



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAUL R. LEPAGE
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University of Maine
Penobscot County
Orono, Maine
A-204-77-4-A

Departmental
Findings of Fact and Order
New Source Review
Amendment #4

After review of the air emissions license amendment 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., §344 and §590, the Department finds the following facts:

I. REGISTRATION

A. Introduction

FACILITY	University of Maine (UMaine)
CURRENT PART 70 LICENSE NUMBER	A-204-70-F-R
LICENSE TYPE	06-096 CMR 115, Minor Modification
NAICS CODES	611310
NATURE OF BUSINESS	Educational Facility
FACILITY LOCATION	Orono, Maine
NSR AMENDMENT ISSUANCE DATE	July 19, 2011

B. Amendment Description

UMaine has submitted a New Source Review (NSR) application for the replacement of the Alford Arena Generator.

C. Emission Equipment

The following new equipment is addressed in this air emission license:

Emergency Generator

<u>Equipment</u>	<u>Max. Design Capacity (MMBtu/hr)</u>	<u>Power Output (kW)</u>	<u>Firing Rate (gal/hr)</u>	<u>Fuel Type, % sulfur</u>
Alford Arena Generator	3.0	300	22.2	Diesel, 0.0015%

Note: The new Alford Arena Generator replaces the existing Alford Arena Generator (rated at 2.0 MMBtu firing #2 fuel oil).

D. Application Classification

The amendment application for the replacement emergency generator is considered a minor modification, based on calculated emissions using a 500 hour per year operational limit. Total criteria pollutants for the generator are under 1.0 ton/year which is well below the "Significant Emission Increase Levels" as given in *Definitions Regulation*, 06-096 CMR 100 (as amended).

<u>Pollutant</u>	<u>Future Generator Licensed Allowed (TPY)</u>	<u>Sig. Level</u>
PM	0.03	25
PM ₁₀	0.03	15
SO ₂	0.001	40
NO _x	0.72	40
CO	0.17	100
VOC	0.02	40

This amendment application has been processed under *Major and Minor Source Air Emission License Regulations*, 06-096 CMR 115 (as amended) since the changes being made are not prohibited in the Part 70 air emission license. UMaine will need to apply to incorporate this amendment into the Part 70 air emission license no later than 12 months from commencement of the operation of the generator.

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 06-096 CMR 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 CMR 100. BACT is a top-down approach to selecting air emission controls considering economic, environmental and energy impacts.

B. Alfond Arena Emergency Generator

The Alfond Arena Emergency Generator, rated at 3.04 MMBtu/hr, is a replacement of the previous Alfond Arena Generator (2.0 MMBtu/hr firing #2 fuel oil). The new Kohler generator with a John Deere 300 kW engine will fire diesel fuel with a maximum sulfur content of 0.0015%.

The previous generator was licensed for back-up usage, as well as peak loading/load shedding under certain scenarios. The new Alfond Arena Generator will only be operated as a back-up unit in emergency situations, for periodic maintenance, and for readiness testing with a 500 hours/year limit.

1. BACT Findings

The BACT emission limits for the generator are based on the following:

- PM/PM₁₀ – 0.10 lb/hr, based on manufacturer's data. This calculates to 0.03 lb/MMBtu which is below the limit in 06-096 CMR 103.
- SO₂ – 0.005 lb/hr, based on firing 0.0015% sulfur
- NO_x – 2.89 lb/hr, based on manufacturer's data
- CO – 0.68 lb/hr, based on manufacturer's data
- VOC – 0.08 lb/hr, based on manufacturer's data
- Opacity – Visible emissions from the generator shall not exceed 20% opacity on a 6 minute block average, except for no more than two (2) six (6) minute block averages in a 3 hour period.

The replacement Alfond Arena Emergency Generator shall be limited to 500 hours of operation a year, based on a 12 month rolling total. UMaine shall keep records of the hours of operation of the unit.

2. 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* is applicable to the replacement Alfond Arena Generator since the unit was ordered after July 11, 2005 and manufactured after April 1, 2006.

Emergency Definition:

Emergency stationary internal combustion engine is defined in 40 CFR Part 60, Subpart III as any stationary internal combustion engine whose operation is limited to emergency situations and required testing and maintenance. 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. Stationary CI ICE used to supply power to an electric grid or that supply power as part of a financial arrangement with another entity are not considered to be emergency engines.

40 CFR Part 60, Subpart III Requirements:

The generator 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)] Note that an EPA certification of conformity for the John Deere Power Systems engine was submitted with the application.

The diesel fuel fired in the generator shall not exceed 15 ppm sulfur (0.0015% sulfur). [40 CFR §60.4207(b)]

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

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

The generator shall be limited to 100 hours/year for maintenance and testing. Up to 50 hours/year of the 100 hours/year may be used in non-emergency situations (this does not include peak shaving or generating income or a financial arrangement with another entity). [40 CFR §60.4211(f)]

C. Annual Emissions

UMaine shall be restricted to the following annual emissions from the facility based on the limits for the most recently licensed proposed steam plant project (once landfill gas is initially delivered to the steam plant), 8760 hours/year operation each for the two Global Science Center Boilers, and 500 hours/year for each of the generators:

Annual Facility Tons/year
(used in the annual license fee calculation)

	PM	PM ₁₀	SO ₂	NO _x	CO	VOC
Steam Plant Boilers #5, #6, #7, #8	32.2	21.2	135.8	100.5	116.3	26.3
Global Science Ctr Boilers (total of two)	4.6	4.6	-	14.0	11.4	0.4
Portable Electric Generator	0.1	0.1	0.05	2.0	0.5	0.03
Hitchner Hall Generator	0.1	0.1	0.05	2.3	1.0	0.03
Aubert Hall Generator	0.1	0.1	0.04	2.3	0.7	0.04
Barrows Hall Generator	0.1	0.1	0.04	2.3	0.7	0.04
Recreation Center Generator	0.1	0.1	0.05	1.5	0.2	0.03
Hilltop Commons Generator	0.2	0.2	0.07	2.9	0.2	0.03
Collins Center Generator	0.12	0.12	0.05	1.30	0.37	0.02
Alfond Generator	0.03	0.03	0.001	0.72	0.17	0.02
Printing Services						2.0
TOTALS	37.65	26.65	136.15	129.82	131.54	28.94

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, and
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License A-204-77-4-A pursuant to the preconstruction licensing requirements of 06-096 CMR 115 and subject to the standard and special conditions below.

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.

(1) **Alfond Arena Emergency Generator - new**

- A. UMaine may replace the previously licensed Alfond Arena Generator with a new diesel Alfond Arena Emergency Generator (3.04 MMBtu/hr, 300 kW). [06-096 CMR 115]
- B. The Alfond Arena Emergency Generator is limited to 500 hours per year total operation, based on a 12 month rolling total. Compliance shall be demonstrated by a written or electronic log of all generator operating hours. [06-096 CMR 115]
- C. Emissions from the generator shall not exceed the following:

Pollutant	lb/MMBtu	Origin and Authority
PM	0.03	06-096 CMR 115, BACT

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

PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
0.10	0.10	0.005	2.89	0.68	0.08

- E. Visible emissions from the 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]
- F. The Alfond Arena Emergency Generator shall meet the applicable requirements of 40 CFR Part 60, Subpart III, including the following:
 - 1. The generator 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. The diesel fuel fired in the generator 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 CFR §60.4207(b) and 06-096 CMR 115]
 - 3. A non-resettable hour meter shall be installed and operated on the generator. [40 CFR §60.4209(a)]

4. The generator shall be limited to 100 hours/year for maintenance and testing. Up to 50 hours/year of the 100 hours/year may be used in non-emergency situations (this does not include peak shaving or generating income or a financial arrangement with another entity). These limits are based on a 12 month rolling total. Compliance shall be demonstrated by a written or electronic log of all generator operating hours. [40 CFR §60.4211(f) and 06-096 CMR 115]
 5. The generator shall be operated and maintained according to the manufacturer's written instructions or procedures developed by UMaine that are approved by the engine manufacturer. UMaine may only change those settings that are permitted by the manufacturer. [40 CFR §60.4211(a)]
- (2) UMaine 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 2(J)(2)(c)]

DONE AND DATED IN AUGUSTA, MAINE THIS *19th* DAY OF *July*, 2011.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: *Melanie L. Fox*
PATRICIA W. FOX, ACTING COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: April 14, 2011

Date of application acceptance: April 28, 2011

Date filed with the Board of Environmental Protection:

This Order prepared by Kathleen E. Tarbuck, Bureau of Air Quality.



