



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION



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PORTSMOUTH NAVAL SHIPYARD)
YORK COUNTY)
KITTERY, MAINE)
A-452-77-7-A 1)
DEPARTMENTAL)
FINDINGS OF FACT AND ORDER)
NEW SOURCE REVIEW (NSR))
NSR #7)

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 M.R.S.A, Section 344, Section 590, 06-096 CMR 115, the Maine Department of Environmental Protection (Department) finds the following facts:

I. REGISTRATION

A. Introduction

FACILITY	Portsmouth Naval Shipyard (PNS)
PART 70 LICENSE NUMBER	A-452-70-C-R
LICENSE TYPE	06-096 CMR 115 New Source Review Amendment
NAIC CODES	336611- Ship Building and Repair
NATURE OF BUSINESS	National Security (Submarine Repair for U.S. Navy)
FACILITY LOCATION	Kittery, Maine

B. Amendment Description

PNS has submitted an application to amend its Air Emissions License per 06-096 CMR 115 New Source Review requirements. The amendment is for the installation and operation of the following emergency generators which will be used to provide emergency support for activities at the Shipyard. The new emergency generator sets are EPA Tier 3 emissions certified.

Emergency Generation Equipment

Equipment	Maximum Capacity (MMBtu/hr)	Power Output (kW)	Diesel Firing Rate (gal/hr)	Stack #
Emergency Generator (G13)	1.90	175	13.8	114
Emergency Generator (G14)	3.95	350	28.6	115
Emergency Generator (G15)	0.51	40	3.7	116
Emergency Generator (G16)	1.90	175	13.8	117

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C. Application Classification

PNS is a major source per the Department's 06-096 CMR 100 regulation. PNS has not requested to increase its current licensed allowed emissions and the installation of the emergency generators will not exceed "Significant Emissions Increase Levels" as defined in the Department's regulations. Therefore, this amendment is determined to be a minor modification under *Minor and Major Source Air Emission License Regulations* 06-096 CMR 115 (as amended) since the changes being made are not addressed or prohibited in the Part 70 air emission license.

Since the emergency generators are not currently licensed, all criteria pollutants are subject to Best Available Control Technology (BACT) requirements. An application to incorporate the requirements of this amendment into the Part 70 air emission license shall be submitted no later than 12 months from commencement of the requested operation.

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 CMR 100 (as amended). 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 CMR 100. BACT is a top-down approach to selecting air emission controls considering economic, environmental and energy impacts.

B. Emergency Generators (G13, G14, G15, G16)

PNS is adding new emergency generators for back-up power to support emergency response in various building of Shipyard. The following units will be installed in 2015:

- Emergency Generator (G13) will be located at Building 43 and is a Caterpillar Diesel Generator Set, Model D175-2 (175 kW) with a maximum design heat input capacity of 1.9 MMBtu/hr and manufactured in 2014.
- Emergency Generator (G14) will be located at Dry Dock #2 and is a Caterpillar Diesel Generator Set, Model C15 (350 kW) with a maximum design heat input capacity of 3.95 MMBtu/hr and manufactured in 2014.

- Emergency Generator (G15) will be located at Building 174 and is a Caterpillar Diesel Generator Set, Model D40-6 (40 kW) with a maximum design heat input capacity of 0.51 MMBtu/hr and manufactured in 2014/2015.
- Emergency Generator (G16) will be located at Building 163 and is a Caterpillar Diesel Generator Set, Model D175-2 (175 kW) with a maximum design heat input capacity of 1.9 MMBtu/hr and manufactured in 2014/2015.

The new engines are planned for installation in 2015 and are all EPA Certified Tier III. The Emergency Generators (G13), (G14), (G15), and (G16) were each ordered after July 11, 2005 and manufactured after April 1, 2006; therefore, the units are subject to New Source Performance Standards (NSPS) 40 CFR Part 60, Subpart III, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*.

06-096 CMR 115 of the Department's regulations requires that a BACT analysis be conducted for the generators. This BACT analysis addresses the five criteria combustion pollutants emitted from the generators: sulfur dioxide (SO₂), nitrogen oxides (NO_x), particulate matter (PM/PM₁₀), carbon monoxide (CO), and volatile organic compounds (VOC).

BACT for PM/PM₁₀

Particulate matter emissions from diesel engines are generally controlled through proper operation and maintenance. To meet BACT, the EPA Certified Tier III and emission limits required in 40 CFR Part 60 Subpart III will be used.

BACT for SO₂

The units addressed in this amendment are considered emergency generators. PNS will accept the hours of operation restriction specified in 40 CFR Part 60, Subpart III. At this low level of operation, the only practical method for limiting sulfur dioxide emissions is through the use of ultra low sulfur fuel. PNS will minimize SO₂ emissions from the generator by using distillate fuel having a sulfur content no greater than 0.0015% by weight to comply with EPA new source performance standards, Subpart III.

BACT for NO_x

Control technologies sometimes used to reduce NO_x emissions from internal combustion engines include selective catalytic reduction (SCR) and fuel injection timing retard (FITR). For a generator used only for emergency back-up, both SCR and FITR would not provide a significant environmental benefit. In fact, each technology could adversely affect the reliability of the generator in power outage situations, and could result in emissions of new pollutants (ammonia from SCR) or increased emissions of current

pollutants (increased CO, PM, and opacity from FITR). PNS proposes to meet BACT for NOx by meeting emissions limits required in 40 CFR Part 60 Subpart III.

BACT for CO and VOC

CO and VOC emissions from internal combustion engines are generally controlled through proper operation and maintenance. Oxidation catalysts have been used on large prime power applications to reduce CO and VOC emission levels in the exhaust. Like SCR technology, use of an oxidation catalyst on a generator of such limited use would not provide a significant environmental benefit, and could adversely affect the reliability of the unit. PNS proposes to meet BACT by meeting CO and VOC emission limits required in 40 CFR Part 60 Subpart III.

A summary of the BACT analysis for (G13, G14, G15, G16) is the following:

1. The emergency generators shall fire only distillate fuel with a maximum sulfur content not to exceed 15 ppm (0.0015%) by weight.
2. The emergency generators shall each be limited to 100 hr/yr of operation for maintenance checks and readiness testing. Compliance shall be demonstrated by a written log of the generator operating hours.
3. The emergency generators shall each be equipped with a non-resettable hour meter.
4. PM emission limits from 40 CFR Part 60 Subpart III are streamlined into the PM BACT emission limits. The PM₁₀ limits are derived from the PM limits.
5. NO_x, CO, and VOC emission limits are based upon 40 CFR Part 60 Subpart III.
6. PNS shall operate and maintain the emergency generators in accordance with the manufacturer's written instructions. PNS shall not change settings that are not approved in writing by the manufacturer.
7. Visible emissions from each emergency generator shall not exceed 20% opacity on a six (6) minute block average, except for no more than two (2) six (6) minute block averages in a continuous 3-hour period.
8. The BACT emission limits for each generator are based on the following:

(G13, G14, & G16)

PM/PM₁₀ - 0.20 g/kW-hr (EPA Certified Tier III & 40 CFR Part 60 Subpart III);
SO₂ - based on firing 0.0015% sulfur distillate fuel;
NO_x - 9.2 g/kW-hr (EPA Certified Tier III & 40 CFR Part 60 Subpart III);
CO - 3.5 g/kW-hr (EPA Certified Tier III & 40 CFR Part 60 Subpart III);
VOC - 1.3 g/kW-hr (EPA Certified Tier III & 40 CFR Part 60 Subpart III);

(G15)

PM/PM₁₀ - 0.40 g/kW-hr (EPA Certified Tier III & 40 CFR Part 60 Subpart III);
SO₂ - based on firing 0.0015% sulfur distillate fuel;

NOx - 9.2 g/kW-hr (EPA Certified Tier III & 40 CFR Part 60 Subpart III);
 CO - 5.0 g/kW-hr (EPA Certified Tier III & 40 CFR Part 60 Subpart III);
 VOC - 1.3 g/kW-hr (06-096 CMR 115, BACT);

Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Emergency Generator (G13)	0.1	0.1	0.1	3.6	1.4	0.5
Emergency Generator (G14)	0.2	0.2	0.1	7.1	2.7	1.0
Emergency Generator (G15)	0.1	0.1	0.1	0.8	0.5	0.1
Emergency Generator (G16)	0.1	0.1	0.1	3.6	1.4	0.5

40 CFR Part 60, Subpart III

The federal regulation 40 CFR Part 60, Subpart III, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (CI ICE)* is applicable to the emergency generators listed above since the units were ordered after July 11, 2005 and manufactured after April 1, 2006. By meeting the requirements of Subpart III, the units also meet the requirements found in the *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*, 40 CFR Part 63, Subpart ZZZZ.

a. Emergency Definition:

Emergency stationary ICE means any stationary reciprocating internal combustion engine that meets all of the following criteria:

- (1) The stationary ICE is operated to provide electrical power or mechanical work during an emergency situation. Examples include stationary ICE used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or stationary ICE used to pump water in the case of fire or flood, etc. There is no time limit on the use of emergency stationary ICE in emergency situations.
- (2) Paragraph (1) above notwithstanding, the emergency stationary ICE may be operated for any combination of the purposes specified below for a maximum of 100 hours per calendar year:
 - (i) 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.

- (ii) Emergency demand response for periods in which the Reliability Coordinator under the North American Electric Reliability Corporation (NERC) Reliability Standard EOP-002-3, Capacity and Energy Emergencies (incorporated by reference, see §63.14), or other authorized entity as determined by the Reliability Coordinator, has declared an Energy Emergency Alert Level 2 as defined in the NERC Reliability Standard EOP-002-3.
 - (iii) Periods where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency.
- (3) Paragraphs (1) and (2) above notwithstanding, emergency stationary ICE may be operated for up to 50 hours per calendar year in non-emergency situations. These 50 hours are counted as part of the 100 hours per calendar year for maintenance checks and readiness testing, emergency demand response, and periods of voltage deviation or low frequency, as provided in paragraph (2) above.

The 50 hours per calendar year for non-emergency situations cannot be used for peak shaving, non-emergency 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, except if the following conditions are met:

- (i) The engine is dispatched by the local balancing authority or local transmission and distribution system operator.
- (ii) The dispatch is intended to mitigate local transmission and/or distribution limitations so as to avert potential voltage collapse or line overloads that could lead to the interruption of power supply in a local area or region.
- (iii) The dispatch follows reliability, emergency operation or similar protocols that follow specific NERC, regional, state, public utility commission or local standards or guidelines.
- (iv) The power is provided only to the facility itself or to support the local transmission and distribution system.
- (v) The owner or operator identifies and records the entity that dispatches the engine and the specific NERC, regional, state, public utility commission or local standards or guidelines that are being followed for dispatching the engine. The local balancing authority or local transmission and distribution system operator may keep these records on behalf of the engine owner or operator.

[40 CFR §60.4211(f) and §60.4219]

b. 40 CFR Part 60, Subpart IIII Requirements:

(1) Manufacturer Certification Requirement

The generators shall be certified by the manufacturer as meeting the emission standards for new nonroad compression ignition engines found in 40 CFR §60.4202. [40 CFR §60.4205(b)]

(2) Ultra-Low Sulfur Diesel Fuel Requirement

The diesel fuel fired in the generators shall not exceed 15 ppm sulfur (0.0015% sulfur), except that any existing diesel fuel purchased (or otherwise obtained) prior to October 1, 2010, may be used until depleted. [40 CFR §60.4207(b)]

(3) Non-Resettable Hour Meter Requirement

A non-resettable hour meter shall be installed and operated on each generator. [40 CFR §60.4209(a)]

(4) Operation and Maintenance Requirements

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

(5) Annual Time Limit for Maintenance and Testing

The generators shall each be limited to 100 hours/year for maintenance checks and readiness testing, emergency demand response, and periods of voltage or frequency deviation from standards. Up to 50 hours/year of the 100 hours/year may be used in non-emergency situations (this does not include peak shaving, non-emergency 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 unless the conditions in §60.4211(f)(3)(i) are met). [40 CFR §60.4211(f)]

(6) Initial Notification Requirement

No initial notification is required for emergency engines. [40 CFR §60.4214(b)]

(7) Recordkeeping

PNS shall keep records that include maintenance conducted on each of the engines and the hours of operation of each engine recorded through the non-

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resettable hour meter. Documentation shall include the hours spent for emergency operation, including what classified the operation as emergency and how many hours spent for non-emergency. If the generator is operated during a period of demand response or deviation from standard voltage or frequency, or to supply power during a non-emergency situation as part of a financial arrangement with another entity as specified in §60.4211(f)(3)(i), PNS shall keep records of the notification of the emergency situation, and the date, start time, and end time of generator operation for these purposes. [40 CFR §60.4214(b)]

Incorporation into the Part 70 Air Emission License

The requirements in this 06-096 CMR 115 New Source Review amendment shall apply to the facility upon amendment issuance. Per *Part 70 Air Emission License Regulations*, 06-096 CMR 140 (as amended), Section 1(C)(8), for a modification that has undergone NSR requirements or been processed through 06-096 CMR 115, the source must then apply for an amendment to the Part 70 license within one year of commencing the proposed operations as provided in 40 CFR Part 70.5.

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 Minor Modification, Air Emission License A-452-77-7-A, subject to the conditions found in Air Emission License A-452-70-C-R, subsequent amendments, and in the following conditions.

Severability. The invalidity or unenforceability of any provision, or part thereof, of this License 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

The following are new conditions:

(1) Emergency Generators (G13, G14, G15, G16)

A. The Emergency Generators (G13, G14, G15, G16) shall each be limited to 100 hours of operation per calendar year, excluding operating hours during emergency situations. [06-096 CMR 115]

B. Emissions shall not exceed the following [06-096 CMR 115, BACT]:

Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Emergency Generator (G13)	0.1	0.1	0.1	3.6	1.4	0.5
Emergency Generator (G14)	0.2	0.2	0.1	7.1	2.7	1.0
Emergency Generator (G15)	0.1	0.1	0.1	0.8	0.5	0.1
Emergency Generator (G16)	0.1	0.1	0.1	3.6	1.4	0.5

C. Visible Emissions

Visible emissions from each emergency generator shall not exceed 20% opacity on a six (6) minute block average, except for no more than two (2) six (6) minute block averages in a continuous 3-hour period. [06-096 CMR 101]

D. The Emergency Generators (G13, G14, G15, G16) shall meet the applicable requirements of 40 CFR Part 60, Subpart IIII, including the following:

1. Manufacturer Certification

The generators shall be certified by the manufacturer as meeting the emission standards for new nonroad compression ignition engines found in §60.4202. [40 CFR §60.4205(b)]

2. Ultra-Low Sulfur Diesel Fuel

The diesel fuel fired in the generators shall not exceed 15 ppm sulfur (0.0015% sulfur), except that any existing diesel fuel purchased (or otherwise obtained) prior to October 1, 2010, may be used until depleted. 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 CFR §60.4207(b) and 06-096 CMR 115, BACT]

3. Non-Resettable Hour Meter

A non-resettable hour meter shall be installed and operated on each of the generators.

[40 CFR §60.4209(a)]

4. Annual Time Limit for Maintenance and Testing

a. Each of the generators shall be limited to 100 hours/year for maintenance checks and readiness testing, emergency demand response, and periods of voltage or frequency deviation from standards. Up to 50 hours/year of the 100 hours/year may be used in non-emergency situations (this does not include peak shaving, non-emergency 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 unless the conditions in §60.4211(f)(3)(i) are met). These limits are based on a calendar year. Compliance shall be demonstrated by a written log of the generator operating hours. [40 CFR §60.4211(f) and 06-096 CMR 115, BACT]

b. PNS shall keep records that include maintenance conducted on each of the generators and the hours of operation of the engines recorded through the non-resettable hour meter. Documentation shall include the hours spent for emergency operation, including what classified the operation as emergency and how many hours spent for non-emergency. If the generator is operated during a period of demand response or deviation from standard voltage or frequency, or to supply power during a non-emergency situation as part of a financial arrangement with another entity as specified in §60.4211(f)(3)(i), then PNS shall keep records of the notification of the emergency situation, and the date, start time, and end time of generator operation for these purposes.

5. Operation and Maintenance

Each of the generators 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 CFR §60.4211(a)]

6. Recordkeeping

PNS shall keep records that include maintenance conducted on the engines and the hours of operation of the engines recorded through the non-resettable hour meter. Documentation shall include the hours spent for emergency operation,

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including what classified the operation as emergency and how many hours spent for non-emergency. If the generator is operated during a period of demand response or deviation from standard voltage or frequency, or to supply power during a non-emergency situation as part of a financial arrangement with another entity as specified in §60.4211(f)(3)(i), PNS shall keep records of the notification of the emergency situation, and the date, start time, and end time of generator operation for these purposes. [40 CFR §60.4214(b)]

- (2) PNS shall notify the Department within 48 hours and submit a report to the Department on a quarterly basis if a malfunction or breakdown in any component causes a violation of any emission standard (38 M.R.S.A. §605-C).
- (3) PNS shall submit an application to incorporate this amendment into the Part 70 air emission license no later than 12 months from commencement of the requested operation. [06-096 CMR 140, Section 1(C)(8)]

DONE AND DATED IN AUGUSTA, MAINE THIS 22 DAY OF December, 2014.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Marc Allen Robert Corse for
PATRICIA W. AHO, COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: October 14, 2014

Date of application acceptance: October 20, 2014

Date filed with the Board of Environmental Protection:

This Order prepared by Edwin Cousins, Bureau of Air Quality

