

**Maine Medical Center  
Scarborough Campus  
Cumberland County  
Scarborough, Maine  
A-934-71-A-N**

**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 Medical Center – Scarborough Campus (MMC) of Scarborough, Maine has applied for an Air Emission License permitting the operation of emission sources associated with their health services campus.

**B. Emission Equipment**

The following equipment is addressed in this air emission license:

**Fuel Burning Equipment**

<b><u>Equipment</u></b>	<b><u>Maximum Capacity (MMBtu/hr)</u></b>	<b><u>Maximum Firing Rate (ft<sup>3</sup>/hr)</u></b>	<b><u>Fuel Type, % sulfur</u></b>	<b><u>Installation Date</u></b>	<b><u>Stack #</u></b>
Boiler ASC-1	2.7	2,648	Natural gas	2006/2007	1
Boiler ASC-2	2.7	2,648	Natural gas	2006/2007	1
Boiler ASC-3	3.17	3,108	Natural gas	2006/2007	2
Boiler ASC-4	3.17	3,108	Natural gas	2006/2007	2
Hot Water Heater ASC-1	1.83	1,795	Natural gas	2006/2007	3
Hot Water Heater ASC-2	1.83	1,795	Natural gas	2006/2007	3
Boiler MMCRI-1	3.0	2,942	Natural gas	2000	4
Boiler MMCRI-2	3.0	2,942	Natural gas	2000	4
Boiler MMCRI-3	4.0	3,922	Natural gas	2000	4
Boiler 98-1	2.1	2,059	Natural gas	1994	5
Boiler 98-2	3.4	3,333	Natural gas	1994	5
Boilers 96-1	1.2	1,177	Natural gas	1999	6
Boilers 96-2	1.2	1,177	Natural gas	1999	6
Boilers 96-3	1.2	1,177	Natural gas	1999	6
Boilers 96-4	1.2	1,177	Natural gas	1999	6

**Electrical Generation Equipment**

<u>Equipment</u>	<u>Power Output (kW)</u>	<u>Maximum Capacity (MMBtu/hr)</u>	<u>Firing Rate (gal/hr)</u>	<u>Fuel Type, % sulfur</u>
Generator ASC-1	600	6.4	46.7	Diesel, 0.05%
Generator MMCRI-1	250	2.7	19.7	Diesel, 0.05%

C. Application Classification

MMC is proposing to construct an Ambulatory Surgery Center (ASC) at its Scarborough Campus. A research center (MMCRI), ambulatory health services building, and medical office building are already present at the location, but the addition of the new ASC trips licensing thresholds and requires MMC to obtain an Air Emission License for their facility as a new source. The new source is considered a major source based on whether or not expected emissions exceed the “Significant Emission Levels” as defined in the Department’s regulations. The emissions for the new source 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	5.26	100
PM <sub>10</sub>	5.26	100
SO <sub>2</sub>	0.25	100
NO <sub>x</sub>	24.91	100
CO	14.98	100
VOC	1.65	50

The Department has determined the facility is a minor source and the application has been processed through Chapter 115 of the Department’s regulations.

**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 Chapter 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. BPT for new sources and modifications requires a demonstration that emissions are receiving Best

Available Control Technology (BACT), as defined in Chapter 100 of the Department's regulations. BACT is a top-down approach to selecting air emission controls considering economic, environmental and energy impacts.

B. Boilers and Hot Water Heaters

1. Ambulatory Surgery Center (ASC)

MMC is proposing to install four boilers and two hot water heaters in their new Ambulatory Surgery Center. The units will range in size between 1.83 MMBtu/hr and 3.17 MMBtu/hr, and will be installed during 2006 or 2007. The boilers and hot water heaters will be used for heating and sterilization purposes, and will fire natural gas. Due to their small sizes, the ASC boilers and hot water heaters are 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.

2. Research Center (MMCRI)

Three boilers are installed at the existing Research Center. Boilers MMCRI-1 and MMCRI-2 are identical units sized at 3.0 MMBtu/hr and Boiler MMCRI-3 is rated at 4.0 MMBtu/hr. All three boilers fire natural gas. Due to their small sizes, the MMCRI boilers and hot water heaters are not subject to New Source Performance Standards (NSPS) Subpart Dc for steam generating units greater than 10 MMBtu/hr manufactured after June 9, 1989.

3. Ambulatory Health Services Building & Medical Office Building

MMC operates several small boilers at the ambulatory health services building and the medical office building on their campus. Boiler 98-1 is rated at 2.1 MMBtu/hr; Boiler 98-2 has a maximum heat input capacity of 3.4 MMBtu/hr; and Boilers 96-1, 96-2, 96-3 and 96-4 are part of a modular unit with each boiler rated at 1.2 MMBtu/hr. None of the Ambulatory Health Services Building or the Medical Office Building boilers are subject to New Source Performance Standards (NSPS) Subpart Dc for steam generating units greater than 10 MMBtu/hr manufactured after June 9, 1989.

4. BACT Analysis

A summary of the BACT analysis for Boilers ASC-1 and ASC-2 (2.10 MMBtu/hr each); ASC-3 and ASC-4 (3.17 MMBtu/hr each); Hot Water Heaters ASC-1 and ASC-2 (1.83 MMBtu/hr each); Boilers MMCRI-1 and MMCRI-2 (3.0 MMBtu/hr); Boiler MMCRI-3 (4.0 MMBtu/hr); Boiler 98-1 (2.1 MMBtu/hr); Boiler 98-2 (3.4 MMBtu/hr); and Boilers 96-1, 96-2, 96-3 and 96-4 is the following:

- i. PM, PM<sub>10</sub>, SO<sub>2</sub> and VOC  
Emissions of particulate matter (PM), particulate matter with a diameter less than 10 microns (PM<sub>10</sub>), sulfur dioxide (SO<sub>2</sub>) and volatile organic compounds (VOC) from small, natural gas-fired fuel-burning units such as the ones operated by MMC are relatively small. Emission control equipment is not economically practical. Emission rates for SO<sub>2</sub> and VOC are based on AP-42 data dated 9/98. BACT for PM and PM<sub>10</sub> is an emission rate of 0.05 lb/MMBtu for boilers larger than 3 MMBtu/hr. Particulate emission limits for smaller boilers are based on AP-42.
  
- ii. Nitrogen Oxides (NO<sub>x</sub>)  
Post-combustion control techniques such as Selective Catalytic Reduction (SCR) and Selective Non-Catalytic Reduction (SNCR) are not technically feasible for small boilers. The demonstrated combustion control techniques available to control thermal NO<sub>x</sub> on industrial boilers of this size consist of low-NO<sub>x</sub> burners and flue gas recirculation (FGR).  
  
Employing either low-NO<sub>x</sub> burners or FGR would require a retrofit to existing boilers. NO<sub>x</sub> emissions from the boilers are already minimal due to the units' small sizes and the firing of natural gas. The addition of low-NO<sub>x</sub> burner and FGR retrofits to existing boilers is not practical. NO<sub>x</sub> emission rates are based on AP-42 dated 9/98.
  
- iii. Carbon Monoxide (CO)  
CO emissions from new boilers of this size are controlled through proper operation and burner maintenance. CO emissions from the boilers are already minimal due to the units' small sizes and the firing of natural gas. CO emission rates are based on AP-42 dated 9/98.
  
- iv. Visible Emissions  
MEDEP Chapter 101 regulates opacity limits for fuel burning equipment. Visible emissions from each boiler (Stacks #1 - #6) shall not exceed 10% opacity on a 6-minute block average basis, except for no more than one 6-minute block average in a 3-hour period.

#### C. Emergency Generators

MMC operates an emergency generator in the Research Center and is proposing to install one in the new Ambulatory Surgery Center. The existing MMCRI Generator is rated at 2.7 MMBtu/hr. The ASC Generator is rated at 6.4 MMBtu/hr. Both generators will fire diesel fuel with a sulfur content not to exceed 0.05%.

“Emergency” is defined in Chapter 100 and throughout this document as: “... any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology based emission limitation under the license, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.”

A summary of the BACT analysis for Generator MMCRI-1 (250 kW) and Generator ASC-1 (600 kW) is the following:

1. PM, PM<sub>10</sub>, SO<sub>2</sub> and VOC

Particulate emissions from stationary diesel engines are generally very low. SO<sub>2</sub> and VOC emissions are controlled through proper operation and maintenance. BACT for the emergency generators shall consist of a 475-hour operating limit (on a 12-month rolling total), the use of 0.05% sulfur fuel, and good operating practices and maintenance. BACT for PM is an emission rate of 0.12 lb/MMBtu for fuel burning units larger than 3 MMBtu/hr, and the PM<sub>10</sub> limits are based on the PM emission factor. PM emission limits for the MMCRI-1 generator and SO<sub>2</sub> and VOC emission limits for both generators are based on AP-42 data.

2. Nitrogen Oxides (NO<sub>x</sub>) and Carbon Monoxide (CO)

NO<sub>x</sub> and CO BACT for the generators shall be an operating limit of 475 hours/year on a 12-month rolling total and good operating practices and maintenance. Emission factors for NO<sub>x</sub> are based on AP-42 data; emission factors for CO are based on vendor data for the ASC-1 unit and on AP-42 for the MMCRI-1 unit.

3. Visible Emissions

MEDEP Chapter 101 regulates opacity limits for fuel burning equipment. Visible emissions from each generator shall not exceed 20% opacity on a 6-minute block average basis, except for no more than two 6-minute block averages in a 3-hour period.

D. Annual Emissions

MMC 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)

	<b>PM</b>	<b>PM<sub>10</sub></b>	<b>SO<sub>2</sub></b>	<b>NO<sub>x</sub></b>	<b>CO</b>	<b>VOC</b>
Boilers ASC-1 & 2	0.18	0.18	0.02	2.32	1.95	0.13
Boilers ASC-3 & 4	1.39	1.39	0.02	2.73	2.29	0.15
Hot Water Heaters ASC-1 & 2	0.12	0.12	0.01	1.58	1.33	0.09
Boilers MMCRI-1 & 2	1.32	1.32	0.02	2.58	2.17	0.15
Boiler MMCRI-3	0.88	0.88	0.02	1.72	1.45	0.10
Boiler 98-1	0.07	0.07	0.01	0.91	0.76	0.05
Boiler 98-2	0.75	0.75	0.01	1.46	1.23	0.09
Boiler 96-1, 2, 3 & 4	0.16	0.16	0.02	2.07	1.74	0.12
Generator ASC-1	0.19	0.19	0.08	6.71	1.45	0.54
Generator MMCRI-1	0.20	0.20	0.04	2.83	0.61	0.23
<b>Total TPY</b>	<b>5.26</b>	<b>5.26</b>	<b>0.25</b>	<b>24.91</b>	<b>14.98</b>	<b>1.65</b>

### III. AMBIENT AIR QUALITY ANALYSIS

According to the Maine Regulations Chapter 115, the level of air quality analyses required for a minor new source shall be determined on a case-by case basis. Based on the information available in the file, and the similarity to existing sources, Maine Ambient Air Quality Standards (MAAQS) will not be violated by this source.

### 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-934-71-A-N 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. [MEDEP Chapter 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. [MEDEP Chapter 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. [MEDEP Chapter 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. [MEDEP Chapter 115]
- (6) The license does not convey any property rights of any sort, or any exclusive privilege. [MEDEP Chapter 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. [MEDEP Chapter 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. [MEDEP Chapter 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. [MEDEP Chapter 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. [MEDEP Chapter 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.
- [MEDEP Chapter 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.

[MEDEP Chapter 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. [MEDEP Chapter 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. [MEDEP Chapter 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. [MEDEP Chapter 115]

### **SPECIFIC CONDITIONS**

(16) **Boilers and Hot Water Heaters**

- A. Boilers and hot water heaters at MMC's Scarborough Campus shall fire natural gas fuel. Compliance shall be demonstrated by fuel purchase records. [MEDEP Chapter 115, BPT]

B. Emissions shall not exceed the following:

Emission Unit	Pollutant	lb/MMBtu	Origin and Authority
Boiler ASC-3	PM	0.05	MEDEP, Chapter 103, Section 2(B)(1)(a), BACT
Boiler ASC-4	PM	0.05	MEDEP, Chapter 103, Section 2(B)(1)(a), BACT
Boiler MMCRI-1	PM	0.05	MEDEP, Chapter 103, Section 2(B)(1)(a), BACT
Boiler MMCRI-2	PM	0.05	MEDEP, Chapter 103, Section 2(B)(1)(a), BACT
Boiler MMCRI-3	PM	0.05	MEDEP, Chapter 103, Section 2(B)(1)(a), BACT
Boiler 98-2	PM	0.05	MEDEP, Chapter 103, Section 2(B)(1)(a), BACT

C. Emissions shall not exceed the following\* [MEDEP Chapter 115, BPT]:

Emission Unit	PM (lb/hr)	PM <sub>10</sub> (lb/hr)	SO <sub>2</sub> (lb/hr)	NO <sub>x</sub> (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Boiler ASC-1	0.03	0.03	0.01	0.27	0.23	0.02
Boiler ASC-2	0.03	0.03	0.01	0.27	0.23	0.02
Boiler ASC-3	0.16	0.16	0.01	0.32	0.26	0.02
Boiler ASC-4	0.16	0.16	0.01	0.32	0.26	0.02
Hot Water Heater ASC-1	0.02	0.02	0.01	0.18	0.16	0.01
Hot Water Heater ASC-2	0.02	0.02	0.01	0.18	0.16	0.01
Boiler MMCRI-1	0.15	0.15	0.02	2.58	2.17	0.15
Boiler MMCRI-2	0.15	0.15	0.02	2.58	2.17	0.15
Boiler MMCRI-3	0.2	0.2	0.01	0.40	0.33	0.03
Boiler 98-1	0.02	0.02	0.01	0.201	0.18	0.02
Boiler 98-2	0.17	0.17	0.01	0.34	0.28	0.02
Boilers 96-1, 2, 3 & 4 (emission limits for each boiler)	0.01	0.01	0.01	0.12	0.10	0.01

\*Emission limits have been rounded up to the nearest hundredth.

D. Visible emissions from each boiler (Stacks #1 - #6) shall not exceed 10% opacity on a 6-minute block average basis, except for no more than one 6-minute block average in a 3-hour period. [MEDEP Chapter 101]

(17) **Emergency Generators ASC-1 and MMCRI-1**

- A. MMC shall limit each emergency generator to 475 hours/year of operation (based on a 12-month rolling total). An hour meter shall be maintained and operated on each emergency generator. [MEDEP Chapter 115, BPT]
- B. The emergency generators shall be operated for emergency purposes only or for short periods to exercise the units and keep them in operating order. A log shall be maintained and updated each time the generators run, documenting the date, time, and reason for their operation. [MEDEP Chapter 115, BPT]
- C. Generators ASC-1 and MMCRI-1 shall fire diesel fuel with a sulfur content not to exceed 0.05% by weight. Compliance shall be based on fuel receipts and records from the supplier showing the quantity of fuel delivered and stating the fuel as on-road diesel. Documentation of percent sulfur analyses performed on the supplier's bulk storage tanks may be used to demonstrate compliance. [MEDEP Chapter 115, BPT]
- D. Emissions shall not exceed the following:

Emission Unit	Pollutant	lb/MMBtu	Origin and Authority
Generator ASC-1	PM	0.12	MEDEP, Chapter 103, Section 2(B)(1)(a), BACT

- E. Emissions shall not exceed the following\* [MEDEP Chapter 115, BPT]:

Emission Unit	PM (lb/hr)	PM <sub>10</sub> (lb/hr)	SO <sub>2</sub> (lb/hr)	NO <sub>x</sub> (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Generator ASC-1	0.77	0.77	0.33	28.23	6.10	2.24
Generator MMCRI-1	0.84	0.84	0.14	11.91	2.57	0.95

\*Emission factors have been rounded up to the nearest hundredth.

- F. Visible emissions from the 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 continuous 3-hour period. [MEDEP Chapter 101]

(18) MMC 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 MRSA §605).

Maine Medical Center  
Scarborough Campus  
Cumberland County  
Scarborough, Maine  
A-934-71-A-N

12

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

(19) **Payment of Annual License Fee**

MMC shall pay the annual air emission license fee within 30 days of January 31st of each year. Pursuant to 38 MRSA §353-A, failure to pay this annual fee in the stated timeframe is sufficient grounds for revocation of the license under 38 MRSA §341-D, subsection 3.

DONE AND DATED IN AUGUSTA, MAINE THIS                      DAY OF                      2006.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: \_\_\_\_\_  
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: December 7, 2005

Date of application acceptance: December 16, 2005

Date filed with the Board of Environmental Protection: \_\_\_\_\_

This Order prepared by Rachel E. Pilling, Bureau of Air Quality.