



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN ELIAS BALDACCI
GOVERNOR

DAVID P. LITTELL
COMMISSIONER

**MAINE MARITIME ACADEMY
HANCOCK COUNTY
CASTINE, MAINE
A-78-71-L-R/A (SM)**

**DEPARTMENTAL
FINDINGS OF FACT AND ORDER
AIR EMISSION LICENSE**

After review of the air emissions 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 and Section 590, the Department finds the following facts:

I. REGISTRATION

A. Introduction

Maine Maritime Academy (MMA) of Castine, Maine has applied to renew their Air Emission License permitting the operation of emission sources associated with their four-year state college. MMA has also requested a minor amendment to their license in order to include a back-up diesel generator and increase its #2 fuel oil limit from 200,000 gallons per year to 250,000 gallons per year.

B. Emission Equipment

The following equipment at MMA is addressed in this air emission license:

Fuel Burning Equipment

Equipment	Maximum Capacity (MMBTU/hr)	Fuel Type, %Sulfur	Maximum Firing Rate (i.e. gal/hr)	Date of Manufacture	Stack Height (ft)
Boiler #1	12.6	#4 oil 1.5% S	84	1970	56
Boiler #2	8.4	#2 oil *	56	1966	42
Boiler #3	12.6	#4 oil 1.5% S	84	1969	56
Boiler #4	2.9	#2 oil *	20	unknown	56
Boiler #5	12.6	#2 oil *	84	1972	28
Boiler #6	1.2	#2 oil *	8.2	unknown	42
Boiler #8	5.3	#2 oil *	35	1983	28
Boiler #9	3.5	#2 oil *	29.5	2004	41
Boiler #10	3.5	#2 oil *	29.5	2004	41

* MMA will use fuel which meets the criteria in ASTM D396 for #2 fuel oil

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Electrical Generation Equipment

Equipment	Power Output (kW)	Firing Rate (gal/hr)	Date of Manufacture	Fuel Type, % sulfur	Stack #
Generator (Curtis) #1A	1.7	12.4	1973	Diesel, 0.05%	9
Generator (Dock) #2A	1.2	8.8	1998	Diesel, 0.05%	10
Generator #3A	1.0	7.0	1995	Diesel, 0.05%	12
Generator #4A *	0.6	4.6	1995	Diesel, 0.05%	13

* new emission unit

C. Application Classification

MMA plans to install a new back-up diesel generator and requests an increase in the #2 fuel oil limit. A modification at 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 for the facility's proposed changes are determined by the maximum future license allowed emissions, as follows:

<u>Pollutant</u>	<u>Max. Future License (TPY)</u>	<u>Sig. Level</u>
PM	3.7	100
PM ₁₀	3.7	100
SO ₂	35.3	100
NO _x	18.5	100
CO	2.3	100
VOC	0.7	50

Therefore, the modification is minor for all criteria pollutants. The license is considered to be a renewal of current licensed emission units along with a minor modification to install a new back-up diesel generator and increase the #2 fuel oil limit from 200,000 gallons per year to 250,000 gallons per year (on a 12-month rolling total basis). The new emission unit is subject to Best Available Control Technology (BACT).

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 06-096 CMR 100 of the Department regulations. Separate control requirement categories exist for new and existing equipment as well as for those sources located in designated non-attainment areas.

B. New Equipment

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 of the Department's regulations. BACT is a top-down approach to selecting air emission controls considering economic, environmental and energy impacts.

Generator #4A

MMA has requested to install a new back-up diesel generator (Generator #4A rated at 65 kw) for emergency purposes. An 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.

Generator #4A was ordered after July 11, 2005 and however was manufactured prior to April 1, 2006. Therefore, Generator #4A is not subject to New Source Performance Standards 40 CFR Part 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

A summary of the BACT analysis for Generator #4A is the following:

1. The emergency generator shall fire only diesel fuel with a maximum sulfur content not to exceed 0.05% by weight.

2. The emergency generator shall be limited to 500 hr/yr of operation based on a 12 month rolling total. Compliance shall be demonstrated by a written of generator operating hours.
3. 06-096 CMR 106 regulates fuel sulfur content, however in this case a BACT analysis for SO₂ determined a more stringent limit of 0.05% was appropriate and shall be used.
4. 06-096 CMR 103 regulates PM emission limits. The PM₁₀ limits are derived from the PM limits.
5. NO_x, CO, and VOC emission limits are based upon AP-42 data dated 10/96.
6. Visible emissions from the emergency generator 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. Existing Equipment

BPT for existing emissions equipment means that method which controls or reduces emissions to the lowest possible level considering:

- the existing state of technology;
- the effectiveness of available alternatives for reducing emissions from the source being considered; and
- the economic feasibility for the type of establishment involved.

Boilers # 1 and #3

Boilers #1 and #3 each have a maximum design heat input capacity of 12.6 MMBtu/hr with a maximum firing rate of 84 gallons/hour. Both boilers are roughly the same age, manufactured between 1969 and 1970, and both fire #4 fuel oil. The boilers are used to supply heat and hot water for the facility's buildings and dorms. The regulated pollutants emitted from these boilers are particulate matter (PM), particulate matter with a diameter smaller than ten microns (PM₁₀), sulfur dioxide (SO₂), nitrogen oxides (NO_x), carbon monoxide (CO), and volatile organic compounds (VOC). Based on the size of the boilers, the Department determines that any additional pollution control devices would be economically unjustified. Therefore, BPT for boilers #1 and #3 shall limit the #4 fuel use to 250,000 gallons/year, based on a 12-month rolling total, with the fuel sulfur content not to exceed 1.5% by weight.

NSPS requirements

Boilers #1 and #3 were installed between 1969 and 1970 and are therefore not subject to the New Source Performance Standards (NSPS) Subpart Dc for steam generating units greater than 10 MMBtu/hr manufactured after June 9, 1989.

A summary of the BPT analysis for Boiler #1 (12.6 MMBtu/hr) and Boiler #3 (12.6 MMBtu/hr) is the following:

1. The total #4 fuel use for the facility shall not exceed 250,000 gal/year, based on a 12 month rolling total, with a maximum sulfur content not to exceed 1.5% by weight.
2. 06-096 CMR 106 regulates fuel sulfur content, however in this case a BPT analysis for SO₂ determined a more stringent limit of 1.5% was appropriate and shall be used.
3. 06-096 CMR 103 regulates PM emission limits. The PM₁₀ limits are derived from the PM limits.
4. NO_x emission limits are based on data from similar #4 fired boilers of this size and age.
5. CO and VOC emission limits are based upon AP-42 data dated 9/98.
6. Visible emissions from the boilers shall not exceed 30% opacity on a six (6) minute block average, except for no more than two (2), six (6) minute block averages in a 3-hour period.

Boilers #2, #4, #5, #6, #8, #9, and #10

Boilers #2, #4, #5, #6, #8, #9, and #10 all fire #2 fuel oil with a maximum fuel sulfur content of 0.5% by weight. The boilers are used to supply heat and hot water for the facility's buildings and dorms. All boilers were manufactured and installed prior to 1989 and are therefore not subject to New Source Performance Standards (NSPS) Subpart Dc for steam generating units. MMA has requested to increase the #2 fuel oil limit from 200,000 to 250,000 gallons per year.

A summary of the BPT analysis for Boiler #2, #4, #5, #6, #8, #9, and #10 is the following:

1. The total #2 fuel use for the facility shall not exceed 250,000 gal/year, based on a 12 month rolling total.
2. 06-096 CMR 106 regulates fuel sulfur content, however in this case a BPT analysis for SO₂ determined a more stringent limit. BPT will be use of fuel which meets the criteria in ASTM D396 for #2 fuel oil.
3. 06-096 CMR 103 regulates PM emission limits. The PM₁₀ limits are derived from the PM limits.
4. NO_x emission limits are based on data from similar #2 fired boilers of this size and age.
5. CO and VOC emission limits are based upon AP-42 data dated 9/98.
6. Visible emissions from each of the boilers shall not exceed 20% opacity on a six (6) minute block average, except for no more than one (1), six (6) minute block average in a 3-hour period.

Emergency Generators

MMA operates three existing back up emergency diesel generators. The generators are rated at 1.7 MMBtu/hr, 1.2 MMBtu/hr, and 1.0 MMBtu/hr. The existing generators will follow the Bureau's guidance document for Emergency Stationary Internal Combustion Engines (SICE).

Back-up generators are only to be operated for maintenance purposes and for situations arising from sudden and reasonably unforeseeable events beyond the control of the source. Back-up generators are not to be used for prime power when reliable offsite power is available.

A summary of the BPT analysis for the existing unit Generator #1A, #2A, and #3A is the following:

1. The emergency generators shall fire only diesel fuel with a maximum sulfur content not to exceed 0.05% by weight.
2. The emergency generators shall each be limited to 500 hr/yr of operation based on a 12 month rolling total. Compliance shall be demonstrated by a written log of all generator operating hours.
3. 06-096 CMR 106 regulates fuel sulfur content, however in this case a BPT/BACT analysis for SO₂ determined a more stringent limit of 0.05% was appropriate and shall be used.
4. 06-096 CMR 103 regulates PM emission limits. The PM₁₀ limits are derived from the PM limits.
5. NO_x, CO, and VOC emission limits are based upon AP-42 data dated 10/96.
6. 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.

D. Annual Emissions

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

Total Licensed Annual Emission for the Facility
Tons/year
 (used to calculate the annual license fee)

	PM	PM ₁₀	SO ₂	NO _x	CO	VOC
Boilers #1 and #3	3.8	3.8	26.4	7.0	0.6	0.1
Boilers #2, #4, #5, #6, #8, #9, & #10	2.1	2.1	8.8	7.0	0.6	0.1
Emrg Diesel generators 1A, 2A, 3A, & 4A	0.2	0.2	0.1	4.5	1.1	0.5
Total TPY	6.1	6.1	35.3	18.5	2.3	0.7

III. **AMBIENT AIR QUALITY ANALYSIS**

According to the Maine Regulations 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 for a renewal if the total emissions of any pollutant released do not exceed the following:

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

Based on the above total facility emissions, MMA 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-78-71-L-R/A subject to 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.

STANDARD CONDITIONS

- (1) Employees and authorized representatives of the Department shall be allowed access to the licensee's premises during business hours, or any time during which any emissions units are in operation, and at such other times as the Department deems necessary for the purpose of performing tests, collecting samples, conducting inspections, or examining and copying records relating to emissions (38 M.R.S.A. §347-C).
- (2) The licensee shall acquire a new or amended air emission license prior to commencing construction of a modification, unless specifically provided for in Chapter 115. [06-096 CMR 115]
- (3) Approval to construct shall become invalid if the source has not commenced construction within eighteen (18) months after receipt of such approval or if construction is discontinued for a period of eighteen (18) months or more. The Department may extend this time period upon a satisfactory showing that an extension is justified, but may condition such extension upon a review of either the control technology analysis or the ambient air quality standards analysis, or both. [06-096 CMR 115]
- (4) The licensee shall establish and maintain a continuing program of best management practices for suppression of fugitive particulate matter during any period of construction, reconstruction, or operation which may result in fugitive dust, and shall submit a description of the program to the Department upon request. [06-096 CMR 115]
- (5) The licensee shall pay the annual air emission license fee to the Department, calculated pursuant to Title 38 M.R.S.A. §353. [06-096 CMR 115]
- (6) The license does not convey any property rights of any sort, or any exclusive privilege. [06-096 CMR 115]

- (7) The licensee shall maintain and operate all emission units and air pollution systems required by the air emission license in a manner consistent with good air pollution control practice for minimizing emissions. [06-096 CMR 115]
- (8) The licensee shall maintain sufficient records to accurately document compliance with emission standards and license conditions and shall maintain such records for a minimum of six (6) years. The records shall be submitted to the Department upon written request. [06-096 CMR 115]
- (9) The licensee shall comply with all terms and conditions of the air emission license. The filing of an appeal by the licensee, the notification of planned changes or anticipated noncompliance by the licensee, or the filing of an application by the licensee for a renewal of a license or amendment shall not stay any condition of the license. [06-096 CMR 115]
- (10) The licensee may not use as a defense in an enforcement action that the disruption, cessation, or reduction of licensed operations would have been necessary in order to maintain compliance with the conditions of the air emission license. [06-096 CMR 115]
- (11) In accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department, the licensee shall:
 - A. perform stack testing to demonstrate compliance with the applicable emission standards under circumstances representative of the facility's normal process and operating conditions:
 1. within sixty (60) calendar days of receipt of a notification to test from the Department or EPA, if visible emissions, equipment operating parameters, staff inspection, air monitoring or other cause indicate to the Department that equipment may be operating out of compliance with emission standards or license conditions; or
 2. pursuant to any other requirement of this license to perform stack testing.
 - B. install or make provisions to install test ports that meet the criteria of 40 CFR Part 60, Appendix A, and test platforms, if necessary, and other accommodations necessary to allow emission testing; and
 - C. submit a written report to the Department within thirty (30) days from date of test completion.[06-096 CMR 115]
- (12) If the results of a stack test performed under circumstances representative of the facility's normal process and operating conditions indicate emissions in excess of the applicable standards, then:

- A. within thirty (30) days following receipt of such test results, the licensee shall re-test the non-complying emission source under circumstances representative of the facility's normal process and operating conditions and in accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department; and
 - B. the days of violation shall be presumed to include the date of stack test and each and every day of operation thereafter until compliance is demonstrated under normal and representative process and operating conditions, except to the extent that the facility can prove to the satisfaction of the Department that there were intervening days during which no violation occurred or that the violation was not continuing in nature; and
 - C. the licensee may, upon the approval of the Department following the successful demonstration of compliance at alternative load conditions, operate under such alternative load conditions on an interim basis prior to a demonstration of compliance under normal and representative process and operating conditions.
[06-096 CMR 115]
- (13) Notwithstanding any other provisions in the State Implementation Plan approved by the EPA or Section 114(a) of the CAA, any credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of any statute, regulation, or Part 70 license requirement. [06-096 CMR 115]
- (14) The licensee shall maintain records of malfunctions, failures, downtime, and any other similar change in operation of air pollution control systems or the emissions unit itself that would affect emission and that is not consistent with the terms and conditions of the air emission license. The licensee shall notify the Department within two (2) days or the next state working day, whichever is later, of such occasions where such changes result in an increase of emissions. The licensee shall report all excess emissions in the units of the applicable emission limitation.
[06-096 CMR 115]
- (15) Upon written request from the Department, the licensee shall establish and maintain such records, make such reports, install, use and maintain such monitoring equipment, sample such emissions (in accordance with such methods, at such locations, at such intervals, and in such a manner as the Department shall prescribe), and provide other information as the Department may reasonably require to determine the licensee's compliance status. [06-096 CMR 115]

SPECIFIC CONDITIONS

(16) Boilers #1 and #3

- A. Total fuel use for Boilers #1 and #3 shall not exceed 250,000 gal/yr of #4 fuel oil with a maximum sulfur content not to exceed 1.5% by weight. Compliance shall be demonstrated by fuel receipts from the supplier showing the type, quantity of fuel delivered, and the percent sulfur of the fuel. Records of annual fuel use shall be kept on a 12-month rolling total basis. [06-096 CMR 115, BPT]
- B. Emissions shall not exceed the following:

Emission Unit	Pollutant	lb/MMBtu	Origin and Authority
Boiler #1	PM	0.20	06-096 CMR 103, Section 2(B)(1)(a)
Boiler #3	PM	0.20	06-096 CMR 103, Section 2(B)(1)(a)

- C. 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)
Boiler #1	2.5	2.5	17.8	5.1	0.4	0.1
Boiler #3	2.5	2.5	17.8	5.1	0.4	0.1

- D. Visible emissions from each boiler (Boiler #1 and Boiler #3) shall not exceed 30% 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]

(17) Boilers #2, #4, #5, #6, #8, #9, and #10

- A. Total fuel use for Boilers #2, #4, #5, #6, #8, #9, and #10 shall not exceed 250,000 gal/yr of #2 fuel oil which meets the criteria in ASTM D396 for #2 fuel oil. Compliance shall be demonstrated by fuel receipts from the supplier showing the quantity of fuel delivered and the percent sulfur of the fuel. Records of annual fuel use shall be kept on a 12-month rolling total basis. [06-096 CMR 115, BPT]

Emissions shall not exceed the following:
[06-096 CMR 103(2)(B)(1)(a) & 06-096 CMR 115, BPT]

Equipment		PM	PM10	SO2	NOx	CO	VOC
Boiler #2	lb/MMBtu	0.12	---	---	---	---	---
	lb/hour	1.1	1.1	4.0	3.5	0.3	0.1
Boiler #4	lb/MMBtu	0.12	---	---	---	---	---
	lb/hour	0.4	0.4	1.4	1.3	0.1	0.1
Boiler #5	lb/MMBtu	0.12	---	---	---	---	---
	lb/hour	1.5	1.5	6.0	5.3	0.4	0.1
Boiler #6	lb/MMBtu	0.12	---	---	---	---	---
	lb/hour	0.2	0.2	0.6	0.5	0.1	0.1
Boiler #8	lb/MMBtu	0.12	---	---	---	---	---
	lb/hour	0.7	0.7	2.7	2.2	0.2	0.1
Boiler #9	lb/MMBtu	0.12	---	---	---	---	---
	lb/hour	0.4	0.4	1.8	0.7	0.2	0.1
Boiler #10	lb/MMBtu	0.12	---	---	---	---	---
	lb/hour	0.4	0.4	1.8	0.7	0.2	0.1

- B. Visible emissions from each boiler (Boilers #2, #4, #5, #6, #8, #9, and #10) shall not exceed 20% opacity on a six (6) minute block average, except for no more than one (1), six (6) minute block average in a continuous 3-hour period. [06-096 CMR 101]

(18) **Emergency Generators #1A, #2A, #3A, #4A**

- A. MMA shall limit each Emergency Generator to 500 hr/yr of operation (based on a 12 month rolling total). An hour meter shall be maintained and operated on each Emergency Generator. [MEDEP 06-096 CMR 115, BPT]
- B. A log documenting the dates, times, and reason of operation for each Emergency Generator shall be kept. [MEDEP 06-096 CMR 115, BPT]
- C. The Emergency Generators shall fire diesel fuel oil with a sulfur limit not to exceed 0.05% by weight. Compliance shall be based on fuel receipts from the supplier showing the type, quantity of fuel delivered, and the percent sulfur of the fuel. [MEDEP 06-096 CMR 115, BPT]
- D. Emissions shall not exceed the following:

Emission Unit	Pollutant	lb/MMBtu	Origin and Authority
Generator #1A	PM	0.12	06-096 CMR 103, Section 2(B)(1)(a)

Generator #2A	PM	0.12	06-096 CMR 103, Section 2(B)(1)(a)
Generator #3A	PM	0.12	06-096 CMR 103, Section 2(B)(1)(a)
Generator #4A	PM	0.12	06-096 CMR 103(2)(B)(1)(a)

E. Emissions shall not exceed the following [MEDEP 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)
Generator #1A	0.2	0.2	0.5	7.5	1.6	0.6
Generator #2A	0.1	0.1	0.3	5.3	1.1	0.4
Generator #3A	0.1	0.1	0.3	4.4	1.0	0.4
Generator #4A	0.1	0.1	0.2	2.7	0.7	0.3

F. 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. [MEDEP 06-096 CMR 101]

(19) **General Process Sources**

Visible emissions from any general process source shall not exceed an opacity of 20% on a six (6) minute block average basis, except for no more than one (1) six (6) minute block average in a 1-hour period. [06-096 CMR 101]

DONE AND DATED IN AUGUSTA, MAINE THIS 24th DAY OF March, 2009.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: James P. Brooks
 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: October 9, 2008

Date of application acceptance: October 31, 2008

Date filed with the Board of Environmental Protection: _____

This Order prepared by Edwin Cousins, Bureau of Air Quality.

