



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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GOVERNOR

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COMMISSIONER

University of New England
York County
Biddeford, Maine
A-487-71-M-A (SM)

Departmental
Findings of Fact and Order
Air Emission License
Amendment #1

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

1. The University of New England (UNE) was issued Air Emission License A-487-71-L-R/A on 1/30/2009, permitting the operation of emission sources associated with their university complex.
2. UNE has requested an amendment to their license in order to add three new emergency generators (#5, #6 and #7), and to amend the operating hour limit on the existing generators (#1, #2, #3 and #4) to 340 hours each per year.

B. Emission Equipment

The following equipment is addressed in this air emission license:

Electrical Generation Equipment

<u>Equipment</u>	<u>Power Output</u> (kW)	<u>Heat Input</u> (MMBtu/hr)	<u>Firing Rate</u> (gal/hr)	<u>Fuel Type,</u> <u>% sulfur</u>
Generator #1 (Marine Science)	600	6.14	44.8	Diesel, 0.05%
Generator #2 (Student Center)	250	2.63	19.2	Diesel, 0.05%
Generator #3 (Pickus)	125	1.56	11.4	Diesel, 0.05%
Generator #4	100	2.18	15.9	Diesel, 0.05%
Generator #5	132	1.26	9.16	Diesel, 0.05%
Generator #6	500	5.12	37.4	Diesel, 0.05%
Generator #7	500	4.7	34.4	Diesel, 0.05%

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C. Application Classification

The modification of a minor source is considered a major modification based on whether or not expected emission increases exceed the "Significant Emission Levels" as defined in the Department's regulations. The emission increases are determined by subtracting the current licensed emissions preceding the modification from the maximum future licensed allowed emissions, as follows:

<u>Pollutant</u>	<u>Current License</u> (TPY)	<u>Future License</u> (TPY)	<u>Net Change</u> (TPY)	<u>Sig. Level</u>
PM	3.8	4.0	0.2	100
PM ₁₀	3.8	4.0	0.2	100
SO ₂	18.9	19.3	0.4	100
NO _x	22.3	24.8	2.5	100
CO	4.1	4.9	0.8	100
VOC	0.9	1.0	0.1	50

This modification is determined to be a minor modification and has been processed as such.

With the fuel limit on the boilers, and the operating-hours restriction on the emergency generators, the facility is licensed below the major source thresholds and is considered a synthetic minor.

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 (last amended December 24, 2005). 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 *Definitions Regulation*, 06-096 CMR 100 (last amended December 24, 2005). BACT is a top-down approach to selecting air emission controls considering economic, environmental and energy impacts.

B. Emergency Generators

UNE operates a total of seven emergency diesel generators. Four of these generators are currently on site, #1, #2, #3 and #4, and three, #5, #6 and #7, are addressed in this amendment.

Emergency Generator is defined as any stationary internal combustion engine whose operation is limited to emergency situations and required testing and maintenance. Examples include stationary engines 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 engines used to pump water in the case of fire or flood. Stationary engines 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.

Existing Generator #1 was manufactured and installed prior to July 11, 2005, therefore is not subject to New Source Performance Standards 40 CFR Part 60 Subpart III, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*. Existing Generators #2, #3 and #4 were manufactured and installed in 2008, and therefore are subject to NSPS.

New Emergency Generator #5 is a John Deere, Tier 2 Certified, 132 kW unit firing 9.2 gallons per hour of diesel fuel. New Emergency Generator #6 is a Caterpillar C15 ATAAC, Tier 2 Certified, 500 kW diesel engine firing 37.4 gallons per hour. New Emergency Generator #7 is a Cummins Model 500 DFEK, Tier 2 Certified, 500 kW diesel engine, firing 34.4 gallons per hour.

Emergency Generators #5, #6 and #7 were ordered after July 11, 2005 and manufactured after April 1, 2006. Therefore, these generators are subject to New Source Performance Standards 40 CFR Part 60, Subpart III, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*.

A summary of the BACT analysis for Emergency Generators #5, #6 and #7 is the following:

1. The Emergency Generators shall fire only diesel fuel with a maximum sulfur content not to exceed 500 ppm.
2. Beginning October 1, 2010, the Emergency Generators shall fire only diesel fuel with a maximum sulfur content not to exceed 15 ppm.
3. Emergency Generators, #1 - #7 inclusive, shall each be limited to 100 hours per year of operation for maintenance checks and readiness testing. The Emergency Generators shall each be limited to 340 hours per year of total operation. Both of these limits are based on a 12-month rolling total. Compliance shall be demonstrated by a written log of all generator operating hours.
4. The Emergency Generators shall each be equipped with a non-resettable hour meter.
5. 06-096 CMR 103 regulates PM emission limits. The PM₁₀ limits are derived from the PM limits.
6. NO_x, CO, and VOC emission limits are based upon AP-42 data dated 10/96.
7. UNE shall operate and maintain the Emergency Generators in accordance with the manufacturer's written instructions. UNE shall not change settings that are not approved in writing by the manufacturer.
8. Visible emissions from the Emergency Generators shall each 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.

C. Annual Emissions

UNE shall be restricted to the following annual emissions, based on a 12-month rolling total and the following limits:

- Total fuel use for all boilers combined shall not exceed 230,000 gallons per year of ASTM compliant #2 fuel oil with a maximum sulfur content not to exceed 0.5% by weight;
- Total fuel use for all boilers combined shall not exceed 90,000 gallons per year of #4 fuel oil with a maximum sulfur content not to exceed 1.5% by weight;
- Total fuel use for all boilers combined of 510,000 gallons per year of propane.
- Each Emergency Generator, #1 - #7 inclusive, shall be limited to 340 hours per year of operation, based on a 12-month rolling total.

**Total Licensed Annual Emissions for the Facility
 Tons per Year**
 (Used to calculate the annual license fee)

	PM	PM ₁₀	SO ₂	NO _x	CO	VOC
Boilers, #2 Fuel	1.3	1.3	8.1	4.8	0.6	0.1
Boilers, #4 Fuel	0.8	0.8	10.4	2.0	0.2	0.1
Boilers, Propane	1.2	1.2	0.1	3.6	0.5	0.1
Emergency Gen. #1	0.2	0.2	0.1	3.3	0.9	0.1
Emergency Gen. #2	0.1	0.1	0.1	2.0	0.4	0.1
Emergency Gen. #3	0.1	0.1	0.1	1.2	0.3	0.1
Emergency Gen. #4	0.1	0.1	0.1	1.6	0.4	0.1
Emergency Gen. #5	0.1	0.1	0.1	0.9	0.2	0.1
Emergency Gen. #6	0.1	0.1	0.1	2.8	0.7	0.1
Emergency Gen. #7	0.1	0.1	0.1	2.6	0.7	0.1
Total TPY	4.0	4.0	19.3	24.8	4.9	1.0

III. AMBIENT AIR QUALITY ANALYSIS

According to 06-096 CMR 115, the level of air quality analyses required for a renewal source shall be determined on a case-by case basis. Modeling and monitoring are not required if the total emissions of any pollutant released do not exceed the following:

Pollutant	Tons/Year
PM	25
PM ₁₀	25
SO ₂	50
NO _x	100
CO	250

Based on the total facility licensed emissions, UNE is below the emissions level required for modeling and monitoring.

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 Air Emission License A-487-71-M-A subject to the conditions found in Air Emission License A-487-71-M-R/A and in the following conditions:

The following Specific Condition (17) shall replace the existing Specific Condition (17).

SPECIFIC CONDITIONS

(17) Emergency Generators

- A. The Emergency Generators, #1 - #7 inclusive, shall fire only diesel fuel with a maximum sulfur content not to exceed 500 ppm. [40 CFR 60.4207(a)]
- B. Beginning October 1, 2010, the Emergency Generators, #1 - #7 inclusive, shall fire only diesel fuel with a maximum sulfur content not to exceed 15 ppm. [40 CFR 60.4207(b)]
- C. The Emergency Generators shall each be limited to 100 hours per year of operation for maintenance checks and readiness testing. The Emergency Generators shall each be limited to 340 hours per year of total operation. Both of these limits are based on a 12-month rolling total. Compliance shall be demonstrated by a written log of all generator operating hours. None of the Emergency Generators shall be operated under any demand response program offered by ISO New England. [40 CFR 60.4211(E) and 06-096 CMR 115, BACT]

- D. The Emergency Generators shall each be equipped with a non-resettable hour meter. [40 CFR 60.4209(a)]
- E. Emissions shall not exceed the following:

Emission Unit	Pollutant	lb/MMBtu	Origin and Authority
Emer. Gen. #1	PM	0.12	06-096 CMR 103(2)(B)(1)(a)
Emer. Gen. #6	PM	0.12	06-096 CMR 103(2)(B)(1)(a)
Emer. Gen. #7	PM	0.12	06-096 CMR 103(2)(B)(1)(a)

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

Emission Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Emer. Gen. #1	0.74	0.74	0.32	19.65	5.22	0.55
Emer. Gen. #2	0.32	0.32	0.14	11.60	2.50	0.92
Emer. Gen. #3	0.19	0.19	0.08	6.88	1.48	0.55
Emer. Gen. #4	0.26	0.26	0.11	9.61	2.07	0.76
Emer. Gen. #5	0.15	0.15	0.06	5.53	1.19	0.44
Emer. Gen. #6	0.61	0.61	0.26	16.38	4.35	0.46
Emer. Gen. #7	0.57	0.57	0.24	15.10	4.01	0.42

- G. Emergency Generators #2, #3, #4, #5, #6 and #7 are subject to PM, CO, and NO_x + VOC emission requirements set forth in 40 CFR 60, Subpart III. Compliance with these emission requirements shall be demonstrated by certification from the manufacturer that this engine class meets the appropriate Tier standards. [40 CFR 60, Subpart III]
- H. UNE shall operate and maintain the Emergency Generators in accordance with the manufacturer's written instructions. UNE shall not change settings that are not approved in writing by the manufacturer. [40 CFR 60.4211(a)]

- I. Visible emissions from the Emergency Generators shall each 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]

DONE AND DATED IN AUGUSTA, MAINE THIS 18th DAY OF August, 2010.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: *David P. Littell*
DAVID P. LITTELL, COMMISSIONER

The term of this license shall be five (5) years from the signature date above.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 3/26/2010

Date of application acceptance: 3/29/2010

Date filed with the Board of Environmental Protection:

This Order prepared by N. Lynn Cornfield, Bureau of Air Quality.

