



DEPARTMENT ORDER

**Portsmouth Naval Shipyard
York County
Kittery, Maine
A-452-77-12-A**

**Departmental
Findings of Fact and Order
New Source Review
NSR #12**

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, the Shipyard) has requested a New Source Review (NSR) license for the installation of one new 225 kW emergency generator to provide backup power at the Shipyard and one new 500 kW non-emergency generator to support homeported Coast Guard vessels at the Shipyard.

C. Emission Equipment

The following equipment is addressed in this NSR license:

Generators

Equipment	Max. Heat Input Capacity (MMBtu/hr)	Max. Firing Rate (gal/hr)	Output (kW)	Fuel Type, % sulfur	Manuf. Date	Install. Date
Emergency Generator G37	2.2	16.1	225	Distillate fuel, 0.0015%	2019	2019
Generator G38	4.9	35.9	500		2019	2020

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.

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 the addition of Emergency Generator G37 and Generator G38 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 year 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 (tpv)	PM₁₀ (tpv)	PM_{2.5} (tpv)	SO₂ (tpv)	NO_x (tpv)	CO (tpv)	VOC (tpv)
Emergency Generator G37	0.013	0.014	0.014	0.01	0.49	0.10	0.04
Generator G38	2.59	2.82	2.82	0.03	3.59	18.75	1.02
Total	2.60	2.83	2.83	0.04	4.08	18.85	1.06

Note: PM₁₀ and PM_{2.5} emissions are higher than PM emissions due to condensable particulate being included in the definitions of PM₁₀ and PM_{2.5} but not in the definition of PM.

3. Emissions Increases

Emissions increases are calculated by subtracting BAE from the PAE. The emission increase is 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	2.60	+2.60	25
PM ₁₀	0	2.83	+2.83	15
PM _{2.5}	0	2.83	+2.83	10
SO ₂	0	0.04	+0.04	40
NO _x	0	4.08	+4.08	40
CO	0	18.85	+18.85	100
VOC	0	1.06	+1.06	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. An application to incorporate the requirements of this NSR license into the Part 70 air emission license shall be submitted no later than 12 months from commencement of operations associated with the addition of Emergency Generator G37 and Generator G38. PNS submitted an

application to incorporate the requirements of this NSR license into the facility's Part 70 air emission license on August 5, 2019.

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 G37

PNS has requested approval to install one new 225 kW (2.2 MMBtu/hr heat input) emergency generator, Emergency Generator G37, to provide backup power at the facility. Emergency Generator G37 is a genset with a John Deere Model 6090HF484 engine and a Kohler brand electrical generator. The unit was manufactured in 2019 and will be installed at the facility in late 2019. Emergency Generator G37 will be licensed to fire distillate fuel with a maximum sulfur content of 0.0015% by weight (15 ppm).

Emergency Generator G37 will meet state and federal regulations and requirements as described below.

1. BACT Findings

a. Particulate Matter (PM and PM₁₀)

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 thus 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 and PM₁₀ emissions from Emergency Generator G37 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 emission limits of 0.26 lb/hr each for PM and PM₁₀.

b. Sulfur Dioxide (SO₂)

For emergency engines that fire distillate fuel and operate for only short periods of time, the use of wet scrubbers or other additional SO₂ add-on control methods would not be economically feasible considering the minimal emissions due to the limited use of the engines. The most practical method for limiting SO₂ 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 SO₂ emissions from Emergency Generator G37 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 an emission limit of 0.01 lb/hr for SO₂.

c. 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.

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 units of this usage (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 G37 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 an emission limit of 9.70 lb/hr for NO_x.

d. 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 engines are generally controlled through proper operation and maintenance of the unit. 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 G37 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 emission limits of 2.09 lb/hr for CO and 0.77 lb/hr for VOC.

e. Visible Emissions

BACT for visible emissions from Emergency Generator G37 shall be the following:

Visible emissions from Emergency Generator G37 shall not exceed 20% opacity on a six-minute block average basis, except during periods of startup, when the unit operator may elect to comply with the following work practice standards in lieu of this visible emission standard:

- (1) Maintain a log (written or electronic) of the date, time, and duration of all unit startups;
- (2) Operate the unit in accordance with the manufacturer's emission-related operating instructions;
- (3) Minimize the engine's time spent at idle and minimize the engine's startup time to a period needed for appropriate and safe loading of the engines, not to exceed 30 minutes, after which time the non-startup emission limitations apply; and
- (4) Operate the unit, including any associated air pollution control equipment, at all times in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Department that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the unit.

f. Fuel Use Restriction

The fuel fired in Emergency Generator G37 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 Emergency Generator G37 are based on the following:

- PM/PM₁₀ - 0.12 lb/MMBtu from 06-096 C.M.R. ch. 115, BACT
- SO₂ - combustion of distillate fuel with a maximum sulfur content not to exceed 15 ppm (0.0015% sulfur by weight)
- NO_x - 4.41 lb/MMBtu from AP-42, Table 3.3-1, dated 10/96
- CO - 0.95 lb/MMBtu from AP-42, Table 3.3-1, dated 10/96
- VOC - 0.35 lb/MMBtu from AP-42, Table 3.3-1, dated 10/96
- Visible Emissions - 06-096 C.M.R. ch. 115, BACT

The BACT emission limits for Emergency Generator G37 are the following:

Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Emergency Generator G37	0.26	0.26	0.01	9.70	2.09	0.77

Visible emissions from Emergency Generator G37 shall not exceed 20% opacity on a six-minute block average basis, except during periods of startup, when the unit operator may elect to comply with the following work practice standards in lieu of this visible emission standard:

- a. Maintain a log (written or electronic) of the date, time, and duration of all unit startups;
- b. Operate the unit in accordance with the manufacturer's emission-related operating instructions;
- c. Minimize the engine's time spent at idle and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply; and
- d. Operate the unit, including any associated air pollution control equipment, at all times in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Department that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the unit.

3. Periodic Monitoring

The fuel used in Emergency Generator G37 shall be included in the facility's distillate fuel limit of 4,900,000 gallons/year based on a 12-month rolling total. Compliance shall be demonstrated by records of total distillate fuel use kept on a monthly and 12-month rolling total basis.

4. 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 Emergency Generator G37 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. 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 III 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 or procedures developed by PNS that are approved by the engine manufacturer. 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 Generator G37. [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 the 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)]

C. Generator G38

PNS has requested approval to install one new 500 kW (4.9 MMBtu/hr heat input) non-emergency generator, Generator G38. Generator G38 will be used to support homeported Coast Guard vessels at the Shipyard. Generator G38 is a genset with a Caterpillar Model C18 engine and a Caterpillar brand electrical generator. The unit was manufactured in 2019 and will be installed at the facility in 2020. Generator G38 will be

licensed to fire distillate fuel with a maximum sulfur content of 0.0015% by weight (15 ppm).

1. BACT Findings

a. Particulate Matter (PM and PM₁₀)

PM and PM₁₀ emissions from fuel combustion are formed from incomplete combustion of fuel and the presence of non-combustible material in the fuel. Emissions of PM and PM₁₀ from distillate fuel-fired engines are generally controlled through proper operation and maintenance of the engine. Additionally, this engine will be subject to 40 C.F.R. Part 60, Subpart IIII, which means it will be required to meet EPA emission standards for non-emergency engines as discussed below and is equipped with a diesel particulate filter to remove soot from the engine's exhaust. Additional PM control technologies, including fabric filters, electrostatic precipitators, wet scrubbers, and cyclones are not generally used for engines and are considered economically infeasible due to the high cost of installing additional PM control and the minimal emissions reduction that would be achieved by such additional control.

The Department finds proper operation and maintenance of the unit, installation of an EPA certified non-emergency stationary engine as required in 40 C.F.R. § 60.4204(b), use of a diesel particulate filter, and emission limits of 0.12 lb/MMBtu and 0.59 lb/hr for PM and 0.59 lb/hr for PM₁₀ to constitute BACT for PM and PM₁₀ emissions from Generator G38.

b. Sulfur Dioxide (SO₂)

Sulfur dioxide is formed from the combustion of sulfur present in the fuel. For distillate fuel-fired engines, the most practical method for limiting SO₂ emissions is the use of ultra-low sulfur fuel such as distillate fuel with a maximum sulfur content no greater than 0.0015% by weight (15 ppm), which is the fuel required for this engine under 40 C.F.R. Part 60, Subpart IIII. Given the low sulfur content of the fuel proposed for this engine and the minimal emissions resulting from the use of that fuel, the use of wet scrubbers or other additional SO₂ add-on control methods would not be economically feasible.

The Department finds use of distillate fuel with a maximum sulfur content no greater than 0.0015% by weight (15 ppm), installation of an EPA certified non-emergency stationary engine as required in 40 C.F.R. § 60.4204(b), and an emission limit of 0.01 lb/hr to constitute BACT for SO₂ emissions from Generator G38.

c. Nitrogen Oxides (NO_x)

Nitrogen oxides consist mainly of nitric oxide (NO) and nitrogen dioxide (NO₂). NO_x emissions from the combustion process are generated through one of three mechanisms: fuel NO_x, thermal NO_x, and prompt NO_x. Fuel NO_x is produced by the oxidation of nitrogen in the fuel. Thermal NO_x is formed in the high temperature area of the engine and increases exponentially with increases in temperature and linearly with increases in residence time. Prompt NO_x is formed from the oxidation of hydrocarbon radicals in the combustion zone and produces an insignificant amount of NO_x.

Control of NO_x emissions from distillate fuel-fired engines can be accomplished through one of two methods: the use of add-on controls such as selective catalytic reduction (SCR) and selective non-catalytic reduction (SNCR), or the use of combustion control techniques which are typically implemented through design features such as electronic engine controls, injection systems, combustion chamber geometry, and turbocharging systems.

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. NSCR is considered technically infeasible due to the high temperatures (1,600°F to 2,100°F) required to maintain a high NO_x control efficiency, which are much higher than the expected exhaust temperature from Generator G38 (882°F to 914°F). SCR is considered technically feasible, and Generator G38 was ordered and supplied with SCR integrated into the engine's design to reduce the unit's NO_x emissions to levels at or below those required for Tier IV engines in 40 C.F.R. Part 60, Subpart IIII.

The Department finds proper operation and maintenance of the unit, installation of an EPA certified non-emergency stationary engine as required in 40 C.F.R. § 60.4204(b), use of a SCR unit, and an emission limit of 0.82 lb/hr to constitute BACT for NO_x emissions from Generator G38.

d. 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 engines may be controlled either through add-on controls such as oxidation catalysts and/or combustion control techniques, such as good combustion practices.

Add-on pollution control technology for the reduction of CO and VOC from combustion sources primarily includes oxidation catalysts, where CO and VOC are oxidized with the aid of a catalyst into carbon dioxide. Oxidation catalysts are commonly used on internal combustion sources such as stationary engines. Use of an oxidation catalyst is considered technically feasible and Generator G38 was ordered and will be supplied with an oxidation catalyst integrated into the engine's design to reduce the unit's CO and VOC emissions to levels at or below those required for Tier IV engines in 40 C.F.R. Part 60, Subpart IIII.

The Department finds proper operation and maintenance of the unit, installation of an EPA certified non-emergency stationary engine as required in 40 C.F.R. § 60.4204(b), use of an oxidation catalyst, and emission limits of 4.28 lb/hr for CO and 0.23 lb/hr for VOC to constitute BACT for CO and VOC emissions from Generator G38.

e. Visible Emissions

BACT for visible emissions from Generator G38 shall be the following:

Visible emissions from Generator G38 shall not exceed 20% opacity on a six-minute block average basis, except during periods of startup, when the unit operator may elect to comply with the following work practice standards in lieu of this visible emission standard:

- (1) Maintain a log (written or electronic) of the date, time, and duration of all unit startups;
- (2) Operate the unit in accordance with the manufacturer's emission-related operating instructions;
- (3) Minimize the engine's time spent at idle and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply; and
- (4) Operate the unit, including any associated air pollution control equipment, at all times in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Department that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the unit.

f. Fuel Use Restriction

The fuel fired in Generator G38 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 Generator G38 are based on the following:

- PM/PM₁₀ - 0.12 based on 06-096 C.M.R. ch. 103, § 2.B.(1)(a)
- SO₂ - combustion of distillate fuel with a maximum sulfur content not to exceed 15 ppm (0.0015% sulfur by weight)
- NO_x - 0.67 g/kW-hr from 40 C.F.R. Part 60, Subpart IIII
- CO - 3.5 g/kW-hr from 40 C.F.R. Part 60, Subpart IIII
- VOC - 0.19 g/kW-hr from 40 C.F.R. Part 60, Subpart IIII
- Visible Emissions - 06-096 C.M.R. ch. 115, BACT

The BACT emission limits for Generator G38 are the following:

Unit	Pollutant	lb/MMBtu
Generator G38	PM	0.12

Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Generator G38	0.59	0.59	0.01	0.82	4.28	0.23

Visible emissions from Generator G38 shall not exceed 20% opacity on a six-minute block average basis, except during periods of startup, when the unit operator may elect to comply with the following work practice standards in lieu of this visible emission standard:

- a. Maintain a log (written or electronic) of the date, time, and duration of all unit startups;
- b. Operate the unit in accordance with the manufacturer's emission-related operating instructions;
- c. Minimize the engine's time spent at idle and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply; and
- d. Operate the unit, including any associated air pollution control equipment, at all times in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Department that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the unit.

3. Periodic Monitoring

The fuel used in Generator G38 shall be included in the facility's distillate fuel limit of 4,900,000 gallons/year based on a 12-month rolling total. Compliance shall be demonstrated by records of total distillate fuel use kept on a monthly and 12-month rolling total basis.

4. 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 Generator G38 since the unit was ordered after July 11, 2005, and manufactured after April 1, 2006. [40 C.F.R. § 60.4200(a)(2)(i)] By meeting the requirements of 40 C.F.R. Part 60, Subpart IIII, the unit also meets 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)]

The requirements of 40 C.F.R. Part 60, Subpart IIII applicable to Generator G38 are as follows:

a. Manufacturer Certification Requirement

Generator G38 shall 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). The unit and its integrated SCR system and diesel oxidation catalyst shall be operated and maintained such that the unit achieves the emission standards over the entire life of the engine. [40 C.F.R. §§ 60.4204(b), 60.4206, and 60.4211(c) and 06-096 C.M.R. ch. 115, BACT]

b. Ultra-Low Sulfur Fuel Requirement

The fuel fired in Generator G38 shall not exceed 15 ppm sulfur (0.0015% sulfur, by weight). [40 C.F.R. § 60.4207(b)]

c. Operation and Maintenance Requirement

Generator G38 and its integrated SCR system and diesel oxidation catalyst 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) and 06-096 C.M.R. ch. 115, BACT]

d. Monitoring Requirement

The diesel particulate filter on Generator G38 shall be installed with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached. [40 C.F.R. § 60.4209(b)]

e. Recordkeeping Requirement

PNS shall keep records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached. [40 C.F.R. § 60.4214(c)]

D. Incorporation Into the Part 70 Air Emission License

Per *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 was submitted to the Department on August 5, 2019.

E. Annual Emissions

PNS is currently licensed to facility-wide limits of 2.26 billion cubic feet of natural gas per year and 4,900,000 gallons of distillate fuel per year, based on a 12-month rolling total. Neither these limits nor the licensed annual emissions based on them will change as a result of the installation of Emergency Generator G37 and Generator G38.

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 ambient 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-452-77-12-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 G37

- A. Emergency Generator G37 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. Emissions shall not exceed the following [06-096 C.M.R. ch. 115, BACT]:

Unit	PM (lb/hr)	PM₁₀ (lb/hr)	SO₂ (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Emergency Generator G37	0.26	0.26	0.01	9.70	2.09	0.77

- C. Visible emissions from Emergency Generator G37 shall not exceed 20% opacity on a six-minute block average basis, except during periods of startup, during which time the facility may elect to comply with the following work practice standards in lieu of this visible emission standard:
 - 1. Maintain a log (written or electronic) of the date, time, and duration of all unit startups;
 - 2. Operate the unit in accordance with the manufacturer's emission-related operating instructions;

3. Minimize the engine's time spent at idle and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply; and
4. Operate the unit, including any associated air pollution control equipment, at all times in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Department that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the unit.

[06-096 C.M.R. ch. 115, BACT]

D. Emergency Generator G37 shall meet all 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 40 C.F.R. § 60.4202. [40 C.F.R. § 60.4205(b)]

2. Ultra-Low Sulfur Distillate Fuel

The distillate fuel fired in the engine shall not exceed 15 ppm sulfur (0.0015% sulfur). Compliance with the fuel sulfur content limit shall be based on fuel records from the supplier documenting the type of fuel delivered and the sulfur content of the fuel. [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

- a. 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]

- b. PNS shall keep records that include maintenance conducted on the engine and the hours of operation of the engine recorded through the 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)]

5. Operation and Maintenance

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

(2) Generator G38

- A. Emissions shall not exceed the following:

<u>Unit</u>	<u>Pollutant</u>	<u>lb/MMBtu</u>	<u>Origin and Authority</u>
Generator G38	PM	0.12	06-096 C.M.R. ch. 103, § 2.B.(1)(a)

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

<u>Unit</u>	<u>PM (lb/hr)</u>	<u>PM₁₀ (lb/hr)</u>	<u>SO₂ (lb/hr)</u>	<u>NO_x (lb/hr)</u>	<u>CO (lb/hr)</u>	<u>VOC (lb/hr)</u>
Generator G38	0.59	0.59	0.01	0.82	4.28	0.23

- C. Visible emissions from Generator G38 shall not exceed 20% opacity on a six-minute block average basis, except during periods of startup, during which time the facility may elect to comply with the following work practice standards in lieu of this visible emission standard:

1. Maintain a log (written or electronic) of the date, time, and duration of all unit startups;
2. Operate the unit in accordance with the manufacturer's emission-related operating instructions;
3. Minimize the engine's time spent at idle and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply; and
4. Operate the unit, including any associated air pollution control equipment, at all times in a manner consistent with safety and good air pollution control practices for

minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Department that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the unit.

[06-096 C.M.R. ch. 115, BACT]

D. Generator G38 shall meet the applicable requirements of 40 C.F.R. Part 60, Subpart IIII, including the following:

1. Manufacturer Certification Requirement

Generator G38 shall 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). The unit and its integrated SCR system and diesel oxidation catalyst shall be operated and maintained such that the unit achieves the emission standards over the entire life of the engine. [40 C.F.R. §§ 60.4204(b), 60.4206, and 60.4211(c) and 06-096 C.M.R. ch. 115, BACT]

2. Ultra-Low Sulfur Fuel Requirement

The fuel fired in Generator G38 shall not exceed 15 ppm sulfur (0.0015% sulfur, by weight). Compliance with the fuel sulfur content limit shall be based on fuel records from the supplier documenting the type of fuel delivered and the sulfur content of the fuel. [40 C.F.R. § 60.4207(b) and 06-096 C.M.R. ch. 115, BACT]

3. Operation and Maintenance Requirement

Generator G38 and its integrated SCR system and diesel oxidation catalyst 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) and 06-096 C.M.R. ch. 115, BACT]

4. Monitoring Requirement

The diesel particulate filter on Generator G38 shall be installed with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached. [40 C.F.R. § 60.4209(b)]

5. Recordkeeping Requirement

PNS shall keep records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached. [40 C.F.R. § 60.4214(c)]

DONE AND DATED IN AUGUSTA, MAINE THIS 11th DAY OF October, 2019.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: 

GERALD D. REID, COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: August 5, 2019

Date of application acceptance: August 15, 2019

Date filed with the Board of Environmental Protection:

This Order prepared by Jonathan E. Rice, Bureau of Air Quality.

