



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION



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GOVERNOR

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COMMISSIONER

**The University of Maine System
University of Maine at Fort Kent
Aroostook County
Fort Kent, Maine
A-604-71-H-A**

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

FINDINGS OF FACT

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 Maine Revised Statutes Annotated (M.R.S.A.), §344 and §590, the Maine Department of Environmental Protection (Department) finds the following facts:

I. REGISTRATION

A. Introduction

University of Maine at Fort Kent (UMFK) was issued Air Emission License A-604-71-G-R/A on April 10, 2012 permitting the operation of emission sources associated with their Fort Kent campus.

UMFK has requested an amendment to their license in order to install two wood pellet-fired boilers for facility heating and hot water needs.

The equipment addressed in this license is located at 23 University Drive, Fort Kent, Maine.

B. Emission Equipment

The following equipment is addressed in this air emission license:

Fuel Burning Equipment

Equipment	Max. Capacity (MMBtu/hr)	Max. Firing Rate (gal/hr)	Fuel Type Max. Sulfur %	Stack #
1PE2	3.20	22.9	#2 fuel oil, 0.5%	1PE
2Aud	1.40	10.0	#2 fuel oil, 0.5%	2Cyr
2Cyr	3.08	22.0	#2 fuel oil, 0.5%	2Cyr
5BL1	1.54	11.0	#2 fuel oil, 0.5%	5BL
5BL2	1.33	9.5	#2 fuel oil, 0.5%	5BL

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Fuel Burning Equipment (Cont.)

<u>Equipment</u>	<u>Max. Capacity (MMBtu/hr)</u>	<u>Max. Firing Rate (gal/hr)</u>	<u>Fuel Type Max. Sulfur %</u>	<u>Stack #</u>
7POW1	1.40	10.0	#2 fuel oil, 0.5%	7POW
7POW2	1.40	10.0	#2 fuel oil, 0.5%	7POW
8NOW	1.26	9.0	#2 fuel oil, 0.5%	8NOW
LDG2	1.40	10.0	#2 fuel oil, 0.5%	1LDG
3K009-B1	1.37	16.0	#2 fuel oil, 0.5%	3K009-B1
3K001-B2	2.20	0.2 (tons/hr)	wood pellets	1PE
3K009-B2*	4.94	0.31 (ton/hr)	wood pellets	3K009-S2
3K009-B3*	4.94	0.31 (ton/hr)	wood pellets	3K009-S2

* Designates new equipment

C. Application Classification

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 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 (TPY)</u>	<u>Future License (TPY)</u>	<u>Net Change (TPY)</u>	<u>Sig. Level</u>
PM	8.1	11.4	+3.3	100
PM ₁₀	8.1	11.4	+3.3	100
SO ₂	18.0	18.3	+0.3	100
NO _x	8.7	17.5	+8.8	100
CO	9.1	15.8	+6.7	100
VOC	0.4	0.6	+0.2	50

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

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 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 (as amended). BACT is a top-down approach to selecting air emission controls considering economic, environmental and energy impacts.

B. Boilers 3K009-B2 and 3K009-B3

UMFK operates Boilers 3K009-B2 and 3K009-B3 for heating and hot water needs. The boilers are rated at 4.94 MMBtu/hr each and fire wood pellets. The boilers were manufactured and installed in 2013. They exhaust through a combined 26-foot stack.

Due to their size these boilers are not 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 Findings

The BACT emission limits for the Boilers 3K009-B2 and 3K009-B3 were based on the following:

PM/PM ₁₀	–	0.30 lb/MMBtu based on 06-096 CMR 103
SO ₂	–	0.025 lb/MMBtu based on AP-42, Table 1.6-2, dated 9/03
NO _x	–	0.49 lb/MMBtu based on AP-42, Table 1.6-2, dated 9/03
CO	–	0.60 lb/MMBtu based on AP-42, Table 1.6-2, dated 9/03
VOC	–	0.017 lb/MMBtu based on AP-42, Table 1.6-3, dated 9/03
Opacity	–	06-096 CMR 115, BACT

The BACT emission limits for Boilers 3K009-B2 and 3K009-B3 are the following:

Emission Unit	Pollutant	lb/MMBtu	Origin and Authority
3K009-B2	PM	0.30	06-096 CMR 103(2)(B)(4)(a)
3K009-B3	PM	0.30	06-096 CMR 103(2)(B)(4)(a)

Emission Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
3K009-B2	1.48	1.48	0.12	2.42	2.96	0.08
3K009-B3	1.48	1.48	0.12	2.42	2.96	0.08

Visible emissions from the combined stack for Boilers 3K009-B2 and 3K009-B3 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.

UMFK shall be limited to a fuel use 3,000 ton/year of wood pellets between all three wood pellet-fired boilers (3K009-B2, 3K009-B3, and previously licensed 3K001-B2). Records of fuel use shall be kept on a calendar year basis.

C. 40 CFR Part 63 Subpart JJJJJ

The following boilers 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):

- 1PE2
- 2Cyr
- 3K001-B2
- 3K009-B2
- 3K009-B3

These boilers are considered existing oil-fired or biomass fired boilers. All other boilers at UMFK are less than 1.6 MMBtu/hr and fall under the definition of Hot Water Heater as defined by the subpart.

For informational purposes, a summary of the currently applicable federal 40 CFR Part 63 Subpart JJJJJ requirements is listed below. At this time, the Department has not taken delegation of this area source MACT (Maximum Achievable Control Technology) rule promulgated by EPA, however UMFK is still 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 is due no later than January 20, 2014. [40 CFR Part 63.11225(a)(2)]

ii. Boiler Tune-Up Program

(a) A boiler tune-up program shall be implemented to include the initial tune-up of applicable boilers no later than March 21, 2014. [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; not to exceed 36 months from the previous inspection for boilers greater than 5 MMBtu/hr or 72 months from the previous inspection for oil fired boilers less than 5 MMBtu/hr, boilers with oxygen trim system, seasonal boilers, and limited use boilers. [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. Delay of the inspection until the next scheduled shutdown is permitted; not to exceed 36 months from the previous inspection for boilers greater than 5 MMBtu/hr or 72 months from the previous inspection for oil fired boilers less than 5 MMBtu/hr, boilers with oxygen trim system, seasonal boilers, and limited use boilers. [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 by volume (ppmv), and oxygen in volume percent, before and after adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). Measurements may be taken using a portable CO analyzer. [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 30 days of start-up. [40 CFR Part 63.11223(b)(7)]
- (c) After conducting the initial boiler tune-up, a Notification of Compliance Status shall be submitted to EPA no later than July 19, 2014. [40 CFR Part 63.11225(a)(4) and 40 CFR Part 63.11214(b)]
- (d) The facility shall implement a boiler tune-up program after the initial tune-up and initial compliance report (called a Notification of Compliance Status) has been submitted.
1. Each tune-up shall be conducted at a frequency specified by the rule and based on the size, age, and operations of the boiler. See chart below:

Boiler Category	Tune-Up Frequency
New or Existing Oil, Biomass and Coal fired boilers that are not designated as "Boilers with less frequent tune up requirements" listed below	Every 2 years
<i>New and Existing Oil, Biomass, and Coal fired Boilers with less frequent tune up requirements</i>	
Seasonal (see definition §63.11237)	Every 5 years
Limited use (see definition §63.11237)	Every 5 years
With a heat input capacity of <5MMBtu/hr	Every 5 years
Boiler with oxygen trim system which maintains an optimum air-to-fuel ratio that would otherwise be subject to a biennial tune up	Every 5 years

[40 CFR Part 63.11223(a) and Table 2]

2. The tune-up compliance report shall be maintained onsite and, if requested, submitted to EPA. The report shall contain the concentration of CO in the effluent stream (ppmv) and oxygen in volume percent, measured at high fire or typical operating load, 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 types and amounts of fuels used over the 12 months prior to the tune-up of the boiler. [40 CFR Part 63.11223(b)(6)] The 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.

Note: EPA will require submission of Notification of Compliance Status reports for tune-ups through their electronic reporting system. However, the system will not be in place until October 2013, so sources may submit the written NOCS to the EPA Administrator. [63.1125(a)(4)(vi)]

D. Annual Emissions

1. Total Annual Emissions

UMFK shall be restricted to the following annual emissions, based on a 12 month rolling total. The tons per year limits were calculated based on the following:

- Firing 500,000 gallons per year of #2 fuel oil with a sulfur content of 0.5% by weight.
- Firing 3,000 tons per year of wood pellets.
- Operating the emergency generator for 500 hours per year.

Total Licensed Annual Emissions for the Facility

Tons/year

(used to calculate the annual license fee)

	PM	PM₁₀	SO₂	NO_x	CO	VOC
Oil Firing	4.2	4.2	17.6	5.0	1.3	0.1
Wood Pellet Firing	7.1	7.1	0.6	11.6	14.3	0.4
KGEN1 Generator	0.1	0.1	0.1	0.9	0.2	0.1
Total TPY	11.4	11.4	18.3	17.5	15.8	0.6

2. Greenhouse Gases

Greenhouse gases are considered regulated pollutants as of January 2, 2011, through 'Tailoring' revisions made to EPA's *Approval and Promulgation of Implementation Plans*, 40 CFR Part 52, Subpart A, §52.21 Prevention of Significant Deterioration of Air Quality rule. Greenhouse gases, as defined in 06-096 CMR 100 (as amended), are the aggregate group of the following gases: Carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. For licensing purposes, greenhouse gases (GHG) are calculated and reported as carbon dioxide equivalents (CO₂e).

Based on the facility's fuel use limit(s), the worst case emission factors from AP-42, IPCC (Intergovernmental Panel on Climate Change), and *Mandatory Greenhouse Gas Reporting*, 40 CFR Part 98, and the global warming potentials contained in 40 CFR Part 98, UMFK is below the major source threshold of 100,000 tons of CO₂e per year. Therefore, no additional licensing requirements are needed to address GHG emissions at this time.

III. AMBIENT AIR QUALITY ANALYSIS

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

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

The total facility licensed emissions are below the emission levels contained in the table above and there are no extenuating circumstances; therefore, an ambient air quality impact analysis is not required as part of this license.

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-604-71-H-A subject to the conditions found in Air Emission License A-604-71-G-R/A and in 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.

The following are New Conditions:

(20) Boilers 3K009-B2 and 3K009-B3

A. Boilers 3K009-B2 and 3K009-B3 are licensed to fire wood pellets. [06-096 CMR 115, BACT]

B. Emissions shall not exceed the following:

Emission Unit	Pollutant	lb/MMBtu	Origin and Authority
3K009-B2	PM	0.30	06-096 CMR 103(2)(B)(4)(a)
3K009-B3	PM	0.30	06-096 CMR 103(2)(B)(4)(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)
3K009-B2	1.48	1.48	0.12	2.42	2.96	0.08
3K009-B3	1.48	1.48	0.12	2.42	2.96	0.08

D. Visible emissions from the combined stack for Boilers 3K009-B2 and 3K009-B3 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 115, BACT]

(21) **Facility-Wide Wood Pellet Fuel Limit**

- A. UMFK shall not exceed a combined fuel limit of 3,000 ton/year of wood pellets in boilers 3K001-B2, 3K009-B2, and 3K009B3. [06-096 CMR 115, BACT]
- B. Compliance shall be demonstrated by fuel records from the supplier showing the quantity of fuel delivered. Records of annual fuel use shall be kept on a calendar year basis. [06-096 CMR 115, BACT]

DONE AND DATED IN AUGUSTA, MAINE THIS 16 DAY OF December, 2013.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Maureen Allen Robert Case for
PATRICIA W. AHO, COMMISSIONER

The term of this amendment shall be concurrent with the term of Air Emission License A-604-71-G-R/A.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 11/4/13

Date of application acceptance: 11/7/13

Date filed with the Board of Environmental Protection:

This Order prepared by Lynn Poland, Bureau of Air Quality.

