STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

Portsmouth Naval Shipyard **York County** **Kittery, Maine** **A-452-77-16-A**	**Departmental** **Findings of Fact and Order** **New Source Review** **NSR #16**

FINDINGS OF FACT

After review of the air emission license application, staff investigation reports, and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 Maine Revised Statutes (M.R.S.) § 344 and § 590, the Maine Department of Environmental Protection (the Department) finds the following facts:

I. REGISTRATION

A. Introduction

FACILITY	Portsmouth Naval Shipyard (PNS)
LICENSE TYPE	06-096 C.M.R. ch. 115, Minor Modification
NAICS CODES	336611 (Ship Building and Repairing)
NATURE OF BUSINESS	National Security (Submarine repair for U.S. Navy)
FACILITY LOCATION	Kittery, Maine

B. NSR License Description

Portsmouth Naval Shipyard (PNS) has requested a New Source Review (NSR) license for the installation of a 600 kW Caterpillar C18 diesel-fired emergency generator (G43) and three MWI diesel-fired water pumps (WP1, WP2, and WP3), each equipped with a 168 kW John Deere engine.

C. Emission Equipment

The following new equipment is addressed in this NSR license:

Generators/Engines

Equipment	Max. Heat Input Capacity (MMBtu/hr)	Max. Firing Rate (gal/hr)	Output	Fuel Type, % sulfur	Mfr. Date	Install. Date
G43 (emergency generator)	5.9	42.7	600 kW		2021	2022

Equipment	Max. Heat Input Capacity (MMBtu/hr)	Max. Firing Rate (gal/hr)	Output	Fuel Type, % sulfur	Mfr. Date	Install. Date
WP1 (water pump)	1.6	11.4	168 kW	Distillate Fuel, 0.0015%	2018	2021
WP2 (water pump)	1.6	11.4	168 kW		2018	2021
WP3 (water pump)	1.6	11.4	168 kW		2018	2021

D. Definitions

Distillate Fuel means the following:

- Fuel oil that complies with the specifications for fuel oil numbers 1 or 2, as defined by the American Society for Testing and Materials (ASTM) in ASTM D396;
- Diesel fuel oil numbers 1 or 2, as defined in ASTM D975;
- Kerosene, as defined in ASTM D3699;
- Biodiesel, as defined in ASTM D6751; or
- Biodiesel blends, as defined in ASTM D7467.

Records or *Logs* mean either hardcopy or electronic records.

E. Application Classification

All rules, regulations, or statutes referenced in this air emission license refer to the amended version in effect as of the issued date of this license.

The application for Emergency Generator (G43) and Water Pumps 1-3 (WP1, WP2, and WP3) does not violate any applicable federal or state requirements and does not reduce monitoring, reporting, testing, or recordkeeping requirements.

The modification of a major source is considered a major or minor modification based on whether or not expected emissions increases exceed the "Significant Emission Increase" levels as given in *Definitions Regulation*, 06-096 Code of Maine Rules (C.M.R.) ch. 100. For a major stationary source, the expected emissions increase from each new, modified, or affected unit may be calculated as equal to the difference between the post-modification projected actual emissions and the baseline actual emissions for each NSR regulated pollutant.

1. Baseline Actual Emissions

Baseline actual emissions (BAE) for existing affected emission units are equal to the average annual emissions from any consecutive 24-month period within the ten years prior to submittal of a complete license application. The selected 24-month baseline period can differ on a pollutant-by-pollutant basis. However, there are no existing emission units which are considered "affected" by this project.

The only equipment addressed by this license are new emission units. Baseline actual emissions for new equipment are considered to be zero for all pollutants; therefore, the selection of a baseline period is unnecessary.

2. Projected Actual Emissions

New emission units must use potential to emit (PTE) emissions for projected actual emissions (PAE). Those emissions are presented in the following table.

Projected Actual Emissions

Equipment	PM (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	SO_2 (tpy)	NO_x (tpy)	CO (tpy)	VOC (tpy)
G43	0.04	0.04	0.04	0.01	0.94	0.25	0.03
WP1	0.83	0.83	0.83	0.01	0.64	6.66	2.45
WP2	0.83	0.83	0.83	0.01	0.64	6.66	2.45
WP3	0.83	0.83	0.83	0.01	0.64	6.66	2.45
Total	**2.53**	**2.53**	**2.53**	**0.04**	**2.86**	**20.23**	**7.38**

3. Emissions Increases

Emissions increases are calculated by subtracting BAE from the PAE. The emissions increases are then compared to the significant emissions increase levels.

Pollutant	Baseline Actual Emissions (ton/year)	Projected Actual Emissions (ton/year)	Emissions Increase (ton/year)	Significant Emissions Increase Levels (ton/year)
PM	0	2.53	2.53	25
PM_{10}	0	2.53	2.53	15
$PM_{2.5}$	0	2.53	2.53	10
SO_2	0	0.04	0.04	40
NO_x	0	2.86	2.86	40
CO	0	20.23	20.23	100
VOC	0	7.38	7.38	40

4. Classification

Since emissions increases do not exceed significant emissions increase levels, this NSR license is determined to be a minor modification under *Minor and Major Source Air Emission License Regulations,* 06-096 C.M.R. ch. 115. PNS has submitted an

application to incorporate the requirements of this NSR license into the facility's Part 70 air emission license.

II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

In order to receive a license, the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in *Definitions Regulation*, 06-096 C.M.R. ch. 100. Separate control requirement categories exist for new and existing equipment as well as for those sources located in designated non-attainment areas.

BPT for new sources and modifications requires a demonstration that emissions are receiving Best Available Control Technology (BACT), as defined in 06-096 C.M.R. ch. 100. BACT is a top-down approach to selecting air emission controls considering economic, environmental, and energy impacts.

B. Emergency Generator, G43

PNS has requested to install and operate a distillate fuel-fired emergency generator. Emergency generators are generator sets with each gen set consisting of an engine and an electrical generator. The emergency generator is powered by a Tier 2 engine that was manufactured in 2021 and has a heat input capacity of 5.9 MMBtu/hr.

1. BACT Findings

a. Tier Review

As part of the BACT analysis, PNS investigated purchasing a Tier 4 engine instead of the Tier 2 engine proposed. As part of their analysis, PNS evaluated engine cost, pollutant reduction, and availability. In comparing costs, the Tier 2 engine totals approximately $355,000, compared to approximately $950,000 for a Tier 4 engine ($595,000 difference). Because the EPA has not required the use of Tier 4 engines for engines of this size and larger, such an engine would have to be custom made with a significant wait time for the unit to be built. At present, the manufacturer of the Tier 2 engine does not build Tier 4 engines of this size. The closest Tier 4 option that the manufacturer could have offered was a 500 kW unit, which would not have met the needs of PNS. In addition, because of the unit's limited use of 100 hours per year of non-emergency operation, none of the criteria pollutants would be emitted in quantities greater than 1 ton per year; of these, the highest criteria pollutant being emitted would be NO_x at 0.7 tpy. A Tier 4 engine would reduce this by 0.66 tpy to 0.04 tpy of NO_x. Thus, the substantially higher cost of a Tier 4 engine, the lack of availability, and the small expected amount of emission

reductions all result in a Tier 4 engine considered to be economically infeasible for NO_x (and the other pollutants which demonstrated even lower reductions than for NO_x emissions with the Tier 4 engine).

b. Particulate Matter (PM PM_{10}, and $PM_{2.5}$)

PM emissions from distillate fuel-fired engines are generally controlled through proper operation and maintenance. Additionally, this engine will be subject to 40 C.F.R. Part 60, Subpart IIII, and therefore required to meet EPA emission standards for emergency stationary engines as discussed below. Given the operating hours restrictions included in 40 C.F.R. Part 60, Subpart IIII, the use of add-on controls for PM is not economically feasible. BACT for PM emissions from Emergency Generator G43 shall be proper operation and maintenance of the unit, installation of an EPA certified emergency stationary engine as required in 40 C.F.R. § 60.4205(b), and the emission limits listed in the following tables.

c. Sulfur Dioxide (SO_2)

For emergency engines that fire distillate fuel and operate for only short periods of time, the use of wet scrubbers or other SO_2 add-on control methods would not be economically feasible considering the minimal emissions resulting from the limited use of the engines. The most practical method for limiting SO_2 emissions from such engines is the use of ultra-low sulfur fuel, such as distillate fuel with a sulfur content no greater than 0.0015% by weight. BACT for SO_2 emissions from Emergency Generator G43 shall be the use of distillate fuel with a sulfur content no greater than 0.0015% by weight, installation of an EPA certified emergency stationary engine as required in 40 C.F.R. § 60.4205(b), and the emission limits listed in the following tables.

d. Nitrogen Oxides (NO_x)

Potentially available control options for reducing emissions of NO_x from distillate fuel-fired engines include combustion controls, selective catalytic reduction (SCR), and non-selective catalytic reduction (NSCR).

Combustion controls are typically implemented through design features such as electronic engine controls, injection systems, combustion chamber geometry, and turbocharging systems. The Tier 2 engine is equipped with electronic engine controls and is designed to minimize NO_x emissions but does not include any after treatment devices for NO_x control. Additional engine modifications such as injection systems or turbo charging systems are not economically feasible for an engine utilized as an emergency back-up engine.

SCR and NSCR are both post-combustion NO_x reduction technologies. SCR uses ammonia to react with NO_x in the gas stream in the presence of a catalyst to form nitrogen and water. NSCR uses a catalyst to convert CO, NO_x, and hydrocarbons into carbon dioxide, nitrogen, and water without the use of an additional reagent, and requires strict air-to-fuel control to maintain high reduction effectiveness without increasing hydrocarbon emissions. For an emergency back-up engine, neither SCR nor NSCR would be economically feasible considering the minimal emissions due to the limited use of the engine.

BACT for NO_x emissions from Emergency Generator G43 shall be the use of good combustion controls, proper operation and maintenance of the unit, installation of an EPA certified emergency stationary engine as required in 40 C.F.R. § 60.4205(b), and the emission limits listed in the following tables.

e. Carbon Monoxide (CO) and Volatile Organic Compounds (VOC)

CO and VOC emissions are a result of incomplete combustion, caused by conditions such as insufficient residence time or limited oxygen availability. CO and VOC emissions from distillate fuel-fired generators are generally controlled through proper operation and maintenance of the units. Oxidation catalysts have been used on large generators to reduce CO and VOC emission levels in the exhaust, but, like SCR and NSCR, use of an oxidation catalyst on an emergency engine with limited yearly use would not provide a significant environmental benefit and would not be economically feasible. BACT for CO and VOC emissions from Emergency Generator G43 shall be proper operation and maintenance of the unit, installation of an EPA certified emergency stationary engine as required in 40 C.F.R. § 60.4205(b), and the emission limits listed in the tables below.

f. Visible Emissions

BACT for visible emissions from Emergency Generator G43 shall be the following:

Visible emissions from Emergency Generator G43 shall not exceed 20% opacity on a six-minute block average basis.

g. Fuel Use Restriction

The fuel fired in Emergency Generator G43 shall be included in the facility's distillate fuel limit of 4,900,000 gallons/year, based on a 12-month rolling total.

h. Emission Limits

The BACT emission limits for Emergency Generator G43 are based on the following:

PM/PM_{10}	- 0.12 lb/MMBtu from 06-096 C.M.R. ch. 103
SO_2	- combustion of distillate fuel with a maximum sulfur content not to exceed 15 ppm (0.0015% sulfur by weight)
NO_x	- 3.2 lb/MMBtu from AP-42 dated 10/96
CO	- 0.85 lb/MMBtu from AP-42 dated 10/96
VOC	- 0.09 lb/MMBtu from AP-42 dated 10/96
Visible Emissions	- 06-096 C.M.R. ch. 115, BACT

The BACT emission limits for Emergency Generator G43 are the following:

Unit	Pollutant	lb/MMBtu
Emergency Generator G43	PM	0.12

Unit	PM (lb/hr)	PM_{10} (lb/hr)	$PM_{2.5}$ (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Emergency Generator G43	0.71	0.71	0.71	0.01	18.88	5.02	0.53

2. 40 C.F.R. Part 60, Subpart IIII

Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, 40 C.F.R. Part 60, Subpart IIII is applicable to the emergency engine listed above since the unit was ordered after July 11, 2005 and manufactured after April 1, 2006. [40 C.F.R. § 60.4200] By meeting the requirements of 40 C.F.R. Part 60, Subpart IIII, the unit also meets the requirements found in the *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*, 40 C.F.R. Part 63, Subpart ZZZZ. [40 C.F.R. § 63.6590(c)]

A summary of the currently applicable federal 40 C.F.R. Part 60, Subpart IIII requirements is listed below.

a. Emergency Engine Designation and Operating Criteria

Under 40 C.F.R. Part 60, Subpart IIII, a stationary reciprocating internal combustion engine (ICE) is considered an **emergency** stationary ICE (emergency engine) as long as the engine is operated in accordance with the following criteria. Operation of an engine outside of the criteria specified below may cause the engine

to no longer be considered an emergency engine under 40 C.F.R. Part 60, Subpart IIII, resulting in the engine being subject to requirements applicable to **non-emergency** engines.

(1) Emergency Situation Operation (On-Site)

There is no operating time limit on the use of an emergency engine to provide electrical power or mechanical work during an emergency situation. Examples of use of an emergency engine during emergency situations include the following:

- Use of an engine to produce power for critical networks or equipment (including power supplied to portions of a facility) because of failure or interruption of electric power from the local utility (or the normal power source, if the facility runs on its own power production);
- Use of an engine to mitigate an on-site disaster or equipment failure;
- Use of an engine to pump water in the case of fire, flood, natural disaster, or severe weather conditions; and
- Similar instances.

(2) Non-Emergency Situation Operation

An emergency engine may be operated up to a maximum of 100 hours per calendar year for maintenance checks, readiness testing, and other non-emergency situations as described below.

(i) An emergency engine may be operated for a maximum of 100 hours per calendar year 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 more than 100 hours per calendar year.

(ii) An emergency engine may be operated for up to 50 hours per calendar year for other non-emergency situations. **However, these operating hours are counted as part of the 100 hours per calendar year operating limit described in paragraph (2) and (2) (i) above.**

The 50 hours per calendar year operating limit for other non-emergency situations cannot be used for peak shaving, demand response, or to generate income for a facility by providing power to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

[40 C.F.R. §§ 60.4211(f) and 60.4219]

b. 40 C.F.R. Part 60, Subpart IIII Requirements

(1) Manufacturer Certification Requirement
The engine shall be certified by the manufacturer as meeting the emission standards for new nonroad compression ignition engines found in 40 C.F.R. § 60.4202. [40 C.F.R. § 60.4205(b)]

(2) Ultra-Low Sulfur Fuel Requirement
The fuel fired in the engine shall not exceed 15 ppm sulfur (0.0015% sulfur). [40 C.F.R. § 60.4207(b)]

(3) Non-Resettable Hour Meter Requirement
A non-resettable hour meter shall be installed and operated on the engine. [40 C.F.R. § 60.4209(a)]

(4) Operation and Maintenance Requirements
The engine shall be operated and maintained according to the manufacturer's emission-related written instructions. PNS may only change those emission-related settings that are permitted by the manufacturer. [40 C.F.R. § 60.4211(a)]

(5) Annual Time Limit for Maintenance and Testing
As an emergency engine, the unit shall be limited to 100 hours/year for maintenance checks and readiness testing. Up to 50 hours/year of the 100 hours/year may be used in non-emergency situations (this does not include peak shaving, demand response, or to generate income for a facility by providing power to an electric grid or otherwise supply power as part of a financial arrangement with another entity). [40 C.F.R. § 60.4211(f)]

(6) Initial Notification Requirement
No initial notification is required under 40 C.F.R. Part 60, Subpart IIII for emergency engines. [40 C.F.R. § 60.4214(b)]

(7) Recordkeeping
PNS shall keep records that include maintenance conducted on the engine and the hours of operation of the engine recorded through its non-resettable hour meter. Documentation shall include the number of hours the unit operated for

emergency purposes, the number of hours the unit operated for non-emergency purposes, and the reason the engine was in operation during each time. [40 C.F.R. § 60.4214(b)]

(8) Enhanced Engine Operating Hours Monitoring and Recordkeeping
Per agreement with the Department and the EPA, PNS has agreed to the following additional measures to ensure their emergency engines do not operate more than allowed for by Subpart IIII in non-emergency service.

The enhanced monitoring shall include weekly inspections of all emergency engines. Inspections shall entail the same recordkeeping as required by Subpart IIII listed above; i.e., PNS shall record the number of hours the unit operated for emergency purposes, the number of hours the unit operated for non-emergency purposes, and the reason the engine was in operation during each time.

In addition to weekly inspections, emergency engines shall be inspected directly following a power outage. The inspection shall include the same criteria as the weekly inspections.

C. Water Pumps 1-3 (WP1, WP2, and WP3)

PNS has requested to install and operate three distillate fuel-fired superflood pumps. WP 1-3 are equipped with Tier 4 certified engines manufactured in 2018. Each engine has a heat input capacity of 1.6 MMBtu/hr**.**

The 3 diesel superflood pumps are intended to run during submarine docking evolutions which happen only a couple times a year. This mode of operation requires superflood conditions to raise dry dock water level above high tide taking about three hours with all three pumps running to reach superflood height. In addition, they will operate for periodic testing. The superflood pumps will be replaced in 5-6 years, at which time PNS intends to build a new pumping station.

The three superflood pump engines will be certified by the manufacturer as compliant with EPA Tier 4 emission standards for nonroad, compression ignition, internal combustion engines. According to the engine's certification, the engines have the following controls in place: Diesel Oxidation Catalyst, a Diesel Particulate Filter, Ammonia Slip Catalyst, and Selective Catalytic Reduction.

The air pollution control options available for engines of this size include the installation of add-on pollution control devices, the use of clean fuels, and good combustion practices. The technologies listed in the table below have been determined to be potentially available control technologies for emissions from distillate fuel-fired engines of this type and size.

Pollutant	Control Technology
PM / PM_{10} / $PM_{2.5}$	- Add-On Controls (i.e., Particulate Filter) - Combustion Control Technologies
SO_2	- Low Sulfur Fuel
NO_x	- Add-On Controls (i.e., Selective Catalytic Reduction) - Combustion Control Technologies
CO	- Oxidation Catalyst - Combustion Control Technologies
VOC	- Oxidation Catalyst - Combustion Control Technologies

1. BACT Findings

   a. Particulate Matter (PM / PM_{10} / $PM_{2.5}$)

   PM, PM_{10}, and $PM_{2.5}$ from firing distillate fuel is formed from non-combustible material in the fuel as well as from incomplete combustion. Potential control technologies for PM / PM_{10} / $PM_{2.5}$ emissions from diesel engines include add-on controls and good combustion practices. PNS has elected to control the particulate matter emissions from each of the engines by purchasing engines equipped with Diesel Particulate Filters (DPF). With these filters, particulate matter being carried in the engine's exhaust stream is trapped inside the DPF where it is later oxidized during regeneration, thus preventing its release into the atmosphere. The Department finds that the use of EPA certified Tier 4 engines having DPF and the emission limits listed in the following table as being BACT.

   b. Sulfur Dioxide (SO_2)

   The quantity of SO_2 generated from distillate fuel combustion is directly proportional to the sulfur content of the fuel being fired. These non-emergency engines will be licensed to only fire ultra-low sulfur distillate fuel having a maximum sulfur content of 0.0015% by weight. BACT for SO_2 emissions from WP 1-3 shall be the use of distillate fuel with a sulfur content no greater than 0.0015% by weight, installation of an EPA certified Tier 4 stationary engines, and the emission limits listed in the following tables.

   c. Nitrous Oxides (NO_x)

   NO_x emissions from distillate fuel-fired engines are created through the conversion and release of nitrogen bound in the fuel (fuel NO_x) and/or by the thermal combustion process (thermal NO_x). Fuel NO_x is produced from the reaction of fuel-bound nitrogen compounds with oxygen and typically occurs in negligible quantities when distillate fuel is combusted. Thermal NO_x is the primary mechanism of NO_x formation from distillate fuel combustion and occurs when

nitrogen and oxygen molecules in combustion air react together at elevated temperatures and pressures in the combustion chamber.

Technologies for controlling NO_x emissions from distillate fuel-fired engines may include add-on controls such as Selective Catalytic Reduction (SCR), combustion control technologies (such as injection timing retard, air-to-fuel ratio optimization, or cooled intake air), and the combustion of clean fuels. PNS proposes to use engines equipped with add-on controls to control NO_x emissions and comply with Tier 4 emission standards for 40 C.F.R. Part 60, Subpart IIII engines.

Each of these engines will be fitted with an SCR catalyst and an Ammonia Slip Catalyst (ASC), also known as an Ammonia Oxidation Catalyst. An SCR process involves the conversion of NO_x, in the presence of a catalyst and with the aid of a nitrogenous reducing agent, such as ammonia, into elemental nitrogen (N_2) and water. In an SCR process, a gaseous reductant such as ammonia is added to an exhaust gas stream prior to contacting the exhaust gas with the SCR catalyst. The reductant is absorbed onto the catalyst and the NO reduction reaction takes place as the gases pass through or over the catalyzed substrate.

The chemical equation for stoichiometric SCR reactions using ammonia is:

- $4NO+4NH_3+O_2 \rightarrow 4N_2+6H_2O$
- $2NO_2+4NH_3+O_2 \rightarrow 3N_2+6H_2O$
- $NO+NO_2+2NH_3 \rightarrow 2N_2+3H_2O$

Most SCR processes utilize a stoichiometric excess of ammonia in order to maximize the conversion of NO_x. Unreacted ammonia passes through the SCR process (also referred to as "ammonia slip"). To prevent this unreacted ammonia from being discharged to atmosphere, the exhaust stream from the SCR is directed into the Ammonia Slip catalyst, which reduces ammonia to nitrogen and water by reacting it with oxygen in the presence of a catalyst.

The Department finds that BACT for NO_x emissions from the engines shall be the utilization of EPA certified Tier 4 engines equipped with SCR and ASC, the combustion of distillate fuel, and the emission limit listed in the following table.

d. Carbon monoxide (CO) and Volatile Organic Compounds (VOC)

CO and VOC emissions from distillate fuel-fired engines are the result of the incomplete combustion of fuels, specifically when there is insufficient residence time or oxygen available to complete oxidation.

Potential control technologies for CO and VOC emissions from these engines include add-on controls such as catalytic oxidation and combustion control technologies (such as fuel injection timing, air-to-fuel ratios, or cooled intake air).

The engines selected by PNS shall be equipped with Diesel Oxidation Catalysts (DOC), which use a chemical process to reduce carbon monoxide and hydrocarbons as well as PM in the exhaust stream.

The engines are compliant with the requirements of Subpart IIII, therefore, the Department finds that BACT for CO and VOC emissions from the generator engines is the utilization of certified Tier 4 engines equipped with DOC on their exhaust streams, and emission limits listed below.

e. Visible Emissions

Visible emissions from each of WP 1-3 shall not exceed 20% opacity on a six-minute block average basis.

f. Fuel Use Restriction

The fuel fired in WP 1-3 shall be included in the facility's distillate fuel limit of 4,900,000 gallons/year, based on a 12-month rolling total.

2. Emission Limits

The BACT emission limits for WP 1-3 are based on the following:

PM/PM_{10}	- 0.12 lb/MMBtu from 06-096 C.M.R. ch. 103
SO_2	- combustion of distillate fuel with a maximum sulfur content not to exceed 15 ppm (0.0015% sulfur by weight)
NO_x	- 0.4 g/kW-hr (Tier 4 emission standard)
CO	- 0.85 lb/MMBtu from AP-42 dated 10/96
VOC	- 0.09 lb/MMBtu from AP-42 dated 10/96
Opacity	- 06-096 C.M.R. ch. 115, BACT

The BACT emission limits for WP 1-3 are the following:

Unit	PM (lb/hr)	PM_{10} (lb/hr)	$PM_{2.5}$ (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
WP-1	0.19	0.19	0.19	0.01	0.15	1.52	0.56
WP-2	0.19	0.19	0.19	0.01	0.15	1.52	0.56
WP-3	0.19	0.19	0.19	0.01	0.15	1.52	0.56

The hours of operation for the non-emergency engines is unlimited. However, the units are equipped with non-resettable hour meters to calculate fuel consumption to fulfill Emission Inventory requirements and for calculating fuel usage toward the facility fuel limit.

Visible emissions from each of the engines shall not exceed 20% opacity on a six-minute block average basis.

40 C.F.R. Part 60, Subpart IIII

Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, 40 C.F.R. Part 60, Subpart IIII is applicable to the three non-emergency engines listed above since the units were ordered after July 11, 2005, and manufactured after April 1, 2006. [40 C.F.R. § 60.4200] By meeting the requirements of 40 C.F.R. Part 60, Subpart IIII, the units also meet the requirements found in *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*, 40 C.F.R. Part 63, Subpart ZZZZ. [40 C.F.R. § 63.6590(c)]

A summary of currently applicable federal 40 C.F.R. Part 60, Subpart IIII requirements is listed below.

a. Manufacturer Certification Requirement

The engines must be certified by the manufacturer as meeting the emission standards for new nonroad compression ignition engines found in 40 C.F.R. § 60.4201(a). [40 C.F.R. § 60.4204(b) and § 60.4211(c)]

b. Ultra-Low Sulfur Fuel Requirement

The fuel fired in the engines shall not exceed 15 ppm sulfur (0.0015% sulfur). [40 C.F.R. § 60.4207(b)]

c. Operation and Maintenance Requirements

The engines shall be operated and maintained according to the manufacturer's emission-related written instructions. PNS may only change those emission-related settings that are permitted by the manufacturer. [40 C.F.R. § 60.4211(a)(1) and (2)]

d. Owner and Operator Requirements
WP 1-3 shall achieve the emission standards established in § 60.4204 over the entire life of the engines. [40 C.F.R. § 60.4206]

e. DPF Backpressure Monitoring Requirement

The DPF that are installed on the engines to ensure compliance with the emissions standards in § 60.4204(b) shall be equipped with backpressure monitors to notify the owner or operator when the high backpressure limit of the engine is approached. [40 C.F.R. § 60.4209(b)]

f. Recordkeeping Requirements

(1) Whenever a backpressure monitor for a DPF on one of the engines has alerted the owner or operator that the high backpressure limit of an engine has been approached, the owner or operator shall document the event in a log, either written or electronic, detailing the engine it occurred on and the date and time the alert was activated. [06-096 C.M.R. ch. 115, BACT]

(2) Whenever a backpressure monitor for a DPF on one of the engines has alerted the owner or operator that the high backpressure limit of an engine has been approached, the owner or operator shall keep records documenting any corrective action(s) taken to resolve the backpressure event. [40 C.F.R. § 60.4214(c)]

g. Initial Notification Requirement

No initial notification is required under 40 C.F.R. Part 60, Subpart IIII for non-emergency, stationary, compression ignition, internal combustion engines that are rated at less than 2,237 kW. [40 C.F.R. § 60.4214(a)]

D. Incorporation Into the Part 70 Air Emission License

Pursuant to *Part 70 Air Emission License Regulations*, 06-096 C.M.R. ch. 140 § 1(C)(8), for a modification at the facility that has undergone NSR requirements or been processed through 06-096 C.M.R. ch. 115, the source must apply for an amendment to their Part 70 license within one year of commencing the proposed operations, as provided in 40 C.F.R. Part 70.5. An application to incorporate the requirements of this NSR license into the Part 70 air emission license has been submitted to the Department.

E. Annual Emissions

PNS is currently licensed with facility-wide limits of 2.26 billion cubic feet of natural gas per year and 4,900,000 gallons of distillate fuel per year, both based on a 12-month rolling total. Neither of these limits nor the licensed annual emissions based on them will change as a result of the installation and operation of Emergency Generator G43 or WP 1-3.

III. AMBIENT AIR QUALITY ANALYSIS

PNS previously submitted an ambient air quality impact analysis outlined in air emission license A-452-70-A-I (dated March 1, 2000) demonstrating that emissions from the facility, in conjunction with all other sources, do not violate Ambient Air Quality Standards (AAQS). An additional air quality impact analysis is not required for this NSR license.

ORDER

Based on the above Findings and subject to conditions listed below, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards,
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants New Source Review License A-452-77-16-A pursuant to the preconstruction licensing requirements of 06-096 C.M.R. ch. 115 and subject to the specific conditions below.

Severability. The invalidity or unenforceability of any provision of this License or part thereof shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

SPECIFIC CONDITIONS

(1) **Emergency Generator G43**

A. Emergency Generator G43 shall be limited to 100 hours of operation per calendar year, excluding operating hours during emergency situations.
[06-096 C.M.R. ch. 115, BACT]

B. Fuel Use Restriction

The fuel fired in Emergency Generator G43 shall be included in the facility's distillate fuel limit of 4,900,000 gallons/year, based on a 12-month rolling total.

C. Emissions shall not exceed the following:

Unit	Pollutant	lb/MMBtu	Origin and Authority
Emergency Generator G43	PM	0.12	06-096 C.M.R. ch. 103, § (2)(B)(1)(a)

D. Emissions shall not exceed the following [06-096 C.M.R. ch. 115, BACT]:

Unit	PM (lb/hr)	PM_{10} (lb/hr)	$PM_{2.5}$ (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Emergency Generator G43	0.71	0.71	0.71	0.01	18.88	5.02	0.53

E. Visible Emissions

Visible emissions from Emergency Generator G43 shall not exceed 20% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BACT]

F. Emergency Generator G43 shall meet the applicable requirements of 40 C.F.R. Part 60, Subpart IIII, including the following:

1. Manufacturer Certification
   The engine shall be certified by the manufacturer as meeting the emission standards for new nonroad compression ignition engines found in § 60.4202.
   [40 C.F.R. § 60.4205(b)]

2. Ultra-Low Sulfur Fuel
   The fuel fired in the engine shall not exceed 15 ppm sulfur (0.0015% sulfur). Compliance with the fuel sulfur content limit shall be demonstrated by fuel delivery receipts from the supplier, fuel supplier certification, certificate of analysis, or testing of the tank containing the fuel to be fired.
   [40 C.F.R. § 60.4207(b) and 06-096 C.M.R. ch. 115, BACT]

3. Non-Resettable Hour Meter
   A non-resettable hour meter shall be installed and operated on the engine.
   [40 C.F.R. § 60.4209(a)]

4. Annual Time Limit for Maintenance and Testing
   As an emergency engine, the unit shall be limited to 100 hours/year for maintenance checks and readiness testing. Up to 50 hours/year of the 100 hours/year may be used in non-emergency situations (this does not include peak shaving, demand response, or to generate income for a facility by providing power to an electric grid or otherwise supply power as part of a financial arrangement with another entity). These limits are based on a calendar year. Compliance shall be demonstrated by records (electronic or written log) of all engine operating hours.
   [40 C.F.R. § 60.4211(f) and 06-096 C.M.R. ch. 115, BACT]

5. Operation and Maintenance
   The engines shall be operated and maintained according to the manufacturer's emission-related written instructions. PNS may only change those emission-related settings that are permitted by the manufacturer. [40 C.F.R. § 60.4211(a)]

6. Recordkeeping
   PNS shall keep records that include maintenance conducted on the engine and the hours of operation of the engine recorded through its non-resettable hour meter. Documentation shall include the number of hours the unit operated for emergency purposes, the number of hours the unit operated for non-emergency purposes, and the reason the engine was in operation during each time. [40 C.F.R. § 60.4214(b)]

7. Enhanced Monitoring and Recordkeeping for Emergency Engines
   a. The enhanced monitoring shall include weekly inspections of all emergency engines including G43.
   b. Inspections shall entail the same recordkeeping as required by Subpart IIII; i.e., PNS shall record the number of hours the unit operated for emergency purposes, the number of hours the unit operated for non-emergency purposes, and the reason the engine was in operation during each time.
   c. In addition to weekly inspections, engines including G43 shall be inspected directly following a power outage. The inspection shall include the same criteria as the weekly inspections.

(2) **Water Pumps 1-3 (WP 1-3)**

A. WP 1-3 shall have unlimited hours of operation per calendar year.
[06-096 C.M.R. ch. 115, BACT]

B. Fuel Use

1. The amount of fuel fired in WP 1-3 shall be included in the facility's distillate fuel limit of 4,900,000 gallons/year, based on a 12-month rolling total.
2. A non-resettable hour meter shall be installed and operated on each the engine.
3. Hours of operation shall be recorded on a monthly and calendar year basis.

C. Emissions shall not exceed the following [06-096 C.M.R. ch. 115, BACT]:

Unit	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
WP1	0.19	0.19	0.01	0.15	1.52	0.56
WP2	0.19	0.19	0.01	0.15	1.52	0.56
WP3	0.19	0.19	0.01	0.15	1.52	0.56

D. Visible Emissions

Visible emissions from each of WP 1-3 shall not exceed 20% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BACT]

E. The WP 1-3 engines shall meet the applicable requirements of 40 C.F.R. Part 60, Subpart IIII, including the following:

1. Manufacturer Certification Requirement
   The engines must be certified by the manufacturer as meeting the emission standards for new nonroad compression ignition engines found in 40 C.F.R. § 60.4201(a). [40 C.F.R. § 60.4204(b) and § 60.4211(c)]

2. Ultra-Low Sulfur Fuel Requirement
   The fuel fired in the engines shall not exceed 15 ppm sulfur (0.0015% sulfur). [40 C.F.R. § 60.4207(b)]

3. Operation and Maintenance Requirements
   The engines shall be operated and maintained according to the manufacturer's emission-related written instructions. PNS may only change those emission-related settings that are permitted by the manufacturer. [40 C.F.R. § 60.4211(a)(1) and (2)]

4. Owner and Operator Requirements
   WP 1-3 shall achieve the emission standards established in § 60.4204 over the entire life of the engines. [40 C.F.R. § 60.4206]

5. DPF Backpressure Monitoring Requirement
   The DPF that are installed on the engines to ensure compliance with the emissions standards in § 60.4204(b) shall be equipped with backpressure monitors to notify the owner or operator when the high backpressure limit of the engine is approached. [40 C.F.R. § 60.4209(b)]

6. Recordkeeping Requirements
   a. Whenever a backpressure monitor for a DPF on one of the engines has alerted the owner or operator that the high backpressure limit of an engine has been approached, the owner or operator shall document the event in a log, either written or electronic, detailing the engine it occurred on and the date and time the alert was activated. [06-096 C.M.R. ch. 115, BACT]

b. Whenever a backpressure monitor for a DPF on one of the engines has alerted the owner or operator that the high backpressure limit of an engine has been approached, the owner or operator shall keep records documenting any corrective action(s) taken to resolve the backpressure event.
[40 C.F.R. § 60.4214(c)]

DONE AND DATED IN AUGUSTA, MAINE THIS 10th DAY OF January, 2022.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: _____ for _____
MELANIE LOYZIM, COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: September 29, 2021
Date of application acceptance: October 7, 2021

Date filed with the Board of Environmental Protection:

This Order prepared by Lisa P. Higgins, Bureau of Air Quality.

FILED

JAN 10, 2022

State of Maine
Board of Environmental Protection