] and [COMAR 26.11.02.19D]

The Permittee shall certify actual annual emissions of regulated pollutants from the facility on a calendar year basis.

a. The certification shall be on forms obtained from the Department and submitted to the Department not later than April 1 of the year following the year for which the certification is required;

b. The individual making the certification shall certify that the information is accurate to the individual's best knowledge. The individual shall be:

   (1) Familiar with each source for which the certifications forms are submitted, and

   (2) Responsible for the accuracy of the emissions information;

c. The Permittee shall maintain records necessary to support the emissions certification including the following information if applicable:

   (1) The total amount of actual emissions of each regulated pollutant and the total of all regulated pollutants;

   (2) An explanation of the methods used to quantify the emissions and the operating schedules and production data that were used to determine emissions, including significant assumptions made;

(3) Amounts, types and analyses of all fuels used;

(4) Emissions data from continuous emissions monitors that are required by this permit, including monitor calibration and malfunction information;

(5) Identification, description, and use records of all air pollution control equipment and compliance monitoring equipment including:
(a) Significant maintenance performed,
(b) Malfunctions and downtime, and
(c) Episodes of reduced efficiency of all equipment;

(6) Limitations on source operation or any work practice standards that significantly affect emissions; and

(7) Other relevant information as required by the Department.

9. COMPLIANCE CERTIFICATION REPORT

[COMAR 26.11.03.06G(6) and (7)]

The Permittee shall submit to the Department and EPA Region III a report certifying compliance with each term of this Part 70 permit including each applicable standard, emissions limitation, and work practice for the previous calendar year by April 1 of each year.

a. The compliance certification shall include:

(1) The identification of each term or condition of this permit which is the basis of the certification;

(2) The compliance status;

(3) Whether the compliance was continuous or intermittent;

(4) The methods used for determining the compliance status of each source, currently and over the reporting period; and

(5) Any other information required to be reported to the Department that is necessary to determine the compliance status of the Permittee with this permit.

b. The Permittee shall submit the compliance certification reports to the Department and EPA simultaneously.

10. CERTIFICATION BY RESPONSIBLE OFFICIAL

[COMAR 26.11.02.02F]

All application forms, reports, and compliance certifications submitted pursuant to this permit shall be certified by a responsible official as to truth, accuracy, and completeness. The Permittee shall expeditiously notify the Department of an appointment of a new responsible official.

The certification shall be in the following form:

"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 who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

11. SAMPLING AND EMISSIONS TESTING RECORD KEEPING

[COMAR 26.11.03.06C(5)]

The Permittee shall gather and retain the following information when sampling and testing for compliance demonstrations:

a. The location as specified in this permit, and the date and time that samples and measurements are taken;

b. All pertinent operating conditions existing at the time that samples and measurements are taken;

c. The date that each analysis of a sample or emissions test is performed and the name of the person taking the sample or performing the emissions test;

d. The identity of the Permittee, individual, or other entity that performed the analysis;

e. The analytical techniques and methods used; and

f. The results of each analysis.

12. GENERAL RECORDKEEPING

[COMAR 26.11.03.06C(6)]

The Permittee shall retain records of all monitoring data and information that support the compliance certification for a period of five (5) years from the date that the monitoring, sample measurement, application, report or emissions test was completed or submitted to the Department.

These records and support information shall include:

a. All calibration and maintenance records;

b. All original data collected from continuous monitoring instrumentation;

c. Records which support the annual emissions certification; and

d. Copies of all reports required by this permit.

13. GENERAL CONFORMITY

[COMAR 26.11.26.09]

The Permittee shall comply with the general conformity requirements of 40 CFR 93, Subpart B and COMAR 26.11.26.09.

14. ASBESTOS PROVISIONS

[40 CFR 61, Subpart M]
The Permittee shall comply with 40 CFR 61, Subpart M when conducting any renovation or demolition activities at the facility.

15. OZONE DEPLETING REGULATIONS

[40 CFR 82, Subpart F]

The Permittee shall comply with the standards for recycling and emissions reduction pursuant to 40 CFR 82, Subpart F, except as provided for MVACs in subpart B:

a. Persons opening appliances for maintenance, service, repair, or disposal shall comply with the prohibitions and required practices pursuant to 40 CFR 82.154 and 82.156.

b. Equipment used during the maintenance, service, repair or disposal of appliances shall comply with the standards for recycling and recovery equipment pursuant to 40 CFR 82.158.

c. Persons performing maintenance, service, repairs or disposal of appliances shall be certified by an approved technician certification program pursuant to 40 CFR 82.161.

d. Persons performing maintenance, service, repairs or disposal of appliances shall certify with the Administrator pursuant to 40 CFR 82.162.

e. Persons disposing of small appliances, MVACS, and MVAC-like appliances as defined in 40 CFR 82.152, shall comply with record keeping requirements pursuant to 40 CFR 82.166.

f. Persons owning commercial or industrial process refrigeration equipment shall comply with the leak repair requirements pursuant to 40 CFR 82.156.

g. Owners/operators of appliances normally containing 50 or more pounds of refrigerant shall keep records of refrigerant purchased and added to such appliances pursuant to 40 CFR 82.166.

16. ACID RAIN PERMIT

Not applicable.

SECTION IV PLANT SPECIFIC CONDITIONS

This section provides tables that include the emissions standards, emissions limitations, and work practices applicable to each emissions unit located at this facility. The Permittee shall comply with all applicable emissions standards, emissions limitations and work practices included herein.

The tables also include testing, monitoring, record keeping and reporting requirements specific to each emissions unit. In addition to the requirements included here in **Section IV**, the Permittee is also subject to the general testing, monitoring, record keeping and reporting requirements included in **Section III – Plant Wide Conditions** of this permit.

Unless otherwise provided in the specific requirements for an emissions unit, the Permittee shall maintain at the facility for at least five (5) years, and shall make available to the Department upon request, all records that the Permittee is required under this section to establish. **[Reference: COMAR 26.11.03.06C(5)(g)]**

Table IV – 1	
1.0	**Emissions Unit Number(s): EU-1, EU-2, EU-3, and EU-4** **MDE Reg. Nos. 031-0323-5-0108, 5-0109, 5-0110, and 5-0111** Four (4) 55 million Btu/hr Union Works boilers e/w Low NO_X burners, burning natural gas as primary fuel and No. 2 fuel oil as back up during periods of gas curtailment, gas supply interruption, startups, or periodic testing on liquid fuel.
1.1	**Applicable Standards/Limits:** **A. Control of Visible Emissions** **COMAR 26.11.09.05A(2) – Fuel Burning Equipment**. "(2) In Areas III and IV, a person may not cause or permit the discharge of emissions from any fuel burning equipment, other than water in an uncombined form, which is visible to human observers except that, for the purpose of demonstrating compliance using COM date, emissions that are visible to a human observer are those that are equal to or greater than 10 percent opacity." **COMAR 26.11.09.05A(3) – Exceptions**. "(3) Section A(1) and (2) of this regulation do not apply to emissions during load changing, soot blowing, start up, or adjustments or occasional cleaning of control equipment if: (a) The visible emissions are not greater than 40 percent opacity; and (b) The visible emissions do not occur for more than 6 consecutive minutes in any sixty-minute period."

Table IV – 1

B. Control of Sulfur Oxides

COMAR 26.11.09.07A(2)(b) – Sulfur Content Limitations for Fuel.
"A person may not burn, sell, or make available for sale any fuel with a sulfur content by weight in excess of which otherwise exceeds the following limitations: (2) In Areas III and IV: (b) distillate fuel oils, 0.3 percent."

C. Control of Nitrogen Oxides

The Permittee shall comply with one of C(1) & (2), or C(3) & C(4) below:

1. **COMAR 26.11.09.08 – Control of NO_X Emissions for Major Stationary Sources**
   COMAR 26.11.09.08B(1), Emission Standards and Requirements.

   (a) "A person who owns or operates an installation that causes NO_X emissions subject to this regulation is in compliance with this regulation if the person establishes compliance with the emissions standards in §B(1)(c) of this regulation."

   (c) "Emission Standards in Pounds of NO_X per Million Btu of heat input."(*)

Fuel	Tangential- Fired	Wall-Fired
Gas only	0.20	0.20
Gas/Oil	0.25	0.25
Coal (dry bottom)	0.38	0.38
Coal (wet bottom)	1.00	1.00

   Note(*): The Permittee shall satisfy this requirement by meeting the more stringent NNSR limits cited under Part E(1) of this permit.

2. **COMAR 26.11.09.08B – General Requirements and Conditions**.
   (2) Demonstration of Compliance. "A person subject to a NO_X emission standard in this regulation shall demonstrate compliance as follows: (e) For a person who establishes compliance using a stack test, compliance shall be determined as averages of the stack test duration."

3. **COMAR 26.11.09.08B(5) – Operator Training**.
   (a) "For purposes of this regulation, the equipment operator to be trained may be the person who maintains the equipment and makes the necessary adjustments for efficient operation."

   (b) "The operator training course sponsored by the Department shall include an in-house training course that is approved by the Department."

4. **COMAR 26.11.09.08E – Requirements for Fuel-Burning Equipment with a Rated Heat Input Capacity of 100 Million Btu Per Hour or Less**.
   "A person who owns or operates fuel-burning equipment with a rated heat input capacity of 100 Million Btu per hour or less shall:
   (1) Submit to the Department an identification of each affected installation, the rated heat input capacity of each installation, and

Table IV – 1

the type of fuel burned in each;

(2) Perform a combustion analysis for each installation at least once each year and optimize combustion based on the analysis;

(3) Maintain the results of the combustion analysis at the site for at least 2 years and make this data available to the Department and the EPA upon request;

(4) Once every 3 years, require each operator of the installation to attend operator training programs on combustion optimization that are sponsored by the Department(*), the EPA, or equipment vendors; and

(5) Prepare and maintain a record of training program attendance for each operator at the site, and make these records available to the Department upon request."

D. Operational Limitation

(1) The Permittee shall burn liquid {No.2 fuel oil} fuel only during periods of gas curtailment, gas supply interruption, startup or periodic testing on liquid {No.2 fuel oil} fuel. Periodic testing of liquid {No.2 fuel oil} fuel shall not exceed a combined total of 48 hours per boiler during any calendar year. **[Reference: 40 CFR §63.11195(e) and §63.11237]**

(2) Except as otherwise provided in this part, each of the four (4) boilers EU # 1 - #4 equipped with low NO_X burners shall be operated in accordance with specifications included in the applications and any operating procedures recommended by equipment vendors unless the Permittee obtains from the Department written authorization for alternative operating procedures. **[Reference: PTC No. 031-0323-5-0108 through -5-0111, issued January 17, 2019]**

E. Non-Attainment New Source Review (NNSR) Limits

(1) In order to avoid triggering NNSR requirements, the Permittee shall not exceed the following NO_X emissions limits:

(c) For the Boilers EU # 1 though EU# 4: 0.1 lbs / MMBTU when burning natural gas; and 0.2 lbs / MMBTU when burning fuel oil.

(2) In order to prevent the NO_X emissions from the installation of the CHP Plant (the one (1) natural gas fired combustion turbine rated at 87.97 MMBtu/hr and the one (1) natural gas fired HRSG rated at 50.78 MMBtu/hr and equipped with low NO_X burners) from triggering a "Significant" net emissions increase for the facility as defined under COMAR 26.11.17.01B(26) and triggering the Nonattainment Provisions for Major New Sources and Modifications (NSR) under COMAR 26.11.17, the Permittee shall:

(b) Limit the combined total NO_X emissions from Boilers #1 - #4 to less than **10.8 TPY** for any 12-month consecutive period; unless

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	prior approval is received from the Department, in order to satisfy the NNSR netting demonstration of the CHP. **[Reference: Permit to Construct PTC #031-0323-5-2363 & 5-2364, issued January 17, 2019]**
1.2	**Testing Requirements:** **A. Control of Visible Emissions** See Monitoring Requirements in Section 1.3. **B. Control of Sulfur Oxides** See Monitoring Requirements in Section 1.3. **C. Control of Nitrogen Oxides** The Permittee shall conduct a stack test to determine the NOx emissions rate on at least two of the four boilers while burning natural gas and while burning No. 2 fuel oil at least once prior to the expiration of the Title V permit. The Permittee shall submit a test protocol to the Department for approval at least 30 days prior to the processed test date. **[Reference: COMAR 26.11.09.08B(2)(a)(ii) and .08B(2)(e) and 26.11.17.01B(26)]** **D. Operational Limitation** See Record Keeping Requirements in Section 1.4. **E. Non-Attainment New Source Review (NNSR) Limits** See Monitoring Requirements in Section 1.3.
1.3	**Monitoring Requirements:** **A. Control of Visible Emissions** The following requirements apply to visible emissions: (1) The Permittee shall properly operate and maintain the boilers in a manner to prevent visible emissions. (2) The Permittee shall verify no visible emissions when burning No. 2 fuel oil. An observer shall perform a visual observation of stack emissions for a 6-minute period once every 168 hours of operation on oil or at a minimum once per year. (3) The Permittee shall perform the following, if emissions are visible to a human observer: (a) Inspect combustion control system and boiler operations; (b) Perform all necessary adjustments and/or repairs to the boiler within 48 hours of operation so that visible emissions are eliminated; and (c) Document in writing the results of inspections, adjustments, and/or repairs to the boiler.

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	(4) The Permittee shall after 48 hours of operation, if the required adjustments and/or repairs had not eliminated the visible emissions, perform a Method 9 observation once daily when boilers operating on No. 2 fuel oil for 18 minutes until corrective action has eliminated the visible emissions. **[Reference: COMAR 26.11.03.06C]** **B. Control of Sulfur Oxides** The Permittee shall obtain a certification from the fuel supplier indicating that the oil complies with the limitation on the sulfur content of the fuel oil. **[Reference: COMAR 26.11.09.07]** **C. Control of Nitrogen Oxides** The Permittee shall, if compliance is sought under COMAR 26.11.09.08E, perform a combustion analysis for each affected installation at least once each year and optimize combustion based on the analysis. **[Reference: COMAR 26.11.09.08E(2)]** **D. Operational Limitation** See Record Keeping Requirements in Section 1.4. **E. Non-Attainment New Source Review (NNSR) Limits** See Record Keeping Requirements in Section 1.4.
1.4	**Record Keeping Requirements:** **A. Control of Visible Emissions** The Permittee shall keep the following records related to visible emissions: (1) Maintain an operation manual and prevention maintenance plan on site; (2) Maintain a record of the maintenance performed that relates to combustion performance; (3) Maintain a log of visible emissions observations performed and make it available to the Department's representative upon request; and (4) Maintain a record of the hours that No. 2 fuel oil is burned. **[Reference: COMAR 26.11.03.06C]** **B. Control of Sulfur Oxides** The Permittee shall retain fuel supplier certifications stating that the fuel oil is in compliance with the sulfur content limitation for at least 5 years. **[Reference: COMAR 26.11.03.06C]** **C. Control of Nitrogen Oxides** The Permittee shall maintain the following records on site for at least five years and make them available to the Department upon request:

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	(1) Records of all notifications required under regulation COMAR 26.11.09.08 of the applicable section under the regulation that applies to the boilers; (2) Records of any NOx stack test and supporting operational data used to demonstrate compliance with COMAR 26.11.09.08; (3) Results of any combustion analysis required under COMAR 26.11.09.08E and make this data available to the Department and the EPA upon request; **[Reference: COMAR 26.11.09.08E(3)]** (4) Prepare and maintain a record of training program attendance for each operator at the site, and make these records available to the Department upon request; **[Reference: COMAR 26.11.09.08F(1)(e) and COMAR 26.11.09.08E(5)]** and (5) Annual fuel use records. **[Reference: COMAR 26.11.09.08K(3) and COMAR 26.11.03.06C]** **D. <u>Operational Limitation</u>** The Permittee shall keep monthly records of quantity of natural gas and No. 2 fuel oil burned, and hours of operation on No.2 fuel oil, along with the supporting documentation for at least 5 years and shall be made available to the Department upon request. **[Reference: COMAR 26.11.03.06C]** **E. <u>Non-Attainment New Source Review (NNSR) Limits</u>** See Record Keeping Requirements in Section 1.4.C.
1.5	**<u>Reporting Requirements</u>:** **A. <u>Control of Visible Emissions</u>** The Permittee shall report incidents of visible emissions in accordance with Permit Condition 4, Section III, “Report of Excess Emissions and Deviations.” **B. <u>Control of Sulfur Oxides</u>** The Permittee shall report fuel supplier certification to the Department upon request. **[Reference: COMAR 26.11.03.06C]** **C. <u>Control of Nitrogen Oxides</u>** (1) The Permittee shall submit to the Department an identification of each affected installation under either COMAR 26.11.09.08E or .08F, the rated heat input capacity of each installation, and the type of fuel burned in each. **[Reference: COMAR 26.11.09.08F(1)(a) and .08E(1)]** (2) If compliance with regulation COMAR 26.11.09.08 is demonstrated by a stack test, the results of the stack tests required by this regulation shall be submitted to the Department within 45 days after completion of the test. **[Reference: COMAR 26.11.09.08K(2)]**

Table IV – 1	
	(3) The Permittee shall inform the Department not later than 60 days after the date when the fuel-burning equipment no longer qualifies as a space heater, and shall meet the applicable fuel-burning equipment RACT requirement in this regulation. **[Reference: COMAR 26.11.09.08F(2)]** **D. Operational Limitation** The Permittee shall submit the monthly quantity of natural gas and NO. 2 fuel oil burned with the supporting documentation for the annual emissions certification report. **E. Non-Attainment New Source Review (NNSR) Limits** See Reporting Requirements in Section 1.5.C.

A permit shield shall cover the applicable requirements of the Clean Air Act that are listed in the table above for the four 55 million Btu/hr Union Works boilers – EU #s 1 through 4.

Table IV – 2	
2.0	**Emissions Unit Number(s): EU-5 and EU-6** **MDE Reg. Nos. 031-0323-5-1112, and 5-1113** Two (2) 99.8 million Btu/hr natural gas fired boilers equipped with low NOx burners and capable of firing No. 2 fuel oil during periods of gas curtailment.
2.1	**Applicable Standards/Limits:** **A. Control of Visible Emissions** **COMAR 26.11.09.05A(2) – Fuel Burning Equipment**. "(2) In Areas III and IV, a person may not cause or permit the discharge of emissions from any fuel burning equipment, other than water in an uncombined form, which is visible to human observers except that, for the purpose of demonstrating compliance using COM date, emissions that are visible to a human observer are those that are equal to or greater than 10 percent opacity." **COMAR 26.11.09.05A(3) – Exceptions**. "(3) Section A(1) and (2) of this regulation do not apply to emissions during load changing, soot blowing, start up, or adjustments or occasional cleaning of control equipment if: (a) The visible emissions are not greater than 40 percent opacity; and (b) The visible emissions do not occur for more than 6 consecutive minutes in any sixty-minute period." **NSPS - 40 CFR § 60.43c – Standard for particulate matter (PM)**.

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"No owner or operator of an affected facility that combusts coal, wood, or oil and has a heat input capacity of 8.7 MW (30 MMBtu/h) or greater shall cause to be discharged into the atmosphere from that affected facility any gases that exhibit greater than 20 percent opacity (6-minute average), except for one 6-minute period per hour of not more than 27 percent opacity." **[Reference: 40 CFR §60.43c(c)]**

B. Control of Sulfur Oxides

(1) "A person may not burn, sell, or make available for sale any fuel with a sulfur content by weight in excess of or which otherwise exceeds the following limitations: (2) In Areas III and IV: (b) Distillate fuel oils, 0.3 percent;" **[Reference: COMAR 26.11.09.07A(2)]**

(2) "No owner or operator of an affected facility that combusts oil shall cause to be discharged into the atmosphere from that affected facility any gases that contain SO_2 in excess of 215 ng/J (0.50 lb/MMBtu) heat input from oil; or, as an alternative, no owner or operator of an affected facility that combusts oil shall combust oil in the affected facility that contains greater than 0.5 weight percent sulfur." **[Reference: 40 CFR §42c(d)]**

Note: Compliance demonstration with COMAR 26.11.09.07A(2)(b) will be used to comply with this standard.

C. Control of Nitrogen Oxides

(1) The NOx emission rate shall not exceed 0.1 lb/MMBtu for natural gas firing and 0.2 lb/MMBtu for No. 2 oil firing. **[Reference: MDE Permit to Construct No. 15-5-1112N and 1113N issued on July 30, 1996]**

(2) The Permittee may demonstrate compliance with regulation COMAR 26.11.09.08 by complying with a NOx emission standard of 0.25 pounds of NOx per million Btu heat input. **[Reference: COMAR 26.11.09.08B(1)(c)]**

Note: Compliance with the NOx standard in Table IV-2, Section 2.1C(1) above will demonstrate compliance with COMAR 26.11.09.08B(1)(c).

D. Operational Limitations

(1) The boilers shall be fired with natural gas as primary fuel and No. 2 distillate oil as back-up fuel. **[Reference: MDE Permit to Construct No. 15-5-1112N and 1113N issued on July 30, 1996]**

(2) In order to prevent the NO_X emissions from the two (2) 99.8 million Btu/hr boilers from triggering a "Significant" net increase for the facility as defined under COMAR 26.11.17.01 B (26) and thereby triggering the Nonattainment Provisions for Major New Sources and Modifications (NNSR) under COMAR 26.11.17, the Permittee shall limit the NO_X emissions from the boilers to less than 25 tons per year, for any 12-month consecutive period.

Table IV – 2	
	(3) In order to demonstrate compliance with the emissions requirement for exemption from NNSR, the Permittee shall calculate and record the NO_X emissions from the boilers, for each previous calendar month and a total for the previous 12 consecutive calendar months. The calculations and records shall be updated monthly, within the first 15 days of each following month. **[Reference: COMAR 26.11.03.01H, … 26.11.03.06C & … 26.11.17.01]** (4) The Permittee may burn liquid fuel only during periods of gas curtailment, gas supply emergencies, or periodic testing on liquid fuel. Periodic testing of liquid fuel shall not exceed a combined total of 48 hours during any calendar year. **[Reference: COMAR 26.11.02.09A and 40 CFR §63.11195(e) and §63.11237]**
2.2	**Testing Requirements:** **A. Control of Visible Emissions** See Monitoring Requirements, Section 2.3. **B. Control of Sulfur Oxides** See Monitoring Requirements, Section 2.3. **C. Control of Nitrogen Oxides** The Permittee shall conduct a stack test to determine the NOx emissions rate on each of the boilers while burning natural gas and while burning No. 2 fuel oil at least once prior to the expiration of the term of this permit. The Permittee shall submit a test protocol to the Department for approval at least 30 days prior to the proposed test date. The Permittee shall submit stack test results to the Department 45 days after the performance testing. **[Reference: COMAR 26.11.03.06C]** **D. Operational Limitations** See Monitoring Requirements, Section 2.3.
2.3	**Monitoring Requirements:** **A. Control of Visible Emissions** The following requirements apply to visible emissions: (1) The Permittee shall properly operate and maintain the boilers in a manner to prevent visible emissions. (2) The Permittee shall verify no visible emissions when burning No. 2 fuel oil. An observer shall perform a visual observation of stack emissions for a 6-minute period once every 168 hours of operation on oil or at a minimum once per year.

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	(3) The Permittee shall perform the following, if emissions are visible to human observer: (a) Inspect combustion control system and boiler operations, (b) Perform all necessary adjustments and/or repairs to the boiler within 48 hours of operation so that visible emissions are eliminated; and (c) Document in writing the results of the inspections, adjustments and/or repairs to the boiler. (4) The Permittee shall after 48 hours of operation, if the required adjustments and/or repairs had not eliminated the visible emissions, perform a Method 9 observation once daily when boilers operation on No. 2 fuel oil for 18 minutes until corrective action has eliminated the visible emissions. **[Reference: COMAR 26.11.03.06C]** **B. <u>Control of Sulfur Oxides</u>** The Permittee shall obtain a certification from the fuel supplier that the No. 2 fuel oil is in compliance with the sulfur in fuel limitation. **[Reference: 40 CFR 60.42c]** **C. <u>Control of Nitrogen Oxides</u>** The Permittee shall measure the NOx concentration of the flue gases from each boiler for a 3 to 5-minute period every 500 hours of operation. The Permittee shall use an analyzer that is properly calibrated and maintained in accordance with the vendor specification. The analyzer shall be the type approved by the Department. **[Reference: COMAR 26.11.03.06C]** **D. <u>Operational Limitations</u>** The Permittee shall calculate the quantity of natural gas and No. 2 fuel oil burned for each 12-month rolling period at the end of each calendar month. The calculation shall be completed by the 15th day of the following month. **[Reference: COMAR 26.11.03.06C]**
2.4	**<u>Record Keeping Requirements</u>:** **A. <u>Control of Visible Emissions</u>** The Permittee shall keep the following records related to visible emission: (1) Maintain an operation manual and prevention maintenance plan on site; (2) Maintain a record of the maintenance performed that relates to combustion performance. (3) Maintain a log of visible emissions observations performed and make it available to the Department's representative upon request; and (4) Maintain a record of the hours that No. 2 fuel oil is burned. **[Reference: COMAR 26.11.03.06C]**

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	B. Control of Sulfur Oxides The Permittee shall retain fuel supplier certifications stating that the fuel oil is in compliance with the sulfur content in the fuel limitation and must be maintained for at least five (5) years. **[Reference: 40 CFR 60.48c(e)]** **C. Control of Nitrogen Oxides** The Permittee shall maintain records of the stack tests and results of measured NOx content of the flue gas on site for at least five (5) years and shall make them available to the Department upon request. **[Reference: COMAR 26.11.03.06C]** **D. Operational Limitations** (1) The Permittee shall maintain records of the quantity of natural gas and No. 2 fuel burned in each rolling 12-month period. **[Reference: COMAR 26.11.03.06C]** (2) The Permittee shall maintain records of the amounts of each fuel combusted during each day. The amount of fuel combusted each day may be calculated by dividing the total fuel burned during a month by the days of operation in that month. **[Reference: 40 CFR 60.48c(g)]**
2.5	**Reporting Requirements:** **A. Control of Visible Emissions** The Permittee shall report incidents of visible emissions in accordance with Permit Condition 4, Section III, "Report of Excess Emissions and Deviations." **B. Control of Sulfur Oxides** The Permittee shall submit to the Department, a semi-annual report including the following: (1) A fuel supplier certification consisting of the name of the oil supplier and a statement from the oil supplier that the oil complies with the sulfur specifications for distillate fuel oil; and (2) A certified statement signed by the Permittee stating that the records of fuel supplier certifications submitted represent all of the fuel oil combusted during the 6-month period. **[Reference: 40 CFR 60.48c]** **C. Control of Nitrogen Oxides** The Permittee shall submit results of the stack tests for NOx within 45 days after completing the tests. **[Reference: COMAR 26.11.03.06C]** **D. Operational Limitations** The Permittee shall submit the monthly quantity of natural gas and No. 2 fuel

Table IV – 2	
	oil burned with the supporting documentation for the annual emissions certification report. **[Reference: COMAR 26.11.03.06C]**

A permit shield shall cover the applicable requirements of the Clean Air Act that are listed in the table above for the two (2) 99.8 MMBH natural gas fired boilers- EU-5 and EU-6.

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3.0	**Emissions Unit Number(s): EU-7** **MDE Reg. No. 031-0323-6-0557** Fire Research Laboratory consisting of four (4) pre-heaters, four (4) bag houses, and four (4) dry scrubbers for emission control.
3.1	**Applicable Standards/Limits:** **A. Control of Visible Emissions** "A person may not cause or permit the discharge of emissions from any installation or building, other than water in an uncombined form, which is visible to human observers." **[Reference: COMAR 26.11.06.02C(2)]** **B. Control of Particulate Matter** (1) "A person may not cause or permit to be discharged into the outdoor atmosphere from any other installation, particulate matter in excess of 0.03 gr/SCFD (68.7 mg/dscm)." **[Reference: COMAR 26.11.06.03B(2)]** (2) "A person may not cause or permit any material to be handled, transported, or stored or a building, its appurtenances, or a road to be used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne." **[Reference: COMAR 26.11.06.03B(2)(a)]** **C. Control of Sulfur Oxides** (1) "A person may not cause or permit the discharge into the atmosphere from installations other than fuel-burning equipment of gases containing more than 500 ppm of sulfur dioxide. Installations constructed before February 21, 1971, are limited to not more than 2,000 ppm sulfur dioxide." **[Reference: COMAR 26.11.06.05C(1)]** (2) A person may not cause or permit the discharge into the atmosphere from installations other than fuel-burning equipment of gases containing sulfuric acid, sulfur trioxide, or any combination of them, greater than 35 milligrams per cubic meter reported as sulfuric acid. Any installation constructed before February 21, 1971, is limited to not more than 70 milligrams per cubic meter of sulfuric acid, sulfur trioxide, or any combination of them, reported as sulfuric acid." **[Reference: COMAR 26.11.06.05C(2)]**

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Note: All calculations of emissions governed by this regulation shall be adjusted to standard conditions and 7 percent oxygen. **[Reference: COMAR 26.11.06.05A]**

D. Control of Nitrogen Oxides

"A person who owns or operates any installation other than fuel-burning equipment that causes NO_x emissions shall:

(1) Maintain good operating practices as recommended by the equipment vendor to minimize NO_x emissions;

(2) Prepare and implement a written in-house training program for all operators of these installations that include instruction on good operating and maintenance practices for the particular installation;

(3) Maintain and make available to the Department, upon request, the written in-house operator training program;

(4) Burn only gas in each installation, where gas is available, during the period May 1 through September 30 of each year; and

(5) Maintain operator training attendance records for each operator at the site for at least 2 years and make these records available to the Department upon request." **[Reference: COMAR 26.11.09.08J]**

Note: COMAR 26.11.09.08B(5) states that: (a) for the purpose of COMAR 26.11.09.08, the equipment operator to be trained may be the person who maintains the equipment and makes eth necessary adjustments for efficient operation; and (b) that the operator training course sponsored by the Department shall include an in-house training course that is approved by the Department.

E. Control of VOC Emissions

"Except as provided in §E of this regulation, a person may not cause or permit the discharge of VOC from any installation constructed on or after May 12, 1972 in excess of 20 pounds (9.07 kilograms) per day unless the discharge is reduced by 85 percent or more overall." **[Reference: COMAR 26.11.06.06B(1)(b)]**

F. Operational Limitations

(1) The pre-heaters shall be natural gas-fired only. **[Reference: Permit to Construct No. 031-0323-6-0557, Part D(2), issued on September 16, 2011]**

(2) The dry scrubbers must be in place and operated in accordance with manufacturer's specifications to meet the air toxics requirements. **[Reference: Permit to Construct No. 031-0323-6-0557, Part D(3),**

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	issued on September 16, 2011] (3) The exhaust from the National Fire Research Lab must vent through the pre-heater, dry scrubber, and bag house system. **Reference: Permit to Construct No. 031-0323-6-0557, Part D(4), issued on September 16, 2011]**
3.2	**Testing Requirements:** **A. Control of Visible Emissions** See Monitoring Requirements, Section 3.3. **B. Control of Particulate Matter** See Monitoring Requirements, Section 3.3. **C. Control of Sulfur Oxides** See Monitoring Requirements, Section 3.3. **D. Control of Nitrogen Oxides** See Monitoring Requirements, Section 3.3. **E. Control of VOC Emissions** See Record Keeping Requirements, Section 3.4. **F. Operational Limitations** See Record Keeping Requirements, Section 3.4.
3.3	**Monitoring Requirements:** **A. Control of Visible Emissions** The Permittee shall perform a visual observation of the exhaust from each bag house once per month for a 6-minute period when a fire is burning (unless the Research Laboratory is not in operation that month) to determine if there are any visible emissions. If visible emissions are observed from the bag houses, the Permittee shall perform the following: (1) Inspect all control equipment that may affect visible emissions; (2) Perform all necessary repairs and/or adjustment within 48 hours so that visible emissions in the exhaust gases are eliminated; (3) Document, in writing, the results of the inspections and the repairs and/or adjustment made to the control equipment; and (4) If visible emissions have not been eliminated within 48 hours, the Permittee shall perform a Method 9 observation once daily for an 18-minute period until corrective actions have eliminated the visible emissions. **[Reference: COMAR 26.11.03.06C]**

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	B. Control of Particulate Matter See Monitoring Requirements, Control of Sulfur Oxides, Section 3.3C below. **C. Control of Sulfur Oxides** The following apply: (1) The emissions control system consisting of four (4) dry scrubbers shall be operated and maintained in accordance with the manufacturer's recommendations. **[Reference: Permit to Construct #031-0323-6-0557 issued on September 16, 2011, Condition D(3)]** (2) The Permittee shall develop and maintain a preventative maintenance plan that is based on manufacturer's recommendations and prior facility maintenance experiences for the four (4) dry scrubbers and the four (4) bag houses that describes the maintenance activity and time schedule for completing each activity. The Permittee shall perform maintenance activities within the time frames established in the plan and shall maintain a log with records of the dates and description of the maintenance that was performed. **[Reference: COMAR 26.11.03.06C]** **D. Control of Nitrogen Oxides** The Permittee shall prepare, implement, and maintain a written in-house training program for all operators that include instruction on good operating and maintenance practices for the installation. **[Reference: COMAR 26.11.09.08J(2)]** **E. Control of VOC Emissions** The Permittee shall calculate VOC emissions based on material usage data. **F. Operational Limitations** See Record Keeping Requirements, Section 3.4.
3.4	**Record Keeping Requirements:** **A. Visible Emissions Limitations** The Permittee shall maintain a log on site of the dates and results of visible emissions observations for five (5) years. **[Reference: COMAR 26.11.03.06C]** **B. Control of Particulate Matter** The Permittee shall maintain the following records for at least five (5) years and make them available to the Department upon request: (1) A copy of the preventative maintenance plan for each bag house and a record of the dates and description of maintenance activity performed; (2) Records of the bag house malfunctions that cause visible emissions and the corrective actions taken to bring it back into proper operation; and

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	(3) Records of the amount and types of material processed in the Fire Research Laboratory. **[Reference: COMAR 26.11.03.06C]** **C. Control of Sulfur Oxides** In keeping with the Preventative Maintenance Plan, the Permittee shall maintain a log with records of the dates and description of the maintenance that was performed. **[Reference: COMAR 26.11.03.06C]** **D. Control of Nitrogen Oxides** (1) The Permittee shall maintain the operator NOx training attendance records for the in-house training program, referenced in Table IV-3, Part 3.1D(2), at the site for at least two (2) years and make these records available to the Department upon request. **[Reference: COMAR 26.11.09.08J(5)]** (2) The Permittee shall maintain annual fuel use records on site for not less than three (3) years, and make these records available to the Department upon request. **[Reference: COMAR 26.11.09.08K(3)]** **E. Control of VOC Emissions** The Permittee shall maintain for at least five (5) years, and shall make available to the Department upon request, input material usage rates for all VOC containing materials. **F. Operational Limitations** The Permittee must keep records of the amount of natural gas used in the pre-heaters each month.
3.5	**Reporting Requirements:** **A. Control of Visible Emissions** The Permittee shall report the results of the visible emissions observations to the Department upon request. **[Reference: COMAR 26.11.03.06C]** **B. Control of Particulate Matter** The Permittee shall submit a copy of the preventative maintenance plan, records of maintenance activities, and corrective actions taken upon request. **[Reference: COMAR 26.11.03.06C]** **C. Control of Sulfur Oxides** The Permittee shall submit records of the amount and types of material processed in the Fire Research Laboratory to the Department upon request. **[Reference: COMAR 26.11.03.06C]**

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	D. Control of Nitrogen Oxides See Record Keeping Requirements, Section 3.4. **E. Control of VOC Emissions** The Permittee shall submit all material usage records and VOC emissions calculations from the Fire Research Laboratory to the Department upon request in the annual Emissions Certification Report. **F. Operational Limitations** The Permittee shall submit records of the amount of natural gas used in the Fire Research Laboratory to the Department with the annual Emissions Certification Report.

A permit shield shall cover the applicable requirements of the Clean Air Act that are listed in the table above for the Fire Research Laboratory – EU #7.

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4.0	**Emissions Unit Number(s): EU-8** **MDE Reg. No. 031-0323-9-1177** One (1) 6,000-gallon aboveground storage tank equipped with a Stage 1 vapor recovery system.
4.1	**Applicable Standards/Limits:** **A. Control of VOC Emissions** (1) The Permittee may not cause or permit gasoline to be loaded into a stationary tank unless the loading system is equipped with a vapor balance line that is properly installed, maintained, and used. **[Reference: COMAR 26.11.13.04C(2)]** (2) "A person may not cause or permit a gasoline or VOC having a TVP of 1.5 psia (10.3 kilonewtons/square meter) or greater to be loaded into any truck, railroad tank car, or other contrivance unless the: (a) Loading connections on the vapor lines are equipped with fittings that have no leaks and that automatically and immediately close upon disconnection to prevent release of gasoline or VOC from these fittings; and (b) Equipment is maintained and operated in a manner to prevent avoidable liquid leaks during loading and unloading operations." **[Reference: COMAR 26.11.13.04D]** **B. Operational Limitations** (1) The Permittee shall limit the monthly gasoline throughput to less than an average of 10,000 gallons per month in any calendar year unless

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	notification is provided to the Department within 30 days following any calendar year in which the average monthly gasoline throughput at the facility during the calendar year exceeds 10,000 gallons per month. **[Reference: COMAR 26.11.03.06C and COMAR 26.11.24.02C(1)]** (2) The Permittee shall install and operate an approved system within one (1) year after any calendar year in which the average monthly gasoline throughput at the facility during the calendar year exceeds 10,000 gallons per month. **[Reference: COMAR 26.11.24.07D(2)]** (3) The Permittee must meet the management standards specified in 40 CFR Part 63 subpart CCCCCC for a tank with less than 10,000 gallons per month throughput. **[Reference: 40 CFR §63.11116]**
4.2	**Testing Requirements:** **A. Control of VOC Emissions** See Monitoring Requirements, Section 4.3. **B. Operational Limitations** See Record Keeping Requirements, Section 4.4.
4.3	**Monitoring Requirements:** **A. Control of VOC Emissions** Once a month during a delivery, the Permittee shall visually inspect all components for leaks and retain a record of these leak inspections. If leaks are detected, corrective action shall be as follows: (1) Take immediate action to repair all observed VOC leaks that can be repaired within 48 hours; and (2) Repair all other leaking components not later than 15 days after the leak is discovered. If a replacement part is needed, the part shall be ordered within 3 days after discovery of the leak, and the leak shall be repaired within 48 hours after receiving the part. **[Reference: COMAR 26.11.03.06C]** **B. Operational Limitations** The Permittee must not allow gasoline to be handled in a manner that would result in vapor releases to the atmosphere for extended periods of time. Measures to be taken include, but are not limited to, the following: (1) Minimize gasoline spills; (2) Clean up spills as expeditiously as practicable;

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	(3) Cover all open gasoline containers and all gasoline storage tank fill-pipes with a gasketed seal when not in use; (4) Minimize gasoline set to open waste collection systems that collect and transport gasoline to reclamation and recycling devices, such as oil/water separators. **[Reference: 40 CFR §63.11116(a)]**
4.4	**Record Keeping Requirements:** **A. Control of VOC Emissions** The Permittee shall retain a record of the leak inspections referenced in Monitoring Requirements, Section 4.3, above. **[Reference: COMAR 26.11.03.06C]** **B. Operational Limitations** (1) An owner or operator of a gasoline dispensing facility exempted according to regulation COMAR 26.11.24.02C of this chapter shall create and maintain records on gasoline throughput and tank sizes and make the records available to the Department upon request. **[Reference: COMAR 26.11.24.07D(1)]** (2) The Permittee shall notify the Department within 30 days and install and operate an approved system within one (1) year after any calendar year in which the average monthly gasoline throughput at the facility during the calendar month exceeds 10,000 gallons per month. **[Reference: COMAR 26.11.03.06C and COMAR 26.11.24.07D(2)]** (3) The Permittee shall keep the following records: (a) Records of the occurrence and duration of each malfunction of operation (i.e. process equipment) or the air pollution control and monitoring equipment. (b) Records of action taken during periods of malfunction to minimize emissions in accordance with §63.11115(a), including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation. **[Reference: 40 CFR §63.11125(d)]**
4.5	**Reporting Requirements:** **A. Control of VOC Emissions** See Record Keeping Requirements, Section 4.4. **B. Operational Limitations** See Record Keeping Requirements, Section 4.4.

A permit shield shall cover the applicable requirements of the Clean Air Act that are listed in the table above for the 6,000-gallon aboveground storage tank – EU #8

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5.0	**Emissions Unit Number(s): EU-9 and EU-10** **MDE Reg. No. 031-0323-9-0630** One (1) diesel fired emergency generator rated at 1,000 kW. **MDE Reg. No. 031-0323-9-0898** One (1) diesel fired emergency generator rated at 500 kW.
5.1	**Applicable Standards/Limits:** **A. Control of Visible Emissions** **COMAR 26.11.09.05E** – Stationary Internal Combustion Engine Powered Equipment. "(2) Emissions During Idle Mode. A person may not cause or permit the discharge of emissions from any engine, operating at idle, greater than 10 percent opacity. **[Reference: COMAR 26.11.09.05E(2)]** (3) Emissions During Operating Mode. A person may not cause or permit the discharge of emissions from any engine, operating at other than idle conditions, greater than 40 percent opacity. **[Reference: COMAR 26.11.09.05E(3)]** (4) Exceptions. (a) Section E(2) does not apply for a period of 2 consecutive minutes after a period of idling of 15 consecutive minutes for the purpose of clearing the exhaust system. (b) Section E(2) does not apply to emissions resulting directly from cold engine start-up and warm-up for the following maximum periods: (i) Engines that are idled continuously when not in service: 30 minutes; (ii) All other engines: 15 minutes. (c) Section E(2) and (3) does not apply while maintenance, repair, or testing is being performed by qualified mechanics." **[Reference: COMAR 26.11.09.05E(4)]** **B. Control of Sulfur Oxides** "A person may not burn, sell, or make available for sale any fuel with a sulfur content by weight in excess of or which otherwise exceeds the following limitations: (2) In Areas III and IV: (b) Distillate fuel oils, 0.3 percent." **[Reference: COMAR 26.11.09.07A(2)(b)]** **C. Control of Nitrogen Oxides** "A person who owns or operates fuel-burning equipment with a capacity factor (as defined in 40 CFR Part 72.2) of 15 percent or less shall:

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	(a) Provide certification of the capacity factor of the equipment to the Department in writing; (b) For fuel-burning equipment that operates more than 500 hours during a calendar year, perform a combustion analysis and optimize combustion at least once annually; (c) Maintain the results of the combustion analysis at the site for at least 2 years and make these results available to the Department and the EPA upon request; (d) Require each operator of an installation, except combustion turbines, to attend operator training programs at least once every 3 years, on combustion optimization that are sponsored by the Department, the EPA, or equipment vendors; and (e) Maintain a record of training program attendance for each operator at the site, and make these records available to the Department upon request." **[Reference: COMAR 26.11.09.08G(1)]** **Note**: COMAR 26.11.09.08B(5) states that; (a) for the purpose of COMAR 26.11.09.08, the equipment operator to be trained may be the person who maintains the equipment and makes the necessary adjustments for efficient operation; and (b) that the operator training course sponsored by the Department shall include an in-house training course that is approved by the Department. **D. Operational Limitations** (1) For each engine, the Permittee shall: (a) Change the oil and filter every 500 hours of operation or annually, whichever comes first. (b) Inspect the air cleaner every 1,000 hours of operation or annually, whichever comes first, and replace as necessary. (c) Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary. **[Reference: 40 CFR §63.6603(a) and 40 CFR 63, Subpart ZZZZ, Table 2d, Item #4]** (2) *Requirements for emergency stationary RICE.* (1) If you own or operate an existing emergency stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions, a new or reconstructed emergency stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions that was installed on or after June 12, 2006, or an ***existing emergency stationary RICE located at an area source of HAP emissions***, you must operate the emergency stationary RICE according to the requirements in paragraphs (f)(1)(i) through (iii) of this section. Any operation other than emergency operation, maintenance and testing is prohibited. If you do not operate the engine according to the requirements in paragraphs (f)(1)(i) through (iii)(*) of this section, the engine will not be considered an emergency engine under this subpart and will need to meet all requirements for non-emergency engines.

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	(i) There is no time limit on the use of emergency stationary RICE in emergency situations. (ii) You may operate your emergency stationary RICE for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency RICE beyond 100 hours per year. **[Reference: 40 CFR §63.6640 (f)]** **Note(*)**: Effective May 2, 2016, emergency generators are no longer allowed to participate for emergency demand response operation unless they meet the requirements of a non-emergency generator of the same model year. This engine does not meet the standards for a non-emergency generator, therefore, operation for emergency demand response or during periods of voltage deviation, as was indicated under paragraphs (f)(1)(iii), are not permitted.
5.2	**Testing Requirements:** **A. Control of Visible Emissions** See Monitoring Requirements in Section 5.3. **B. Control of Sulfur Oxides** See Monitoring Requirements in Section 5.3. **C. Control of Nitrogen Oxides** See Monitoring Requirements in Section 5.3. **D. Operational Limitations** The Permittee has the option of utilizing an oil analysis program in order to extend the specified oil change requirement. The oil analysis must be performed at the same frequency specified for changing the oil in 40 CFR 63 Subpart ZZZZ, Table 2d. The analysis program must at a minimum analyze the following three parameters: Total Base Number, viscosity, and percent water content in accordance with 40 CFR §63.6625(i). **[Reference: 40 CFR §63.6625(i)]**
5.3	**Monitoring Requirements:** **A. Control of Visible Emissions** The Permittee shall properly operate and maintain the engine in a manner to

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	minimize visible emissions. **[Reference: COMAR 26.11.03.06C]** **B. <u>Control of Sulfur Oxides</u>** The Permittee shall obtain a certification from the fuel supplier that the fuel oil is in compliance with the sulfur in fuel limitation. **[Reference: COMAR 26.11.03.06C]** **C. <u>Control of Nitrogen Oxides</u>** The Permittee shall, on any emergency generator that operates more than 500 hours during a calendar year, perform an annual combustion analysis that includes the measurement of CO, O2, and NOx in the flue gas and optimize the combustion in accordance with manufacturer's recommendations. **[Reference: COMAR 26.11.09.08G(1)(b)]** **D. <u>Operational Limitations</u>** (1) The Permittee must maintain and operate the engines in a manner consistent with safety and good air pollution control practices for minimizing emissions. **[Reference: 40 CFR §63.6605(b)]** (2) The Permittee shall operate and maintain the stationary RICE and after-treatment control device (if any) according to the manufacturer's emission-related written instructions or develop your own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions. **[Reference: 40 CFR §63.6625(e)]**
5.4	**<u>Record Keeping Requirements</u>:** **<u>Note</u>: COMAR 26.11.03.06C(6)(a) requires that all records be kept for at least five (5) years and made available to the Department upon request.** **A. <u>Control of Visible Emissions</u>** The Permittee shall: **[Reference: COMAR 26.11.03.06C]** (1) Maintain an operation manual and prevention maintenance plan on site; and (2) Maintain a record of the maintenance performed that relates to combustion performance. **B. <u>Control of Sulfur Oxides</u>** The Permittee shall retain fuel supplier certifications stating that the fuel oil is in compliance with this regulation for at least five (5) years. **[Reference: COMAR 26.11.09.07C]** **C. <u>Control of Nitrogen Oxides</u>** The Permittee shall: (1) Maintain records of hours of operation and fuel use on-site for at least five

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	(5) years and shall make them available to the Department upon request. **[Reference: COMAR 26.11.03.06C]** (2) If a combustion analysis is required to be performed, maintain the results of the combustion analysis at the site for at least five (5) years and make these results available to the Department and the EPA upon request. **[Reference: COMAR 26.11.03.06C(6)(a)]** (3) Maintain a record of training program attendance for each operator at the site, and make these records available to the Department upon request. **[Reference: COMAR 26.11.09.08G(1)(e)]** **D. Operational Limitations** The Permittee must keep the following records in hard copy or electronic format, for at least five (5) years following the date of each occurrence, in a form suitable and readily available for expeditious review: (1) The Permittee must keep records of the maintenance conducted on the emergency engines and after treatment control devices (if any) according to the maintenance plan. **[Reference: 40 CFR §63.6655(e) and §63.6660]** (2) The Permittee must keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The Permittee must document how many hours are spent for emergency operation including what classified the operation as emergency and how many hours are spent for non-emergency operation. If the engines are used for demand response operation, the Permittee must keep records of the notification of the emergency situation, the date, the start time, and end time the engine was operated as part of the demand response. **[Reference: 40 CFR §63.6655(f) and §63.6660]**
5.5	**Reporting Requirements:** **A. Control of Visible Emissions** The Permittee shall report incidents of visible emissions in accordance with Permit Condition 4, Section III, "Report of Excess Emissions and Deviations." **B. Control of Sulfur Oxides** The Permittee shall report fuel supplier certification to the Department upon request. **[Reference: COMAR 26.11.09.07C]** **C. Control of Nitrogen Oxides** The Permittee shall: (1) Provide certification of the capacity factor of the equipment to the Department in writing. **[Reference: COMAR 26.11.09.08G(1)(a)]** (2) Make records of training program attendance for each operator at the site

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	available to the Department upon request. **[Reference: COMAR 26.11.09.08G(1)(e)]** **D. <u>Operational Limitations</u>** The Permittee shall make records available to the Department upon request. **[Reference: COMAR 26.11.03.06]**

A permit shield shall cover the applicable requirements of the Clean Air Act that are listed in the table above for the two (2) diesel-fired emergency generators – EU #9 & EU #10.

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6.0	**<u>Emissions Unit Number(s)</u>: EU-11 and EU-12** **MDE Reg. No. 031-0323-5-2363** One (1) natural gas fired combustion turbine rated at 87.97 MMBtu/hr. Installed August 2019. **MDE Reg. No. 031-0323-5-2364** One (1) heat recovery steam generator (HRSG) rated at 50.78 MMBtu/hr and equipped with low NO_X duct burners. Installed August 2019.
6.1	**<u>Applicable Standards/Limits</u>:** **A. <u>Control of Visible Emissions</u>** **<u>Fuel Burning Equipment</u>. – [COMAR 26.11.09.05(A)(1)]** "In Areas I, "In Areas III and IV, a person may not cause or permit the discharge of emissions from any fuel burning equipment, other than water in an uncombined form, which is visible to human observers except that, for the purpose of demonstrating compliance using COM data, emissions that are visible to a human observer are those that are equal to or greater than 10 percent opacity." (2) COMAR 26.11.09.05A(3), Exceptions. "Section A(1) and (2) of this regulation do not apply to emissions during load changing, soot blowing, startup, or adjustments or occasional cleaning of control equipment if: (a) The visible emissions are not greater than 40 percent opacity; and (b) The visible emissions do not occur for more than 6 consecutive minutes in any sixty-minute period." **B. <u>Control of Sulfur Oxides</u>** The Permittee must comply with one of the following: (1) You must not cause to be discharged into the atmosphere from the subject stationary combustion turbine any gases which contain SO_2 in excess of 110 nanograms per Joule (ng/J) (0.90 pounds per megawatt-hour (lb/MWh)) gross output, or

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(2) You must not burn in the subject stationary combustion turbine any fuel which contains total potential sulfur emissions in excess of 26 ng SO_2/J (0.060 lb SO_2/MMBtu) heat input. If your turbine simultaneously fires multiple fuels, each fuel must meet this requirement.

[Reference: 40 CFR Part 60, Subpart KKKK, §60.4330(a)(1) and (2). What emissions limits must I meet for sulfur dioxide (SO_2)?]

C. Control of Nitrogen Oxides

40 CFR Part 60, Subpart KKKK Requirements

Applies to the CT:

(1) The Permittee "must meet the emission limits for NO_X specified in Table 1 to this subpart."

(2) "If you have two or more turbines that are connected to a single generator, each turbine must meet the emission limits for NO_X."

40 CFR Part 60, Subpart KKKK, Table 1 – Nitrogen Oxide Emission Limits for New Stationary Combustion Turbines.

Combustion Turbine Type	Combustion Turbine heat input at peak load (HHV)	NO_X emission standard
New turbine firing natural gas	> 50 MMBtu/h and ≤ 850 MMBtu/h	25 ppm at 15 percent O_2 or 150 ng/J of useful output (1.2 lb/MWh).

[Reference: 40 CFR Part 60, Subpart KKKK, Table 1 – Nitrogen Oxide Emission Limits for New Stationary Combustion Turbines]

{COMAR 26.11.09.08E applies only to the HRSG}

COMAR 26.11.09.08E – Requirements for Fuel-Burning Equipment with a Rated Heat Input capacity of 100 MMBtu Per Hour or Less.

"A person who owns or operates fuel-burning equipment with a rated heat input capacity of 100 MMBtu per hour or less shall:

(1) Submit to the Department an identification of each affected installation, the rated heat input capacity of each installation, and the type of fuel burned in each;

(2) Perform a combustion analysis for each installation at least once each year and optimize combustion based on the analysis; *{**Note:** Applies for units that operate more than 500 hour in a calendar year - Ref: Condition G(1) above.}*

(3) Maintain the results of the combustion analysis at the site for at least 2 years and make this data available to the Department and the EPA upon

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request;

(4) Once every 3 years, require each operator of the installation to attend operator training programs on combustion optimization that are sponsored by the Department, the EPA, or equipment vendors; and

(5) Prepare and maintain a record of training program attendance for each operator at the site, and make these records available to the Department upon request.

{COMAR 26.11.09.08G applies only to the Combustion Turbine}

COMAR 26.11.09.08G – Control of NO_X Emissions for Major Stationary Sources. "Requirements for Fuel-Burning Equipment with a Capacity Factor of 15 Percent or Less, and Combustion Turbines with a Capacity Factor Greater than 15 Percent.

Note(*2): The federal NO_X emissions limit under 40 CFR Subpart KKKK is more stringent than the State requirements and therefore takes precedence over COMAR 26.11.09.08G. However, the NSPS Subpart KKKK NO_X standard is superseded by the more conservative Permit to Construct NNSR limit, which is cited in **Section 6.1.(E)** of this permit.

D. Operational Limitations

Except as otherwise provided in this part, the one (1) natural gas fired combustion turbine rated at 87.97 MMBtu/hr, the one (1) natural gas fired HRSG rated at 50.78 MMBtu/hr and equipped with low NO_X burners, and Boilers EU # 1 - #4 equipped with low NO_X burners shall be operated in accordance with specifications included in the applications and any operating procedures recommended by equipment vendors unless the Permittee obtains from the Department written authorization for alternative operating procedures.

[Reference: Permit to Construct PTC #031-0323-5-2363 & 5-2364, issued January 17, 2019]

E. Non-Attainment New Source Review (NNSR) Limits

(1) In order to avoid triggering NNSR requirements, the Permittee shall not exceed the following NO_X emissions limits:

(a) For the combustion turbine (CT): 15 ppm on a dry volume basis (ppmvd) at 15 percent oxygen (O2);

(b) For the Heat Recovery Steam Generator (HRSG): 0.08 lb / MMBtu; and

(c) For the Boilers EU # 1 though EU# 4: 0.1 lbs / MMBTU

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	when burning natural gas; and 0.2 lbs / MMBTU when burning fuel oil. (2) In order to prevent the NO_X emissions from the installation of the CHP Plant (the one (1) natural gas fired combustion turbine rated at 87.97 MMBtu/hr and the one (1) natural gas fired HRSG rated at 50.78 MMBtu/hr and equipped with low NO_X burners) from triggering a "Significant" net emissions increase for the facility as defined under COMAR 26.11.17.01B(26) and triggering the Nonattainment Provisions for Major New Sources and Modifications (NSR) under COMAR 26.11.17, the Permittee shall: (a) Limit NO_X emissions from the CHP Plant (Reg. No. 5-2363 & -5-2364) to no more than **30 TPY** for any 12-month consecutive period, unless prior approval is received from the Department; and (b) Limit the combined total NO_X emissions from Boilers #1 - #4 to less than **10.8 TPY** for any 12-month consecutive period; unless prior approval is received from the Department, in order to satisfy the NNSR netting demonstration of the CHP. (3) In order to demonstrate compliance with the annual emissions limitations, the Permittee shall calculate and record the CHP Plant and Boiler Nos. 1 – 4 NO_X emissions for each previous calendar month and a total for the previous 12 consecutive calendar months. (4) Monthly records of the hours of operation, fuel use, NO_X emission calculations and supporting data, including emissions factors, for the CHP and Boiler Nos. 1 – 4 shall be kept on site for at least five (5) years and shall be made available to the Department upon request. **[Reference: PTC 031-0323-5-2363 & 5-2364, issued January 17, 2019]**
6.2	**Testing Requirements:** **A. Control of Visible Emissions** **Fuel Burning Equipment**. – **[COMAR 26.11.09.05(A)(1)]** See Monitoring Requirements, below. **B. Control of Sulfur Oxides** See Monitoring Requirements, below. **C. Control of Nitrogen Oxides** (1) Initial Testing (a) The Permittee shall conduct the initial performance test within 60 days

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	of achieving the maximum production rate at which the facility will operate but not later than 180 days after initial startup of the facility**. [Reference: 40 CFR §60.8(a)] Note: Initial *Performance testing completed on September 24, 2019.*** (b) The Permittee must conduct an initial NOx performance test, as required in §60.8. **[Reference: 40 CFR §60.4400(a)] Note: Initial *Performance testing completed on September 24, 2019.*** (2) **Periodic Testing** **Note(*):** Conditions below applies to the CT that the Permittee has opted to use the alternative method to annual testing for demonstrating continuous compliance ("continuous parameter monitoring") for NO_X as specified in 40 CFR § 60.4340 (b)(2). (a) After the initial compliance test required under 40 CFR § 60.8, the owner or operator shall ***conduct a performance stack test for NOX for each CT unit at least once every 5 years or at least once during the term of the operating permit(*)***. The Permittee shall conduct performance test for NO_X in accordance with the methodologies specified in 40 CFR §§ 60.4340 & 60.4400. (b) Performance tests shall be conducted, and data reduced in accordance with the test methods and procedures contained in each applicable subpart unless the Administrator specifies or approves, in specific cases, an alternative reference method. (c) The Permittee shall provide the Department at least 30 days prior notice of any performance test, except as specified under other subparts, to afford the Administrator the opportunity to have an observer present. If after 30 days notice for an initially scheduled performance test, there is a delay (due to operational problems, etc.) in conducting the scheduled performance test, the owner or operator of an affected facility shall notify the Administrator (the Department) as soon as possible of any delay in the original test date, either by providing at least 7 days prior notice of the rescheduled date of the performance test, or by arranging a rescheduled date with the Administrator (the Department) by mutual agreement. (3) **Testing Notifications** (a) The Permittee shall notify the Department at least 30 days prior to any performance test, to afford the Department the opportunity to have an observer present. **[Reference: 40 CFR §60.8(d)]** (b) The Permittee shall provide the Department with two copies of the test protocols at least 30 days prior to any scheduled performance tests.

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	[Reference: COMAR 26.11.01.04 & 40 CFR § 60.4340 (b)(2) & .4400] **D. <u>Operational Limitations</u>** See Record Keeping Requirements in Section 6.4, below. **E. <u>Non-Attainment New Source Review (NNSR) Limits</u>** In order to demonstrate compliance with Non-attainment New Source Review (NNSR), PTC requirement, NO_X emission standard of 15 ppm on a dry volume basis (ppmvd) at 15 percent oxygen (O_2) for the CT and 0.08 lb/ MMBtu/hr for the HRSG, the Permittee shall conduct initial and periodic testing as described in Section 6.2 C, above. **[Reference: Permit to Construct PTC# 031-0323-5-2363 and 5-2364]**
6.3	**<u>Monitoring Requirements</u>:** **A. <u>Visible Emissions Limitations</u>** The Permittee is required to implement a preventative maintenance plan and maintain on site an operations manual and records of maintenance performed that relate to combustion performance. The Permittee shall properly operate and maintain the CT and HRSG in accordance with the manufacturer's recommendations and in a manner to assure compliance with the visible emissions standards and shall maintain logs of any visible emissions observations performed. **[Reference: COMAR 26.11.03.06C]** **B. <u>Control of Sulfur Oxides</u>** (1) The Permittee may elect not to monitor the total sulfur content of the fuel combusted in the turbine, if the fuel is demonstrated not to exceed potential sulfur emissions of 26 ng SO_2/J (0.060 lb SO_2/MMBtu) heat input for units located in continental areas and 180 ng SO_2/J (0.42 lb SO_2/MMBtu) heat input for units located in noncontinental areas or a continental area that the Administrator determines does not have access to natural gas and that the removal of sulfur compounds would cause more environmental harm than benefit. You must use one of the following sources of information to make the required demonstration: (a) The fuel quality characteristics in a current, valid purchase contract, tariff sheet or transportation contract for the fuel, specifying that the maximum total sulfur content for oil use in continental areas is 0.05 weight percent (500 ppmw) or less and 0.4 weight percent (4,000 ppmw) or less for noncontinental areas, ***the total sulfur content for natural gas use in continental areas is 20 grains of sulfur or less per 100 standard cubic feet*** and 140 grains of sulfur or less per 100 standard cubic feet for noncontinental areas, has potential sulfur emissions of less than less than 26 ng SO_2/J (0.060 lb SO_2/MMBtu) heat input for

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	continental areas and has potential sulfur emissions of less than less than 180 ng SO_2/J (0.42 lb SO_2/MMBtu) heat input for noncontinental areas; or (b) Representative fuel sampling data which show that the sulfur content of the fuel does not exceed 26 ng SO_2/J (0.060 lb SO_2/MMBtu) heat input for continental areas or 180 ng SO_2/J (0.42 lb SO_2/MMBtu) heat input for noncontinental areas. At a minimum, the amount of fuel sampling data specified in section 2.3.1.4 or 2.3.2.4 of appendix D to part 75 of this chapter is required. **[Reference: 40 CFR §60.4365(a)]** (2) The Permittee may develop custom schedules for determination of the total sulfur content of gaseous fuels, based on the design and operation of the affected facility and the characteristics of the fuel supply. Except as provided in 40 CFR §60.4370(c)(1) and (c)(2), custom schedules shall be substantiated with data and shall be approved by the Administrator before they can be used to comply with the standard in §60.4330. **[Reference: 40 CFR §60.4370(c)]** (3) If the Permittee chooses the option to monitor the sulfur content of the fuel, excess emissions and monitoring downtime are defined as follows: (a) For samples of gaseous fuel and for oil samples obtained using daily sampling, flow proportional sampling, or sampling from the unit's storage tank, an excess emission occurs each unit operating hour included in the period beginning on the date and hour of any sample for which the sulfur content of the fuel being fired in the combustion turbine exceeds the applicable limit and ending on the date and hour that a subsequent sample is taken that demonstrates compliance with the sulfur limit. (b) If the option to sample each delivery of fuel oil has been selected, you must immediately switch to one of the other oil sampling options (i.e., daily sampling, flow proportional sampling, or sampling from the unit's storage tank) if the sulfur content of a delivery exceeds 0.05 weight percent. You must continue to use one of the other sampling options until all of the oil from the delivery has been combusted, and you must evaluate excess emissions according to paragraph (a) of this section. When all of the fuel from the delivery has been burned, you may resume using the as-delivered sampling option. (c) A period of monitor downtime begins when a required sample is not taken by its due date. A period of monitor downtime also begins on the date and hour of a required sample, if invalid results are obtained. The period of monitor downtime ends on the date and hour of the next valid sample. **[Reference: 40 CFR §60.4385]**

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C. Control of Nitrogen Oxides
[CT NSPS]

(1) The appropriate parameters must be continuously monitored and recorded during each run of the initial performance test required under 40 CFR §60.8, to establish acceptable operating values and ranges, for the purposes of the parameter monitoring plan as specified in 40 CFR §60.4355. The Permittee may supplement the performance test data with engineering analyses, design specifications, manufacturer's recommendations, and other relevant information to define the acceptable parametric ranges more precisely. **[Reference: 40 CFR §60.4355(a) and 40 CFR §60.4410]**

The Permittee shall establish and document a proper parametric monitoring plan in accordance with **§ 60.4355**. The plan shall include, but not be limited to: selection of indicators to be monitored, ranges of indicators, process used to obtain representative data, quality assurance, frequency of monitoring, and justification for the proposed elements of monitoring

Note: The Dry "SoLoNox" Low Emissions system employed by the Solar Turbine is integrated into the entire combustion system, including the fuel injectors, combustion air management, controls, and fuel delivery systems. The Permittee shall demonstrate compliance with CFR § 60.4340 for NO_X emissions with continuous parametric monitoring as stipulated into the facility's Parametric Monitoring Plan (PMP).

(2) The Permittee shall assure continuous compliance as stipulated under § 60.4340 by operating the CT in accordance with the Parametric Monitoring Plan, which includes operation in Dry Low Emissions (DLE) mode which is indicated by monitoring pilot valve position, which will indicate that "Minimum Pilot Mode" is either "ON" or "OFF." NIST will continuously monitor and record pilot fuel valve position and report any incidence of "Minimum Pilot Mode" = OFF, that is not attributable to combustion turbine start-up or load change, to indicate potential NO_X emissions exceedances.

(3) The Permittee must develop and keep on-site a parametric monitoring plan which explains the procedures used to document proper operation of the NO_X emissions controls in accordance with 40 CFR §60.4355. **[Reference: 40 CFR §60.4355(a)]**

D. Operational Limitations
See Monitoring Requirements in Section 6.3, above.

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	E. Non-Attainment New Source Review (NNSR) Limits See Monitoring Requirements in Section 6.3, above.
6.4	**Record Keeping Requirements:** **[All records shall be maintained for a period of at least five years and shall be made available to the Department upon request.]** **A. Visible Emissions Limitations** The Permittee shall maintain a preventative maintenance plan, operations manual and records of maintenance performed that relate to combustion performance and shall maintain logs of any visible emissions observations performed. **[Reference: 40 CFR 60, Subpart KKKK & COMAR 26.11.03.06C]** **B. Control of Sulfur Oxides** The Permittee shall maintain records and results of fuel sulfur content monitoring and/or records of fuel quality characteristics from a current, valid purchase contract, tariff sheet or transportation contract for the fuel, specifying that the maximum total sulfur content complies with the limitation on sulfur content. **[Reference: COMAR 26.11.03.06C]** **C. Control of Nitrogen Oxides** (1) The Permittee shall maintain records and results of any tests performed in compliance with testing as required under 40 CFR § 60.8 and 40 CFR 60, Subpart KKKK and any other testing required under this permit. (2) The Permittee shall maintain a copy of the parametric monitoring plan in accordance with § 60.4355 and records of pilot fuel valve position and report any incidence of “Minimum Pilot Mode” = OFF to indicate potential NOx exceedances, as applicable, in accordance with the plan. **[Reference: 40 CFR 60, Subpart KKKK & COMAR 26.11.03.06C]** (3) The Permittee shall maintain records of all maintenance performed that relates to combustion performance, and records of all performance testing conducted. **[COMAR 26.11.03.06C]** (4) The Permittee shall maintain a record of training program attendance for each operator at the site and make these records available to the Department upon request. **[COMAR 26.11.09.08 F & G]** (5) The Permittee shall maintain records of the results of the combustion analysis at the site for at least 2 years and make these results available to the Department and the EPA upon request; **[Reference: COMAR 26.11.09.08G & COMAR 26.11.03.06C]**

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	D. <u>Operational Limitations</u> (1) The Permittee shall maintain records associated with the operations and maintenance plan and shall make them available to the Department upon request. (2) The Permittee shall maintain monthly records of the following: (a) Monthly amount of fuel combusted, (b) Fuel supplier certifications, (c) Combustion turbine & HRSG operating hours, and (d) A verification of the capacity factor for the combustion turbine generator set, which shall include the heat input (in million British thermal units or equivalent units of measure) and/or electric output (expressed in MWe-hr). **[Reference: COMAR 26.11.03.06C & COMAR 26.11.02.19D]** **E. <u>Non-Attainment New Source Review (NNSR) Limits</u>** See Record Keeping Requirements in Section 6.4 C, above.
6.5	**<u>Reporting Requirements</u>:** **A. <u>Visible Emissions Limitations</u>** The Permittee shall report incidents of visible emissions in accordance with Permit Condition 4, of Section III, "Report of Excess Emissions and Deviations." **[Reference: COMAR 26.11.03.06C]** **B. <u>Control of Sulfur Oxides</u>** **Reporting under § 60.4375:** "(a) For each affected unit required to continuously monitor parameters or emissions, or to periodically determine the fuel sulfur content under this subpart, you must submit reports of excess emissions and monitor downtime, in accordance with Sec. 60.7(c). Excess emissions must be reported for all periods of unit operation, including start-up, shutdown, and malfunction." "(b) For each affected unit that performs performance tests in accordance with Sec. 60.4340(a), you must submit a written report of the results of each performance test before the close of business on the 60th day following the completion of the performance test." The Permittee shall submit along with their ***semi-annual*** reports, ***fuel supplier certifications*** that verify that the fuel used complies with the limitations on sulfur content. The reports shall be submitted within 30 days after the end of the last previous semi-annual period covered. **[Reference: 40 CFR 60 Subpart KKKK § 60.4375]**

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C. Control of Nitrogen Oxides

Reporting under § 60.4375:

"(b) For each affected unit that performs performance tests in accordance with Sec. 60.4340(a), you must submit a written report of the results of each performance test before the close of business on the 60th day following the completion of the performance test."

§60.4380 How are excess emissions and monitor downtime defined for NO_X?

For the purpose of reports required under §60.7(c), periods of excess emissions and monitor downtime that must be reported are defined as follows:

(c) For turbines required to monitor combustion parameters or parameters that document proper operation of the NOx emission controls:

(1) An excess emission is a 4-hour rolling unit operating hour average in which any monitored parameter does not achieve the target value or is outside the acceptable range defined in the parameter monitoring plan for the unit.

(2) A period of monitor downtime is a unit operating hour in which any of the required parametric data are either not recorded or are invalid. **[Reference: 40 CFR 60, Subpart KKKK]**

The Permittee shall report all periods of excess emissions in accordance with permit condition 4, Section III, Plant Wide Conditions, "Report of Excess Emissions and Deviations." **[Reference: COMAR 26.11.03.06C]**

COMAR 26.11.09.08K, Reporting Requirements.

(1) Not applicable.
(2) "When compliance with this regulation is demonstrated by a stack test, the results of the stack tests required by this regulation shall be submitted to the Department within 45 days after completion of the test."
(3) "A person subject to this regulation shall maintain annual fuel use records on site for not less than 3 years, and make these records available to the Department upon request."

D. Operational Limitations

See Recordkeeping Requirements, in Section 6.4 D, above.

E. Non-Attainment New Source Review (NNSR) Limits

See Record Keeping Requirements in Section 6.4 C, above.

A permit shield shall cover the applicable requirements of the Clean Air Act that are listed in the table above for the combustion turbine and heat recovery steam generator – EU #11 & EU #12.

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7.0	**Emissions Unit Number(s): EU-13** **MDE Reg. No. 031-0323-9-1199** One (1) diesel-fired emergency generator rated at 1,250 kW. Installed in 2020.
7.1	**Applicable Standards/Limits:** **A. Control of Visible Emissions** **COMAR 26.11.09.05E** – Stationary Internal Combustion Engine Powered Equipment. "(2) Emissions During Idle Mode. A person may not cause or permit the discharge of emissions from any engine, operating at idle, greater than 10 percent opacity. **[Reference: COMAR 26.11.09.05E(2)]** (3) Emissions During Operating Mode. A person may not cause or permit the discharge of emissions from any engine, operating at other than idle conditions, greater than 40 percent opacity. **[Reference: COMAR 26.11.09.05E(3)]** (4) Exceptions. (a) Section E(2) does not apply for a period of 2 consecutive minutes after a period of idling of 15 consecutive minutes for the purpose of clearing the exhaust system. (b) Section E(3) does not apply to emissions resulting directly from cold engine start-up and warm-up for the following maximum periods: (i) Engines that are idled continuously when not in service: 30 minutes; (ii) All other engines: 15 minutes. (c) Section E(2) and (3) does not apply while maintenance, repair, or testing is being performed by qualified mechanics." **[Reference: COMAR 26.11.09.05E(4)]** **B. Control of Sulfur Oxides** "A person may not burn, sell, or make available for sale any fuel with a sulfur content by weight in excess of or which otherwise exceeds the following limitations: (2) In Areas III and IV: (b) Distillate fuel oils, 0.3 percent." **[Reference: COMAR 26.11.09.07A(2)(b)]** Note: Installations subject to 40 CFR Part 60, Subpart IIII must comply with the fuel standards of §60.4207 which limit the maximum sulfur content of the fuel to 15 ppm beginning October 1, 2010.

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	C. <u>Operational Limitations</u> (1) This source is subject to all applicable federal air pollution control requirements including, but not limited to, the following: (a) All applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements included in federal New Source Performance Standards (NSPS) under 40 CFR Part 60 Subpart IIII for Stationary Compression Ignition Internal Combustion Engines, (b) All applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements included in the National Emissions Standards for Hazardous Air Pollutants (NESHAP) promulgated under 40 CFR 63, Subparts A and ZZZZ for Reciprocating Internal Combustion Engines. The Permittee shall meet the requirements of 40 CFR, Part 63, Subpart ZZZZ by meeting the requirements of 40 CFR, Part 60, Subpart IIII for the emergency generator. No further requirements apply to the emergency generator under 40 CFR, Part 63, Subpart ZZZZ. **[Reference: 40 CFR §63.6590(c)(1)]** (2) Except as otherwise provided in this part, the emergency diesel generator shall be operated in accordance with specifications included in the application and any operating procedures recommended by equipment vendors unless the Permittee obtains from the Department written authorization for alternative operating procedures. (3) The Permittee must operate and maintain an NSPS emergency diesel generator and control devices according to the manufacturer's written instructions or according to procedures developed by the owner or operator that are approved by the manufacturer. Additionally, the Permittee may change only those settings that are permitted by the manufacturer. The Permittee must also meet the requirements of 40 CFR part 89, part 1039 for model year 2011 or later, part 94 and/or part 1068, as they may apply to an owner or operator. **[Ref: §60.4211(a)]** (4) Beginning October 1, 2010, owners and operators (the Permittee) of a stationary source CI ICE subject to this subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must purchase diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel. **[Ref: §60.4207(b)]** (5) In accordance with 40 CFR §60.4211(f), as owner/operator of an emergency stationary ICE, you must operate the emergency stationary

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	ICE according to the requirements in paragraphs (f)(1) through (3) of this section. In order for the engine to be considered an emergency stationary ICE under this subpart, any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as described in paragraphs (f)(1) through (3) of this section, is prohibited. If you do not operate the engine according to the requirements in paragraphs (f)(1) through (3) of this section, the engine will not be considered an emergency engine under this subpart and must meet all requirements for non-emergency engines. (f)(1) There is no time limit on the use of emergency stationary ICE in emergency situations. (f)(2)(i) Emergency stationary ICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE beyond 100 hours per calendar year. (*)**Note:** Effective May 2, 2016, emergency generators are no longer allowed to participate for emergency demand response operation unless they meet the requirements of a non-emergency generator of the same model year. This engine does not meet the standards for a non-emergency generator, therefore, operation for emergency demand response or during periods of voltage deviation are not permitted.
7.2	**Testing Requirements:** **A. Control of Visible Emissions** See Monitoring Requirements, Section 7.3. **B. Control of Sulfur Oxides** See Monitoring Requirements, Section 7.3. **C. Operational Limitations** The Permittee has the option of utilizing an oil analysis program in order to extend the specified oil change requirement. The oil analysis must be performed at the same frequency specified for changing the oil in 40 CFR 63 Subpart ZZZZ, Table 2d. The analysis program must at a minimum analyze the following three parameters: Total Base Number, viscosity, and percent water content in accordance with 40 CFR §63.6625(i). **[Reference: 40 CFR §63.6625(i)]**

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7.3	**Monitoring Requirements:** **A. Control of Visible Emissions** The Permittee shall properly operate and maintain the engine in a manner to minimize visible emissions. **[Reference: COMAR 26.11.03.06C]** **B. Control of Sulfur Oxides** The Permittee shall obtain a certification from the fuel supplier that the fuel oil is in compliance with the sulfur in fuel limitation. **[Reference: COMAR 26.11.03.06C]** **C. Operational Limitations** (1) The Permittee must maintain and operate the engines in a manner consistent with safety and good air pollution control practices for minimizing emissions. **[Reference: 40 CFR §63.6605(b)]** (2) The Permittee shall operate and maintain the stationary RICE and after-treatment control device (if any) according to the manufacturer's emission-related written instructions or develop your own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions. **[Reference: 40 CFR §63.6625(e)]**
7.4	**Record Keeping Requirements:** **Note: COMAR 26.11.03.06C(6)(a) requires that all records be kept for at least five (5) years and made available to the Department upon request.** **A. Control of Visible Emissions** The Permittee shall: **[Reference: COMAR 26.11.03.06C]** (1) Maintain an operation manual and prevention maintenance plan on site; and (2) Maintain a record of the maintenance performed that relates to combustion performance. **B. Control of Sulfur Oxides** The Permittee shall retain fuel supplier certifications stating that the fuel oil is in compliance with this regulation for at least five (5) years. **[Reference: COMAR 26.11.09.07C]** **C. Operational Limitations** The Permittee must keep the following records in hard copy or electronic format, for at least five (5) years following the date of each occurrence, in a form suitable and readily available for expeditious review: (1) The Permittee must keep records of the maintenance conducted on the

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	emergency engines and after treatment control devices (if any) according to the maintenance plan. **[Reference: 40 CFR §63.6655(e) and §63.6660]** (2) The Permittee must keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The Permittee must document how many hours are spent for emergency operation including what classified the operation as emergency and how many hours are spent for non-emergency operation. If the engines are used for demand response operation, the Permittee must keep records of the notification of the emergency situation, the date, the start time, and end time the engine was operated as part of the demand response. **[Reference: 40 CFR §63.6655(f) and §63.6660]**
7.5	**Reporting Requirements:** **A. Control of Visible Emissions** The Permittee shall report incidents of visible emissions in accordance with Permit Condition 4, Section III, "Report of Excess Emissions and Deviations." **B. Control of Sulfur Oxides** The Permittee shall report fuel supplier certification to the Department upon request. **[Reference: COMAR 26.11.09.07C]** **C. Operational Limitations** The Permittee shall make records available to the Department upon request. **[Reference: COMAR 26.11.03.06]**

A permit shield shall cover the applicable requirements of the Clean Air Act that are listed in the table above for the one (1) diesel-fired emergency generators – EU #13.

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8.0	**Emissions Unit Number(s): EU-14 and EU-15** **[MDE Registration No. 031-0323-9-1213]** One (1) natural gas-fired emergency generator rated at 500 kilowatts. Installed in 2020. **[MDE Registration No.031-0323-9-1214]** One (1) natural gas-fired emergency generator rated at 500 kilowatts. Installed in 2020.

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8.1	**Applicable Standards/Limits:** **A. Control of Visible Emissions** **COMAR 26.11.09.05E** – Stationary Internal Combustion Engine Powered Equipment. "(2) Emissions During Idle Mode. A person may not cause or permit the discharge of emissions from any engine, operating at idle, greater than 10 percent opacity. **[Reference: COMAR 26.11.09.05E(2)]** (3) Emissions During Operating Mode. A person may not cause or permit the discharge of emissions from any engine, operating at other than idle conditions, greater than 40 percent opacity. **[Reference: COMAR 26.11.09.05E(3)]** (4) Exceptions. (a) Section E(2) does not apply for a period of 2 consecutive minutes after a period of idling of 15 consecutive minutes for the purpose of clearing the exhaust system. (b) Section E(2) does not apply to emissions resulting directly from cold engine start-up and warm-up for the following maximum periods: (i) Engines that are idled continuously when not in service: 30 minutes; (ii) All other engines: 15 minutes. (c) Section E(2) and (3) does not apply while maintenance, repair, or testing is being performed by qualified mechanics." **[Reference: COMAR 26.11.09.05E(4)]** **B. Control of Nitrogen Oxides** **COMAR 26.11.09.08G(1)** – Requirements for Fuel-Burning Equipment with a Capacity Factor of 15 Percent or Less. "A person who owns or operates fuel-burning equipment with a capacity factor (as defined in 40 CFR Part 72.2) of 15 percent or less shall: (i) Require each operator of an installation, except combustion turbines, to attend operator training programs at least once every 3 years, on combustion optimization that are sponsored by the Department, the EPA, or equipment vendors; and (ii) Maintain a record of training program attendance for each operator at the site, and make these records available to the Department upon request." **[Reference: COMAR 26.11.09.08G(1)]** Note: COMAR 26.11.09.08B(5) states that; (a) for the purpose of COMAR 26.11.09.08, the equipment operator to be trained may be the person who maintains the equipment and makes the necessary adjustments for efficient operation; and (b) that the operator training course sponsored by the Department shall include an in-house training course that is approved by the Department.

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C. Operational Limitations

(1) This source is subject to all applicable federal air pollution control requirements including, but not limited to, the following:

(a) All applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements included in federal New Source Performance Standards (NSPS) under 40 CFR Part 60 Subpart JJJJ for Stationary Spark Ignition Internal Combustion Engines, including the following:

§ 60.4230 Am I subject to this subpart?
(a) The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary spark ignition (SI) internal combustion engines (ICE) as specified in paragraphs (a)(1) through (6) of this section. For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator.
(ii) On or after January 1, 2009, for emergency engines.

Emission Standards for Owners and Operators
§ 60.4233 What emission standards must I meet if I am an owner or operator of a stationary SI internal combustion engine?

"(e) Owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 75 KW (100 HP) (except gasoline and rich burn engines that use LPG) must comply with the emission standards in Table 1 to this subpart for their stationary SI ICE."

Emission Standards for Owners and Operators
Table 1 to Subpart JJJJ of Part 60 - NO_X, CO, and VOC Emission Standards for…, and Stationary Emergency Engines >25 HP

Engine type and fuel	Maximum engine power	Manufacture date	Emission standards [a]					
			g/HP-hr			ppmvd at 15% O_2		
			NO_X	CO	VOC [d]	NO_X	CO	VOC [d]
Emergency	HP≥130	On or after 1/1/2009	**2.0**	**4.0**	**1.0**	**160**	**540**	**86**

a Owners and operators of stationary non-certified SI engines may choose to comply with the emission standards in units of either g/HP-hr or ppmvd at 15 percent O2.

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b Owners and operators of new or reconstructed non-emergency lean burn SI stationary engines with a site rating of greater than or equal to 250 brake HP located at a major source that are meeting the requirements of 40 CFR part 63, subpart ZZZZ, Table 2a do not have to comply with the CO emission standards of Table 1 of this subpart.

d For purposes of this subpart, when calculating emissions of volatile organic compounds, emissions of formaldehyde should not be included. [76 FR 37975, June 28, 2011}

§60.4234 How long must my engines meet the emission standards if I am a manufacturer of stationary SI internal combustion engines?

Owners and operators of stationary SI ICE must operate and maintain stationary SI ICE that achieve the emission standards as required in §60.4233 over the entire life of the engine.

Note: The Permittee shall comply with the emissions standard by installing engines that are certified to meet the emission standards.

(b) All applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements included in the National Emissions Standards for Hazardous Air Pollutants (NESHAP) promulgated under 40 CFR 63, Subparts A and ZZZZ for Reciprocating Internal Combustion Engines.

Note: The Permittee shall meet the requirements of 40 CFR, Part 63, Subpart ZZZZ by meeting the requirements of 40 CFR, Part 60, Subpart JJJJ. No further requirements apply to the emergency generators under 40 CFR, Part 63, Subpart ZZZZ. [Reference: 40 CFR §63.6590(c)(1)]

(2) The two (2) natural gas-fired emergency generators (SI ICEs) shall be operated in accordance with specifications included in the application and any operating procedures recommended by equipment vendors unless the Permittee obtains from the Department written authorization for alternative operating procedures.

(3) The two (2) natural gas-fired stand-by emergency generators (SI ICEs) shall be operated for emergency use, operational maintenance checks and readiness testing only.

(4) In accordance with 40 CFR §60.4243(d), non-emergency use of each NSPS emergency natural gas generator for the purpose of maintenance checks and readiness testing is limited to 100 hours per year or less unless prior approval is received from the Department.

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8.2	**Testing Requirements:** **A. Control of Visible Emissions** See Monitoring Requirements, Section 8.3. **B. Control of Nitrogen Oxides** See Monitoring Requirements, Section 8.3. **C. Operational Limitations** See Monitoring Requirements, Section 8.3.
8.3	**Monitoring Requirements:** **A. Control of Visible Emissions** The Permittee shall properly operate and maintain the engine in a manner to minimize visible emissions. **[Reference: COMAR 26.11.03.06C]** **B. Control of Nitrogen Oxides** See Record Keeping Requirements, Section 8.4. **C. Operational Limitations** (1) The Permittee as the owner and operator of a stationary SI internal combustion engine (SI ICE) that is manufactured after July 1, 2008, and must comply with the emission standards specified in §60.4233(a) through (c), you must comply by purchasing an engine certified to the emission standards in §60.4231(a) through (c), as applicable, for the same engine class and maximum engine power. In addition, you must meet one of the following requirements: (a) If you operate and maintain the certified stationary SI internal combustion engine and control device according to the manufacturer's emission-related written instructions, you must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. You must also meet the requirements as specified in 40 CFR part 1068, subparts A through D, as they apply to you. If you adjust engine settings according to and consistent with the manufacturer's instructions, your stationary SI internal combustion engine will not be considered out of compliance. **[Ref: §60.4243(a)(1)]** (b) If you do not operate and maintain the certified stationary SI internal combustion engine(SI ICE) and control device according to the manufacturer's emission-related written instructions, your engine will be considered a non-certified engine, and you must demonstrate compliance as follows: you

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	must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must *conduct an initial performance test within 1 year of engine startup* and conduct *subsequent performance testing every 8,760 hours or 3 years*, whichever comes first, thereafter to demonstrate compliance. [**Ref: §60.4243(a)(2)].** (c) The Permittee shall keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. **[Ref: 40 CFR Subpart JJJJ §60.4243 (b)(2)(il)]**
8.4	**<u>Record Keeping Requirements</u>:** **<u>Note</u>: COMAR 26.11.03.06C(6)(a) requires that all records be kept for at least five (5) years and made available to the Department upon request.** **A. <u>Control of Visible Emissions</u>** The Permittee shall: **[Reference: COMAR 26.11.03.06C]** (1) Maintain an operation manual and prevention maintenance plan on site; and (2) Maintain a record of the maintenance performed that relates to combustion performance. **B. <u>Control of Nitrogen Oxides</u>** See Record Keeping Requirements in Section 8.4.C. **C. <u>Operational Limitations</u>** (1) The Permittee shall maintain a log for the engine indicating the amounts of fuel combusted, the hours of operation, and reason for engine operation (i.e., maintenance or operational testing, emergency power outage, etc.). **[Ref.: COMAR 26.11.03.06C]** (2) The Permittee shall maintain on site and make available to the Department upon request the following records: (a) All notifications submitted to comply with 40 CFR 60, Subpart JJJJ and all documentation supporting any notification. (b) Maintenance plan and records of conducted maintenance.

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	(c) Documentation that the engine meets the emission standards (manufacturer's certification). **[Reference: PTC No. 031-0323-9-1213 & 9-1214]**
8.5	**Reporting Requirements:** **A. Control of Visible Emissions** The Permittee shall report incidents of visible emissions in accordance with Permit Condition 4, Section III, "Report of Excess Emissions and Deviations." **B. Control of Nitrogen Oxides** See Record Keeping Requirements in Section 8.5.C. **C. Operational Limitations** The Permittee shall submit an initial notification as required in §60.7(a)(1). The notification must include the information: (a) Name and address of the owner or operator; (b) The address of the affected source; (c) Engine information including make, model, engine family, serial number, model year, maximum engine power, and engine displacement; (d) Emission control equipment; and (e) Fuel used. **[Reference: PTC No. 031-0323-9-1213 & 9-1214]** **Note: The Permittee has already fulfilled this requirement. The Permittee has installed certified engines.**

A permit shield shall cover the applicable requirements of the Clean Air Act that are listed in the table above for the two (2) diesel fired emergency generators – EU #14 & EU #15.

SECTION V INSIGNIFICANT ACTIVITIES

This section provides a list of insignificant emissions units that were reported in the Title V permit application. The applicable Clean Air Act requirements, if any, are listed below the insignificant activity.

(1) No. 10 Stationary internal combustion engines with an output less than 500 brake horsepower (373 kilowatts) and which are not used to generate electricity for sale or for peak or load shaving;

The engines are subject to the following requirements:

(A) COMAR 26.11.09.05E(2), Emissions During Idle Mode: The Permittee may not cause or permit the discharge of emissions from any engine, operating at idle, greater than 10 percent opacity.

(B) COMAR 26.11.09.05E(3), Emissions During Operating Mode: The Permittee may not cause or permit the discharge of emissions from any engine, operating at other than idle conditions, greater than 40 percent opacity.

(C) Exceptions:

(i) COMAR 26.11.09.05E(2) does not apply for a period of 2 consecutive minutes after a period of idling of 15 consecutive minutes for the purpose of clearing the exhaust system.

(ii) COMAR 26.11.09.05E(2) does not apply to emissions resulting directly from cold engine start-up and warm-up for the following maximum periods:

(a) Engines that are idled continuously when not in service: 30 minutes
(b) all other engines: 15 minutes.

(iii) COMAR 26.11.09.05E(2) & (3) do not apply while maintenance, repair or testing is being performed by qualified mechanics.

(D) COMAR 26.11.36.03A(1), which establishes that the Permittee may not operate an emergency generator except for emergencies, testing and maintenance purposes.

(E) COMAR 26.11.36.03A(5), which establishes that the Permittee may not operate an emergency generator for testing and engine maintenance purposes between 12:01 a.m. and 2:00 p.m. on any day on which the Department forecasts that the air quality

will be a code orange, code red, or code purple unless the engine fails a test and engine maintenance and a re-test are necessary.

(2) X Space heaters utilizing direct heat transfer and used solely for comfort heat;

(3) No. 3 Water cooling towers and water-cooling ponds unless used for evaporative cooling of water from barometric jets or barometric condensers, or used in conjunction with an installation requiring a permit to operate;

(4) X Commercial bakery ovens with a rated heat input capacity of less than 2,000,000 Btu per hour;

(5) X Kilns used for firing ceramic ware, heated exclusively by natural gas, liquefied petroleum gas, electricity, or any combination of these;

(6) X Die casting machines;

(7) X Photographic process equipment used to reproduce an image upon sensitized material through the use of radiant energy;

(8) X Equipment for drilling, carving, cutting, routing, turning, sawing, planing, spindle sanding, or disc sanding of wood or wood products;

(9) X Brazing, soldering, or welding equipment, and cutting torches related to manufacturing and construction activities that emit HAP metals and not directly related to plant maintenance, upkeep and repair or maintenance shop activities;

(10) X Equipment for washing or drying products fabricated from metal or glass, provided that no VOC is used in the process and that no oil or solid fuel is burned;

(11) X Containers, reservoirs, or tanks used exclusively for electrolytic plating work, or electrolytic polishing, or electrolytic stripping of brass, bronze, cadmium, copper, iron, lead, nickel, tin, zinc, and precious metals;

(12) X Containers, reservoirs, or tanks used exclusively for:

(a) X Storage of butane, propane, or liquefied petroleum, or natural gas;

(b) No. 21 Storage of lubricating oils;

(c) No. 19 Storage of Numbers 1, 2, 4, 5, and 6 fuel oil and aviation jet engine fuel;

(d) No. 3 The storage of VOC normally used as solvents, diluents, thinners, inks, colorants, paints, lacquers, enamels, varnishes, liquid resins, or other surface coatings and having individual capacities of 2,000 gallons (7.6 cubic meters) or less;

(13) X Gaseous fuel-fired or electrically heated furnaces for heat treating glass or metals, the use of which does not involve molten materials;

(14) X Charbroilers and pit barbecues as defined in COMAR 26.11.18.01 with a total cooking area of 5 square feet (0.46 square meter) or less;

(15) X First aid and emergency medical care provided at the facility, including related activities such as sterilization and medicine preparation used in support of a manufacturing or production process;

(16) X Firing and testing of military weapons and explosives;

(17) X Comfort air conditioning subject to requirements of Title VI of the Clean Air Act;

(18) X Laboratory fume hoods and vents;

(19) any other emissions unit, not listed in this section, with a potential to emit less than the “de minimus” levels listed in COMAR 26.11.02.10X (list and describe units):

No. 4 Nano –fabrication Laboratory wet benches (HCl and HF)

SECTION VI STATE-ONLY ENFORCEABLE CONDITIONS

The Permittee is subject to the following State-only enforceable requirements:

1. Applicable Regulations:

   (A) COMAR 26.11.06.08, Nuisance. "An installation or premises may not be operated or maintained in such a manner that a nuisance or air pollution is created. Nothing in this regulation relating to the control of emissions may in any manner be construed as authorizing or permitting the creation of, or maintenance of, nuisance or air pollution."

   (B) COMAR 26.11.06.09, Odors. "A person may not cause or permit the discharge into the atmosphere of gases, vapors, or odors beyond the property line in such a manner that a nuisance or air pollution is created."

   (C) COMAR 26.11.15.05, Control Technology Requirements. "New or Reconstructed Installations. A person may not construct, reconstruct, operate, or cause to be constructed, reconstructed, or operated, any new installation or source that will discharge a toxic air pollutant to the atmosphere without installing and operating T-BACT."

   (D) COMAR 26.11.15.06A, Ambient Impact Requirement. "Requirements for New Installations, Sources, or Premises. (1) Except as provided in §A(2) of this regulation, a person may not construct, modify, or operate, or cause to be constructed, modified, or operated, any new installation or source without first demonstrating to the satisfaction of the Department using procedures established in this chapter that total allowable emissions from the premises of each toxic air pollutant discharged by the new installation or source will not unreasonably endanger human health."

   (E) COMAR 26.11.36.03A(1), Applicability and General Requirements for Emergency Generators and Load Shaving Units. "The owner or operator of an emergency generator may not operate the generator except for emergencies, testing, and maintenance purposes."

   (F) COMAR 26.11.36.03A(4), Applicability and General Requirements for Emergency Generators and Load Shaving Units. "The owner or operator of an emergency generator or load shaving unit may be subject to the federal standards for stationary internal combustion engines under 40 CFR Parts 60 and 63."

   (G) COMAR 26.11.36.03A(5), Applicability and General Requirements for Emergency Generators and Load Shaving Units. "The owner or operator of an emergency generator or load shaving unit may not operate the engine for testing and engine maintenance purposes between 12:01 a.m. and 2:00 p.m. on any day on which the Department forecasts that the air quality will be a code orange, code red, or code purple unless the engine fails a test and engine maintenance and a re-test are necessary."

2. Record Keeping and Reporting:

The Permittee shall submit to the Department, by April 1 of each year during the term of this permit, a written certification of the results of an analysis of emissions of toxic air pollutants from the Permittee's facility during the previous calendar year. The analysis shall include either:

(a) a statement that previously submitted compliance demonstrations for emissions of toxic air pollutants remain valid; or

(b) a revised compliance demonstration, developed in accordance with requirements included under COMAR 26.11.15 & 16, that accounts for changes in operations, analytical methods, emissions determinations, or other factors that have invalidated previous demonstrations.

UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899-

April 27, 2022

Ms. Suna Yi Sariscak
Manager, Air Quality Permits Program
Air and Radiation Management Administration
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, MD 21230

Dear Ms. Sariscak,

Please find enclosed the National Institute of Standards and Technology's (NIST) renewal application for our Part 70 Operating Permit No. 24-031-00323. Two hardcopies are included with electronic .pdf copies located on CDs in each binder.

Should you have any questions, or require additional information regarding this application, please contact me at 240-654-2896 or mike.blackmon@nist.gov.

Sincerely,

Michael Blackmon
Environmental Management Group Leader

Enclosures

NIST

MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Boulevard • Suite 720 • Baltimore, Maryland 21230-1720
410-537-3000.800-633-6101 • http://www.mde.state.md.us

Air and Radiation Management Administration • Air Quality Permits Program

Budget Reconciliation and Financing Act of 2003
(Commonly referred as Maryland House Bill 935)

On July 1, 2003, House Bill 935, Chapter 203 amended § 1-203 of the Environment Article, Annotated Code of Maryland, as follows:

Section l-203(b).
(1) A license or permit is considered renewed for purposes of this subsection if the license or permit is issued by a unit of State government to a person for the period immediately following a period for which the person previously possessed the same or a substantially similar license.
(2) Before any license or permit may be renewed under this article, **the issuing authority shall verify through the office of the Comptroller (emphasis added)** that the applicant has paid all undisputed taxes and the unemployment insurance contributions payable to the Comptroller or the Secretary of Labor, Licensing, and Regulation or that the applicant has provided for payment in a manner satisfactory to the unit responsible for collection.

In order for the Maryland Department of the Environment (MDE) to verify this compliance, we would need you to provide the following information before we can process or issue your renewal license, permit, or certification:

Current MDE License/Permit No.: 24-031-00323

Name of Licensee or Permit Holder: National Institute of Standards and Technology

Address: 100 Bureau Drive, MS 1730

Gaithersburg, MD, 20899-1730

Contact Name: Michael Blackmon **Title:** Environmental Management Group Leader

Contact Telephone Number: 301-975-5822

Privacy Act Notice: This Notice is provided pursuant to the Federal Privacy Act of 1974, 5 U.S.C. § 552a. Disclosure of your Social Security or Federal Tax Identification on this form is mandatory pursuant to the provisions of § 1-203 (2003) of Environment Article, Annotated Code of Maryland, which requires MDE to verify that an applicant for a permit or license has paid all undisputed taxes and unemployment insurance. Social Security and Federal Tax Identification Nos. will not be used for any purposes other than those described in this Notice.

Federal Employer Identification Number (FEIN): 72-0564834

Certification: I certify that the above information is true and correct to the best of my knowledge.

Signature

Date 4/27/22

Complete and return this form to the above address. Call 410-537-3230 if you have questions

MARYLAND DEPARTMENT OF THE ENVIRONMENT
1800 Washington Boulevard ● Baltimore MD 21230
(410) 537-3000 ● 1-800-633-6101 ● http://www.mde.state.md.us

PART 70 PERMIT APPLICATION FOR RENEWAL

AIR AND RADIATION ADMINISTRATION

Facilities required to obtain a Part 70 permit under COMAR 26.11.03.01 must complete and return this form. Applications are incomplete unless all applicable information required by COMAR 26.11.03.03 and 26.11.03.13 is supplied. Failure to supply additional information required by the Department to enable it to act on the application may result in loss of the application shield and denial of this application.

Owner and Operator:

Name of Owner or Operator: U.S. Department of Commerce, National Institute of Standards and Technology		
Street Address: 100 Bureau Drive, Mail stop 1730		
City: Gaithersburg	State: MD	Zip Code: 20899
Telephone Number 301-975-5375, Option 3		Fax Number 301-975-4895

Facility Information:

Name of Facility: National Institute of Standards and Technology		
Street Address: 100 Bureau Drive, Mail Stop 1730		
City: Gaithersburg	State: MD	Zip Code: 20899
Plant Manager: Skip Vaughn Director, Office of Facilities and Property Management	Telephone Number: (301) 975-8832	Fax Number: (301) 975-8835
24-Hour Emergency Telephone Number for Air Pollution Matters: 301-975-2222		

List, on a separate page, the names and telephone numbers of other facility owners and persons with titles.

Additional Names and Telephone Numbers of Other Facility Personnel at NIST:

Name/Title	Telephone Number
Laurie Locascio, PhD NIST Director	301-975-2300
Del Brockett Associate Director for Management Resources	301-975-5000
Elizabeth Mackey, PhD Director, Office of Safety, Health and Environment	301-975-5149
Charles Bowers Chief, Gaithersburg Facility Maintenance Division	301-975-6901
Richard Kelsey Chief, Emergency Services Office	303-497-5236
Mark Miller Fire Protection Group Leader	301-975-6118
Mike Blackmon Environmental Management Group Leader	301-975-5822

SECTION 1. CERTIFICATION STATEMENTS

1. Compliance Status with Applicable Enhanced Monitoring and Compliance Certification Requirements

The emissions units identified in this application are in compliance with applicable enhanced monitoring and compliance certification requirements.

2. Certification of Current Compliance with All Applicable Federally Enforceable Requirements

Except for the requirements identified in Section 7 of this application, for which compliance is not achieved, I hereby certify, based on information and belief formed after reasonable inquiry, that the facility is currently in compliance with all applicable federally enforceable requirements and agree that the facility will continue to comply with those requirements during the permit term.

You must complete a Section 7 form for each non-complying emissions unit.

3. Statement of Compliance with Respect to All New Applicable Requirements Effective During the Permit Term

I hereby state, based on information and belief formed after reasonable inquiry, that the facility agrees to meet, in a timely manner, all applicable federally enforceable requirements that become effective during the permit term, unless a more detailed schedule is expressly required by the applicable requirement.

4. Risk Management Plan Compliance

I hereby certify that, based on information and belief formed after reasonable inquiry, that a Risk Management Plan as required under 112(r) of the Clean Air Act:

[ ] has been submitted;

[ ] will be submitted at a future date; or

[**X**] does not need to be submitted.

5. Statement of Truth, Accuracy, and Completeness

"I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision and 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(s) who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

RESPONSIBLE OFFICIAL:

X _____ 4/27/22

SIGNATURE DATE

Michael Blackmon

PRINTED NAME

Environmental Management Group Leader

TITLE

SECTION 2. FACILITY DESCRIPTION SUMMARY

1. Major Activities of Facility

Briefly describe the major activities, including the applicable SIC Code(s) and end product(s).

The National Institute of Standards and Technology (NIST) is an agency of the U.S Department of Commerce. NIST's mission is to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology. At the Gaithersburg, MD site, NIST maintains over 60 buildings primarily consisting of laboratories and office space. The primary air pollution sources are a central heating plant, fire research facility, aboveground gasoline tank, and emergency generators.

SIC 9199, Federal Government

2. Facility-Wide Emissions

A. This facility is required to obtain a Part 70 Operating Permit because it is:
Check appropriate box:

- **X** Actual Major
- ☐ Potential Major·
- ☐ Solid Waste Incineration Unit Requiring Permit Under § 129(e) of CAA

B. List the actual facility-wide emissions below*:

PM10: 7.59 NOx: 27.06 VOC: 3.69 SOx: 1.64 CO: 36.88 HAPs: 2.06

**Tons emitted in calendar year 2021 as calculated in the Emissions Certification*

3. Include With the Application:

Flow Diagrams showing all emissions units, emission points, and control devices;
Emissions Certification Report (copy of the most recent submitted to the Department.)

SECTION 3A-1. EMISSIONS UNIT DESCRIPTIONS

1. Emissions Unit No.: EUs - 1, 2, 3, and 4 1a. Date of installation (month/year): EUs 1,2,3, and 4 installed 11/1961	2. MDE Registration No.:(if applicable) 5-108, 5-109, 5-110, and 5-111

3. Detailed description of the emissions unit, including all emission point(s) and the assigned number(s):

At the NIST Central Steam and Chilled Water Plant, Building 302, boilers are operated as described below:

Four 55 million BTU Boilers (EUs 1, 2, 3 and 4)

Each boiler burns natural gas as the primary fuel with No. 2 oil as a backup fuel

Each boiler has a separate stack. All boilers are equipped with low NOx burners

4. Federally Enforceable Limit on the Operating Schedule for this Emissions Unit:

General Reference: _____

Continuous Processes: _____ hours/day _____ days/year

Batch Processes: _____ hours/batch _____ batches/day

_____ days/year

5. Fuel Consumption:

Type(s) of Fuel	% Sulfur	Annual Usage (specify units)*
1. Natural Gas	N/A	111.4 x 10^6 cubic feet
2. No. 2 Fuel Oil	<0.0015% **	17,840 gallons
3.		

* CY 2021 ** Ultra low sulfur fuel oil (<15 ppm sulfur by weight)

6. Emissions in Tons:

A. Actual Major: _____ Potential Major: X (note: before control device)

B. Actual Emissions*: NOx: 2.96 SOx: 0.04 VOC: 0.31 PM10: 0.12 HAPs: 0.46

* From 2021 Emissions Certification

SECTION 3A-2. EMISSIONS UNIT DESCRIPTIONS

1. Emissions Unit No.: EUs - 5 and 6 1a. Date of installation (month/year): EUs 5 and 6 installed 10/1997	2. MDE Registration No.:(if applicable) 5-112 and 5-113

3. Detailed description of the emissions unit, including all emission point(s) and the assigned number(s):

At the NIST Central Steam and Chilled Water Plant, Building 302, boilers are operated as described below:

Two 99.8 million BTU Boilers (EUs 5 and 6)

Each boiler burns natural gas as the primary fuel with No. 2 oil as a backup fuel.

Each boiler has a separate stack. Both boilers are equipped with low NOx burners

4. Federally Enforceable Limit on the Operating Schedule for this Emissions Unit:

General Reference: _____

Continuous Processes: _____ hours/day _____ days/year

Batch Processes: _____ hours/batch _____ batches/day

_____ days/year

5. Fuel Consumption:

Type(s) of Fuel	% Sulfur	Annual Usage (specify units)*
1. Natural Gas	N/A	69.9 x 10^6 cubic feet
2. No. 2 Fuel Oil	<0.0015% **	679 gallons
3.		

* CY 2021 ** Ultra low sulfur fuel oil (<15 ppm sulfur by weight)

6. Emissions in Tons:

A. Actual Major: _____ Potential Major: X (note: before control device)

B. Actual Emissions*: NOx: 1.75 SOx: 0.02 VOC: 0.19 PM10: 0.07 HAPs: 0.29

* From 2021 Emissions Certification

SECTION 3A-3. EMISSIONS UNIT DESCRIPTIONS

1. Emissions Unit No.: EU-7 1a. Date of installation (month/year): 1999 / 2012	2. MDE Registration No.:(if applicable) 6-0557

3. Detailed description of the emissions unit, including all emission point(s) and the assigned number(s):

NIST National Fire Research Laboratory, Building 205

Two emission stacks. Air pollution control equipment includes four preheaters, four caustic air scrubbers, and four bag-house filters.

4. Federally Enforceable Limit on the Operating Schedule for this Emissions Unit:

General Reference: _____

Continuous Processes: _____ hours/day _____ days/year

Batch Processes: _____ hours/batch _____ batches/day

_____ days/year

5. Fuel Consumption:

	Type(s) of Fuel	% Sulfur	Annual Usage (specify units)
1.	Natural Gas	N/A	3.5 x 10^6 cubic feet*
2.			
3.			

* CY 2021

6. Emissions in Tons:

A. Actual Major: _____ Potential Major: _____ (note: before control device)

B. Actual Emissions*: NOx: 0.18 SOx: 0.00 VOC: 0.01 PM10: 0.00 HAPs: 0.01

* From 2021 Emissions Certification

SECTION 3A-4 EMISSIONS UNIT DESCRIPTIONS

1. Emissions Unit No.: EU-8 1a. Date of installation (month/year): 5/2018	2. MDE Registration No.:(if applicable) 9-0684

3. Detailed description of the emissions unit, including all emission point(s) and the assigned number(s):

6,000 gallon aboveground storage tank with a throughput of less than 5,000 gallons per month

4. Federally Enforceable Limit on the Operating Schedule for this Emissions Unit:

General Reference:_____

Continuous Processes: _____ hours/day _____ days/year

Batch Processes: _____ hours/batch _____ batches/day

_____ days/year

5. Fuel Consumption:

	Type(s) of Fuel	% Sulfur	Annual Usage (specify units)
1.	Gasoline	N/A	25,087 gallons throughput*
2.			
3.			

*Usage from 2017 underground storage tank throughput - last year of full operation

6. Emissions in Tons:

A. Actual Major: _____ Potential Major:_____ (note: before control device)

B. Actual Emissions*: NOx: 0 SOx: 0 VOC: 0.04* PM10: 0 HAPs: 0

* From 2017 Annual Emissions Certification 6,000 gal underground storage tank throughput - last year of full operation. This EU was shut down and did not operation in 2021.

SECTION 3A-5. EMISSIONS UNIT DESCRIPTIONS

1. Emissions Unit No.: EU-9 & 10 1a. Date of installation (month/year): 7/2004	2. MDE Registration No.:(if applicable) 9-0630

3. Detailed description of the emissions unit, including all emission point(s) and the assigned number(s):

EU-9: 1,000 KW emergency diesel generator

EU-10: 500 KW emergency diesel generator

4. Federally Enforceable Limit on the Operating Schedule for this Emissions Unit:

General Reference: _____

Continuous Processes: _____ hours/day _____ days/year

Batch Processes: _____ hours/batch _____ batches/day

_____ days/year ** 2 hours per month for maintenance*

5. Fuel Consumption:

	Type(s) of Fuel	% Sulfur	Annual Usage (specify units)
1.	Diesel	<0.0015% **	182 gallons*
2.			
3.			

* CY 2021 ** Ultra low sulfur fuel oil (<15 ppm sulfur by weight)

6. Emissions in Tons:

A. Actual Major: _____ Potential Major: _____ (note: before control device)

B. Actual Emissions*: NOx: 0.2910 SOx: 0.0000 VOC: 0.0000 PM10: 0.0000 HAPs: 0.0001

* From 2021 Emissions Certification

SECTION 3A-6 EMISSIONS UNIT DESCRIPTIONS

1. Emissions Unit No.: EU-11 1a. Date of installation (month/year): 8/2019	2. MDE Registration No.:(if applicable) 5-2363

3. Detailed description of the emissions unit, including all emission point(s) and the assigned number(s):

Natural gas fired combustion turbine rated at 87.97 MM Btu/hr

4. Federally Enforceable Limit on the Operating Schedule for this Emissions Unit:

General Reference: _____

Continuous Processes: _____ hours/day _____ days/year

Batch Processes: _____ hours/batch _____ batches/day

_____ days/year

5. Fuel Consumption:

	Type(s) of Fuel	% Sulfur	Annual Usage (specify units)
1.	Natural Gas	N/A	632.7 x 10^6 cubic feet*
2.			(22.0 x 10^6 cu-ft used to calculate NOx
3.			from CT running without HRSG)

* CY 2021

6. Emissions in Tons:

A. Actual Major: _____ Potential Major: _____ (note: before control device)

B. B. Actual Emissions*: NOx: 0.36** SOx: 1.17 VOC: 0.72 PM10: 6.17 HAPs: 0.35

* From 2021 Emissions Certification

** NOx for CT based on emission factors from stack testing. Majority of NOx emissions shown as CT running concurrently with the HRSG (EU-12) in section 3A-7

SECTION 3A-7 EMISSIONS UNIT DESCRIPTIONS

1. Emissions Unit No.: EU-12 1a. Date of installation (month/year): 8/2019	2. MDE Registration No.:(if applicable) 5-2364

3. Detailed description of the emissions unit, including all emission point(s) and the assigned number(s):

Natural gas fired heat recovery steam generator (HRSG) rated at 50.78 MMBtu/hr, equipped with low NOx duct burners

4. Federally Enforceable Limit on the Operating Schedule for this Emissions Unit:

General Reference:_____

Continuous Processes: _____ hours/day _____ days/year

Batch Processes: _____ hours/batch _____ batches/day

_____ days/year

5. Fuel Consumption:

	Type(s) of Fuel	% Sulfur	Annual Usage (specify units)
1.	Natural Gas	N/A	225.4 x 10^6 cubic feet* (HRSG with Duct Burners)
2.			(NOx emissions = add 610.7 x 10^6 cubic feet from
3.			CT (EU-11) running concurrently with HRSG)

*From application for Permit to Construct # 031-0323-5-2364

6. Emissions in Tons:

A. Actual Major: _____ Potential Major:_____ (note: before control device)

C. Actual Emissions*: NOx: 21.39** SOx: 0.42 VOC: 2.44 PM10: 1.22 HAPs: 0.93

* From 2021 Emissions Certification

** NOx emissions from the CT (EU-11) running concurrently with the HRSG, based on emission factors from stack testing.

SECTION 3A-8 EMISSIONS UNIT DESCRIPTIONS

1. Emissions Unit No.: EU-13 1a. Date of installation (month/year): 10/2020	2. MDE Registration No.:(if applicable) 9-1199

3. Detailed description of the emissions unit, including all emission point(s) and the assigned number(s):

EU-13: 1,250 KW emergency diesel generator

Construction of this emission unit is covered by Permit to Construct # 031-0323-9-1199.

4. Federally Enforceable Limit on the Operating Schedule for this Emissions Unit:

General Reference:_____

Continuous Processes: _____ hours/day _____ days/year

Batch Processes: _____ hours/batch _____ batches/day

_____ days/year

5. Fuel Consumption:

	Type(s) of Fuel	% Sulfur	Annual Usage (specify units)
1.	Diesel	<0.0015% **	994 gallons*
2.			
3.			

* CY 2021

** Ultra low sulfur fuel oil (<15 ppm sulfur by weight)

6. Emissions in Tons:

A. Actual Major: _____ Potential Major:_____ (note: before control device)

D. Actual Emissions*: NOx: 0.1266 SOx: 0.0001 VOC: 0.0032 PM10: 0.0017 HAPs: 0.0001

* From 2021 Emissions Certification

SECTION 3A-9 EMISSIONS UNIT DESCRIPTIONS

1. Emissions Unit No.: EU-14 and EU-15 1a. Date of installation (month/year): 10/2020	2. MDE Registration No.:(if applicable) 9-1213 and 9-1214

3. Detailed description of the emissions unit, including all emission point(s) and the assigned number(s):

EU-14: 500 KW emergency diesel generator

EU-15: 500 KW emergency diesel generator

Construction of this emission unit is covered by Permit to Construct Nos. 031-0323-9-1213 and 031-0323-9-1214.

4. Federally Enforceable Limit on the Operating Schedule for this Emissions Unit:

General Reference:_____

Continuous Processes: _____ hours/day _____ days/year

Batch Processes: _____ hours/batch _____ batches/day

_____ days/year

5. Fuel Consumption:

	Type(s) of Fuel	% Sulfur	Annual Usage (specify units)
1.	Natural Gas	N/A	0.12 x 10^6 cubic feet*
2.			
3.			

* CY 2021

6. Emissions in Tons:

A. Actual Major: _____ Potential Major:_____ (note: before control device)

Actual Emissions*: NOx: 0.0028 SOx: 0.0001 VOC: 0.0082 PM10: 0.0045 HAPs: 0.0007

* From 2021 Emissions Certification

SECTION 3B-1. CITATION TO AND DESCRIPTION OF APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS

Emissions Unit No.: EUs 1,2,3, and 4 (Four 55 million Btu/hr Union Works Boilers)
General Reference: Part 71 Permit No. 24-031-00323

Briefly describe the Emission Standard/Limit or Operational Limitation:

Applicable Standards/Limits:

A. Visible Emissions Limitations.
(1) "In Areas III and IV, a person may not cause or permit the discharge of emissions from any fuel burning equipment, other than water in an uncombined form, which is visible to human observers except that, for the purpose of demonstrating compliance using COM data, emissions that are visible to a human observer are those that are equal to or greater than 10 percent opacity."
[Reference: COMAR 26.11.09.05A(2)]
(2) "Exceptions. Section A(1) and (2) of this regulation do not apply to emissions during load changing, soot blowing, startup, or adjustments or occasional cleaning of control equipment if:
(a) The visible emissions are not greater than 40 percent opacity; and
(b) The visible emissions do not occur for more than 6 consecutive minutes in any sixty minute period." **[Reference: COMAR 26.11.09.05A(3)]**

B. Control of Sulfur Oxides.
A person may not burn, sell, or make available for sale any fuel with a sulfur content by weight in excess of or which otherwise exceeds the following limitations: (2) In Areas III and IV: (b) Distillate fuel oils, 0.3 percent." **[Reference: COMAR 26.11.09.07 A(2)(b**)]

C. Control of Nitrogen Oxides.
The Permittee shall comply with one of C(1) & (2), or C(3), or C(4) below:
(1) "A person who owns or operates an installation that causes NOx emissions subject to this regulation is in compliance with this regulation if the person establishes compliance with the emissions standards in §B(1)(c) of this regulation." The Permittee must meet the NOx emissions standard of 0.25 pounds of NOx per million Btu heat input.

And:
(2) Demonstration of Compliance.
(a) A person subject to a NOx emission standard in this regulation shall demonstrate compliance as follows:
(ii) For all other installations, compliance with the NOx emissions standards in this regulation shall be established by stack tests using Method 07 of the test methods referenced in COMAR 26.11.01.04C(1) or other test methods approved by the Department and the EPA.
[Reference: COMAR 26.11.09.088 (1) & **(2)]**

Or:
(3) Requirements for Fuel-Burning Equipment with a Rated Heat Input Capacity of 100 Million Btu Per Hour or Less. "A person who owns or operates fuel-burning equipment with a rated heat input capacity of 100 Million Btu per hour or less shall:
(a) Submit to the Department an identification of each affected installation, the rated heat input capacity of each installation, and the type of fuel burned in each;

(b) Perform a combustion analysis for each installation at least once each year and optimize combustion based on the analysis;
(c) Maintain the results of the combustion analysis at the site for at least 2 years and make this data available to the Department and the EPA upon request;
(d) Once every 3 years, require each operator of the installation to attend operator training programs on combustion optimization that are sponsored by the Department, the EPA, or equipment vendors; and
(e) Prepare and maintain a record of training program attendance for each operator at the site, and make these records available to the Department upon request." **[Reference: COMAR 26.11.09.08E(1) through (5)]**

Or:
(4) "A person who owns or operates a *space heater* as defined in Regulation .01 B of this chapter shall:
(a) Submit to the Department a list of each affected installation on the premises and the types of fuel used in each installation;
(b) Develop an operating and maintenance plan to minimize NOx emissions based on the recommendations of equipment vendors and other information including the source's operating and maintenance experience;
(c) Implement the operating and maintenance plan and maintain the plan at the premises for review upon request by the Department;
(d) Require installation operators to attend in-State operator training programs once every 3 years on combustion optimization that are sponsored by the Department, the EPA, or equipment vendors; and
(e) Prepare and maintain a record of training program attendance for each operator

Permit Shield Request: Yes

Compliance Demonstration:

Check appropriate reports required to be submitted:

- ☐ Quarterly Monitoring Report: _____
- ☐ Annual Compliance Certification: X
- ☐ Semi-Annual Monitoring Report: X

Methods used to demonstrate compliance:

Testing Requirements:

A. Visible Emissions Limitations.
See Section 1.3 - Monitoring Requirements.

B. Control of Sulfur Oxides.
See Section 1.3 - Monitoring Requirements.

C. Control of Nitrogen Oxides.
If compliance with regulation COMAR 26.11.09.08 is sought under section .088(1)(c), the Permittee shall conduct a stack test to determine the NOx emissions rate on at least two of the four boilers

while burning natural gas and while burning No. 2 fuel oil at least once prior to expiration of the term of this permit. The Permittee shall submit a test protocol to the Department for approval at least 30 days prior to the proposed test date. The Permittee shall submit stack test results to the Department 45 days after the performance testing.
[Reference: COMAR 26.11.09.088(2)(a)(ii) and .08B(2)(e)]
Note: This requirement is waived by the Department if the Permittee complies with either COMAR 26.11.09.08E or .08F.

D. Operational Limitation.
See Section 1.4, Record Keeping Requirements.

Monitoring Requirements:

A. Visible Emissions Limitations.
The following requirements apply to visible emissions:
(1) The Permittee shall properly operate and maintain the boilers in a manner to prevent visible emissions.
(2) The Permittee shall verify no visible emissions when burning No. 2 fuel oil. An observer shall perform a visual observation of stack emissions for a 6-minute period once every 168 hours of operation on oil or at a minimum once per year.
(3) The Permittee shall perform the following, if emissions are visible to a human observer:
(a) Inspect combustion control system and boiler operations;
(b) Perform all necessary adjustments and/or repairs to the boiler within 48 hours of operation so that visible emissions are eliminated; and
(c) Document in writing the results of inspections, adjustments, and/or repairs to the boiler.
(4) The Permittee shall after 48 hours of operation, if the required adjustments and/or repairs had not eliminated the visible emissions, perform a Method 9 observation once daily when boilers operating on No. 2 fuel oil for 18 minutes until corrective action has eliminated the visible emissions. **[Reference: COMAR 26.11.03.06C]**

B. Control of Sulfur Oxides.
The Permittee shall obtain a certification from the fuel supplier indicating that the oil complies with the limitation on the sulfur content of the fuel oil.
[Reference: COMAR 26.11.09.07]

C. Control of Nitrogen Oxides.
The Permittee shall, if compliance is sought under COMAR 26.11.09.08E, perform a combustion analysis for each affected installation at least once each year and optimize combustion based on the analysis. **[Reference: COMAR 26.11.09.08E(2)]**

D. Operational Limitation.
See Section 1.4, Record Keeping Requirements.

Record Keeping Requirements:

A. Visible Emissions Limitations.
The Permittee shall keep the following records related to visible emissions:
(1) Maintain an operation manual and prevention maintenance plan on site;
(2) Maintain a record of the maintenance performed that relates to combustion performance;
(3) Maintain a log of visible emissions observations performed and make it available to the Department's representative upon request; and

(4) Maintain a record of the hours that No. 2 fuel oil is burned.
[Reference: COMAR 26.11.03.06C]

B. Control of Sulfur Oxides.
The Permittee shall retain fuel supplier certifications stating that the fuel oil is in compliance with the sulfur content limitation for at least 5 years. **[Reference: COMAR 26.11.03.06C]**

C. Control of Nitrogen Oxides.
The Permittee shall maintain the following records on site for at least five years and make them available to the Department upon request:
(1) Records of all notifications required under regulation COMAR 26.11.09.08 of the applicable section under the regulation that applies to the boilers;
(2) Records of any NOx stack test and supporting operational data used to demonstrate compliance with COMAR 26.11.09.08;
(3) Results of any combustion analysis required under COMAR 26.11.09.08E and make this data available to the Department and the EPA upon request
[Reference: COMAR 26.11 ;09.08E(3)];
(4) Prepare and maintain a record of training program attendance for each operator at the site, and make these records available to the Department upon request **[Reference: COMAR 26.11.09.08F(1)(e) and COMAR 26.11.09.08E(5)];** and
(5) Annual fuel use records. **[Reference: COMAR 26.11.09.08K(3)]**
[Reference: COMAR 26.11.03.0GC]

D. Operational Limitation.
The Permittee shall keep monthly records of quantity of natural gas and No. 2 fuel oil burned, and hours of operation on No.2 fuel oil, along with the supporting documentation for at least 5 years and shall be made available to the Department upon request. **[Reference: COMAR 26.11.03.06C]**

Reporting Requirements:

A. Visible Emissions Limitations.
The Permittee shall report incidents of Visible emissions in accordance with Permit Condition 4, Section III, "Report of Excess Emissions and Deviations."

B. Control of Sulfur Oxides.
The Permittee shall report fuel supplier certification to the Department upon request.
[Reference: COMAR 26.11.03.0GC]

C. Control of Nitrogen Oxides.
(1) The Permittee shall-submit to the Department .an identification of each affected installation under either COMAR 26.11.09.08E or .08F, the rated heat input capacity of each installation, and the type of fuel burned in each. **[Reference: COMAR 26.11.09.08F(1)(a) and .08E(1)]**
(2) If compliance with regulation COMAR 26.11.09.08 is demonstrated by a stack test, the results of the stack tests required by this regulation shall be submitted to the Department within 45 days after completion of the test. **[Reference: COMAR 26. 11.09.08K(2)]**
(3) The Permittee shall inform the Department not later than 60 days after the date when the fuel-burning equipment no longer qualifies as a space heater, and shall meet the applicable fuel-burning equipment RACT requirement in this regulation. **[Reference: COMAR 26.11.09.08F(2)]**

D. Operational Limitation.
The Permittee shall submit the monthly quantity of natural gas and NO. 2 fuel oil burned with the supporting documentation for the annual emissions certification report.

Frequency of submittal of the compliance demonstration: Semi-Annual

SECTION 3B-2. CITATION TO AND DESCRIPTION OF APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS

Emissions Unit No.: EUs 5 and 6 (Two natural gas fired boilers each rated 99.8 million Btu/hr)
General Reference: Part 71 Permit No. 24-031-00323

Briefly describe the Emission Standard/Limit or Operational Limitation:

Applicable Standards/Limits:

A. Visible Emissions Limitations.
(1) "A person may not cause or permit the discharge of emissions from any fuel burning equipment, other than water in an uncombined form, which is visible to human observers except that, for the purpose of demonstrating compliance using COM data, emissions that are visible to a human observer are those that are equal to or greater than 10 percent opacity."
[Reference: COMAR 26. 11.09.05A(2)]
(2) "Exceptions. Section A(1) and A(2) of this regulation do not apply to emissions during load changing, soot blowing, startup, or adjustments or occasional cleaning of control equipment if:
(c) The visible emissions are not greater than 40 percent opacity; and
(d) The visible emissions do not occur for more than 6 consecutive minutes in any sixty minute period." **[Reference: COMAR 26. 11.09.05A(3)]**
(3) "No owner or operator of an affected facility that combusts coal, wood, or oil and has a heat input capacity of 8. 7 MW (30 MMBtu/h) or greater shall cause to be discharged into the atmosphere from that affected facility any gases that exhibit greater than 20 percent opacity (6-minute average), except for one 6-minute period per hour of not more than 27 percent opacity."
[Reference: 40 CFR §60.43c(c)]

B. Control of Sulfur Oxides.
(1) "A person may not burn, sell, or make available for sale any fuel with a sulfur content by weight in excess of or which otherwise exceeds the following limitations: (2) In Areas III and IV: (b) Distillate fuel oils, 0.3 percent;" **[Reference: COMAR 26.11.09.07 A(2)]**
(2) "No owner or operator of an affected facility that combusts oil shall cause to be discharged into the atmosphere from that affected facility any gases that contain SO2 in excess of 215 ng/J (0.50 lb/MMBtu) heat input from oil; or, as an alternative, no owner or operator of an affected facility that combusts oil shall combust oil in the affected facility that contains greater than 0.5 weight percent sulfur." **[Reference: 40 CFR §42c(d)]**
Note: Compliance demonstration with COMAR 26.11.09.07A(2)(b) will be used to comply with this standard.

C. Control of Nitrogen Oxides.
(1) The NOx emission rate shall not exceed 0.1 lb/MMBtu for natural gas firing and 0.2 lb/MMBtu for No. 2 oil firing. **[Reference: MDE Permit to Construct No. 15-5-1112N and 1113N issued on July 30, 1996]**
(2) The Permittee may demonstrate compliance with regulation COMAR 26.11.09.08 by complying with a NOx emission standard of 0.25 pounds of NOx per million Btu heat input. **[Reference: COMAR 26.11.09.08B(1)(c)]**
Note: Compliance with the NOx standard in Table IV-2, Section 2.1 C(1) above will demonstrate compliance with COMAR 26.11.09.088(1)(c).

D. Operational Limitations.
(1) The boilers shall be fired with natural gas as primary fuel and No. 2 distillate oil as back-up fuel. **[Reference: MDE Permit to Construct No. 15-5-1112N and 1113N issued on July 30, 1996]**
(2) In order to prevent the NOx emissions from the two (2) 99.8 million Btu/hr boilers from triggering a "Significant" net increase for the facility as defined under COMAR 26.11.17 .01 8 (26) and thereby triggering the Nonattainment Provisions for Major New Sources and Modifications (NNSR) under COMAR 26.11.17, the Permittee shall limit the NOx emissions from the boilers to less than 25 tons per year, for any 12-month consecutive period.
(3) In order to demonstrate compliance with the emissions requirement for exemption from NNSR, the Permittee shall calculate and record the NOx emissions from the boilers, for each previous calendar month and a total for the previous 12 consecutive calendar months. The calculations and records shall be updated monthly, within the first 15 days of each following month. **[Reference: COMAR 26.11.03.01H,** ... **26.11.03.06C** & ... **26.11.17.01]**
(4) The Permittee may burn liquid fuel only during periods of gas curtailment, gas supply emergencies, or periodic testing on liquid fuel. Periodic testing of liquid fuel shall not exceed a combined total of 48 hours during any calendar year. **[Reference: COMAR 26.11.02.09A and 40 CFR §63.11195(e) and §63.11237]**

Permit Shield Request: Yes

Compliance Demonstration:

Check appropriate reports required to be submitted:

- ☐ Quarterly Monitoring Report: _____
- ☐ Annual Compliance Certification: X
- ☐ Semi-Annual Monitoring Report: X

Methods used to demonstrate compliance:

Testing Requirements:

A. Visible Emissions Limitations.
See Monitoring Requirements, Section 2.3.

B. Control of Sulfur Oxides.
See Monitoring Requirements, Section 2.3.

C. Control of Nitrogen Oxides.
The Permittee shall conduct a stack test to determine the NOx emissions rate on each of the boilers while burning natural gas and while burning No. 2 fuel oil at least once prior to the expiration of the term of this permit. The Permittee shall submit a test protocol to the Department for approval at least 30 days prior to the proposed test date. The Permittee shall submit stack test results to the Department 45 days after the performance testing. **[Reference: COMAR 26.11.03.06C]**

D. Operational Limitations.
See Monitoring Requirements, Section 2.3.

Monitoring Requirements:

A. Visible Emissions Limitations.
The following requirements apply to visible emissions:
(1) The Permittee shall properly operate and maintain the boilers in a manner to prevent visible emission.
(2) The Permittee shall verify no visible emissions when burning No. 2 fuel oil. An observer shall perform a visual observation of stack emissions for a 6-minute period once every 168 hours of operation on oil or at a minimum once per year.
(3) The Permittee shall perform the following, if emissions are visible to human observer:
(a) Inspect combustion control system and boiler operations,
(b) Perform all necessary adjustments and/or repairs to the boiler within 48 hours of operation sci that visible emissions are eliminated; and
(c) Document in writing the results of the inspections, adjustments and/or repairs to the boiler.
(4) The Permittee shall after 48 hours of operation, if the required adjustments and/or repairs had not eliminated the visible emissions, perform a Method 9 observation once daily when boilers operation on No. 2 fuel oil for 18 minutes until corrective action has eliminated the visible emissions.
[Reference: COMAR 26.11.03.06C]

B. Control of Sulfur Oxides.
The Permittee shall obtain a certification from the fuel supplier that the No. 2 fuel oil is in compliance with the sulfur in fuel limitation. **[Reference: 40 CFR60.42c]**

C. Control of Nitrogen Oxides.
The Permittee shall measure the NOx concentration of the flue gases from each boiler for a 3 to 5-minute period every 500 hours of operation. The Permittee shall use an analyzer that is properly calibrated and maintained in accordance with the vendor specification. The analyzer shall be the type approved by the Department. **[Reference: COMAR 26.11.03.06C]**

D. Operational Limitations.
The Permittee shall calculate the quantity of natural gas and No. 2 fuel oil burned for each 12 month rolling period at the end of each calendar month. The calculation shall be completed by the 15th day of the following month. **[Reference: COMAR 26.11.03.06C]**

Record Keeping Requirements:

A. Visible Emissions Limitations.
The Permittee shall keep the following records related to visible emission:
(1) Maintain an operation manual and prevention maintenance plan on site;
(2) Maintain a record of the maintenance performed that relates to combustion performance.
(3) Maintain a log of visible emissions observations performed and make it available to the Department's representative upon request; and
(4) Maintain a record of the hours that No. 2 fuel oil is burned.
[Reference: COMAR 26.11.03.06C]

B. Control of Sulfur Oxides.

The Permittee shall retain fuel supplier certifications stating that the fuel oil is in compliance with the sulfur content in the fuel limitation and must be maintained for at least five (5) years. **[Reference: 40 CFR 60.48c(e)]**

C. Control of Nitrogen Oxides.
The Permittee shall maintain records of the stack tests and results of measured NOx content of the flue gas on site for at least five (5) years and shall make them available to the Department upon request. **[Reference: COMAR 26.11.03.06C]**

D. Operational Limitations.
(1) The Permittee shall maintain records of the quantity of natural gas and No. 2 fuel burned in each rolling 12 month period. **[Reference: COMAR 26.11.03.06C]**
(2) The Permittee shall maintain records of the amounts of each fuel combusted during each day. The amount of fuel combusted each day may be calculated by dividing the total fuel burned during a month by the days of operation in that month. **[Reference: 40 CFR 60.48c(g)]**

Reporting Requirements:

A. Visible Emissions Limitations.
The Permittee shall report incidents of visible emissions in accordance with Permit Condition 4, Section III, "Report of Excess Emissions and Deviations."

B. Control of Sulfur Oxides.
The Permittee shall submit to the Department, a semi-annual report including the following:
(1) A fuel supplier certification consisting of the name of the oil supplier and a statement from the oil supplier that the oil complies with the sulfur specifications for distillate fuel oil; and
(2) A certified statement signed by the Permittee stating that the records of fuel supplier certifications submitted represent all of the fuel oil combusted during the 6-month period.
[Reference: 40 CFR 60.48c]

C. Control of Nitrogen Oxides.
The Permittee shall submit results of the stack tests for NOx within 45 days after completing the tests. **[Reference: COMAR 26.11.03.06C]**

D. Operational Limitations.
The Permittee shall submit the monthly quantity of natural gas and No. 2 fuel oil burned with the supporting documentation for the annual emissions certification report.
[Reference: COMAR 26.11.03.06C]

Frequency of submittal of the compliance demonstration: Semi-Annual

SECTION 3B-3. CITATION TO AND DESCRIPTION OF APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS

Emissions Unit No.: EU-7 (Fire Research Laboratory consisting of four pre-heaters, four baghouses, and four dry scrubbers)
General Reference: Part 71 Permit No. 24-31-00323
Construction Permit No. 031-0323-6-0557

Briefly describe the Emission Standard/Limit or Operational Limitation:

Applicable Standards/Limits:

A. Visible Emissions Limitations
"A person may not cause or permit the discharge of emissions from any installation or building, other than water in an uncombined form, which is visible to human observers."
[Reference: COMAR 26.11.06.02C(2)]

B. Control of Particulate Matter
(1) "A person may not cause or permit to be discharged into the outdoor atmosphere from any other installation, particulate matter in excess of 0.03 gr/SCFD (68.7 mg/dscm)."
[Reference: COMAR 26.11.06.03B(2)]
(2) "A person may not cause or permit any material to be handled, transported, or stored or a building, its appurtenances, or a road to be used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne."
[Reference: COMAR 26.11.06.03B(2)(a)]

C. Control of Sulfur Oxides
(1) "A person may not cause or permit the discharge into the atmosphere from installations other than fuel-burning equipment of gases containing more than 500 ppm of sulfur dioxide. Installations constructed before February 21, 1971, are limited to not more than 2,000 ppm sulfur dioxide."
[Reference: COMAR 26.11.06.05C(1)]
(2) A person may not cause or permit the discharge into the atmosphere from installations other than fuel-burning equipment of gases containing sulfuric acid, sulfur trioxide, or any combination of them, greater than 35 milligrams per cubic meter reported as sulfuric acid. Any installation constructed before February 21, 1971, is limited to not more than 70 milligrams per cubic meter of sulfuric acid, sulfur trioxide, or any combination of them, reported as sulfuric acid."
[Reference: COMAR 26.11.06.05C(2)]
Note: All calculations of emissions governed by this regulation shall be adjusted to standard conditions and 7 percent oxygen. **[Reference: COMAR 26.11.06.05A]**

D. Control of Nitrogen Oxides
"A person who owns or operates any installation other than fuel-burning equipment that causes NOx emissions shall:
(1) Maintain good operating practices as recommended by the equipment vendor to minimize NOx emissions;
(2) Prepare and implement a written in-house training program for all operators of these installations that include instruction on good operating and maintenance practices for the particular installation;
(3) Maintain and make available to the Department, upon request, the written in-house operator training program;

(4) Burn only gas in each installation, where gas is available, during the period May 1 through September 30 of each year; and
(5) Maintain operator training attendance records for each operator at the site for at least 2 years and make these records available to the Department upon request."
[Reference: COMAR 26.11.09.08J]
Note: COMAR 26.11.09.088(5) states that: (a) for the purpose of COMAR 26.11.09.08, the equipment operator to be trained may be the person who maintains the equipment and makes the necessary adjustments for efficient operation; and (b) that the operator training course sponsored by the Department shall include an in-house training course that is approved by the Department.

E. Control of VOC Emissions
"Except as provided in §E of this regulation, a person may not cause or permit the discharge of VOC from any installation constructed on or after May 12, 1972 in excess of 20 pounds (9.07 kilograms) per day unless the discharge is reduced by 85 percent or more overall."
[Reference: COMAR 26.11.06.06B(1)(b)]
Operational Limitations
(1) The pre-heaters shall be natural gas fired only.
[Reference: Permit to Construct No. 031-0323-6-0557, Part 0(2), issued on September 16, 2011]
(2) The dry scrubbers must be in place and operated in accordance with manufacturer's specifications to meet the air toxics requirements.
[Reference: Permit to Construct No. 031-0323-6-0557, Part D(3), issued on September 16, 2011]
(3) The exhaust from the National Fire Research Lab must vent through the pre-heater, dry scrubber, and bag house system. **Reference: Permit to Construct No. 031-0323-6-0557, Part D(4), issued on September 16, 2011]**

Permit Shield Request: Yes

Compliance Demonstration:

Check appropriate reports required to be submitted:

- ☐ Quarterly Monitoring Report: _____
- ☐ Annual Compliance Certification: X
- ☐ Semi-Annual Monitoring Report: X

Methods used to demonstrate compliance:

Testing Requirements:

A. Visible Emissions Limitations
See Monitoring Requirements, Section 3.3.

B. Control of Particulate Matter
See Monitoring Requirements, Section 3.3.

C. Control of Sulfur Oxides
See Monitoring Requirements, Section 3.3.

D. Control of Nitrogen Oxides
See Monitoring Requirements, Section 3.3.

E. Control of voe Emissions
See Record Keeping Requirements, Section 3.4.

F. Operational Limitations
See Record Keeping Requirements, Section 3.4.

Monitoring Requirements:

A. Visible Emissions Limitations
The Permittee shall perform a visual observation of the exhaust from each bag house once per month for a 6 minute period when a fire is burning (unless the Research Laboratory is not in operation that month) to determine if there are any visible emissions. If visible emissions are observed from the bag houses, the Permittee shall perform the following:
(1) Inspect all control equipment that may affect visible emissions;
(2) Perform all necessary repairs and/or adjustment within 48 hours so that visible emissions in the exhaust gases are eliminated;
(3) Document, in writing, the results of the inspections and the repairs and/or adjustment made to the control equipment; and
(4) If visible emissions have not been eliminated within 48 hours, the Permittee shall perform a Method 9 observation once daily for an 18-minute period until corrective actions have eliminated the visible emissions.
[Reference: COMAR 26.11.03.06C]

B. Control of Particulate Matter
See Monitoring Requirements, Control of Sulfur Oxides, Section 3.3C below.

C. Control of Sulfur Oxides
The following apply:
(1) The emissions control system consisting of four (4) dry scrubbers shall be operated arid maintained in accordance with the manufacturer's recommendations. **[Reference: Permit to Construct" #031-0323-6-0557 issued on September 16, 2011, Condition 0(3)]**
(2) The Permittee shall develop and maintain a preventative maintenance plan that is based on manufacturer's recommendations and prior facility maintenance experiences for the four (4) dry scrubbers and the four (4) bag houses that describes the maintenance activity and time schedule for completing each activity. The Permittee shall perform maintenance activities within the time frames established in the plan and shall maintain a log with records of the dates and description of the maintenance that was performed. **[Reference: COMAR 26.11.03.06C]**

D. Control of Nitrogen Oxides
The Permittee shall prepare, implement, and maintain a written in-house training program for all operators that include instruction on good operating and maintenance practices for the installation.
[Reference: COMAR 26.11.09.08J(2)]

E. Control of VOC Emissions
The Permittee shall calculate VOC emissions based on material usage data.

F. Operational Limitations
See Record Keeping Requirements, Section 3.4.

Record Keeping Requirements:

A. Visible Emissions Limitations
The Permittee shall maintain a log on site of the dates and results of visible emissions observations for five (5) years. **[Reference: COMAR 26.11.03.06C]**

B. Control of Particulate Matter
The Permittee shall maintain the following records for at least five (5) years and make them available to the Department upon request:
(1) A copy of the preventative maintenance plan for each bag house and a record of the dates and description of maintenance activity performed;
(2) Records of the bag house malfunctions that cause visible emissions and the corrective actions taken to bring it back into proper operation; and
(3) Records of the amount and types of material processed in the Fire Research Laboratory.
[Reference: COMAR 26.11.03.06C]

C. Control of Sulfur Oxides
In keeping with the Preventative Maintenance Plan, the Permittee shall maintain a log with records of the dates and description of the maintenance that was performed. **[Reference: COMAR 26.11.03.06C]**

D. Control of Nitrogen Oxides
(1) The Permittee shall maintain the operator NOx training attendance records for the in-house training program, referenced in Table IV-3, Part 3.10(2), at the site for at least two (2) years and make these records available to the Department upon request. **[Reference: COMAR 26.11.09.08J(5)]**
(2) The Permittee shall maintain annual fuel use records on site for not less than three (3) years, and make these records available to the Department upon request. **[Reference: COMAR 26.11.09.08K(3)]**

E. Control of VOC Emissions
The Permittee shall maintain for at least five (5) years, and shall make available to the Department upon request, input material usage rates for all VOC containing materials.

F. Operational Limitations
The Permittee must keep records of the amount of natural gas used in the preheaters each month.

Reporting Requirements:

A. Visible Emissions Limitations
The Permittee, shall report the results of the visible emissions observations to the Department upon request. **[Reference: COMAR 26.11.03.06C]**

B. Control of Particulate Matter
The Permittee shall submit a copy of the preventative maintenance plan, records of maintenance activities, and corrective actions taken upon request. **[Reference: COMAR 26.11.03.06C]**

C. Control of Sulfur Oxides
The Permittee shall submit records of the amount and types of material processed in the Fire Research Laboratory to the Department upon request. **[Reference: COMAR 26.11.03.06C]**

D. Control of Nitrogen Oxides
See Record Keeping Requirements, Section 3.4.

E. Control of VOC Emissions
The Permittee shall submit all material usage records and VOC emissions calculations from the Fire Research Laboratory to the Department upon request in the annual Emissions Certification Report.

F. Operational Limitations
The Permittee shall submit records of the amount of natural gas used in the Fire Research Laboratory to the Department with the annual Emissions Certification Report.

Frequency of submittal of the compliance demonstration: Semi-Annual

SECTION 3B-4. CITATION TO AND DESCRIPTION OF APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS

Emissions Unit No.: EU-8 (One 6,000 gallon gasoline aboveground storage tank equipped with a Stage 1 vapor recovery system)
General Reference: Part 71 Permit No. 24-031-00323

Briefly describe the Emission Standard/Limit or Operational Limitation:

Applicable Standards/Limits:

A. Control of VOC Emissions.
(1) The Permittee may not cause or permit gasoline to be loaded into a stationary tank unless the loading system is equipped with a vapor balance line that is properly installed, maintained, and used. **[Reference: COMAR 26.11.13.04C(2)]**
(2) "A person may not cause or permit a gasoline or VOC having a TVP of 1.5 psia (10.3 kilonewtons/square meter) or greater to be loaded into any truck, railroad tank car, or other contrivance unless the:
(a) Loading connections on the vapor lines are equipped with fittings that have no leaks and that automatically and immediately close upon disconnection to prevent release of gasoline or VOC from these fittings; and
(b) Equipment is maintained and operated in a manner to prevent avoidable liquid leaks during loading and unloading operations. **[Reference: COMAR 26.11.13.04D]**

B. Operational Limitations.
(1) The Permittee shall limit the monthly gasoline throughput to less than an average of 10,000 gallons per month in any calendar year unless notification is provided to the Department within 30 days following any calendar year in which the average monthly gasoline throughput at the facility during the calendar year exceeds 10,000 gallons per month.
[Reference: COMAR 26.11.03.06C and COMAR 26.11.24.02C(1)]
(2) The Permittee shall install and operate an approved system within one (1) year after any calendar year in which the average monthly gasoline, throughput at the facility during the calendar year exceeds 10,000 gallons per month. **[Reference: COMAR 26.11.24.07D(2)]**
(3) The Permittee must meet the management standards specified in 40 CFR Part 63 subpart CCCCCC for a tank with less than 10,000 gallons per month throughput.
[Reference: 40 CFR §63.11116]

Permit Shield Request: Yes

Compliance Demonstration:

Check appropriate reports required to be submitted:

- ☐ Quarterly Monitoring Report: _____
- ☐ Annual Compliance Certification: X
- ☐ Semi-Annual Monitoring Report: X

Methods used to demonstrate compliance:

Testing Requirements:

A. Control of VOC Emissions.
See Monitoring Requirements, Section 4.3.

B. Operational Limitations.
See Record Keeping Requirements, Section 4.4.

Monitoring Requirements:

A. Control of VOC Emissions.
Once a month during a delivery, the Permittee shall visually inspect all components for leaks and retain a record of these leak inspections. If leaks are detected, corrective action shall be as follows:
(1) Take immediate action to repair all observed VOC leaks that can be repaired within 48 hours; and
(2) Repair all other leaking components not later than 15 days after the leak is discovered.
If a replacement part is needed, the part shall be ordered within 3 days after discovery of the leak, and the leak shall be repaired within 48 hours after receiving the part.
[Reference: COMAR 26.11.03.06C]

B. Operational Limitations.
The Permittee must not allow gasoline to be handled in a manner that would result in vapor releases to the atmosphere for extended periods of time. Measures to be taken include, but are not limited to, the following:
(1) Minimize gasoline spills;
(2) Clean up spills as expeditiously as practicable;
(3) Cover all open gasoline containers and all gasoline storage tank fill-pipes with a gasketed seal when not in use;
(4) Minimize gasoline set to open waste collection systems that collect and transport gasoline to reclamation and recycling devices, such as oil/water separators.
[Reference: 40 CFR §63.1111 6(a)]

Record Keeping Requirements:

A Control of VOC Emissions
The Permittee shall retain a record of the leak inspections referenced in Monitoring Requirements, Section 4.3, above. **[Reference: COMAR 26.11.03.06C]**

B. Operational Limitations.
(1) An owner or operator of a gasoline dispensing facility exempted according to regulation COMAR 26.11.24.02C of this chapter shall create and maintain records on gasoline throughput and tank sizes and make the records available to the Department upon request.
[Reference: COMAR 26.11.24.07D(1)]
(2) The Permittee shall notify the Department within 30 days and install and operate an approved system within one (1) year after any calendar year in which the average monthly gasoline throughput at the facility during the calendar month exceeds 10,000 gallons per month.
[Reference: COMAR 26.11.03.06C and COMAR 26.11.24.07D(2)]

(3) The Permittee shall keep the following records:
(a) Records of the occurrence and duration of each malfunction of operation (i.e. process equipment) or the air pollution control and monitoring equipment:
(b) Records of action taken during periods of malfunction to minimize emissions in accordance with §63.11115(a), including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation.
[Reference: 40 CFR §63.11125(d)]

Reporting Requirements:

A Control of VOC Emissions
See Record Keeping Requirements, Section 4.4.

B. Operational Limitations.
See Record Keeping Requirements, Section 4.4.

Frequency of submittal of the compliance demonstration: Semi-Annual

SECTION 3B-5. CITATION TO AND DESCRIPTION OF APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS

Emissions Unit No.: EU-9 (One Diesel fired emergency generator rated at 1,000 kW) and EU-10 (One Diesel fired emergency generator rated at 500 kW)
General Reference: Part 71 Permit No. 24-031-00323

Briefly describe the Emission Standard/Limit or Operational Limitation:

Applicable Standards/Limits:

A. Visible Emissions Limitations
(1) "A person may not cause or permit the discharge of emissions from any engine, operating at idle, greater than 1 O percent opacity. **[Reference: COMAR 26.11.09.05E(2)]**
(2) "A person may not cause or permit the discharge of emissions from any engine, operating at other than idle conditions, greater than 40 percent opacity. **[Reference: COMAR 26.11.09.05E(3)]**
(3) "Exceptions:
(a) Section E(2) of this regulation does not apply for a period of 2 consecutive minutes after a period of idling of 15 consecutive minutes for the purpose of clearing the exhaust system.
(b) Section E(2) of this regulation does not apply to emissions resulting directly from cold engine start-up arid warm-up for the following maximum periods:
(i) Engines that are idled continuously when not in service: 30 minutes;
(ii) All other engines: 15 minutes."
[Reference: COMAR 26.11.09.05E(4)]

B. Control of Sulfur Oxides
"A person may not burn, sell, or make available for sale any fuel with a sulfur content by weight in excess of or which otherwise exceeds the following limitations: (2) In Areas Ill and IV: (b) Distillate fuel oils, 0.3 percent."
[Reference: COMAR 26.11.09.07 A(2)(b)]

C. Control of Nitrogen Oxides
"A person who owns or operates fuel-burning equipment with a capacity factor (as defined in 40 CFR Part 72.2) of 15 percent or less shall:
(a) Provide certification of the capacity factor of the equipment to the Department in writing;
(b) For fuel-burning equipment that operates more than 500 hours during a calendar year, perform a combustion analysis and optimize combustion at least once annually;
(c) Maintain the results of the combustion analysis at the site for at least 2 years and make these results available to the Department and the EPA upon request;
(d) Require each operator of an installation, except combustion turbines, to attend operator training programs at least once every 3 years, on combustion optimization that are sponsored by the Department, the EPA, or equipment vendors; and
(e) Maintain a record of training program attendance for each operator at the site, and make these records available to the Department upon request."
[Reference: COMAR 26.11.09.08G(1)]
Note: COMAR 26.11.09.08B(5) states that; (a) for the purpose of COMAR 26.11.09.08, the equipment operator to be trained may be the person who maintains the equipment and makes the necessary adjustments for efficient operation; and (b) that the operator training course sponsored by the Department shall include an in-house training course that is approved by the Department.

D. Operational Limitations
(1) For each engine, the Permittee shall:
(a) Change the oil and filter every 500 hours of operation or annually, whichever comes first.
(b) Inspect the air cleaner every 1,000 hours of operation or annually, whichever comes first, and replace as necessary.
(c) Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.
[Reference: 40 CFR §63.6603(a) and 40 CFR 63, Subpart ZZZZ, Table 2d, Item #4]
(2) *Requirements for emergency stationary RICE.* (1) If you own or operate an existing emergency stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions, a new or reconstructed emergency stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions that was installed on or after June 12, 2006, or an ***existing emergency stationary RICE located at an area source* of *HAP emissions,*** you must operate the emergency stationary RICE according to the requirements in paragraphs (f)(1)(i) through (iii) of this section. Any operation other than emergency operation, maintenance and testing is prohibited. If you do not operate the engine according to the requirements in paragraphs (f)(1)(i) through (iii)(*) of this section, the engine will not be considered an emergency engine under this subpart and will need to meet all requirements for non-emergency engines.
(i) There is no time limit on the use of emergency stationary RICE in emergency situations.
(ii) You may operate your emergency stationary RICE for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency RICE beyond 100 hours per year.
[Reference: 40 CFR §63.6640 (f)]
Note(*): Effective May 2, 2016, emergency generators are no longer allowed to participate for emergency demand response operation unless they meet the requirements of a non-emergency generator of the same model year. This engine does not meet the standards for a non-emergency generator, therefore, operation for emergency demand response or during periods of voltage deviation, as was indicated under paragraphs (f)(1)(iii), are not permitted.

Permit Shield Request: Yes

Compliance Demonstration:

Check appropriate reports required to be submitted:
- ☐ Quarterly Monitoring Report: _____
- ☐ Annual Compliance Certification: X
- ☐ Semi-Annual Monitoring Report: X

Methods used to demonstrate compliance:

Testing Requirements:

A Visible Emissions Limitations
See Monitoring Requirements, Section 5.3.

B. Control of Sulfur Oxides
See Monitoring Requirements, Section 5.3.

C. Control of Nitrogen Oxides
See Monitoring Requirements, Section 5.3.

D. Operational Limitations
The Permittee has the option of utilizing an oil analysis program in order to extend the specified oil change requirement. The oil analysis must be performed at the same frequency specified for changing the oil in 40 CFR 63 Subpart ZZZZ, Table 2d. The analysis program must at a minimum analyze the following three parameters: Total Base Number, viscosity, and percent water content in accordance with 40 CFR §63.6625(i). **[Reference: 40 CFR §63.6625(i)]**

Monitoring Requirements:

A Visible Emissions Limitations
The Permittee shall properly operate and maintain the engine in a manner to minimize visible emissions. **[Reference: COMAR 26.11.03.06C]**

B. Control of Sulfur Oxides
The Permittee shall obtain a certification from the fuel supplier that the fuel oil is in compliance with the sulfur in fuel limitation. **[Reference: COMAR 26.11.03.06C]**

C. Control of Nitrogen Oxides
The Permittee shall, on any emergency generator that operates more than 500 hours during a calendar year, perform an annual combustion analysis that includes the measurement of CO, 02, and NOx in the flue gas and optimize the combustion in accordance with manufacturer's recommendations. **[Reference: COMAR 26.11.09.08G(1)(b)]**

D. Operational Limitations
(1) The Permittee must maintain and operate the engines in a manner consistent with safety and good air pollution control practices for minimizing emissions. **[Reference: 40 CFR §63.6605(b)]**
(2) The Permittee shall operate and maintain the stationary RICE and aftertreatment control device (if any) according to the manufacturer's emission related written instructions or develop your own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions. **[Reference: 40 CFR §63.6625(e)]**

Record Keeping Requirements:

A. Visible Emissions Limitations
The Permittee shall: **[Reference: COMAR 26.11.03.06C]**
(1) Maintain an operation manual and prevention maintenance plan on site; and
(2) Maintain a record of the maintenance performed that relates to combustion performance.

B. Control of Sulfur Oxides
The Permittee shall retain fuel supplier certifications stating that the fuel oil is in compliance with this regulation for at least five (5) years. **[Reference: COMAR 26.11.09.07C]**

C. Control of Nitrogen Oxides
The Permittee shall:
(1) Maintain records of hours of operation and fuel use on-site for at least five (5) years and shall make them available to the Department upon request. **[Reference: COMAR 26.11.03.06C]**
(2) If a combustion analysis is required to be performed, maintain the results of the combustion analysis at the site for at least five (5) years and make these results available to the Department and the EPA upon request. **[Reference: COMAR 26.11.03.06C(6)(a)]**
(3) Maintain a record of training program attendance for each operator at the site, and make these records available to the Department upon request. **[Reference: COMAR 26.11.09.08G(1)(e)]**

D. Operational Limitations
The Permittee must keep the following records in hard copy or electronic format, for at least five (5) years following the date of each occurrence, in a form suitable and readily available for expeditious review
(1) The Permittee must keep records of the maintenance conducted on the emergency engines and after treatment control devices (if any) according to the maintenance plan.
[Reference: 40 CFR §63.6655(e) and §63.6660]
(2) The Permittee must keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The Permittee must document how many hours are spent for emergency operation including what classified the operation as emergency and how many hours are spent for non-emergency operation. If the engines are used for demand response operation, the Permittee must keep records of the notification of the emergency situation, the date, the start time, and end time the engine was operated as part of the demand response.
[Reference: 40 CFR §63.6655(f) and §63.6660]

Reporting Requirements:

A. Visible Emissions Limitations
The Permittee shall report incidents of visible emissions in accordance with Permit Condition 4, Section III, "Report of Excess Emissions and Deviations."

B. Control of Sulfur Oxides
The Permittee shall report fuel supplier certification to the Department upon request.
[Reference: COMAR 26.11.09.07C]

C. Control of Nitrogen Oxides
The Permittee shall:
(1) Provide certification of the capacity factor of the equipment to the Department in writing.
[Reference: COMAR 26.11.09.08G(1)(a)]
(2) Make records of training program attendance for each operator at the site available to the Department upon request. **[Reference: COMAR 26.11.09.08G(1)(e)]**

D. Operational Limitations
The Permittee shall make records available to the Department upon request.
[Reference: COMAR 26.11.03.06]

Frequency of submittal of the compliance demonstration: Semi-Annual

SECTION 3B-6. CITATION TO AND DESCRIPTION OF APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS

Emissions Unit No.: EU-11 (One natural gas fired combustion turbine rated at 87.97 MMBtu/hr)
EU-12 (One heat recovery steam generator (HRSG) rated at 50.78 MMBtu/hr and equipped with low NOx duct burners

General Reference: Part 71 Permit No. 24-031-00323
Amendment to PTC # 031-0323-5-2363 & -5-2364; and -5-0108 through -5-0111, issued 1/17/2019 [Note: This amendment supersedes the Part 71 Permit No. 24-031-00323, issued 5/1/2018]

Briefly describe the Emission Standard/Limit or Operational Limitation:

Part A - General Provisions

(1) The following Air and Radiation Administration (ARA) permit-to-construct applications and supplemental information are incorporated into this permit by reference:

(a) Application for Fuel Burning Equipment (Form(s) 11) and letter with attachments requesting the amendment of the Cogeneration equipment (Combustion Turbine and Heat Recovery Steam Generator) installation permit to construct received April 11, 2018. The application includes an amended Non-attainment New Source Review (NNSR) NOx netting analysis in order to retain Boiler No. 6 (Reg. No. 5-1113)(*), by taking credit for the installation of Low NOx burners on Boilers #1 - #4 (Ref.: PTC 031-0323-5-0108 - 0111).
(*)**Note: Boilers #5** & **#6 were permitted under PTC #15-5-1112** & **-5-1113 N, issued July30, 1996. That permit did not require modification as a result of the Cogeneration plant permit amendment.**

(b) Application for Fuel Burning Equipment (Form 11) for the installation of one (1) Solar/Taurus 70 natural gas fired combustion turbine (CT) rated at 87.97 MMBtu/hr received on February 11, 2016.

(c) Application for Fuel Burning Equipment (Form 11) for the installation of one (1) Rentech natural gas fired heat recovery steam generator (HRSG) rated at 50.78 MMBtu/hr and equipped with low NOx duct burners received on February 11, 2016.

(d) Supplemental Information including the following: emissions calculations and vendor literature received on February 11, 2016.

(e) Zoning documents from the Montgomery County Planning Department dated March 2014 received on February 11, 2016.

(f) Environmental Site Assessment - Combined Heat and Power Plant for the NIST facility dated November 17, 2014, received by the Department on February 17, 2016.

(g) Application for Gas Cleaning or Emission Control Equipment (Form 6) for the addition of low NOx burners for four existing 55 million Btu/hr Union Iron Works boilers, firing natural gas as

primary fuel and No. 2 fuel oil as back up {ARA Reg. Nos. 5-0108 through 5-0111; (EU #1 though EU-4)} received on January 10, 2013.

If there are any conflicts between representations in this permit and representations in the applications, the representations in the permit shall govern. Estimates of dimensions, volumes, emissions rates, operating rates, feed rates and hours of operation included in the applications do not constitute enforceable numeric limits beyond the extent necessary for compliance with applicable requirements.

(2) Upon presentation of credentials, representatives of the Maryland Department of the Environment ("MDE" or the "Department") and the Montgomery County Department of Environmental Protection shall at any reasonable time be granted, without delay and without prior notification, access to the Permittee's property and permitted to:

(a) inspect any construction authorized by this permit;

(b) sample, as necessary to determine compliance with requirements of this permit, any materials stored or processed on-site, any waste materials, and any discharge into the environment;

(c) inspect any monitoring equipment required by this permit;

(d) review and copy any records, including all documents required to be maintained by this permit, relevant to a determination of compliance with requirements of this permit; and

(e) obtain any photographic documentation or evidence necessary to determine compliance with the requirements of this permit.

(3) The Permittee shall notify the Department prior to increasing quantities and/or changing the types of any materials referenced in the application or limited by this permit. If the Department determines that such increases or changes constitute a modification, the Permittee shall obtain a permit-to-construct prior to implementing the modification.

(4) Nothing in this permit authorizes the violation of any rule or regulation or the creation of a nuisance or air pollution.

(5) If any provision of this permit is declared by proper authority to be invalid, the remaining provisions of the permit shall remain in effect.

(6) The Permittee shall comply with all applicable requirements of the facility's current Title V-Part 70 Operating Permit #24-033-0010.

(7) This permit supersedes all registrations and/or permit to construct issued under ARA Registration Nos. 031-0323--5-0108, -5-0109, -5-0110, -5-0111 {Boiler EUs # 1 - #4}; and -5-2363 and -5-2364 {CT and HRSG EUs # 11 & # 12}.

(8) The amendment of the permit which includes amended Non-attainment New Source Review (NNSR) NOx Synthetic-Minor limitations and conditions, and the retention of Boiler EU #6, qualifies as an "Off-Permit" change to the facility's Part 70 operating permit. The Department recognizes the permit to construct application as written notification of the proposed change the Permittee shall include the changes made and included as a part of this permit in the next renewal of the Part 70 permit.

Part B - Applicable Regulations

(1) This source is subject to all applicable federal air pollution control requirements including, but not limited to, the following:

(a) All applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements included in federal New Source Performance Standards (NSPS) promulgated under 40 CFR 60, Subparts A and KKKK for Stationary Combustion Turbines.

§60.4320. What emission limits must I meet for nitrogen oxides (NOx)?

(a) "You must meet the emission limits for NOx specified in Table 1 to this subpart."

(b) "If you have two or more turbines that are connected to a single generator, each turbine must meet the emission limits for NOx."

40 CFR Part 60, Subpart KKKK, Table 1 - Nitrogen Oxide Emission Limits for New Stationary Combustion Turbines.

Combustion Turbine Type	Combustion Turbine heat input at peak load (HHV)	NOx emission standard
New turbine firing natural gas	50 MMBtu/h and 850 MMBtu/h	25 ppm at 15 percent 0_2 or 150 ng/J of useful output (1.2 lb/MWh).

§60.4330(a)(1) and (2) What emissions limits must I meet for sulfur dioxide (SO2)?

The Permittee must comply with one of the following:

(1) You must not cause to be discharged into the atmosphere from the subject stationary combustion turbine any gases which contain S02 in excess of 110 nanograms per Joule (ng/J) (0.90 pounds per megawatt-hour (lb/MWh)) gross output, or

(2) You must not burn in the subject stationary combustion turbine any fuel which contains total potential sulfur emissions in excess of 26 ng SO_2 (0.060 lb SO_2/MMBtu) heat input. If your turbine simultaneously fires multiple fuels, each fuel must meet this requirement.

Note: The Permittee may satisfy this requirement by meeting the fuel oil **sulfur content limitation of 0.05% by weight** as specified in a current valid purchase contract, tariff sheet or transportation contract for the fuel per **40 CFR § 60.4365 (a).**

§60.4333(a) What are my general requirements for complying with this subpart?

"You must operate and maintain your stationary combustion turbine, air pollution control equipment, and monitoring equipment in a manner consistent with good air pollution control practices for minimizing emissions at all times including during startup, shutdown, and malfunction."

(c) All notifications required under 40 CFR 60, Subparts A and **KKKK** shall be submitted to both of the following:

The Administrator
Compliance Program
Maryland Department of the Environment
Air and Radiation Administration
1800 Washington Boulevard, STE 715
Baltimore MD 21230

and

Director, Air Protection Division
U.S. EPA- Region 3

Mail Code 3AP00
1650 Arch Street
Philadelphia, PA 19103-2029

(2) This source is subject to all applicable federally enforceable State air pollution control requirements including, but not limited to, the following regulations:

(a) COMAR 26.11.01.05-1B(1), Emissions Statements. "By April 1 of each year, beginning with April 1, 1993, a person subject to this regulation shall submit to the Department an emissions statement for the previous calendar year that meets the requirements of this regulation."

(b) COMAR 26.11.01 .07C, Report of Excess Emissions.

(1) "In the case of any occurrence of excess emissions, expected to last or actually lasting for 1 hour or more, from any installation required by COMAR 26.11.02.13 to obtain a State permit to
operate, the owner or operator shall report the onset and shall report the termination of the occurrence to the Department by telephone."

(2) "Telephone reports of excess emissions shall include the following information:

(a) The identity of the installation and the person reporting;

(b) The nature or characteristics of the emissions (for example, hydrocarbons, fluorides);

(c) The time of occurrence of the onset of the excess emissions and the actual or expected duration of the occurrence; and

(d) The actual or probable cause of the excess emissions."

(c) COMAR 26.11.02.04B, Permits to Construct and Approvals. "A permit to construct or an approval expires if, as determined by the Department:

(1) Substantial construction or modification is not commenced within 18 months after the date of issuance of the permit or approval, unless the Department specifies a longer period in the permit or
approval;

(2) Construction or modification is substantially discontinued for a period of 18 months after the construction or modification has commenced; or

(3) The source for which the permit or approval was issued is not completed within a reasonable period after the date of issuance of the permit or approval."

(d) COMAR 26.11.02.09A, Sources Subject to Permits to Construct and Approvals. "A person may not construct or modify or cause to be constructed or modified any of the following sources without first obtaining, and having in current effect, the specified permits to construct and approvals: (6) All sources, including installations and air pollution control equipment, except as listed in Regulation .10 of this chapter-permit to construct required."

(e) COMAR 26.11.03.14A, Revision of Part 70 Permits – General Requirements. "The Permittee shall submit an application to the Department to revise a Part 70 permit when required under Regulations .15-.17 of this chapter."

(f) COMAR 26.11.09.05A(2), Visible Emissions. "In Areas III and IV, a person may not cause or permit the discharge of emissions from any fuel burning equipment, other than water in an uncombined form, which is visible to human observers except that, for the purpose of demonstrating compliance using COM data, emissions that are visible to a human observer are those that are equal to or greater than 10 percent opacity."

(g) COMAR 26.11.09.05A(3), Exceptions. "Section A(1) and (2) of this regulation do not apply to emissions during load changing, soot blowing, startup, or adjustments or occasional cleaning of control equipment if:

(a) The visible emissions are not greater than 40 percent opacity; and

(b) The visible emissions do not occur for more than 6 consecutive minutes in any sixty minute period."

Conditions (h) and (i) below apply to Boilers #1-4, only.

(h) COMAR 26.11.09.07A, Sulfur Content Limitations for Fuel. "A person may not burn, sell, or make available for sale any fuel with a sulfur content by weight in excess of or which otherwise exceeds the following limitations: (2) In Areas III and IV: (b) Distillate fuel oils, 0.3 percent."

COMAR 26.11.09.08 - Control of NOx Emissions for Major Stationary Sources

(i) COMAR 26.11.09.086(1), Emission Standards and Requirements.

(a) "A person who owns or operates an installation that causes NOx emissions subject to this regulation is in compliance with this regulation if the person establishes compliance with the emissions standards in §B(1)(c) of this regulation."

(c) "Emission Standards in Pounds of NOx per Million Btu of heat input."(*)

Fuel	Tangential- Fired	Wall-Fired
Gas only	0.20	0.20
Gas/Oil	0.25	0.25
Coal (dry bottom)	0.38	0.38
Coal (wet bottom)	1.00	1.00

Note(*): The Permittee shall satisfy this requirement by meeting the more stringent NNSR limits cited under Part E (1) of this permit.

(j) COMAR 26.11.09.08B, General Requirements and Conditions.

(2) Demonstration of Compliance. "A person subject to a NOx emission standard in this regulation shall demonstrate compliance as follows: (e) For a person who establishes compliance using a stack test, compliance shall be determined as averages of the stack test duration."

(k) COMAR 26.11.09.08B{S), Operator Training.

(a) "For purposes of this regulation, the equipment operator to be trained may be the person who maintains the equipment and makes the necessary adjustments for efficient operation."

(b) "The operator training course sponsored by the Department shall include an in-house training course that is approved by the Department."

(I) COMAR 26.11.09.08E, Requirements for Fuel-Burning Equipment with a Rated Heat Input Capacity of 100 Million Btu Per Hour or Less "A person who owns or operates fuel-burning equipment with a rated heat input capacity of 100 Million Btu per hour or less shall:

(1) Submit to the Department an identification of each affected installation, the rated heat input capacity of each installation, and the type of fuel burned in each;

(2) Perform a combustion analysis for each installation at least once each year and optimize combustion based on the analysis;

(3) Maintain the results of the combustion analysis at the site for at least 2 years and make this data available to the Department and the EPA upon request;

(4) Once every 3 years, require each operator of the installation to attend operator training programs on combustion optimization that are sponsored by the Department(*), the EPA, or equipment vendors; and

(5) Prepare and maintain a record of training program attendance for each operator at the site, and make these records available to the Department upon request."

Condition (m) applies to the Combustion Turbine only.

(m) COMAR 26.11.09.0BG, Requirements for Fuel-Burning Equipment with a Capacity Factor of 15 Percent or Less, and Combustion Turbines with a Capacity Factor Greater than 15 Percent.

(1) *Not applicable.*

(2) "A person who owns or operates a combustion turbine with a capacity factor greater than 15 percent shall meet an hourly average NOx emission rate of not more than 42 ppm when burning gas or 65 ppm when burning fuel oil (dry volume at 15 percent oxygen) or meet applicable Prevention of Significant Deterioration limits, whichever is more restrictive."

(n) COMAR 26.11.09.0BK, Reporting Requirements.

(1) *Not applicable.*

(2) 'When compliance with this regulation is demonstrated by a stack test, the results of the stack tests required by this regulation shall be submitted to the Department within 45 days after completion of the test."

(3) "A person subject to this regulation shall maintain annual fuel use records on site for not less than 3 years, and make these records available to the Department upon request."

(3) This source is subject to all applicable State-only enforceable air pollution control requirements including, but not limited to, the following regulations:

(a) COMAR 26.11.02.13A, Sources Subject to State Permits to Operate. "Except for a source that is covered by a Part 70 permit, a person may not operate or cause to be operated any of the following sources without first obtaining, and having in current effect, a State permit to operate as required by this regulation: (2) Fuel-burning equipment, hot oil heaters, and stationary combustion turbines with a maximum rated heat input capacity of 50 million Btu (52.8 gigajoules) or more per hour."

(b) COMAR 26.11.02.19C, Information Required to be Maintained by a Source.

(1) "Beginning January 1, 1994, the owner or operator of a source for which a permit to operate is required shall maintain records necessary to support the emission certification, including the following information:

(a) The total amount of actual emissions of each regulated pollutant and the total of all regulated pollutants;

(b) An explanation of the methods used to quantify the emissions and the operating schedules and production data that were used to determine emissions, including significant assumptions made;

(c) Amounts, types, and analyses of all fuels used;

(d} Emission data from continuous emission monitors that are required by this subtitle or EPA regulations, including monitor calibration and malfunction information;

(e) Identification, description, and use records of all air pollution control equipment and compliance monitoring equipment, including significant maintenance performed, malfunctions and downtime, and episodes of reduced efficiency of this equipment;

(f) Limitations on source operation or any work practice standards that significantly affect emissions; and

(g) Other relevant information as required by the Department."

(2) "The logs and other records of information required by §C(1) of this regulation shall be retained for a period of 5 years and made available to the Department upon request."

(3) "If the owner or operator of a source for which a permit to operate is required fails to maintain or provide the data required by this section, which the Department requests in order to verify the emissions during the previous calendar year, the annual emission based fee for that source shall be based on the estimated allowable emissions, as defined in COMAR 26.11.01.01B(4), of that source, as determined by the Department."

(c) COMAR 26.11.02.19D, Emission Certification.

(1) "Beginning January 1, 1994, the responsible official designated by the owner or operator of a source for which a permit to operate is required shall certify, as provided at Regulation .02F of this
chapter, the actual emissions of regulated air pollutants from all installations at the plant or facility."
(2) "Certification shall be on a form obtained from the Department and shall be submitted to the Department not later than April 1 of the year following the year for which certification is required."
(3) "An emission certification submitted pursuant to this section and which contains all information required by COMAR 26.11.01 .05-1, for NOx and VOC, satisfies the requirements of COMAR
26.11.01.05-1."

(d) COMAR 26.11.06.08, Nuisance. "An installation or premises may not be operated or maintained in such a manner that a nuisance or air pollution is created. Nothing in this regulation relating to the control of emissions may in any manner be construed as authorizing or permitting the creation of, or maintenance of, nuisance or air pollution."

(e) COMAR 26.11.06.09, Odors. "A person may not cause or permit the discharge into the atmosphere of gases, vapors, or odors beyond the property line in such a manner that a nuisance or air pollution is created."

Part C - Construction Conditions

(1) Except as otherwise provided in this part, the one (1) natural gas fired combustion turbine rated at 87.97 MMBtu/hr, one (1) natural gas fired HRSG rated at 50.78 MMBtu/hr equipped with low NOx burners, and the installation of low NOx burners to Boilers #1- #4, shall be constructed in accordance with specifications included in the incorporated applications.

(2) The Permittee must install, calibrate, operate, and maintain a continuous parameter monitoring system (CPMS) to monitor the appropriate parameters to determine that the turbine is operating in low- NOx mode. **[Reference: 40 CFR §60.4340(b)(2)(ii)] {Note: See Condition F (5), below}**

(3) In order to demonstrate compliance with Non-attainment New Source Review (NNSR), the combustion turbine must be designed to meet the following NOx emission standard: 15 ppm on a dry volume basis (ppmvd) at 15 percent oxygen (02).

(4) In order to demonstrate compliance with NNSR, the HRSG must be designed to meet the following NOx emission standard: 0.08 lb/ MMBtu/hr.

(5) In order to demonstrate compliance with NNSR, the Low NOx burners installed on Boilers EU # 1 though EU# 4 shall be designed to achieve NOx limits of 0.1 lbs / MMBTU when burning natural gas and 0.2 lbs / MMBTU when burning fuel oil.

Permit Shield Request: Yes

Compliance Demonstration:

Check appropriate reports required to be submitted:

- Quarterly Monitoring Report: _____
- Annual Compliance Certification: X
- Semi-Annual Monitoring Report: X

Methods used to demonstrate compliance:

Part D - Operating Conditions

(1) Except as otherwise provided in this part, the one (1) natural gas fired combustion turbine rated at 87.97 MMBtu/hr, the one (1) natural gas fired HRSG rated at 50.78 MMBtu/hr and equipped with low NOx burners, and Boilers EU # 1 - #4 equipped with low NOx burners shall be operated in accordance with specifications included in the applications and any operating procedures recommended by equipment vendors unless the Permittee obtains from the Department written authorization for alternative operating procedures.

{Condition (2) below applies to Boilers EU#s 1-4, only}
(2) The Permittee shall burn liquid {No.2 fuel oil} fuel only during periods of gas curtailment, gas supply interruption, startup or periodic testing on liquid {No.2 fuel oil} fuel. Periodic testing of liquid {No.2 fuel oil} fuel shall not exceed a combined total of 48 hours per boiler during any calendar year.
[Reference: 40 CFR §63.11195(e) and §63.11237]

Part E- NNSR NOx Synthetic Minor Requirements

(1) In order to avoid triggering NNSR requirements, the Permittee shall not exceed the following NOx emissions limits:
(a) For the combustion turbine (CT): 15 ppm on a dry volume basis (ppmvd) at 15 percent oxygen (O2);
(b) For the Heat Recovery Steam Generator (HRSG): 0.08 lb/ MMBtu; and
(c) For the Boilers EU# 1 though EU# 4: 0.1 lbs/ MMBtu when burning natural gas; and 0.2 lbs / MMBtu when burning fuel oil.

(2) In order to prevent the NOx emissions from the installation of the CHP Plant (the one (1) natural gas fired combustion turbine rated at 87.97 MMBtu/hr and the one (1) natural gas fired HRSG rated at 50.78 MMBtu/hr and equipped with low NOx burners) from triggering a "Significant" net emissions increase for the facility as defined under COMAR 26.11.17.018(26) and triggering the Nonattainment Provisions for Major New Sources and Modifications (NSR) under COMAR 26.11.17, the Permittee shall:
(a) Limit NOx emissions from the CHP Plant (Reg. No. 5-2363 & -5-2364) to no more than **30 TPY** for any 12-month consecutive period, unless prior approval is received from the Department; and
(b) Limit the combined total NOx emissions from Boilers #1 - #4 to less than **10.8 TPY** for any 12-month consecutive period; unless prior approval is received from the Department, in order to satisfy the NNSR netting demonstration of the CHP.

(3) In order to demonstrate compliance with the annual emissions limitations, the Permittee shall calculate and record the CHP Plant and Boiler Nos. 1 - 4 NOx emissions for each previous calendar month and a total for the previous 12 consecutive calendar months.

(4) Monthly records of the hours of operation, fuel use, NOx emission calculations and supporting data, including emissions factors, for the CHP and Boiler Nos. 1 - 4 shall be kept on site for at least five (5) years and shall be made available to the Department upon request.

Part F – Notifications, Testing, and Monitoring Requirements

Notifications

(1) The Permittee shall notify the Department at least 30 days prior to any performance test, to afford the Department the opportunity to have an observer present. **[Reference: 40 CFR §60.8(d)]** The Permittee shall provide the Department with two copies of the test protocols at least 30 days prior to any scheduled performance tests.
[Reference: COMAR 26.11.01 .04 & 40 CFR § 60.4340 (b)(2) & .4400]

Testing

(2) The Permittee shall conduct the initial performance test within 60 days of achieving the maximum production rate at which the facility will operate but not later than 180 days after initial startup of the facility. **[Reference: 40 CFR §60.8(a)]**

(3) The Permittee must conduct an initial NOx performance test, as required in §60.8. **[Reference: 40 CFR §60.4400(a)]**

(4) **[Periodic Testing - Combustion Turbine]**
Note(*): Conditions below applies to the CT that the Permittee has opted to use the alternative method to annual testing for demonstrating continuous compliance ("continuous parameter monitoring") for NOX as specified in 40 CFR § 60.4340 (b)(2).

(1) After the initial compliance test required under 40 CFR § 60.8, the owner or operator shall ***conduct a performance stack test for NOX for each CT unit at least once every 5 years or at least once during the term of the operating permit(*).*** The Permittee shall conduct performance test for NOX in accordance with the methodologies specified in 40 CFR §§ 60.4340 & 60.4400.

(2) Performance tests shall be conducted and data reduced in accordance with the test methods and procedures contained in each applicable subpart unless the Administrator specifies or approves, in specific cases, an alternative reference method.

(3) The Permittee shall provide the Department at least 30 days prior notice of any performance test, except as specified under other subparts, to afford the Administrator the opportunity to have an observer present. If after 30 days notice for an initially scheduled performance test, there is a delay (due to operational problems, etc.) in conducting the scheduled performance test, the owner or operator of an affected facility shall notify the Administrator (the Department) as soon as possible of any delay in the original test date, either by providing at least 7 days prior notice of the rescheduled date of the performance test, or by arranging a rescheduled date with the Administrator (the Department) by mutual agreement.

{Conditions (5) and (6) below apply to Boilers #1 - 4, only}

(5) The Permittee shall conduct a stack test to determine the NOx emissions rate on at least two of the four boilers while burning natural gas and while burning No. 2 fuel oil at least once prior to the expiration of the Title V permit. The Permittee shall submit a test protocol to the Department for approval at least 30 days prior to the processed test date.
[Reference: COMAR 26.11.09.088(2)(a)(ii) and .08B(2)(e) and 26.11.17.01B(26)]

(6) If compliance is sought under COMAR 26.11.09.08E, the Permittee shall conduct a combustion analysis for each affected installation at least once each year and optimize combustion based on the analysis.

Monitoring

(7) The appropriate parameters must be continuously monitored and recorded during each run of the initial performance test required under 40 CFR §60.8, to establish acceptable operating values and ranges, for the purposes of the parameter monitoring plan as specified in 40 CFR §60.4355. The Permittee may supplement the performance test data with engineering analyses, design specifications, manufacturer's recommendations, and other relevant information to define the acceptable parametric ranges more precisely. **[Reference: 40 CFR §60.4355(a) and 40 CFR §60.4410]**

The Permittee shall establish and document a proper parametric monitoring plan in accordance with **§ 60.4355.** The plan shall include, but not be limited to: selection of indicators to be monitored, ranges of indicators, process used to obtain representative data, quality assurance, frequency of monitoring, and justification for the proposed elements of monitoring

Note: The Dry "SoLoNox" Low Emissions system employed by the Solar Turbine is integrated into the entire combustion system, including the fuel injectors, combustion air management, controls, and fuel delivery systems. The Permittee shall demonstrate compliance with CFR § 60.4340 for NOx emissions with continuous parametric monitoring as stipulated into the facility's Parametric Monitoring Plan (PMP) as stipulated in Condition F (9), below.

(8) The Permittee shall assure continuous compliance as stipulated under§ 60.4340 by operating the CT in accordance with the Parametric Monitoring Plan, which includes operation in Dry Low Emissions (DLE) mode which is indicated by monitoring pilot valve position, which will indicate that "Minimum Pilot Mode" is either "ON" or "OFF". NIST will continuously monitor and record pilot fuel valve position and report any incidence of "Minimum Pilot Mode"= OFF, that is not attributable to combustion turbine start-up or load change, to indicate potential NOx emissions exceedances.

(9) The Permittee may elect not to monitor the total sulfur content of the fuel combusted in the turbine, if the fuel is demonstrated not to exceed potential sulfur emissions of 26 ng SO_2/J (0.060 lb SO_2/MMBtu) heat input for units located in continental areas and 180 ng SO_2/J (0.42 lb SO_2/MMBtu) heat input for units located in noncontinental areas or a continental area that the Administrator determines does not have access to natural gas and that the removal of sulfur compounds would cause more environmental harm than benefit. You must use one of the following sources of information to make the required demonstration:

(a) The fuel quality characteristics in a current, valid purchase contract, tariff sheet or transportation contract for the fuel, specifying that the maximum total sulfur content for oil use in continental areas is 0.05 weight percent (500 ppmw) or less and 0.4 weight percent (4,000 ppmw) or less for noncontinental areas, ***the total sulfur content for natural gas use in continental areas is 20 grains of sulfur or less per 100 standard cubic feet*** and 140 grains of sulfur or less per 100 standard cubic feet for noncontinental areas, has potential sulfur emissions of less than less than 26 ng SO_2/J (0.060 lb SO_2/MMBtu) heat input for continental areas and has potential sulfur emissions of less than less than 180 ng SO_2/J (0.42 lb SO_2/MMBtu) heat input for noncontinental areas; or

(b) Representative fuel sampling data which show that the sulfur content of the fuel does not exceed 26 ng SO_2/J (0.060 lb SO_2/MMBtu) heat input for continental areas or 180 ng SO_2/J (0.42 lb SO_2/MMBtu) heat input for noncontinental areas. At a minimum, the amount of fuel sampling data specified in section 2.3.1.4 or 2.3.2.4 of appendix D to part 75 of this chapter is required.

[Reference: 40 CFR §60.4365(a)]

(10) The Permittee may develop custom schedules for determination of the total sulfur content of gaseous fuels, based on the design and operation of the affected facility and the characteristics of the fuel supply. Except as provided in 40 CFR §60.4370{c)(1) and (c){2), custom schedules shall be substantiated with data and shall be approved by the Administrator before they can be used to comply with the standard in §60.4330.
[Reference: 40 CFR §60.4370(c)]

(11) The Permittee must develop and keep on-site a parametric monitoring plan which explains the procedures used to document proper operation of the NOx emissions controls in accordance with 40 CFR §60.4355. **[Reference: 40 CFR §60.4355(a)] {Note: See conditions F. (7) & (8), above.}**

(12) If the Permittee chooses the option to monitor the sulfur content of the fuel, excess emissions and monitoring downtime are defined as follows:

(a) For samples of gaseous fuel and for oil samples obtained using daily sampling, flow proportional sampling, or sampling from the unit's storage tank, an excess emission occurs each unit operating hour included in the period beginning on the date and hour of any sample for which the sulfur content of the fuel being fired in the combustion turbine exceeds the applicable limit and ending on the date and hour that a subsequent sample is taken that demonstrates compliance with the sulfur limit.

(b) If the option to sample each delivery of fuel oil has been selected, you must immediately switch to one of the other oil sampling options (i.e., daily sampling, flow proportional sampling, or sampling from the unit's storage tank) if the sulfur content of a delivery exceeds 0.05 weight percent. You must continue to use one of the other sampling options until all of the oil from the delivery has been
combusted, and you must evaluate excess emissions according to paragraph (a) of this section. When all of the fuel from the delivery has been burned, you may resume using the as-delivered sampling option.

(c) A period of monitor downtime begins when a required sample is not taken by its due date. A period of monitor downtime also begins on the date and hour of a required sample, if invalid results are obtained. The period of monitor downtime ends on the date and hour of the next valid sample.

[Reference: 40 CFR §60.4385]

Part F - Record Keeping and Reporting Requirements

(1) The Permittee shall maintain for at least five (5) years, and shall make available to the Department upon request, records of the following information:

(a) Records of the results of the combustion analysis. **[Reference: COMAR 26.11.09.08E(3), G(1) and COMAR 26.11.03.06C]**

(b) Records of training program attendance for each operator. **[Reference: COMAR 26.11.09.08E(5), G(1)(e) and COMAR 26.11.03.06C]**

(c) Maintain annual fuel use records on site for not less than 3 years. **[Reference: COMAR 26.11.09.08K(3)]**

(d) Provide certification of the capacity factor of the equipment to the Department with the annual emissions certification. **[Reference: COMAR 26.11.09.08G(1)(a)]**

(e) Identification of each installation, the input capacity of each installation, and the type of fuel burned in each installation. **[Reference: COMAR 26.11.09.08E(1)]**

(f) Records and results of the initial and subsequent stack tests performed as required by 40 CFR Part 60, Subpart KKKK, COMAR 26.11.09.08, or NNSR Synthetic Minor Limits under Part E of this permit.
(g) The Permittee shall maintain a copy of the parametric monitoring plan in accordance with § 60.4355 and records of pilot fuel valve position and report any incidence of "Minimum Pilot Mode" = OFF to indicate potential NOx exceedances, in accordance with the plan.
[Authority: 40 CFR 60, Subpart KKKK & COMAR 26.11.03.06C]
(h) Records and results of the fuel sulfur content monitoring and/or fuel supplier certifications stating that the fuel oil is in compliance with the sulfur content limitation.
(i) Monthly records of the hours of operation and fuel usage of the CHP plant and Boilers Nos. 1 - 4 on a rolling 12-month basis.
(j) Records of NOx emission calculations and supporting data, including emissions factors, to show compliance with NNSR Synthetic Minor limits as defined in Part E.

(2) The Permittee shall report to the Department, no later than 45 days after the scheduled test, the results of the initial stack test performed.

(3) The Permittee shall submit semiannual reports of results of NOx emission calculations, including emissions factors and fuels use data as appropriate, to show compliance with NNSR Synthetic Minor limits as defined in Part E of this permit.

(4) The Permittee shall submit semiannual reports of excess emissions and monitor downtime in accordance with 40 CFR §60.7(c). Reports must be postmarked by the 30th day following the end of each 6-month period. Excess emissions must be reported for all periods of unit operation, including start up and shutdown, and malfunction. Excess emissions and monitor downtime are defined for this installation as follows:
(a) An excess emission is a 4-hour rolling unit operating hour average in which any monitored parameter does not achieve the target value or is outside the acceptable range defined in the parameter monitoring plan for the unit.
(b) A period of monitor downtime is a unit operating hour in which any of the required parametric data are either not recorded or are invalid.
[References: 40 CFR §60.4375(a), 40 CFR §60.4380(c), and 40 CFR §60.4395]
(5) The Permittee shall maintain at the facility for at least five (5) years, and shall make available to the Department upon request, records necessary to support annual certifications of emissions and demonstrations of compliance for toxic air pollutants. Such records shall include, if applicable, the following:
(a) mass emissions rates for each regulated pollutant, and the total mass emissions rate for all regulated pollutants for each registered source of emissions;
(b) accounts of the methods and assumptions used to quantify emissions;
(c) all operating data, including operating schedules and production data, that were used in determinations of emissions;
(d) amounts, types, and analyses of all fuels used;
(e) any records, the maintenance of which is required by this permit or by State or federal regulations, that pertain to the operation and maintenance of continuous emissions monitors, including:
(i) all emissions data generated by such monitors;
(ii) all monitor calibration data;
(iii) information regarding the percentage of time each monitor was available for service; and
(iv) information concerning any equipment malfunctions.
(f) information concerning operation, maintenance, and performance of air pollution control equipment and compliance monitoring equipment, including:

(i) identifications and descriptions of all such equipment;
(ii) operating schedules for each item of such equipment;
(iii) accounts of any significant maintenance performed;
(iv) accounts of all malfunctions and outages; and
(v) accounts of any episodes of reduced efficiency.
(g) limitations on source operation or any work practice standards that significantly affect emissions; and
(h) other relevant information as required by the Department.
(6) The Permittee shall submit to the Department by April 1 of each year a certification of emissions for the previous calendar year. The certifications shall be prepared in accordance with requirements, as applicable, adopted under COMAR 26.11.01 .05-1 and COMAR 26.11.02.19D.
(a) Certifications of emissions shall be submitted on forms obtained from the Department.
(b) A certification of emissions shall include mass emissions rates for each regulated pollutant, and the total mass emissions rate for all regulated pollutants for each of the facility's registered sources of emissions.
(c) The person responsible for a certification of emissions shall certify the submittal to the Department in the following manner:

"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 the qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

(7) The Permittee shall submit to the Department by April 1 of each year a written certification of the results of an analysis of emissions of toxic air pollutants from the Permittee's facility during the previous calendar year. Such analysis shall include either:
(a) a statement that previously submitted compliance demonstrations for emissions of toxic air pollutants remain valid; or
{b) a revised compliance demonstration, developed in accordance with requirements included under COMAR 26.11.15 & 16, that accounts for changes in operations, analytical methods, emissions determinations, or other factors that have invalidated previous demonstrations.
(8) The Permittee shall report, in accordance with requirements under COMAR 26.11.01.07, occurrences of excess emissions to the Compliance Program of the Air and Radiation Management Administration.

Frequency of submittal of the compliance demonstration: Semi-Annual

SECTION 3B-7. CITATION TO AND DESCRIPTION OF APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS

Emissions Unit No.: EU-13 (One Diesel fired emergency generator rated at 1,250 kW)

General Reference: MDE Permit to Construct No. 031-0323-9-1199

Briefly describe the Emission Standard/Limit or Operational Limitation:

Part A - General Provisions

(1) The following Air and Radiation Administration (ARA) permit to construct application and supplemental information are incorporated into this permit by reference:
(a) Application for EMERGENCY GENERATOR (Form MDE/ARMA/PER.042) for the installation of one (1) GENERAC Model IDLC1250 (Mitsubishi Tier II) emergency diesel generator set rated at 1881 BHP (1250-kWe), received on September 19, 2018; and
(b) Supplemental information: Engine/Generator manufacturer's specifications and facility plot plans received on September 19, 2018.
If there are any conflicts between representations in this permit and representations in the applications, the representations in the permit shall govern. Estimates of dimensions, volumes, emissions rates, operating rates, feed rates and hours of operation included in the applications do not constitute enforceable numeric limits beyond the extent necessary for compliance with applicable requirements.

(2) Upon presentation of credentials, representatives of the Maryland Department of the Environment ("MOE" or the "Department") and the Montgomery County Department of Environmental Protection shall at any reasonable time be granted, without delay and without prior notification, access to the Permittee's property and permitted to:
(a) inspect any construction authorized by this permit;
(b) sample, as necessary to determine compliance with requirements of this permit, any materials stored or processed on-site, any waste materials, and any discharge into the environment;
(c) inspect any monitoring equipment required by this permit;
(d) review and copy any records, including all documents required to be maintained by this permit, relevant to a determination of compliance with requirements of this permit; and
(e) obtain any photographic documentation or evidence necessary to determine compliance with the requirements of this permit.

(3) The Permittee shall notify the Department prior to increasing quantities and/or changing the types of any materials referenced in the application or limited by this permit. If the Department determines that such increases or changes constitute a modification, the Permittee shall obtain a permit-to-construct prior to implementing the modification.

(4) Nothing in this permit authorizes the violation of any rule or regulation or the creation of nuisance or air pollution.

(5) If any provision of this permit is declared by proper authority to be invalid, the remaining provisions of the permit shall remain in effect.

(6) The Permittee shall comply with all applicable requirements of the current Title V-Part 70 Operating Permit# 24-0321-0323.

(7) The addition of the 1881-Bhp (1250-kWe) GENERAC emergency diesel generator qualifies as an "Off-Permit" change to the facility's Part 70 operating permit. The Department recognizes the permit to construct application as written notification of the proposed change and should be included in the application for the next renewal of the Part 70 permit.

Part B - Applicable Regulations:

(1) This source is subject to all applicable federal air pollution control requirements including, but not limited to, the following:

(a) All applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements included in federal New Source Performance Standards (NSPS) under 40 CFR Part 60 Subpart 1111 for Stationary Compression Ignition Internal Combustion Engines,

(b) All applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements included in the National Emissions Standards for Hazardous Air Pollutants (NESHAP) promulgated under 40 CFR 63, Subparts A and ZZZZ for Reciprocating Internal Combustion Engines. The Permittee shall meet the requirements of 40 CFR, Part 63, Subpart ZZZZ by meeting the requirements of 40 CFR, Part 60, Subpart 1111 for the emergency generator. No further requirements apply to the emergency generator under 40 CFR, Part 63, Subpart **ZZZZ.** [Reference: 40 CFR §63.6590(c)(1)]

(2) This source is subject to all applicable federally enforceable State air pollution control requirements including, but not limited to, the following regulations:

(a) COMAR 26.11.01 .04A which provides that the Department may request sufficient testing to determine compliance with applicable air quality regulations.

(b) **[No text under (b) in permit to construct 031-0323-9-1199]**

(c) COMAR 26.11.01 .07C, which requires that the Permittee report to the Department occurrences of excess emissions.

(d) COMAR 26.11.02.048, which states that a permit to construct or an approval expires if, as determined by the Department:

(i) Substantial construction or modification is not commenced within 18 months after the date of issuance of the permit or approval, unless the Department specifies a longer period in the permit or approval;

(ii) Construction or modification is substantially discontinued for a period of 18 months after the construction or modification has commenced; or

(iii) The source for which the permit or approval was issued is not completed within a reasonable period after the date of issuance of the permit or approval.

(e) COMAR 26.11.02.09A, which requires that the Permittee obtain a permit-to-construct if an installation is to be modified in a manner that will cause changes in the quantity, nature, or characteristics of emissions from the installation as referenced in this permit.

(f) COMAR 26.11.02.19C & D, which require that the Permittee submit to the Department annual certifications of emissions, and that the Permittee maintain sufficient records to support the emissions information presented in the submittals.

(g) COMAR 26.11.09.05E(2) which prohibits emissions from internal combustion engines greater than 1 0 percent opacity while operating at idle.

(h) COMAR 26.11.09.05E(3) which prohibits emissions from internal combustion engines greater than 40 percent opacity while operating during non-idle conditions.

(i) COMAR 26.11.09.05E(4), *Exceptions to Visible Emissions Standards for I/C Engines:*

(i) COMAR 26.11.09.05E(2) does not apply for a period of 2 consecutive minutes after a period of idling of 15 consecutive minutes for the purpose of clearing the exhaust system.

(ii) COMAR 26.11.09.05E(3) does not apply to emissions resulting directly from cold engine start-up and warm-up for the following maximum periods:
(1) Engines that are idled continuously when not in service: 30 minutes,
(2) All other engines: 15 minutes.
(iii) COMAR 26.11.09.05E(2) & (3) does not apply while maintenance, repair, or testing is being performed by qualified mechanics.

j) COMAR 26.11.09.07A which provides that a person may not burn, sell, or make available for sale distillate oil with a sulfur content in excess of 0.3 percent by weight.
Note: Installations subject to 40 CFR Part 60, Subpart **1111** must comply with the fuel standards of §60.4207 which limit the maximum sulfur content of the fuel to 15 ppm beginning October 1, 2010.

(3) This source is subject to all applicable State-only enforceable air pollution control requirements including, but not limited to, the following regulations:
(a) COMAR 26.11.06.08 and 26.11.06.09, which generally prohibit the discharge of emissions beyond the property line in such a manner that a nuisance or air pollution is created.

Part C - Construction Conditions

(1) Except as otherwise provided in this part, the emergency diesel engine(s) shall be constructed in accordance with the specifications contained in the permit-to-construct application and be installed and configured in accordance with the manufacturer's specifications.

(2) This permit is valid only for the installation of an emergency diesel engine with a piston displacement less than 1 O liters per cylinder.

(3) The provisions of 40 CFR Part 60, Subpart 1111 apply if the emergency diesel engine uses a diesel engine manufactured after April 1, 2006 [Ref: §60.4200].

(4) For 2007 model year and later model year NSPS emergency diesel engines, the Permittee must comply by purchasing an engine certified to the emission standards specified in §60.4205(b) for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications. [Ref: §60.4211 (c)]

Permit Shield Request: Yes

Compliance Demonstration:

Check appropriate reports required to be submitted:

- ☐ Quarterly Monitoring Report: _____
- ☐ Annual Compliance Certification: X
- ☐ Semi-Annual Monitoring Report: X

Methods used to demonstrate compliance:

Part D - Operating Conditions

(1) Except as otherwise provided in this part, the emergency diesel generator shall be operated in accordance with specifications included in the application and any operating procedures recommended by equipment vendors unless the Permittee obtains from the Department written authorization for alternative operating procedures.

(2) The Permittee must operate and maintain an NSPS emergency diesel generator and control devices according to the manufacturer's written instructions or according to procedures developed by the owner or operator that are approved by the manufacturer. Additionally, the Permittee may change only those settings that are permitted by the manufacturer. The Permittee must also meet the requirements of 40 CFR part 89, part 1039 for model year 2011 or later, part 94 and/or part 1068, as they may apply to an owner or operator **[Ref: §60.4211 (a)].**

(3) Beginning October 1, 2010, owners and operators (the Permittee) of a stationary source CI ICE subject to this subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must purchase diesel fuel that meets the requirements of 40 CFR 80.51 0(b) for nonroad diesel fuel. **[Ref: §60.4207(b)].**

(4) In accordance with 40 CFR §60.4211 (f), as owner/operator of an emergency stationary ICE, you must operate the emergency stationary ICE according to the requirements in paragraphs (f)(1) through (3) of this section. In order for the engine to be considered an emergency stationary ICE under this subpart, any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as described in paragraphs (f)(1) through (3) of this section, is prohibited. If you do not operate the engine according to the requirements in paragraphs (f)(1) through (3) of this section, the engine will not be considered an emergency engine under this subpart and must meet all requirements for non-emergency engines.
(f)(1) There is no time limit on the use of emergency stationary ICE in emergency situations.
(f)(2)(i) Emergency stationary ICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE beyond 100 hours per calendar year.
(*)**Note:** Effective May 2, 2016, emergency generators are no longer allowed to participate for emergency demand response operation unless they meet the requirements of a nonemergency generator of the same model year. This engine does not meet the standards for a non-emergency generator, therefore, operation for emergency demand response or during periods of voltage deviation are not permitted.

Part E – Record Keeping and Reporting Requirements

(1) The Permittee shall maintain the following records on site for at least five (5) years and they shall be made available to the Department upon request:
(a) The operating hours for each generator,
(b) Monthly records of fuel use,

(c) Reason for generator operation (i.e., maintenance or operational testing, power outage, etc.), and
(d) A copy of the generator's and operations and maintenance manual, and records of maintenance and repairs performed.

(2) The Permittee shall maintain on site for the life of the source the following records for the emergency diesel engine(s):
(a) Engine information including make, model, engine family, serial number, model year (Manufacture date), maximum engine power, and engine displacement;
(b) Copies of all notifications submitted to comply with this subpart and all documentation supporting any notification;
(c) Maintenance conducted on the engine; and
(d) The certifications of compliance or manufacturer engine test data required by 40 CFR §60.4211 and §60.4214(b).

(3) For any NSPS emergency diesel engine the Permittee shall for each fuel delivery obtain from the fuel supplier a fuel supplier certification consisting of the name of the oil supplier, the date of delivery, the amount of fuel delivered, and a statement from the fuel supplier that the diesel fuel oil complies with the specifications of 40 CFR §80.510. The Permittee shall maintain the required records on site for at least five (5) years.

(4) All other records required under this permit shall be maintained on site by the Permittee for at least five (5) years and shall be made available to the Department upon request.

Frequency of submittal of the compliance demonstration: Semi-Annual

SECTION 3B-8. CITATION TO AND DESCRIPTION OF APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS

Emissions Unit No.: EU-14 (One natural gas fired emergency generator rated at 500 kW)
EU-15 (One natural gas fired emergency generator rated at 500 kW)

General Reference: MDE Permits to Construct No. 031-0323-9-1213 & 031-0323-9-1214

Briefly describe the Emission Standard/Limit or Operational Limitation:

Part A - General Provisions

(1) The following Air and Radiation Administration (ARA) permit to construct application and supplemental information are incorporated into this permit by reference:
(a) Application for emergency generator (Form MDE/ARMA/PER.042) for the installation of two-(2) GENERAC 670 HP (500-kW) SI NG fired stand-by emergency generators (SI ICEs), received on July 10, 2019.
(b) Vendor literature for the natural gas fired engine received with the application.
If there are any conflicts between representations in this permit and representations in the applications, the representations in the permit shall govern. Estimates of dimensions, volumes, emissions rates, operating rates, feed rates and hours of operation included in the applications do not constitute enforceable numeric limits beyond the extent necessary for compliance with applicable requirements.

(2) Upon presentation of credentials, representatives of the Maryland Department of the Environment ("MDE" or the "Department") and the Montgomery County Department of Environmental Protection shall at any reasonable time be granted, without delay and without prior notification, access to the Permittee's property and permitted to:
(a) inspect any construction authorized by this permit;
(b) sample, as necessary to determine compliance with requirements of this permit, any materials stored or processed on-site, any waste materials, and any discharge into the environment;
(c) inspect any monitoring equipment required by this permit;
(d) review and copy any records, including all documents required to be maintained by this permit, relevant to a determination of compliance with requirements of this permit; and
(e) obtain any photographic documentation or evidence necessary to determine compliance with the requirements of this permit.

(3) The Permittee shall notify the Department prior to increasing quantities and/or changing the types of any materials referenced in the application or limited by this permit. If the Department determines that such increases or changes constitute a modification, the Permittee shall obtain a permit-to-construct prior to implementing the modification.

(4) Nothing in this permit authorizes the violation of any rule or regulation or the creation of nuisance or air pollution.

(5) If any provision of this permit is declared by proper authority to be invalid, the remaining provisions of the permit shall remain in effect.

(6) The Permittee shall comply with all applicable requirements of the current Title V-Part 70 Operating Permit# 24-0321-0323.

(7) The addition of the two-(2) GENERAC 670 HP (500-kW) SI NG fired stand-by emergency generators qualifies as an "Off-Permit" change to the facility's Part 70 operating permit. The Department recognizes the permit to construct application as written notification of the proposed change and should be included in the application for the next renewal of the Part 70 permit.

Part B – Applicable Regulations

(1) This source is subject to all applicable federal air pollution control requirements including, but not limited to, the following:
(a) All applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements included in federal New Source Performance Standards (NSPS) under 40 CFR Part 60 Subpart JJJJ for Stationary Spark Ignition Internal Combustion Engines, including the following:
§ **60.4230 Am I subject to this subpart?**
(a) The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary spark ignition (SI) internal combustion engines (ICE) as specified in paragraphs (a)(1) through (6) of this section. For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator.
(ii) On or after January 1, 2009, for emergency engines.
Emission Standards for Owners and Operators
§ **60.4233 What emission standards must I meet if I am an owner or operator of a stationary SI internal combustion engine?**
"(e) Owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 75 ~ (100 HP) (except gasoline and rich burn engines that use LPG) must comply with the emission standards in Table 1 to this subpart for their stationary SI ICE."

Emission Standards for Owners and Operators
Table 1 to Subpart JJJJ of Part 60 - NOx, CO, and VOC Emission Standards for ... , and Stationary Emergency Engines >25 HP

Engine type and fuel	Maximum engine power	Manufacture date	Emission standards[a]					
			g/HP-hr			ppmvd at 15% O_2		
			NOx	CO	VOC[d]	NOx	CO	VOC[d]
Emergency	HP≥130	On or after 1/1/2009	2.0	4.0	1.0	160	540	86

a Owners and operators of stationary non-certified SI engines may choose to comply with the emission standards in units of either g/HP-hr or ppmvd at 15 percent O2.
b Owners and operators of new or reconstructed non-emergency lean burn SI stationary engines with a site rating of greater than or equal to 250 brake HP located at a major source that are meeting the requirements of 40 CFR part 63, subpart ZZZZ, Table 2a do not have to comply with the CO emission standards of Table 1 of this subpart.
d For purposes of this subpart, when calculating emissions of volatile organic compounds, emissions of formaldehyde should not be included.
[76 FR 37975, June 28, 2011}

§60.4234 How long must my engines meet the emission standards if I am a manufacturer of stationary SI internal combustion engines?

Owners and operators of stationary SI ICE must operate and maintain stationary SI ICE that achieve the emission standards as required in §60.4233 over the entire life of the engine.

Note: The Permittee shall comply with the emissions standard by installing engines that are certified to meet the emission standards.

(b) All applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements included in the National Emissions Standards for Hazardous Air Pollutants (NESHAP) promulgated under 40 CFR 63, Subparts A and ZZZZ for Reciprocating Internal
Combustion Engines.

Note: The Permittee shall meet the requirements of 40 CFR, Part 63, Subpart ZZZZ by meeting the requirements of 40 CFR, Part 60, Subpart JJJJ. No further requirements apply to the emergency generators under 40 CFR, Part 63, Subpart ZZZZ. [Reference: 40 CFR §63.6590(c)(1)]

(2) This source is subject to all applicable federally enforceable state air pollution control requirements including, but not limited to, the following regulations:

(a) COMAR 26.11.01 .07C, which requires that the Permittee report to the Department occurrences of excess emissions.

(b) COMAR 26.11.02.09A, which requires that the Permittee obtain a permit-to-construct if an installation is to be modified in a manner that will cause changes in the quantity, nature, or characteristics of emissions from the installation as referenced in this permit.

(c) COMAR 26.11.02.04B, which states that a permit to construct or an approval expires if, as determined by the Department:

(i) Substantial construction or modification is not commenced within 18 months after the date of issuance of the permit or approval, unless the Department specifies a longer period in the permit or
approval;

(ii) Construction or modification is substantially discontinued for a period of 18 months after the construction or modification has commenced; or

(iii) The source for which the permit or approval was issued is not completed within a reasonable period after the date of issuance of the permit or approval.

(d) COMAR 26.11.02.19C & D, which require that the Permittee submit to the Department annual certifications of emissions, and that the Permittee maintain sufficient records to support the emissions information presented in the submittals.

(e) COMAR 26.11.09.05E(2) which prohibits emissions from internal combustion engines greater than 1 O percent opacity while operating at idle.

(f) COMAR 26.11.09.05E(3) which prohibits emissions from internal combustion engines greater than 40 percent opacity while operating during non-idle conditions.

(g) COMAR 26.11.09.05E(4), *Exceptions to Visible Emissions Standards for /IC Engines:*

(i) COMAR 26.11.09.05E(2) does not apply for a period of 2 consecutive minutes after a period of idling of 15 consecutive minutes for the purpose of clearing the exhaust system.

(ii) COMAR 26.11.09.05E(3) does not apply to emissions resulting directly from cold engine start-up and warm-up for the following maximum periods:

(1) Engines that are idled continuously when not in service: 30 minutes,

(2) All other engines: 15 minutes.

(iii) COMAR 26.11.09.05E(2) & (3) does not apply while maintenance, repair, or testing is being performed by qualified mechanics.

(h) COMAR 26.11 .09.08G(1) *-Requirements for Fuel-Burning Equipment with a Capacity Factor of 15 Percent or Less* - a person who owns or operates fuel-burning equipment with a capacity factor (as defined in 40 CFR Part 72.2) of 15 percent or less shall:

(i) Require each operator of an installation, except combustion turbines, to attend operator training programs at least once every 3 years, on combustion optimization that are sponsored by the
Department, the EPA, or equipment vendors; and

(ii) Maintain a record of training program attendance for each operator at the site and make these records available to the Department upon request.

(i) COMAR 26.11.09.08B(5) states that; (a) for the purpose of COMAR 26.11.09.08, the equipment operator to be trained may be the person who maintains the equipment and makes the necessary adjustments for efficient operation; and (b) that the operator training course sponsored by the
Department shall include an in-house training course that is approved by the Department.

(j) COMAR 26.11.09.08K(3) which requires a person subject to this regulation to maintain annual fuel use records on site for not less than 3 years, and make these records available to the Department upon request.

(3) This source is subject to all applicable State-only enforceable air pollution control requirements including, but not limited to, the following regulations:
COMAR 26.11.06.08 and 26.11.06.09, which generally prohibit the discharge of emissions beyond the property line in such a manner that a nuisance or air pollution is created.

Part C – Construction Conditions

(1) Except as otherwise provided in this part, the two-(2) GENERAC 670 HP (500-kW) SI NG fired stand-by emergency generators (SI ICEs) shall be constructed in accordance with the specifications contained in the permit-to-construct application and be installed and configured in accordance with the manufacturer's specifications.

(2) This permit is valid only for the installation of a natural gas generator with a piston displacement less than 10 liters per cylinder.

(3) An emergency natural gas generator or natural gas engine subject to the requirements of 40 CFR 60, Subpart JJJJ ("NSPS emergency natural gas generator" or "NSPS emergency natural gas engine") shall be equipped with a non-resettable hour meter if the engine does not meet the standards applicable to non-emergency engines [Ref: §60.4237(a)].

(4) The Permittee must comply by purchasing an engine certified to the applicable emission standards specified in §60.4233. The engine must be installed and configured according to the manufacturer's specifications. [Ref: §60.4243(a)]

Permit Shield Request: Yes

Compliance Demonstration:

Check appropriate reports required to be submitted:

- ☐ Quarterly Monitoring Report: _____
- ☐ Annual Compliance Certification: X

 Semi-Annual Monitoring Report: X

Methods used to demonstrate compliance:

Part D - Operating Conditions

(1) Except as otherwise provided in this part, the two-(2) GENERAC 670 HP (500-kW) SI NG fired stand-by emergency generators (SI ICEs) shall be operated in accordance with specifications included in the application and any operating procedures recommended by equipment vendors unless the Permittee obtains from the Department written authorization for alternative operating procedures.

(2) The Permittee as the owner and operator of a stationary SI internal combustion engine (SI ICE) that is manufactured after July 1, 2008 and must comply with the emission standards specified in §60.4233(a) through (c), you must comply by purchasing an engine certified to the emission standards in §60.4231 (a) through (c), as applicable, for the same engine class and maximum engine power. In addition, you must meet one of the following requirements:

(a) If you operate and maintain the certified stationary SI internal combustion engine and control device according to the manufacturer's emission related written instructions, you must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. You must also meet the requirements as specified in 40 CFR part 1068, subparts A through D, as they apply to you. If you adjust engine settings according to and consistent with the manufacturer's
instructions, your stationary SI internal combustion engine will not be considered out of compliance. **[Ref: §60.4243(a)(1**)]

(b) If you do not operate and maintain the certified stationary SI internal combustion engine (SI ICE) and control device according to the manufacturer's emission-related written instructions, your engine will be considered a non-certified engine, and you must demonstrate compliance as follows: you must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must *conduct an initial performance test within 1 year of engine startup* and conduct *subsequent performance testing eve,y 8,760 hours or 3 years,* whichever comes first, thereafter to demonstrate compliance. **[Ref: §60.4243(a)(2)].**

(c) The Permittee shall keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. **[Ref: 40 CFR Subpart JJJJ §60.4243 (b)(2)(il)]**

(3) The two-(2) GENERAC 670 HP (500-kW) SI NG fired stand-by emergency generators (SI ICEs) shall be operated for emergency use, operational maintenance checks and readiness testing only.

(4) In accordance with 40 CFR §60.4243(d), non-emergency use of each NSPS emergency natural gas generator for the purpose of maintenance checks and readiness testing is limited to 100 hours per year or less unless prior approval is received from the Department.

Part E - Record Keeping and Reporting Requirements

Record Keeping:
(1) The Permittee shall maintain a log for the engine indicating the amounts of fuel combusted, the hours of operation, and reason for engine operation (i.e., maintenance or operational testing, emergency power outage, etc.). **[Ref.: COMAR 26.11.03.06C)**

(2) The Permittee shall maintain on site and make available to the Department upon request the following records:

(a) All notifications submitted to comply with 40 CFR 60, Subpart JJJJ and all documentation supporting any notification.

(b) Maintenance plan and records of conducted maintenance.

(c) Documentation that the engine meets the emission standards (manufacturer's certification).

Reporting:

(3) The Permittee shall submit an initial notification as required in §60.7(a)(1). The notification must include the information:

(a) Name and address of the owner or operator;

(b) The address of the affected source;

(c) Engine information including make, model, engine family, serial number, model year, maximum engine power, and engine displacement;

(d) Emission control equipment; and

(e) Fuel used.

(4) All records required under this permit shall be maintained on site by the Permittee for at least five (5) years and shall be made available to the Department upon request.

(5) All notifications, including the initial, required under 40 CFR 60 shall be submitted to both of the following:

The Administrator
Compliance Program
Maryland Department of the Environment
Air and Radiation Administration
1800 Washington Boulevard, STE 715
Baltimore MD 21230

and

Director, Air. Protection Division
Mail Code 3AP00
1650 Arch Street
Philadelphia, PA 19103-2029

Frequency of submittal of the compliance demonstration: Semi-Annual

SECTION 3C. OBSOLETE, EXTRANEOUS, OR INSIGNIFICANT PERMIT CONDITIONS

List permit to construct conditions which should be considered to be obsolete, extraneous, or environmentally insignificant.

Emissions Unit No.: N/A **Permit to Construct No.** _____

Emissions Point No.	Date Permit Issued	Condition No.	Brief Description of Condition and Reason for Exclusion
None			

SECTION 3D. ALTERNATE OPERATING SCENARIOS

Emissions Unit No.: N/A

Briefly describe any alternate operating scenarios. Assign a number to each scenario for identification purposes.

None

SECTION 3E. CITATION TO AND DESCRIPTION OF APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS FOR AN ALTERNATE OPERATING SCENARIO

Scenario No.: N/A

Emissions Unit No.: N/A **General Reference:** _____

Briefly describe any applicable Emissions Standard/Limits/Operational Limitations:

_____

_____

_____

_____

_____

Compliance Demonstration

Methods used to demonstrate compliance:

Monitoring: Reference _____ Describe: _____

_____

_____

_____

Testing: Reference _____ Describe: _____

_____

_____

_____

Record Keeping: Reference _____ Describe: _____

_____

_____

_____

Reporting: Reference _____ Describe: _____

_____

_____

_____

Frequency of submittal of the compliance demonstration: _____

SECTION 4-1. CONTROL EQUIPMENT

1. Associated Emissions Units No.: EUs 1, 2, 3, 4, 5, and 6	2. Emissions Point No.:
3. Type and Description of Control Equipment:	
EUs 1, 2, 3, 4, 5, and 6 are natural gas/No. 2 fuel oil fired boilers that are equipped with low NOx burners.	

4. Pollutants Controlled:	Control Efficiency:
NO_x	

5. Capture Efficiency:

SECTION 4-2. CONTROL EQUIPMENT

1. Associated Emissions Units No. : EU 7	2. Emissions Point No.:

3. Type and Description of Control Equipment:
EU-7 is the Large Fire Research Facility at NIST. It is equipped with the following control equipment:
A total of four preheaters, four caustic scrubbers and four baghouse filters.

4. Pollutants Controlled:	Control Efficiency:
PM_{10}	98%
VOCs	
Acid Gasses	

5. Capture Efficiency:

SECTION 4-3. CONTROL EQUIPMENT

1. Associated Emissions Units No.: EU-12	2. Emissions Point No.:
3. Type and Description of Control Equipment:	
EU 12 is a natural gas fired heat recovery steam generator (HRSG) rated at 50.78 MMBtu/hr equipped	
with low NOx duct burners.	

4. Pollutants Controlled:	Control Efficiency:
NO_x	

5. Capture Efficiency:

SECTION 5. SUMMARY SHEET OF POTENTIAL EMISSIONS

List all applicable pollutants in tons per year (tpy) pertaining to this facility. The Emissions Unit No. should be consistent with numbers used in Section 3. Attach a copy of all calculations.

Pollutant	NO_x	SO_x	VOC	PM_{10}	CO	HAPS
CAS Number						
Emissions Unit # 1, 2, 3, and 4 Boilers	2.96	0.04	0.31	0.12	4.72	0.46
Emissions Unit # 5 and 6 Boilers	1.75	0.02	0.19	0.07	2.94	0.29
Emissions Unit #7 Large Fire Lab	0.18	0.00	0.01	0.00	0.15	0.01
Emissions Unit #8 6,000 Gallon Gasoline Tank	-	-	0.04	-		-
Emissions Unit #9 and 10 1,000 kW and 500 kW Emergency Generators	0.2910	0.0000	0.0000	0.0000	0.0773	0.0001
Emissions Unit #11 Natural Gas Fired Combustion Turbine Rated at 87.97 MM Btu/hr	0.36	1.17	0.72	6.17	19.20	0.35
Emissions Unit #12 Natural Gas Fired Heat Recovery Steam Generator Rated at 50.78 MMBtu/hr	21.39*	0.42	2.44	1.22	9.78	0.93
Emissions Unit #13 1,250 kW Emergency Generator	0.1266	0.0001	0.0032	0.0017	0.0136	0.0001
Emissions Unit #14 and 15 500 kW Natural Gas Emergency Generators	0.0028	0.0001	0.0082	0.0045	0.0020	0.0007
Fugitive Emissions						
Total	27.06	1.64	3.69	7.59	36.88	2.06

*Note: EU-12 NOx emissions presented as EU-11(NG Fired Combustion Turbine) running concurrently with the HRSG. HRSG cannot operate without the CT. NOx emission factor applies to EUs 11 and 12 running concurrently.

SECTION 6. EXPLANATION OF PROPOSED EXEMPTIONS FROM OTHERWISE APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS

Describe and cite the applicable requirements to be exempted. Complete this Section only if the facility is claiming exemptions from or the non-applicability of any federally enforceable requirements.

1. Applicable Requirement: None
2. Brief Description: N/A
3. Reasons for Proposed Exemption or Justification of Non-applicability:

SECTION 7. COMPLIANCE SCHEDULE FOR NONCOMPLYING EMISSIONS UNITS

1. Emissions Unit #	Anticipated Compliance Date
N/A	N/A
Applicable Federally Enforceable Requirement being Violated: No Emissions Units are out of compliance	

2. Description of Plan to Achieve Compliance:

Certified Progress Reports for sources in noncompliance shall be submitted at least quarterly to the Department.

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STATE-ONLY ENFORCEABLE REQUIREMENTS

Facility Information:

Name of Facility: National Institute of Standards and Technology	**County:** Montgomery
Premises Number: 24-031-00323	
Street Address: 100 Bureau Drive, Mail Stop 1730, Gaithersburg, Maryland 20899	
24-hour Emergency Telephone Number for Air Pollution Matters: 301-975-2222	
Type of Equipment (List Significant Units): Central Heating Plant - Four 55 MMBtu/hr Boilers (EUs 1-4)	
Central Heating Plant - Two 99.8 MMBtu/hr Boilers (EUs 5-6)	
Fire Research Facility (EU 7)	
6,000 Gallon Gasoline Storage Tank (EU 8)	
1,000 kW and 500 kW Emergency Generators (EUs 9-10)	
Natural Gas Fired Combustion Turbine rated at 87.97 MM Btu/hr (EU 11)	
Natural Gas Fired Heat Recovery Steam Generator (HRSG) rated at 50.78 MMBtu/hr, equipped with low NOx duct burners (EU 12)	
1,250 kW Diesel Emergency Generator (EU-13)	
2 – 500 kW Natural Gas Emergency Generators (EUs 14-15)	

CITATION TO AND DESCRIPTION OF APPLICABLE STATE-ONLY ENFORCEABLE REQUIREMENTS

Registration No.: N/A

Emissions Unit No.: Facility -Wide **General Reference:** COMAR 26.11.15

Briefly describe the requirement and the emissions limit (if applicable):

COMAR 26.11.06.08 and COMAR 26.11.06.09, general prohibitions on emissions beyond the facility property line in such a manner that a nuisance or air pollution is created.

COMAR 26.11.15.05 – requirement to install T-BACT on sources discharging a toxic air pollutant to the atmosphere.

COMAR 26.11.15.06 – requirement to comply with the allowable emissions of toxic air pollutants.

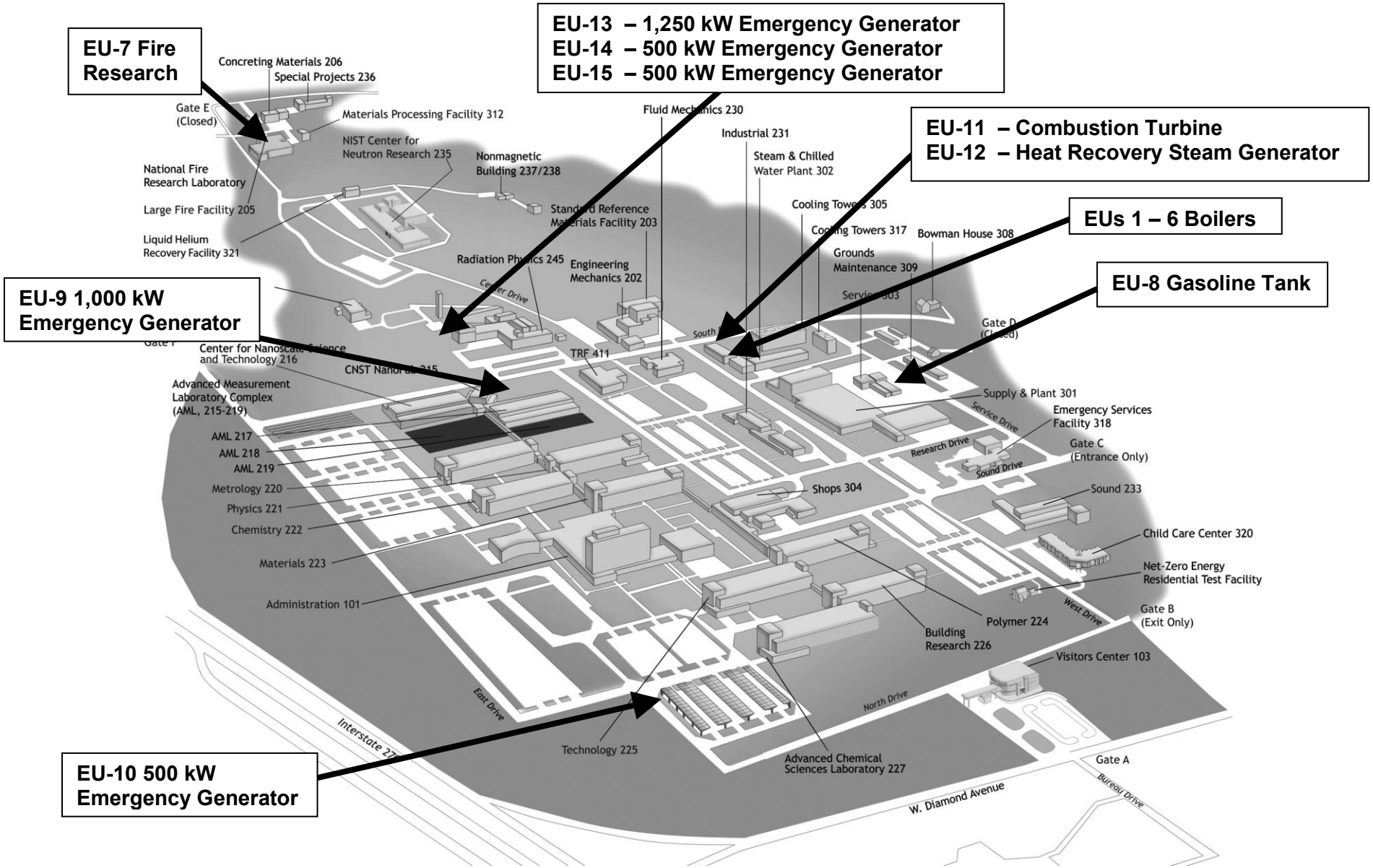
Methods used to demonstrate compliance:

Permittee shall submit to the Department, by April 1 of each year during the term of this permit, a written certification of the results of an analysis of emissions of toxic pollutants from the Permittee's facility during the previous calendar year.

Attachment 1

Site Map with Emission Unit Locations

Checklist of Insignificant Activities



NIST Gaithersburg Site Map and Air Emissions Units – 2022

MARYLAND DEPARTMENT OF THE ENVIRONMENT
AIR AND RADIATION ADMINISTRATION
RENEWAL TITLE V APPLICATION INSIGNIFICANT ACTIVITIES LIST

III. Check-off List of Emissions Units and Activities Exempt from the Part 70 Permit Application

Insignificant Activities

Place a check mark beside each type of emissions unit or activity that is located at the facility. Where noted, please indicate the number of that type of emissions unit or activity located at the facility.

(1) No. 0 Fuel burning equipment using gaseous fuels or no. 1 or no. 2 fuel oil, and having a heat input less than 1,000,000 Btu (1.06 gigajoules) per hour;

(2) No. 0 Fuel-burning equipment using solid fuel and having a heat input of less than 350,000 Btu (0.37 gigajoule) per hour;

(3) No. 10 Stationary internal combustion engines with less than 500 brake horsepower (373 kilowatts) of power output

(4) X Space heaters utilizing direct heat transfer and used solely for comfort heat;

(5) 3 Water cooling towers and water cooling ponds unless used for evaporative cooling of water from barometric jets or barometric condensers, or used in conjunction with an installation requiring a permit to operate;

(6) No. 0 Unheated VOC dispensing containers or unheated VOC rinsing containers of 60 gallons (227 liters) capacity or less;

(7) X Commercial bakery ovens with a rated heat input capacity of less than 2,000,000 Btu per hour;

(8) X Kilns used for firing ceramic ware, heated exclusively by natural gas, liquefied petroleum gas, electricity, or any combination of these;

(9) ____ Confection cookers where the products are edible and intended for human consumption;

(10) X Die casting machines;

(11) X Photographic process equipment used to reproduce an image upon sensitized material through the use of radiant energy;

(12) X Equipment for drilling, carving, cutting, routing, turning, sawing, planing, spindle sanding, or disc sanding of wood or wood products;

(13) _X_ Brazing, soldering, or welding equipment, and cutting torches related to manufacturing and construction activities that emit HAP metals and not directly related to plant maintenance, upkeep and repair or maintenance shop activities;

(14) _X_ Equipment for washing or drying products fabricated from metal or glass, provided that no VOC is used in the process and that no oil or solid fuel is burned;

(15) _X_ Containers, reservoirs, or tanks used exclusively for electrolytic plating work, or electrolytic polishing, or electrolytic stripping of brass, bronze, cadmium, copper, iron, lead, nickel, tin, zinc, and precious metals;

(16) Containers, reservoirs, or tanks used exclusively for:

(a) ___ Dipping operations for applying coatings of natural or synthetic resins that contain no VOC;

(b) ___ Dipping operations for coating objects with oils, waxes, or greases, and where no VOC is used;

(c) _X_ Storage of butane, propane, or liquefied petroleum, or natural gas;

(d) No. _22_ Storage of lubricating oils:

(e) No. _0_ Unheated storage of VOC with an initial boiling point of 300 °F (

(f) No. _19_ Storage of Numbers 1, 2, 4, 5, and 6 fuel oil and aviation jet engine fuel,

(g) No. _0_ Storage of motor vehicle gasoline and having individual tank capacities of 2,000 gallons (7.6 cubic meters) or less;

(h) No. _1_ The storage of VOC normally used as solvents, diluents, thinners, inks, colorants, paints, lacquers, enamels, varnishes, liquid resins, or other surface coatings and having individual capacities of 2,000 gallons (7.6 cubic meters) or less;

(17) _X_ Gaseous fuel-fired or electrically heated furnaces for heat treating glass or metals, the use of which does not involve molten materials;

(18) Crucible furnaces, pot furnaces, or induction furnaces, with individual capacities of 1,000 pounds (454 kilograms) or less each, in which no sweating or distilling is conducted, or any fluxing is conducted using chloride, fluoride,

or ammonium compounds, and from which only the following metals are poured or in which only the following metals are held in a molten state:

(a) ___ Aluminum or any alloy containing over 50 percent aluminum, if no gaseous chloride compounds, chlorine, aluminum chloride, or aluminum fluoride is used;

(b) ___ Magnesium or any alloy containing over 50 percent magnesium;

(c) ___ Lead or any alloy containing over 50 percent lead;

(d) ___ Tin or any alloy containing over 50 percent tin;

(e) ___ Zinc or any alloy containing over 50 percent zinc;

(f) ___ Copper;

(g) ____ Precious metals;

(19) _X_ Charbroilers and pit barbecues as defined in COMAR 26.11.18.01 with a total cooking area of 5 square feet (0.46 square meter) or less;

(20) _X_ First aid and emergency medical care provided at the facility, including related activities such as sterilization and medicine preparation used in support of a manufacturing or production process;

(21) ____ Certain recreational equipment and activities, such as fireplaces, barbecue pits and cookers, fireworks displays, and kerosene fuel use;

(22) ___ Potable water treatment equipment, not including air stripping equipment;

(23) _X_ Firing and testing of military weapons and explosives;

(24) ___ Emissions resulting from the use of explosives for blasting at quarrying operations and from the required disposal of boxes used to ship the explosive;

(25) _X_ Comfort air conditioning subject to requirements of Title VI of the Clean Air Act;

(26) ____Grain, metal, or mineral extrusion presses;

(27) ____Breweries with an annual beer production less than 60,000 barrels;

(28) ___ Natural draft hoods or natural draft ventilators that exhaust air pollutants into the ambient air from manufacturing/industrial or commercial processes;

(29) _X_ Laboratory fume hoods and vents;

(30) No.___ Sheet-fed letter or lithographic printing press(es) with a cylinder width of less than 18 inches;

For the following, attach additional pages as necessary:

(31) any other emissions unit, not listed in this section, with a potential to emit less than the "de minimus" levels listed in COMAR 26.11.02.10X (list and describe units):

No. _4_ Nano-fabrication laboratory wet benches (HCL and HF)

No. ___ _____

No. ___ _____

No. ___ _____

No. ___ _____

(32) any other emissions unit at the facility which is not subject to an applicable requirement of the Clean Air Act (list and describe):

No. ___ _____

No. ___ _____

No. ___ _____

Attachment 2

2021 Emissions Certification

UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899-

March 16, 2022

Maryland Department of the Environment
Air and Radiation Management Administration
Attn: Mr. Daniel Davis, Compliance Program
1800 Washington Boulevard, Suite 715
Baltimore, MD. 21230-1720

Dear Mr. Davis,

Enclosed, please find the Annual Emissions Certification Report for the National Institute of Standards and Technology (NIST) Gaithersburg, Maryland Site, in accordance with Section III of our Part 70 Operating Permit (No. 24-031-0323). This report is for the period of January 1, 2021 through December 31, 2021.

If you have any questions, please contact me at 240-654-2896 or via email at mike.blackmon@nist.gov.

Sincerely,

Michael Blackmon, PE, CHMM
Environmental Management Group Leader

Enclosures

cc: Air Enforcement Branch (3AP12), U.S.E.P.A., Region III (via email to R3_APD_Permits@epa.gov)
Mr. Charles Bowers, Chief, Gaithersburg Facility Maintenance Division
Ms. Frances Hill, Chief, Facilities Services Division
Mr. Philip Kaiser, Steam and Chilled Water Generation Plant Acting Group Leader
Ms. Natalie Starfish, Operations Engineering Group Leader
Dr. Matthew Bundy, National Fire Research Laboratory Group Leader

NIST

2021 Annual Emissions Certification
Title V Part 70 Operating Permit

(Permit No. 24-031-0323)

National Institute of Standards and Technology

Gaithersburg, MD

March 2022

MARYLAND DEPARTMENT OF THE ENVIRONMENT
1800 Washington Boulevard, Suite 715 • Baltimore Maryland 21230-1720
410-537-3000 • 1-800-633-6101 • http://www.mde.state.md.us
Air and Radiation Management Administration
Air Quality Compliance Program
410-537-3220

FORM 1:

GENERAL FACILITY INFORMATION
EMISSIONS CERTIFICATION REPORT

Calendar Year: 2021

A. FACILITY IDENTIFICATION	**Do Not Write in This Space**
Facility Name National Institute of Standards & Technology	Date Received Regional
Address 100 Bureau Drive, MS 1730	Date Received State
City Gaithersburg County Montgomery Zip Code 20899-1730	AIRS Code
B. Briefly describe the major function of the facility	FINDS Code
NIST, an agency of the U.S. Department of Commerce, is a physical science	SIC Code
research facility with a mission of advancing measurement science, standards	Facility Number:
and technology. The primary air emission units at NIST are dual fuel boilers,	
a fire research laboratory, em. generators, and a combined heat and power plant.	TEMPO ID:
C. SEASONAL PRODUCTION (%, if applicable)	Reviewed by:
Winter *(Dec.-Feb.)* _____ Spring *(Mar – May)* _____ Summer *(Jun – Aug)* _____ Fall *(Sept – Nov)* _____	Name Date

D. Explain any increases or decreases in emissions from the previous calendar year for each registration at this facility.

Emissions increased in 2021. The increase is primarily due to the combined heat and power plant operating a full 12 months and generally colder weather than 2020.

E. CONTROL DEVICE INFORMATION (for NOx and VOC sources only)

Control Device	Capture Efficiency	Removal Efficiency
Low-NOx burners installed on emission		
units 1, 2, 3, 4, 5, 6, and 12.	100%	50%
SoLoNOx on the combustion turbine		
Two Scrubbers and Baghouses at the		
Large Fire Research Lab.		

I am familiar with the facility and the installations and sources for which this report is submitted. I have personally examined the information in this report, which consists of 49 pages (including attachments), and certify that the information is correct to the best of my knowledge.

Michael Blackmon — Name (Print/Type)
Environmental Management Group Leader — Title
3/14/22 — Date
Signature
240-654-2896 — Telephone

1/09/08

FORM 2 **CRITERIA AIR POLLUTANTS**

EMISSIONS CERTIFICATION REPORT

Facility Name: National Institute of Standards and Technology Facility ID#: 24-031-00323 Pollutant: NOx Calender Year: 2021

Equipment Description/ Registration Number	SCC Number	Fuel		Actual Emissions		Operating Schedule (Actual)					TOSD	Operating Schedule			Emissions Methods
				Tons/Yr	Lbs/Day	Hrs/Day	Start	End	Dys/Wk	Days/Yr	Lbs/Dy	Hrs/Dy	Start	End	
Boiler #1, EU-1	10300602	NG	S	0.79	11.84					133	12.97				C-3
#5-0108	10300502	Fuel Oil	S	0.09	1.36						69.28				C-3
Boiler #2, EU-2	10300602	NG	S	0.59	10.05					117	11.21				C-3
#5-0109	10300502	Fuel Oil	S	0.05	0.80						35.80				C-3
Boiler #3, EU-3	10300602	NG	S	0.74	11.72					127	16.03				C-3
#5-0110	10300502	Fuel Oil	S	0.02	0.32						15.68				C-3
Boiler #4, EU-4	10300602	NG	S	0.67	10.47					127	11.93				C-3
#5-0111	10300502	Fuel Oil	S	0.02	0.33						16.15				C-3
Boiler #5, EU-5	10300602	NG	S	1.24	27.86					89	31.11				C-3
#5-0112	10300502	Fuel Oil	S	0.00	0.11						3.70				C-3
Boiler #6, EU-6	10300602	NG	S	0.51	28.22					36	34.53				C-3
#5-0113	10300502	Fuel Oil	S	0.00	0.11						1.51				C-3
Fire Research Lab, EU-7	39000699	NG	S	0.18	5.03					70	4.62				C-3
#6-0557															
Emer. Generator (1,000 kW)	20200401	Diesel	S	0.22	36.21					12	72.43				C-3
#9-0630, EU-9															
Emer. Generator (500 kW)	20200401	Diesel	S	0.07	12.28					12	24.57				C-3
#9-0898, EU-10															
Emer. Generator (1,250 kW)	20200401	Diesel	S	0.13	21.11					12	37.53				C-3
PTC 031-0323-9-1199															
NG Emer. Gen. #1 (500 kW)	20200401	NG	S	0.00	0.05					52	0.10				C-3
PTC 031-0323-9-1213															
NG Emer. Gen. #2 (500 kW)	20200401	NG	S	0.00	0.05					52	0.11				C-3
PTC 031-0323-9-1214															
Combustion Turbine (CT) only	20300203	NG	S	0.36	2.09					345	21.37				C-3
#5-2363, EU-11															
CT + HRSG with Low NOx Duct Burners	20300203	NG	S	21.39	127.56					335	118.74				C-3
#5-2364, EU-11 + EU-12															
Total				27.06	307.57						539.39				

S - Stack Emissions F - Fugitive Emissions Daily emissions (lbs/day) are lbs/operating day of the source

TOSD: Typical Ozone Season Day means a typical day of that period of the year during which conditions for photochemical conditions are most favorable, which is generally during sustained periods of direct sunlight and warm temperatures (April-September). This section needs to be completed only for VOC and NOx sources.

Fuel: Include emissions for each fuel used. If more than one fuel is used, calculate and list emissions separately for each fuel.

Emission Estimation Method

A1-U.S. EPA Reference Method
A2-Other Particulate Sampling Train
A3-Liquid Absorption Technique
A4-Solid Absorption Technique
A5-Freezing Out Technique
A9-Other, Specify

C1-User calculated based on source test or other measurement
C2-User calculated based on material balance using engineering knowledge of the process
C3-User calculated based on AP-42
C4-User calculated by best guess/engineering Judgment

C5-User calculated based on a State or local agency emission factor
C6-New construction, not operational
C7-Source closed, operation ceased
C8-Computer calculated based on standard

1/09/08

FORM 2

CRITERIA AIR POLLUTANTS
EMISSIONS CERTIFICATION REPORT

Facility Name: National Institute of Standards and Technology Facility ID#: 24-031-00323 Pollutant: Carbon Monoxide Calender Year: 2021

Equipment Description/ Registration Number	SCC Number	Fuel		Actual Emissions		Operating Schedule (Actual)					TOSD	Operating Schedule			Emissions Methods
				Tons/Yr	Lbs/Day	Hrs/Day	Start	End	Dys/Wk	Days/Yr	Lbs/Dy	Hrs/Dy	Start	End	
Boiler #1, EU-1	10300602	NG	S	1.32	19.89					133	N/A				C-3
#5-0108	10300502	Fuel Oil	S	0.02	0.34						N/A				C-3
Boiler #2, EU-2	10300602	NG	S	0.99	16.88					117	N/A				C-3
#5-0109	10300502	Fuel Oil	S	0.01	0.20						N/A				C-3
Boiler #3, EU-3	10300602	NG	S	1.25	19.69					127	N/A				C-3
#5-0110	10300502	Fuel Oil	S	0.01	0.08						N/A				C-3
Boiler #4, EU-4	10300602	NG	S	1.12	17.60					127	N/A				C-3
#5-0111	10300502	Fuel Oil	S	0.01	0.08						N/A				C-3
Boiler #5, EU-5	10300602	NG	S	2.08	46.80					89	N/A				C-3
#5-0112	10300502	Fuel Oil	S	0.00	0.03						N/A				C-3
Boiler #6, EU-6	10300602	NG	S	0.85	47.40					36	N/A				C-3
#5-0113	10300502	Fuel Oil	S	0.00	0.03						N/A				C-3
Fire Research Lab, EU-7	39000699	NG	S	0.15	4.22					70	N/A				C-3
#5-0557															
Emer. Generator (1,000 kW)	20200401	Diesel	S	0.06	9.62					12	N/A				C-3
#9-0630, EU-9															
Emer. Generator (500 kW)	20200401	Diesel	S	0.02	3.26					12	N/A				C-3
#9-0898, EU-10															
Emer. Generator (1,250 kW)	20200401	Diesel	S	0.01	2.27					12	N/A				C-3
PTC 031-0323-9-1199															
NG Emer. Gen. #1 (500 kW)	20200401	NG	S	0.00	0.04					52	N/A				C-3
PTC 031-0323-9-1213															
NG Emer. Gen. #2 (500 kW)	20200401	NG	S	0.00	0.04					52	N/A				C-3
PTC 031-0323-9-1214															
Combustion Turbine	20300203	NG	S	19.20	111.48					345	N/A				C-3
#5-2363, EU-11															
HRSG with Low NOx Duct Burners	20300203	NG	S	9.78	58.30					335	N/A				C-3
#5-2364, EU-12															
Total				36.88	358.25										

S - Stack Emissions F - Fugitive Emissions Daily emissions (lbs/day) are lbs/operating day of the source

TOSD: Typical Ozone Season Day means a typical day of that period of the year during which conditions for photochemical conditions are most favorable, which is generally during sustained periods of direct sunlight and warm temperatures (April-September). This section needs to be completed only for VOC and NOx sources.

Fuel: Include emissions for each fuel used. If more than one fuel is used, calculate and list emissions separately for each fuel.

Emission Estimation Method

A1-U.S. EPA Reference Method
A2-Other Particulate Sampling Train
A3-Liquid Absorption Technique
A4-Solid Absorption Technique
A5-Freezing Out Technique
A9-Other, Specify

C1-User calculated based on source test or other measurement
C2-User calculated based on material balance using engineering knowledge of the process
C3-User calculated based on AP-42
C4-User calculated by best guess/engineering Judgment

C5-User calculated based on a State or local agency emission factor
C6-New construction, not operational
C7-Source closed, operation ceased
C8-Computer calculated based on standard

1/09/08

FORM 2

CRITERIA AIR POLLUTANTS
EMISSIONS CERTIFICATION REPORT

Facility Name: National Institute of Standards and Technology Facility ID#: 24-031-00323 Pollutant: Sulfur Oxides Calender Year: 2021

Equipment Description/ Registration Number	SCC Number			Actual Emissions		Operating Schedule (Actual)					TOSD	Operating Schedule			Emissions Methods
				Tons/Yr	Lbs/Day	Hrs/Day	Start	End	Dys/Wk	Days/Yr	Lbs/Dy	Hrs/Dy	Start	End	
Boiler #1, EU-1	10300602	NG	S	0.01	0.14					133	N/A				C-3
#5-0108	10300502	Fuel Oil	S	0.00	0						N/A				C-3
Boiler #2, EU-2	10300602	NG	S	0.01	0.12					117	N/A				C-3
#5-0109	10300502	Fuel Oil	S	0.00	0						N/A				C-3
Boiler #3, EU-3	10300602	NG	S	0.01	0.14					127	N/A				C-3
#5-0110	10300502	Fuel Oil	S	0.00	0						N/A				C-3
Boiler #4, EU-4	10300602	NG	S	0.01	0.13					127	N/A				C-3
#5-0111	10300502	Fuel Oil	S	0.00	0						N/A				C-3
Boiler #5, EU-5	10300602	NG	S	0.01	0.33					89	N/A				C-3
#5-0112	10300502	Fuel Oil	S	0.00	0						N/A				C-3
Boiler #6, EU-6	10300602	NG	S	0.01	0.34					36	N/A				C-3
#5-0113	10300502	Fuel Oil	S	0.00	0						N/A				C-3
Fire Research Lab, EU-7	39000699	NG	S	0.001	0.03					70	N/A				C-3
#5-0557															
Emer. Generator (1,000 kW)	20200401	Diesel	S	0.000	0.02					12	N/A				C-3
#9-0630, EU-9															
Emer. Generator (500 kW)	20200401	Diesel	S	0.000	0.01					12	N/A				C-3
#9-0898, EU-10															
Emer. Generator (1,250 kW)	20200401	Diesel	S	0.00	0.01					12	N/A				C-3
PTC 031-0323-9-1199															
NG Emer. Gen. #1 (500 kW)	20200401	NG	S	0.00	0.00					52	N/A				C-3
PTC 031-0323-9-1213															
NG Emer. Gen. #2 (500 kW)	20200401	NG	S	0.00	0.00					52	N/A				C-3
PTC 031-0323-9-1214															
Combustion Turbine	20300203	NG	S	1.17	6.77					345	N/A				C-3
#5-2363, EU-11															
HRSG with Low NOx Duct Burners	20300203	NG	S	0.42	2.48					335	N/A				C-3
#5-2364, EU-12															
Total				1.64	10.54										

S - Stack Emissions F - Fugitive Emissions Daily emissions (lbs/day) are lbs/operating day of the source

TOSD: Typical Ozone Season Day means a typical day of that period of the year during which conditions for photochemical conditions are most favorable, which is generally during sustained periods of direct sunlight and warm temperatures (April-September). This section needs to be completed only for VOC and NOx sources.

Fuel: Include emissions for each fuel used. If more than one fuel is used, calculate and list emissions separately for each fuel.

Emission Estimation Method

A1-U.S. EPA Reference Method
A2-Other Particulate Sampling Train
A3-Liquid Absorption Technique
A4-Solid Absorption Technique
A5-Freezing Out Technique
A9-Other, Specify

C1-User calculated based on source test or other measurement
C2-User calculated based on material balance using engineering knowledge of the process
C3-User calculated based on AP-42
C4-User calculated by best guess/engineering Judgment

C5-User calculated based on a State or local agency emission factor
C6-New construction, not operational
C7-Source closed, operation ceased
C8-Computer calculated based on standard

1/09/08

FORM 2 **CRITERIA AIR POLLUTANTS**

EMISSIONS CERTIFICATION REPORT

Facility Name: National Institute of Standards and Technology Facility ID#: 24-031-00323 Pollutant: VOCs Calender Year: 2021

Equipment Description/ Registration Number	SCC Number	Fuel		Actual Emissions		Operating Schedule (Actual)					TOSD	Operating Schedule			Emissions Methods
				Tons/Yr	Lbs/Day	Hrs/Day	Start	End	Dys/Wk	Days/Yr	Lbs/Dy	Hrs/Dy	Start	End	
Boiler #1, EU-1	10300602	NG	S	0.09	1.30					133	1.43				C-3
#5-0108	10300502	Fuel Oil	S	0	0.02						1.18				C-3
Boiler #2, EU-2	10300602	NG	S	0.06	1.11					117	1.23				C-3
#5-0109	10300502	Fuel Oil	S	0	0.01						0.61				C-3
Boiler #3, EU-3	10300602	NG	S	0.08	1.29					127	1.76				C-3
#5-0110	10300502	Fuel Oil	S	0	0.01						0.27				C-3
Boiler #4, EU-4	10300602	NG	S	0.07	1.15					127	1.31				C-3
#5-0111	10300502	Fuel Oil	S	0	0.01						0.27				C-3
Boiler #5, EU-5	10300602	NG	S	0.14	3.06					89	3.42				C-3
#5-0112	10300502	Fuel Oil	S	0	0.00						0.06				C-3
Boiler #6, EU-6	10300602	NG	S	0.06	3.10					36	3.80				C-3
#5-0113	10300502	Fuel Oil	S	0	0.00						0.03				C-3
Fire Research Lab, EU-7	39000699	NG	S	0.01	0.28					70	0.25				C-3
#5-0557															
Gasoline UST, EU-8	40600401	Gasoline	S	0.00	0.00					365	0.00				C-3
#9-0684															
Emer. Generator (1,000 kW)	20200401	Diesel	S	0.006	1.02					12	2.04				C-3
#9-0630, EU-9															
Emer. Generator (500 kW)	20200401	Diesel	S	0.002	0.35					12	0.69				C-3
#9-0898, EU-10															
Emer. Generator (1,250 kW)	20200401	Diesel	S	0.00	0.53					12	1.06				C-3
PTC 031-0323-9-1199															
NG Emer. Gen. #1 (500 kW)	20200401	NG	S	0.00	0.03					52	0.07				C-3
PTC 031-0323-9-1213															
NG Emer. Gen. #2 (500 kW)	20200401	NG	S	0.00	0.04					52	0.07				C-3
PTC 031-0323-9-1214															
Combustion Turbine	20300203	NG	S	0.72	4.18					345	1.49				C-3
#5-2363, EU-11															
HRSG with Low NOx Duct Burners	20300203	NG	S	2.44	14.57					335	50.32				C-3
#5-2364, EU-12															
Total				3.69	32.06						71.35				

S - Stack Emissions F - Fugitive Emissions Daily emissions (lbs/day) are lbs/operating day of the source

TOSD: Typical Ozone Season Day means a typical day of that period of the year during which conditions for photochemical conditions are most favorable, which is generally during sustained periods of direct sunlight and warm temperatures (April-September). This section needs to be completed only for VOC and NOx sources.

Fuel: Include emissions for each fuel used. If more than one fuel is used, calculate and list emissions separately for each fuel.

Emission Estimation Method

A1-U.S. EPA Reference Method
A2-Other Particulate Sampling Train
A3-Liquid Absorption Technique
A4-Solid Absorption Technique
A5-Freezing Out Technique
A9-Other, Specify

C1-User calculated based on source test or other measurement
C2-User calculated based on material balance using engineering knowledge of the process
C3-User calculated based on AP-42
C4-User calculated by best guess/engineering Judgment

C5-User calculated based on a State or local agency emission factor
C6-New construction, not operational
C7-Source closed, operation ceased
C8-Computer calculated based on standard

1/09/08

FORM 2

CRITERIA AIR POLLUTANTS
EMISSIONS CERTIFICATION REPORT

Facility Name: National Institute of Standards and Technology Facility ID#: 24-031-00323 Pollutant: PM Total Calender Year: 2021

Equipment Description/ Registration Number	SCC Number	Fuel		Actual Emissions		Operating Schedule (Actual)					TOSD	Operating Schedule			Emissions Methods
				Tons/Yr	Lbs/Day	Hrs/Day	Start	End	Dys/Wk	Days/Yr	Lbs/Dy	Hrs/Dy	Start	End	
Boiler #1, EU-1	10300602	NG	S	0.12	1.80					133	N/A				C-3
#5-0108	10300502	Fuel Oil	S	0.01	0.22						N/A				C-3
Boiler #2, EU-2	10300602	NG	S	0.09	1.53					117	N/A				C-3
#5-0109	10300502	Fuel Oil	S	0.01	0.13						N/A				C-3
Boiler #3, EU-3	10300602	NG	S	0.11	1.78					127	N/A				C-3
#5-0110	10300502	Fuel Oil	S	0.00	0.05						N/A				C-3
Boiler #4, EU-4	10300602	NG	S	0.10	1.59					127	N/A				C-3
#5-0111	10300502	Fuel Oil	S	0.00	0.05						N/A				C-3
Boiler #5, EU-5	10300602	NG	S	0.19	4.23					89	N/A				C-3
#5-0112	10300502	Fuel Oil	S	0.00	0.02						N/A				C-3
Boiler #6, EU-6	10300602	NG	S	0.08	4.29					36	N/A				C-3
#5-0113	10300502	Fuel Oil	S	0.00	0.02						N/A				C-3
Fire Research Lab, EU-7	39000699	NG	S	0.01	0.38					70	N/A				C-3
#5-0557															
Emer. Generator (1,000 kW)	20200401	Diesel	S	0.005	0.79					12	N/A				C-3
#9-0630, EU-9															
Emer. Generator (500 kW)	20200401	Diesel	S	0.002	0.27					12	N/A				C-3
#9-0898, EU-10															
Emer. Generator (1,250 kW)	20200401	Diesel	S	0.003	0.57					12	N/A				C-3
PTC 031-0323-9-1199															
NG Emer. Gen. #1 (500 kW)	20200401	NG	S	0.00	0.02					52	N/A				C-3
PTC 031-0323-9-1213															
NG Emer. Gen. #2 (500 kW)	20200401	NG	S	0.00	0.02					52	N/A				C-3
PTC 031-0323-9-1214															
Combustion Turbine	20300203	NG	S	6.17	35.83					345	N/A				C-3
#5-2363, EU-11															
HRSG with Low NOx Duct Burners	20300203	NG	S	1.22	7.29					335	N/A				C-3
#5-2364, EU-12															
Total				8.14	60.90										

S - Stack Emissions F - Fugitive Emissions Daily emissions (lbs/day) are lbs/operating day of the source

TOSD: Typical Ozone Season Day means a typical day of that period of the year during which conditions for photochemical conditions are most favorable, which is generally during sustained periods of direct sunlight and warm temperatures (April-September). This section needs to be completed only for VOC and NOx sources.

Fuel: Include emissions for each fuel used. If more than one fuel is used, calculate and list emissions separately for each fuel.

Emission Estimation Method

A1-U.S. EPA Reference Method
A2-Other Particulate Sampling Train
A3-Liquid Absorption Technique
A4-Solid Absorption Technique
A5-Freezing Out Technique
A9-Other, Specify

C1-User calculated based on source test or other measurement
C2-User calculated based on material balance using engineering knowledge of the process
C3-User calculated based on AP-42
C4-User calculated by best guess/engineering Judgment

C5-User calculated based on a State or local agency emission factor
C6-New construction, not operational
C7-Source closed, operation ceased
C8-Computer calculated based on standard

1/09/08

FORM 2

CRITERIA AIR POLLUTANTS
EMISSIONS CERTIFICATION REPORT

Facility Name: National Institute of Standards and Technology Facility ID#: 24-031-00323 Pollutant: PM10 Calender Year: 2021

Equipment Description/ Registration Number	SCC Number	Fuel		Actual Emissions		Operating Schedule (Actual)					TOSD	Operating Schedule			Emissions Methods
				Tons/Yr	Lbs/Day	Hrs/Day	Start	End	Dys/Wk	Days/Yr	Lbs/Dy	Hrs/Dy	Start	End	
Boiler #1, EU-1	10300602	NG	S	0.03	0.45					133	N/A				C-3
#5-0108	10300502	Fuel Oil	S	0.00	0.07						N/A				C-3
Boiler #2, EU-2	10300602	NG	S	0.02	0.38					117	N/A				C-3
#5-0109	10300502	Fuel Oil	S	0.00	0.04						N/A				C-3
Boiler #3, EU-3	10300602	NG	S	0.03	0.45					127	N/A				C-3
#5-0110	10300502	Fuel Oil	S	0.00	0.02						N/A				C-3
Boiler #4, EU-4	10300602	NG	S	0.03	0.40					127	N/A				C-3
#5-0111	10300502	Fuel Oil	S	0.00	0.02						N/A				C-3
Boiler #5, EU-5	10300602	NG	S	0.05	1.06					89	N/A				C-3
#5-0112	10300502	Fuel Oil	S	0.00	0.01						N/A				C-3
Boiler #6, EU-6	10300602	NG	S	0.02	1.07					36	N/A				C-3
#5-0113	10300502	Fuel Oil	S	0.00	0.01						N/A				C-3
Fire Research Lab, EU-7	39000699	NG	S	0.003	0.10					70	N/A				C-3
#5-0557															
Emer. Generator (1,000 kW)	20200401	Diesel	S	0.003	0.56					12	N/A				C-3
#9-0630, EU-9															
Emer. Generator (500 kW)	20200401	Diesel	S	0.001	0.19					12	N/A				C-3
#9-0898, EU-10															
Emer. Generator (1,250 kW)	20200401	Diesel	S	0.00	0.29					12	N/A				C-3
PTC 031-0323-9-1199															
NG Emer. Gen. #1 (500 kW)	20200401	NG	S	0.00	0.01					52	N/A				C-3
PTC 031-0323-9-1213															
NG Emer. Gen. #2 (500 kW)	20200401	NG	S	0.00	0.01					52	N/A				C-3
PTC 031-0323-9-1214															
Combustion Turbine	20300203	NG	S	6.17	35.83					345	N/A				C-3
#5-2363, EU-11															
HRSG with Low NOx Duct Burners	20300203	NG	S	1.22	7.29					335	N/A				C-3
#5-2364, EU-12															
Total				7.59	48.25										

S - Stack Emissions F - Fugitive Emissions Daily emissions (lbs/day) are lbs/operating day of the source

TOSD: Typical Ozone Season Day means a typical day of that period of the year during which conditions for photochemical conditions are most favorable, which is generally during sustained periods of direct sunlight and warm temperatures (April-September). This section needs to be completed only for VOC and NOx sources.

Fuel: Include emissions for each fuel used. If more than one fuel is used, calculate and list emissions separately for each fuel.

Emission Estimation Method

A1-U.S. EPA Reference Method
A2-Other Particulate Sampling Train
A3-Liquid Absorption Technique
A4-Solid Absorption Technique
A5-Freezing Out Technique
A9-Other, Specify

C1-User calculated based on source test or other measurement
C2-User calculated based on material balance using engineering knowledge of the process
C3-User calculated based on AP-42
C4-User calculated by best guess/engineering Judgment

C5-User calculated based on a State or local agency emission factor
C6-New construction, not operational
C7-Source closed, operation ceased
C8-Computer calculated based on standard

1/09/08

FORM 2

CRITERIA AIR POLLUTANTS
EMISSIONS CERTIFICATION REPORT

Facility Name: National Institute of Standards and Technology Facility ID#: 24-031-00323 Pollutant: PM2.5 Calender Year: 2021

Equipment Description/ Registration Number	SCC Number	Fuel		Actual Emissions		Operating Schedule (Actual)					TOSD	Operating Schedule			Emissions Methods
				Tons/Yr	Lbs/Day	Hrs/Day	Start	End	Dys/Wk	Days/Yr	Lbs/Dy	Hrs/Dy	Start	End	
Boiler #1, EU-1	10300602	NG	S	0.03	0.45					133	N/A				C-3
#5-0108	10300502	Fuel Oil	S	0.00	0.06						N/A				C-3
Boiler #2, EU-2	10300602	NG	S	0.02	0.38					117	N/A				C-3
#5-0109	10300502	Fuel Oil	S	0.00	0.03						N/A				C-3
Boiler #3, EU-3	10300602	NG	S	0.03	0.45					127	N/A				C-3
#5-0110	10300502	Fuel Oil	S	0.00	0.01						N/A				C-3
Boiler #4, EU-4	10300602	NG	S	0.03	0.40					127	N/A				C-3
#5-0111	10300502	Fuel Oil	S	0.00	0.01						N/A				C-3
Boiler #5, EU-5	10300602	NG	S	0.05	1.06					89	N/A				C-3
#5-0112	10300502	Fuel Oil	S	0.00	0.00						N/A				C-3
Boiler #6, EU-6	10300602	NG	S	0.02	1.07					36	N/A				C-3
#5-0113	10300502	Fuel Oil	S	0.00	0.00						N/A				C-3
Fire Research Lab, EU-7	39000699	NG	S	0.003	0.10					70	N/A				C-3
#5-0557															
Emer. Generator (1,000 kW)	20200401	Diesel	S	0.003	0.54					12	N/A				C-3
#9-0630, EU-9															
Emer. Generator (500 kW)	20200401	Diesel	S	0.001	0.18					12	N/A				C-3
#9-0898, EU-10															
Emer. Generator (1,250 kW)	20200401	Diesel	S	0.00	0.28					12	N/A				C-3
PTC 031-0323-9-1199															
NG Emer. Gen. #1 (500 kW)	20200401	NG	S	0.00	0.01					52	N/A				C-3
PTC 031-0323-9-1213															
NG Emer. Gen. #2 (500 kW)	20200401	NG	S	0.00	0.01					52	N/A				C-3
PTC 031-0323-9-1214															
Combustion Turbine	20300203	NG	S	6.17	35.83					345	N/A				C-3
#5-2363, EU-11															
HRSG with Low NOx Duct Burners	20300203	NG	S	1.22	7.29					335	N/A				C-3
#5-2364, EU-12															
Total				7.58	48.18										

S - Stack Emissions F - Fugitive Emissions Daily emissions (lbs/day) are lbs/operating day of the source

TOSD: Typical Ozone Season Day means a typical day of that period of the year during which conditions for photochemical conditions are most favorable, which is generally during sustained periods of direct sunlight and warm temperatures (April-September). This section needs to be completed only for VOC and NOx sources.

Fuel: Include emissions for each fuel used. If more than one fuel is used, calculate and list emissions separately for each fuel.

Emission Estimation Method

A1-U.S. EPA Reference Method
A2-Other Particulate Sampling Train
A3-Liquid Absorption Technique
A4-Solid Absorption Technique
A5-Freezing Out Technique
A9-Other, Specify

C1-User calculated based on source test or other measurement
C2-User calculated based on material balance using engineering knowledge of the process
C3-User calculated based on AP-42
C4-User calculated by best guess/engineering Judgment

C5-User calculated based on a State or local agency emission factor
C6-New construction, not operational
C7-Source closed, operation ceased
C8-Computer calculated based on standard

1/09/08

FORM 2

CRITERIA AIR POLLUTANTS
EMISSIONS CERTIFICATION REPORT

Facility Name: National Institute of Standards and Technology Facility ID#: 24-031-00323 Pollutant: PM Condensable Calender Year: 2021

Equipment Description/ Registration Number	SCC Number	Fuel		Actual Emissions		Operating Schedule (Actual)					TOSD	Operating Schedule			Emissions Methods
				Tons/Yr	Lbs/Day	Hrs/Day	Start	End	Dys/Wk	Days/Yr	Lbs/Dy	Hrs/Dy	Start	End	
Boiler #1, EU-1	10300602	NG	S	0.09	1.35					133	N/A				C-3
#5-0108	10300502	Fuel Oil	S	0.01	0.09						N/A				C-3
Boiler #2, EU-2	10300602	NG	S	0.07	1.15					117	N/A				C-3
#5-0109	10300502	Fuel Oil	S	0.00	0.05						N/A				C-3
Boiler #3, EU-3	10300602	NG	S	0.08	1.34					127	N/A				C-3
#5-0110	10300502	Fuel Oil	S	0.00	0.02						N/A				C-3
Boiler #4, EU-4	10300602	NG	S	0.08	1.19					127	N/A				C-3
#5-0111	10300502	Fuel Oil	S	0.00	0.02						N/A				C-3
Boiler #5, EU-5	10300602	NG	S	0.14	3.18					89	N/A				C-3
#5-0112	10300502	Fuel Oil	S	0.00	0.01						N/A				C-3
Boiler #6, EU-6	10300602	NG	S	0.06	3.22					36	N/A				C-3
#5-0113	10300502	Fuel Oil	S	0.00	0.01						N/A				C-3
Fire Research Lab, EU-7	39000699	NG	S	0.01	0.29					70	N/A				C-3
#5-0557															
Emer. Generator (1,000 kW)	20200401	Diesel	S	0.00	0.09					12	N/A				C-3
#9-0630, EU-9															
Emer. Generator (500 kW)	20200401	Diesel	S	0.00	0.03					12	N/A				C-3
#9-0898, EU-10															
Emer. Generator (1,250 kW)	20200401	Diesel	S	0.00	0.05					12	N/A				C-3
PTC 031-0323-9-1199															
NG Emer. Gen. #1 (500 kW)	20200401	NG	S	0.00	0.01					52	N/A				C-3
PTC 031-0323-9-1213															
NG Emer. Gen. #2 (500 kW)	20200401	NG	S	0.00	0.01					52	N/A				C-3
PTC 031-0323-9-1214															
Combustion Turbine	20300203	NG	S	1.61	9.36					345	N/A				C-3
#5-2363, EU-11															
HRSG with Low NOx Duct Burners	20300203	NG	S	0.67	4.01					335	N/A				C-3
#5-2364, EU-12															
Total				2.82	25.45										

S - Stack Emissions F - Fugitive Emissions Daily emissions (lbs/day) are lbs/operating day of the source

TOSD: Typical Ozone Season Day means a typical day of that period of the year during which conditions for photochemical conditions are most favorable, which is generally during sustained periods of direct sunlight and warm temperatures (April-September). This section needs to be completed only for VOC and NOx sources.

Fuel: Include emissions for each fuel used. If more than one fuel is used, calculate and list emissions separately for each fuel.

Emission Estimation Method

A1-U.S. EPA Reference Method
A2-Other Particulate Sampling Train
A3-Liquid Absorption Technique
A4-Solid Absorption Technique
A5-Freezing Out Technique
A9-Other, Specify

C1-User calculated based on source test or other measurement
C2-User calculated based on material balance using engineering knowledge of the process
C3-User calculated based on AP-42
C4-User calculated by best guess/engineering Judgment

C5-User calculated based on a State or local agency emission factor
C6-New construction, not operational
C7-Source closed, operation ceased
C8-Computer calculated based on standard

1/09/08

FORM 2

CRITERIA AIR POLLUTANTS
EMISSIONS CERTIFICATION REPORT

Facility Name: National Institute of Standards and Technology Facility ID#: 24-031-00323 Pollutant: Lead Calender Year: 2021

Equipment Description/ Registration Number	SCC Number	Fuel		Actual Emissions		Operating Schedule (Actual)					TOSD	Operating Schedule			Emissions Methods
				Tons/Yr	Lbs/Day	Hrs/Day	Start	End	Dys/Wk	Days/Yr	Lbs/Dy	Hrs/Dy	Start	End	
Boiler #1, EU-1	10300602	NG	S	0.0000	0.0001					133	N/A				C-3
#5-0108	10300502	Fuel Oil	S	0.0000	0.0001						N/A				C-3
Boiler #2, EU-2	10300602	NG	S	0.0000	0.0001					117	N/A				C-3
#5-0109	10300502	Fuel Oil	S	0.0000	0.0001						N/A				C-3
Boiler #3, EU-3	10300602	NG	S	0.0000	0.0001					127	N/A				C-3
#5-0110	10300502	Fuel Oil	S	0.0000	0.0000						N/A				C-3
Boiler #4, EU-4	10300602	NG	S	0.0000	0.0001					127	N/A				C-3
#5-0111	10300502	Fuel Oil	S	0.0000	0.0000						N/A				C-3
Boiler #5, EU-5	10300602	NG	S	0.0000	0.0003					89	N/A				C-3
#5-0112	10300502	Fuel Oil	S	0.0000	0.0000						N/A				C-3
Boiler #6, EU-6	10300602	NG	S	0.0000	0.0003					36	N/A				C-3
#5-0113	10300502	Fuel Oil	S	0.0000	0.0000						N/A				C-3
Fire Research Lab, EU-7	39000699	NG	S	0.0000	0.0000					70	N/A				C-3
#5-0557															
HRSG with Low NOx Duct Burners	20300203	NG	S	0.0001	0.0100					12	N/A				C-3
#5-2364, EU-12															
Total				0.0001	0.0112					345					

S - Stack Emissions F - Fugitive Emissions Daily emissions (lbs/day) are lbs/operating day of the source

TOSD: Typical Ozone Season Day means a typical day of that period of the year during which conditions for photochemical conditions are most favorable, which is generally during sustained periods of direct sunlight and warm temperatures (April-September). This section needs to be completed only for VOC and NOx sources.

Fuel: Include emissions for each fuel used. If more than one fuel is used, calculate and list emissions separately for each fuel.

Emission Estimation Method

A1-U.S. EPA Reference Method
A2-Other Particulate Sampling Train
A3-Liquid Absorption Technique
A4-Solid Absorption Technique
A5-Freezing Out Technique
A9-Other, Specify

C1-User calculated based on source test or other measurement
C2-User calculated based on material balance using engineering knowledge of the process
C3-User calculated based on AP-42
C4-User calculated by best guess/engineering Judgment

C5-User calculated based on a State or local agency emission factor
C6-New construction, not operational
C7-Source closed, operation ceased
C8-Computer calculated based on standard

1/09/08

FORM 3: PM **EMISSIONS CERTIFICATION REPORT**

Calender Year: 2021

Facility Name: **National Institute of Standards and Technology** Facility ID#: **24-031-00323** Pollutant: Particulate Matter

Equipment Description/ Registration Number	SCC Number	Fuel		PM - Filterable		PM 10 - Filterable		PM 2.5 - Filterable		PM Condensable		Operation	Emissions Methods
				Tons/yr	Lbs/day	Tons/yr	Lbs/day	Tons/yr	Lbs/day	Tons/yr	Lbs/dy	Days/yr	
Boiler #1, EU-1	10300602	NG	S	0.03	0.45	0.03	0.45	0.03	0.45	0.09	1.35	133	C-3
#5-0108	10300502	Fuel Oil	S	0.01	0.14	0.00	0.07	0.00	0.06	0.01	0.09		C-3
Boiler #2, EU-2	10300602	NG	S	0.02	0.38	0.02	0.38	0.02	0.38	0.07	1.15	117	C-3
#5-0109	10300502	Fuel Oil	S	0.00	0.08	0.00	0.04	0.00	0.03	0.00	0.05		C-3
Boiler #3, EU-3	10300602	NG	S	0.03	0.45	0.03	0.45	0.03	0.45	0.08	1.34	127	C-3
#5-0110	10300502	Fuel Oil	S	0.00	0.03	0.00	0.02	0.00	0.01	0.00	0.02		C-3
Boiler #4, EU-4	10300602	NG	S	0.03	0.40	0.03	0.40	0.03	0.40	0.08	1.19	127	C-3
#5-0111	10300502	Fuel Oil	S	0.00	0.03	0.00	0.02	0.00	0.01	0.00	0.02		C-3
Boiler #5, EU-5	10300602	NG	S	0.05	1.06	0.05	1.06	0.05	1.06	0.14	3.18	89	C-3
#5-0112	10300502	Fuel Oil	S	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01		C-3
Boiler #6, EU-6	10300602	NG	S	0.02	1.07	0.02	1.07	0.02	1.07	0.06	3.22	36	C-3
#5-0113	10300502	Fuel Oil	S	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01		C-3
Fire Research Lab, EU-7 #5-0557	39000699	NG	S	0.00	0.10	0.00	0.10	0.00	0.10	0.01	0.29	70	C-3
Emer. Generator (1,000 kW) #9-0630, EU-9	20200401	Diesel	S	0.00	0.70	0.00	0.56	0.00	0.54	0.00	0.09	12	C-3
Emer. Generator (500 kW) #9-0898, EU-10	20200401	Diesel	S	0.00	0.24	0.00	0.19	0.00	0.18	0.00	0.03	12	C-3
Emer. Generator (1,250 kW) PTC 031-0323-9-1199	20200401	Diesel	S	0.00	0.36	0.00	0.29	0.00	0.28	0.00	0.05	12	C-3
NG Emer. Gen. #1 (500 kW) PTC 031-0323-9-1213	20200401	Diesel	S	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.01	52	C-3
NG Emer. Gen. #2 (500 kW) PTC 031-0323-9-1214	20200401	Diesel	S	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.01	52	C-3
Combustion Turbine #5-2363, EU-11	20300203	NG	S	6.17	35.83	6.17	35.83	6.17	35.83	1.61	9.36	345	C-3
HRSG with Low NOx Duct Burners #5-2364, EU-12	20300203	NG	S	1.22	7.29	1.22	7.29	1.22	7.29	0.67	4.01	335	C-3
Total				7.60	48.67	7.59	48.25	7.58	48.18	2.82	25.45		

S-Stack Emissions F-Fugitive Emissions Daily emissions (lbs/day) are lbs/operating day of source

Fuel: Include emissions for each fuel used. If more than one fuel is used, calculate and list emissions separately for each fuel.

Emission Estimation Method

A1-U.S. EPA Reference Method
A2-Other Particulate Sampling Train
A3-Liquid Absorption technique
A4-Solid Absorption Technique
A5-Freezing Out technique
A9-Other, Specify

C1-User calculated based on source test or other measurement
C2-User calculated based on material balance using engineering knowledge of the process
C3-User calculated based on AP-42
C4-User calculated by best guess/engineering Judgment

C5-User calculated based on a State or local agency emission factor
C6-New construction, not operational
C7-Source closed, operation ceased
C8-Computer calculated based on standard

FORM 4: **Calendar Year: 2021**

TOXIC AIR POLLUTANTS

EMISSIONS CERTIFICATION REPORT

Facility Name: **National Institute of Standards and Technology** Facility ID: **24-031-00323** Pollutant: **Acrolein**

Equipment Description/ Registration Number [1]	Actual Emissions			Control Device **	% Efficiency
	Tons/yr	Lbs/day	Lbs/hour		
Emer. Gen. (1,000 kW) EU-9 #9-0630	5.351E-07	8.918E-05	2.689E-05		
Emer. Gen. (500 kW) EU-10 #9-0898	1.815E-07	3.025E-05	1.344E-05		
Emer. Gen. (1,250 kW) PTC 031-0323-9-1199	2.773E-07	4.621E-05	3.361E-05		
NG Emer. Gen. #1 (500 kW) PTC 031-0323-9-1213	7.828E-05	3.011E-03	1.037E-02		
NG Emer. Gen. #2 (500 kW) PTC 031-0323-9-1214	8.140E-05	3.131E-03	8.753E-03		
Combustion Turbine #5-2363, EU-11	2.195E-03	1.274E-02	5.309E-04		
TOTALS	2.355E-03	1.905E-02	1.973E-02		

*Please attach all calculations.

*See Attachment 1 for the minimum reporting values

**Control Device
S = Scrubber
B = Baghouse
ESP =Electrostatic Precipitator
A = Afterburner
C = Condenser
AD = Adsorbtion
O = Other

[1] Emissions must be broken down by equipment registration number (ex. 9-0076, 9-0077)

FORM 4: **Calendar Year: 2021**

TOXIC AIR POLLUTANTS

EMISSIONS CERTIFICATION REPORT

Facility Name: **National Institute of Standards and Technology** Facility ID: **24-031-00323** Pollutant: **Benzene**

Equipment Description/ Registration Number [1]	Actual Emissions			Control Device **	% Efficiency
	Tons/yr	Lbs/day	Lbs/hr		
Boiler #1, EU-1 #5-0108	3.404E-05	5.119E-04	2.336E-05		
Boiler #2, EU-2 #5-0109	2.518E-05	4.305E-04	2.002E-05		
Boiler #3, EU-3 #5-0110	3.148E-05	6.490E-04	2.826E-05		
Boiler #4, EU-1 #5-0111	2.816E-05	4.434E-04	2.105E-05		
Boiler #5, EU-1 #5-0112	5.212E-05	1.171E-03	5.449E-05		
Boiler #6, EU-1 #5-0113	2.135E-05	1.186E-03	6.049E-05		
Fire Research Lab, EU-7 #5-0557	3.693E-06	1.055E-04	8.776E-05		
Emer. Gen. (1,000 kW) EU-9 #9-0630	5.269E-05	8.782E-03	2.648E-03		
Emer. Gen. (500 kW) EU-10 #9-0898	1.787E-05	2.979E-03	1.324E-03		
Emer. Gen. (1,250 kW) PTC 031-0323-9-1199	2.731E-05	4.551E-03	3.310E-03		
NG Emer. Gen. #1 (500 kW) PTC 031-0323-9-1213	4.702E-05	1.809E-03	6.228E-03		
NG Emer. Gen. #2 (500 kW) PTC 031-0323-9-1214	4.890E-05	1.881E-03	5.258E-03		
Combustion Turbine #5-2363, EU-11	4.115E-03	2.389E-02	9.954E-04		
HRSG with Low NOx Duct Burners #5-2364, EU-12	2.37E-04	1.412E-03	5.882E-05		
TOTALS	4.741E-03	4.980E-02	2.012E-02		

*Please attach all calculations.

*See Attachment 1 for the minimum reporting values

**Control Device
S = Scrubber
B = Baghouse
ESP =Electrostatic Precipitator
A = Afterburner
C = Condenser
AD = Adsorbtion
O = Other

[1] Emissions must be broken down by equipment registration number (ex. 9-0076, 9-0077)

FORM 4: **Calendar Year: 2021**

TOXIC AIR POLLUTANTS

EMISSIONS CERTIFICATION REPORT

Facility Name: **National Institute of Standards and Technology** Facility ID: **24-031-00323** Pollutant: **Cadmium**

Equipment Description/ Registration Number [1]	Actual Emissions			Control Device **	% Efficiency
	Tons/yr	Lbs/day	Lbs/hour		
Boiler #1, EU-1 #5-0108	1.922E-05	2.890E-04	1.319E-05		
Boiler #2, EU-2 #5-0109	1.391E-05	2.378E-04	1.106E-05		
Boiler #3, EU-3 #5-0110	1.680E-05	3.464E-04	1.508E-05		
Boiler #4, EU-1 #5-0111	1.507E-05	2.374E-04	1.127E-05		
Boiler #5, EU-1 #5-0112	2.738E-05	6.152E-04	2.862E-05		
Boiler #6, EU-1 #5-0113	1.121E-05	6.230E-04	3.177E-05		
Fire Research Lab, EU-7 #5-0557	1.935E-06	5.528E-05	4.597E-05		
HRSG with Low NOx Duct Burners #5-2364, EU-12	1.240E-04	7.395E-04	3.081E-05		
TOTALS	2.295E-04	3.144E-03	1.878E-04		

*Please attach all calculations.

*See Attachment 1 for the minimum reporting values

**Control Device
S = Scrubber
B = Baghouse
ESP =Electrostatic Precipitator
A = Afterburner
C = Condenser
AD = Adsorbtion
O = Other

[1] Emissions must be broken down by equipment registration number (ex. 9-0076, 9-0077)

FORM 4: **Calendar Year: 2021**

TOXIC AIR POLLUTANTS

EMISSIONS CERTIFICATION REPORT

Facility Name: **National Institute of Standards and Technology** Facility ID: **24-031-00323** Pollutant: **Formaldehyde**

Equipment Description/ Registration Number [1]	Actual Emissions			Control Device **	% Efficiency
	Tons/yr	Lbs/day	Lbs/hr		
Boiler #1, EU-1 #5-0108	1.330E-03	2.000E-02	9.129E-04		
Boiler #2, EU-2 #5-0109	9.585E-04	1.639E-02	7.619E-04		
Boiler #3, EU-3 #5-0110	1.150E-03	2.371E-02	1.032E-03		
Boiler #4, EU-1 #5-0111	1.032E-03	1.626E-02	7.718E-04		
Boiler #5, EU-1 #5-0112	1.868E-03	4.197E-02	1.952E-03		
Boiler #6, EU-1 #5-0113	7.651E-04	4.250E-02	2.167E-03		
Fire Research Lab, EU-7 #5-0557	1.319E-04	3.769E-03	3.134E-03		
Emer. Gen. (1,000 kW) EU-9 #9-0630	5.357E-06	8.929E-04	2.692E-04		
Emer. Gen. (500 kW) EU-10 #9-0898	1.817E-06	3.029E-04	1.346E-04		
Emer. Gen. (1,250 kW) PTC 031-0323-9-1199	2.776E-06	4.627E-04	3.365E-04		
NG Emer. Gen. #1 (500 kW) PTC 031-0323-9-1213	3.839E-07	1.477E-05	5.085E-05		
NG Emer. Gen. #2 (500 kW) PTC 031-0323-9-1214	3.993E-07	1.536E-05	4.293E-05		
Combustion Turbine #5-2363, EU-11	2.435E-01	1.413E+00	5.889E-02		
HRSG with Low NOx Duct Burners #5-2364, EU-12	8.454E-03	5.042E-02	2.101E-03		
TOTALS	2.592E-01	1.630E+00	7.256E-02		

*Please attach all calculations.

*See Attachment 1 for the minimum reporting values

**Control Device
S = Scrubber
B = Baghouse
ESP =Electrostatic Precipitator
A = Afterburner
C = Condenser
AD = Adsorbtion
O = Other

[1] Emissions must be broken down by equipment registration number (ex. 9-0076, 9-0077)

FORM 5

Calendar Year: 2021

BILLABLE TOXIC AIR POLLUTANTS

EMISSIONS CERTIFICATION REPORT

Facility Name: **National Institute of Standards & Technology** Facility ID#: **24-031-0323**

Chemical Name	CAS Number		Actual Emissions				Estimation Method
			Tons/year	Lbs/day	Lbs/hr		
carbon disulfide	75-15-0	S					
		F					
carbonyl sulfide	463-58-1	S					
		F					
chlorine	7782-50-5	S					
		F					
cyanide compounds	57-12-5	S					
		F					
hydrochloric acid	7647-01-0	S	**Less than reporting threshold**				**C2**
		F					
hydrogen fluoride	7664-39-3	S	**Less than reporting threshold**				**C2**
		F					
methyl chloroform	71-55-6	S					
		F					
methylene chloride	75-09-2	S					
		F					
perchloroethylene	127-18-4	S					
		F					
phosphine	7803-51-2	S					
		F					
titanium tetrachloride	7550-45-0	S					
		F					
TOTALS							

S-Stack Emissions F-Fugitive Emission Daily emissions (lbs/day) are lbs/operating day of the source

PLEASE NOTE: Be sure to attach all data and calculations necessary to support the emissions figures shown above.

See Attachment 1 for minimum reporting values

Emission Estimation Method

A1-U.S. EPA Reference Method
A2-Other Particulate Sampling Train
A3-Liquid Absorption Technique
A4-Solid
A5-Freezing Out Technique
A9-Other, Specify

C1-User calculated based on source test or other measurement
C2-User calculated based on material balance using engineering knowledge of the process
C3-User calculated based on AP-42
C4-User calculated by best guess/engineering judgment
C5-User calculated based on a State or local agency factor
C6-New construction, not operational
C7-Source closed, operation ceased
C8-Computer calculated bsed on standards

This form to include only the eleven chemicals identified

FORM 6 **GREENHOUSE GAS AIR POLLUTANTS EMISSIONS CERTIFICATION REPORT** **Calender Year:** 2021

Facility Name: National Institute of Standards and Technology **Facility ID:** 24-031-0323 **Pollutant:** Carbon Dioxide

Equipment Description/ Registration Number	Actual Emissions		
	Tons/Yr	Lbs/Day	Lbs/hr
Boiler #1, EU-1	1,991	29,933	1,247
#5-0108			
Boiler #2, EU-2	1,463	25,000	1,042
#5-0109			
Boiler #3, EU-3	1,809	37,299	1,554
#5-0110			
Boiler #4, EU-4	1,620	25,506	1,063
#5-0111			
Boiler #5, EU-5	2,981	66,983	2,791
#5-0112			
Boiler #6, EU-6	1,221	67,840	2,827
#5-0113			
Fire Research Lab, EU-7	211	6,030	5,015
#5-0557			
Emer. Generator (1,000 kW)	11	1867	78
#9-0630, EU-9			
Emer. Generator (500 kW)	4	633	26
#9-0898, EU-10			
Emer. Generator (1,250 kW)	6	968	40
PTC 031-0323-9-1199			
NG Emer. Gen. #1 (500 kW)	3	126	434
PTC 031-0323-9-1213			
NG Emer. Gen. #2 (500 kW)	3	131	366
PTC 031-0323-9-1214			
Combustion Turbine	37,720	218,985	9,124
#5-2363, EU-11			
HRSG with Low NOx Duct Burners	13,441	80,157	3,340
#5-2364, EU-12			
Lab Use - Fugitive	66	363	15
Totals	62,550	561,820	28,962

[1]Emissions must be broken down by equipment registration number (ex 9-0076, 9-0077)

This form must be used to report Greenhouse gas emissions:

- carbon dioxide (CO2)
- methane (CH4)
- nitrous oxide (N2O)
- hydrofluorocarbons (HFCs)
- perfluorocarbons (PFCs)
- sulfur hexafluoride (SF6)

* Use a separate form for each pollutant.

* Please attach all calculations.

FORM 6 **GREENHOUSE GAS AIR POLLUTANTS** **Calender Year:** 2021

EMISSIONS CERTIFICATION REPORT

Facility Name: National Institute of Standards and Technology **Facility ID:** 24-031-0323 **Pollutant:** Methane

Equipment Description/ Registration Number	Actual Emissions		
	Tons/Yr	Lbs/Day	Lbs/hr
Boiler #1, EU-1	0.04	0.56	0.02
#5-0108			
Boiler #2, EU-2	0.03	0.47	0.02
#5-0109			
Boiler #3, EU-3	0.03	0.71	0.03
#5-0110			
Boiler #4, EU-4	0.03	0.49	0.02
#5-0111			
Boiler #5, EU-5	0.06	1.28	0.05
#5-0112			
Boiler #6, EU-6	0.02	1.30	0.05
#5-0113			
Fire Research Lab, EU-7	0.00	0.12	0.10
#5-0557			
Emer. Generator (1,000 kW)	0.00	0.09	0.00
#9-0630, EU-9			
Emer. Generator (500 kW)	0.00	0.03	0.00
#9-0898, EU-10			
Emer. Generator (1,250 kW)	0.00	0.05	0.00
PTC 031-0323-9-1199			
NG Emer. Gen. #1 (500 kW)	0.00	0.04	0.13
PTC 031-0323-9-1213			
NG Emer. Gen. #2 (500 kW)	0.00	0.04	0.11
PTC 031-0323-9-1214			
Combustion Turbine	3	17	1
#5-2363, EU-11			
HRSG with Low NOx Duct Burners	1	6	0.261
#5-2364, EU-12			
Lab Use - Fugitive	0.06	0.34	0.01
Totals	4.28	28.89	1.53

[1]Emissions must be broken down by equipment registration number (ex 9-0076, 9-0077)

This form must be used to report Greenhouse gas emissions:

- carbon dioxide (CO2)
- methane (CH4)
- nitrous oxide (N2O)
- hydrofluorocarbons (HFCs)
- perfluorocarbons (PFCs)
- sulfur hexafluoride (SF6)

* Use a separate form for each pollutant.

* Please attach all calculations.

FORM 6 **GREENHOUSE GAS AIR POLLUTANTS** **Calender Year:** 2021

EMISSIONS CERTIFICATION REPORT

Facility Name: National Institute of Standards and Technology **Facility ID:** 24-031-0323 **Pollutant:** Nitrous Oxide

Equipment Description/ Registration Number	Actual Emissions		
	Tons/Yr	Lbs/Day	Lbs/hr
Boiler #1, EU-1	0.04	0.54	0.02
#5-0108			
Boiler #2, EU-2	0.03	0.45	0.02
#5-0109			
Boiler #3, EU-3	0.03	0.68	0.03
#5-0110			
Boiler #4, EU-4	0.03	0.47	0.02
#5-0111			
Boiler #5, EU-5	0.05	1.23	0.05
#5-0112			
Boiler #6, EU-6	0.02	1.24	0.05
#5-0113			
Fire Research Lab, EU-7	0.00	0.11	0.09
#5-0557			
Combustion Turbine	1.03	5.97	0.25
#5-2363, EU-11			
HRSG with Low NOx Duct Burners	0.08	0.46	0.02
#5-2364, EU-12			
Lab Use - Fugitive	0.22	1.19	0.05
Totals	1.53	12.34	0.60

[1]Emissions must be broken down by equipment registration number (ex 9-0076, 9-0077)

This form must be used to report Greenhouse gas emissions:

- carbon dioxide (CO2)
- methane (CH4)
- nitrous oxide (N2O)
- hydrofluorocarbons (HFCs)
- perfluorocarbons (PFCs)
- sulfur hexafluoride (SF6)

* Use a separate form for each pollutant.

* Please attach all calculations.

FORM 6 **GREENHOUSE GAS AIR POLLUTANTS** **Calender Year:** 2021

EMISSIONS CERTIFICATION REPORT

Facility Name: National Institute of Standards and Technology **Facility ID:** 24-031-0323 **Pollutant:** Hydrofluorocarbons (HFCs)

Equipment Description/ Registration Number	Actual Emissions		
	Tons/Yr	Lbs/Day	Lbs/hr
Boiler #1, EU-1			
#5-0108			
Boiler #2, EU-2			
#5-0109			
Boiler #3, EU-3			
#5-0110			
Boiler #4, EU-4			
#5-0111			
Boiler #5, EU-5			
#5-0112			
Boiler #6, EU-6			
#5-0113			
Fire Research Lab, EU-7			
#5-0557			
Emer. Generator (1,000 kW)			
#9-0630, EU-9			
Emer. Generator (500 kW)			
#9-0898, EU-10			
Emer. Generator (1,250 kW)			
PTC 031-0323-9-1199			
NG Emer. Gen. #1 (500 kW)			
PTC 031-0323-9-1213			
NG Emer. Gen. #2 (500 kW)			
PTC 031-0323-9-1214			
Combustion Turbine			
#5-2363, EU-11			
HRSG with Low NOx Duct Burners			
#5-2364, EU-12			
Lab Use - HFCs (fugitive)	1.86	10.20	0.42
Totals	1.86	10.20	0.42

[1]Emissions must be broken down by equipment registration number (ex 9-0076, 9-0077)

This form must be used to report Greenhouse gas emissions:

- carbon dioxide (CO2)
- methane (CH4)
- nitrous oxide (N2O)
- hydrofluorocarbons (HFCs)
- perfluorocarbons (PFCs)
- sulfur hexafluoride (SF6)

* Use a separate form for each pollutant.

* Please attach all calculations.

FORM 6 **GREENHOUSE GAS AIR POLLUTANTS** **Calender Year:** 2021

EMISSIONS CERTIFICATION REPORT

Facility Name: National Institute of Standards and Technology **Facility ID:** 24-031-0323 **Pollutant:** Perfluorocarbons (PFCs)

Equipment Description/ Registration Number	Actual Emissions		
	Tons/Yr	Lbs/Day	Lbs/hr
Boiler #1, EU-1			
#5-0108			
Boiler #2, EU-2			
#5-0109			
Boiler #3, EU-3			
#5-0110			
Boiler #4, EU-4			
#5-0111			
Boiler #5, EU-5			
#5-0112			
Boiler #6, EU-6			
#5-0113			
Fire Research Lab, EU-7			
#5-0557			
Emer. Generator (1,000 kW)			
#9-0630, EU-9			
Emer. Generator (500 kW)			
#9-0898, EU-10			
Emer. Generator (1,250 kW)			
PTC 031-0323-9-1199			
NG Emer. Gen. #1 (500 kW)			
PTC 031-0323-9-1213			
NG Emer. Gen. #2 (500 kW)			
PTC 031-0323-9-1214			
Combustion Turbine			
#5-2363, EU-11			
HRSG with Low NOx Duct Burners			
#5-2364, EU-12			
Lab Use - PFCs (fugitive)	0.10	0.56	0.02
Totals	0.10	0.56	0.02

[1]Emissions must be broken down by equipment registration number (ex 9-0076, 9-0077)

This form must be used to report Greenhouse gas emissions:

- carbon dioxide (CO2)
- methane (CH4)
- nitrous oxide (N2O)
- hydrofluorocarbons (HFCs)
- perfluorocarbons (PFCs)
- sulfur hexafluoride (SF6)

* Use a separate form for each pollutant.

* Please attach all calculations.

FORM 6 **GREENHOUSE GAS AIR POLLUTANTS EMISSIONS CERTIFICATION REPORT** **Calender Year:** 2021

Facility Name: National Institute of Standards and Technology **Facility ID:** 24-031-0323 **Pollutant:** Sulfur Hexafluoride (SF6)

Equipment Description/ Registration Number	Actual Emissions		
	Tons/Yr	Lbs/Day	Lbs/hr
Boiler #1, EU-1			
#5-0108			
Boiler #2, EU-2			
#5-0109			
Boiler #3, EU-3			
#5-0110			
Boiler #4, EU-4			
#5-0111			
Boiler #5, EU-5			
#5-0112			
Boiler #6, EU-6			
#5-0113			
Fire Research Lab, EU-7			
#5-0557			
Emer. Generator (1,000 kW)			
#9-0630, EU-9			
Emer. Generator (500 kW)			
#9-0898, EU-10			
Emer. Generator (1,250 kW)			
PTC 031-0323-9-1199			
NG Emer. Gen. #1 (500 kW)			
PTC 031-0323-9-1213			
NG Emer. Gen. #2 (500 kW)			
PTC 031-0323-9-1214			
Combustion Turbine			
#5-2363, EU-11			
HRSG with Low NOx Duct Burners			
#5-2364, EU-12			
Lab Use - SF6 (fugitive)	0.40	2.22	0.09
Totals	0.40	2.22	0.09

[1]Emissions must be broken down by equipment registration number (ex 9-0076, 9-0077)

This form must be used to report Greenhouse gas emissions:

- carbon dioxide (CO2)
- methane (CH4)
- nitrous oxide (N2O)
- hydrofluorocarbons (HFCs)
- perfluorocarbons (PFCs)
- sulfur hexafluoride (SF6)

* Use a separate form for each pollutant.

* Please attach all calculations.

2021 Capacity Factors for NIST Generators (EU-9 and EU-10), Heat Recovery Steam Generator with Low NOx Duct Burners (EU-12), and Emergency Generators (MDE PTC Nos. 031-0323-9-1199, 031-0323-9-1213, and 031-0323-9-1214)

Emission Unit	Hours Run	Capacity Factor*
EU-9 Diesel Fired Emergency Generator rated at 1,000 kilowatts (MDE Registration No. 031-0323-9-0630)	39.8	0.45%
EU-10 Diesel Fired Emergency Generator rated at 500 kilowatts (MDE Registration No. 031-0323-9-0898)	27.0	0.31%
EU-12 Heat Recovery Steam Generator (HRSG) rated at 50.78 MMBtu/hr and equipped with low NOx duct burners (MDE Registration No. 031-0323-5-2364)	8049.0	91.88%
Diesel Fired Emergency Generator rated at 1,250 kilowatts (MDE PTC No. 031-0323-9-1199)	16.5	0.19%
Natural Gas Fired Emergency Generator rated at 500 kilowatts (MDE PTC No. 031-0323-9-1213)	15.1	0.17%
Natural Gas Fired Emergency Generator rated at 500 kilowatts (MDE PTC No. 031-0323-9-1214)	18.6	0.21%

* Operation hours are used to calculate capacity factors

Appendix:

Supporting Calculations

2021 AIR EMISSIONS CALCULATIONS FOR INDIVIDUAL EMISSION UNITS - NIST, GAITHERSBURG MARYLAND

Emissions per Boiler, CHP, Fire Research Lab, and NG Generators from Natural Gas (lbs/year)

Emission Unit	Gas Use (CCF)	Gas Use (million scf)	NOx Emissions (lbs/year)	VOC Emissions (lbs/year)	SOx Emissions (lbs/year)	CO Emissions (lbs/year)	PM Total Emissions (lbs/year)	PM - Filterable (lbs/year)	PM10 - Filterable (lbs/year)	PM2.5 Filterable (lbs/year)	PM Condensable Emissions (lbs/year)	Lead (lbs/year)
EU-1 (Boiler #1)*	314,985	31.499	1,575	173	19	2,646	239	60	60	60	180	0.0157
EU-2 (Boiler #2)*	235,081	23.508	1,175	129	14	1,975	179	45	45	45	134	0.0118
EU-3 (Boiler #3)*	297,705	29.771	1,489	164	18	2,501	226	57	57	57	170	0.0149
EU-4 (Boiler #4)*	266,024	26.602	1,330	146	16	2,235	202	51	51	51	152	0.0133
EU-5 (Boiler #5)*	495,893	49.589	2,479	273	30	4,166	377	94	94	94	283	0.0248
EU-6 (Boiler #6)*	203,153	20.315	1,016	112	12	1,706	154	39	39	39	116	0.0102
EU-7 (Fire Research Lab)	35,175	3.518	352	19	2	295	27	7	7	7	20	0.0018
PTC 031-0323-9-1213 Emer. Gen1 (500 kW) and PTC 031-0323-9-1214 Emer. Gen2 (500kW) From table below			5	4	0	4	2	2	1	1	1	
Total	1,848,016	184.802	9,421	1,020	111	15,527	1,407	353	352	352	1,055	0.0924

* Boilers 1-4 have been retrofitted with low NOx burners in 2014. All boilers at NIST (1 - 6) used low NOx burners since November of 2014

Combustion Turbine and HRSG NOx Calculation from Stack Test Emission Factors

Emission Unit	Gas Use (MMBtu)		Nox Emissions (lbs/year)
EU-11 (Combustion Turbine Only)	23,870		721
EU-11 + EU-12 (CT + HRSG Low NOx Duct Burners)	906,338		42,779
Total	930,207		43,500

Combustion Turbine and HRSG Calculations from AP-42 Emission Factors

Emission Unit	Gas Use (MMBtu)	Gas Use (10^6 Cubic Feet)		VOC Emissions (lbs/year)	SOx Emissions (lbs/year)	CO Emissions (lbs/year)	PM Total Emissions (lbs/year)	PM - Filterable (lbs/year)	PM10 - Filterable (lbs/year)	PM2.5 Filterable (lbs/year)	PM Condensable Emissions (lbs/year)	Lead (lbs/year)
EU-11 (Combustion Turbine Only)	685,820	633		1,440	2,332	38,406	12,345	12,345	12,345	12,345	3,223	ND
EU-12 (HRSG with Low NOx Duct Burners Only)	244,387	225		4,888	831	19,551	2,444	2,444	2,444	2,444	1,344	0.1198
Total				6,328	3,163	57,957	14,789	14,789	14,789	14,789	4,567	

BOILERS **Natural Gas Combustion**	**AP-42 Emission Factor in lbs/10^6 Cubic Feet***	**Emission Factor Source (AP-42)**
NOx (Std boilers)	100.00	Table 1.4-1
***NOx** (low NOx blrs)	50.00	Table 1.4-1
VOC	5.50	Table 1.4-2
SOx	0.60	Table 1.4-2
CO	84.00	Table 1.4-1
PM (Total)	7.60	Table 1.4-2
PM (Filterable)	1.90	Table 1.4-2
PM10 (Filterable)	1.90	Table 1.4-2
PM2.5 (Filterable)	1.90	Table 1.4-2
PM (Condensable)	5.70	Table 1.4-2
Lead	0.0005	Table 1.4-2

* Boilers 1-4 have been retrofitted with low NOx burners in 2014. All boilers at NIST (1 - 6) used low NOx burners since November of 2014

COMBUSTION TURBINE **Lean Premix**	**Emission Factors lbs/MMBtu**	**Emission Factor Source**	**CT Only Emission Factor from Stack Test on 8/22/2019 lbs/MMBtu**	**CT with HRSG Emission Factor from Stack Test on 8/22/2019 lbs/MMBtu**
NOx		Stack Test on 8/22/19	0.0302	0.0472
VOC	0.0021	AP-42 Table 3.1-2a***		
SO_2	0.0034	AP-42 Table 3.1-2a[b***]		
CO	0.056	Vendor Guarantee		
PM (Total)	0.018	Vendor Guarantee		
PM (Filterable)	0.018	Vendor Guarantee		
PM10 (Filterable)	0.018	Vendor Guarantee		
PM2.5 (Filterable)	0.018	Vendor Guarantee		
PM (Condensable)	0.0047	Table 3.1-2a***		
Lead	ND	Table 3.1-2a		

HRSG **Duct Burners**	**Emission Factors lbs/MMBtu**	**Emission Factor Source**
NOx†	0.0472	Stack Test on 8/22/19
VOC	0.02	Vendor Guarantee
SO_2	0.0034	AP-42 Table 3.1-2a[b***]
CO	0.08	Vendor Guarantee
PM (Total)	0.01	Vendor Guarantee
PM (Filterable)	0.01	Vendor Guarantee
PM10 (Filterable)	0.01	Vendor Guarantee
PM2.5 (Filterable)	0.01	Vendor Guarantee
PM (Condensable)	0.0055	Table 1.4-2*
Lead	4.9020E-07	Table 1.4-2*

† - NOx from HRSG with Low NOx Duct Burners running simultaneously with CTG

*** Note: Emission factor for lean premix not given. Factor for uncontrolled gas turbine used.

*** - Emission factor converted to lbs/MMBtu from lbs/10^6 scf shown in AP-42 table**

2021 AIR EMISSIONS CALCULATIONS FOR INDIVIDUAL EMISSION UNITS - NIST, GAITHERSBURG MARYLAND

Emissions per Boiler from Fuel Oil (lbs/year)

Emission Unit	Fuel Oil Use (Gal)	Fuel Oil Use (10^3 gal)	Nox Emissions (lbs)	VOC Emissions (lbs)	SOx Emissions (lbs)	CO Emissions (lbs)	PM Total Emissions (lbs)	PM Filterable (lbs)	PM10 Filterable (lbs)	PM2.5 Filterable(lbs)	PM Condensable Emissions (lbs)	Lead (lbs)
EU-1 (Boiler #1)	9,028	9.028	181	3	2	45	30	18	10	7	12	0.0114
EU-2 (Boiler #2)	4,665	4.665	93	2	1	23	15	9	5	4	6	0.0059
EU-3 (Boiler #3)	2,043	2.043	41	1	0	10	7	4	2	2	3	0.0026
EU-4 (Boiler #4)	2,104	2.104	42	1	0	11	7	4	2	2	3	0.0027
EU-5 (Boiler #5)	482	0.482	10	0	0	2	2	1	1	0	1	0.0006
EU-6 (Boiler #6)	197	0.197	4	0	0	1	1	0	0	0	0	0.0002
EU-9, EU-10, and PTC 031-0323-9-1199 Emer. Generators (From Table Below)			582	16	0.28	155	13	11	9	9	1	
Total	18,519	18.519	370	6	4	93	61	37	20	15	25	0.0233

Emissions per Generator from Fuel Oil (lbs/year)

Generator No.	Generator Size (kW)	Run Hours	Fuel Used (MMBtu)	Nox Emissions (lbs)	VOC Emissions (lbs)	SOx Emissions (lbs)	CO Emissions (lbs)	PM Total Emissions (lbs)	PM Filterable (lbs)	PM10 Filterable (lbs)	PM2.5 Filterable(lbs)	PM Condensable Emissions (lbs)
EU-9 (Emer. Gen. 1,000 kW)	1,000	39.8	135.80	434.57	12.22	0.21	115.43	9.47	8.42	6.74	6.50	1.05
EU-10 (Emer. Gen. 500 kW)	500	27	46.06	147.40	4.15	0.07	39.15	3.21	2.86	2.28	2.21	0.35
PTC 031-0323-9-1199 (Emer. Gen. 1,250 kW)	1,250	16.5	70.38	253.28	6.33	0.11	27.28	6.82	4.36	3.49	3.37	0.54
Total				582	16	0.28	155	13	11	9	9	1

Emissions per Generator from Natural Gas (lbs/year)

Generator No.	Generator Size (kW)	Run Hours	Fuel Used (MMBtu)	NOx Emissions (lbs)	VOC Emissions (lbs)	SOx Emissions (lbs)	CO Emissions (lbs)	PM Total Emissions (lbs)	PM Filterable (lbs)*	PM10 Filterable (lbs)	PM2.5 Filterable(lbs)	PM Condensable Emissions (lbs)
PTC 031-0323-9-1213 Gen1 (Emer. Gen. 500 kW)	500	15.1	59.52	2.69	1.76	0.04	1.92	1.16	1.13	0.57	0.57	0.59
PTC 031-0323-9-1214 Gen2 (Emer. Gen. 500 kW)	500	18.6	61.90	2.80	1.83	0.04	2.00	1.20	1.18	0.59	0.59	0.61
Total				5.49	3.59	0.07	3.92	2.36	2.31	1.15	1.15	1.20

* PM Filterable = PM10 + PM2.5

Emissions from Gasoline UST (lbs/year)

Emission Unit	Gasoline Throughput (gal/year)	AP-42 VOC Emissions Factor (lbs/1,000 gal)	VOC Emissions (lbs/year)	VOC Emissions (tons/year)
EU-8 (6,000 Gal Gasoline UST)	0.00	3.10	0.00	0.000

Boiler Emissions	AP-42 Emission Factor in lbs/10^3 gals of #2 fuel oil	Emission Factor Source (AP-42)
NOx	20.00	Table 1.3-1
VOC	0.34	Table 1.3-3*
SOx	0.216	Table 1.3-1**
CO	5.00	Table 1.3-1
PM (Total)	3.30	Table 1.3-7
PM - Filterable	2.00	Table 1.3-7
PM10 Filterable	1.08	Table 1.3-7
PM2.5 Filterable	0.83	Table 1.3-7
PM Condensable	1.30	Table 1.3-7
Lead	0.00126	Table 1.3-7

* Reported as NMTOC

** Assuming Sulfur % = 15 ppm (Fuel Oil is certified 15 ppm max)

Diesel Generator Emissions	AP-42 Emission Factor in lb/MMBtu	Emission Factor Source (AP-42)
NOx	3.2	Table 3.4-1
VOC	0.09	Table 3.4-1
SOx	0.001515	Table 3.4-1**
CO	0.85	Table 3.4-1
PM10 Filterable	0.0496	Table 3.4-2
PM Filterable	0.062	Table 3.4-2
PM Condensable	0.0077	Table 3.4-2
PM Total	0.07	Table 3.4-2
PM 2.5	0.0479	Table 3.4-2 ***
CO_2	165	Table 3.4-1

** Assuming Sulfur % = 15 ppm (Fuel Oil is certified 15 ppm max)

*** PM 2.5 not given, uses PM 3 emission factor from Table

Generator Conversion Factors	
1 kW*hr = 3412.142 Btu	1 CCF = 0.1027 MMBtu
1 MMBtu = 1,000,000 Btu	

Gasoline UST VOC Emissions from Operations	AP-42 Emission Factor in lbs/1,000 gal	Emission Factor Source (AP-42)
Balanced Submerged Filling	0.3	Table 5.2-7
UST Breathing/Filling	1.0	Table 5.2-7
Displacement Losses (cont.)	1.1	Table 5.2-7
Spillage	0.7	Table 5.2-7
Total (lbs/1,000 gal)	**3.1**	**Table 5.2-7**

PTC 031-0323-9-1199 Diesel Generator Emissions	AP-42 Emission Factor in lb/MMBtu	Emission Factor Source (AP-42)
NOx*	3.598983998	Vendor Data*
VOC	0.09	Table 3.4-1
SOx	0.001515	Table 3.4-1**
CO	0.387682298	Vendor Data
PM10 Filterable	0.0496	Table 3.4-2
PM Filterable	0.062	Table 3.4-2
PM Condensable	0.0077	Table 3.4-2
PM Total	0.10	Vendor Data
PM 2.5	0.0479	Table 3.4-2 ***
CO_2	165	Table 3.4-1

* Vendor Emissions Data provides NOx + NMHC. NOx not shown separately.

Natural Gas Generator Emissions	AP-42 Emission Factor in lb/MMBtu	Emission Factor Source (AP-42)
NOx*	0.045229601	Vendor Data
VOC	0.0296	Table 3.2-3
SOx**	0.000588	Table 3.2-3
CO	0.032306858	Vendor Data
PM10 Filterable	0.0095	Table 3.2-3
PM Filterable		
PM Condensable	0.00991	Table 3.2-3
PM Total***	0.02	Table 3.2-3
PM 2.5	0.0095	Table 3.2-3
CO_2	110	Table 3.2-3

* NOx <90% load; ** SOx as SO2; *** PM Total = PM10 Filterable + PM Condensable

2021 AIR EMISSIONS CALCULATIONS FOR INDIVIDUAL EMISSION UNITS - NIST, GAITHERSBURG MARYLAND

Total Emissions Natural Gas, Fuel Oil, and Gasoline Tank (lbs/year)

Emission Unit	Nox Emissions (lbs)	VOC Emissions (lbs)	Sox Emissions (lbs)	CO Emissions (lbs)	PM Total Emissions (lbs)	PM - Filterable (lbs)	PM10 - Filterable (lbs)	PM2.5 Filterable (lbs)	PM Condensable Emissions (lbs)	Lead (lbs)
EU-1 (Boiler #1)	1,755	176	21	2,691	269	78	70	67	191	0.0271
EU-2 (Boiler #2)	1,269	131	15	1,998	194	54	50	49	140	0.0176
EU-3 (Boiler #3)	1,529	164	18	2,511	233	61	59	58	172	0.0175
EU-4 (Boiler #4)	1,372	147	16	2,245	209	55	53	52	154	0.0160
EU-5 (Boiler #5)	2,489	273	30	4,168	378	95	95	95	283	0.0254
EU-6 (Boiler #6)	1,020	112	12	1,707	155	39	39	39	116	0.0104
EU-7 (Fire Research Lab)	352	19	2	295	27	7	7	7	20	0.0018
EU-8 Gasoline AST		0								
EU-9 Emer. Gen. (1,000 kW)	435	12	0.21	115	9	8	7	7	1	
EU-10 Emer. Gen. (500 kW)	147	4	0.07	39	3	3	2	2	0.4	
Emer. Gen. (1,250 kW) - Diesel	253	6	0.11	27	7	4	3	3	0.5	
Emer. Gen. 1 (500 kW) - NG	3	2	0.04	2	1	1	1	1	0.6	
Emer. Gen. 2 (500 kW) - NG	3	2	0.04	2	1	1	1	1	0.6	
EU-11 (Combustion Turbine)	721	1,440	2,332	38,406	12,345	12,345	12,345	12,345	3,223	
EU-12 (HRSG with low NOx burners)*		4,888	831	19,551	2,444	2,444	2,444	2,444	1,344	0.1198
EU-11 + EU-12 (CT + HRSG with Low NOx Duct Burners - NOx calc only)	42,779									
Total	54,127	7,377	3,278	73,759	16,276	15,195	15,173	15,168	5,648	0.2355

Total Emissions from Natural Gas, Fuel Oil, and Gasoline UST (lbs/day)

Emission Unit	Hours of Operation	Days of Operation	Nox Emissions (lbs/day)	VOC Emissions (lbs/day)	Sox Emissions (lbs/day)	CO Emissions (lbs/day)	PM Total Emissions (lbs/day)	PM - Filterable (lbs/day)	PM10 - Filterable (lbs/day)	PM2.5 Filterable (lbs/day)	PM Condensable Emissions (lbs/day)	Lead (lbs)
EU-1 (Boiler #1)	2,914	133	13	1.3	0.2	20.2	2.0	0.6	0.5	0.5	1.4	0.0002
EU-2 (Boiler #2)	2,516	117	11	1.1	0.1	17.1	1.7	0.5	0.4	0.4	1.2	0.0002
EU-3 (Boiler #3)	2,228	97	16	1.7	0.2	25.9	2.4	0.6	0.6	0.6	1.8	0.0002
EU-4 (Boiler #4)	2,675	127	11	1.2	0.1	17.7	1.6	0.4	0.4	0.4	1.2	0.0001
EU-5 (Boiler #5)	1,913	89	28	3.1	0.3	46.8	4.3	1.1	1.1	1.1	3.2	0.0003
EU-6 (Boiler #6)	706	36	28	3.1	0.3	47.4	4.3	1.1	1.1	1.1	3.2	0.0003
EU-7 (Fire Research Lab)	84.2	70	5	0.3	0.0	4.2	0.4	0.1	0.1	0.1	0.3	0
EU-8 Gasoline AST	0.0	0		0.0								
EU-9 Emer. Gen. (1,000 kW) - Diesel	39.8	12	36	1.0	0.0	9.6	0.8	0.7	0.6	0.5	0.1	
EU-10 Emer. Gen. (500 kW) - Diesel	27.0	12	12	0.3	0.0	3.3	0.3	0.2	0.2	0.2	0.0	
Emer. Gen. (1,250 kW) - Diesel	16.5	12	253	6.3	0.1	27.3	6.8	4.4	3.5	3.4	0.5	
Emer. Gen. 1 (500 kW) - NG	15.1	52	3	1.8	0.0	1.9	1.2	1.1	0.6	0.6	0.6	
Emer. Gen. 2 (500 kW) - NG	18.6	52	3	1.8	0.0	2.0	1.2	1.2	0.6	0.6	0.6	
EU-11 (Combustion Turbine)	8,268	345	2	4.2	6.8	111.5	35.8	35.8	35.8	35.8	9.4	
EU-12 (HRSG with low NOx burners only)*	8,049	335		14.6	2.5	58.3	7.3	7.3	7.3	7.3	4.0	
EU-11/12 (CT with HRSG - NOx calc only)	8,049	335	128									
Total			421	41.8	10.8	393.2	70.0	55.1	52.7	52.5	27.5	0.0013

TOTAL EMISSIONS BY EMISSION UNIT IN TONS PER YEAR

Emission Unit	Nox Emissions (tons)	VOC Emissions (tons)	SOx Emissions (tons)	CO Emissions (tons)	PM Total Emissions (tons)	PM - Filterable (tons)	PM10 - Filterable (tons)	PM2.5 Filterable (tons)	PM Condensable Emissions (tons)	Lead (tons)
EU-1 (Boiler #1)	0.88	0.09	0.01	1.35	0.13	0.04	0.03	0.03	0.10	0.000014
EU-2 (Boiler #2)	0.63	0.07	0.01	1.00	0.10	0.03	0.02	0.02	0.07	0.000009
EU-3 (Boiler #3)	0.76	0.08	0.01	1.26	0.12	0.03	0.03	0.03	0.09	0.000009
EU-4 (Boiler #4)	0.69	0.07	0.01	1.12	0.10	0.03	0.03	0.03	0.08	0.000008
EU-5 (Boiler #5)	1.24	0.14	0.01	2.08	0.19	0.05	0.05	0.05	0.14	0.000013
EU-6 (Boiler #6)	0.51	0.06	0.01	0.85	0.08	0.02	0.02	0.02	0.06	0.000005
EU-7 (Fire Research Lab)	0.18	0.01	0.00	0.15	0.01	0.00	0.00	0.00	0.01	0.000001
EU-8 Gasoline UST		0.00								
EU-9 Emer. Gen. (1,000 kW)	0.22	0.01	0.00	0.06	0.00	0.00	0.00	0.00	0.00	
EU-10 Emer. Gen. (500 kW)	0.07	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	
Emer. Gen. (1,250 kW) - Diesel	0.13	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	
Emer. Gen. 1 (500 kW) - NG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Emer. Gen. 2 (500 kW) - NG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
EU-11 (Combustion Turbine)	0.36	0.72	1.17	19.20	6.17	6.17	6.17	6.17	1.61	
EU-12 (HRSG with low NOx burners)*	0.00	2.44	0.42	9.78	1.22	1.22	1.22	1.22	0.67	
EU-11/12 (CT with HRSG - NOx calc only)	21.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Total	27.06	3.69	1.64	36.88	8.14	7.60	7.59	7.58	2.82	0.000058

Total Tons of NO_x, VOC, SO_x and PM = **40.53**

2021 AIR EMISSIONS CALCULATIONS FOR INDIVIDUAL EMISSION UNITS - NIST, GAITHERSBURG MARYLAND

CY 2021 Run Hours for NIST Emission Units (NG and Fuel Oil)

		Days of Operation	Hours of Operation
EU-1 (Boiler #1)	Registration number 5-108	133	2,914
EU-2 (Boiler #2)	Registration number 5-109	117	2,516
EU-3 (Boiler #3)	Registration number 5-110	97	2,228
EU-4 (Boiler #4)	Registration number 5-111	127	2,675
EU-5 (Boiler #5)	Registration number 5-112	89	1,913
EU-6 (Boiler #6)	Registration number 5-113	36	706
EU-7 Fire Research Lab	Registration number 6-0557	70	84
EU-8 Gasoline UST	Registration number 9-0684	0	N/A
EU-9 Emer. Gen. (1,000 kW)	Registration number 9-0630	12	39.8
EU-10 Emer. Gen. (500 kW)	Registration number 9-0898	12	27.0
Emer. Gen. (1,250 kW) - Diesel	Reg. no. PTC 031-0323-9-1199	12	16.5
Emer. Gen. 1 (500 kW) - NG	Reg. no. PTC 031-0323-9-1213	52	15.1
Emer. Gen. 2 (500 kW) - NG	Reg. no. PTC 031-0323-9-1214	52	18.6
EU-11 (Combustion Turbine)	Registration number 5-2363	345	8,268
EU-12 (HRSG with low NOx burners)*	Registration number 5-2364	335	8,049

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY, GAITHERSBURG, MARYLAND
2021 NOx EMISSIONS OF STEAM GENERATION PLANT, BUILDING 302, Boilers 1 - 6, EUs 1-6

Month	10^3 Gal. of #2 Fuel Oil	AP-42 Emission Factor in Lbs of NO_x per 10^3 gal of fuel oil	Lbs of NO_x Emissions per month from Fuel Oil	Tons NO_x Emissions per month form Fuel Oil		CCF of Natural Gas Usage	10^6 cubic feet of Natural Gas Usage	AP-42 Emission Factor in Lbs of NO_x per 10^6 cubic feet of natural gas*	Lbs of NO_x Emissions per month from Natural Gas	Tons of NOx per month from Natural Gas	Total Tons of NOx per month from Fuel oil and Natural Gas
Jan	0.006	20.00	0.1	0.000		287,101	28.710	50.00	1,436	0.718	0.718
Feb	0.000	20.00	0.0	0.000		274,836	27.484	50.00	1,374	0.687	0.687
Mar	0.000	20.00	0.0	0.000		186,678	18.668	50.00	933	0.467	0.467
Apr	0.000	20.00	0.0	0.000		144,109	14.411	50.00	721	0.360	0.360
May	0.000	20.00	0.0	0.000		108,488	10.849	50.00	542	0.271	0.271
Jun	0.000	20.00	0.0	0.000		72,095	7.210	50.00	360	0.180	0.180
Jul	6.225	20.00	124.5	0.062		62,269	6.227	50.00	311	0.156	0.218
Aug	0.799	20.00	16.0	0.008		72,411	7.241	50.00	362	0.181	0.189
Sep	0.082	20.00	1.6	0.001		74,692	7.469	50.00	373	0.187	0.188
Oct	2.012	20.00	40.2	0.020		134,403	13.440	50.00	672	0.336	0.356
Nov	9.230	20.00	184.6	0.092		216,020	21.602	50.00	1,080	0.540	0.632
Dec	0.165	20.00	3.3	0.002		179,739	17.974	50.00	899	0.449	0.451
CY SUM	**19**		370	**0**		179,739	**181**		**9,064**	**5**	**5**

* Boilers 1-4 have been retrofitted with low NOx burners in 2014. All boilers at NIST (1 - 6) used low NOx burners since November of 2014

NOx EMISSIONS OF FIRE RESEARCH LAB, BUILDING 205, EU-7 -CY 2021

Date	CCF of Natural Gas Usage	10^6 Cubic Feet of Natural Gas Usage	AP-42 Emission Factor in Lbs of NO_x per 10^6 cubic feet of Natural Gas	Lbs of NO_x Emissions per month from Natural Gas		Tons of Nox per month from Natural Gas
Jan	3,920	0.392	100.0	39.2		0.0196
Feb	4,155	0.416	100.0	41.6		0.0208
Mar	4,190	0.419	100.0	41.9		0.0210
Apr	7,795	0.780	100.0	78.0		0.0390
May	4,920	0.492	100.0	49.2		0.0246
Jun	780	0.078	100.0	7.8		0.0039
Jul	365	0.037	100.0	3.7		0.0018
Aug	5	0.001	100.0	0.1		0.0000
Sep	0	0.000	100.0	0.0		0.0000
Oct	1,770	0.177	100.0	17.7		0.0089
Nov	3,760	0.376	100.0	37.6		0.0188
Dec	3,515	0.352	100.0	35.2		0.0176
CY SUM	**35,175**	**3.518**		**351.8**		**0.1759**

2021 AIR EMISSIONS CALCULATIONS FOR INDIVIDUAL EMISSION UNITS - NIST, GAITHERSBURG MARYLAND

Particulates Emissions - NIST Gaithersburg. MD - CY2021

PM from Natural Gas	Lbs/year	Tons/ Year
PM Total	1,407	0.70
PM Condensable	1,055	0.53
PM Filterable	353	0.18
PM from Fuel Oil		
PM Filterable	37	0.02
PM Condensable	25	0.01

PM from Natural Gas all PM1
PM from Fuel Oil = 0.25% PM10, 0.25% PM2.5 and 0.38% PM1 (AP-42, Table 1.3-7)

	Tons per Year
PM10	7.587
PM2.5	7.584
PM1	2.824

Natural Gas Generator Emissions	AP-42 Emission Factor in lb/MMBtu	Emission Factor Source (AP-42)
CO	0.032306858	Vendor Data
CO_2	110	Table 3.2-3
Methane	0.23	Table 3.2-3

GREENHOUSE GAS EMISSIONS - NIST GAITHERSBURG, MD - CY2021

	AP-42 Emission Factor in lbs/10^6 Cubic Feet NG	AP-42 Emission Factor in lbs/10^3 gals of #2 Fuel Oil	NG Emission Factor Source (AP-42)	#2 Fuel Oil Emission Factor Source (AP-42)
CO_2	120000	22,300	Table 1.4-2	Table 1.3-1
Methane	2.3	0.216	Table 1.4-2	Table 1.3-3*
N2O	2.2	0.26	Table 1.4-2	Table 1.3-1
N2O Low Nox	0.64		Table 1.4-2	

* Reported as NMTOC

Diesel Generator Emissions	AP-42 Emission Factor in lb/MMBtu	Emission Factor Source (AP-42)
CO_2	165	Table 3.4-1
Methane	0.008	Table 3.4-1
N2O	Included in NOx emission factor	

Combustion Turbine Lean Premix	AP-42 Emission Factor in lbs/MMBtu	NG Emission Factor Source (AP-42)	AP-42 Emission Factor in lbs/10^6 Cubic Feet**
CO2	110.0000	Table 3.1-2a***	112200
Methane	0.0086	Table 3.1-2a***	8.772
N2O	0.0030	Table 3.1-2a***	3.06
N2O Low Nox		Table 1.4-2	0.64

** **Conversion Factor** 1020 (lb/MMBTU) = lbs/10^6

*** Note: Emission factor for lean premix not given. Factor for uncontrolled gas turbine used.

Greenhouse Gas Boilers 1-6, Fire Research Lab, and 2 Emergency Generators (Natural Gas)

Emission Unit	Gas Use Boilers (CCF) Gas Use Fire Lab (CCF) Gas Use Emer. Gen (MMBtu)	Gas Use (106 cubic feet) [ml changed unit to 10^6 SCF]	CO_2 Emissions (lbs/yr)	CO_2 Emissions (lbs/day)	CO_2 Emissions (lbs/hr)	Methane Emissions (lbs/yr)	Methane Emissions (lbs/day)	Methane Emissions (lbs/hr)	N2O Emissions (lbs/yr)	N2O Emissions (lbs/day)	N2O Emissions (lbs/hr)
EU-1 (Boiler #1)	314,985	31.499	3,779,820	28,419.70	1,184.15	72.4	0.54	0.02	69.3	0.52	0.02
EU-2 (Boiler #2)	235,081	23.508	2,820,972	24,110.87	1,004.62	54.1	0.46	0.02	51.7	0.44	0.02
EU-3 (Boiler #3)	297,705	29.771	3,572,460	36,829.48	1,534.56	68.5	0.71	0.03	65.5	0.68	0.03
EU-4 (Boiler #4)	266,024	26.602	3,192,288	25,136.13	1,047.34	61.2	0.48	0.02	58.5	0.46	0.02
EU-5 (Boiler #5)	495,893	49.589	5,950,716	66,861.98	2,785.92	114.1	1.28	0.05	109.1	1.23	0.05
EU-6 (Boiler #6)	203,153	20.315	2,437,836	67,717.67	2,821.57	46.7	1.30	0.05	44.7	1.24	0.05
EU-7 (Fire Research Lab)	35,175	3.518	422,100	6,030.00	5,014.77	8.1	0.12	0.10	7.7	0.11	0.09
Emer. Gen. 1 (500 kW) - NG	60		6,548	125.92	433.63	1.9	0.04	0.13			
Emer. Gen. 2 (500 kW) - NG	62		6,809	130.95	366.09	2.0	0.04	0.11			
Total Emissions (lbs/yr)			22,189,549			429			407		0.28
Total Emissions (tons/year)			11,095			0.21			0.20		

Greenhouse Gas Combustion Turbine and HRSG (Natural Gas)

Boiler No.	Gas Use (MMBtu)		CO2 Emissions (lbs/yr)	CO2 Emissions (lbs/day)	CO2 Emissions (lbs/hr)	Methane Emissions (lbs/yr)	Methane Emissions (lbs/day)	Methane Emissions (lbs/hr)	N2O Emissions (lbs/yr)	N2O Emissions (lbs/day)	N2O Emissions (lbs/hr)
EU-11 (Combustion Turbine)	685,820		75,440,243	218,985	9,124	5,898	17	0.71	2,057	6	0.25
EU-12 (HRSG with low NOx burners)*	244,387		26,882,550	80,157	3,340	2,102	6	0.26	153	0	0.02
Total Emissions (lbs/yr)			102,322,792			8,000		0.97	2,211		0.55
Total Emissions (tons/year)			51,161			4.00			1.11		

GREENHOUSE GAS EMISSIONS - NIST GAITHERSBURG, MD - CY2021

Greenhouse Gas Emissions from Fuel Oil

Emission Unit	Fuel Oil Use Boilers - (Gal) Generators - (Hours)	Fuel Oil Use (10^3 gal) Generators (kW)	CO2 Emissions (lbs/yr)	CO2 Emissions (lbs/day)	CO2 Emissions (lbs/hr)	Methane Emissions (lbs/yr)	Methane Emissions (lbs/day)	Methane Emissions (lbs/hr)	N20 Emissions (lbs/yr)	N2O Emissions (lbs/day)	N2O Emissions (lbs/hr)
EU-1 (Boiler #1)	9,028	9.028	201,324	1,513.72	63.07	2.0	0.01	0.001	2.3	0.02	0.001
EU-2 (Boiler #2)	4,665	4.665	104,030	889.14	37.05	1.0	0.01	0.000	1.2	0.01	0.000
EU-3 (Boiler #3)	2,043	2.043	45,559	469.68	19.57	0.4	0.00	0.000	0.5	0.01	0.000
EU-4 (Boiler #4)	2,104	2.104	46,919	369.44	15.39	0.5	0.00	0.000	0.5	0.00	0.000
EU-5 (Boiler #5)	482	0.482	10,749	120.77	5.03	0.1	0.00	0.000	0.1	0.00	0.000
EU-6 (Boiler #6)	197	0.197	4,393	122.03	5.08	0.0	0.00	0.000	0.1	0.00	0.000
EU-9 Emer. Gen. (1,000 kW)	39.8	1,000	22,407	1,867.22	77.80	1.1	0.09	0.004			
EU-10 Emer. Gen. (500 kW)	27.0	500	7,600	633.35	26.39	0.4	0.03	0.001			
Emer. Gen. (1,250 kW) - Diesel	16.5	1,250	11,611	967.62	40.32	0.6	0.05	0.002			
Total Emissions (lbs/yr)		lbs/yr	442,981			5.5			4.8		
Total Emissions (tons/year)		tons/year	221			0.00			0.00		

2021 AIR EMISSIONS CALCULATIONS FOR INDIVIDUAL EMISSION UNITS - NIST, GAITHERSBURG MARYLAND

Greenhouse Gas Emissions - Total - Natural Gas and Fuel Oil

Emission Unit	CO2 Emissions (lbs/yr)	CO2 Emissions (lbs/day)	CO2 Emissions (lbs/hr)	Methane Emissions (lbs/yr)	Methane Emissions (lbs/day)	Methane Emissions (lbs/hr)	N20 Emissions (lbs/yr)	N2O Emissions (lbs/day)	N2O Emissions (lbs/hr)	CO2 Emissions (tons/yr)	Methane Emissions (tons/yr)	N20 Emissions (tons/yr)
EU-1 (Boiler #1)	3,981,144.4	29,933.4	1,247.2	74.4	0.56	0.023	71.6	0.54	0.02	1,991	0.037198299	0.03582199
EU-2 (Boiler #2)	2,925,001.5	25,000.0	1,041.7	55.1	0.47	0.020	52.9	0.45	0.02	1,463	0.027538135	0.02646536
EU-3 (Boiler #3)	3,618,018.9	37,299.2	1,554.1	68.9	0.71	0.030	66.0	0.68	0.03	1,809	0.034456719	0.03301314
EU-4 (Boiler #4)	3,239,207.2	25,505.6	1,062.7	61.6	0.49	0.020	59.1	0.47	0.02	1,620	0.030819992	0.02953616
EU-5 (Boiler #5)	5,961,464.6	66,982.7	2,790.9	114.2	1.28	0.053	109.2	1.23	0.05	2,981	0.057079751	0.05461089
EU-6 (Boiler #6)	2,442,229.1	67,839.7	2,826.7	46.8	1.30	0.054	44.7	1.24	0.05	1,221	0.023383871	0.02237244
EU-7 (Fire Research Lab)	422,100	6,030	5,015	8.1	0.12	0.096	7.74	0.11	0.09	211	0.004045125	0.00386925
EU-9 Emer. Gen. (1,000 kW)	22,407	1,867	78	1.1	0.09	0.004				11	0.00054998	
EU-10 Emer. Gen. (500 kW)	7,600	633	26	0.4	0.03	0.001				4	0.000186551	
Emer. Gen. (1,250 kW) - Diesel	11,611	968	40	0.6	0.05	0.002				6	0.000285009	
Emer. Gen. 1 (500 kW) - NG	6,548	126	434	1.9	0.04	0.127				3	0.000961532	
Emer. Gen. 2 (500 kW) - NG	6,809	131	366	2.0	0.04	0.108				3	0.000999925	
EU-11 (Combustion Turbine)	75,440,243	218,985	9,124	5,898	17.12	0.713	2,057.46	5.97	0.25	37,720	2.949027677	1.028730585
EU-12 (HRSG with low NOx burners)*	26,882,550	80,157	3,340	2,102	6.27	0.261	153.34	0.46	0.02	13,441	1.050863302	0.076670373
Total Emissions (lbs/yr)	124,966,933.4			8,434.8			2,622.2					
Total Emissions (tons/year)	62,483			4.22			1.31					

Boilers 1-6 CO2 Emissions from Natural Gas

	3,779,820.0
Note: lbs/year summed up and converted to tons/yr	2,820,972.0
	3,572,460.0
	3,192,288.0
	5,950,716.0
	2,437,836.0
Total CO2 Emissions from Boilers 1-6 (lbs/year) =	21,754,092.0
Total CO2 Emissions from Boilers 1-6 (tons/year) =	10,877

EU-11 and EU-12 Combustion Turbine and HRSG CO2 Emissions from Natural Gas (tons/yr) =	51,161
Total CO2 Emissions from Fire Research Lab (tons/year) =	211

Fire Research Lab CO2 Emissions from Natural Gas

	422,100
Total CO2 Emissions from Fire Research Lab (tons/year) =	211

Emergency Generator CO2 Emissions from fuel oil (lbs/year)

	22,406.6
	7,600.2
	11,611
Total CO2 Emissions from 3 diesel Emer. Gen. (lbs/year) =	41,618
Total CO2 Emissions from 3 diesel Emer. Gen. (tons/year) =	20.8

Emergency Generator CO2 Emissions from Natural Gas (lbs/year)

	6,547.7
	6,809.2
Total CO2 Emissions from 3 diesel Emer. Gen. (lbs/year) =	13,357
Total CO2 Emissions from both NG Emer. Gen. (tons/year) =	6.7

Emer. Gen. Caculated Fuel Used

	MMBtu	Gallons Fuel Oil
1,000 kW Emer. Gen.	135.80	970.023112
500 kW Emer. Gen.	46.06	329.02794
Total		1299.051052

Note: From AP-42 = 1000 gal No. 2 Fuel Oil = 140 MMBtu

OZONE SEASON CALCULATIONS

CY 2021 Fuel Usage NIST EUs - 1-6 (Boilers 1-6)

Month	Fuel Oil (10^3 gal)	Ozone Season Fuel Oil (10^3 gal)	Percentage Fuel Oil burned during Ozone Season	Natural Gas (CCF)	Ozone Season (NG)	Percentage NG burned during Ozone Season
Jan	6			544,658		
Feb	0			287,101		
Mar	0			274,836		
Apr	0	0	0.00	186,678	186,678	
May	0	0	0.00	144,109	144,109	
Jun	0	0	0.00	108,488	108,488	Ozone Season
Jul	6,225	6225	0.34	72,095	72,095	
Aug	799	799	0.04	62,269	62,269	
Sep	82	82	0.00	72,411	72,411	
Oct	2,012			74,692		
Nov	9,230			134,403		
Dec	165			216,020		
Total	18,519.000	7,106.00	38.4%	2,177,760	646,050	29.7%

CY 2021 Run Hours for NIST Boilers

				Percentage of Hours Operated
Boiler #1	Registration number 5-108	2,914	hours	22%
Boiler #2	Registration number 5-109	2,516	hours	19%
Boiler #3	Registration number 5-110	2,228	hours	17%
Boiler #4	Registration number 5-111	2,675	hours	21%
Boiler #5	Registration number 5-112	1,913	hours	15%
Boiler #6	Registration number 5-113	706	hours	5%
	Total	12,952		100%

CY 2021 EU-7 (Fire Research Lab) Ozone Season NOx and VOC emissions

Month	CCF	Million SCF	Ozone Season Million SCF	NOx Emissions from NG (lbs)	VOC Emissions from NG (lbs)	Days operated during year	Days operated during Ozone Season	Ozone Season NOx Emissions (lbs/day)	Ozone Season VOC Emissions (lbs/day)
Jan	3,920	0.4							
Feb	4,155	0.4							
Mar	4,190	0.4							
Apr	7,795	0.8	0.8	77.95	4.3		10		
May	4,920	0.5	0.5	49.2	2.7		2		
Jun	780	0.1	0.1	7.8	0.4		2		
Jul	365	0.0	0.0	3.65	0.2		6		
Aug	5	0.0	0.0	0.05	0.0		9		
Sep	0	0.0	0.0	0	0.0		1		
Oct	1,770	0.2							
Nov	3,760	0.4							
Dec	3,515	0.4							
Total	**35,175**	**4**	1	138.7	7.6	0	30	4.62	0.25

CY 2021 EUs 11 and 12 (NIST CT and HRSG - NOx)

Month	CT MMBtu	CT + HRSG* MMBtu	CT Ozone Season Nox Emissions (lbs)	CT + HRSG Ozone Season NOx Emissions (lbs)	CT Days Operated**	CT + HRSG Days Operated	CT Ozone Season NOx Emissions (lbs/day)	CT + HRSG Ozone Season NOx Emissions (lbs/day)
Jan	280	96,326						
Feb	151	87,476						
Mar	210	90,089						
Apr	63	73,378	2	3,463	1	26		
May	0	86,195	0	4,068	0	31		
Jun	248	65,552	7	3,094	1	26		
Jul	1,813	70,119	55	3,310	1	31		
Aug	0	72,428	0	3,419	0	31		
Sep	0	70,571	0	3,331	0	30		
Oct	257	59,753						
Nov	0	76,463						
Dec	20,847	57,987						
Total	**23,849**	**906,358**	64	20,685	3	174	21	119

* - Combustion Turbine running with HRSG on. Stack test NOx emission factor was measured with both CT and HRSG running concurrently

** - Months with greater than 0 but less than 24 hours of CT run time defaults to 1 day

CY 2021 EUs 11 and 12 (NIST CT and HRSG - VOC)

Month	CT MMBtu	HRSG MMBtu	CT Ozone Season VOC Emissions (lbs)	HRSG Ozone Season VOC Emissions (lbs)	CT Days Operated	HRSG Days Operated	CT Ozone Season VOC Emissions (lbs/day)*	HRSG Ozone Season VOC Emissions (lbs/day)*
Jan	280	96,326						
Feb	151	87,476						
Mar	210	90,089						
Apr	63	73,378	0	1,468	1	26		
May	0	86,195	0	1,724	0	31		
Jun	248	65,552	1	1,311	1	26		
Jul	1,813	70,119	4	1,402	1	31		
Aug	0	72,428	0	1,449	0	31		
Sep	0	70,571	0	1,411	0	30		
Oct	257	59,753						
Nov	0	76,463						
Dec	20,847	57,987						
Total	**685,820**	**244,387**	4	8,765	3	174	1	50

OZONE SEASON CALCULATIONS

2021 Emissions per Boiler from Natural Gas Ozone Season (lbs/year)

Boiler No.	Gas Use (CCF)	Gas Use (MMcf)	Ozone Season Gas Use (29.7%) in MMcf	Ozone Season NOx Emissions (lbs)	Ozone Season VOC Emissions (lbs)	Days operated during year	Percentage days operated during Ozone Season (29.7%)	Ozone Season NOx Emissions (lbs/day)	Ozone Season VOC Emissions (lbs/day)
1	314,985	31.50	9.3	467	51	121	36	12.97	1.43
2	235,081	23.51	7.0	349	38	105	31	11.21	1.23
3	297,705	29.77	8.8	442	49	93	28	16.03	1.76
4	266,024	26.60	7.9	395	43	111	33	11.93	1.31
5*	495,893	49.59	14.7	736	81	80	24	31.11	3.42
6*	203,153	20.32	6.0	301	33	29	9	34.53	3.80
Total	1,812,841	181.28	53.8	2,689	296				

2021 Emissions per Boiler from Fuel Oil Ozone Season (lbs/year)

Boiler No.	Fuel Oil Use (Gal)	Fuel Oil Use (10^3 Gal)	Ozone Season Fuel Oil Use (0.2%)	Ozone Season NOx Emissions (lbs)	Ozone Season VOC Emissions (lbs)	Hours Operating on Fuel Oil	Days Operating on Fuel Oil	Percentage days operated during Ozone Season (38.4%)*	Ozone Season NOx Emissions (lbs/day)	Ozone Season VOC Emissions (lbs/day)
1	9,028	9.03	3.5	69	1.2	41	2	1	69.28	1.18
2	4,665	4.67	1.8	36	0.6	48	2	1	35.80	0.61
3	2,043	2.04	0.8	16	0.3	14	1	1	15.68	0.27
4	2,104	2.10	0.8	16	0.3	14	1	1	16.15	0.27
5*	482	0.48	0.2	4	0.1	4	0	1	3.70	0.06
6*	197	0.20	0.1	2	0.0	1	0	1	1.51	0.03
Total	18,519	18.52	7.1	142	2.4					

* - Values less than 24 hours defaults to 1 day

	AP-42 Emission Factor for NG in lbs/10^6 Cubic Feet*	Emission Factor Source (AP-42)	AP-42 Emission Factor in lbs/10^3 gals of diesel	Emission Factor Source (AP-42)
NOx (Std boilers)	100.00	Table 1.4-1		
***NOx** (low NOx boilers)	50.00	Table 1.4-1	20.00	Table 1.3-1
VOC (Std boilers)			0.34	Table 1.3-3*
NOx (Emer Generator)			3.2	Table 3.4-1
VOC (Emer. Generator)			0.09	Table 3.4-1
VOC (Gasoline UST)			3.10	Table 5.2-7

	AP-42 Emission Factor for NG in lbs/10^6 Cubic Feet*	Emission Factor Source (AP-42)
VOC	5.50	Table 1.4-2

COMBUSTION TURBINE Lean Premix	AP-42 Emission Factor in lbs/MMBtu	Emission Factor Source (AP-42)	CT Only Emission Factor from Stack Test on 8/22/2019 lbs/MMBtu	CT with HRSG Emission Factor from Stack Test on 8/22/2019 lbs/MMBtu
NOx		Stack Test on 8/22/19	0.0302	0.0472
VOC	0.0021	Table 3.1-2a***		
CO	0.056	Vendor Guarantee		

*** Note: Emission factor for lean premix not given. Factor for uncontrolled gas turbine used.

HRSG Duct Burners	AP-42 Emission Factor in lbs/MMBtu	Emission Factor Source (AP-42)
NOx†	0.0472	Stack Test on 8/22/19 HRSG running with CT
VOC	0.02	Vendor Guarantee
CO	0.08	Vendor Guarantee

† - NOx from HRSG running simultaneously with CTG

* - Emission factor converted to lbs/MMBtu from lbs/10^6 scf shown in AP-42 table

Emissions from Emergency Generators and Gasoline UST (lbs/year)

Emission Unit	Gasoline Throughput (gal/year)	Generator Size (kW)	Run Hours	Fuel Used (MMBtu)	NOx Emissions (lbs/year)	NOX Emissions (tons/year)	VOC Emissions (lbs/year)	VOC Emissions (tons/year)	Days Operating During Ozone Season (50%)	Ozone Season NOx Emissions (lbs/day)	Ozone Season VOC Emissions (lbs/day)
EU-8 (6,000 Gal Gasoline AST)	0						0.00	0.00	0		0.00
EU-9 (Emer. Gen. 1,000 kW)		1,000	39.8	135.80	434.57	0.22	12.22	0.01	6	72.43	2.04
EU-10 (Emer. Gen. 500 kW)		500	27	46.06	147.40	0.07	4.15	0.00	6	24.57	0.69
Emer. Gen. (1,250 kW) - Diesel		1,250	16.5	70.38	225.20	0.11	6.33	0.00	6	37.53	1.06
Emer. Gen. 1 (500 kW) - NG		500	15.1	59.52	2.69	0.00	1.76	0.00	26	0.10	0.07
Emer. Gen. 2 (500 kW) - NG		500	18.6	61.90	2.80	0.00	1.83	0.00	26	0.11	0.07
Total					812.67	0.41	26.30	0.01		134.74	3.92

Form 4 HAPS Calculations

Formaldehyde

Emission Unit	Tons/Year	Lbs/Day	Lbs/hr
Boiler #1, EU-1 #5-0108	1.330E-03	2.000E-02	9.129E-04
Boiler #2, EU-2 #5-0109	9.585E-04	1.639E-02	7.619E-04
Boiler #3, EU-3 #5-0110	1.150E-03	2.371E-02	1.032E-03
Boiler #4, EU-1 #5-0111	1.032E-03	1.626E-02	7.718E-04
Boiler #5, EU-1 #5-0112	1.868E-03	4.197E-02	1.952E-03
Boiler #6, EU-1 #5-0113	7.651E-04	4.250E-02	2.167E-03
Fire Research Lab, EU-7 #5-0557	1.319E-04	3.769E-03	3.134E-03
Emer. Gen. (1,000 kW), EU-9	5.357E-06	8.929E-04	2.692E-04
Emer. Gen. (500 kW), EU-10	1.817E-06	3.029E-04	1.346E-04
Emer. Gen. (1,250 kW) Diesel	2.776E-06	4.627E-04	3.365E-04
NG Emer. Gen. #1 (500 kW)	3.839E-07	1.477E-05	5.085E-05
NG Emer. Gen. #2 (500 kW)	3.993E-07	1.536E-05	4.293E-05
CT, EU-11, #5-2363	2.435E-01	1.413E+00	5.889E-02
HRSG with Low NOx Duct Burners, EU-12, #5-2364	8.454E-03	5.042E-02	2.101E-03
TOTAL	2.592E-01	1.630E+00	7.256E-02

Benzene

Emission Unit	Tons/Year	Lbs/Day	Lbs/hr
Boiler #1, EU-1 #5-0108	3.404E-05	5.119E-04	2.336E-05
Boiler #2, EU-2 #5-0109	2.518E-05	4.305E-04	2.002E-05
Boiler #3, EU-3 #5-0110	3.148E-05	6.490E-04	2.826E-05
Boiler #4, EU-1 #5-0111	2.816E-05	4.434E-04	2.105E-05
Boiler #5, EU-1 #5-0112	5.212E-05	1.171E-03	5.449E-05
Boiler #6, EU-1 #5-0113	2.135E-05	1.186E-03	6.049E-05
Fire Research Lab, EU-7 #5-0557	3.693E-06	1.055E-04	8.776E-05
Emer. Gen. (1,000 kW), EU-9	5.269E-05	8.782E-03	2.648E-03
Emer. Gen. (500 kW), EU-10	1.787E-05	2.979E-03	1.324E-03
Emer. Gen. (1,250 kW) Diesel	2.731E-05	4.551E-03	3.310E-03
NG Emer. Gen. #1 (500 kW)	4.702E-05	1.809E-03	6.228E-03
NG Emer. Gen. #2 (500 kW)	4.890E-05	1.881E-03	5.258E-03
CT, EU-11, #5-2363	4.115E-03	2.389E-02	9.954E-04
HRSG with Low NOx Duct Burners, EU-12, #5-2364	2.37E-04	1.412E-03	5.882E-05
TOTAL	4.741E-03	4.980E-02	2.012E-02

Cadmium

Emission Unit	Tons/Year	Lbs/Day	Lbs/hr
Boiler #1, EU-1 #5-0108	1.922E-05	2.890E-04	1.319E-05
Boiler #2, EU-2 #5-0109	1.391E-05	2.378E-04	1.106E-05
Boiler #3, EU-3 #5-0110	1.680E-05	3.464E-04	1.508E-05
Boiler #4, EU-1 #5-0111	1.507E-05	2.374E-04	1.127E-05
Boiler #5, EU-1 #5-0112	2.738E-05	6.152E-04	2.862E-05
Boiler #6, EU-1 #5-0113	1.121E-05	6.230E-04	3.177E-05
Fire Research Lab, EU-7 #5-0557	1.935E-06	5.528E-05	4.597E-05
HRSG with Low NOx Duct Burners, EU-12, #5-2364	1.240E-04	7.395E-04	3.081E-05
TOTAL	2.295E-04	3.144E-03	1.878E-04

Acrolein

Emission Unit	Tons/Year	Lbs/Day	Lbs/hr
Emer. Gen. (1,000 kW), EU-9	5.351E-07	8.918E-05	2.689E-05
Emer. Gen. (500 kW), EU-10	1.815E-07	3.025E-05	1.344E-05
Emer. Gen. (1,250 kW) Diesel	2.773E-07	4.621E-05	3.361E-05
NG Emer. Gen. #1 (500 kW)	7.828E-05	3.011E-03	1.037E-02
NG Emer. Gen. #2 (500 kW)	8.140E-05	3.131E-03	8.753E-03
CT, EU-11, #5-2363	2.195E-03	1.274E-02	5.309E-04
TOTAL	2.355E-03	1.905E-02	1.973E-02

Emission Unit Operating Days and Hours per year

	Operating Days/Yr	Operating hrs/yr
Boiler #1, EU-1 #5-0108	133	2,914
Boiler #2, EU-2 #5-0109	117	2,516
Boiler #3, EU-3 #5-0110	97	2,228
Boiler #4, EU-1 #5-0111	127	2,675
Boiler #5, EU-1 #5-0112	89	1,913
Boiler #6, EU-1 #5-0113	36	706
Fire Research Lab, EU-7 #5-0557	70	84
Emer. Gen. (1,000 kW), EU-9	12	39.8
Emer. Gen. (500 kW), EU-10	12	27
Emer. Gen. (1,250 kW) Diesel	12	17
NG Emer. Gen. #1 (500 kW)	52	15
NG Emer. Gen. #2 (500 kW)	52	18.6
CT, EU-11, #5-2363	345	8,268
HRSG with Low NOx Duct Burners, EU-12, #5-2364	335	8,049

2021 EU-1 (Boiler 1) HAPS Analysis

Source of Emission Factor (AP-42)	Criteria Pollutant	Natural Gas Emission Factor lbs/10^6 scf	Fuel Oil Emission Factor lbs/10^3 gal	Fuel Oil Use (10^3 gal)	Natural Gas Use (10^6 scf)	Emissions from Natural Gas (lbs)	Emissions from Fuel Oil (lbs)	Total Emissions per Year (lbs)	Boiler Run Hours/Year (hrs)	Emissions per Hour (lbs/hr)	Emissions per Year (tons/yr)
Table 1.4-4 (NG), Table 1.3-10 (FO)	Arsenic	2.0E-04	5.6E-04	9.028	31	0.0062997	0.00505568	0.01135538	2,914	3.897E-06	5.678E-06
Table 1.4-4 (NG)	Barium	4.4E-03	N/A	9.028	31	0.1385934	N/A	0.1385934	2,914	4.756E-05	6.930E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Beryllium	1.2E-05	4.2E-04	9.028	31	0.000377982	0.00379176	0.004169742	2,914	1.431E-06	2.085E-06
Table 1.4-4 (NG), Table 1.3-10 (FO)	Cadmium	1.1E-03	4.2E-04	9.028	31	0.03464835	0.00379176	0.03844011	2,914	1.319E-05	1.922E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Chromium	1.4E-03	4.2E-04	9.028	31	0.0440979	0.00379176	0.04788966	2,914	1.643E-05	2.394E-05
Table 1.4-4 (NG)	Cobalt	8.4E-05	N/A	9.028	31	0.002645874	N/A	0.002645874	2,914	9.080E-07	1.323E-06
Table 1.4-4 (NG), Table 1.3-10 (FO)	Copper	8.5E-04	8.4E-04	9.028	31	0.026773725	0.00758352	0.034357245	2,914	1.179E-05	1.718E-05
Table 1.4-2 (NG), Table 1.3-10 (FO)	Lead	5.0E-04	1.3E-03	9.028	31	0.01574925	0.01137528	0.02712453	2,914	9.308E-06	1.356E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Manganese	3.8E-04	8.4E-04	9.028	31	0.01196943	0.00758352	0.01955295	2,914	6.710E-06	9.776E-06
Table 1.4-4 (NG), Table 1.3-10 (FO)	Mercury	2.6E-04	4.2E-04	9.028	31	0.00818961	0.00379176	0.01198137	2,914	4.112E-06	5.991E-06
Table 1.4-4 (NG)	Molybdenum	1.1E-03	N/A	9.028	31	0.03464835	N/A	0.03464835	2,914	1.189E-05	1.732E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Nickel	2.1E-03	4.2E-04	9.028	31	0.06614685	0.00379176	0.06993861	2,914	2.400E-05	3.497E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Zinc	2.9E-02	5.6E-04	9.028	31	0.9134565	0.00505568	0.91851218	2,914	3.152E-04	4.593E-04
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benzene	2.1E-03	2.1E-04	9.028	31	0.06614685	0.001931992	0.068078842	2,914	2.336E-05	3.404E-05
Table 1.4-3 (NG)	Dichlorobenzene	1.2E-03	N/A	9.028	31	0.0377982	N/A	0.0377982	2,914	1.297E-05	1.890E-05
Table 1.3-9 (FO)	Ethylbenzene	N/A	6.4E-05	9.028	31	N/A	0.000574181	0.000574181	2,914	1.970E-07	2.871E-07
Table 1.4-3 (NG), Table 1.3-9 (FO)	Formaldehyde	7.5E-02	3.3E-02	9.028	31	2.3623875	0.297924	2.6603115	2,914	9.129E-04	1.330E-03
Table 1.4-3 (NG)	Hexane	1.8E+00	N/A	9.028	31	56.6973	N/A	56.6973	2,914	1.946E-02	2.835E-02
Table 1.4-3 (NG), Table 1.3-9 (FO)	Naphthalene	6.1E-04	1.1E-03	9.028	31	0.019214085	0.01020164	0.029415725	2,914	1.009E-05	1.471E-05
Table 1.4-3 (NG), Table 1.3-9 (FO)	Toluene	3.4E-03	6.2E-03	9.028	31	0.1070949	0.0559736	0.1630685	2,914	5.596E-05	8.153E-05
Table 1.3-9 (FO)	o-Xylene	N/A	1.1E-04	9.028	31	N/A	0.000984052	0.000984052	2,914	3.377E-07	4.920E-07
Table 1.4-3 (NG), Table 1.3-9 (FO)	Acenaphthene	1.8E-06	2.1E-05	9.028	31	5.66973E-05	0.000190491	0.000247188	2,914	8.483E-08	1.236E-07
Table 1.4-3 (NG), Table 1.3-9 (FO)	Acenaphthylene	1.8E-06	2.5E-07	9.028	31	5.66973E-05	2.28408E-06	5.89814E-05	2,914	2.024E-08	2.949E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Anthracene	2.4E-06	1.2E-06	9.028	31	7.55964E-05	1.10142E-05	8.66106E-05	2,914	2.972E-08	4.331E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benz(a)anthracene	1.8E-06	4.0E-06	9.028	31	5.66973E-05	3.62023E-05	9.28996E-05	2,914	3.188E-08	4.645E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benzo(b,k)fluoranthene	1.8E-06	1.5E-06	9.028	31	5.66973E-05	1.33614E-05	7.00587E-05	2,914	2.404E-08	3.503E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benzo(g,h,i)perylene	1.2E-06	2.3E-06	9.028	31	3.77982E-05	2.04033E-05	5.82015E-05	2,914	1.997E-08	2.910E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Chrysene	1.8E-06	2.4E-06	9.028	31	5.66973E-05	2.14866E-05	7.81839E-05	2,914	2.683E-08	3.909E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Dibenzo(a,h) anthracene	1.2E-06	1.7E-06	9.028	31	3.77982E-05	1.50768E-05	5.2875E-05	2,914	1.815E-08	2.644E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Fluoranthene	3.0E-06	4.8E-06	9.028	31	9.44955E-05	4.36955E-05	0.000138191	2,914	4.742E-08	6.910E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Fluorene	2.8E-06	4.5E-06	9.028	31	8.81958E-05	4.03552E-05	0.000128551	2,914	4.411E-08	6.428E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Indo(1,2,3-cd)pyrene	1.8E-06	2.1E-06	9.028	31	5.66973E-05	1.93199E-05	7.60172E-05	2,914	2.609E-08	3.801E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Phenanthrene	1.7E-05	1.1E-05	9.028	31	0.000535475	0.000094794	0.000630269	2,914	2.163E-07	3.151E-07
Table 1.4-3 (NG), Table 1.3-9 (FO)	Pyrene	5.0E-06	4.3E-06	9.028	31	0.000157493	0.000038369	0.000195862	2,914	6.721E-08	9.793E-08
Table 1.3-9 (FO)	1,1,1-Trichloroethane	N/A	2.4E-04	9.028	31	N/A	0.002130608	0.002130608	2,914	7.312E-07	1.065E-06
Table 1.3-9 (FO)	OCDD	N/A	3.1E-09	9.028	31	N/A	2.79868E-08	2.79868E-08	2,914	9.604E-12	1.399E-11
Table 1.4-3 (NG)	2-Methylnaphthalene	2.4E-05	N/A	9.028	31	0.000755964	N/A	0.000755964	2,914	2.594E-07	3.780E-07
Table 1.4-3 (NG)	3-Methylchloranthrene	1.8E-06	N/A	9.028	31	5.66973E-05	N/A	5.66973E-05	2,914	1.946E-08	2.835E-08
Table 1.4-3 (NG)	7,12-Dimethylbenz(a)anthracene	1.6E-05	N/A	9.028	31	0.000503976	N/A	0.000503976	2,914	1.729E-07	2.520E-07
Table 1.4-3 (NG)	Benzo(a)pyrene	1.2E-06	N/A	9.028	31	3.77982E-05	N/A	3.77982E-05	2,914	1.297E-08	1.890E-08
Table 1.4-3 (NG)	Butane	2.1E+00	N/A	9.028	31	66.14685	N/A	66.14685	2,914	2.270E-02	3.307E-02
Table 1.4-3 (NG)	Chrysene	1.8E-06	N/A	9.028	31	5.66973E-05	N/A	5.66973E-05	2,914	1.946E-08	2.835E-08
Table 1.4-3 (NG)	Pentane	2.6E+00	N/A	9.028	31	81.8961	N/A	81.8961	2,914	2.810E-02	4.095E-02
Table 1.4-3 (NG)	Phenanathrene	1.7E-05	N/A	9.028	31	0.000535475	N/A	0.000535475	2,914	1.838E-07	2.677E-07
Table 1.4-3 (NG)	Propane	1.6E+00	N/A	9.028	31	50.3976	N/A	50.3976	2,914	1.729E-02	2.520E-02

2021 EU-2 (Boiler 2) HAPS Analysis

Source of Emission Factor (AP-42)	Criteria Pollutant	Natural Gas Emission Factor lbs/10^6 scf	Fuel Oil Emission Factor lbs/10^3 gal	Fuel Oil Use (10^3 gal)	Natural Gas Use (10^6 scf)	Emissions from Natural Gas (lbs)	Emissions from Fuel Oil (lbs)	Total Emissions per Year (lbs)	Boiler Run Hours/Year (hrs)	Emissions per Hour (lbs/hr)	Emissions per Year (tons/yr)
Table 1.4-4 (NG), Table 1.3-10 (FO)	Arsenic	2.0E-04	5.6E-04	4.665	23.508	0.00470162	0.0026124	0.00731402	2,516	2.907E-06	3.657E-06
Table 1.4-4 (NG)	Barium	4.4E-03	N/A	4.665	23.508	0.10343564	N/A	0.10343564	2,516	4.111E-05	5.172E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Beryllium	1.2E-05	4.2E-04	4.665	23.508	0.000282097	0.0019593	0.002241397	2,516	8.909E-07	1.121E-06
Table 1.4-4 (NG), Table 1.3-10 (FO)	Cadmium	1.1E-03	4.2E-04	4.665	23.508	0.02585891	0.0019593	0.02781821	2,516	1.106E-05	1.391E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Chromium	1.4E-03	4.2E-04	4.665	23.508	0.03291134	0.0019593	0.03487064	2,516	1.386E-05	1.744E-05
Table 1.4-4 (NG)	Cobalt	8.4E-05	N/A	4.665	23.508	0.00197468	N/A	0.00197468	2,516	7.848E-07	9.873E-07
Table 1.4-4 (NG), Table 1.3-10 (FO)	Copper	8.5E-04	8.4E-04	4.665	23.508	0.019981885	0.0039186	0.023900485	2,516	9.499E-06	1.195E-05
Table 1.4-2 (NG), Table 1.3-10 (FO)	Lead	5.0E-04	1.3E-03	4.665	23.508	0.01175405	0.0058779	0.01763195	2,516	7.008E-06	8.816E-06
Table 1.4-4 (NG), Table 1.3-10 (FO)	Manganese	3.8E-04	8.4E-04	4.665	23.508	0.008933078	0.0039186	0.012851678	2,516	5.108E-06	6.426E-06
Table 1.4-4 (NG), Table 1.3-10 (FO)	Mercury	2.6E-04	4.2E-04	4.665	23.508	0.006112106	0.0019593	0.008071406	2,516	3.208E-06	4.036E-06
Table 1.4-4 (NG)	Molybdenum	1.1E-03	N/A	4.665	23.508	0.02585891	N/A	0.02585891	2,516	1.028E-05	1.293E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Nickel	2.1E-03	4.2E-04	4.665	23.508	0.04936701	0.0019593	0.05132631	2,516	2.040E-05	2.566E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Zinc	2.9E-02	5.6E-04	4.665	23.508	0.6817349	0.0026124	0.6843473	2,516	2.720E-04	3.422E-04
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benzene	2.1E-03	2.1E-04	4.665	23.508	0.04936701	0.00099831	0.05036532	2,516	2.002E-05	2.518E-05
Table 1.4-3 (NG)	Dichlorobenzene	1.2E-03	N/A	4.665	23.508	0.02820972	N/A	0.02820972	2,516	1.121E-05	1.410E-05
Table 1.3-9 (FO)	Ethylbenzene	N/A	6.4E-05	4.665	23.508	N/A	0.000296694	0.000296694	2,516	1.179E-07	1.483E-07
Table 1.4-3 (NG), Table 1.3-9 (FO)	Formaldehyde	7.5E-02	3.3E-02	4.665	23.508	1.7631075	0.153945	1.9170525	2,516	7.619E-04	9.585E-04
Table 1.4-3 (NG)	Hexane	1.8E+00	N/A	4.665	23.508	42.31458	N/A	42.31458	2,516	1.682E-02	2.116E-02
Table 1.4-3 (NG), Table 1.3-9 (FO)	Naphthalene	6.1E-04	1.1E-03	4.665	23.508	0.014339941	0.00527145	0.019611391	2,516	7.795E-06	9.806E-06
Table 1.4-3 (NG), Table 1.3-9 (FO)	Toluene	3.4E-03	6.2E-03	4.665	23.508	0.07992754	0.028923	0.10885054	2,516	4.326E-05	5.443E-05
Table 1.3-9 (FO)	o-Xylene	N/A	1.1E-04	4.665	23.508	N/A	0.000508485	0.000508485	2,516	2.021E-07	2.542E-07
Table 1.4-3 (NG), Table 1.3-9 (FO)	Acenaphthene	1.8E-06	2.1E-05	4.665	23.508	4.23146E-05	9.84315E-05	0.000140746	2,516	5.594E-08	7.037E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Acenaphthylene	1.8E-06	2.5E-07	4.665	23.508	4.23146E-05	1.18025E-06	4.34948E-05	2,516	1.729E-08	2.175E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Anthracene	2.4E-06	1.2E-06	4.665	23.508	5.64194E-05	5.6913E-06	6.21107E-05	2,516	2.469E-08	3.106E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benz(a)anthracene	1.8E-06	4.0E-06	4.665	23.508	4.23146E-05	1.87067E-05	6.10212E-05	2,516	2.425E-08	3.051E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benzo(b,k)fluoranthene	1.8E-06	1.5E-06	4.665	23.508	4.23146E-05	6.9042E-06	4.92188E-05	2,516	1.956E-08	2.461E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benzo(g,h,i)perylene	1.2E-06	2.3E-06	4.665	23.508	2.82097E-05	1.05429E-05	3.87526E-05	2,516	1.540E-08	1.938E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Chrysene	1.8E-06	2.4E-06	4.665	23.508	4.23146E-05	1.11027E-05	5.34173E-05	2,516	2.123E-08	2.671E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Dibenzo(a,h) anthracene	1.2E-06	1.7E-06	4.665	23.508	2.82097E-05	7.79055E-06	3.60003E-05	2,516	1.431E-08	1.800E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Fluoranthene	3.0E-06	4.8E-06	4.665	23.508	7.05243E-05	2.25786E-05	9.31029E-05	2,516	3.700E-08	4.655E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Fluorene	2.8E-06	4.5E-06	4.665	23.508	6.58227E-05	2.08526E-05	8.66752E-05	2,516	3.445E-08	4.334E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Indo(1,2,3-cd)pyrene	1.8E-06	2.1E-06	4.665	23.508	4.23146E-05	9.9831E-06	5.22977E-05	2,516	2.079E-08	2.615E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Phenanthrene	1.7E-05	1.1E-05	4.665	23.508	0.000399638	4.89825E-05	0.00044862	2,516	1.783E-07	2.243E-07
Table 1.4-3 (NG), Table 1.3-9 (FO)	Pyrene	5.0E-06	4.3E-06	4.665	23.508	0.000117541	1.98263E-05	0.000137367	2,516	5.460E-08	6.868E-08
Table 1.3-9 (FO)	1,1,1-Trichloroethane	N/A	2.4E-04	4.665	23.508	N/A	0.00110094	0.00110094	2,516	4.376E-07	5.505E-07
Table 1.3-9 (FO)	OCDD	N/A	3.1E-09	4.665	23.508	N/A	1.44615E-08	1.44615E-08	2,516	5.748E-12	7.231E-12
Table 1.4-3 (NG)	2-Methylnaphthalene	2.4E-05	N/A	4.665	23.508	0.000564194	N/A	0.000564194	2,516	2.242E-07	2.821E-07
Table 1.4-3 (NG)	3-Methylchloranthrene	1.8E-06	N/A	4.665	23.508	4.23146E-05	N/A	4.23146E-05	2,516	1.682E-08	2.116E-08
Table 1.4-3 (NG)	7,12-Dimethylbenz(a)anthracene	1.6E-05	N/A	4.665	23.508	0.00037613	N/A	0.00037613	2,516	1.495E-07	1.881E-07
Table 1.4-3 (NG)	Benzo(a)pyrene	1.2E-06	N/A	4.665	23.508	2.82097E-05	N/A	2.82097E-05	2,516	1.121E-08	1.410E-08
Table 1.4-3 (NG)	Butane	2.1E+00	N/A	4.665	23.508	49.36701	N/A	49.36701	2,516	1.962E-02	2.468E-02
Table 1.4-3 (NG)	Chrysene	1.8E-06	N/A	4.665	23.508	4.23146E-05	N/A	4.23146E-05	2,516	1.682E-08	2.116E-08
Table 1.4-3 (NG)	Pentane	2.6E+00	N/A	4.665	23.508	61.12106	N/A	61.12106	2,516	2.429E-02	3.056E-02
Table 1.4-3 (NG)	Phenanathrene	1.7E-05	N/A	4.665	23.508	0.000399638	N/A	0.000399638	2,516	1.588E-07	1.998E-07
Table 1.4-3 (NG)	Propane	1.6E+00	N/A	4.665	23.508	37.61296	N/A	37.61296	2,516	1.495E-02	1.881E-02

2021 EU-3 (Boiler 3) HAPS Analysis

Source of Emission Factor (AP-42)	Criteria Pollutant	Natural Gas Emission Factor lbs/10^6 scf	Fuel Oil Emission Factor lbs/10^3 gal	Fuel Oil Use (10^3 gal)	Natural Gas Use (10^6 scf)	Emissions from Natural Gas (lbs)	Emissions from Fuel Oil (lbs)	Total Emissions per Year (lbs)	Boiler Run Hours/Year (hrs)	Emissions per Hour (lbs/hr)	Emissions per Year (tons/yr)
Table 1.4-4 (NG), Table 1.3-10 (FO)	Arsenic	2.0E-04	5.6E-04	2.043	29.771	0.0059541	0.00114408	0.00709818	2,228	3.186E-06	3.549E-06
Table 1.4-4 (NG)	Barium	4.4E-03	N/A	2.043	29.771	0.1309902	N/A	0.1309902	2,228	5.879E-05	6.550E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Beryllium	1.2E-05	4.2E-04	2.043	29.771	0.000357246	0.00085806	0.001215306	2,228	5.455E-07	6.077E-07
Table 1.4-4 (NG), Table 1.3-10 (FO)	Cadmium	1.1E-03	4.2E-04	2.043	29.771	0.03274755	0.00085806	0.03360561	2,228	1.508E-05	1.680E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Chromium	1.4E-03	4.2E-04	2.043	29.771	0.0416787	0.00085806	0.04253676	2,228	1.909E-05	2.127E-05
Table 1.4-4 (NG)	Cobalt	8.4E-05	N/A	2.043	29.771	0.002500722	N/A	0.002500722	2,228	1.122E-06	1.250E-06
Table 1.4-4 (NG), Table 1.3-10 (FO)	Copper	8.5E-04	8.4E-04	2.043	29.771	0.025304925	0.00171612	0.027021045	2,228	1.213E-05	1.351E-05
Table 1.4-2 (NG), Table 1.3-10 (FO)	Lead	5.0E-04	1.3E-03	2.043	29.771	0.01488525	0.00257418	0.01745943	2,228	7.836E-06	8.730E-06
Table 1.4-4 (NG), Table 1.3-10 (FO)	Manganese	3.8E-04	8.4E-04	2.043	29.771	0.01131279	0.00171612	0.01302891	2,228	5.848E-06	6.514E-06
Table 1.4-4 (NG), Table 1.3-10 (FO)	Mercury	2.6E-04	4.2E-04	2.043	29.771	0.00774033	0.00085806	0.00859839	2,228	3.859E-06	4.299E-06
Table 1.4-4 (NG)	Molybdenum	1.1E-03	N/A	2.043	29.771	0.03274755	N/A	0.03274755	2,228	1.470E-05	1.637E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Nickel	2.1E-03	4.2E-04	2.043	29.771	0.06251805	0.00085806	0.06337611	2,228	2.845E-05	3.169E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Zinc	2.9E-02	5.6E-04	2.043	29.771	0.8633445	0.00114408	0.86448858	2,228	3.880E-04	4.322E-04
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benzene	2.1E-03	2.1E-04	2.043	29.771	0.06251805	0.000437202	0.062955252	2,228	2.826E-05	3.148E-05
Table 1.4-3 (NG)	Dichlorobenzene	1.2E-03	N/A	2.043	29.771	0.0357246	N/A	0.0357246	2,228	1.603E-05	1.786E-05
Table 1.3-9 (FO)	Ethylbenzene	N/A	6.4E-05	2.043	29.771	N/A	0.000129935	0.000129935	2,228	5.832E-08	6.497E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Formaldehyde	7.5E-02	3.3E-02	2.043	29.771	2.2327875	0.067419	2.3002065	2,228	1.032E-03	1.150E-03
Table 1.4-3 (NG)	Hexane	1.8E+00	N/A	2.043	29.771	53.5869	N/A	53.5869	2,228	2.405E-02	2.679E-02
Table 1.4-3 (NG), Table 1.3-9 (FO)	Naphthalene	6.1E-04	1.1E-03	2.043	29.771	0.018160005	0.00230859	0.020468595	2,228	9.187E-06	1.023E-05
Table 1.4-3 (NG), Table 1.3-9 (FO)	Toluene	3.4E-03	6.2E-03	2.043	29.771	0.1012197	0.0126666	0.1138863	2,228	5.112E-05	5.694E-05
Table 1.3-9 (FO)	o-Xylene	N/A	1.1E-04	2.043	29.771	N/A	0.000222687	0.000222687	2,228	9.995E-08	1.113E-07
Table 1.4-3 (NG), Table 1.3-9 (FO)	Acenaphthene	1.8E-06	2.1E-05	2.043	29.771	5.35869E-05	4.31073E-05	9.66942E-05	2,228	4.340E-08	4.835E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Acenaphthylene	1.8E-06	2.5E-07	2.043	29.771	5.35869E-05	5.16879E-07	5.41038E-05	2,228	2.428E-08	2.705E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Anthracene	2.4E-06	1.2E-06	2.043	29.771	7.14492E-05	2.49246E-06	7.39417E-05	2,228	3.319E-08	3.697E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benz(a)anthracene	1.8E-06	4.0E-06	2.043	29.771	5.35869E-05	8.19243E-06	6.17793E-05	2,228	2.773E-08	3.089E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benzo(b,k)fluoranthene	1.8E-06	1.5E-06	2.043	29.771	5.35869E-05	3.02364E-06	5.66105E-05	2,228	2.541E-08	2.831E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benzo(g,h,i)perylene	1.2E-06	2.3E-06	2.043	29.771	3.57246E-05	4.61718E-06	4.03418E-05	2,228	1.811E-08	2.017E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Chrysene	1.8E-06	2.4E-06	2.043	29.771	5.35869E-05	4.86234E-06	5.84492E-05	2,228	2.623E-08	2.922E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Dibenzo(a,h) anthracene	1.2E-06	1.7E-06	2.043	29.771	3.57246E-05	3.41181E-06	3.91364E-05	2,228	1.757E-08	1.957E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Fluoranthene	3.0E-06	4.8E-06	2.043	29.771	8.93115E-05	9.88812E-06	9.91996E-05	2,228	4.452E-08	4.960E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Fluorene	2.8E-06	4.5E-06	2.043	29.771	8.33574E-05	9.13221E-06	9.24896E-05	2,228	4.151E-08	4.624E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Indo(1,2,3-cd)pyrene	1.8E-06	2.1E-06	2.043	29.771	5.35869E-05	4.37202E-06	5.79589E-05	2,228	2.601E-08	2.898E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Phenanthrene	1.7E-05	1.1E-05	2.043	29.771	0.000506099	2.14515E-05	0.00052755	2,228	2.368E-07	2.638E-07
Table 1.4-3 (NG), Table 1.3-9 (FO)	Pyrene	5.0E-06	4.3E-06	2.043	29.771	0.000148853	8.68275E-06	0.000157535	2,228	7.071E-08	7.877E-08
Table 1.3-9 (FO)	1,1,1-Trichloroethane	N/A	2.4E-04	2.043	29.771	N/A	0.000482148	0.000482148	2,228	2.164E-07	2.411E-07
Table 1.3-9 (FO)	OCDD	N/A	3.1E-09	2.043	29.771	N/A	6.3333E-09	6.3333E-09	2,228	2.843E-12	3.167E-12
Table 1.4-3 (NG)	2-Methylnaphthalene	2.4E-05	N/A	2.043	29.771	0.000714492	N/A	0.000714492	2,228	3.207E-07	3.572E-07
Table 1.4-3 (NG)	3-Methylchloranthrene	1.8E-06	N/A	2.043	29.771	5.35869E-05	N/A	5.35869E-05	2,228	2.405E-08	2.679E-08
Table 1.4-3 (NG)	7,12-Dimethylbenz(a)anthracene	1.6E-05	N/A	2.043	29.771	0.000476328	N/A	0.000476328	2,228	2.138E-07	2.382E-07
Table 1.4-3 (NG)	Benzo(a)pyrene	1.2E-06	N/A	2.043	29.771	3.57246E-05	N/A	3.57246E-05	2,228	1.603E-08	1.786E-08
Table 1.4-3 (NG)	Butane	2.1E+00	N/A	2.043	29.771	62.51805	N/A	62.51805	2,228	2.806E-02	3.126E-02
Table 1.4-3 (NG)	Chrysene	1.8E-06	N/A	2.043	29.771	5.35869E-05	N/A	5.35869E-05	2,228	2.405E-08	2.679E-08
Table 1.4-3 (NG)	Pentane	2.6E+00	N/A	2.043	29.771	77.4033	N/A	77.4033	2,228	3.474E-02	3.870E-02
Table 1.4-3 (NG)	Phenanathrene	1.7E-05	N/A	2.043	29.771	0.000506099	N/A	0.000506099	2,228	2.272E-07	2.530E-07
Table 1.4-3 (NG)	Propane	1.6E+00	N/A	2.043	29.771	47.6328	N/A	47.6328	2,228	2.138E-02	2.382E-02

2021 EU-4 (Boiler 4) HAPS Analysis

Source of Emission Factor (AP-42)	Criteria Pollutant	Natural Gas Emission Factor lbs/10^6 scf	Fuel Oil Emission Factor lbs/10^3 gal	Fuel Oil Use (10^3 gal)	Natural Gas Use (10^6 scf)	Emissions from Natural Gas (lbs)	Emissions from Fuel Oil (lbs)	Total Emissions per Year (lbs)	Boiler Run Hours/Year (hrs)	Emissions per Hour (lbs/hr)	Emissions per Year (tons/yr)
Table 1.4-4 (NG), Table 1.3-10 (FO)	Arsenic	2.0E-04	5.6E-04	2.104	26.602	0.00532048	0.00117824	0.00649872	2,675	2.429E-06	3.249E-06
Table 1.4-4 (NG)	Barium	4.4E-03	N/A	2.104	26.602	0.11705056	N/A	0.11705056	2,675	4.376E-05	5.853E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Beryllium	1.2E-05	4.2E-04	2.104	26.602	0.000319229	0.00088368	0.001202909	2,675	4.497E-07	6.015E-07
Table 1.4-4 (NG), Table 1.3-10 (FO)	Cadmium	1.1E-03	4.2E-04	2.104	26.602	0.02926264	0.00088368	0.03014632	2,675	1.127E-05	1.507E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Chromium	1.4E-03	4.2E-04	2.104	26.602	0.03724336	0.00088368	0.03812704	2,675	1.425E-05	1.906E-05
Table 1.4-4 (NG)	Cobalt	8.4E-05	N/A	2.104	26.602	0.002234602	N/A	0.002234602	2,675	8.354E-07	1.117E-06
Table 1.4-4 (NG), Table 1.3-10 (FO)	Copper	8.5E-04	8.4E-04	2.104	26.602	0.02261204	0.00176736	0.0243794	2,675	9.114E-06	1.219E-05
Table 1.4-2 (NG), Table 1.3-10 (FO)	Lead	5.0E-04	1.3E-03	2.104	26.602	0.0133012	0.00265104	0.01595224	2,675	5.963E-06	7.976E-06
Table 1.4-4 (NG), Table 1.3-10 (FO)	Manganese	3.8E-04	8.4E-04	2.104	26.602	0.010108912	0.00176736	0.011876272	2,675	4.440E-06	5.938E-06
Table 1.4-4 (NG), Table 1.3-10 (FO)	Mercury	2.6E-04	4.2E-04	2.104	26.602	0.006916624	0.00088368	0.007800304	2,675	2.916E-06	3.900E-06
Table 1.4-4 (NG)	Molybdenum	1.1E-03	N/A	2.104	26.602	0.02926264	N/A	0.02926264	2,675	1.094E-05	1.463E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Nickel	2.1E-03	4.2E-04	2.104	26.602	0.05586504	0.00088368	0.05674872	2,675	2.121E-05	2.837E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Zinc	2.9E-02	5.6E-04	2.104	26.602	0.7714696	0.00117824	0.77264784	2,675	2.888E-04	3.863E-04
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benzene	2.1E-03	2.1E-04	2.104	26.602	0.05586504	0.000450256	0.056315296	2,675	2.105E-05	2.816E-05
Table 1.4-3 (NG)	Dichlorobenzene	1.2E-03	N/A	2.104	26.602	0.03192288	N/A	0.03192288	2,675	1.193E-05	1.596E-05
Table 1.3-9 (FO)	Ethylbenzene	N/A	6.4E-05	2.104	26.602	N/A	0.000133814	0.000133814	2,675	5.002E-08	6.691E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Formaldehyde	7.5E-02	3.3E-02	2.104	26.602	1.99518	0.069432	2.064612	2,675	7.718E-04	1.032E-03
Table 1.4-3 (NG)	Hexane	1.8E+00	N/A	2.104	26.602	47.88432	N/A	47.88432	2,675	1.790E-02	2.394E-02
Table 1.4-3 (NG), Table 1.3-9 (FO)	Naphthalene	6.1E-04	1.1E-03	2.104	26.602	0.016227464	0.00237752	0.018604984	2,675	6.955E-06	9.302E-06
Table 1.4-3 (NG), Table 1.3-9 (FO)	Toluene	3.4E-03	6.2E-03	2.104	26.602	0.09044816	0.0130448	0.10349296	2,675	3.869E-05	5.175E-05
Table 1.3-9 (FO)	o-Xylene	N/A	1.1E-04	2.104	26.602	N/A	0.000229336	0.000229336	2,675	8.573E-08	1.147E-07
Table 1.4-3 (NG), Table 1.3-9 (FO)	Acenaphthene	1.8E-06	2.1E-05	2.104	26.602	4.78843E-05	4.43944E-05	9.22787E-05	2,675	3.450E-08	4.614E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Acenaphthylene	1.8E-06	2.5E-07	2.104	26.602	4.78843E-05	5.32312E-07	4.84166E-05	2,675	1.810E-08	2.421E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Anthracene	2.4E-06	1.2E-06	2.104	26.602	6.38458E-05	2.56688E-06	6.64126E-05	2,675	2.483E-08	3.321E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benz(a)anthracene	1.8E-06	4.0E-06	2.104	26.602	4.78843E-05	8.43704E-06	5.63214E-05	2,675	2.105E-08	2.816E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benzo(b,k)fluoranthene	1.8E-06	1.5E-06	2.104	26.602	4.78843E-05	3.11392E-06	5.09982E-05	2,675	1.906E-08	2.550E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benzo(g,h,i)perylene	1.2E-06	2.3E-06	2.104	26.602	3.19229E-05	4.75504E-06	3.66779E-05	2,675	1.371E-08	1.834E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Chrysene	1.8E-06	2.4E-06	2.104	26.602	4.78843E-05	5.00752E-06	5.28918E-05	2,675	1.977E-08	2.645E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Dibenzo(a,h) anthracene	1.2E-06	1.7E-06	2.104	26.602	3.19229E-05	3.51368E-06	3.54366E-05	2,675	1.325E-08	1.772E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Fluoranthene	3.0E-06	4.8E-06	2.104	26.602	7.98072E-05	1.01834E-05	8.99906E-05	2,675	3.364E-08	4.500E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Fluorene	2.8E-06	4.5E-06	2.104	26.602	7.44867E-05	9.40488E-06	8.38916E-05	2,675	3.136E-08	4.195E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Indo(1,2,3-cd)pyrene	1.8E-06	2.1E-06	2.104	26.602	4.78843E-05	4.50256E-06	5.23869E-05	2,675	1.958E-08	2.619E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Phenanthrene	1.7E-05	1.1E-05	2.104	26.602	0.000452241	0.000022092	0.000474333	2,675	1.773E-07	2.372E-07
Table 1.4-3 (NG), Table 1.3-9 (FO)	Pyrene	5.0E-06	4.3E-06	2.104	26.602	0.000133012	0.000008942	0.000141954	2,675	5.307E-08	7.098E-08
Table 1.3-9 (FO)	1,1,1-Trichloroethane	N/A	2.4E-04	2.104	26.602	N/A	0.000496544	0.000496544	2,675	1.856E-07	2.483E-07
Table 1.3-9 (FO)	OCDD	N/A	3.1E-09	2.104	26.602	N/A	6.5224E-09	6.5224E-09	2,675	2.438E-12	3.261E-12
Table 1.4-3 (NG)	2-Methylnaphthalene	2.4E-05	N/A	2.104	26.602	0.000638458	N/A	0.000638458	2,675	2.387E-07	3.192E-07
Table 1.4-3 (NG)	3-Methylchloranthrene	1.8E-06	N/A	2.104	26.602	4.78843E-05	N/A	4.78843E-05	2,675	1.790E-08	2.394E-08
Table 1.4-3 (NG)	7,12-Dimethylbenz(a)anthracene	1.6E-05	N/A	2.104	26.602	0.000425638	N/A	0.000425638	2,675	1.591E-07	2.128E-07
Table 1.4-3 (NG)	Benzo(a)pyrene	1.2E-06	N/A	2.104	26.602	3.19229E-05	N/A	3.19229E-05	2,675	1.193E-08	1.596E-08
Table 1.4-3 (NG)	Butane	2.1E+00	N/A	2.104	26.602	55.86504	N/A	55.86504	2,675	2.088E-02	2.793E-02
Table 1.4-3 (NG)	Chrysene	1.8E-06	N/A	2.104	26.602	4.78843E-05	N/A	4.78843E-05	2,675	1.790E-08	2.394E-08
Table 1.4-3 (NG)	Pentane	2.6E+00	N/A	2.104	26.602	69.16624	N/A	69.16624	2,675	2.586E-02	3.458E-02
Table 1.4-3 (NG)	Phenanathrene	1.7E-05	N/A	2.104	26.602	0.000452241	N/A	0.000452241	2,675	1.691E-07	2.261E-07
Table 1.4-3 (NG)	Propane	1.6E+00	N/A	2.104	26.602	42.56384	N/A	42.56384	2,675	1.591E-02	2.128E-02

2021 EU-5 (Boiler 5) HAPS Analysis

Source of Emission Factor (AP-42)	Criteria Pollutant	Natural Gas Emission Factor lbs/10^6 scf	Fuel Oil Emission Factor lbs/10^3 gal	Fuel Oil Use (10^3 gal)	Natural Gas Use (10^6 scf)	Emissions from Natural Gas (lbs)	Emissions from Fuel Oil (lbs)	Total Emissions per Year (lbs)	Boiler Run Hours/Year (hrs)	Emissions per Hour (lbs/hr)	Emissions per Year (tons/yr)
Table 1.4-4 (NG), Table 1.3-10 (FO)	Arsenic	2.0E-04	5.6E-04	0.482	49.589	0.00991786	0.00026992	0.01018778	1,913	5.326E-06	5.094E-06
Table 1.4-4 (NG)	Barium	4.4E-03	N/A	0.482	49.589	0.21819292	N/A	0.21819292	1,913	1.141E-04	1.091E-04
Table 1.4-4 (NG), Table 1.3-10 (FO)	Beryllium	1.2E-05	4.2E-04	0.482	49.589	0.000595072	0.00020244	0.000797512	1,913	4.169E-07	3.988E-07
Table 1.4-4 (NG), Table 1.3-10 (FO)	Cadmium	1.1E-03	4.2E-04	0.482	49.589	0.05454823	0.00020244	0.05475067	1,913	2.862E-05	2.738E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Chromium	1.4E-03	4.2E-04	0.482	49.589	0.06942502	0.00020244	0.06962746	1,913	3.640E-05	3.481E-05
Table 1.4-4 (NG)	Cobalt	8.4E-05	N/A	0.482	49.589	0.004165501	N/A	0.004165501	1,913	2.177E-06	2.083E-06
Table 1.4-4 (NG), Table 1.3-10 (FO)	Copper	8.5E-04	8.4E-04	0.482	49.589	0.042150905	0.00040488	0.042555785	1,913	2.225E-05	2.128E-05
Table 1.4-2 (NG), Table 1.3-10 (FO)	Lead	5.0E-04	1.3E-03	0.482	49.589	0.02479465	0.00060732	0.02540197	1,913	1.328E-05	1.270E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Manganese	3.8E-04	8.4E-04	0.482	49.589	0.018843934	0.00040488	0.019248814	1,913	1.006E-05	9.624E-06
Table 1.4-4 (NG), Table 1.3-10 (FO)	Mercury	2.6E-04	4.2E-04	0.482	49.589	0.012893218	0.00020244	0.013095658	1,913	6.846E-06	6.548E-06
Table 1.4-4 (NG)	Molybdenum	1.1E-03	N/A	0.482	49.589	0.05454823	N/A	0.05454823	1,913	2.851E-05	2.727E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Nickel	2.1E-03	4.2E-04	0.482	49.589	0.10413753	0.00020244	0.10433997	1,913	5.454E-05	5.217E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Zinc	2.9E-02	5.6E-04	0.482	49.589	1.4380897	0.00026992	1.43835962	1,913	7.519E-04	7.192E-04
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benzene	2.1E-03	2.1E-04	0.482	49.589	0.10413753	0.000103148	0.104240678	1,913	5.449E-05	5.212E-05
Table 1.4-3 (NG)	Dichlorobenzene	1.2E-03	N/A	0.482	49.589	0.05950716	N/A	0.05950716	1,913	3.111E-05	2.975E-05
Table 1.3-9 (FO)	Ethylbenzene	N/A	6.4E-05	0.482	49.589	N/A	3.06552E-05	3.06552E-05	1,913	1.602E-08	1.533E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Formaldehyde	7.5E-02	3.3E-02	0.482	49.589	3.7191975	0.015906	3.7351035	1,913	1.952E-03	1.868E-03
Table 1.4-3 (NG)	Hexane	1.8E+00	N/A	0.482	49.589	89.26074	N/A	89.26074	1,913	4.666E-02	4.463E-02
Table 1.4-3 (NG), Table 1.3-9 (FO)	Naphthalene	6.1E-04	1.1E-03	0.482	49.589	0.030249473	0.00054466	0.030794133	1,913	1.610E-05	1.540E-05
Table 1.4-3 (NG), Table 1.3-9 (FO)	Toluene	3.4E-03	6.2E-03	0.482	49.589	0.16860362	0.0029884	0.17159202	1,913	8.970E-05	8.580E-05
Table 1.3-9 (FO)	o-Xylene	N/A	1.1E-04	0.482	49.589	N/A	0.000052538	0.000052538	1,913	2.746E-08	2.627E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Acenaphthene	1.8E-06	2.1E-05	0.482	49.589	8.92607E-05	1.01702E-05	9.94309E-05	1,913	5.198E-08	4.972E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Acenaphthylene	1.8E-06	2.5E-07	0.482	49.589	8.92607E-05	1.21946E-07	8.93827E-05	1,913	4.672E-08	4.469E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Anthracene	2.4E-06	1.2E-06	0.482	49.589	0.000119014	5.8804E-07	0.000119602	1,913	6.252E-08	5.980E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benz(a)anthracene	1.8E-06	4.0E-06	0.482	49.589	8.92607E-05	1.93282E-06	9.11936E-05	1,913	4.767E-08	4.560E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benzo(b,k)fluoranthene	1.8E-06	1.5E-06	0.482	49.589	8.92607E-05	7.1336E-07	8.99741E-05	1,913	4.703E-08	4.499E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benzo(g,h,i)perylene	1.2E-06	2.3E-06	0.482	49.589	5.95072E-05	1.08932E-06	6.05965E-05	1,913	3.168E-08	3.030E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Chrysene	1.8E-06	2.4E-06	0.482	49.589	8.92607E-05	1.14716E-06	9.04079E-05	1,913	4.726E-08	4.520E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Dibenzo(a,h) anthracene	1.2E-06	1.7E-06	0.482	49.589	5.95072E-05	8.0494E-07	6.03121E-05	1,913	3.153E-08	3.016E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Fluoranthene	3.0E-06	4.8E-06	0.482	49.589	0.000148768	2.33288E-06	0.000151101	1,913	7.899E-08	7.555E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Fluorene	2.8E-06	4.5E-06	0.482	49.589	0.00013885	2.15454E-06	0.000141005	1,913	7.371E-08	7.050E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Indo(1,2,3-cd)pyrene	1.8E-06	2.1E-06	0.482	49.589	8.92607E-05	1.03148E-06	9.02922E-05	1,913	4.720E-08	4.515E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Phenanthrene	1.7E-05	1.1E-05	0.482	49.589	0.000843018	0.000005061	0.000848079	1,913	4.433E-07	4.240E-07
Table 1.4-3 (NG), Table 1.3-9 (FO)	Pyrene	5.0E-06	4.3E-06	0.482	49.589	0.000247947	2.0485E-06	0.000249995	1,913	1.307E-07	1.250E-07
Table 1.3-9 (FO)	1,1,1-Trichloroethane	N/A	2.4E-04	0.482	49.589	N/A	0.000113752	0.000113752	1,913	5.946E-08	5.688E-08
Table 1.3-9 (FO)	OCDD	N/A	3.1E-09	0.482	49.589	N/A	1.4942E-09	1.4942E-09	1,913	7.811E-13	7.471E-13
Table 1.4-3 (NG)	2-Methylnaphthalene	2.4E-05	N/A	0.482	49.589	0.001190143	N/A	0.001190143	1,913	6.221E-07	5.951E-07
Table 1.4-3 (NG)	3-Methylchloranthrene	1.8E-06	N/A	0.482	49.589	8.92607E-05	N/A	8.92607E-05	1,913	4.666E-08	4.463E-08
Table 1.4-3 (NG)	7,12-Dimethylbenz(a)anthracene	1.6E-05	N/A	0.482	49.589	0.000793429	N/A	0.000793429	1,913	4.148E-07	3.967E-07
Table 1.4-3 (NG)	Benzo(a)pyrene	1.2E-06	N/A	0.482	49.589	5.95072E-05	N/A	5.95072E-05	1,913	3.111E-08	2.975E-08
Table 1.4-3 (NG)	Butane	2.1E+00	N/A	0.482	49.589	104.13753	N/A	104.13753	1,913	5.444E-02	5.207E-02
Table 1.4-3 (NG)	Chrysene	1.8E-06	N/A	0.482	49.589	8.92607E-05	N/A	8.92607E-05	1,913	4.666E-08	4.463E-08
Table 1.4-3 (NG)	Pentane	2.6E+00	N/A	0.482	49.589	128.93218	N/A	128.93218	1,913	6.740E-02	6.447E-02
Table 1.4-3 (NG)	Phenanathrene	1.7E-05	N/A	0.482	49.589	0.000843018	N/A	0.000843018	1,913	4.407E-07	4.215E-07
Table 1.4-3 (NG)	Propane	1.6E+00	N/A	0.482	49.589	79.34288	N/A	79.34288	1,913	4.148E-02	3.967E-02

2021 EU-6 (Boiler 6) HAPS Analysis

Source of Emission Factor (AP-42)	Criteria Pollutant	Natural Gas Emission Factor lbs/10^6 scf	Fuel Oil Emission Factor lbs/10^3 gal	Fuel Oil Use (10^3 gal)	Natural Gas Use (10^6 scf)	Emissions from Natural Gas (lbs)	Emissions from Fuel Oil (lbs)	Total Emissions per Year (lbs)	Boiler Run Hours/Year (hrs)	Emissions per Hour (lbs/hr)	Emissions per Year (tons/yr)
Table 1.4-4 (NG), Table 1.3-10 (FO)	Arsenic	2.0E-04	5.6E-04	0.197	20.315	0.00406306	0.00011032	0.00417338	706	5.911E-06	2.087E-06
Table 1.4-4 (NG)	Barium	4.4E-03	N/A	0.197	20.315	0.08938732	N/A	0.08938732	706	1.266E-04	4.469E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Beryllium	1.2E-05	4.2E-04	0.197	20.315	0.000243784	0.00008274	0.000326524	706	4.625E-07	1.633E-07
Table 1.4-4 (NG), Table 1.3-10 (FO)	Cadmium	1.1E-03	4.2E-04	0.197	20.315	0.02234683	0.00008274	0.02242957	706	3.177E-05	1.121E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Chromium	1.4E-03	4.2E-04	0.197	20.315	0.02844142	0.00008274	0.02852416	706	4.040E-05	1.426E-05
Table 1.4-4 (NG)	Cobalt	8.4E-05	N/A	0.197	20.315	0.001706485	N/A	0.001706485	706	2.417E-06	8.532E-07
Table 1.4-4 (NG), Table 1.3-10 (FO)	Copper	8.5E-04	8.4E-04	0.197	20.315	0.017268005	0.00016548	0.017433485	706	2.469E-05	8.717E-06
Table 1.4-2 (NG), Table 1.3-10 (FO)	Lead	5.0E-04	1.3E-03	0.197	20.315	0.01015765	0.00024822	0.01040587	706	1.474E-05	5.203E-06
Table 1.4-4 (NG), Table 1.3-10 (FO)	Manganese	3.8E-04	8.4E-04	0.197	20.315	0.007719814	0.00016548	0.007885294	706	1.117E-05	3.943E-06
Table 1.4-4 (NG), Table 1.3-10 (FO)	Mercury	2.6E-04	4.2E-04	0.197	20.315	0.005281978	0.00008274	0.005364718	706	7.599E-06	2.682E-06
Table 1.4-4 (NG)	Molybdenum	1.1E-03	N/A	0.197	20.315	0.02234683	N/A	0.02234683	706	3.165E-05	1.117E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Nickel	2.1E-03	4.2E-04	0.197	20.315	0.04266213	0.00008274	0.04274487	706	6.055E-05	2.137E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Zinc	2.9E-02	5.6E-04	0.197	20.315	0.5891437	0.00011032	0.58925402	706	8.346E-04	2.946E-04
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benzene	2.1E-03	2.1E-04	0.197	20.315	0.04266213	0.000042158	0.042704288	706	6.049E-05	2.135E-05
Table 1.4-3 (NG)	Dichlorobenzene	1.2E-03	N/A	0.197	20.315	0.02437836	N/A	0.02437836	706	3.453E-05	1.219E-05
Table 1.3-9 (FO)	Ethylbenzene	N/A	6.4E-05	0.197	20.315	N/A	1.25292E-05	1.25292E-05	706	1.775E-08	6.265E-09
Table 1.4-3 (NG), Table 1.3-9 (FO)	Formaldehyde	7.5E-02	3.3E-02	0.197	20.315	1.5236475	0.006501	1.5301485	706	2.167E-03	7.651E-04
Table 1.4-3 (NG)	Hexane	1.8E+00	N/A	0.197	20.315	36.56754	N/A	36.56754	706	5.180E-02	1.828E-02
Table 1.4-3 (NG), Table 1.3-9 (FO)	Naphthalene	6.1E-04	1.1E-03	0.197	20.315	0.012392333	0.00022261	0.012614943	706	1.787E-05	6.307E-06
Table 1.4-3 (NG), Table 1.3-9 (FO)	Toluene	3.4E-03	6.2E-03	0.197	20.315	0.06907202	0.0012214	0.07029342	706	9.957E-05	3.515E-05
Table 1.3-9 (FO)	o-Xylene	N/A	1.1E-04	0.197	20.315	N/A	0.000021473	0.000021473	706	3.042E-08	1.074E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Acenaphthene	1.8E-06	2.1E-05	0.197	20.315	3.65675E-05	4.1567E-06	4.07242E-05	706	5.768E-08	2.036E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Acenaphthylene	1.8E-06	2.5E-07	0.197	20.315	3.65675E-05	4.9841E-08	3.66174E-05	706	5.187E-08	1.831E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Anthracene	2.4E-06	1.2E-06	0.197	20.315	4.87567E-05	2.4034E-07	4.89971E-05	706	6.940E-08	2.450E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benz(a)anthracene	1.8E-06	4.0E-06	0.197	20.315	3.65675E-05	7.8997E-07	3.73575E-05	706	5.291E-08	1.868E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benzo(b,k)fluoranthene	1.8E-06	1.5E-06	0.197	20.315	3.65675E-05	2.9156E-07	3.68591E-05	706	5.221E-08	1.843E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benzo(g,h,i)perylene	1.2E-06	2.3E-06	0.197	20.315	2.43784E-05	4.4522E-07	2.48236E-05	706	3.516E-08	1.241E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Chrysene	1.8E-06	2.4E-06	0.197	20.315	3.65675E-05	4.6886E-07	3.70364E-05	706	5.246E-08	1.852E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Dibenzo(a,h) anthracene	1.2E-06	1.7E-06	0.197	20.315	2.43784E-05	3.2899E-07	2.47074E-05	706	3.500E-08	1.235E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Fluoranthene	3.0E-06	4.8E-06	0.197	20.315	6.09459E-05	9.5348E-07	6.18994E-05	706	8.768E-08	3.095E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Fluorene	2.8E-06	4.5E-06	0.197	20.315	5.68828E-05	8.8059E-07	5.77634E-05	706	8.182E-08	2.888E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Indo(1,2,3-cd)pyrene	1.8E-06	2.1E-06	0.197	20.315	3.65675E-05	4.2158E-07	3.69891E-05	706	5.239E-08	1.849E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Phenanthrene	1.7E-05	1.1E-05	0.197	20.315	0.00034536	2.0685E-06	0.000347429	706	4.921E-07	1.737E-07
Table 1.4-3 (NG), Table 1.3-9 (FO)	Pyrene	5.0E-06	4.3E-06	0.197	20.315	0.000101577	8.3725E-07	0.000102414	706	1.451E-07	5.121E-08
Table 1.3-9 (FO)	1,1,1-Trichloroethane	N/A	2.4E-04	0.197	20.315	N/A	0.000046492	0.000046492	706	6.585E-08	2.325E-08
Table 1.3-9 (FO)	OCDD	N/A	3.1E-09	0.197	20.315	N/A	6.107E-10	6.107E-10	706	8.650E-13	3.054E-13
Table 1.4-3 (NG)	2-Methylnaphthalene	2.4E-05	N/A	0.197	20.315	0.000487567	N/A	0.000487567	706	6.906E-07	2.438E-07
Table 1.4-3 (NG)	3-Methylchloranthrene	1.8E-06	N/A	0.197	20.315	3.65675E-05	N/A	3.65675E-05	706	5.180E-08	1.828E-08
Table 1.4-3 (NG)	7,12-Dimethylbenz(a)anthracene	1.6E-05	N/A	0.197	20.315	0.000325045	N/A	0.000325045	706	4.604E-07	1.625E-07
Table 1.4-3 (NG)	Benzo(a)pyrene	1.2E-06	N/A	0.197	20.315	2.43784E-05	N/A	2.43784E-05	706	3.453E-08	1.219E-08
Table 1.4-3 (NG)	Butane	2.1E+00	N/A	0.197	20.315	42.66213	N/A	42.66213	706	6.043E-02	2.133E-02
Table 1.4-3 (NG)	Chrysene	1.8E-06	N/A	0.197	20.315	3.65675E-05	N/A	3.65675E-05	706	5.180E-08	1.828E-08
Table 1.4-3 (NG)	Pentane	2.6E+00	N/A	0.197	20.315	52.81978	N/A	52.81978	706	7.482E-02	2.641E-02
Table 1.4-3 (NG)	Phenanathrene	1.7E-05	N/A	0.197	20.315	0.00034536	N/A	0.00034536	706	4.892E-07	1.727E-07
Table 1.4-3 (NG)	Propane	1.6E+00	N/A	0.197	20.315	32.50448	N/A	32.50448	706	4.604E-02	1.625E-02

2021 EU-7 (Fire Research Laboratory) HAPS Analysis

Source of Emission Factor (AP-42)	Criteria Pollutant	Natural Gas Emission Factor lbs/10^6 scf	Fuel Oil Emission Factor lbs/10^3 gal	Fuel Oil Use (10^3 gal)	Natural Gas Use (10^6 scf)	Emissions from Natural Gas (lbs)	Emissions from Fuel Oil (lbs)	Total Emissions per Year (lbs)	NFRL NG Run Hours/Year (hrs)	Emissions per Hour (lbs/hr)	Emissions per Year (tons/yr)
Table 1.4-4 (NG), Table 1.3-10 (FO)	Arsenic	2.0E-04	5.6E-04	N/A	3.518	0.0007035	0	0.0007035	84	8.358E-06	3.518E-07
Table 1.4-4 (NG)	Barium	4.4E-03	N/A	N/A	3.518	0.015477	0	0.015477	84	1.839E-04	7.739E-06
Table 1.4-4 (NG), Table 1.3-10 (FO)	Beryllium	1.2E-05	4.2E-04	N/A	3.518	0.00004221	0	0.00004221	84	5.015E-07	2.111E-08
Table 1.4-4 (NG), Table 1.3-10 (FO)	Cadmium	1.1E-03	4.2E-04	N/A	3.518	0.00386925	0	0.00386925	84	4.597E-05	1.935E-06
Table 1.4-4 (NG), Table 1.3-10 (FO)	Chromium	1.4E-03	4.2E-04	N/A	3.518	0.0049245	0	0.0049245	84	5.851E-05	2.462E-06
Table 1.4-4 (NG)	Cobalt	8.4E-05	N/A	N/A	3.518	0.00029547	0	0.00029547	84	3.510E-06	1.477E-07
Table 1.4-4 (NG), Table 1.3-10 (FO)	Copper	8.5E-04	8.4E-04	N/A	3.518	0.002989875	0	0.002989875	84	3.552E-05	1.495E-06
Table 1.4-2 (NG), Table 1.3-10 (FO)	Lead	5.0E-04	1.3E-03	N/A	3.518	0.00175875	0	0.00175875	84	2.089E-05	8.794E-07
Table 1.4-4 (NG), Table 1.3-10 (FO)	Manganese	3.8E-04	8.4E-04	N/A	3.518	0.00133665	0	0.00133665	84	1.588E-05	6.683E-07
Table 1.4-4 (NG), Table 1.3-10 (FO)	Mercury	2.6E-04	4.2E-04	N/A	3.518	0.00091455	0	0.00091455	84	1.087E-05	4.573E-07
Table 1.4-4 (NG)	Molybdenum	1.1E-03	N/A	N/A	3.518	0.00386925	0	0.00386925	84	4.597E-05	1.935E-06
Table 1.4-4 (NG), Table 1.3-10 (FO)	Nickel	2.1E-03	4.2E-04	N/A	3.518	0.00738675	0	0.00738675	84	8.776E-05	3.693E-06
Table 1.4-4 (NG), Table 1.3-10 (FO)	Zinc	2.9E-02	5.6E-04	N/A	3.518	0.1020075	0	0.1020075	84	1.212E-03	5.100E-05
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benzene	2.1E-03	2.1E-04	N/A	3.518	0.00738675	0	0.00738675	84	8.776E-05	3.693E-06
Table 1.4-3 (NG)	Dichlorobenzene	1.2E-03	N/A	N/A	3.518	0.004221	0	0.004221	84	5.015E-05	2.111E-06
Table 1.3-9 (FO)	Ethylbenzene	N/A	6.4E-05	N/A	3.518	N/A	0	N/A	84	0.000E+00	0.000E+00
Table 1.4-3 (NG), Table 1.3-9 (FO)	Formaldehyde	7.5E-02	3.3E-02	N/A	3.518	0.2638125	0	0.2638125	84	3.134E-03	1.319E-04
Table 1.4-3 (NG)	Hexane	1.8E+00	N/A	N/A	3.518	6.3315	0	6.3315	84	7.522E-02	3.166E-03
Table 1.4-3 (NG), Table 1.3-9 (FO)	Naphthalene	6.1E-04	1.1E-03	N/A	3.518	0.002145675	0	0.002145675	84	2.549E-05	1.073E-06
Table 1.4-3 (NG), Table 1.3-9 (FO)	Toluene	3.4E-03	6.2E-03	N/A	3.518	0.0119595	0	0.0119595	84	1.421E-04	5.980E-06
Table 1.3-9 (FO)	o-Xylene	N/A	1.1E-04	N/A	3.518	N/A	0	N/A	84	0.000E+00	0.000E+00
Table 1.4-3 (NG), Table 1.3-9 (FO)	Acenaphthene	1.8E-06	2.1E-05	N/A	3.518	6.3315E-06	0	6.3315E-06	84	7.522E-08	3.166E-09
Table 1.4-3 (NG), Table 1.3-9 (FO)	Acenaphthylene	1.8E-06	2.5E-07	N/A	3.518	6.3315E-06	0	6.3315E-06	84	7.522E-08	3.166E-09
Table 1.4-3 (NG), Table 1.3-9 (FO)	Anthracene	2.4E-06	1.2E-06	N/A	3.518	0.000008442	0	0.000008442	84	1.003E-07	4.221E-09
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benz(a)anthracene	1.8E-06	4.0E-06	N/A	3.518	6.3315E-06	0	6.3315E-06	84	7.522E-08	3.166E-09
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benzo(b,k)fluoranthene	1.8E-06	1.5E-06	N/A	3.518	6.3315E-06	0	6.3315E-06	84	7.522E-08	3.166E-09
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benzo(g,h,i)perylene	1.2E-06	2.3E-06	N/A	3.518	0.000004221	0	0.000004221	84	5.015E-08	2.111E-09
Table 1.4-3 (NG), Table 1.3-9 (FO)	Chrysene	1.8E-06	2.4E-06	N/A	3.518	6.3315E-06	0	6.3315E-06	84	7.522E-08	3.166E-09
Table 1.4-3 (NG), Table 1.3-9 (FO)	Dibenzo(a,h) anthracene	1.2E-06	1.7E-06	N/A	3.518	0.000004221	0	0.000004221	84	5.015E-08	2.111E-09
Table 1.4-3 (NG), Table 1.3-9 (FO)	Fluoranthene	3.0E-06	4.8E-06	N/A	3.518	1.05525E-05	0	1.05525E-05	84	1.254E-07	5.276E-09
Table 1.4-3 (NG), Table 1.3-9 (FO)	Fluorene	2.8E-06	4.5E-06	N/A	3.518	0.000009849	0	0.000009849	84	1.170E-07	4.925E-09
Table 1.4-3 (NG), Table 1.3-9 (FO)	Indo(1,2,3-cd)pyrene	1.8E-06	2.1E-06	N/A	3.518	6.3315E-06	0	6.3315E-06	84	7.522E-08	3.166E-09
Table 1.4-3 (NG), Table 1.3-9 (FO)	Phenanthrene	1.7E-05	1.1E-05	N/A	3.518	5.97975E-05	0	5.97975E-05	84	7.104E-07	2.990E-08
Table 1.4-3 (NG), Table 1.3-9 (FO)	Pyrene	5.0E-06	4.3E-06	N/A	3.518	1.75875E-05	0	1.75875E-05	84	2.089E-07	8.794E-09
Table 1.3-9 (FO)	1,1,1-Trichloroethane	N/A	2.4E-04	N/A	3.518	N/A	0	N/A	84	0.000E+00	0.000E+00
Table 1.3-9 (FO)	OCDD	N/A	3.1E-09	N/A	3.518	N/A	0	N/A	84	0.000E+00	0.000E+00
Table 1.4-3 (NG)	2-Methylnaphthalene	2.4E-05	N/A	N/A	3.518	0.00008442	0	0.00008442	84	1.003E-06	4.221E-08
Table 1.4-3 (NG)	3-Methylchloranthrene	1.8E-06	N/A	N/A	3.518	6.3315E-06	0	6.3315E-06	84	7.522E-08	3.166E-09
Table 1.4-3 (NG)	7,12-Dimethylbenz(a)anthracene	1.6E-05	N/A	N/A	3.518	0.00005628	0	0.00005628	84	6.686E-07	2.814E-08
Table 1.4-3 (NG)	Benzo(a)pyrene	1.2E-06	N/A	N/A	3.518	0.000004221	0	0.000004221	84	5.015E-08	2.111E-09
Table 1.4-3 (NG)	Butane	2.1E+00	N/A	N/A	3.518	7.38675	0	7.38675	84	8.776E-02	3.693E-03
Table 1.4-3 (NG)	Chrysene	1.8E-06	N/A	N/A	3.518	6.3315E-06	0	6.3315E-06	84	7.522E-08	3.166E-09
Table 1.4-3 (NG)	Pentane	2.6E+00	N/A	N/A	3.518	9.1455	0	9.1455	84	1.087E-01	4.573E-03
Table 1.4-3 (NG)	Phenanathrene	1.7E-05	N/A	N/A	3.518	5.97975E-05	0	5.97975E-05	84	7.104E-07	2.990E-08
Table 1.4-3 (NG)	Propane	1.6E+00	N/A	N/A	3.518	5.628	0	5.628	84	6.686E-02	2.814E-03

2021 EU-9 (1,000 kW Emergency Generator) HAPS Analysis

Source of Emission Factor (AP-42)	Criteria Pollutant	Fuel Oil Emission Factor lbs/MMBtu	Hours	kW	Conversion Factor (MMBtu/kW-hr)	Emissions from HAP (lbs/year)	Emissions per Hour (lbs/hr)	Emissions per Year (tons/yr)
Table 3.4-3	Formaldehyde	7.89E-05	39.8	1000	3.412E-03	1.071E-02	2.692E-04	5.357E-06
Table 3.4-4	Naphthalene	1.30E-04	39.8	1000	3.412E-03	1.765E-02	4.436E-04	8.827E-06
Table 3.4-3	Toluene	2.81E-04	39.8	1000	3.412E-03	3.816E-02	9.588E-04	1.908E-05
Table 3.4-3	Xylenes	1.93E-04	39.8	1000	3.412E-03	2.621E-02	6.585E-04	1.311E-05
Table 3.4-4	Acenaphthene	4.68E-06	39.8	1000	3.412E-03	6.356E-04	1.597E-05	3.178E-07
Table 3.4-4	Acenaphthylene	9.23E-06	39.8	1000	3.412E-03	1.253E-03	3.149E-05	6.267E-07
Table 3.4-3	Acetaldehyde	2.52E-05	39.8	1000	3.412E-03	3.422E-03	8.599E-05	1.711E-06
Table 3.4-3	Acrolein	7.88E-06	39.8	1000	3.412E-03	1.070E-03	2.689E-05	5.351E-07
Table 3.4-4	Anthracene	1.23E-06	39.8	1000	3.412E-03	1.670E-04	4.197E-06	8.352E-08
Table 3.4-4	Benz(a)anthracene	6.22E-07	39.8	1000	3.412E-03	8.447E-05	2.122E-06	4.223E-08
Table 3.4-4	Benzo(b,k)fluoranthene	1.33E-06	39.8	1000	3.412E-03	1.803E-04	4.531E-06	9.017E-08
Table 3.4-4	Benzo(g,h,I)perylene	4.14E-07	39.8	1000	3.412E-03	5.622E-05	1.413E-06	2.811E-08
Table 3.4-4	Chrysene	1.53E-06	39.8	1000	3.412E-03	2.078E-04	5.221E-06	1.039E-07
Table 3.4-4	Dibenz(a,h) anthracene	3.46E-07	39.8	1000	3.412E-03	4.699E-05	1.181E-06	2.349E-08
Table 3.4-4	Fluoranthene	4.03E-06	39.8	1000	3.412E-03	5.473E-04	1.375E-05	2.736E-07
Table 3.4-4	Fluorene	1.28E-05	39.8	1000	3.412E-03	1.738E-03	4.368E-05	8.691E-07
Table 3.4-4	Indeno(1,2,3-cd)pyrene	4.14E-07	39.8	1000	3.412E-03	5.622E-05	1.413E-06	2.811E-08
Table 3.4-4	Phenanthrene	4.08E-05	39.8	1000	3.412E-03	5.541E-03	1.392E-04	2.770E-06
Table 3.4-4	Pyrene	3.71E-06	39.8	1000	3.412E-03	5.038E-04	1.266E-05	2.519E-07
Table 3.4-3	Benzene	7.76E-04	39.8	1000	3.412E-03	1.054E-01	2.648E-03	5.269E-05
Table 3.4-4	Benzo(a)pyrene	2.57E-07	39.8	1000	3.412E-03	3.490E-05	8.769E-07	1.745E-08

2021 EU-10 (500 kW Emergency Generator) HAPS Analysis

Source of Emission Factor (AP-42)	Criteria Pollutant	Fuel Oil Emission Factor lbs/MMBtu	Hours	kW	Conversion Factor (MMBtu/kW-hr)	Emissions from HAP (lbs/year)	Emissions per Hour (lbs/hr)	Emissions per Year (tons/yr)
Table 3.4-3	Formaldehyde	7.89E-05	27.0	500	3.412E-03	3.634E-03	1.346E-04	1.817E-06
Table 3.4-4	Naphthalene	1.30E-04	27.0	500	3.412E-03	5.988E-03	2.218E-04	2.994E-06
Table 3.4-3	Toluene	2.81E-04	27.0	500	3.412E-03	1.294E-02	4.794E-04	6.472E-06
Table 3.4-3	Xylenes	1.93E-04	27.0	500	3.412E-03	8.890E-03	3.293E-04	4.445E-06
Table 3.4-4	Acenaphthene	4.68E-06	27.0	500	3.412E-03	2.156E-04	7.984E-06	1.078E-07
Table 3.4-4	Acenaphthylene	9.23E-06	27.0	500	3.412E-03	4.252E-04	1.575E-05	2.126E-07
Table 3.4-3	Acetaldehyde	2.52E-05	27.0	500	3.412E-03	1.161E-03	4.299E-05	5.804E-07
Table 3.4-3	Acrolein	7.88E-06	27.0	500	3.412E-03	3.630E-04	1.344E-05	1.815E-07
Table 3.4-4	Anthracene	1.23E-06	27.0	500	3.412E-03	5.666E-05	2.098E-06	2.833E-08
Table 3.4-4	Benz(a)anthracene	6.22E-07	27.0	500	3.412E-03	2.865E-05	1.061E-06	1.433E-08
Table 3.4-4	Benzo(b,k)fluoranthene	1.33E-06	27.0	500	3.412E-03	6.117E-05	2.266E-06	3.059E-08
Table 3.4-4	Benzo(g,h,I)perylene	4.14E-07	27.0	500	3.412E-03	1.907E-05	7.063E-07	9.535E-09
Table 3.4-4	Chrysene	1.53E-06	27.0	500	3.412E-03	7.048E-05	2.610E-06	3.524E-08
Table 3.4-4	Dibenz(a,h) anthracene	3.46E-07	27.0	500	3.412E-03	1.594E-05	5.903E-07	7.969E-09
Table 3.4-4	Fluoranthene	4.03E-06	27.0	500	3.412E-03	1.856E-04	6.875E-06	9.282E-08
Table 3.4-4	Fluorene	1.28E-05	27.0	500	3.412E-03	5.896E-04	2.184E-05	2.948E-07
Table 3.4-4	Indeno(1,2,3-cd)pyrene	4.14E-07	27.0	500	3.412E-03	1.907E-05	7.063E-07	9.535E-09
Table 3.4-4	Phenanthrene	4.08E-05	27.0	500	3.412E-03	1.879E-03	6.961E-05	9.397E-07
Table 3.4-4	Pyrene	3.71E-06	27.0	500	3.412E-03	1.709E-04	6.330E-06	8.545E-08
Table 3.4-3	Benzene	7.76E-04	27.0	500	3.412E-03	3.575E-02	1.324E-03	1.787E-05
Table 3.4-4	Benzo(a)pyrene	2.57E-07	27.0	500	3.412E-03	1.184E-05	4.385E-07	5.919E-09

2021 (1,250 kW Emergency Generator PTC# 031-0323-9-1199) HAPS Analysis

Source of Emission Factor (AP-42)	Criteria Pollutant	Fuel Oil Emission Factor lbs/MMBtu	Hours	kW	Conversion Factor (MMBtu/kW-hr)	Emissions from HAP (lbs/year)	Emissions per Hour (lbs/hr)	Emissions per Year (tons/yr)
Table 3.4-3	Formaldehyde	7.89E-05	16.5	1250	3.412E-03	5.553E-03	3.365E-04	2.776E-06
Table 3.4-4	Naphthalene	1.30E-04	16.5	1250	3.412E-03	9.149E-03	5.545E-04	4.574E-06
Table 3.4-3	Toluene	2.81E-04	16.5	1250	3.412E-03	1.978E-02	1.199E-03	9.888E-06
Table 3.4-3	Xylenes	1.93E-04	16.5	1250	3.412E-03	1.358E-02	8.232E-04	6.791E-06
Table 3.4-4	Acenaphthene	4.68E-06	16.5	1250	3.412E-03	3.294E-04	1.996E-05	1.647E-07
Table 3.4-4	Acenaphthylene	9.23E-06	16.5	1250	3.412E-03	6.496E-04	3.937E-05	3.248E-07
Table 3.4-3	Acetaldehyde	2.52E-05	16.5	1250	3.412E-03	1.773E-03	1.075E-04	8.867E-07
Table 3.4-3	Acrolein	7.88E-06	16.5	1250	3.412E-03	5.546E-04	3.361E-05	2.773E-07
Table 3.4-4	Anthracene	1.23E-06	16.5	1250	3.412E-03	8.656E-05	5.246E-06	4.328E-08
Table 3.4-4	Benz(a)anthracene	6.22E-07	16.5	1250	3.412E-03	4.377E-05	2.653E-06	2.189E-08
Table 3.4-4	Benzo(b,k)fluoranthene	1.33E-06	16.5	1250	3.412E-03	9.346E-05	5.664E-06	4.673E-08
Table 3.4-4	Benzo(g,h,l)perylene	4.14E-07	16.5	1250	3.412E-03	2.914E-05	1.766E-06	1.457E-08
Table 3.4-4	Chrysene	1.53E-06	16.5	1250	3.412E-03	1.077E-04	6.526E-06	5.384E-08
Table 3.4-4	Dibenz(a,h) anthracene	3.46E-07	16.5	1250	3.412E-03	2.435E-05	1.476E-06	1.217E-08
Table 3.4-4	Fluoranthene	4.03E-06	16.5	1250	3.412E-03	2.836E-04	1.719E-05	1.418E-07
Table 3.4-4	Fluorene	1.28E-05	16.5	1250	3.412E-03	9.008E-04	5.459E-05	4.504E-07
Table 3.4-4	Indeno(1,2,3-cd)pyrene	4.14E-07	16.5	1250	3.412E-03	2.914E-05	1.766E-06	1.457E-08
Table 3.4-4	Phenanthrene	4.08E-05	16.5	1250	3.412E-03	2.871E-03	1.740E-04	1.436E-06
Table 3.4-4	Pyrene	3.71E-06	16.5	1250	3.412E-03	2.611E-04	1.582E-05	1.305E-07
Table 3.4-3	Benzene	7.76E-04	16.5	1250	3.412E-03	5.461E-02	3.310E-03	2.731E-05
Table 3.4-4	Benzo(a)pyrene	2.57E-07	16.5	1250	3.412E-03	1.809E-05	1.096E-06	9.043E-09

2021 (500 kW Natural Gas Emergency Generator No. 1 PTC# 031-0323-9-1213) HAPS Analysis

Source of Emission Factor (AP-42)	Criteria Pollutant	NG Emission Factor lbs/MMBtu	Hours	MMBtu	Emissions from HAP (lbs/year)	Emissions per Hour (lbs/hr)	Emissions per Year (tons/yr)
Table 3.2-3	Formaldehyde	1.29E-05	15.1	59.5	7.679E-04	5.085E-05	3.839E-07
Table 3.2-3	Naphthalene	9.71E-05	15.1	59.5	5.780E-03	3.828E-04	2.890E-06
Table 3.2-3	Toluene	5.58E-04	15.1	59.5	3.321E-02	2.200E-03	1.661E-05
Table 3.2-3	Xylenes	1.95E-04	15.1	59.5	1.161E-02	7.687E-04	5.804E-06
Table 3.2-3	Acetaldehyde	2.79E-03	15.1	59.5	1.661E-01	1.100E-02	8.304E-05
Table 3.2-3	Acrolein	2.63E-03	15.1	59.5	1.566E-01	1.037E-02	7.828E-05
Table 3.2-3	Benzene	1.58E-03	15.1	59.5	9.405E-02	6.228E-03	4.702E-05
Table 3.2-3	Carbon Tetrachloride	1.77E-05	15.1	59.5	1.054E-03	6.977E-05	5.268E-07
Table 3.2-3	Chlorobenzene	1.29E-05	15.1	59.5	7.679E-04	5.085E-05	3.839E-07
Table 3.2-3	Chloroform	1.37E-05	15.1	59.5	8.155E-04	5.401E-05	4.077E-07
Table 3.2-3	Ethylbenzene	2.48E-05	15.1	59.5	1.476E-03	9.776E-05	7.381E-07
Table 3.2-3	Ethylene Dibromide	2.13E-05	15.1	59.5	1.268E-03	8.397E-05	6.339E-07
Table 3.2-3	Methanol	3.06E-03	15.1	59.5	1.821E-01	1.206E-02	9.107E-05
Table 3.2-3	Methylene Chloride	4.12E-05	15.1	59.5	2.452E-03	1.624E-04	1.226E-06
Table 3.2-3	Styrene	1.19E-05	15.1	59.5	7.083E-04	4.691E-05	3.542E-07
Table 3.2-3	Vinyl Chloride	7.18E-06	15.1	59.5	4.274E-04	2.830E-05	2.137E-07
Table 3.2-3	1,1,2,2-Tetrachloroethane	2.53E-05	15.1	59.5	1.506E-03	9.973E-05	7.530E-07
Table 3.2-3	1,1,2-Trichloroethane	1.53E-05	15.1	59.5	9.107E-04	6.031E-05	4.554E-07
Table 3.2-3	1,2-Dichloropropane	1.30E-05	15.1	59.5	7.738E-04	5.125E-05	3.869E-07
Table 3.2-3	1,3-Butadiene	6.63E-04	15.1	59.5	3.947E-02	2.614E-03	1.973E-05
Table 3.2-3	1,3-Dichloropropene	1.27E-05	15.1	59.5	7.560E-04	5.006E-05	3.780E-07
Table 3.2-3	PAH	1.41E-04	15.1	59.5	8.393E-03	5.558E-04	4.197E-06

2021 (500 kW Natural Gas Emergency Generator No. 2 PTC# 031-0323-9-1214) HAPS Analysis

Source of Emission Factor (AP-42)	Criteria Pollutant	NG Emission Factor lbs/MMBtu	Hours	MMBtu	Emissions from HAP (lbs/year)	Emissions per Hour (lbs/hr)	Emissions per Year (tons/yr)
Table 3.2-3	Formaldehyde	1.29E-05	18.6	61.9	7.985E-04	4.293E-05	3.993E-07
Table 3.2-3	Naphthalene	9.71E-05	18.6	61.9	6.011E-03	3.232E-04	3.005E-06
Table 3.2-3	Toluene	5.58E-04	18.6	61.9	3.454E-02	1.857E-03	1.727E-05
Table 3.2-3	Xylenes	1.95E-04	18.6	61.9	1.207E-02	6.490E-04	6.035E-06
Table 3.2-3	Acetaldehyde	2.79E-03	18.6	61.9	1.727E-01	9.285E-03	8.635E-05
Table 3.2-3	Acrolein	2.63E-03	18.6	61.9	1.628E-01	8.753E-03	8.140E-05
Table 3.2-3	Benzene	1.58E-03	18.6	61.9	9.780E-02	5.258E-03	4.890E-05
Table 3.2-3	Carbon Tetrachloride	1.77E-05	18.6	61.9	1.096E-03	5.891E-05	5.478E-07
Table 3.2-3	Chlorobenzene	1.29E-05	18.6	61.9	7.985E-04	4.293E-05	3.993E-07
Table 3.2-3	Chloroform	1.37E-05	18.6	61.9	8.481E-04	4.559E-05	4.240E-07
Table 3.2-3	Ethylbenzene	2.48E-05	18.6	61.9	1.535E-03	8.254E-05	7.676E-07
Table 3.2-3	Ethylene Dibromide	2.13E-05	18.6	61.9	1.319E-03	7.089E-05	6.593E-07
Table 3.2-3	Methanol	3.06E-03	18.6	61.9	1.894E-01	1.018E-02	9.471E-05
Table 3.2-3	Methylene Chloride	4.12E-05	18.6	61.9	2.550E-03	1.371E-04	1.275E-06
Table 3.2-3	Styrene	1.19E-05	18.6	61.9	7.366E-04	3.960E-05	3.683E-07
Table 3.2-3	Vinyl Chloride	7.18E-06	18.6	61.9	4.445E-04	2.390E-05	2.222E-07
Table 3.2-3	1,1,2,2-Tetrachloroethane	2.53E-05	18.6	61.9	1.566E-03	8.420E-05	7.831E-07
Table 3.2-3	1,1,2-Trichloroethane	1.53E-05	18.6	61.9	9.471E-04	5.092E-05	4.735E-07
Table 3.2-3	1,2-Dichloropropane	1.30E-05	18.6	61.9	8.047E-04	4.326E-05	4.024E-07
Table 3.2-3	1,3-Butadiene	6.63E-04	18.6	61.9	4.104E-02	2.206E-03	2.052E-05
Table 3.2-3	1,3-Dichloropropene	1.27E-05	18.6	61.9	7.862E-04	4.227E-05	3.931E-07
Table 3.2-3	PAH	1.41E-04	18.6	61.9	8.728E-03	4.693E-04	4.364E-06

2021 EU-11 (Combustion Turbine) HAPS Analysis

Source of Emission Factor (AP-42)	Criteria Pollutant	Natural Gas Emission Factor lbs/MMBtu	Natural Gas Use (MMBtu)	Emissions from Natural Gas (lbs)	Total Emissions per Year (lbs)	CT Run Hours/Year (hrs)	Emissions per Hour (lbs/hr)	Emissions per Year (tons/yr)
Table 3.1-3 (NG)	1,3-Butadiene*	4.3E-07	685,820	0.294902768	0.294902768	8,268	3.567E-05	1.475E-04
Table 3.1-3 (NG)	Acetaldehyde	4.0E-05	685,820	27.4328156	27.4328156	8,268	3.318E-03	1.372E-02
Table 3.1-3 (NG)	Acrolein	6.4E-06	685,820	4.389250495	4.389250495	8,268	5.309E-04	2.195E-03
Table 3.1-3 (NG)	Benzene	1.2E-05	685,820	8.229844679	8.229844679	8,268	9.954E-04	4.115E-03
Table 3.1-3 (NG)	Ethylbenzene	3.2E-05	685,820	21.94625248	21.94625248	8,268	2.654E-03	1.097E-02
Table 3.1-3 (NG)	Formaldehyde	7.1E-04	685,820	486.9324768	486.9324768	8,268	5.889E-02	2.435E-01
Table 3.1-3 (NG)	Naphthalene	1.3E-06	685,820	0.891566507	0.891566507	8,268	1.078E-04	4.458E-04
Table 3.1-3 (NG)	PAH	2.2E-06	685,820	1.508804858	1.508804858	8,268	1.825E-04	7.544E-04
Table 3.1-3 (NG)	Propylene Oxide*	2.9E-05	685,820	19.88879131	19.88879131	8,268	2.406E-03	9.944E-03
Table 3.1-3 (NG)	Toluene	1.3E-04	685,820	89.15665069	89.15665069	8,268	1.078E-02	4.458E-02
Table 3.1-3 (NG)	Xylenes	6.4E-05	685,820	43.89250495	43.89250495	8,268	5.309E-03	2.195E-02

* - AP-42 states these as < the shown emision factor (ie. Propylene Oxyde is <2.9E-05)

2021 EU-12 (HRSG with Low NOx Burners) HAPS Analysis

Source of Emission Factor (AP-42)	Criteria Pollutant	Natural Gas Emission Factor lbs/10^6 scf	Natural Gas Use (10^6 scf)	Emissions from Natural Gas (lbs)	Total Emissions per Year (lbs)	HRSG NG Run Hours/Year (hrs)	Emissions per Hour (lbs/hr)	Emissions per Year (tons/yr)
Table 1.4-4 (NG), Table 1.3-10 (FO)	Arsenic	0.0002	225.4	0.045089818	0.045089818	8,049	5.602E-06	2.254E-05
Table 1.4-4 (NG)	Barium	0.0044	225.4	0.991976	0.991976	8,049	1.232E-04	4.960E-04
Table 1.4-4 (NG), Table 1.3-10 (FO)	Beryllium	0.000012	225.4	0.002705389	0.002705389	8,049	3.361E-07	1.353E-06
Table 1.4-4 (NG), Table 1.3-10 (FO)	Cadmium	0.0011	225.4	0.247994	0.247994	8,049	3.081E-05	1.240E-04
Table 1.4-4 (NG), Table 1.3-10 (FO)	Chromium	0.0014	225.4	0.315628727	0.315628727	8,049	3.921E-05	1.578E-04
Table 1.4-4 (NG)	Cobalt	0.000084	225.4	0.018937724	0.018937724	8,049	2.353E-06	9.469E-06
Table 1.4-4 (NG), Table 1.3-10 (FO)	Copper	0.00085	225.4	0.191631727	0.191631727	8,049	2.381E-05	9.582E-05
Table 1.4-2 (NG), Table 1.3-10 (FO)	Lead	0.0005	225.4	0.112724545	0.112724545	8,049	1.400E-05	5.636E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Manganese	0.00038	225.4	0.085670655	0.085670655	8,049	1.064E-05	4.284E-05
Table 1.4-4 (NG), Table 1.3-10 (FO)	Mercury	0.00026	225.4	0.058616764	0.058616764	8,049	7.282E-06	2.931E-05
Table 1.4-4 (NG)	Molybdenum	0.0011	225.4	0.247994	0.247994	8,049	3.081E-05	1.240E-04
Table 1.4-4 (NG), Table 1.3-10 (FO)	Nickel	0.0021	225.4	0.473443091	0.473443091	8,049	5.882E-05	2.367E-04
Table 1.4-4 (NG), Table 1.3-10 (FO)	Zinc	0.029	225.4	6.538023634	6.538023634	8,049	8.123E-04	3.269E-03
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benzene	0.0021	225.4	0.473443091	0.473443091	8,049	5.882E-05	2.367E-04
Table 1.4-3 (NG)	Dichlorobenzene	0.0012	225.4	0.270538909	0.270538909	8,049	3.361E-05	1.353E-04
Table 1.3-9 (FO)	Ethylbenzene	N/A	225.4	N/A	N/A	8,049	0.000E+00	0.000E+00
Table 1.4-3 (NG), Table 1.3-9 (FO)	Formaldehyde	0.075	225.4	16.90868181	16.90868181	8,049	2.101E-03	8.454E-03
Table 1.4-3 (NG)	Hexane	1.8	225.4	405.8083635	405.8083635	8,049	5.042E-02	2.029E-01
Table 1.4-3 (NG), Table 1.3-9 (FO)	Naphthalene	0.00061	225.4	0.137523945	0.137523945	8,049	1.709E-05	6.876E-05
Table 1.4-3 (NG), Table 1.3-9 (FO)	Toluene	0.0034	225.4	0.766526909	0.766526909	8,049	9.523E-05	3.833E-04
Table 1.3-9 (FO)	o-Xylene	N/A	225.4	N/A	N/A	8,049	0.000E+00	0.000E+00
Table 1.4-3 (NG), Table 1.3-9 (FO)	Acenaphthene	0.0000018	225.4	0.000405808	0.000405808	8,049	5.042E-08	2.029E-07
Table 1.4-3 (NG), Table 1.3-9 (FO)	Acenaphthylene	0.0000018	225.4	0.000405808	0.000405808	8,049	5.042E-08	2.029E-07
Table 1.4-3 (NG), Table 1.3-9 (FO)	Anthracene	0.0000024	225.4	0.000541078	0.000541078	8,049	6.722E-08	2.705E-07
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benz(a)anthracene	0.0000018	225.4	0.000405808	0.000405808	8,049	5.042E-08	2.029E-07
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benzo(b,k)fluoranthene	0.0000018	225.4	0.000405808	0.000405808	8,049	5.042E-08	2.029E-07
Table 1.4-3 (NG), Table 1.3-9 (FO)	Benzo(g,h,i)perylene	0.0000012	225.4	0.000270539	0.000270539	8,049	3.361E-08	1.353E-07
Table 1.4-3 (NG), Table 1.3-9 (FO)	Chrysene	0.0000018	225.4	0.000405808	0.000405808	8,049	5.042E-08	2.029E-07
Table 1.4-3 (NG), Table 1.3-9 (FO)	Dibenzo(a,h) anthracene	0.0000012	225.4	0.000270539	0.000270539	8,049	3.361E-08	1.353E-07
Table 1.4-3 (NG), Table 1.3-9 (FO)	Fluoranthene	0.000003	225.4	0.000676347	0.000676347	8,049	8.403E-08	3.382E-07
Table 1.4-3 (NG), Table 1.3-9 (FO)	Fluorene	0.0000028	225.4	0.000631257	0.000631257	8,049	7.843E-08	3.156E-07
Table 1.4-3 (NG), Table 1.3-9 (FO)	Indo(1,2,3-cd)pyrene	0.0000018	225.4	0.000405808	0.000405808	8,049	5.042E-08	2.029E-07
Table 1.4-3 (NG), Table 1.3-9 (FO)	Phenanthrene	0.000017	225.4	0.003832635	0.003832635	8,049	4.762E-07	1.916E-06
Table 1.4-3 (NG), Table 1.3-9 (FO)	Pyrene	0.000005	225.4	0.001127245	0.001127245	8,049	1.400E-07	5.636E-07
Table 1.3-9 (FO)	1,1,1-Trichloroethane	N/A	225.4	N/A	N/A	8,049	0.000E+00	0.000E+00
Table 1.3-9 (FO)	OCDD	N/A	225.4	N/A	N/A	8,049	0.000E+00	0.000E+00
Table 1.4-3 (NG)	2-Methylnaphthalene	0.000024	225.4	0.005410778	0.005410778	8,049	6.722E-07	2.705E-06
Table 1.4-3 (NG)	3-Methylchloranthrene	0.0000018	225.4	0.000405808	0.000405808	8,049	5.042E-08	2.029E-07
Table 1.4-3 (NG)	7,12-Dimethylbenz(a)anthracene	0.000016	225.4	0.003607185	0.003607185	8,049	4.482E-07	1.804E-06
Table 1.4-3 (NG)	Benzo(a)pyrene	0.0000012	225.4	0.000270539	0.000270539	8,049	3.361E-08	1.353E-07
Table 1.4-3 (NG)	Butane	2.1	225.4	473.4430907	473.4430907	8,049	5.882E-02	2.367E-01
Table 1.4-3 (NG)	Chrysene	0.0000018	225.4	0.000405808	0.000405808	8,049	5.042E-08	2.029E-07
Table 1.4-3 (NG)	Pentane	2.6	225.4	586.1676361	586.1676361	8,049	7.282E-02	2.931E-01
Table 1.4-3 (NG)	Phenanathrene	0.000017	225.4	0.003832635	0.003832635	8,049	4.762E-07	1.916E-06
Table 1.4-3 (NG)	Propane	1.6	225.4	360.7185453	360.7185453	8,049	4.482E-02	1.804E-01

2021 Total HAPs Emissions Analysis

HAPS	Boilers 1-6, Fire Research Lab, and HRSG		1,000 kW Diesel Generator		500 kW Diesel Generator		1,250 kW Diesel Generator		500 kW NG Generator		500 kW NG Generator		Combustion Turbine (CT)		Total HAPS		MDE Reporting Thresholds		Report?	
	lb/hr	tons/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	tons/yr	lb/hr	tons/yr
Arsenic	3.76E-05	4.62E-05													3.76E-05	4.62E-05	0.0001	0.0001	No	No
Barium	7.39E-04	9.03E-04													7.39E-04	9.03E-04	N/A	N/A	No	No
Beryllium	5.03E-06	6.35E-06													5.03E-06	6.35E-06	0.00001	0.0001	No	No
Cadmium	1.88E-04	2.30E-04													1.88E-04	2.30E-04	0.0001	0.0001	Yes	Yes
Chromium	2.38E-04	2.91E-04													2.38E-04	2.91E-04	0.001	0.01	No	No
Cobalt	1.41E-05	1.72E-05													1.41E-05	1.72E-05	0.0001	0.001	No	No
Copper	1.49E-04	1.82E-04													1.49E-04	1.82E-04	0.001	0.01	No	No
Lead	9.30E-05	1.14E-04													9.30E-05	1.14E-04	0.0001	0.001	No	No
Manganese	6.99E-05	8.57E-05													6.99E-05	8.57E-05	0.001	0.01	No	No
Mercury	4.67E-05	5.72E-05													4.67E-05	5.72E-05	0.0001	0.001	No	No
Molybdenum	1.85E-04	2.26E-04													1.85E-04	2.26E-04	N/A	N/A	No	No
Nickel	3.56E-04	4.35E-04													3.56E-04	4.35E-04	0.001	0.001	No	No
Zinc	4.87E-03	5.95E-03													4.87E-03	5.95E-03	0.01	0.1	No	No
Benzene	3.54E-04	4.33E-04	2.65E-03	5.27E-05	1.32E-03	1.79E-05	3.31E-03	2.73E-05	6.23E-03	4.70E-05	5.26E-03	4.89E-05	9.95E-04	4.11E-03	2.01E-02	4.74E-03	0.01	0.1	Yes	No
Dichlorobenzene	2.02E-04	2.46E-04													2.02E-04	2.46E-04	1	0.1	No	No
Ethylbenzene	4.57E-07	5.89E-07							9.78E-05	7.38E-07	8.25E-05	7.68E-07	2.65E-03	1.10E-02	2.84E-03	1.10E-02	1	10	No	No
Formaldehyde	1.28E-02	1.57E-02	2.69E-04	5.36E-06	1.35E-04	1.82E-06	3.37E-04	2.78E-06	5.09E-05	3.84E-07	4.29E-05	3.99E-07	5.89E-02	2.43E-01	7.26E-02	2.59E-01	0.001	0.01	Yes	Yes
Hexane	3.02E-01	3.69E-01													3.02E-01	3.69E-01	1	10	No	No
Naphthalene	1.11E-04	1.36E-04	4.44E-04	8.83E-06	2.22E-04	2.99E-06	5.54E-04	4.57E-06	3.83E-04	2.89E-06	3.23E-04	3.01E-06	1.08E-04	4.46E-04	2.14E-03	6.04E-04	0.1	1	No	No
Toluene	6.16E-04	7.55E-04	9.59E-04	1.91E-05	4.79E-04	6.47E-06	1.20E-03	9.89E-06	2.20E-03	1.66E-05	1.86E-03	1.73E-05	1.08E-02	4.46E-02	1.81E-02	4.54E-02	1	10	No	No
o-Xylene	7.83E-07	1.01E-06	6.59E-04	1.31E-05	3.29E-04	4.45E-06	8.23E-04	6.79E-06	7.69E-04	5.80E-06	6.49E-04	6.04E-06	5.31E-03	2.19E-02	8.54E-03	2.20E-02	1	10	No	No
Acenaphthene	4.54E-07	5.65E-07	1.60E-05	3.18E-07	7.98E-06	1.08E-07	2.00E-05	1.65E-07							4.44E-05	1.15E-06	0.001	0.01	No	No
Acenaphthylene	3.04E-07	3.72E-07	3.15E-05	6.27E-07	1.57E-05	2.13E-07	3.94E-05	3.25E-07							8.69E-05	1.54E-06	0.001	0.01	No	No
Anthracene	4.12E-07	5.04E-07	4.20E-06	8.35E-08	2.10E-06	2.83E-08	5.25E-06	4.33E-08							1.20E-05	6.59E-07	0.001	0.01	No	No
Benz(a)anthracene	3.31E-07	4.06E-07	2.12E-06	4.22E-08	1.06E-06	1.43E-08	2.65E-06	2.19E-08							6.17E-06	4.85E-07	0.001	0.001	No	No
Benzo(b,k)fluoranthene	3.13E-07	3.83E-07	4.53E-06	9.02E-08	2.27E-06	3.06E-08	5.66E-06	4.67E-08							1.28E-05	5.50E-07	0.1	0.001	No	No
Benzo(g,h,i)perylene	2.18E-07	2.67E-07	1.41E-06	2.81E-08	7.06E-07	9.54E-09	1.77E-06	1.46E-08							4.10E-06	3.19E-07	0.001	0.01	No	No
Chrysene	3.19E-07	3.91E-07	5.22E-06	1.04E-07	2.61E-06	3.52E-08	6.53E-06	5.38E-08							1.47E-05	5.84E-07	0.001	0.01	No	No
Dibenzo(a,h) anthracene	2.14E-07	2.62E-07	1.18E-06	2.35E-08	5.90E-07	7.97E-09	1.48E-06	1.22E-08							3.46E-06	3.05E-07	0.0001	0.0001	No	No
Fluoranthene	5.39E-07	6.60E-07	1.38E-05	2.74E-07	6.88E-06	9.28E-08	1.72E-05	1.42E-07							3.84E-05	1.17E-06	0.1	0.1	No	No
Fluorene	5.02E-07	6.16E-07	4.37E-05	8.69E-07	2.18E-05	2.95E-07	5.46E-05	4.50E-07							1.21E-04	2.23E-06	0.001	0.01	No	No
Indo(1,2,3-cd)pyrene	3.18E-07	3.89E-07	1.41E-06	2.81E-08	7.06E-07	9.54E-09	1.77E-06	1.46E-08							4.20E-06	4.41E-07	0.001	0.001	No	No
Phenanthrene	2.93E-06	3.58E-06	1.39E-04	2.77E-06	6.96E-05	9.40E-07	1.74E-04	1.44E-06							3.86E-04	8.73E-06	0.01	0.01	No	No
Pyrene	8.70E-07	1.06E-06	1.27E-05	2.52E-07	6.33E-06	8.54E-08	1.58E-05	1.31E-07							3.57E-05	1.53E-06	0.001	0.01	No	No
1,1,1-Trichloroethane	1.70E-06	2.19E-06													1.70E-06	2.19E-06	0.1	1	No	No
OCDD	2.23E-11	2.87E-11													2.23E-11	2.87E-11	N/A	N/A	No	No
2-Methylnaphthalene	4.03E-06	4.92E-06													4.03E-06	4.92E-06	N/A	N/A	No	No
3-Methylchloranthrene	3.02E-07	3.69E-07													3.02E-07	3.69E-07	N/A	N/A	No	No
7,12-Dimethylbenz(a)anthracene	2.69E-06	3.28E-06													2.69E-06	3.28E-06	N/A	N/A	No	No
Benzo(a)pyrene	2.02E-07	2.46E-07	8.77E-07	1.75E-08	4.38E-07	5.92E-09	1.10E-06	9.04E-09							2.61E-06	2.79E-07	N/A	N/A	No	No
Butane	3.53E-01	4.31E-01													3.53E-01	4.31E-01	N/A	N/A	No	No
Chrysene	3.02E-07	3.69E-07													3.02E-07	3.69E-07	0.001	0.01	No	No
Pentane	4.37E-01	5.33E-01													4.37E-01	5.33E-01	N/A	N/A	No	No
Phenanathrene	2.86E-06	3.49E-06													2.86E-06	3.49E-06	0.01	0.01	No	No
Propane	2.69E-01	3.28E-01													2.69E-01	3.28E-01	N/A	N/A	No	No
Acetaldehyde			8.60E-05	1.71E-06	4.30E-05	5.80E-07	1.07E-04	8.87E-07	1.10E-02	8.30E-05	9.29E-03	8.64E-05	3.32E-03	1.37E-02	2.38E-02	1.39E-02	0.1	0.1	No	No
Acrolein			2.69E-05	5.35E-07	1.34E-05	1.81E-07	3.36E-05	2.77E-07	1.04E-02	7.83E-05	8.75E-03	8.14E-05	5.31E-04	2.19E-03	1.97E-02	2.36E-03	0.001	0.01	Yes	No
1,3 Butadiene									2.61E-03	1.97E-05	2.21E-03	2.05E-05	3.57E-05	1.47E-04	4.86E-03	1.88E-04	0.01	0.001	No	No
Propylene Oxide													2.41E-03	9.94E-03	2.41E-03	9.94E-03	0.1	0.1	No	No
Xylenes (including o-Xylene)	7.83E-07	1.01E-06	6.59E-04	1.31E-05	3.29E-04	4.45E-06	8.23E-04	6.79E-06	7.69E-04	5.80E-06	6.49E-04	6.04E-06	5.31E-03	2.19E-02	8.54E-03	2.20E-02	1	10	No	No
PAH									5.56E-04	4.20E-06	4.69E-04	4.36E-06	1.82E-04	7.54E-04	1.21E-03	7.63E-04	*	*	No	No
Carbon Tetrachloride									6.98E-05	5.27E-07	5.89E-05	5.48E-07			1.29E-04	1.07E-06	0.1	0.01	No	No
Chlorobenzene									5.09E-05	3.84E-07	4.29E-05	3.99E-07			9.38E-05	7.83E-07	0.1	1	No	No
Chloroform									5.40E-05	4.08E-07	4.56E-05	4.24E-07			9.96E-05	8.32E-07	0.1	0.01	No	No
Ethylene Dibromide									8.40E-05	6.34E-07	7.09E-05	6.59E-07			1.55E-04	1.29E-06	1	0.001	No	No
Methanol									1.21E-02	9.11E-05	1.02E-02	9.47E-05			2.22E-02	1.86E-04	1	10	No	No
Methylene Chloride									1.62E-04	1.23E-06	1.37E-04	1.28E-06			3.00E-04	2.50E-06	1	1	No	No
Styrene									4.69E-05	3.54E-07	3.96E-05	3.68E-07			8.65E-05	7.22E-07	1	1	No	No
Vinyl Chloride									2.83E-05	2.14E-07	2.39E-05	2.22E-07			5.22E-05	4.36E-07	0.1	0.01	No	No
1,1,2,2-Tetrachloroethane									9.97E-05	7.53E-07	8.42E-05	7.83E-07			1.84E-04	1.54E-06	0.1	0.1	No	No
1,1,2-Trichloroethane									6.03E-05	4.55E-07	5.09E-05	4.74E-07			1.11E-04	9.29E-07	0.1	1	No	No
1,2-Dichloropropane									5.12E-05	3.87E-07	4.33E-05	4.02E-07			9.45E-05	7.89E-07	1	10	No	No
1,3-Dichloropropene									5.01E-05	3.78E-07	4.23E-05	3.93E-07			9.23E-05	7.71E-07	0.01	0.01	No	No

Boilers

Metals Emission Factor Conversion

Criteria Pollutant	Fuel Oil Metals EF from AP-42 (lb/10^12 Btu) *	Conversion Factor 140 MMBtu/10^3 gal = .00014 x 10^{12} Btu /10^3 gal	Fuel Oil Emission Factor lbs/10^3 gal
Arsenic	4	0.00014	0.00056
Barium	N/A	N/A	N/A
Beryllium	3	0.00014	0.00042
Cadmium	3	0.00014	0.00042
Chromium	3	0.00014	0.00042
Cobalt	N/A	N/A	N/A
Copper	6	0.00014	0.00084
Lead	9	0.00014	0.00126
Manganese	6	0.00014	0.00084
Mercury	3	0.00014	0.00042
Molybdenum	N/A	N/A	N/A
Nickel	3	0.00014	0.00042
Zinc	4	0.00014	0.00056

* Source: AP-42 Table 1.3-10

Attachment 3

Permits to Construct

Amendment to Modification of a Combined Heat and Power Plant

1,250 kW Diesel Fired Emergency Generator

2 – 500 Natural Gas Fired Emergency Generators

Maryland
Department of
the Environment

Larry Hogan, Governor
Boyd K. Rutherford, Lt. Governor

Ben Grumbles, Secretary
Horacio Tablada, Deputy Secretary

031-0323; AI # 13355

JAN 17 2019

Mr. Michael Blackmon, P.E.
Environmental Management Group Leader
National Institute of Standards and Technology
100 Bureau Dr, MS 1730
Gaithersburg, Maryland 20899

RE: PTC #031-0323-5-2363 & 5-2364 – CHP plant {amendment}

Dear Mr. Blackmon:

Enclosed please find your amended Permit to Construct for the modification of a Combined Heat and Power Plant which includes the following installations: one (1) natural gas fired combustion turbine rated at 87.97 MMBtu/hr and one (1) natural gas fired heat recovery steam generator (HRSG) rated at 50.78 MMBtu/hr, equipped with low NO_X duct burners, to be located at the National Institute of Standards and Technology, 100 Bureau Dr - Bldg. 302, Gaithersburg, MD 20899. The permit contains both general conditions, which apply to all air quality permit holders in Maryland, and specific conditions, which apply to the Combined Heat and Power Plant that you have proposed to install.

The amendment of the permit to construct, which includes amended Non-attainment New Source Review (NNSR) NO_X Synthetic-Minor limitations and conditions, qualifies as an "Off-Permit" change to the facility's Part 70 operating permit. The Department recognizes the permit to construct application as written notification of the proposed change. The Permittee shall include the changes made under the amendment application in next renewal of the Part 70 permit.

If you have any questions regarding the issuance of this permit, please contact Michael Hassan at (410) 537-3225.

Sincerely,

Karen G. Irons, Administrator
Air Quality Permits Program
Air & Radiation Administration

KGI/dar
Enclosure

KEEP PERMIT AT SITE **CONTROL NO. B- 05661**

State of Maryland

Lawrence J. Hogan, Jr.
Governor

Boyd K. Rutherford
Lt. Governor

Ben Grumbles
Secretary

DEPARTMENT OF THE ENVIRONMENT

Air and Radiation Administration
1800 Washington Boulevard, Suite 720
Baltimore, MD 21230

[X] Construction Permit (amended)

[ ] Operating Permit

PERMIT NO. 031-0323-5-2363 & -5-2364; and -5-0108 through -5-0111

DATE ISSUED JAN 17 2019

PERMIT FEE $2,000.00 (Paid)

EXPIRATION DATE In accordance with COMAR 26.11.02.04B

LEGAL OWNER & ADDRESS

National Institute of Standards and Technology
100 Bureau Dr, MS 1730
Gaithersburg, Maryland 20899

Attention: Michael Blackmon, P.E.
Environmental Management Group Leader

SITE

National Institute of Standards and Technology
100 Bureau Dr - Bldg. 302
Gaithersburg, MD 20899

Premises # 031-0323
AI # 13355

SOURCE DESCRIPTION

Combined Heat and Power Plant which includes the following installations one (1) natural gas fired combustion turbine rated at 87.97 MMBtu/hr and one (1) natural gas fired heat recovery steam generator (HRSG) rated at 50.78 MMBtu/hr, equipped with low NOx duct burners.

Modification to four (4) Union Iron Works boilers each rated at 55 million Btu/hr and burning natural gas as primary fuel and No. 2 fuel oil as backup during periods of curtailment with the addition of low NOX burners on each unit.

Note: This permit supersedes all registrations and/or permits to construct issued under ARA Registration Nos. 031-0323--5-0108, -5-0109, -5-0110, -5-0111; and -5-2363 and -5-2364. This permit includes limits on the facility's annual NOX emissions, designating it as a NNSR "Synthetic-Minor" facility.

This source is subject to the conditions described on the attached pages.

Program Manager

Director, Air and Radiation Administration

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Emissions Unit Number	MDE Registration Number	Emissions Unit Name and Description	Date of Installation
EU-1 (NIST Boiler #1)	031-0323-5-0108	One (1) 55 million Btu/hr Union Iron Works boiler e/w Low NO_X Burners firing natural gas as primary fuel and No. 2 fuel oil as back up.	1961 / mod.2013
EU-2 (NIST Boiler #2)	031-0323-5-0109	One (1) 55 million Btu/hr Union Iron Works boiler e/w Low NO_X Burners firing natural gas as primary fuel and No. 2 fuel oil as back up.	1961 / mod.2013
EU-3 (NIST Boiler #3)	031-0323-5-0110	One (1) 55 million Btu/hr Union Iron Works boiler e/w Low NO_X Burners firing natural gas as primary fuel and No. 2 fuel oil as back up.	1961 / mod.2013
EU-4 (NIST Boiler #4)	031-0323-5-0111	One (1) 55 million Btu/hr Union Iron Works boiler e/w Low NO_X Burners firing natural gas as primary fuel and No. 2 fuel oil as back up.	1961 / mod.2013
EU-11	031-0323-5-2363	8 MW Solar Taurus natural gas fired combustion turbine rated at 87.97 MMBtu/hr.	Under construction
EU-12	031-0323-5-2364	50.78 MMBtu/hr Rentech natural gas fired HRSG equipped with low NO_X duct burners.	Under construction

Part A – General Provisions

(1) The following Air and Radiation Administration (ARA) permit-to-construct applications and supplemental information are incorporated into this permit by reference:

(a) Application for Fuel Burning Equipment (Form(s) 11) and letter with attachments requesting the amendment of the Cogeneration equipment (Combustion Turbine and Heat Recovery Steam Generator) installation permit to construct received April 11, 2018. The application includes an amended Non-attainment New Source Review (NNSR) NO_X netting analysis in order to retain Boiler No. 6 (Reg. No. 5-1113)(*), by taking credit

for the installation of Low NO_X burners on Boilers #1 - #4 (Ref.: PTC 031-0323-5-0108 - 0111).
(*)**Note: Boilers #5 & #6 were permitted under PTC #15-5-1112 & -5-1113 N, issued July30t, 1996. That permit did not require modification as a result of the Cogeneration plant permit amendment.**

(b) Application for Fuel Burning Equipment (Form 11) for the installation of one (1) Solar/Taurus 70 natural gas fired combustion turbine (CT) rated at 87.97 MMBtu/hr received on February 11, 2016.

(c) Application for Fuel Burning Equipment (Form 11) for the installation of one (1) Rentech natural gas fired heat recovery steam generator (HRSG) rated at 50.78 MMBtu/hr and equipped with low NO_X duct burners received on February 11, 2016.

(d) Supplemental Information including the following: emissions calculations and vendor literature received on February 11, 2016.

(e) Zoning documents from the Montgomery County Planning Department dated March 2014 received on February 11, 2016.

(f) Environmental Site Assessment – Combined Heat and Power Plant for the NIST facility dated November 17, 2014, received by the Department on February 17, 2016.

(g) Application for Gas Cleaning or Emission Control Equipment (Form 6) for the addition of low NO_X burners for four existing 55 million Btu/hr Union Iron Works boilers, firing natural gas as primary fuel and No. 2 fuel oil as back up {ARA Reg. Nos. 5-0108 through 5-0111; (EU #1 though EU-4)} received on January 10, 2013.

If there are any conflicts between representations in this permit and representations in the applications, the representations in the permit shall govern. Estimates of dimensions, volumes, emissions rates, operating rates, feed rates and hours of operation included in the applications do not constitute enforceable numeric limits beyond the extent necessary for compliance with applicable requirements.

(2) Upon presentation of credentials, representatives of the Maryland Department of the Environment ("MDE" or the "Department") and the Montgomery County Department of Environmental Protection shall at any reasonable time be granted, without delay and without prior notification, access to the Permittee's property and permitted to:

(a) inspect any construction authorized by this permit;

(b) sample, as necessary to determine compliance with requirements of this permit, any materials stored or processed on-site, any waste materials, and any discharge into the environment;

(c) inspect any monitoring equipment required by this permit;

(d) review and copy any records, including all documents required to be maintained by this permit, relevant to a determination of compliance with requirements of this permit; and

(e) obtain any photographic documentation or evidence necessary to determine compliance with the requirements of this permit.

(3) The Permittee shall notify the Department prior to increasing quantities and/or changing the types of any materials referenced in the application or limited by this permit. If the Department determines that such increases or changes constitute a modification, the Permittee shall obtain a permit-to-construct prior to implementing the modification.

(4) Nothing in this permit authorizes the violation of any rule or regulation or the creation of a nuisance or air pollution.

(5) If any provision of this permit is declared by proper authority to be invalid, the remaining provisions of the permit shall remain in effect.

(6) The Permittee shall comply with all applicable requirements of the facility's current Title V-Part 70 Operating Permit #24-033-0010.

(7) This permit supersedes all registrations and/or permit to construct issued under ARA Registration Nos. 031-0323--5-0108, -5-0109, -5-0110, -5-0111 {Boiler EUs # 1 - #4}; and -5-2363 and -5-2364 {CT and HRSG EUs # 11 & # 12}.

(8) The amendment of the permit which includes amended Non-attainment New Source Review (NNSR) NO_X Synthetic-Minor limitations and conditions, and the retention of Boiler EU #6, qualifies as an "Off-Permit" change to the facility's Part 70 operating permit. The Department recognizes the permit to construct application as written notification of the proposed change the Permittee shall include the changes made and included as a part of this permit in the next renewal of the Part 70 permit.

Part B – Applicable Regulations

(1) This source is subject to all applicable federal air pollution control requirements including, but not limited to, the following:

(a) All applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements included in federal New Source Performance Standards (NSPS) promulgated under 40 CFR 60, Subparts A and KKKK for Stationary Combustion Turbines.

§60.4320. What emission limits must I meet for nitrogen oxides (NO_X)?

(a) "You must meet the emission limits for NO_X specified in Table 1 to this subpart."

(b) "If you have two or more turbines that are connected to a single generator, each turbine must meet the emission limits for NO_X."

40 CFR Part 60, Subpart KKKK, Table 1 – Nitrogen Oxide Emission Limits for New Stationary Combustion Turbines.

Combustion Turbine Type	Combustion Turbine heat input at peak load (HHV)	NO_X emission standard
New turbine firing natural gas	50 MMBtu/h and 850 MMBtu/h	25 ppm at 15 percent O_2 or 150 ng/J of useful output (1.2 lb/MWh).

§60.4330(a)(1) and (2) What emissions limits must I meet for sulfur dioxide (SO_2)?

The Permittee must comply with one of the following:

(1) You must not cause to be discharged into the atmosphere from the subject stationary combustion turbine any gases which contain SO_2 in excess of 110 nanograms per Joule (ng/J) (0.90 pounds per megawatt-hour (lb/MWh)) gross output, or

(2) You must not burn in the subject stationary combustion turbine any fuel which contains total potential sulfur emissions in excess of 26 ng SO_2/J (0.060 lb SO_2/MMBtu) heat input. If your turbine simultaneously fires multiple fuels, each fuel must meet this requirement.

Note: The Permittee may satisfy this requirement by meeting the fuel oil **sulfur content limitation of 0.05% by weight** as specified in a current valid purchase contract, tariff sheet or transportation contract for the fuel per **40 CFR § 60.4365 (a).**

§60.4333(a) What are my general requirements for complying with this subpart?

"You must operate and maintain your stationary combustion turbine, air pollution control equipment, and monitoring equipment in a manner consistent with good air pollution control practices for minimizing emissions at all times including during startup, shutdown, and malfunction."

(c) All notifications required under 40 CFR 60, Subparts A and KKKK shall be submitted to both of the following:

The Administrator
Compliance Program
Maryland Department of the Environment
Air and Radiation Administration
1800 Washington Boulevard, STE 715
Baltimore MD 21230

and

Director, Air Protection Division
U.S. EPA – Region 3

(2) This source is subject to all applicable federally enforceable State air pollution control requirements including, but not limited to, the following regulations:

(a) COMAR 26.11.01.05-1B(1), Emissions Statements. "By April 1 of each year, beginning with April 1, 1993, a person subject to this regulation shall submit to the Department an emissions statement for the previous calendar year that meets the requirements of this regulation."

(b) COMAR 26.11.01.07C, Report of Excess Emissions.
(1) "In the case of any occurrence of excess emissions, expected to last or actually lasting for 1 hour or more, from any installation required by COMAR 26.11.02.13 to obtain a State permit to operate, the owner or operator shall report the onset and shall report the termination of the occurrence to the Department by telephone."
(2) "Telephone reports of excess emissions shall include the following information:
(a) The identity of the installation and the person reporting;
(b) The nature or characteristics of the emissions (for example, hydrocarbons, fluorides);
(c) The time of occurrence of the onset of the excess emissions and the actual or expected duration of the occurrence; and
(d) The actual or probable cause of the excess emissions."

(c) COMAR 26.11.02.04B, Permits to Construct and Approvals. "A permit to construct or an approval expires if, as determined by the Department:
(1) Substantial construction or modification is not commenced within 18 months after the date of issuance of the permit or approval, unless the Department specifies a longer period in the permit or approval;
(2) Construction or modification is substantially discontinued for a period of 18 months after the construction or modification has commenced; or
(3) The source for which the permit or approval was issued is not completed within a reasonable period after the date of issuance of the permit or approval."

(d) COMAR 26.11.02.09A, Sources Subject to Permits to Construct and Approvals. "A person may not construct or modify or cause to be constructed or modified any of the following sources without first obtaining, and having in current effect, the specified permits to construct and approvals: (6) All sources, including installations and air pollution control equipment, except as listed in Regulation .10 of this chapter—permit to construct required."

(e) COMAR 26.11.03.14A, Revision of Part 70 Permits – General Requirements. "The Permittee shall submit an application to the Department to revise a Part 70 permit when required under Regulations .15—.17 of this chapter."

(f) COMAR 26.11.09.05A(2), Visible Emissions. "In Areas III and IV, a person may not cause or permit the discharge of emissions from any fuel burning equipment, other than water in an uncombined form, which is visible to human observers except that, for the purpose of demonstrating compliance using COM data, emissions that are visible to a human observer are those that are equal to or greater than 10 percent opacity."

(g) COMAR 26.11.09.05A(3), Exceptions. "Section A(1) and (2) of this regulation do not apply to emissions during load changing, soot blowing, startup, or adjustments or occasional cleaning of control equipment if:
(a) The visible emissions are not greater than 40 percent opacity; and
(b) The visible emissions do not occur for more than 6 consecutive minutes in any sixty minute period."

Conditions (h) and (i) below apply to Boilers #1-4, only.

(h) COMAR 26.11.09.07A, Sulfur Content Limitations for Fuel. "A person may not burn, sell, or make available for sale any fuel with a sulfur content by weight in excess of or which otherwise exceeds the following limitations: (2) In Areas III and IV: (b) Distillate fuel oils, 0.3 percent."

COMAR 26.11.09.08 - Control of NO_X Emissions for Major Stationary Sources

(i) COMAR 26.11.09.08B(1), Emission Standards and Requirements.
(a) "A person who owns or operates an installation that causes NO_X emissions subject to this regulation is in compliance with this regulation if the person establishes compliance with the emissions standards in §B(1)(c) of this regulation."
(c) "Emission Standards in Pounds of NO_X per Million Btu of heat input." (*)

Fuel	Tangential- Fired	Wall-Fired
Gas only	0.20	0.20
Gas/Oil	0.25	0.25
Coal (dry bottom)	0.38	0.38
Coal (wet bottom)	1.00	1.00

Note(*): The Permittee shall satisfy this requirement by meeting the more stringent NNSR limits cited under Part E (1) of this permit.

(j) COMAR 26.11.09.08B, General Requirements and Conditions.
(2) Demonstration of Compliance. "A person subject to a NO_X emission standard in this regulation shall demonstrate compliance as follows: (e) For a person who establishes compliance using a stack test, compliance shall be determined as averages of the stack test duration."

(k) COMAR 26.11.09.08B(5), Operator Training.

(a) "For purposes of this regulation, the equipment operator to be trained may be the person who maintains the equipment and makes the necessary adjustments for efficient operation."

(b) "The operator training course sponsored by the Department shall include an in-house training course that is approved by the Department."

(l) COMAR 26.11.09.08E, Requirements for Fuel-Burning Equipment with a Rated Heat Input Capacity of 100 Million Btu Per Hour or Less "A person who owns or operates fuel-burning equipment with a rated heat input capacity of 100 Million Btu per hour or less shall:
(1) Submit to the Department an identification of each affected installation, the rated heat input capacity of each installation, and the type of fuel burned in each;
(2) Perform a combustion analysis for each installation at least once each year and optimize combustion based on the analysis;
(3) Maintain the results of the combustion analysis at the site for at least 2 years and make this data available to the Department and the EPA upon request;
(4) Once every 3 years, require each operator of the installation to attend operator training programs on combustion optimization that are sponsored by the Department(*), the EPA, or equipment vendors; and
(5) Prepare and maintain a record of training program attendance for each operator at the site, and make these records available to the Department upon request."

Condition (m) applies to the Combustion Turbine only.

(m) COMAR 26.11.09.08G, Requirements for Fuel-Burning Equipment with a Capacity Factor of 15 Percent or Less, and Combustion Turbines with a Capacity Factor Greater than 15 Percent.
(1) *Not applicable.*
(2) "A person who owns or operates a combustion turbine with a capacity factor greater than 15 percent shall meet an hourly average NO_X emission rate of not more than 42 ppm when burning gas or 65 ppm when burning fuel oil (dry volume at 15 percent oxygen) or meet applicable Prevention of Significant Deterioration limits, whichever is more restrictive."

(n) COMAR 26.11.09.08K, Reporting Requirements.
(1) *Not applicable.*
(2) "When compliance with this regulation is demonstrated by a stack test, the results of the stack tests required by this regulation shall be submitted to the Department within 45 days after completion of the test."
(3) "A person subject to this regulation shall maintain annual fuel use records on site for not less than 3 years, and make these records available to the Department upon request."

(3) This source is subject to all applicable State-only enforceable air pollution control requirements including, but not limited to, the following regulations:

(a) COMAR 26.11.02.13A, Sources Subject to State Permits to Operate. "Except for a source that is covered by a Part 70 permit, a person may not operate or cause to be operated any of the following sources without first obtaining, and having in current effect, a State permit to operate as required by this regulation: **(2)** Fuel-burning equipment, hot oil heaters, and stationary combustion turbines with a maximum rated heat input capacity of 50 million Btu (52.8 gigajoules) or more per hour."

(b) COMAR 26.11.02.19C, Information Required to be Maintained by a Source.

(1) "Beginning January 1, 1994, the owner or operator of a source for which a permit to operate is required shall maintain records necessary to support the emission certification, including the following information:

(a) The total amount of actual emissions of each regulated pollutant and the total of all regulated pollutants;
(b) An explanation of the methods used to quantify the emissions and the operating schedules and production data that were used to determine emissions, including significant assumptions made;
(c) Amounts, types, and analyses of all fuels used;
(d) Emission data from continuous emission monitors that are required by this subtitle or EPA regulations, including monitor calibration and malfunction information;
(e) Identification, description, and use records of all air pollution control equipment and compliance monitoring equipment, including significant maintenance performed, malfunctions and downtime, and episodes of reduced efficiency of this equipment;
(f) Limitations on source operation or any work practice standards that significantly affect emissions; and
(g) Other relevant information as required by the Department."

(2) "The logs and other records of information required by §C(1) of this regulation shall be retained for a period of 5 years and made available to the Department upon request."

(3) "If the owner or operator of a source for which a permit to operate is required fails to maintain or provide the data required by this section, which the Department requests in order to verify the emissions during the previous calendar year, the annual emission-based fee for that source shall be based on the estimated allowable emissions, as defined in COMAR 26.11.01.01B(4), of that source, as determined by the Department."

(c) COMAR 26.11.02.19D, Emission Certification.

(1) "Beginning January 1, 1994, the responsible official designated by the owner or operator of a source for which a permit to operate is required shall certify, as provided at Regulation .02F of this chapter, the actual emissions of regulated air pollutants from all installations at the plant or facility."

(2) "Certification shall be on a form obtained from the Department and shall be submitted to the Department not later than April 1 of the year following the year for which certification is required."

(3) "An emission certification submitted pursuant to this section and which contains all information required by COMAR 26.11.01.05-1, for NO_X and VOC, satisfies the requirements of COMAR 26.11.01.05-1."

(d) COMAR 26.11.06.08, Nuisance. "An installation or premises may not be operated or maintained in such a manner that a nuisance or air pollution is created. Nothing in this regulation relating to the control of emissions may in any manner be construed as authorizing or permitting the creation of, or maintenance of, nuisance or air pollution."

(e) COMAR 26.11.06.09, Odors. "A person may not cause or permit the discharge into the atmosphere of gases, vapors, or odors beyond the property line in such a manner that a nuisance or air pollution is created."

Part C – Construction Conditions

(1) Except as otherwise provided in this part, the one (1) natural gas fired combustion turbine rated at 87.97 MMBtu/hr, one (1) natural gas fired HRSG rated at 50.78 MMBtu/hr equipped with low NO_X burners, and the installation of low NO_X burners to Boilers #1- #4, shall be constructed in accordance with specifications included in the incorporated applications.

(2) The Permittee must install, calibrate, operate, and maintain a continuous parameter monitoring system (CPMS) to monitor the appropriate parameters to determine that the turbine is operating in low- NO_X mode. **[Reference: 40 CFR §60.4340(b)(2)(ii)] {Note: See Condition F (5), below}**

(3) In order to demonstrate compliance with Non-attainment New Source Review (NNSR), the combustion turbine must be designed to meet the following NO_X emission standard: 15 ppm on a dry volume basis (ppmvd) at 15 percent oxygen (O2).

(4) In order to demonstrate compliance with NNSR, the HRSG must be designed to meet the following NO_X emission standard: 0.08 lb/ MMBtu/hr.

(5) In order to demonstrate compliance with NNSR, the Low NO_X burners installed on Boilers EU # 1 though EU# 4 shall be designed to achieve NO_X limits of 0.1 lbs / MM BTU when burning natural gas and 0.2 lbs / MM BTU when burning fuel oil.

Part D – Operating Conditions

(1) Except as otherwise provided in this part, the one (1) natural gas fired combustion turbine rated at 87.97 MMBtu/hr, the one (1) natural gas fired HRSG rated at 50.78 MMBtu/hr and equipped with low NO_X burners, and Boilers EU # 1 - #4 equipped with low NO_X burners shall be operated in accordance with specifications included in the applications and any operating procedures recommended by equipment vendors unless the Permittee obtains from the Department written authorization for alternative operating procedures.

{Condition (2) below applies to Boilers EU#s 1-4, only}

(2) The Permittee shall burn liquid {No.2 fuel oil} fuel only during periods of gas curtailment, gas supply interruption, startup or periodic testing on liquid {No.2 fuel oil} fuel. Periodic testing of liquid {No.2 fuel oil} fuel shall not exceed a combined total of 48 hours per boiler during any calendar year.
[Reference: 40 CFR §63.11195(e) and §63.11237]

Part E – NNSR NO_X Synthetic Minor Requirements

(1) In order to avoid triggering NNSR requirements, the Permittee shall not exceed the following NO_X emissions limits:

(a) For the combustion turbine (CT): 15 ppm on a dry volume basis (ppmvd) at 15 percent oxygen (O2);

(b) For the Heat Recovery Steam Generator (HRSG): 0.08 lb / MMBtu; and

(c) For the Boilers EU # 1 though EU# 4: 0.1 lbs / MMBTU when burning natural gas; and 0.2 lbs / MMBTU when burning fuel oil.

(2) In order to prevent the NO_X emissions from the installation of the CHP Plant (the one (1) natural gas fired combustion turbine rated at 87.97 MMBtu/hr and the one (1) natural gas fired HRSG rated at 50.78 MMBtu/hr and equipped with low NO_X burners) from triggering a "Significant" net emissions increase for the facility as defined under COMAR 26.11.17.01B(26) and triggering the Nonattainment Provisions for Major New Sources and Modifications (NSR) under COMAR 26.11.17, the Permittee shall:

(a) Limit NO_X emissions from the CHP Plant (Reg. No. 5-2363 & -5-2364) to no more than **30 TPY** for any 12-month consecutive period, unless prior approval is received from the Department; and

(b) Limit the combined total NO_X emissions from Boilers #1 - #4 to less than **10.8 TPY** for any 12-month consecutive period; unless prior approval is received from the Department, in order to satisfy the NNSR netting demonstration of the CHP.

(3) In order to demonstrate compliance with the annual emissions limitations, the Permittee shall calculate and record the CHP Plant and Boiler Nos. 1 – 4 NO_X emissions for each previous calendar month and a total for the previous 12 consecutive calendar months.

(4) Monthly records of the hours of operation, fuel use, NO_X emission calculations and supporting data, including emissions factors, for the CHP and Boiler Nos. 1 – 4 shall be kept on site for at least five (5) years and shall be made available to the Department upon request.

Part F – Notifications, Testing, and Monitoring Requirements

Notifications

(1) The Permittee shall notify the Department at least 30 days prior to any performance test, to afford the Department the opportunity to have an observer present. **[Reference: 40 CFR §60.8(d)]**
The Permittee shall provide the Department with two copies of the test protocols at least 30 days prior to any scheduled performance tests.
[Reference: COMAR 26.11.01.04 & 40 CFR § 60.4340 (b)(2) & .4400]

Testing

(2) The Permittee shall conduct the initial performance test within 60 days of achieving the maximum production rate at which the facility will operate but not later than 180 days after initial startup of the facility. **[Reference: 40 CFR §60.8(a)]**

(3) The Permittee must conduct an initial NO_X performance test, as required in §60.8. **[Reference: 40 CFR §60.4400(a)]**

(4) **[Periodic Testing - Combustion Turbine]**
Note(*): Conditions below applies to the CT that the Permittee has opted to use the alternative method to annual testing for demonstrating continuous compliance ("continuous parameter monitoring") for NOX as specified in 40 CFR § 60.4340 (b)(2).

(1)After the initial compliance test required under 40 CFR § 60.8, the owner or operator shall ***conduct a performance stack test for NOX for each CT unit at least once every 5 years or at least once during the term of the operating permit(*)***. The Permittee shall conduct performance test for NOX in accordance with the methodologies specified in 40 CFR §§ 60.4340 & 60.4400.

(2)Performance tests shall be conducted and data reduced in accordance with the test methods and procedures contained in each applicable subpart unless the Administrator specifies or approves, in specific cases, an alternative reference method.

(3)The Permittee shall provide the Department at least 30 days prior notice of any performance test, except as specified under other subparts, to afford the Administrator the opportunity to have an observer present. If after 30 days notice for an initially scheduled performance test, there is a delay (due to operational problems, etc.) in conducting the scheduled performance test, the owner or operator of an affected facility shall notify the Administrator (the Department) as soon as possible of any delay in the original test date, either by providing at least 7 days prior notice of the rescheduled date of the performance test, or by arranging a rescheduled date with the Administrator (the Department) by mutual agreement.

{Conditions (5) and (6) below apply to Boilers #1 – 4, only}

(5) The Permittee shall conduct a stack test to determine the NO_X emissions rate on at least two of the four boilers while burning natural gas and while burning No. 2 fuel oil at least once prior to the expiration of the Title V permit. The Permittee shall submit a test protocol to the Department for approval at least 30 days prior to the processed test date.
[Reference: COMAR 26.11.09.08B(2)(a)(ii) and .08B(2)(e) and 26.11.17.01B(26)]

(6) If compliance is sought under COMAR 26.11.09.08E, the Permittee shall conduct a combustion analysis for each affected installation at least once each year and optimize combustion based on the analysis.

Monitoring

(7) The appropriate parameters must be continuously monitored and recorded during each run of the initial performance test required under 40 CFR §60.8, to establish acceptable operating values and ranges, for the purposes of the parameter monitoring plan as specified in 40 CFR §60.4355. The Permittee may supplement the performance test data with engineering analyses, design specifications, manufacturer's recommendations, and other relevant information to define the acceptable parametric ranges more precisely. **[Reference: 40 CFR §60.4355(a) and 40 CFR §60.4410]**

The Permittee shall establish and document a proper parametric monitoring plan in accordance with **§ 60.4355.** The plan shall include, but not be limited to: selection of indicators to be monitored, ranges of indicators, process used to obtain representative data, quality assurance, frequency of monitoring, and justification for the proposed elements of monitoring

Note: The Dry "SoLoNox" Low Emissions system employed by the Solar Turbine is integrated into the entire combustion system, including the fuel injectors, combustion air management, controls, and fuel delivery systems. The Permittee shall demonstrate compliance with CFR § 60.4340 for NO_X emissions with continuous parametric monitoring as stipulated into the facility's Parametric Monitoring Plan (PMP) as stipulated in Condition F (9), below.

(8) The Permittee shall assure continuous compliance as stipulated under § 60.4340 by operating the CT in accordance with the Parametric Monitoring Plan, which includes operation in Dry Low Emissions (DLE) mode which is indicated by monitoring pilot valve position, which will indicate that "Minimum Pilot Mode" is either "ON" or "OFF".

NIST will continuously monitor and record pilot fuel valve position and report any incidence of "Minimum Pilot Mode" = OFF, that is not attributable to combustion turbine start-up or load change, to indicate potential NO_X emissions exceedances.

(9) The Permittee may elect not to monitor the total sulfur content of the fuel combusted in the turbine, if the fuel is demonstrated not to exceed potential sulfur emissions of 26 ng SO_2/J (0.060 lb SO_2/MMBtu) heat input for units located in continental areas and 180 ng SO_2/J (0.42 lb SO_2/MMBtu) heat input for units located in noncontinental areas or a continental area that the Administrator determines does not have access to natural gas and that the removal of sulfur compounds would cause more environmental harm than benefit. You must use one of the following sources of information to make the required demonstration:

(a) The fuel quality characteristics in a current, valid purchase contract, tariff sheet or transportation contract for the fuel, specifying that the maximum total sulfur content for oil use in continental areas is 0.05 weight percent (500 ppmw) or less and 0.4 weight percent (4,000 ppmw) or less for noncontinental areas, ***the total sulfur content for natural gas use in continental areas is 20 grains of sulfur or less per 100 standard cubic feet*** and 140 grains of sulfur or less per 100 standard cubic feet for noncontinental areas, has potential sulfur emissions of less than less than 26 ng SO_2/J (0.060 lb SO_2/MMBtu) heat input for continental areas and has potential sulfur emissions of less than less than 180 ng SO_2/J (0.42 lb SO_2/MMBtu) heat input for noncontinental areas; or

(b) Representative fuel sampling data which show that the sulfur content of the fuel does not exceed 26 ng SO_2/J (0.060 lb SO_2/MMBtu) heat input for continental areas or 180 ng SO_2/J (0.42 lb SO_2/MMBtu) heat input for noncontinental areas. At a minimum, the amount of fuel sampling data specified in section 2.3.1.4 or 2.3.2.4 of appendix D to part 75 of this chapter is required.

[Reference: 40 CFR §60.4365(a)]

(10) The Permittee may develop custom schedules for determination of the total sulfur content of gaseous fuels, based on the design and operation of the affected facility and the characteristics of the fuel supply. Except as provided in 40 CFR §60.4370(c)(1) and (c)(2), custom schedules shall be substantiated with data and shall be approved by the Administrator before they can be used to comply with the standard in §60.4330. **[Reference: 40 CFR §60.4370(c)]**

(11) The Permittee must develop and keep on-site a parametric monitoring plan which explains the procedures used to document proper operation of the NO_X emissions controls in accordance with 40 CFR §60.4355. **[Reference: 40 CFR §60.4355(a)]** {**Note: See conditions F. (7) & (8), above.**}

(12) If the Permittee chooses the option to monitor the sulfur content of the fuel, excess emissions and monitoring downtime are defined as follows:

(a) For samples of gaseous fuel and for oil samples obtained using daily sampling, flow proportional sampling, or sampling from the unit's storage tank, an excess emission occurs each unit operating hour included in the period beginning on the date and hour of any sample for which the sulfur content of the fuel being fired in the combustion turbine exceeds the applicable limit and ending on the date and hour that a subsequent sample is taken that demonstrates compliance with the sulfur limit.

(b) If the option to sample each delivery of fuel oil has been selected, you must immediately switch to one of the other oil sampling options (i.e., daily sampling, flow proportional sampling, or sampling from the unit's storage tank) if the sulfur content of a delivery exceeds 0.05 weight percent. You must continue to use one of the other sampling options until all of the oil from the delivery has been combusted, and you must evaluate excess emissions according to paragraph (a) of this section. When all of the fuel from the delivery has been burned, you may resume using the as-delivered sampling option.

(c) A period of monitor downtime begins when a required sample is not taken by its due date. A period of monitor downtime also begins on the date and hour of a required sample, if invalid results are obtained. The period of monitor downtime ends on the date and hour of the next valid sample.

[Reference: 40 CFR §60.4385]

Part F – Record Keeping and Reporting Requirements

(1) The Permittee shall maintain for at least five (5) years, and shall make available to the Department upon request, records of the following information:

(a) Records of the results of the combustion analysis. **[Reference: COMAR 26.11.09.08E(3), G(1) and COMAR 26.11.03.06C]**

(b) Records of training program attendance for each operator. **[Reference: COMAR 26.11.09.08E(5), G(1)(e) and COMAR 26.11.03.06C]**

(c) Maintain annual fuel use records on site for not less than 3 years. **[Reference: COMAR 26.11.09.08K(3)]**

(d) Provide certification of the capacity factor of the equipment to the Department with the annual emissions certification. **[Reference: COMAR 26.11.09.08G(1)(a)]**

(e) Identification of each installation, the input capacity of each installation, and the type of fuel burned in each installation. **[Reference: COMAR 26.11.09.08E(1)]**

(f) Records and results of the initial and subsequent stack tests performed as required by 40 CFR Part 60, Subpart KKKK, COMAR 26.11.09.08, or NNSR Synthetic Minor Limits under Part E of this permit.

(g) The Permittee shall maintain a copy of the parametric monitoring plan in accordance with § 60.4355 and records of pilot fuel valve position and report any incidence of "Minimum Pilot Mode" = OFF to indicate potential NOX exceedances, in accordance with the plan.
[Authority: 40 CFR 60, Subpart KKKK & COMAR 26.11.03.06C]

(h) Records and results of the fuel sulfur content monitoring and/or fuel supplier certifications stating that the fuel oil is in compliance with the sulfur content limitation.

(i) Monthly records of the hours of operation and fuel usage of the CHP plant and Boilers Nos. 1 - 4 on a rolling 12-month basis.

(j) Records of NO_X emission calculations and supporting data, including emissions factors, to show compliance with NNSR Synthetic Minor limits as defined in Part E.

(2) The Permittee shall report to the Department, no later than 45 days after the scheduled test, the results of the initial stack test performed.

(3) The Permittee shall submit semiannual reports of results of NO_X emission calculations, , including emissions factors and fuels use data as appropriate, to show compliance with NNSR Synthetic Minor limits as defined in Part E of this permit.

(4) The Permittee shall submit semiannual reports of excess emissions and monitor downtime in accordance with 40 CFR §60.7(c). Reports must be postmarked by the 30th day following the end of each 6-month period. Excess emissions must be reported for all periods of unit operation, including start up and shutdown, and malfunction. Excess emissions and monitor downtime are defined for this installation as follows:

(a) An excess emission is a 4-hour rolling unit operating hour average in which any monitored parameter does not achieve the target value or is outside the acceptable range defined in the parameter monitoring plan for the unit.

(b) A period of monitor downtime is a unit operating hour in which any of the required parametric data are either not recorded or are invalid.
[References: 40 CFR §60.4375(a), 40 CFR §60.4380(c), and 40 CFR §60.4395]

(5) The Permittee shall maintain at the facility for at least five (5) years, and shall make available to the Department upon request, records necessary to support annual certifications of emissions and demonstrations of compliance for toxic air pollutants. Such records shall include, if applicable, the following:

(a) mass emissions rates for each regulated pollutant, and the total mass emissions rate for all regulated pollutants for each registered source of emissions;

(b) accounts of the methods and assumptions used to quantify emissions;

(c) all operating data, including operating schedules and production data, that were used in determinations of emissions;

(d) amounts, types, and analyses of all fuels used;

(e) any records, the maintenance of which is required by this permit or by State or federal regulations, that pertain to the operation and maintenance of continuous emissions monitors, including:
(i) all emissions data generated by such monitors;
(ii) all monitor calibration data;
(iii) information regarding the percentage of time each monitor was available for service; and
(iv) information concerning any equipment malfunctions.

(f) information concerning operation, maintenance, and performance of air pollution control equipment and compliance monitoring equipment, including:
(i) identifications and descriptions of all such equipment;
(ii) operating schedules for each item of such equipment;
(iii) accounts of any significant maintenance performed;
(iv) accounts of all malfunctions and outages; and
(v) accounts of any episodes of reduced efficiency.

(g) limitations on source operation or any work practice standards that significantly affect emissions; and

(h) other relevant information as required by the Department.

(6) The Permittee shall submit to the Department by April 1 of each year a certification of emissions for the previous calendar year. The certifications shall be prepared in accordance with requirements, as applicable, adopted under COMAR 26.11.01.05-1 and COMAR 26.11.02.19D.

(a) Certifications of emissions shall be submitted on forms obtained from the Department.

(b) A certification of emissions shall include mass emissions rates for each regulated pollutant, and the total mass emissions rate for all regulated pollutants for each of the facility's registered sources of emissions.

(c) The person responsible for a certification of emissions shall certify the submittal to the Department in the following manner:

"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 who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

(7) The Permittee shall submit to the Department by April 1 of each year a written certification of the results of an analysis of emissions of toxic air pollutants from the Permittee's facility during the previous calendar year. Such analysis shall include either:

(a) a statement that previously submitted compliance demonstrations for emissions of toxic air pollutants remain valid; or

(b) a revised compliance demonstration, developed in accordance with requirements included under COMAR 26.11.15 & 16, that accounts for changes in operations, analytical methods, emissions determinations, or other factors that have invalidated previous demonstrations.

(8) The Permittee shall report, in accordance with requirements under COMAR 26.11.01.07, occurrences of excess emissions to the Compliance Program of the Air and Radiation Management Administration.

Part G – Temporary Permit-to-Operate Conditions

(1) This permit-to-construct shall also serve as a temporary permit-to-operate that confers upon the Permittee authorization to operate the one (1) natural gas fired combustion turbine rated at 87.97 MMBtu/hr and the one (1) HRSG rated at 50.78 MMBtu/hr and equipped with low NO_X burners for a period of up to 180 days after initiating operation of the new installations.

(2) The Permittee shall provide the Department with written or electronic notification of the date on which operation of the one (1) natural gas fired combustion turbine rated at 87.97 MMBtu/hr and the one (1) HRSG rated at 50.78 MMBtu/hr and equipped with low NO_X burners is initiated. Such notification shall be provided within 10 business days of the date to be reported.

(3) During the effective period of the temporary permit-to-operate the Permittee shall operate the new installations as required by the applicable terms and conditions of this permit-to-construct, and in accordance with operating procedures and recommendations provided by equipment vendors.

UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899-

April 10, 2018

Michael Hassan
Regulatory & Compliance Engineer
Air Quality Permits Program
Air and Radiation Management Administration
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, MD 21230

Dear Mr Hassan,

Please find enclosed the National Institute of Standards and Technology's application for an amendment to Permit to Construct #031-0323-5-2363, 2364.

Please contact me with any questions, or if any additional information is required at 301-975-5822 or mike.blackmon@nist.gov.

Sincerely,

Michael Blackmon
Environmental Management Group Leader
National Institute of Standards and Technology

Enclosures

NIST

Proposed Amendment to Permit to Construct #031-0323-5-2363, 2364

National Institute of Standards and Technology, Gaithersburg Maryland

April 10, 2018

Background

In 2016, NIST planned to remove Boiler 6 (Emission Unit 6) as part of the construction of a combined heat and power system. The removal of Boiler 6 was included by NIST as a provision in the application for Permit to Construct 031-0323-5-2363, 2364 (Combustion Turbine and Heat Recovery Steam Generator). In the Net Emissions Calculations submitted with the application for the permit to construct, the Boiler 6 removal accounted for a reduction in NOx emission of 5.66 tons.

Proposal to Retain Boiler 6

A recent evaluation of NIST's planned campus expansion in the 2018 Master Plan and associated steam requirements, has determined that Boiler 6 is a necessary backup for heating at the NIST campus. The Boiler is in good condition and equipped with low NOx burners. Removing Boiler 6 would be a significant expense and result in the loss of expensive and needed equipment.

Proposed Modification to Permit to Construct #031-0323-5-2363, 2364

NIST is proposing the following:

1. Retain Boiler 6 and eliminate the corresponding NOx emission reduction associated with Boiler 6.

2. Apply the NOx emissions reductions achieved by the installation of Low NOx Burners on Boilers 1,2,3, and 4 at NIST (Emissions Units 1, 2, 3, and 4) to the Net Emission Calculation for the combined heat and power plant. The Low NOx Burners were installed in 2014 under Permit to Construct 031-0323-5-0108; 5-0109; 5-0110; 5-0111. At the time that the initial application for the combined heat and power plant permit to construct was submitted (2015), NIST did not have sufficient data to account for a contemporaneous decrease in emissions for the Low NOx Burners.

3. Based on data now available, the Low NOx Burners on Boilers 1, 2, 3 and 4 account for a total reduction in NOx of 5.73 tons per year (See Attachment 1). This is more of a reduction than was originally proposed for the removal of Boiler 6 in Permit to Construct 031-0323-5-2363; 2364 (5.66 tons per year).

4. A revised Net Emissions Increase calculation is shown in Attachment 2.

5. The remainder of Permit to Construct #031-0323-5-2363, 2364 remains unchanged.

Attachment 1

Actual Emissions of NOx - NIST Boilers 1, 2, 3, & 4 (tons/yr)
(from annual emissions certification reports)

Boiler No.	Standard Burners					Low NOx Burners		
	2010	2011	2012	2013	2014	2015	2016	2017
1	2.24	3.58	4.74	3.85	5.86	2.39	3.32	2.56
2	4.43	2.79	5.46	3.97	7.88	1.67	3.16	1.96
3	5.41	3.71	3.40	3.02	3.59	2.56	3.42	1.97
4	2.65	6.51	4.66	1.63	3.39	2.19	3.09	4.18
Total 1-4	14.73	16.59	18.26	12.47	20.73	8.82	12.99	10.67

Boilers 1-4 five year average NOx emissions for 2010-2014 (Standard Burners) = 16.56

Boilers 1-4 three year average NOx emissions for 2015-2017 (low NOx Burners) = 10.82

Reduction in NOx emissions from Low NOx Burners (tons/yr) = 5.73

Attachment 2

JCI-NIST
CHP Project
Project PSD and NSR Applicability Analysis

Step 1 - Project Emission Increases (tpy)

Pollutant	Project Total	PSD Significant Increase Threshold	NSR Significant Increase Threshold	Step 1 Significant for PSD	Step 1 Significant for NSR?
PM	8.03	25		No	
PM_{10}	8.03	15		No	
$PM_{2.5}$ *	8.03		10		No
NO_x	30.1	40	25	No	Yes
SO_2	1.68	40		No	
CO	30.4	100		No	
VOC	3.00		25		No
CO_2e	57,963	75000 **		No	
Lead	0.0001	0.6		No	

* Montgomery County was redesignated attainment for $PM_{2.5}$ effective November 5, 2014 (as published in the Federal Register October 6, 2014). However, MDE NSR permitting rules (COMAR 26.11.17.01 B.(26)(c) still lists a significant increase threshold for $PM_{2.5}$. Therefore, $PM_{2.5}$ is listed in the NSR columns for purposes of this evaluation.

** GHG emissions trigger PSD only if a non-GHG PSD regulated pollutant triggers PSD. Since no other PSD-regulated pollutant triggers PSD, GHG is not a PSD-regulated pollutant for this project.

Step 2 - Net Emission Increases (tpy)

Pollutant	Project Total	Sum of Contemporaneous Increases and Decreases	Net Emissions Increase	NSR Significant Increase Threshold	Step 2 Significant for NSR?
NO_x	30.07	-5.53	24.54	25	No

NOTE: Only those pollutants with a significant emissions increase in Step 1 are evaluated in Step 2.

Summary of NOx Contemporaneous Increases and Decreases, tpy

Description	Year Occurred	Increase/Decrease	tpy
Fire Research Lab Modication	2014	Increase	0.20
~~Boiler 6 Removal~~	~~Prior to turbine startup~~	~~Decrease*~~	~~-5.66~~
Boiler 1-4 Low NOx Burners	**2015**	**Decrease***	**-5.73**
		Total	-5.53

* Decrease based on baseline actual emissions for 2010 to 2014 (standard burners) and 2015 to 2017 (low NOx burners)

AMENDMENT TO PERMIT TO CONSTRUCT 031-0323-5-2363, 2364

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APR 11 2018
By

MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Blvd ▪ Baltimore, Maryland 21230
(410) 537-3230 ▪ 1-800-633-6101 ▪ www.mde.state.md.us

Air and Radiation Management Administration ▪ Air Quality Permits Program

APPLICATION FOR FUEL BURNING EQUIPMENT

AMENDMENT Permit to Construct ☒ Registration Update ☐ Initial Registration ☐

1A. Owner of Equipment/Company Name
National Institute of Standards and Technology

Mailing Address/Street
100 Bureau Drive, MS1730

City Gaithersburg State MD Zip Code 20899

Telephone Number (301) 975-5822

Print Name/Title Michael Blackmon, P.E.
Environmental Management Group Leader

Signature: Date: 4/10/18

DO NOT WRITE IN THIS BOX

2. Registration Number

County No. (1-2)	Premises No. (3-6)
031	0323

Registration Class (7)	Equipment No.
5	2363

Data Year (12-13): 18

8-5-26-2364

Application Date

1B. Equipment Location (if different from above give Street Number and Name, City, State, Zip and Telephone Number):
Building 302

Premises Name (if different from above):

3. Status

A= New Equipment B= Modification to Existing Equipment C= Existing Equipment	Status (15)	New Construction Began (MM/YY) (16-19)	New Construction Completed (MM/YY) (20-23)	Existing Initial Operation (MM/YY) (20-23)
	A			

4. Describe this Equipment (Make, Model, Features, Manufacturer, etc.):
Solar Taurus 70-10801S Combustion Turbine

5. Workmen's Compensation Coverage: Binder/Policy Number: Federal Government Facility - self insured

Company Name: _____ Expiration Date _____

NOTE: Before a Permit to Construct may be issued by the Department, the applicant must provide the Department with proof of worker's compensation coverage as required under Section 1-202 of the Worker's Compensation Act.

6. Number of Pieces of Identical Equipment to be Registered/Permitted at this Time: 1

7. Person Installing this Equipment (if different from above give Name/Title, Company Name, Mailing Address and Telephone Number): Kevin Strong, Senior Project Manager, Johnson Controls, Inc., 1101 Hampton Park Blvd., Bldg C Ste 100, Capital Heights, MD 20743 Tel No.: 301-250-3518

8. Major Activity, Product or Service of Company at this Location: The National Institute of Standards and Technology mission is to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology. NIST has over 1,000 research laboratories at the Gaithersburg site conducting research relevant to its mission.

9. Control Devices Associated with this Equipment

None (24-0)	Simple/Multiple Cyclones (24-1)	Spray/Adsorb Tower (24-2)	Venturi Scrubber (24-3)	Carbon Adsorber (24-4)	Electrostatic Precipitator (24-5)	Bag-house (24-6)
X	☐	☐	☐	☐	☐	☐

Thermal/Catalytic Afterburner (24-7)	Dry Scrubber (24-8)	Other (24-9)	Describe
☐	☐	☐	_____

hey
SS

10. Annual Fuel Consumption for this Equipment Only

OIL-1000 GALLONS	SULFUR %	GRADE	NATURAL GAS-1000 FT^3	LP GAS-100 GALLONS	GRADE
			751108		
26-31	32-33	34	35-41	42-45	

COAL- TONS	SULFUR %	ASH%	WOOD-TONS	MOISTURE %
46-52	53-55	56-58	59-63	64-65

OTHER FUELS _____ (Specify Type) ☐ 66-1 ANNUAL AMOUNT CONSUMED _____ (Specify Units of Measure)

OTHER FUEL _____ (Specify Type) ☐ 66-2 ANNUAL AMOUNT CONSUMED _____ (Specify Units of Measure)

1= Coke 2= COG 3=BFG 4=Other

11. Operating Schedule (for this equipment)

Comfort/Space Heating Only [X] 67-1 Process Heat Only [ ] 67-2 Percent Process Heat [ ] 68-69 Oil Burner Type [ ] 70 (1=Pressure Gun 2=Air Atomizer 3=Steam Atomizer 4=Rotary Cup) Coal Burner Type [ ] 71 (1=Cyclone 2=Stoker 3=Pulverized 4=Hand Fired)

SEASONAL VARIATION IN OPERATION (PERCENT):

Days Per Week [7] 72 Days Per Year [365] 73-75 None [X] 76 Winter [25] 77-78 Spring [25] 79-80 Summer [25] 81-82 Fall [25] 83-84

12. Exhaust Stack Information

Height Above Ground (ft)	Inside Diameter at Top (inches)	Exit Temperature (°F)	Exit Velocity (ft/sec)
42	48	331	96
86-88	89-91	92-95	96-98

13. Total Stack Emissions (for this equipment only) in Pounds Per Operating Day

Particulate Matter	Oxides of Sulfur	Oxides of Nitrogen
38.00	7.18	116.67
99-104	105-110	111-116

Carbon Monoxide	Volatile Organic Compounds	PM-10
118.35	4.43	38.00
117-122	123-128	129-134

14. Method Used to Determine Emissions (1=Estimate, 2=AP42, 3=Stack Test, 4=Other Emission Factor)

TSP [4] 165 SOx [4] 166 NOx [4] 167 CO [4] 168 VOC [2] 169 PM10 [4] 170

15. What is the Maximum Rated Heat Input of this Unit (Million Btu/hr)? 87.97

Air and Radiation Management Administration Use Only

16. Date Rec'd Local _____ Date Rec'd State _____

Return to Local Jurisdiction Date _____ By _____

Rev'd by Local Jurisdiction: Date _____ By _____ Rev'd by State: Date _____ By _____

Acknowledgement Sent by State: Date _____ By _____

17. Inventory Date (MM/YY)	SCC Code	18. Annual Operating Rate	Maximum Design Hourly Rate
171-174	178-185	186-192	193-199

Permit to Operate Month	Transaction Date	Staff Code	VOC	SIP Code
200-201	202-207	208-210	211 212	213 214

Regulation Code _____ 215-218 Confidentiality [ ] 219

Point Description _____ 220-238 Action [ ] 239 (A: Add C: Change)

AMENDMENT TO PERMIT TO CONSTRUCT 031-0323-5-2363, 2364

MARYLAND DEPARTMENT OF THE ENVIRONMENT

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Air and Radiation Management Administration ▪ Air Quality Permits Program

APPLICATION FOR FUEL BURNING EQUIPMENT

Permit to Construct ☐ Registration Update ☐ Initial Registration ☐

1A. Owner of Equipment/Company Name
National Institute of Standards and Technology

Mailing Address/Street
100 Bureau Drive, MS 1730

City Gaithersburg State MD Zip Code 20899

Telephone Number 301-975-5822

Print Name/Title Michael Blackmon, P.E.
Environmental Management Group Leader

Signature: Date: 4/10/18

DO NOT WRITE IN THIS BOX

2. Registration Number

County No. 31 (1-2) Premises No. 0323 (3-6)

Registration Class 5 (7) Equipment No. 2363 (6-11)

Data Year 18 (12-13) Application Date

1B. Equipment Location (if different from above give Street Number and Name, City, State, Zip and Telephone Number):
Building 302

Premises Name (if different from above):

3. Status

A= New Equipment B= Modification to Existing Equipment C= Existing Equipment	Status	New Construction Began (MM/YY)	New Construction Completed (MM/YY)	Existing Initial Operation (MM/YY)
	A			
	15	16-19	20-23	20-23

4. Describe this Equipment (Make, Model, Features, Manufacturer, etc.):
Attached to the Combustion Turbine - Rentech Heat Recovery Steam Generator with Zeeco Low NOx Duct Burners

5. Workmen's Compensation Coverage: Binder/Policy Number: Federal Government Facility - self insured

Company Name: _____ Expiration Date _____

NOTE: Before a Permit to Construct may be issued by the Department, the applicant must provide the Department with proof of worker's compensation coverage as required under Section 1-202 of the Worker's Compensation Act.

6. Number of Pieces of Identical Equipment to be Registered/Permitted at this Time: 1

7. Person Installing this Equipment (if different from above give Name/Title, Company Name, Mailing Address and Telephone Number): Kevin Strong, Senior Project Manager, Johnson Controls, Inc., 1101 Hampton Park Blvd., Bldg C Ste 100, Capital Heights, MD 20743 Tel No.: 301-250-3518

8. Major Activity, Product or Service of Company at this Location: The National Institute of Standards and Technology mission is to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology. NIST has over 1,000 research laboratories at the Gaithersburg site conducting research relevant to its mission.

9. Control Devices Associated with this Equipment

None	Simple/Multiple Cyclones	Spray/Adsorb Tower	Venturi Scrubber	Carbon Adsorber	Electrostatic Precipitator	Bag-house
☒	☐	☐	☐	☐	☐	☐
24-0	24-1	24-2	24-3	24-4	24-5	24-6

Thermal/Catalytic Afterburner	Dry Scrubber	Other	Describe
☐	☐	☐	_____
24-7	24-8	24-9	_____

10. Annual Fuel Consumption for this Equipment Only

OIL-1000 GALLONS	SULFUR %	GRADE	NATURAL GAS-1000 FT^3	LP GAS-100 GALLONS	GRADE
			213801		
26-31	32-33	34	35-41	42-45	

COAL- TONS	SULFUR %	ASH%	WOOD-TONS	MOISTURE %
46-52	53-55	56-58	59-63	64-65

OTHER FUELS _____ (Specify Type) [ ] 66-1 ANNUAL AMOUNT CONSUMED _____ (Specify Units of Measure)

OTHER FUEL _____ (Specify Type) [ ] 66-2 ANNUAL AMOUNT CONSUMED _____ (Specify Units of Measure)

1= Coke 2= COG 3=BFG 4=Other

11. Operating Schedule (for this equipment)

Comfort/Space Heating Only [X] 67-1 | Process Heat Only [ ] 67-2 | Percent Process Heat [ ] 68-69 | Oil Burner Type [ ] 70 (1=Pressure Gun 2=Air Atomizer 3=Steam Atomizer 4=Rotary Cup) | Coal Burner Type [ ] 71 (1=Cyclone 2=Stoker 3=Pulverized 4=Hand Fired)

Days Per Week [7] 72 | Days Per Year [365] 73-75

SEASONAL VARIATION IN OPERATION (PERCENT):

None [ ] 76 | Winter [50] 77-78 | Spring [25] 79-80 | Summer [ ] 81-82 | Fall [25] 83-84

12. Exhaust Stack Information

Height Above Ground (ft)	Inside Diameter at Top (inches)	Exit Temperature (°F)	Exit Velocity (ft/sec)
42	48	331	96
86-88	89-91	92-95	96-98

13. Total Stack Emissions (for this equipment only) in Pounds Per Operating Day

Particulate Matter	Oxides of Sulfur	Oxides of Nitrogen
12.19	4.14	97.49
99-104	105-110	111-116

Carbon Monoxide	Volatile Organic Compounds	PM-10
97.49	24.37	12.19
117-122	123-128	129-134

14. Method Used to Determine Emissions (1=Estimate, 2=AP42, 3=Stack Test, 4=Other Emission Factor)

TSP	SOx	NOx	CO	VOC	PM10
4	4	4	4	4	4
165	166	167	168	169	170

15. What is the Maximum Rated Heat Input of this Unit (Million Btu/hr)? 50.78

Air and Radiation Management Administration Use Only

16. Date Rec'd Local _____ Date Rec'd State 04/11/2013

Return to Local Jurisdiction Date _____ By _____

Rev'd by Local Jurisdiction: Date _____ By _____ Rev'd by State: Date _____ By _____

Acknowledgement Sent by State: Date _____ By _____

17. Inventory Date (MM/YY)	SCC Code	18. Annual Operating Rate	Maximum Design Hourly Rate
171-174	178-185	186-192	193-199

Permit to Operate Month	Transaction Date	Staff Code	VOC	SIP Code
200-201	202-207	208-210	211 212	213 214

Regulation Code [ ] 215-218 Confidentiality [ ] 219

Point Description [ ] 220-238 Action [ ] 239 A: Add C: Change

Maryland
Department of
the Environment

Larry Hogan, Governor
Boyd Rutherford, Lt. Governor

Ben Grumbles, Secretary
Horacio Tablada, Deputy Secretary

FEB 21 2019

031-0323; AI# 13355

Mr. Michael Blackmon
Environmental Management Group Leader
National Institute of Standards and Technology
100 Bureau Dr, Stop 1730
Gaithersburg, Maryland 20899

RE: PTC #031-0323-9-1199

Dear Mr. Blackmon:

Enclosed please find your Permit to Construct for the installation of of one (1) GENERAC Model IDLC1250 (Mitsubishi Tier II) emergency diesel generator set rated at 1881 BHP (1250-kWe), to be located at the NIST 100 Bureau Dr, Building No. 245, Gaithersburg, Maryland 20899. The permit contains both general conditions, which apply to all air quality permit holders in Maryland, and specific conditions, which apply to the emergency generator that you have installed.

The addition of the emergency generator qualifies as an "Off-Permit" change to the facility's Part 70 operating permit. The Department recognizes the permit to construct application as written notification of the proposed change. Please include the emergency generator in the next renewal application of National Institute of Standards and Technology's Part 70 operating permit.

If you have any questions regarding the issuance of this permit, please contact Michael Hassan at (410) 537-3225.

Sincerely,

Karen G. Irons, Administrator
Air Quality Permits Program
Air & Radiation Administration

KGI/dar
Enclosure

KEEP PERMIT AT SITE **CONTROL NO. B- 05687**

State of Maryland

Lawrence J. Hogan, Jr.
Governor

Boyd K. Rutherford
Lt. Governor

Ben Grumbles
Secretary

DEPARTMENT OF THE ENVIRONMENT

Air and Radiation Administration
1800 Washington Boulevard, Suite 720
Baltimore, MD 21230

[X] Construction Permit [ ] Operating Permit

PERMIT NO. 031-0323-9-1199

DATE ISSUED FEB 21 2019

PERMIT FEE $500.00 (Paid)

EXPIRATION DATE In accordance with COMAR 26.11.02.04B

LEGAL OWNER & ADDRESS

National Institute of Standards and Technology
100 Bureau Dr, Stop 1730
Gaithersburg, Maryland 20899

Attention: Mr. Michael Blackmon,
Environmental Management Group Leader

SITE

National Institute of Standards and Technology
100 Bureau Dr, - BLDG. NO. . 245
Gaithersburg, MD 20899

Premises # 031-0323
AI # 13355

SOURCE DESCRIPTION

Installation of one (1) GENERAC Model IDLC1250 (Mitsubishi Tier 2) emergency diesel generator set rated at 1881 BHP (1250-kWe).

This source is subject to the conditions described on the attached pages.

Program Manager

Director, Air and Radiation Administration

(NOT TRANSFERABLE)

INDEX

Part A – General Provisions

(1) The following Air and Radiation Administration (ARA) permit to construct application and supplemental information are incorporated into this permit by reference:

(a) Application for EMERGENCY GENERATOR (Form MDE/ARMA/PER.042) for the installation of one (1) GENERAC Model IDLC1250 (Mitsubishi Tier II) emergency diesel generator set rated at 1881 BHP (1250-kWe), received on September 19, 2018; and

(b) Supplemental information: Engine/Generator manufacturer's specifications and facility plot plans received on September 19, 2018.

If there are any conflicts between representations in this permit and representations in the applications, the representations in the permit shall govern. Estimates of dimensions, volumes, emissions rates, operating rates, feed rates and hours of operation included in the applications do not constitute enforceable numeric limits beyond the extent necessary for compliance with applicable requirements.

(2) Upon presentation of credentials, representatives of the Maryland Department of the Environment ("MDE" or the "Department") and the Montgomery County Department of Environmental Protection shall at any reasonable time be granted, without delay and without prior notification, access to the Permittee's property and permitted to:

(a) inspect any construction authorized by this permit;

(b) sample, as necessary to determine compliance with requirements of this permit, any materials stored or processed on-site, any waste materials, and any discharge into the environment;

(c) inspect any monitoring equipment required by this permit;

(d) review and copy any records, including all documents required to be maintained by this permit, relevant to a determination of compliance with requirements of this permit; and

(e) obtain any photographic documentation or evidence necessary to determine compliance with the requirements of this permit.

(3) The Permittee shall notify the Department prior to increasing quantities and/or changing the types of any materials referenced in the application or limited by this permit. If the Department determines that such increases or changes constitute a modification, the Permittee shall obtain a permit-to-construct prior to implementing the modification.

(4) Nothing in this permit authorizes the violation of any rule or regulation or the creation of nuisance or air pollution.

(5) If any provision of this permit is declared by proper authority to be invalid, the remaining provisions of the permit shall remain in effect.

(6) The Permittee shall comply with all applicable requirements of the current Title V-Part 70 Operating Permit # 24-0321-0323.

(7) The addition of the 1881-Bhp (1250-kWe) GENERAC emergency diesel generator qualifies as an "Off-Permit" change to the facility's Part 70 operating permit. The Department recognizes the permit to construct application as written notification of the proposed change and should be included in the application for the next renewal of the Part 70 permit

Part B – Applicable Regulations

(1) This source is subject to all applicable federal air pollution control requirements including, but not limited to, the following:

(a) All applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements included in federal New Source Performance Standards (NSPS) under 40 CFR Part 60 Subpart IIII for Stationary Compression Ignition Internal Combustion Engines,

(b) All applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements included in the National Emissions Standards for Hazardous Air Pollutants (NESHAP) promulgated under 40 CFR 63, Subparts A and ZZZZ for Reciprocating Internal Combustion Engines.

The Permittee shall meet the requirements of 40 CFR, Part 63, Subpart ZZZZ by meeting the requirements of 40 CFR, Part 60, Subpart IIII for the emergency generator. No further requirements apply to the emergency generator under 40 CFR, Part 63, Subpart ZZZZ. [Reference: 40 CFR §63.6590(c)(1)]

(2) This source is subject to all applicable federally enforceable State air pollution control requirements including, but not limited to, the following regulations:

(a) COMAR 26.11.01.04A which provides that the Department may request sufficient testing to determine compliance with applicable air quality regulations.

(b)

(c) COMAR 26.11.01.07C, which requires that the Permittee report to the Department occurrences of excess emissions.

(d) COMAR 26.11.02.04B, which states that a permit to construct or an approval expires if, as determined by the Department:

(i) Substantial construction or modification is not commenced within 18 months after the date of issuance of the permit or approval, unless the Department specifies a longer period in the permit or approval;

(ii) Construction or modification is substantially discontinued for a period of 18 months after the construction or modification has commenced; or

(iii) The source for which the permit or approval was issued is not completed within a reasonable period after the date of issuance of the permit or approval.

(e) COMAR 26.11.02.09A, which requires that the Permittee obtain a permit-to-construct if an installation is to be modified in a manner that will cause changes in the quantity, nature, or characteristics of emissions from the installation as referenced in this permit.

(f) COMAR 26.11.02.19C & D, which require that the Permittee submit to the Department annual certifications of emissions, and that the Permittee maintain sufficient records to support the emissions information presented in the submittals.

(g) COMAR 26.11.09.05E(2) which prohibits emissions from internal combustion engines greater than 10 percent opacity while operating at idle.

(h) COMAR 26.11.09.05E(3) which prohibits emissions from internal combustion engines greater than 40 percent opacity while operating during non-idle conditions.

(i) COMAR 26.11.09.05E(4), *Exceptions to Visible Emissions Standards for I/C Engines*:

(i) COMAR 26.11.09.05E(2) does not apply for a period of 2 consecutive minutes after a period of idling of 15 consecutive minutes for the purpose of clearing the exhaust system.

(ii) COMAR 26.11.09.05E(3) does not apply to emissions resulting directly from cold engine start-up and warm-up for the following maximum periods:

(1) Engines that are idled continuously when not in service: 30 minutes,

(2) All other engines: 15 minutes.

(iii) COMAR 26.11.09.05E(2) & (3) does not apply while maintenance, repair, or testing is being performed by qualified mechanics.

(j) COMAR 26.11.09.07A which provides that a person may not burn, sell, or make available for sale distillate oil with a sulfur content in excess of 0.3 percent by weight.

Note: Installations subject to 40 CFR Part 60, Subpart IIII must comply with the fuel standards of §60.4207 which limit the maximum sulfur content of the fuel to 15 ppm beginning October 1, 2010.

(3) This source is subject to all applicable State-only enforceable air pollution control requirements including, but not limited to, the following regulations:

(a) COMAR 26.11.06.08 and 26.11.06.09, which generally prohibit the discharge of emissions beyond the property line in such a manner that a nuisance or air pollution is created.

Part C – Construction Conditions

(1) Except as otherwise provided in this part, the emergency diesel engine(s) shall be constructed in accordance with the specifications contained in the permit-to-construct application and be installed and configured in accordance with the manufacturer's specifications.

(2) This permit is valid only for the installation of an emergency diesel engine with a piston displacement less than 10 liters per cylinder.

(3) The provisions of 40 CFR Part 60, Subpart IIII apply if the emergency diesel engine uses a diesel engine manufactured after April 1, 2006 [Ref: §60.4200].

(4) For 2007 model year and later model year NSPS emergency diesel engines, the Permittee must comply by purchasing an engine certified to the emission standards specified in §60.4205(b) for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications. [Ref: §60.4211(c)]

Part D – Operating Conditions

(1) Except as otherwise provided in this part, the emergency diesel generator shall be operated in accordance with specifications included in the application and any operating

procedures recommended by equipment vendors unless the Permittee obtains from the Department written authorization for alternative operating procedures.

(2) The Permittee must operate and maintain an NSPS emergency diesel generator and control devices according to the manufacturer's written instructions or according to procedures developed by the owner or operator that are approved by the manufacturer. Additionally the Permittee may change only those settings that are permitted by the manufacturer. The Permittee must also meet the requirements of 40 CFR part 89, part 1039 for model year 2011 or later, part 94 and/or part 1068, as they may apply to an owner or operator **[Ref: §60.4211(a)]**.

(3) Beginning October 1, 2010, owners and operators (the Permittee) of a stationary source CI ICE subject to this subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must purchase diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel. **[Ref: §60.4207(b)]**.

(4) In accordance with 40 CFR §60.4211(f), as owner/operator of an emergency stationary ICE, you must operate the emergency stationary ICE according to the requirements in paragraphs (f)(1) through (3) of this section. In order for the engine to be considered an emergency stationary ICE under this subpart, any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as described in paragraphs (f)(1) through (3) of this section, is prohibited. If you do not operate the engine according to the requirements in paragraphs (f)(1) through (3) of this section, the engine will not be considered an emergency engine under this subpart and must meet all requirements for non-emergency engines.

(f)(1) There is no time limit on the use of emergency stationary ICE in emergency situations.

(f)(2)(i) Emergency stationary ICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE beyond 100 hours per calendar year.

(*)**Note:** Effective May 2, 2016, emergency generators are no longer allowed to participate for emergency demand response operation unless they meet the requirements of a non-emergency generator of the same model year. This engine does not meet the standards for a non-emergency generator, therefore, operation for emergency demand response or during periods of voltage deviation are not permitted.

Part E – Record Keeping and Reporting Requirements

(1) The Permittee shall maintain the following records on site for at least five (5) years and they shall be made available to the Department upon request:

(a) The operating hours for each generator,

(b) Monthly records of fuel use,

(c) Reason for generator operation (i.e., maintenance or operational testing, power outage, etc.), and

(d) A copy of the generator's and operations and maintenance manual, and records of maintenance and repairs performed.

(2) The Permittee shall maintain on site for the life of the source the following records for the emergency diesel engine(s):

(a) Engine information including make, model, engine family, serial number, model year (Manufacture date), maximum engine power, and engine displacement;

(b) Copies of all notifications submitted to comply with this subpart and all documentation supporting any notification; .

(c) Maintenance conducted on the engine; and

(d) The certifications of compliance or manufacturer engine test data required by 40 CFR §60.4211 and §60.4214(b).

(3) For any NSPS emergency diesel engine the Permittee shall for each fuel delivery obtain from the fuel supplier a fuel supplier certification consisting of the name of the oil supplier, the date of delivery, the amount of fuel delivered, and a statement from the fuel supplier that the diesel fuel oil complies with the specifications of 40 CFR §80.510. The Permittee shall maintain the required records on site for at least five (5) years.

(4) All other records required under this permit shall be maintained on site by the Permittee for at least five (5) years and shall be made available to the Department upon request.

Maryland
Department of
the Environment

Larry Hogan, Governor
Boyd Rutherford, Lt. Governor

Ben Grumbles, Secretary
Horacio Tablada, Deputy Secretary

031-0323; AI# 13355

SEP 17 2019

Mr. Michael Blackmon
Environmental Management Group Leader
National Institute of Standards and Technology
100 Bureau Dr, Stop 1730
Gaithersburg, Maryland 20899

RE: PTC #031-0323-9-1213 & -9-1214

Dear Mr. Blackmon:

Enclosed please find your Permit to Construct for the installation of two-(2) GENERAC 670 HP (500-kW) SI natural gas fired. {EPA-Tier 2} stand-by emergency generators (SI ICEs), to be located at the National Institute of Standards and Technology (NIST) 100 Bureau Dr, Building No. 245, Gaithersburg, Maryland 20899. The permit contains both general conditions, which apply to all air quality permit holders in Maryland, and specific conditions, which apply to the emergency generator that you have installed.

The addition of the two emergency generators qualifies as an "Off-Permit" change to the facility's Part 70 operating permit. The Department recognizes the permit to construct application as written notification of the proposed change. Please include the emergency generators in the next renewal application of National Institute of Standards and Technology's Part 70 operating permit.

If you have any questions regarding the issuance of this permit, please contact Michael Hassan at (410) 537-3225.

Sincerely,

William V. Paul, Division Chief
Combustion & Metallurgical Division
Air Quality Permits Program
Air and Radiation Administration

WVP/dar
Enclosure

KEEP PERMIT AT SITE

CONTROL NO. B- 05898

State of Maryland

Lawrence J. Hogan, Jr.
Governor

Ben Grumbles
Secretary

DEPARTMENT OF THE ENVIRONMENT

Boyd K. Rutherford
Lt. Governor

Air and Radiation Administration
1800 Washington Boulevard, Suite 720
Baltimore, MD 21230

[X] Construction Permit [ ] Operating Permit

PERMIT NO.	031-0323-9-1213 & 031-0323-9-1214	DATE ISSUED	SEP 17 2019
PERMIT FEE	$800.00 (Paid)	EXPIRATION DATE	In accordance with COMAR 26.11.02.04B

LEGAL OWNER & ADDRESS

National Institute of Standards and Technology
100 Bureau Dr, Stop 1730
Gaithersburg, Maryland 20899

Attention: Michael Blackmon,
Environmental Mgr. Group Leader

SITE

National Institute of Standards and Technology
100 Bureau Dr, Bldg. 245
Gaithersburg, MD 20899

Montgomery County
Premises # 031-0323
AI # 13355

SOURCE DESCRIPTION

Installation of two-(2) GENERAC 670 HP (500-kW) {EPA-Tier2} SI natural gas fired stand-by emergency generators (SI ICEs).

This source is subject to the conditions described on the attached pages.

Program Manager

Director, Air and Radiation Administration

(NOT TRANSFERABLE)

INDEX

Part A – General Provisions

(1) The following Air and Radiation Administration (ARA) permit to construct application and supplemental information are incorporated into this permit by reference:

(a) Application for emergency generator (Form MDE/ARMA/PER.042) for the installation of two-(2) GENERAC 670 HP (500-kW) SI NG fired stand-by emergency generators (SI ICEs), received on July 10, 2019.

(b) Vendor literature for the natural gas fired engine received with the application.

If there are any conflicts between representations in this permit and representations in the applications, the representations in the permit shall govern. Estimates of dimensions, volumes, emissions rates, operating rates, feed rates and hours of operation included in the applications do not constitute enforceable numeric limits beyond the extent necessary for compliance with applicable requirements.

(2) Upon presentation of credentials, representatives of the Maryland Department of the Environment ("MDE" or the "Department") and the Montgomery County Department of Environmental Protection shall at any reasonable time be granted, without delay and without prior notification, access to the Permittee's property and permitted to:

(a) inspect any construction authorized by this permit;

(b) sample, as necessary to determine compliance with requirements of this permit, any materials stored or processed on-site, any waste materials, and any discharge into the environment;

(c) inspect any monitoring equipment required by this permit;

(d) review and copy any records, including all documents required to be maintained by this permit, relevant to a determination of compliance with requirements of this permit; and

(e) obtain any photographic documentation or evidence necessary to determine compliance with the requirements of this permit.

(3) The Permittee shall notify the Department prior to increasing quantities and/or changing the types of any materials referenced in the application or limited by this permit. If the Department determines that such increases or changes constitute a modification, the Permittee shall obtain a permit-to-construct prior to implementing the modification.

(4) Nothing in this permit authorizes the violation of any rule or regulation or the creation of nuisance or air pollution.

(5) If any provision of this permit is declared by proper authority to be invalid, the remaining provisions of the permit shall remain in effect.

(6) The Permittee shall comply with all applicable requirements of the current Title V-Part 70 Operating Permit # 24-0321-0323.

(7) The addition of the two-(2) GENERAC 670 HP (500-kW) SI NG fired stand-by emergency generators qualifies as an "Off-Permit" change to the facility's Part 70 operating permit. The Department recognizes the permit to construct application as written notification of the proposed change and should be included in the application for the next renewal of the Part 70 permit.

Part B – Applicable Regulations

(1) This source is subject to all applicable federal air pollution control requirements including, but not limited to, the following:

(a) All applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements included in federal New Source Performance Standards (NSPS) under 40 CFR Part 60 Subpart JJJJ for Stationary Spark Ignition Internal Combustion Engines, including the following:

§ 60.4230 Am I subject to this subpart?
(a) The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary spark ignition (SI) internal combustion engines (ICE) as specified in paragraphs (a)(1) through (6) of this section. For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator.
(ii) On or after January 1, 2009, for emergency engines.

Emission Standards for Owners and Operators
§ 60.4233 What emission standards must I meet if I am an owner or operator of a stationary SI internal combustion engine?

"**(e)** Owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 75 KW (100 HP) (except gasoline and rich burn engines that use LPG) must comply with the emission standards in Table 1 to this subpart for their stationary SI ICE."

Emission Standards for Owners and Operators

Table 1 to Subpart JJJJ of Part 60 - NO_X, CO, and VOC Emission Standards for..., and Stationary Emergency Engines >25 HP

Engine type and fuel	Maximum engine power	Manufacture date	Emission standards [a]					
			g/HP-hr			ppmvd at 15% O_2		
			NO_X	CO	VOC [d]	NO_X	CO	VOC [d]
Emergency	HP≥130	On or after 1/1/2009	2.0	4.0	1.0	160	540	86

a Owners and operators of stationary non-certified SI engines may choose to comply with the emission standards in units of either g/HP-hr or ppmvd at 15 percent O2.

b Owners and operators of new or reconstructed non-emergency lean burn SI stationary engines with a site rating of greater than or equal to 250 brake HP located at a major source that are meeting the requirements of 40 CFR part 63, subpart ZZZZ, Table 2a do not have to comply with the CO emission standards of Table 1 of this subpart.

d For purposes of this subpart, when calculating emissions of volatile organic compounds, emissions of formaldehyde should not be included.
[76 FR 37975, June 28, 2011}

§60.4234 How long must my engines meet the emission standards if I am a manufacturer of stationary SI internal combustion engines?
Owners and operators of stationary SI ICE must operate and maintain stationary SI ICE that achieve the emission standards as required in §60.4233 over the entire life of the engine.

Note: The Permittee shall comply with the emissions standard by installing engines that are certified to meet the emission standards.

(b) All applicable terms, provisions, emissions standards, testing, monitoring, record keeping, and reporting requirements included in the National Emissions Standards for Hazardous Air Pollutants (NESHAP) promulgated under 40 CFR 63, Subparts A and ZZZZ for Reciprocating Internal Combustion Engines.

Note: The Permittee shall meet the requirements of 40 CFR, Part 63, Subpart ZZZZ by meeting the requirements of 40 CFR, Part 60, Subpart JJJJ. No further requirements apply to the emergency generators under 40 CFR, Part 63, Subpart ZZZZ. [Reference: 40 CFR §63.6590(c)(1)]

(2) This source is subject to all applicable federally enforceable state air pollution control requirements including, but not limited to, the following regulations:

(a) COMAR 26.11.01.07C, which requires that the Permittee report to the Department occurrences of excess emissions.

(b) COMAR 26.11.02.09A, which requires that the Permittee obtain a permit-to-construct if an installation is to be modified in a manner that will cause

changes in the quantity, nature, or characteristics of emissions from the installation as referenced in this permit.

(c) COMAR 26.11.02.04B, which states that a permit to construct or an approval expires if, as determined by the Department:

(i) Substantial construction or modification is not commenced within 18 months after the date of issuance of the permit or approval, unless the Department specifies a longer period in the permit or approval;

(ii) Construction or modification is substantially discontinued for a period of 18 months after the construction or modification has commenced; or

(iii) The source for which the permit or approval was issued is not completed within a reasonable period after the date of issuance of the permit or approval.

(d) COMAR 26.11.02.19C & D, which require that the Permittee submit to the Department annual certifications of emissions, and that the Permittee maintain sufficient records to support the emissions information presented in the submittals.

(e) COMAR 26.11.09.05E(2) which prohibits emissions from internal combustion engines greater than 10 percent opacity while operating at idle.

(f) COMAR 26.11.09.05E(3) which prohibits emissions from internal combustion engines greater than 40 percent opacity while operating during non-idle conditions.

(g) COMAR 26.11.09.05E(4), *Exceptions to Visible Emissions Standards for I/C Engines*:

(i) COMAR 26.11.09.05E(2) does not apply for a period of 2 consecutive minutes after a period of idling of 15 consecutive minutes for the purpose of clearing the exhaust system.

(ii) COMAR 26.11.09.05E(3) does not apply to emissions resulting directly from cold engine start-up and warm-up for the following maximum periods:

(1) Engines that are idled continuously when not in service: 30 minutes,

(2) All other engines: 15 minutes.

(iii) COMAR 26.11.09.05E(2) & (3) does not apply while maintenance, repair, or testing is being performed by qualified mechanics.

(h) COMAR 26.11.09.08G(1) -*Requirements for Fuel-Burning Equipment with a Capacity Factor of 15 Percent or Less* - a person who owns or operates fuel-burning equipment with a capacity factor (as defined in 40 CFR Part 72.2) of 15 percent or less shall:

(i) Require each operator of an installation, except combustion turbines, to attend operator training programs at least once every 3 years, on combustion optimization that are sponsored by the Department, the EPA, or equipment vendors; and

(ii) Maintain a record of training program attendance for each operator at the site and make these records available to the Department upon request.

(i) COMAR 26.11.09.08B(5) states that; (a) for the purpose of COMAR 26.11.09.08, the equipment operator to be trained may be the person who maintains the equipment and makes the necessary adjustments for efficient operation; and (b) that the operator training course sponsored by the Department shall include an in-house training course that is approved by the Department.

(j) COMAR 26.11.09.08K(3) which requires a person subject to this regulation to maintain annual fuel use records on site for not less than 3 years, and make these records available to the Department upon request.

(3) This source is subject to all applicable State-only enforceable air pollution control requirements including, but not limited to, the following regulations:

COMAR 26.11.06.08 and 26.11.06.09, which generally prohibit the discharge of emissions beyond the property line in such a manner that a nuisance or air pollution is created.

Part C – Construction Conditions

(1) Except as otherwise provided in this part, the two-(2) GENERAC 670 HP (500-kW) SI NG fired stand-by emergency generators (SI ICEs) shall be constructed in accordance with the specifications contained in the permit-to-construct application and be installed and configured in accordance with the manufacturer's specifications.

(2) This permit is valid only for the installation of a natural gas generator with a piston displacement less than 10 liters per cylinder.

(3) An emergency natural gas generator or natural gas engine subject to the requirements of 40 CFR 60, Subpart JJJJ ("NSPS emergency natural gas generator" or "NSPS emergency natural gas engine") shall be equipped with a non-resettable hourmeter if

the engine does not meet the standards applicable to non-emergency engines [Ref: §60.4237(a)].

(4) The Permittee must comply by purchasing an engine certified to the applicable emission standards specified in §60.4233. The engine must be installed and configured according to the manufacturer's specifications. [Ref: §60.4243(a)]

Part D – Operating Conditions

(1) Except as otherwise provided in this part, the two-(2) GENERAC 670 HP (500-kW) SI NG fired stand-by emergency generators (SI ICEs) shall be operated in accordance with specifications included in the application and any operating procedures recommended by equipment vendors unless the Permittee obtains from the Department written authorization for alternative operating procedures.

(2) The Permittee as the owner and operator of a stationary SI internal combustion engine (SI ICE) that is manufactured after July 1, 2008, and must comply with the emission standards specified in §60.4233(a) through (c), you must comply by purchasing an engine certified to the emission standards in §60.4231(a) through (c), as applicable, for the same engine class and maximum engine power. In addition, you must meet one of the following requirements:

(a) If you operate and maintain the certified stationary SI internal combustion engine and control device according to the manufacturer's emission-related written instructions, you must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. You must also meet the requirements as specified in 40 CFR part 1068, subparts A through D, as they apply to you. If you adjust engine settings according to and consistent with the manufacturer's instructions, your stationary SI internal combustion engine will not be considered out of compliance. **[Ref: §60.4243(a)(1)]**

(b) If you do not operate and maintain the certified stationary SI internal combustion engine(SI ICE) and control device according to the manufacturer's emission-related written instructions, your engine will be considered a non-certified engine, and you must demonstrate compliance as follows: you must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must *conduct an initial performance test within 1 year of engine startup* and conduct *subsequent performance testing every 8,760 hours or 3 years*, whichever comes first, thereafter to demonstrate compliance. **[Ref: §60.4243(a)(2)].**

(c) The Permittee shall keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. **[Ref: 40 CFR Subpart JJJJ §60.4243 (b)(2)(il)]**

(3) The two-(2) GENERAC 670 HP (500-kW) SI NG fired stand-by emergency generators (SI ICEs) shall be operated for emergency use, operational maintenance checks and readiness testing only.

(4) In accordance with 40 CFR §60.4243(d), non-emergency use of each NSPS emergency natural gas generator for the purpose of maintenance checks and readiness testing is limited to 100 hours per year or less unless prior approval is received from the Department.

Part E – Record Keeping and Reporting Requirements

Record Keeping:

(1) The Permittee shall maintain a log for the engine indicating the amounts of fuel combusted, the hours of operation, and reason for engine operation (i.e., maintenance or operational testing, emergency power outage, etc.). **[Ref.: COMAR 26.11.03.06C]**

(2) The Permittee shall maintain on site and make available to the Department upon request the following records:

(a) All notifications submitted to comply with 40 CFR 60, Subpart JJJJ and all documentation supporting any notification.

(b) Maintenance plan and records of conducted maintenance.

(c) Documentation that the engine meets the emission standards (manufacturer's certification).

Reporting:

(3) The Permittee shall submit an initial notification as required in §60.7(a)(1). The notification must include the information:

(a) Name and address of the owner or operator;

(b) The address of the affected source;

(c) Engine information including make, model, engine family, serial number, model year, maximum engine power, and engine displacement;

(d) Emission control equipment; and

(e) Fuel used.

(4) All records required under this permit shall be maintained on site by the Permittee for at least five (5) years and shall be made available to the Department upon request.

(5) All notifications, including the initial, required under 40 CFR 60 shall be submitted to both of the following:

The Administrator
Compliance Program
Maryland Department of the Environment
Air and Radiation Administration
1800 Washington Boulevard, STE 715
Baltimore MD 21230

and

Director, Air Protection Division
Mail Code 3AP00
1650 Arch Street
Philadelphia, PA 19103-2029

AGENCY CUSTOMER ID: _____

LOC #: _____

ACORD®

ADDITIONAL REMARKS SCHEDULE

AGENCY		NAMED INSURED
Arthur J. Gallagher Risk Management Services, Inc.		Mona Electric Group, Inc. Construction - Contracts 7915 Malcolm Road Clinton MD 20735
POLICY NUMBER		
CARRIER	NAIC CODE	EFFECTIVE DATE:

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,

FORM NUMBER: 25 FORM TITLE: CERTIFICATE OF LIABILITY INSURANCE

Liability policies as required by written contract. Insurance provided is primary and non-contributory with respect to the General Liability, Automobile Liability and Umbrella Liability policies as required by written contract. A waiver of subrogation applies with respect to the General Liability, Automobile Liability and Umbrella Liability policies as required by written contract. Umbrella follows form over General Liability, Automobile Liability and Employers Liability Policies as required by written contract. Except for Non Payment of premium at least 30-day notice of cancellation will be given per written contract with regards to General Liability, Automobile Liability and Worker's Compensation policies as required by written contract.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

BLANKET ADDITIONAL INSURED – AUTOMATIC STATUS IF REQUIRED BY WRITTEN CONTRACT (CONTRACTORS)

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

1. The following is added to **SECTION II – WHO IS AN INSURED**:

   Any person or organization that:

   a. You agree in a "written contract requiring insurance" to include as an additional insured on this Coverage Part; and

   b. Has not been added as an additional insured for the same project by attachment of an endorsement under this Coverage Part which includes such person or organization in the endorsement's schedule;

   is an insured, but:

   a. Only with respect to liability for "bodily injury", "property damage" or "personal injury"; and

   b. Only as described in Paragraph **(1)**, **(2)** or **(3)** below, whichever applies:

      (1) If the "written contract requiring insurance" specifically requires you to provide additional insured coverage to that person or organization by the use of:

         (a) The Additional Insured – Owners, Lessees or Contractors – (Form B) endorsement CG 20 10 11 85; or

         (b) Either or both of the following: the Additional Insured – Owners, Lessees or Contractors – Scheduled Person Or Organization endorsement CG 20 10 10 01, or the Additional Insured – Owners, Lessees or Contractors – Completed Operations endorsement CG 20 37 10 01;

      the person or organization is an additional insured only if the injury or damage arises out of "your work" to which the "written contract requiring insurance" applies;

      (2) If the "written contract requiring insurance" specifically requires you to provide additional insured coverage to that person or organization by the use of:

         (a) The Additional Insured – Owners, Lessees or Contractors – Scheduled Person or Organization endorsement CG 20 10 07 04 or CG 20 10 04 13, the Additional Insured – Owners, Lessees or Contractors – Completed Operations endorsement CG 20 37 07 04 or CG 20 37 04 13, or both of such endorsements with either of those edition dates; or

         (b) Either or both of the following: the Additional Insured – Owners, Lessees or Contractors – Scheduled Person Or Organization endorsement CG 20 10, or the Additional Insured – Owners, Lessees or Contractors – Completed Operations endorsement CG 20 37, without an edition date of such endorsement specified;

      the person or organization is an additional insured only if the injury or damage is caused, in whole or in part, by acts or omissions of you or your subcontractor in the performance of "your work" to which the "written contract requiring insurance" applies; or

      (3) If neither Paragraph **(1)** nor **(2)** above applies:

         (a) The person or organization is an additional insured only if, and to the extent that, the injury or damage is caused by acts or omissions of you or your subcontractor in the performance of "your work" to which the "written contract requiring insurance" applies; and

         (b) The person or organization does not qualify as an additional insured with respect to the independent acts or omissions of such person or organization.

2. The insurance provided to the additional insured by this endorsement is limited as follows:
   a. If the Limits of Insurance of this Coverage Part shown in the Declarations exceed the minimum limits of liability required by the "written contract requiring insurance", the insurance provided to the additional insured will be limited to such minimum required limits of liability. For the purposes of determining whether this limitation applies, the minimum limits of liability required by the "written contract requiring insurance" will be considered to include the minimum limits of liability of any Umbrella or Excess liability coverage required for the additional insured by that "written contract requiring insurance". This endorsement will not increase the limits of insurance described in Section III – Limits Of Insurance.
   b. The insurance provided to the additional insured does not apply to "bodily injury", "property damage" or "personal injury" arising out of the rendering of, or failure to render, any professional architectural, engineering or surveying services, including:
      (1) The preparing, approving, or failing to prepare or approve, maps, shop drawings, opinions, reports, surveys, field orders or change orders, or the preparing, approving, or failing to prepare or approve, drawings and specifications; and
      (2) Supervisory, inspection, architectural or engineering activities.
   c. The insurance provided to the additional insured does not apply to "bodily injury" or "property damage" caused by "your work" and included in the "products-completed operations hazard" unless the "written contract requiring insurance" specifically requires you to provide such coverage for that additional insured during the policy period.
3. The insurance provided to the additional insured by this endorsement is excess over any valid and collectible other insurance, whether primary, excess, contingent or on any other basis, that is available to the additional insured. However, if the "written contract requiring insurance" specifically requires that this insurance apply on a primary basis or a primary and non-contributory basis, this insurance is primary to other insurance available to the additional insured under which that person or organization qualifies as a named insured, and we will not share with that other insurance. But the insurance provided to the additional insured by this endorsement still is excess over any valid and collectible other insurance, whether primary, excess, contingent or on any other basis, that is available to the additional insured when that person or organization is an additional insured, or is any other insured that does not qualify as a named insured, under such other insurance.
4. As a condition of coverage provided to the additional insured by this endorsement:
   a. The additional insured must give us written notice as soon as practicable of an "occurrence" or an offense which may result in a claim. To the extent possible, such notice should include:
      (1) How, when and where the "occurrence" or offense took place;
      (2) The names and addresses of any injured persons and witnesses; and
      (3) The nature and location of any injury or damage arising out of the "occurrence" or offense.
   b. If a claim is made or "suit" is brought against the additional insured, the additional insured must:
      (1) Immediately record the specifics of the claim or "suit" and the date received; and
      (2) Notify us as soon as practicable.

      The additional insured must see to it that we receive written notice of the claim or "suit" as soon as practicable.
   c. The additional insured must immediately send us copies of all legal papers received in connection with the claim or "suit", cooperate with us in the investigation or settlement of the claim or defense against the "suit", and otherwise comply with all policy conditions.
   d. The additional insured must tender the defense and indemnity of any claim or "suit" to any provider of other insurance which would cover the additional insured for a loss we cover under this endorsement. However, this condition does not affect whether the insurance provided to the additional insured by this endorsement is primary to other insurance available to the additional insured which covers that person or organization as a named insured as described in Paragraph 3. above.
5. The following is added to the **DEFINITIONS** Section:

   "Written contract requiring insurance" means that part of any written contract or agreement under which you are required to include a person or or-

ganization as an additional insured on this Coverage Part, provided that the "bodily injury" and "property damage" occurs, and the "personal injury" is caused by an offense committed, during the policy period and:

a. After the signing and execution of the contract or agreement by you; and

b. While that part of the contract or agreement is in effect.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Air and Radiation Management Administration • Air Quality Permits Program
1800 Washington Boulevard • Baltimore, Maryland 21230
(410)537-3230 • 1-800-633-6101 • www.mde.state.md.us

Mail application to:
MDE/ARMA
1800 Washington Blvd, Suite 720
Baltimore, MD 21230-1720

Air Quality Permit to Construct & Registration Application for

EMERGENCY GENERATOR

You must check off all of the following items to be able to use this application form

- [X] This generator is a dedicated emergency backup generator, and will not be used for peak or load shaving.
- [X] This generator is powered by an internal combustion engine, not a turbine
- [X] This generator's engine is at least 500 brake horsepower (373 kilowatts)
  (Smaller emergency engines do not need a permit)

AND

You must check off one of the following items to be able to use this application form

- [X] I do not need a CPCN Exemption because the generator is rated at 2000 kW or less
- [ ] I do not need a CPCN Exemption because the generator was installed before October 1, 2001
- [ ] I have a CPCN Exemption from the Public Service Commission for this generator
  (Contact the Public Service Commission at 410.767.8131)

1) Business/Institution/Facility where the equipment will be located — [X] **Check if this is a federal facility**

Business/Institution/Facility Name:			Phone:
Contact Person's Name: MIKE BLACKMON		Email Address: blackmon@nist.gov	
Street Address: 100 BUREAU DRIVE, MS 1730			
City: GAITHERSBURG	State: MD	Zip Code: 20899-1730	County: MONTGOMERY

2) Owner [ ] **Check if different from above. If checked, complete the following:**

Name:		Phone:
Mailing Address:		
City:	State:	Zip Code:

3) Installer [X] **Check if different from above. If checked, complete the following:**

Contact Name: **Brian Mensch, Senior Project Manager** — Contact Company: **Mona Electric Group, Inc, 7915 Malcolm Road, Clinton, MD 20735** — Phone: **301-868-8400**

031-0323-9-1213 & 9-1214

4) Equipment Information

Manufacturer / Model: **Generac Power System, Inc.** Installation Date: **8/1/2019**

☐ Yes This generator will be operated as part of an emergency demand response program.			Will be used for emergency use only per NIST email 08/27/2019
☒ No These generator(s) will be operated as part of an optional standby response system			
Number Installed: **2**	Number Removed: **0**	Stack Height (feet, estimated): **9 feet**	Stack Diameter (inches, estimated): **10 inches**
Engine Make / Model: **Generac JGNXB25.82C1**	EPA Tier Certified: **Tier 2**	Engine Horsepower: **670**	Engine Manufacture Date: **2019** Fuel Type: **Natural Gas (CNG/LNG)**

5) Required Attachments (check that you've included them)

☒ Vendor literature

☐ CPCN Exemption from the Public Service Commission
(not needed for generators installed before October 1, 2001, or rated at 1500 kW or less)

6) Workers Compensation Information (Environmental Article §1-202)

Workers insurance policy or binder number: 1833556095

☐ Check if self-employed or otherwise exempt from this requirement

"I CERTIFY UNDER PENALTY OF LAW THAT THE INFORMATION SUBMITTED IN THIS REQUEST FOR COVERAGE IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS."

[signature] Michael Blackmon, Env. Mgt. Grp. Leader 7/9/19

Owners Signature **Printed Name and Title** **Date**

LEAVE BLANK
MDE USE ONLY

☑ Permit
☐ Registration (Less than 1,000 brake horsepower & installed prior to 11/24/03)

Permit/Registration Number: 031 0323 9 - 12138 9-1214

AI: 13355

Emissions

	Sox	Nox	CO	VOC	PM	PM-10
Stack						
Fugitive						

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 11/20/2017

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME:	
Arthur J. Gallagher Risk Management Services, Inc. 11311 McCormick Road, Ste 450 Hunt Valley MD 21031-8622	PHONE (A/C, No, Ext): 443-798-7499	FAX (A/C, No):
	E-MAIL ADDRESS: BW2.BSD.Certs@ajg.com	
	INSURER(S) AFFORDING COVERAGE	NAIC #
	INSURER A : Travelers Property Casualty Co of Americ	25674
INSURED	INSURER B : Phoenix Insurance Company	25623
Mona Electric Group, Inc. Construction - Contracts 7915 Malcolm Road Clinton MD 20735	INSURER C : The North River Insurance Company	21105
	INSURER D : Travelers Indemnity Co	25658
	INSURER E :	
	INSURER F :	

COVERAGES **CERTIFICATE NUMBER:** 1833556095 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
B	X COMMERCIAL GENERAL LIABILITY	Y	Y	VTNCO8280B33APHX-17	12/1/2017	12/1/2018	EACH OCCURRENCE	$1,000,000
	CLAIMS-MADE [X] OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$300,000
							MED EXP (Any one person)	$10,000
							PERSONAL & ADV INJURY	$1,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$2,000,000
	POLICY [X] PRO-JECT [ ] LOC						PRODUCTS - COMP/OP AGG	$2,000,000
	OTHER:							$
A	AUTOMOBILE LIABILITY	Y	Y	VTJCAP8280B341TIL-17	12/1/2017	12/1/2018	COMBINED SINGLE LIMIT (Ea accident)	$1,000,000
	X ANY AUTO						BODILY INJURY (Per person)	$
	OWNED AUTOS ONLY / SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	X HIRED AUTOS ONLY / X NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
C	X UMBRELLA LIAB X OCCUR	Y	Y	5811097473	12/1/2017	12/1/2018	EACH OCCURRENCE	$10,000,000
	EXCESS LIAB CLAIMS-MADE						AGGREGATE	$10,000,000
	DED RETENTION $							$
D	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y/N		Y	VTC2KUB8394M648-17	12/1/2017	12/1/2018	X PER STATUTE OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? [N] N/A (Mandatory in NH)						E.L. EACH ACCIDENT	$1,000,000
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$1,000,000
							E.L. DISEASE - POLICY LIMIT	$1,000,000
A	Leased/Rented Special Form Including Theft			QT6305638B952TIL17	12/1/2017	12/1/2018	$500,000 $10,000 $1,000	Any One Item Theft Deductible All Other Ded.

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Professional Liability - Policy #CEO744651201 - Indian Harbor Insurance Company - Policy Period: 12/1/17 - 12/1/18
Limits: $5,000,000 per claim, $5,000,000 aggregate, $50,000 deductible

Re: CONS9158 – NIST project

Hensel Phelps Construction Co. and other Indemnities are included as Additional Insured with respect to the General Liability and Umbrella
See Attached...

CERTIFICATE HOLDER

Hensel Phelps Construction Co.
4437 Brookfield Corporate Drive
Suite 207
Chantilly VA 20151

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Dennis Durand

CERTIFICATE

This is to certify that

Generac Power Systems, Inc.

S45 W29290 Hwy. 59
Waukesha, WI 53189
United States of America

with the organizational units/sites as listed in the annex

has implemented and maintains a **Quality Management System**.

Scope:
Design, Manufacturing, and Distribution of Generators and Power Products.

Through an audit, documented in a report, it was verified that the management system fulfills the requirements of the following standard:

ISO 9001 : 2015

Certificate registration no.	10012920 QM15
Date of original certification	2013-12-09
Date of certification	2018-07-16
Valid until	2021-07-15

ANAB ACCREDITED ISO/IEC 17021 MANAGEMENT SYSTEMS CERTIFICATION BODY

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

DQS Inc.

Brad McGuire
Managing Director

STATEMENT OF EXHAUST EMISSIONS
2018 SPARK-IGNITED GENERATORS
INDUSTRIAL SERIES - NON-SCAQMD CERTIFIED
STATIONARY EMERGENCY

GENERAC | INDUSTRIAL POWER

2018 EPA SPARK-IGNITED EXHAUST EMISSIONS DATA

Effective since 2009, the EPA has implemented exhaust emissions regulations on stationary spark-ignited (gaseous) engine generators for emergency applications. All Generac spark-ignited gensets, including SG, MG, QTA, QT and RG series gensets that are built with engines manufactured in 2009 and later meet the requirements of 40CFR part 60 subpart JJJJ and are EPA certified. These generator sets are labeled as EPA Certified with decals affixed to the engines' valve covers.

The attached documents summarize the general information relevant to EPA certification on these generator sets. This information can be used for submittal data and for permitting purposes, if required. These documents include the following information:

EPA Engine Family
The EPA Engine Family is assigned by the Manufacturer under EPA guidelines for certification purposes and appears on the EPA certificate.

Catalyst Required
Indicates whether a three-way catalyst (TWC) and Air/Fuel Ratio control system are required on the generator set to meet EPA certification requirements. Generally, units rated 80kW and smaller do not require a TWC to meet EPA certification requirements. Please note that some units that do not require a TWC to meet EPA requirements do need one if the California SCAQMD option is selected. Please see "California SCAQMD" below for additional information on this option.

Combination Catalyst or Separate Catalyst
SG and MG series generator sets typically utilize a single combination catalyst/silencer as part of meeting EPA certification requirements. Many QT and RG series generator sets use the same engines as SG series units, but have different exhaust configurations that require the use of conventional silencers with additional separate catalysts installed.

EPA Certificate Number
Upon certification by the EPA, a Certificate Number is assigned by the EPA.

Emissions Actuals - Grams/bhp-hr
Actual exhaust emission data for Total Hydrocarbons (THC), Nitrogen Oxides (NOx) and Carbon Monoxide (CO) that were submitted to EPA and are official data of record for certification. This data can be used for permitting if necessary. Values are expressed in grams per brake horsepower-hour; to convert to grams/kW-hr, multiply by 1.341. Please see advisory notes below for further information.

California Units, SCAQMD CEP Number
A separate low-emissions option is available on many Generac gaseous-fueled generator sets to comply with the more stringent South Coast Air Quality Management District requirements that are recognized in certain areas in California. Gensets that include this option are also EPA Certified.

General Advisory Note to Dealers
The information provided here is proprietary to Generac and its' authorized dealers. This information may only be disseminated upon request, to regulatory governmental bodies for emissions permitting purposes or to specifying organizations as submittal data when expressly required by project specifications, and shall remain confidential and not open to public viewing. This information is not intended for compilation or sales purposes and may not be used as such, nor may it be reproduced without the expressed written permission of Generac Power Systems, Inc.

Advisory Notes on Emissions Actuals
- The stated values are actual exhaust emission test measurements obtained from units representative of the generator types and engines described.
- Values are official data of record as submitted to the EPA and SCAQMD for certification purposes. Testing was conducted in accordance with prevailing EPA protocols, which are typically accepted by SCAQMD and other regional authorities.
- No emission values provided are to be construed as guarantees of emissions levels for any given Generac generator unit.
- Generac Power Systems reserves the right to revise this information without prior notice.
- Consult state and local regulatory agencies for specific permitting requirements.
- The emissions performance data supplied by the equipment manufacturer is only one element required toward completion of the permitting and installation process. State and local regulations may vary on a case-by-case basis and must be consulted by the permit applicant/equipment owner prior to equipment purchase or installation. The data supplied herein by Generac Power Systems cannot be construed as a guarantee of installability of the generator set.
- The emission values provided are the result of multi-mode, weighted scale testing in accordance with EPA testing regulations, and may not be representative of any specific load point.
- The emission values provided are not to be construed as emission limits.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2018 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: Generac Power Systems, Inc.
(U.S. Manufacturer or Importer)

Certificate Number: JGNXB25.82C1-023

Effective Date: 09/13/2017

Expiration Date: 12/31/2018

Mary J. Manners

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 09/13/2017

Revision Date: N/A

Manufacturer: Generac Power Systems, Inc.
Engine Family: JGNXB25.82C1
Mobile/Stationary Certification Type: Stationary
Fuel : Natural Gas (CNG/LNG)
Emission Standards :
Part 60 Subpart JJJ Table 1
CO (g/kW-hr) : 5.4
VOC (g/kW-hr) : 1.3
NOx (g/kW-hr) : 2.7
Emergency Use Only : Y

1=34hp-hr = 1 kwh

Pursuant to Section 213 of the Clean Air Act (42 U.S.C. section 7547) and 40 CFR Part 60, 1065, 1068, and 60 (stationary only and combined stationary and mobile) and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following nonroad engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

This certificate of conformity covers only those new nonroad spark-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60. This certificate of conformity does not cover nonroad engines imported prior to the effective date of the certificate.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068.20 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60.

This certificate does not cover large nonroad engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

GENERAC | INDUSTRIAL POWER

STATEMENT OF EXHAUST EMISSIONS
2018 SPARK-IGNITED GENERATORS
INDUSTRIAL SERIES - NON-SCAQMD CERTIFIED
STATIONARY EMERGENCY

	Model	Engine	EPA Engine Family	Fuel	CAT Req'd*	Comb Cat or Separate Cat	EPA Cert #	Grams/bhp-hr.			Rated RPM	BHP	Fuel Flow (lb/hr)
								THC	NOx	CO			
Small Spark Ignited Engines - SSIE (SORE)	QTA25	2.4	JGNXB02.42NN	NG	No	NR	JGNXB02.42NN-006	2.14	2.37	93.95	1800	38.39	16.52
	QTA25	2.4	JGNXB02.42NL	LPG	No	NR	JGNXB02.42NL-066	1.43	4.38	86.18	1800	43.29	17.59
	SG035	5.4	JGNXB05.42NN	NG	No	NR	JGNXB05.42NN-009	1.60	2.52	95.32	1800	82.10	36.91
	SG035	5.4	JGNXB05.42NL	LPG	No	NR	JGNXB05.42NL-010	1.24	3.45	112.01	1800	82.30	34.60
	SG040	5.4	JGNXB05.42NN	NG	No	NR	JGNXB05.42NN-009	1.60	2.52	95.32	1800	82.10	36.91
	SG040	5.4	JGNXB05.42NL	LPG	No	NR	JGNXB05.42NL-010	1.24	3.45	112.01	1800	82.30	34.60
	SG045	5.4	JGNXB05.42NN	NG	No	NR	JGNXB05.42NN-009	1.60	2.52	95.32	1800	82.10	36.91
	SG045	5.4	JGNXB05.42NL	LPG	No	NR	JGNXB05.42NL-010	1.24	3.45	112.01	1800	82.30	34.60
	SG050	5.4	JGNXB05.42NN	NG	No	NR	JGNXB05.42NN-009	1.60	2.52	95.32	1800	82.10	36.91
	SG050	5.4	JGNXB05.42NL	LPG	No	NR	JGNXB05.42NL-010	1.24	3.45	112.01	1800	82.30	34.60
	SG050	6.8	JGNXB06.82NN	NG	No	NR	JGNXB06.82NN-011	1.46	6.57	30.88	1800	84.90	37.17
	SG050	6.8	JGNXB06.82NL	LPG	No	NR	JGNXB06.82NL-012	1.86	2.67	172.30	1800	84.66	46.55
	SG060	6.8	JGNXB06.82NN	NG	No	NR	JGNXB06.82NN-011	1.47	2.94	75.88	1800	96.67	38.76
	SG060	6.8	JGNXB06.82NL	LPG	No	NR	JGNXB06.82NL-012	1.26	4.23	99.05	1800	96.60	41.20
	SG070	6.8	JGNXB06.82NN	NG	No	NR	JGNXB06.82NN-011	1.46	3.55	68.40	1800	109.72	42.37
	SG070	6.8	JGNXB06.82NL	LPG	No	NR	JGNXB06.82NL-012	1.26	3.28	111.49	1800	118.41	51.86
	SG080	8.0	JGNXB08.02NN	NG	No	NR	JGNXB08.02NN-024	1.16	2.86	49.60	1800	127.61	44.02
	SG080 (DF)	8.0	JGNXB08.02NN	NG/LPV	No	NR	JGNXB08.02NN-024	0.85	4.24	27.29	1800	128.06	42.50
	SG080 (DF)	8.0	JGNXB08.02NN	NG/LPL	No	NR	JGNXB08.02NN-024	1.23	4.09	37.06	1800	127.90	42.60
	SG080	8.0	JGNXB08.02NL	LPV	No	NR	JGNXB08.02NL-013	0.95	2.24	86.43	1800	127.46	50.13
	SG080	8.0	JGNXB08.02NL	LPL	No	NR	JGNXB08.02NL-013	1.00	2.77	71.36	1800	128.09	46.61
Large Spark Ignited Engines (LSIE)	SG100	9.0	JGNXB08.92O1	NG	Yes	Cat Muff	JGNXB08.92O1-040	0.00	0.12	0.03	1800	153.00	53.24
	SG100	9.0	JGNXB08.92O2	LPG	Yes	Cat Muff	JGNXB08.92O2-001	0.01	0.20	0.22	1800	142.30	54.35
	SG130,150	9.0 (G18)	JGNXB08.92C3	NG	Yes	Cat Muff	JGNXB08.92C3-039	0.10	0.03	0.02	1800	230.30	71.97
	SG130,150 (DF)	9.0 (G18)	JGNXB08.92C3	NG/LPV	Yes	Cat Muff	JGNXB08.92C3-039	0.10	0.03	0.02	1800	230.30	71.97
	SG130,150 (DF)	9.0 (G18)	JGNXB08.92C3	NG/LPL	Yes	Cat Muff	JGNXB08.92C3-039	0.10	0.03	0.02	1800	230.30	71.97
	MG130,150	9.0 (G18)	JGNXB08.92C3	NG	Yes	Cat Muff	JGNXB08.92C3-039	0.10	0.03	0.02	1800	230.30	71.97
	MG130,150 (DF)	9.0 (G18)	JGNXB08.92C3	NG/LPV	Yes	Cat Muff	JGNXB08.92C3-039	0.10	0.03	0.02	1800	230.30	71.97
	MG130,150 (DF)	9.0 (G18)	JGNXB08.92C3	NG/LPL	Yes	Cat Muff	JGNXB08.92C3-039	0.10	0.03	0.02	1800	230.30	71.97
	SG130, 150	9.0 (G18)	JGNXB08.92C4	LPG	Yes	Cat Muff	JGNXB08.92C4-022	0.02	0.57	1.30	1800	230.30	75.43
	SG130, 150	9.0 (G18)	JGNXB08.92C4	LPL	Yes	Cat Muff	JGNXB08.92C4-022	0.02	0.57	1.30	1800	230.30	75.43
	MG130,150	9.0 (G18)	JGNXB08.92C4	LPG	Yes	Cat Muff	JGNXB08.92C4-022	0.02	0.57	1.30	1800	230.30	75.43
	MG130,150	9.0 (G18)	JGNXB08.92C4	LPL	Yes	Cat Muff	JGNXB08.92C4-022	0.02	0.57	1.30	1800	230.30	75.43
	SG130, 150	9.0 (G26)	JGNXB08.92O3	NG	Yes	Cat Muff	JGNXB08.92O3-064	0.06	0.09	0.19	1800	228.13	84.81
	MG130, 150	9.0 (G26)	JGNXB08.92O3	NG	Yes	Cat Muff	JGNXB08.92O3-064	0.06	0.09	0.19	1800	228.13	84.81
	SG130, 150	9.0 (G26)	JGNXB08.92O4	LPV	Yes	Cat Muff	JGNXB08.92O4-075	0.02	0.03	0.09	1800	226.23	85.35
	SG130, 150	9.0 (G26)	JGNXB08.92O4	LPL	Yes	Cat Muff	JGNXB08.92O4-075	0.01	0.28	0.20	1800	230.39	86.36
	SG150, 175, 200	14.2	JGNXB14.22C1	NG	Yes	Cat Muff	JGNXB14.22C1-043	0.06	0.05	0.39	1800	304.00	98.54
	MG150	14.2	JGNXB14.22C1	NG	Yes	Cat Muff	JGNXB14.22C1-043	0.06	0.05	0.39	1800	304.00	98.54
	MG200	14.2	JGNXB14.22C1	NG	Yes	Cat Muff	JGNXB14.22C1-043	0.06	0.05	0.39	1800	304.00	98.54
	SG230, 250	14.2	JGNXB14.22C1	NG	Yes	Cat Muff	JGNXB14.22C1-043	0.04	0.02	0.23	1800	374.00	120.84
	MG250	14.2	JGNXB14.22C1	NG	Yes	Cat Muff	JGNXB14.22C1-043	0.04	0.02	0.23	1800	374.00	120.84
	SG275, 300	14.2	JGNXB14.22C1	NG	Yes	Cat Muff	JGNXB14.22C1-043	0.03	0.03	0.17	1800	460.00	142.87
	MG300	14.2	JGNXB14.22C1	NG	Yes	Cat Muff	JGNXB14.22C1-043	0.03	0.03	0.17	1800	460.00	142.87
	SG350	21.9	JGNXB21.92C1	NG	Yes	Cat Muff	JGNXB21.92C1-044	0.18	0.14	0.82	1800	636.00	201.17
	MG350	21.9	JGNXB21.92C1	NG	Yes	Cat Muff	JGNXB21.92C1-044	0.18	0.14	0.82	1800	636.00	201.17
	SG400	21.9	JGNXB21.92C1	NG	Yes	Cat Muff	JGNXB21.92C1-044	0.18	0.14	0.82	1800	636.00	201.17
	MG400	21.9	JGNXB21.92C1	NG	Yes	Cat Muff	JGNXB21.92C1-044	0.18	0.14	0.82	1800	636.00	201.17
	SG450	21.9	JGNXB21.92C3	NG	Yes	Cat Muff	JGNXB21.92C3-045	0.14	0.08	0.39	1800	673.10	211.85
	MG450	21.9	JGNXB21.92C3	NG	Yes	Cat Muff	JGNXB21.92C3-045	0.14	0.08	0.39	1800	673.10	211.85
	SG450 (LPF)	21.9	JGNXB21.92C3	NG	Yes	Cat Muff	JGNXB21.92C3-045	0.10	0.08	0.13	1800	674.14	208.84
	MG450 (LPF)	21.9	JGNXB21.92C3	NG	Yes	Cat Muff	JGNXB21.92C3-045	0.10	0.08	0.13	1800	674.14	208.84
	SG500	25.8	JGNXB25.82C1	NG	Yes	Cat Muff	JGNXB25.82C1-023	0.07	0.07	0.05	1800	777.00	244.49
	MG500	25.8	JGNXB25.82C1	NG	Yes	Cat Muff	JGNXB25.82C1-023	0.07	0.07	0.05	1800	777.00	244.49
	SG625	33.9	JGNXB33.92C1	NG	Yes	Cat Muff	JGNXB33.92C1-067	0.13	0.01	0.22	1800	907.98	324.83
	MG625	33.9	JGNXB33.92C1	NG	Yes	Cat Muff	JGNXB33.92C1-067	0.13	0.01	0.22	1800	907.98	324.83

* Three-Way Catalyst (TWC)
NR: Not Required
DF: Dual Fuel
Refer to page 2 for definitions and advisory notes.

MG500 | 25.8L | 500 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC | INDUSTRIAL

OPERATING DATA

DEMAND RESPONSE READY

POWER RATINGS - NATURAL GAS

	Standby/Demand Response	
Three-Phase 277/480 VAC @0.8pf	500 kW	Amps: 752
Three-Phase 346/600 VAC @0.8pf	500 kW	Amps: 601

MOTOR STARTING CAPABILITIES (skVA)

skVA vs. Voltage Dip

277/480 VAC	30%
K0500124Y23	1,050
K0600124Y23	1,560

FUEL CONSUMPTION RATES*

Natural Gas – scfh (m^3/hr)

Percent Load	Standby/Demand Response
25%	2,550 (72.2)
50%	3,600 (101.9)
75%	4,740 (134.2)
100%	5,820 (164.8)

* Fuel supply installation must accommodate fuel consumption rates at 100% load.

COOLING

		Standby/Demand Response
Air Flow (Fan Air Flow Across Radiator)	scfm (m^3/min)	23,550 (666)
Coolant Flow	gpm (Lpm)	225 (851.7)
Coolant System Capacity	gal (L)	20.5 (77.6)
Maximum Operating Ambient Temperature	°F (°C)	122 (50)
Maximum Operating Ambient Temperature (Before Derate)		See Bulletin No. 0199270SSD
Maximum Radiator Backpressure	in H_2O (kPa)	0.5 (0.12)

horsepower rating

COMBUSTION AIR REQUIREMENTS

	Standby/Demand Response
Flow at Rated Power scfm (m^3/min)	942 (26.6)

ENGINE

		Standby/Demand Response
Rated Engine Speed	RPM	1,800
Horsepower at Rated kW**	hp	670
Piston Speed	ft/min (m/min)	1,890 (576)
BMEP	psi (kPa)	207 (1,427)

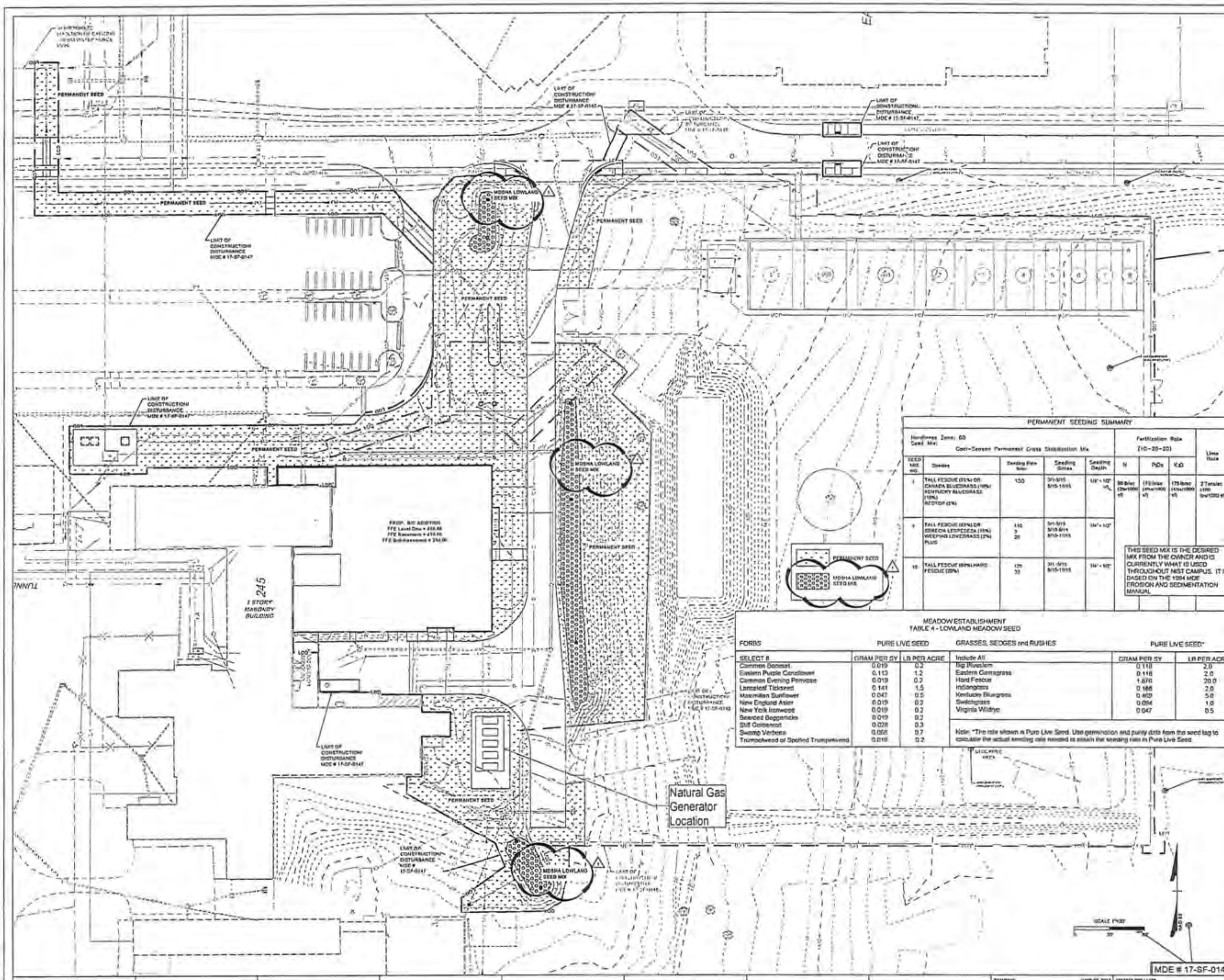
EXHAUST

		Standby/Demand Response
Exhaust Flow (Rated Output)	scfm (m^3/min)	3,207 (90.8)
Max. Backpressure (Post Silencer)	inHg (kPa)	0.75 (2.54)
Exhaust Temp (Rated Output - Post Silencer)	°F (°C)	1,265 (685)

** Refer to "Emissions Data Sheet" for maximum bHP for EPA and SCAQMD permitting purposes.

Deration – Operational characteristics consider maximum ambient conditions. Derate factors may apply under atypical site conditions.
Please contact a Generac Power Systems Industrial Dealer for additional details. All performance ratings in accordance with ISO3046, BS5514, ISO8528, and DIN6271 standards.
Standby - See Bulletin 0187500SSB
Demand Response - See Bulletin 10000018250
Prime - See Bulletin 0187510SSB

Sound Dr
Research Dr
Service Dr
Steam Dr
South Dr
East Dr
Downing St
270
Property Boundary
TRAILER SITE
17-SF-0148
Natural Gas Generator Location
BC ADDITION
SITE
17-SF-0147
N



PERMANENT SEEDING SUMMARY

Hardiness Zone: 6B
Seed Mix: Cool-Season Permanent Grass Stabilization Mix

Seed Mix No.	Species	Seeding Rate	Seeding Dates	Seeding Depth	Fertilization Rate (10-20-20): N	P_2O_5	K_2O	Lime Rate
1	TALL FESCUE (85%) OR CANADA BLUEGRASS (10%) KENTUCKY BLUEGRASS (10%) REDTOP (5%)	150	3/1-5/15 8/15-11/15	1/4" - 1/2"	[illegible]	[illegible]	[illegible]	2 Tons/ac [illegible]
[illegible]	TALL FESCUE (83%) OR SERICEA LESPEDEZA (15%) WEEPING LOVEGRASS (2%) PLUS	110 2 20	3/1-5/15 5/16-8/14 8/15-11/15	1/4" - 1/2"				
10	TALL FESCUE (80%) HARD FESCUE (20%)	120 30	3/1-5/15 8/15-11/15	1/4" - 1/2"				

THIS SEED MIX IS THE DESIRED MIX FROM THE OWNER AND IS CURRENTLY WHAT IS USED THROUGHOUT NIST CAMPUS. IT IS BASED ON THE 1994 MDE EROSION AND SEDIMENTATION MANUAL

MEADOW ESTABLISHMENT
TABLE 4 - LOWLAND MEADOW SEED

FORBS — SELECT 8	PURE LIVE SEED: GRAM PER SY	LB PER ACRE
Common Boneset	0.019	0.2
Eastern Purple Coneflower	0.113	1.2
Common Evening Primrose	0.019	0.2
Lanceleaf Tickseed	0.141	1.5
Maximilian Sunflower	0.047	0.5
New England Aster	0.019	0.2
New York Ironweed	0.019	0.2
Bearded Beggarticks	0.019	0.2
Stiff Goldenrod	0.028	0.3
Swamp Verbena	0.066	0.7
Trumpetweed or Spotted Trumpetweed	0.019	0.2

GRASSES, SEDGES and RUSHES — Include All	PURE LIVE SEED*: GRAM PER SY	LB PER ACRE
Big Bluestem	0.118	2.0
Eastern Gamagrass	0.118	2.0
Hard Fescue	1.876	20.0
Indiangrass	0.188	2.0
Kentucky Bluegrass	0.469	5.0
Switchgrass	0.094	1.0
Virginia Wildrye	0.047	0.5

Note: *The rate shown is Pure Live Seed. Use germination and purity data from the seed tag to calculate the actual seeding rate needed to attain the seeding rate in Pure Live Seed.

REVISION	DESCRIPTION	DATE
	MDE MODIFICATION #1	11 OCT 2017
1	DCN 006 MDE APPROVAL	13 MAR 2018

GENERAL NOTES:

THIS DRAWING REPRESENTS THE MDE APPROVED GREEN STAMPED DRAWINGS AS DATED 02-23-18

DESIGN / BUILD CONTRACTOR
HENSEL PHELPS
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KEY PLAN

NIST

FOR OFFICIAL USE ONLY

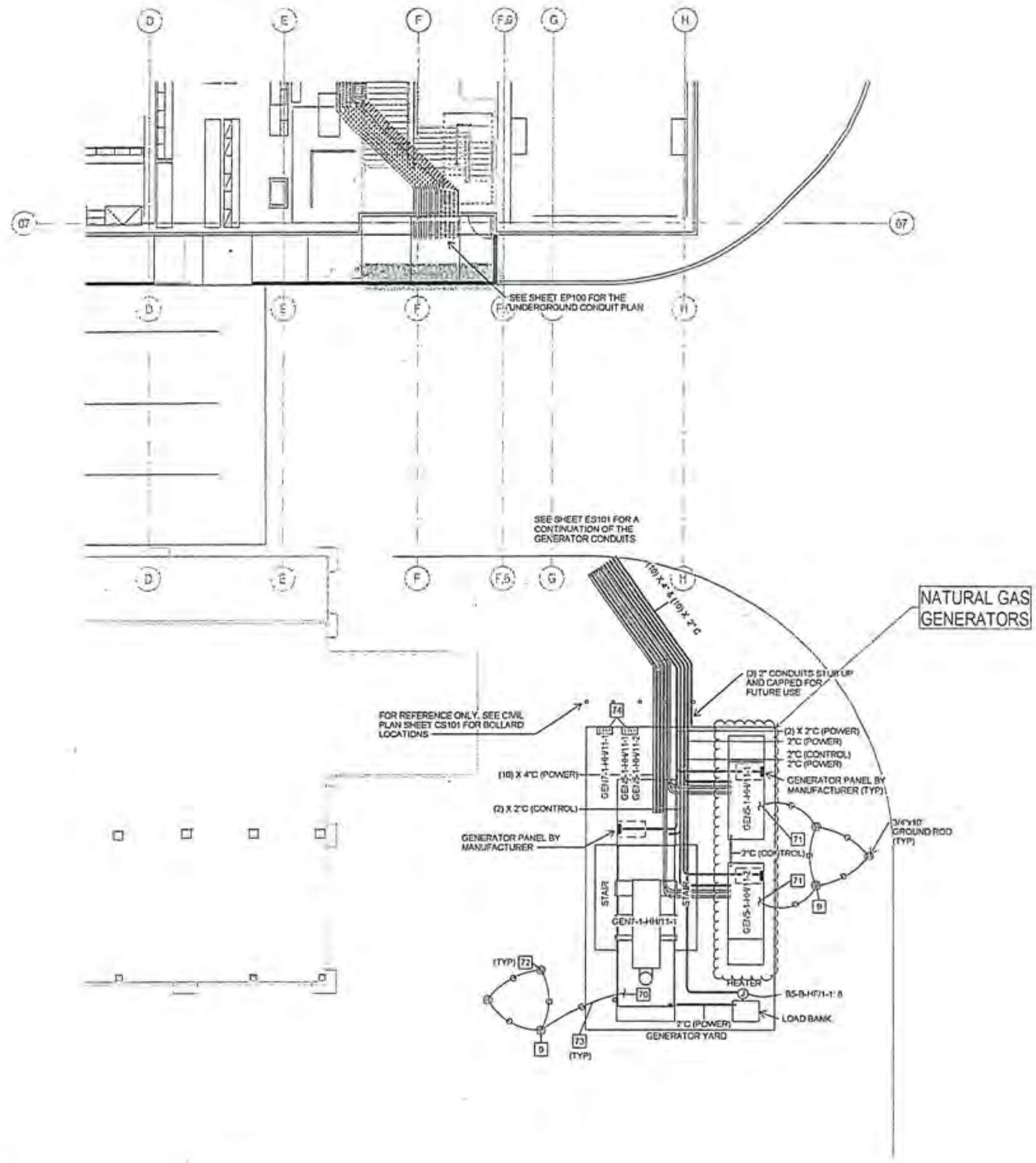
U.S. DEPARTMENT OF COMMERCE
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
OFFICE OF FACILITIES AND PROPERTY MANAGEMENT

BUILDING 245 RADIATION PHYSICS LABORATORY MODERNIZATION
B/C WING ADDITION - FTP #1| DCN 06

LANDSCAPE PLAN | L103

MDE # 17-SF-0147

DWG 245-***



1 ES104 SITE GENERATOR PLAN
1/8" = 1'-0"

ELECTRICAL KEYNOTE LEGEND	
NUMBER	DESCRIPTION
9	PROVIDE GROUND TEST WELL AT THIS LOCATION.
70	CONNECT TO DIESEL GENERATOR GROUNDING SYSTEM.
71	CONNECT TO NATURAL GAS GENERATOR GROUNDING SYSTEM.
72	THE TRIAD MUST BE 3 FEET AWAY AT ALL POINTS FROM THE PAD. GROUND RODS SHALL BE SEPARATED BY A MINIMUM OF 10 FEET.
73	#4/0 BARE STRANDED COPPER GROUND CONDUCTOR (BURY 30 INCHES BELOW GRADE (TYP)).
74	PROVIDE REMOTE EPO BUTTON ON STRUT, EXTEND GENERATOR EPO CIRCUIT TO THIS LOCATION.

REVISION	DESCRIPTION	DATE
	CONFORMED SET	8 MAR 2019

SEAL

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 48155, Expiration Date: 1/7/2020.

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KEY PLAN

SCALE 0 4 8 16'

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OFFICE OF FACILITIES AND PROPERTY MANAGEMENT

BUILDING 245 RADIATION PHYSICS LABORATORY MODERNIZATION

H WING ADDITION - CONFORMED SET

ELECTRICAL SITE GENERATOR PLAN — ES104

SH. NO. ___ OF ___ DWG # 245-1340

APPROVED BY | DATE | SPONSOR | DATE | MAINTENANCE ENG. OFF | DATE | ENVIRONMENTAL MANAGEMENT | DATE | SAFETY | DATE | SHEQ - NIST FIRE MARSHAL (AHJ) | DATE | FACILITIES ENG. OFF | DATE | PROJECT LEADER | DATE | MONA ELECTRIC GROUP INC | DRAWN BY | DATE | PROJECT/WO

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