



STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAUL R. LEPAGE  
GOVERNOR

PATRICIA W. AHO  
COMMISSIONER

**Madison Paper Industries  
Somerset County  
Madison, Maine  
A-427-77-3-M**

**Departmental  
Findings of Fact and Order  
New Source Review  
Amendment #3**

After review of the air emissions license minor revision request, 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

FACILITY	Madison Paper Industries
LICENSE TYPE	06-096 CMR 115, Minor Modification
NAICS CODES	322121 Paper Mills
NATURE OF BUSINESS	Mechanical Pulp and Supercalendered Paper Production
FACILITY LOCATION	Madison, Maine
NSR AMENDMENT ISSUANCE DATE	December 27, 2011

B. Amendment Description

Madison Paper Industries has submitted a minor revision request for a temporary increase in the natural gas 12.03 lb/hr NO<sub>x</sub> limit for Boiler #7. Amendment A-427-77-2-A (issued September 1, 2011) allowed for the firing of natural gas in Boiler #7, but the NO<sub>x</sub> emissions were underestimated as shown by the operational data during the recent switchover from oil to natural gas. Madison Paper Industries is requesting a minor revision until a full amendment can be processed to permanently change the emission limit.

C. Emission Equipment

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

### Fuel Burning Equipment

<u>Equipment</u>	<u>Maximum Capacity (MMBtu/hr)</u>	<u>Maximum Firing Rate</u>	<u>Fuel Type</u>
Boiler 7	117	780.0 gal/hr	#6 fuel oil, 0.5% sulfur
	122.7	120,294 scf/hr	natural gas

#### D. Application Classification

This amendment is determined to be a minor revision under *Minor and Major Source Air Emission License Regulations* 06-096 CMR 115 (as amended) since the change in the NO<sub>x</sub> emission limit from Boiler #7 is being limited to less than a 4 tons/year increase.

## II. MINOR REVISION DESCRIPTION

Boiler 7, rated at 117 MMBtu/hr when firing #6 fuel oil and 122.7 MMBtu/hr when firing natural gas, was licensed to fire natural gas in a new source review license (A-427-77-3-A) issued on September 1, 2011. The proposed NO<sub>x</sub> emission rate submitted in the application was based on EPA's AP-42 factors. However, in the process of switching to natural gas from #6 fuel oil during the second week of December 2011, data showed that the unit's NO<sub>x</sub> is higher than originally proposed.

The licensed NO<sub>x</sub> emission limit was based on the AP-42 factor of 100 lb/MMscf from Table 1.4-1 dated 7/98. This equates to 0.098 lb/MMBtu, using a natural gas heat content of 1020 Btu/scf. Calculating a lb/hr limit from these numbers [(0.098 lb/MMBtu) x (122.7 MMBtu/hr)] results in the current license limit of 12.03 lb/hr.

When the fuel switchover occurred, Madison Paper Industries became aware that the number submitted in the application was lower than the burner vendor guarantee of 0.2 lb/MMBtu for NO<sub>x</sub>. This higher predicted value is due to the unique characteristics of the boiler, including its age and the fact that it was not originally designed to burn natural gas. Continuous emissions monitoring (CEM) data during the recent weeks has confirmed a higher emission rate.

In order to operate below the current license limit of 12.03 lb/hr, Madison Paper Industries has scaled down operations of Boiler 7. To offset this, Boiler 6 has continued to operate firing #6 fuel oil.

To meet the threshold of a minor revision, Madison Paper Industries has requested the ability to increase the NO<sub>x</sub> emission limit, but operate such that the overall NO<sub>x</sub> increase from Boiler 7 does not exceed 4 tons/year above the current licensed

allowed. The facility intends to prepare and submit an amendment request to adjust the NO<sub>x</sub> limit on a permanent basis.

The Department approves this minor revision, using a 0.2 lb/MMBtu NO<sub>x</sub> emission limit and the following calculations to document compliance with the minor revision threshold:

$$(0.2 \text{ lb/MMBtu} - 0.098 \text{ lb/MMBtu}) \times [(\text{MMBtu/hr heat input}) \times (\text{hrs of operation at the corresponding heat input})] / (1/2000) < 4 \text{ tons/yr}$$

Where (0.2 lb/MMBtu – 0.098 lb/MMBtu) is the difference between the current licensed emission rate and the vendor guaranteed rate. Using a constant full boiler capacity of 122.7 MMBtu/hr, Madison Paper Industries will be able to operate for 638 hours (26.5 days) or fire 76.75 MMscf at the temporary 0.2 lb/MMBtu limit.

### 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-427-77-3-M pursuant to the preconstruction licensing requirements of 06-096 CMR 115 and subject to the standard and special conditions below.

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 shall replace Condition 2 in air emission license amendment A-427-77-2-A:

(2) Boiler 7

A. Natural gas may be fired in Boiler 7. [06-096 CMR 115, BACT]

B. Emission Limits

1. Emissions from Boiler 7 (122.7 MMBtu/hr) shall not exceed the following limits while firing natural gas [06-096 CMR 115, BACT]:

Pollutant	lb/MMBtu	lb/hr
PM	-	0.91 lb/hr
PM <sub>10</sub>	-	0.91 lb/hr
SO <sub>2</sub>	-	0.07 lb/hr
NO <sub>x</sub>	0.2 (determined by CEM data)	see condition 2(B)(2) below
CO	-	10.10 lb/hr
VOC	-	0.66 lb/hr

2. Total NO<sub>x</sub> emissions shall be limited to the following until an air emission license amendment is issued permanently revising the NO<sub>x</sub> limit:

$$(X \text{ lb/MMBtu} - 0.098 \text{ lb/MMBtu}) \times \text{sum}[(\text{MMBtu/hr actual heat input}) \times (\text{hr(s) of operation at the corresponding heat input})] / (1/2000) \leq 4 \text{ tons/yr}$$

Where:

- X is the actual lb/MMBtu emissions from the boiler, not to exceed 0.2 lb/MMBtu as determined by CEM data
- MMBtu/hr is actual heat input as determined by operational records

Madison Paper Industries shall keep records of the calculation above to demonstrate compliance with the minor revision threshold.

Note: Madison Paper Industries may simplify this calculation by using the 'not to exceed' NO<sub>x</sub> emission limit of 0.2 lb/MMBtu and a constant full boiler capacity of 122.7 MMBtu/hr, which results in the facility being restricted to 638 hours (26.5 days) or firing 76.75 MMscf at the temporary 0.2 lb/MMBtu limit.

- C. Madison Paper Industries shall operate Boiler 7 such that visible emissions from Boiler 7 when firing natural gas shall not exceed 10% opacity on a six (6) minute block average basis, for more than one (1) six (6) minute block average in a 3-hour period. [06-096 CMR 101]
- D. Madison Paper Industries shall maintain records of natural gas fired in Boiler 7, based on a monthly and 12 month rolling total basis for inventory purposes. [06-069 CMR 137]

DONE AND DATED IN AUGUSTA, MAINE THIS 27<sup>th</sup> DAY OF December, 2011.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Melanie [Signature]  
PATRICIA W. AHO, COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: December 21, 2011

Date of application acceptance: December 22, 2011

Date filed with the Board of Environmental Protection:

This Order prepared by Kathleen E. Tarbuck, Bureau of Air Quality.

