



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAUL R. LEPAGE
GOVERNOR

PATRICIA W. AHO
COMMISSIONER

**The University of Maine System
Kennebec County
Augusta, Maine
A-602-71-I-R**

**Departmental
Findings of Fact and Order
Air Emission License**

After review of the air emissions license renewal 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

The University of Maine System (UMA) has applied to renew their Air Emission License permitting the operation of emission sources associated with their Augusta, Maine educational facility. The NOx emission factors have been updated in this renewal to match those for sources of a similar size and function.

The equipment addressed in this license is located at 46 University Drive, Augusta, Maine.

B. Emission Equipment

The following equipment is addressed in this air emission license:

Boilers

<u>Equipment</u>	<u>Maximum Capacity (MMBtu/hr)</u>	<u>Maximum Firing Rate (gal/hr)</u>	<u>Fuel Type, % sulfur</u>	<u>Install. Date</u>	<u>Stack #</u>
Boiler #18-STC-A	1.5	10.8	#2 Oil ASTM D396	2003	1
Boiler #18-STC-B	1.5	10.8	#2 Oil ASTM D396	2003	1
Boiler #2-JH	5.04	36.0	#2 Oil ASTM D396	2001	1
Boiler #6-BDK-A	4.2	30.0	#2 Oil ASTM D396	1973	6
Boiler #6-BDK-B	1.5	10.8	#2 Oil ASTM D396	1990	6
Boiler #16-RH	1.06	7.75	#2 Oil ASTM D396	1984	16

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Generators

<u>Equipment</u>	<u>Horse Power (HP) or KW</u>	<u>Firing Rate (gal/hr)</u>	<u>Fuel Type, % sulfur</u>	<u>Install. Date</u>	<u>Stack #</u>
Generator #17-BDK-G	1.55	11.6	Diesel 0.05%	1999	17

C. Application Classification

The application for UMA does not include the installation of new or modified equipment; however, emission factors have been updated since the last license. The license is considered to be a renewal of current licensed emission units only and has been processed through *Major and Minor Source Air Emission License Regulations*, 06-096 CMR 115 (as amended).

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 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. Boilers

UMA operates six boiler units at their Augusta educational facility, primarily for facility hot water and heating needs. The boilers have a total maximum design heat input capacity of 14.8 MMBtu/hr and fire #2 fuel oil meeting ASTM D396 standards (with a maximum sulfur content no greater than 0.5% by weight).

Each of the six boiler units has a maximum heat input capacity below 10 MMBtu/hr, therefore none of the boilers are subject to the New Source Performance Standards (NSPS) 40 CFR Part 60, Subpart Dc, *Standards of*

Performance for Small Industrial-Commercial-Institutional Steam Generating Units, for units greater than 10 MMBtu/hr manufactured after June 9, 1989.

1. BACT/BPT Findings

The BACT/BPT emission limits for the boilers were based on the following:

#2 Fuel Oil

PM/PM₁₀ –

Boiler units 6-BDK-A, 6-BDK-B, and 16-HR limits are derived from Chapter 103 and are 0.12 lb/MMBtu

Boiler units 2-JH, 18-STC-A, and 18-STC-B limits are 0.08 lb/MMBtu, derived from a previous BACT finding.

SO₂ – 0.5 lb/MMBtu, based on firing ASTM D396 compliant #2 fuel oil (0.5% sulfur)

NO_x – 0.35 lb/MMBtu based on those used for sources of similar size

CO – 5 lb/1000 gal, AP-42, Table 1.3-1, dated 5/10

VOC – 0.2 lb/1000 gal, AP-42, Table 1.3-3, dated 5/10

Opacity – Visible emissions from each boiler firing fuel oil shall not exceed 20% opacity on a 6-minute block average, except for no more than one 6-minute block average in a 3-hour period.

The BPT emission limits for the boilers 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)
Boiler #2-JH (5.04 MMBtu/hr) #2 fuel	0.40	0.40	2.54	1.76	0.18	0.01
Boiler #6-BDK-A (4.2 MMBtu/hr) #2 fuel	0.50	0.50	2.12	1.47	0.15	0.01
Boiler #6-BDK-B (1.5 MMBtu/hr) #2 fuel	0.18	0.18	0.76	0.53	0.05	0.0036
Boiler #16-RH (1.06 MMBtu/hr) #2 fuel	0.13	0.13	0.53	0.37	0.04	0.0026
Boiler #18-STC-A (1.5 MMBtu/hr) #2 fuel	0.12	0.12	0.76	0.53	0.05	0.0036
Boiler #18-STC-B (1.5 MMBtu/hr) #2 fuel	0.12	0.12	0.76	0.53	0.05	0.0036

UMA shall be limited to 600,000 gallons per year (gal/yr) of #2 fuel oil meeting ASTM D396 standards, based on a twelve-month rolling total in the boiler units.

Until December 31, 2015, the fuel oil fired in the boiler units shall be ASTM D396 compliant #2 fuel oil (maximum sulfur content of 0.5% by weight). Per 38 MRSA §603-A(2)(A)(3), beginning January 1, 2016, the facility shall fire #2 fuel oil with a maximum sulfur content limit of 0.005% by weight (50 ppm), and beginning January 1, 2018, the facility shall fire #2 fuel oil with a maximum sulfur content limit of 0.0015% by weight (15 ppm).

Periodic Monitoring

Periodic monitoring for the boilers shall include recordkeeping to document fuel use both on a monthly and 12 month rolling total basis. Documentation shall include the type of fuel used and sulfur content of the fuel.

2. 40 CFR Part 63 Subpart JJJJJ

The boiler units may be subject to the *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources* (40 CFR Part 63 Subpart JJJJJ). The units are considered existing oil boilers rated less than 10 MMBtu/hr.

For informational purposes, a summary of the current applicable federal 40 CFR Part 63 Subpart JJJJJ requirements is listed below. At this time, the Maine Department of Environmental Protection has not taken delegation of this area source MACT (Maximum Achievable Control Technology) rule promulgated by EPA, however UMA may still be subject to the requirements. Notification forms and additional rule information can be found on the following website: <http://www.epa.gov/ttn/atw/boiler/boilerpg.html>.

a. Compliance Dates, Notifications, and Work Practice Requirements

i. Initial Notification of Compliance

An Initial Notification submittal to EPA was due on September 17, 2011. [40 CFR Part 63.11225(a)(2)]

ii. Boiler Tune-Up Program – Initial and Biennial

(a) A boiler tune-up program shall be implemented to include the tune-up of applicable boilers by March 21, 2012. [40 CFR Part 63.11196(a)(1)]

(b) The boiler tune-up program, conducted to demonstrate continuous compliance, shall be performed as specified below:

1. As applicable, inspect the burner, and clean or replace any component of the burner as necessary. Delay of the burner inspection until the next scheduled shutdown is permitted;

- however, the burner must be inspected at least once every 36 months. [40 CFR Part 63.11223(b)(1)]
2. Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern, consistent with the manufacturer's specifications. [40 CFR Part 63.11223(b)(2)]
 3. Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure it is correctly calibrated and functioning properly. [40 CFR Part 63.11223(b)(3)]
 4. Optimize total emissions of CO, consistent with manufacturer's specifications. [40 CFR Part 63.11223(b)(4)]
 5. Measure the concentration in the effluent stream of CO in parts per million (ppm), by volume, and oxygen in volume percent, before and after adjustments are made. [40 CFR Part 63.11223(b)(5)]
 6. If a unit is not operating on the required date for a tune-up, the tune-up must be conducted within one week of start-up. [40 CFR Part 63.11223(b)(7)]
- (c) A Notification of Compliance Status shall be submitted to EPA no later than 120 days after conducting the initial boiler tune-up. [40 CFR Part 63.11225(a)(4) and 40 CFR Part 63.11214(b)]
- (d) The facility shall implement a biennial boiler tune-up program after the initial tune-up and initial compliance report has been submitted.
1. Each biennial tune-up shall be conducted no more than 25 months after the previous tune-up. [40 CFR Part 63.11223(a)]
 2. The biennial report shall be maintained onsite and submitted to EPA, if requested. The report shall contain the concentration of CO in the effluent stream (ppmv) and oxygen in volume percent, measured before and after the boiler tune-up, a description of any corrective actions taken as part of the tune-up of the boiler, and the type and amount of fuel used over the 12 months prior to the biennial tune-up of the boiler. [40 CFR Part 63.11223(b)(6)] The biennial compliance report shall also include the company name and address; a compliance statement signed by a responsible official certifying truth, accuracy, and completeness; and a description of any deviations and corrective actions. [40 CFR Part 63.11225(b)]

b. Recordkeeping

Records shall be maintained consistent with the requirements of 40 CFR Part 63 Subpart JJJJJ including the following [40 CFR Part 63.11225(c)]: copies of notifications and reports with supporting compliance documentation; identification of each boiler, the date of tune-up, procedures followed for tune-up, and the manufacturer's specifications to

which the boiler was tuned; documentation of fuel type(s) used monthly by each boiler; the occurrence and duration of each malfunction of the boiler; and actions taken during periods of malfunction to minimize emissions and actions taken to restore the malfunctioning boiler to its usual manner of operation. Records shall be in a form suitable and readily available for expeditious review.

C. Emergency Generator #17 BDK G

UMA operates one stand-by diesel generator unit. The emergency generator is rated at 1.55 MMBtu/hr and fires diesel fuel oil with a maximum sulfur content no greater than 0.05% sulfur by weight. The generator was manufactured in 1999.

The emergency engine is not applicable to the federal regulation 40 CFR Part 63, Subpart ZZZZ, *National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines*. The unit is considered an existing, emergency stationary reciprocating internal combustion engine at an area HAP source, however it is considered exempt from the requirements of Subpart ZZZZ since it is categorized as a residential, commercial, or institutional emergency engine.

BACT/BPT Findings

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

Diesel

PM/PM₁₀ – 0.12 lb/MMBtu from previous license

SO₂ – 0.05 lb/MMBtu based on firing 0.05% sulfur;

NO_x – 4.41 lb/MMBtu, AP-42, Table 3.3-1 (dated 10/96);

CO – 0.95 lb/MMBtu, AP-42, Table 3.3-1 (dated 10/96);

VOC – 0.36 lb/MMBtu, AP-42, Table 3.3-1 (dated 10/96);

Opacity – Visible emissions from the diesel emergency generator shall not exceed 20% opacity on a 6-minute block average, except for no more than two 6-minute block averages in a 3 hour period.

Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Generator #17-BDK-G (1.55 MMBtu/hr) Diesel	0.19	0.19	0.08	6.84	1.47	0.56

The emergency generator shall be limited to 500 hours of operation a year (equivalent to 5800 gal/yr diesel fuel), based on a 12 month rolling total. UMA shall keep records of the hours of operation for the unit. In order to demonstrate

compliance with the emergency generator fuel restriction, UMA shall maintain a fuel use record, which shall include purchase receipts indicating amount of fuel purchased and supplier certification indicating sulfur content of the purchased fuel. Fuel use records shall be maintained on a monthly basis, in addition to the twelve month rolling total.

Emergency 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. Emergency generators are not to be used for prime power when reliable offsite power is available; nor to supply power to an electric grid as part of a financial arrangement with an independent system operator (ISO).

D. Annual Emissions

UMA shall be restricted to the following annual emissions, based on a 12 month rolling total. The tons per year limits were calculated based on 600,000 gal/yr fuel oil for the boilers and 500 hrs/yr for the generator.

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

	PM	PM₁₀	SO₂	NO_x	CO	VOC
Boilers	5.04	5.04	21.15	14.70	1.50	0.10
Generator	0.05	0.05	0.02	1.71	0.37	0.14
Total TPY	5.09	5.09	21.17	16.41	1.87	0.24

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 is not required for a renewal if the total emissions of any pollutant released do not exceed the following and there are no extenuating circumstances:

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

Based on the total facility licensed emissions, UMA is below the emissions level required for modeling.

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-602-71-I-R 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-A. [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**

A #2 Fuel Oil

1. Total fuel use for all boiler units shall not exceed 600,000 gal/yr of #2 fuel oil based on a 12 month rolling total basis.
2. Until December 31, 2015, the #2 fuel oil fired in the boilers shall be ASTM D396 compliant (max. sulfur content of 0.5% by weight). [06-096 CMR 115, BPT]
3. Beginning January 1, 2016, the facility shall fire #2 fuel oil with a maximum sulfur content limit of 0.005% by weight (50 ppm). [38 MRSA §603-A(2)(A)(3)]
4. Beginning January 1, 2018, the facility shall fire #2 fuel oil with a maximum sulfur content limit of 0.0015% by weight (15 ppm). [38 MRSA §603-A(2)(A)(3)]
5. Compliance shall be demonstrated by fuel records from the supplier showing the quantity, type, and the percent sulfur of the fuel delivered (if applicable). Records of annual fuel use shall be kept on a monthly and 12-month rolling total basis. [06-096 CMR 115, BPT]

B. Emissions shall not exceed the following:

<u>Unit</u>	<u>Pollutant</u>	<u>lb/MMBtu</u>	<u>Origin and Authority</u>
Boiler #2-JH	PM	0.08	06-096 CMR 103(2)(B)(1)(a)
Boiler #6-BDK-A	PM	0.12	06-096 CMR 103(2)(B)(1)(a)

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

<u>Unit</u>	<u>PM (lb/hr)</u>	<u>PM₁₀ (lb/hr)</u>	<u>SO₂ (lb/hr)</u>	<u>NO_x (lb/hr)</u>	<u>CO (lb/hr)</u>	<u>VOC (lb/hr)</u>
Boiler #2-JH (5.04 MMBtu/hr) #2 fuel	0.40	0.40	2.54	1.76	0.18	0.01
Boiler #6-BDK-A (4.2 MMBtu/hr) #2 fuel	0.50	0.50	2.12	1.47	0.15	0.01
Boiler #6-BDK-B (1.5 MMBtu/hr) #2 fuel	0.18	0.18	0.76	0.53	0.05	0.0036
Boiler #16-RH (1.06 MMBtu/hr) #2 fuel	0.13	0.13	0.53	0.37	0.04	0.0026
Boiler #18-STC-A (1.5 MMBtu/hr) #2 fuel	0.12	0.12	0.76	0.53	0.05	0.0036
Boiler #18-STC-B (1.5 MMBtu/hr) #2 fuel	0.12	0.12	0.76	0.53	0.05	0.0036

D. Visible Emissions

Visible emissions from each boiler firing fuel oil shall not exceed 20% opacity on a 6 minute block average, except for no more than one (1) six (6) minute block average in a 3 hour period. [06-096 CMR 101]

(17) **Emergency Generators #17-BDK-G**

- A. The generator is limited to 500 hours per year total operation, based on a 12 month rolling total. Compliance shall be demonstrated by a written log of all generator operating hours. [06-096 CMR 115]
- B. The fuel oil sulfur content for the generator shall be limited to 0.05% sulfur. Compliance shall be demonstrated by fuel records from the supplier documenting the type of fuel delivered and the sulfur content of the fuel. [06-096 CMR 115, BPT]
- C. Emissions shall not exceed the following [06-096 CMR 115, BPT]:

<u>Unit</u>	<u>PM</u> <u>(lb/hr)</u>	<u>PM₁₀</u> <u>(lb/hr)</u>	<u>SO₂</u> <u>(lb/hr)</u>	<u>NO_x</u> <u>(lb/hr)</u>	<u>CO</u> <u>(lb/hr)</u>	<u>VOC</u> <u>(lb/hr)</u>
Generator #17-BDK-G (1.55 MMBtu/hr) diesel	0.19	0.19	0.080	6.84	1.47	0.56

D. Visible Emissions

Visible emissions from the diesel 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. [06-096 CMR 101]

- (18) UMA 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).

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

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Melanie R. [Signature]
PATRICIA W. AMO, 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: 2/2/2010

Date of application acceptance: 2/5/2010

Date filed with the Board of Environmental Protection:

This Order prepared by Kristen M. Colby, Bureau of Air Quality.

