



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

**Maine Maritime Academy
Hancock County
Castine, Maine
A-78-71-P-A**

**Departmental
Findings of Fact and Order
Air Emission License
Amendment #3**

FINDINGS OF FACT

After review of the air emission license amendment 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 (Department) finds the following facts:

I. REGISTRATION

A. Introduction

Maine Maritime Academy (MMA) was issued Air Emission License A-78-71-M-R/A on July 24, 2014, for the operation of emission sources associated with their educational facility. The license was subsequently amended on January 30, 2015 (A-78-71-N-A), and on January 9, 2015 (A-78-71-O-A).

MMA has requested an amendment to their license in order to include the following changes:

- Add a new emergency generator designated Generator #7A.
- Adjust the short term and annual SO₂ emission rates for all boilers to better reflect the lower sulfur content of distillate fuel.

The equipment addressed in this license amendment is located at 1 Pleasant St., Castine, Maine.

B. Emission Equipment

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

Boilers

Equipment	Max. Capacity (MMBtu/hr)	Maximum Firing Rate (gal/hr)	Fuel Type, % sulfur	Date of Manuf.	Date of Install.
Curtis Boiler #1A	3.4	30	distillate fuel, 0.0015%	2014	2015
Curtis Boiler #2A	3.4	30	distillate fuel, 0.0015%	2014	2014
Curtis Boiler #3A	3.4	30	distillate fuel, 0.0015%	2014	2014
Dismukes Boiler #1	1.3	12	distillate fuel, 0.0015%	2011	2011
Dismukes Boiler #2	1.3	12	distillate fuel, 0.0015%	2011	2011
Andrews Boiler #1	4.2	30	distillate fuel, 0.0015%	2015	2016
Andrews Boiler #2	3.4	30	distillate fuel, 0.0015%	2014	2014
Student Union #1	2.8	29	distillate fuel, 0.0015%	2004	2004
Student Union #2	2.8	29	distillate fuel, 0.0015%	2004	2004
Library Boiler #1A	1.8	16	distillate fuel, 0.0015%	2013	2013
Library Boiler #2A	1.8	16	distillate fuel, 0.0015%	2013	2013

Stationary Engine

Equipment	Max. Input Capacity (MMBtu/hr)	Rated Output Capacity (kW)	Fuel Type, % sulfur	Firing Rate (gal/hr)	Date of Manuf.	Date of Install.
Generator #7A (Alfond Building)	1.0	60	distillate fuel, 0.0015%	7.3	2018	2018

C. 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.

Records or Logs mean either hardcopy or electronic records.

D. Application Classification

All rules, regulations, or statutes referenced in this air emission license refer to the amended version in effect as of the date this license was issued.

The modification of a minor source is considered a major or minor modification based on whether or not expected emission increases exceed the “Significant Emission” levels as defined in the Department’s *Definitions Regulation*, 06-096 Code of Maine Rules (C.M.R.) ch. 100. The emission increases are determined by subtracting the current licensed annual emissions preceding the modification from the maximum future licensed annual emissions, as follows:

Pollutant	Current License (tpy)	Future License (tpy)	Net Change (tpy)	Significant Emission Levels
PM	13.3	13.3	0.0	100
PM ₁₀	13.3	13.3	0.0	100
PM _{2.5}	13.3	13.3	0.0	100
SO ₂	87.7	70.2	-17.5	100
NO _x	56.9	56.6	-0.3*	100
CO	18.0	16.7	-1.3*	100
VOC	3.6	3.3	-0.3*	50**

* In Air Emission License Amendment A-78-71-O-A, the annual emissions for Generator #6A were calculated on a basis of 500 hours/year of non-emergency usage, rather than the allowed 100 hour/year limitation under 40 C.F.R. Part 60, Subpart III. The annual emissions for Generator #6A will be corrected in this amendment.

** MMA is located in an area of the state included in the Ozone Transport Region. Therefore, the significant emission level for VOC is 50 tpy.

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

E. Facility Classification

With the annual fuel limit on the boilers, the emission limits associated with the engine test cell, and the operating hours restriction on the emergency generators, the facility is licensed as follows:

- As a synthetic minor source of air emissions for all criteria pollutants, because MMA is subject to license restrictions that keep facility emissions below major source thresholds for all criteria pollutants; and
- As an area source of hazardous air pollutants (HAP), because the licensed emissions are below the major source thresholds for HAP.

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.

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 C.M.R. ch. 100. BACT is a top-down approach to selecting air emission controls considering economic, environmental, and energy impacts.

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.

B. Boiler Fuel Sulfur Content

The boilers at MMA are licensed to fire distillate fuel which, by definition, has a sulfur content of 0.5% or less by weight. Pursuant to 38 M.R.S. § 603-A(2)(A)(3), as of July 1, 2018, no person shall import, distribute, or offer for sale any distillate fuel with a sulfur content greater than 0.0015% by weight (15 ppm). Therefore, the distillate fuel purchased or otherwise obtained for use in the boilers shall not exceed 0.0015% by weight (15 ppm) and, as such, the short term SO₂ emission limits for all boilers will be updated to reflect this change in fuel sulfur content.

The BPT SO₂ emission limits for the boilers are the following:

Unit	SO ₂ (lb/hr)
Curtis Boiler #1A	0.01
Curtis Boiler #2A	0.01
Curtis Boiler #3A	0.01

Unit	SO ₂ (lb/hr)
Dismukes Boiler #1	0.01
Dismukes Boiler #2	0.01
Andrews Boiler #1	0.01
Andrews Boiler #2	0.01
Student Union #1	0.01
Student Union #2	0.01
Library Boiler #1A	0.01
Library Boiler #2A	0.01

C. Generator #7A

MMA operates Generator #7A as an emergency generator. Generator #7A is a generator set consisting of an engine and an electrical generator. Generator #7A has an engine rated at 1.0 MMBtu/hr which fires distillate fuel. Generator #7A was manufactured in 2018.

1. BACT Findings

The BACT emission limits for Generator #7A 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 dated, Table 3.3-1 10/96
- CO - 0.95 lb/MMBtu from AP-42 dated, Table 3.3-1 10/96
- VOC - 0.35 lb/MMBtu from AP-42 dated, Table 3.3-1 10/96
- Visible Emissions - 06-096 C.M.R. ch. 115, BACT

a. The BACT emission limits for Generator #7A 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)
Generator #7A	0.12	0.12	0.01	4.41	0.95	0.35

b. Visible emissions from Generator #7A shall not exceed 20% opacity on a six-minute block average basis.

The Department has determined that the proposed BACT visible emission limit is more stringent than the applicable limit in 06-096 C.M.R. ch. 101. Therefore, the visible emission limit for the generator has been streamlined to the more stringent BACT limit, and only this more stringent limit shall be included in the air emission license.

- c. BACT for Generator #7A includes recordkeeping of all maintenance conducted on the engine.

2. Chapter 169

Stationary Generators, 06-096 C.M.R. ch. 169 (Chapter 169), is applicable to Generator #7A. It is an emergency generator powered by an engine with a rated output of less than 1,000 brake horsepower (747 kW). Chapter 169 identifies emission standards for generator engines subject to this chapter.

For Generator #7A, MMA shall comply with the emission standards for emergency generators by complying with the applicable standards contained in 40 C.F.R. Part 60, Subpart IIII. [06-096 C.M.R. ch. 169, § 4(B)(1)]

3. New Source Performance Standards

Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, 40 C.F.R. Part 60, Subpart IIII is applicable to the emergency engine listed above 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 meet 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 summary of the currently applicable federal 40 C.F.R. Part 60, Subpart IIII requirements is listed below.

- 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;
- 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. MMA 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 engines. [40 C.F.R. § 60.4214(b)]
- (7) Recordkeeping
MMA shall keep records that include 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)]

D. Annual Emissions

The table below provides an estimate of facility-wide annual emissions for the purposes of calculating the facility's annual air license fee and establishing the facility's potential to emit (PTE). Only licensed equipment is included, i.e., emissions from insignificant activities are excluded. Similarly, unquantifiable fugitive particulate matter emissions are not included except when required by state or federal regulations. Maximum potential emissions were calculated based on the following assumptions:

- Firing 500,000 gal/yr distillate fuel in the boilers;
- Operating the emergency generators for 100 hrs/yr each; and
- The annual emissions limits for the Engine Test Cell.

This information does not represent a comprehensive list of license restrictions or permissions. That information is provided in the Order section of this license.

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

	PM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	VOC
Boilers	4.2	4.2	4.2	0.1	5.0	1.3	0.1
Generators	0.1	0.1	0.1	0.1	1.6	0.4	0.2
Engine Test Cell	9.0	9.0	9.0	70.0	50.0	15.0	3.0
Total TPY	13.3	13.3	13.3	70.2	56.6	16.7	3.3

Pollutant	Tons/year
Single HAP	9.9
Total HAP	24.9

III. AMBIENT AIR QUALITY ANALYSIS

The level of ambient air quality impact modeling required for a minor source is determined by the Department on a case-by case basis. In accordance with 06-096 C.M.R. ch. 115, an ambient air quality impact analysis is not required for a minor source if the total licensed annual emissions of any pollutant released do not exceed the following levels and there are no extenuating circumstances:

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

The total annual licensed emissions for the facility are above at least one of the emission levels contained in the table above; however, after taking into consideration the following factors:

- similarity with other licensed sources based on size, emissions, and local topography;
- location, including proximity to other sources, complex terrain and Class I areas; and
- background air quality data available in or representative of the local area;

the Department has determined that an ambient air quality impact analysis is not required for the facility and that Ambient Air Quality Standards (AAQS) will not be exceeded.

This determination is based on information provided by the applicant regarding the expected construction and operation of the proposed emission units. If the Department determines that any parameter (e.g., stack size, configuration, flow rate, emission rates, nearby structures, etc.) deviates from what was included in the application, the Department may require MMA to submit additional information and may require an ambient air quality impact analysis at that time.

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 Amendment A-78-71-P-A subject to the conditions found in Air Emission License A-78-71-M-R/A, in amendments A-78-71-N-A and A-78-71-O-A, and the following conditions.

Severability. The invalidity or unenforceability of any provision of this License Amendment or part thereof shall not affect the remainder of the provision or any other provisions. This License Amendment 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 shall replace Specific Condition (16)(C) of Air Emission License A-78-71-O-A.

(16) Boilers

C. Emissions shall not exceed the following [06-096 C.M.R. ch. 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)
Curtis Boiler #1A	0.27	0.27	0.01	0.49	0.12	0.01
Curtis Boiler #2A	0.27	0.27	0.01	0.49	0.12	0.01
Curtis Boiler #3A	0.27	0.27	0.01	0.49	0.12	0.01
Dismukes Boiler #1	0.16	0.16	0.01	0.19	0.05	0.01
Dismukes Boiler #2	0.16	0.16	0.01	0.19	0.05	0.01
Andrews Boiler #1	0.33	0.33	0.01	0.60	0.15	0.01
Andrews Boiler #2	0.27	0.27	0.01	0.49	0.12	0.01
Student Union #1	0.34	0.34	0.01	0.40	0.10	0.01
Student Union #2	0.34	0.34	0.01	0.40	0.10	0.01
Library Boiler #1A	0.14	0.14	0.01	0.26	0.06	0.01

Emission Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Library Boiler #2A	0.14	0.14	0.01	0.26	0.06	0.01

The following are new Specific Conditions of Air Emission License A-78-71-M-R/A.

(24) **Generator #7A**

- A. Generator #7A 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. MMA shall keep records of all maintenance conducted on the engine associated with Generator #7A. [06-096 C.M.R. ch. 115, BACT]
- C. Emissions shall not exceed the following [06-096 C.M.R. ch. 115, BACT]:

Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Generator #7A	0.12	0.12	0.01	4.41	0.95	0.35

D. Visible Emissions

Visible emissions from Generator #7A shall not exceed 20% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BACT]

- E. Generator #7A shall meet the applicable requirements of 40 C.F.R. Part 60, Subpart IIII, including the following:
[incorporated under 06-096 C.M.R. ch. 115, BACT]
 - 1. **Manufacturer Certification**
The engine shall be certified by the manufacturer as meeting the emission standards for new nonroad compression ignition engines found in § 60.4202.
[40 C.F.R. § 60.4205(b)]
 - 2. **Ultra-Low Sulfur Fuel**
The fuel fired in the engine shall not exceed 15 ppm sulfur (0.0015% sulfur). Compliance with the fuel sulfur content limit shall be demonstrated by fuel delivery receipts from the supplier, fuel supplier certification, certificate of analysis, or testing of the tank containing the fuel to be fired. [40 C.F.R. § 60.4207(b) and 06-096 C.M.R. ch. 115, BPT]
 - 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)]

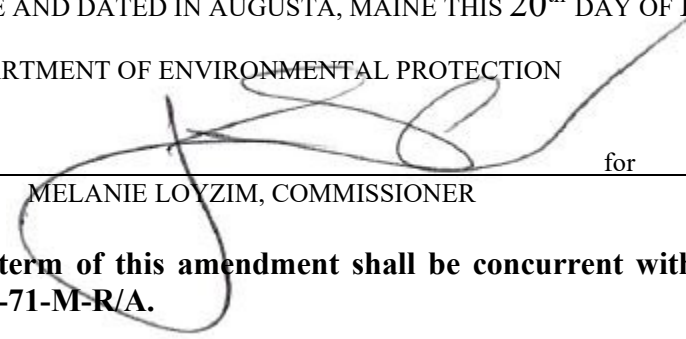
4. Annual Time Limit for Maintenance and Testing
 - a. As an emergency engine, the unit shall be limited to 100 hours/year for maintenance checks and readiness testing. Up to 50 hours/year of the 100 hours/year may be used in non-emergency situations (this does not include peak shaving, demand response, 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, BPT]
 - b. MMA shall keep records that include 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. MMA may only change those emission-related settings that are permitted by the manufacturer. [40 C.F.R. § 60.4211(a)]

- (25) If the Department determines that any parameter value pertaining to construction and operation of the proposed emissions units, including but not limited to stack size, configuration, flow rate, emission rates, nearby structures, etc., deviates from what was submitted in the application or ambient air quality impact analysis for this air emission license, MMA may be required to submit additional information. Upon written request from the Department, MMA shall provide information necessary to demonstrate AAQS will not be exceeded, potentially including submission of an ambient air quality impact analysis or an application to amend this air emission license to resolve any deficiencies and ensure compliance with AAQS. Submission of this information is due within 60 days of the Department's written request unless otherwise stated in the Department's letter.
[06-096 C.M.R. ch. 115, § 2(O)]

DONE AND DATED IN AUGUSTA, MAINE THIS 20th DAY OF DECEMBER, 2022.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY:  for
MELANIE LOYZIM, COMMISSIONER

The term of this amendment shall be concurrent with the term of Air Emission License A-78-71-M-R/A.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 10/24/22

Date of application acceptance: 10/24/22

Date filed with the Board of Environmental Protection:

This Order prepared by Chris Ham, Bureau of Air Quality.

