



DEPARTMENT ORDER

**Robbins Lumber, Inc.
Waldo County
Searsmont, Maine
A-156-77-5-M**

**Departmental
Findings of Fact and Order
New Source Review
NSR #5**

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 (the Department) finds the following facts:

I. REGISTRATION

A. Introduction

FACILITY	Robbins Lumber, Inc. (Robbins Lumber)
LICENSE TYPE	06-096 C.M.R. ch. 115, Minor Revision
NAICS CODES	321912, 321113, 321999
NATURE OF BUSINESS	Lumber Manufacturing
FACILITY LOCATION	53 Ghent Road, Searsmont, Maine

B. NSR License Description

Robbins Lumber, Inc. is the owner of the lumber manufacturing facility in Searsmont, Maine. Georges River Energy, LLC, a wholly owned subsidiary of Robbins Lumber, Inc., operates the biomass cogeneration process at the facility. References and requirements in this license for Robbins Lumber, Inc. apply to both Georges River Energy, LLC and Robbins Lumber, Inc.

Robbins Lumber, Inc. (Robbins Lumber) has requested a New Source Review (NSR) license minor revision to extend emission limit applicability dates and stack testing requirement deadlines to allow additional time for evaluation of boiler operating performance and optimization and control options for nitrogen oxide (NO_x) and carbon monoxide (CO) emissions.

This amendment will not increase licensed emissions of any pollutant. Therefore, this amendment is determined to be a minor revision and has been processed as such.

C. Emission Equipment

The following equipment is addressed in this NSR license:

Fuel Burning Equipment

Equipment	Maximum Capacity (MMBtu/hr)	Maximum Firing Rate	Fuel Type, % sulfur	Stack #
Biomass Boiler #3	167.3	~446 tons/day	Wood/ Biomass, negligible	3

D. Project Description

Robbins Lumber was licensed in 2017 to construct Biomass Boiler #3 for cogeneration: to provide electrical power to the grid and steam and electrical power to the existing lumber manufacturing facility at this location. Due to the uncertainty of the ability to achieve the proposed NO_x BACT limit upon initial startup and commissioning of Biomass Boiler #3 without the installation and operation of a selective non-catalytic reduction (SNCR) control system, the Department licensed Robbins Lumber to achieve the limit in two phases. Initially, NO_x emissions from Biomass Boiler #3 were to be limited to 0.25 lb/MMBtu for a period of 365 days from the date of initial startup, and after that time the final NO_x emission limit of 0.15 lb/MMBtu was to take effect. CO was initially limited to 0.60 lb/MMBtu, with a final CO emission limit of 0.30 lb/MMBtu to take effect at the same time as the final NO_x limit.

Robbins Lumber achieved first fire of Biomass Boiler #3 on November 28, 2018 but did not achieve reliable and consistent firing rates until September 2019 due to a manufacturing defect of the steam turbine associated with the boiler. Upon stabilizing operations of the boiler and steam turbine system, particulate matter (PM) and volatile organic compound (VOC) stack testing was completed in October 2019. Since that time, Robbins Lumber has continued to work to reduce NO_x and CO emissions to meet the lower NO_x and CO emission limits. Because KWM, the manufacturer of Biomass Boiler #3, is presently in bankruptcy proceedings and under creditor protection granted by the Courts, Robbins Lumber was not able to receive technical support from KMW to fine-tune the boiler's operations. In February 2020, Robbins Lumber initiated engagement with Wechsler Engineering (Wechsler), a boiler and pollution control specialty company.

Robbins Lumber has been actively working with Wechsler to evaluate potential methods to minimize NO_x and CO emissions from Boiler #3 and obtain recommendations regarding any changes necessary to meet the applicable NO_x, CO, and NH₃ slip limits of 0.15 lb/MMBtu, 0.3 lb/MMBtu, and 40 ppm, respectively. To date, Wechsler has made changes to improve the under-grate primary air (UGA) delivery system and balance the existing Flue Gas Recirculation (FGR) and Over Fire Air (OFA) systems to try to achieve

the targeted NO_x and CO emission limits. Wechsler has also completed additional furnace box modeling and design change options to identify further gains by modifying the secondary air system and making some firebox modifications, but Robbins Lumber has not yet made these physical changes. With all the proposed firebox changes in-place, boiler combustion modeling conducted by Wechsler predicts a high level of urea injection required to achieve the NO_x license limits. At the Department's recommendation to solicit additional evaluation of the system, Robbins Lumber has hired Yanke Energy (Yanke), an engineering firm specializing in renewable energy projects, to review the boiler and the Wechsler design recommendations.

Robbins is requesting additional time to achieve the best outcome, to include the following:

- To work with Wechsler and Yanke to determine the best approach to reduce CO and NO_x emissions;
- To make physical changes to the boiler if appropriate;
- To tune the boiler to determine the lowest levels of CO and NO_x achievable without SNCR; and
- To determine whether SNCR will be feasible and/or effective.

If it is determined that SNCR is required to achieve the final NO_x and CO emission limits, baseline performance data will provide the basis to determine appropriate urea dosage rates and predicted ammonia slip emissions.

The Department hereby grants the requested extension. Emission limit dates, as found in NSR Amendment A-156-77-4-M (11/19/2020), Specific Condition (3) G. 2. d., are extended in this NSR amendment from September 30, 2021, to December 31, 2022.

In addition, stack testing due dates, as found in A-156-77-4-M (11/19/2020), Specific Condition (3) H. 3. and 5, are extended in this NSR amendment from November 28, 2021, to March 31, 2023, to accommodate the emission limit extensions.

Robbins Lumber shall provide to the Department updates every other month, through and including February of 2023, conveying the status of boiler combustion system evaluations, modeling results, and adjustments determined necessary to achieve the NO_x and CO emission limits, as well as the potential need to install SNCR and predicted related ammonia slip levels. The first update is due by November 28, 2021.

ORDER

The Department hereby grants New Source Review Minor Revision A-156-77-5-M pursuant to the preconstruction licensing requirements of 06-096 C.M.R. ch. 115 and subject to the specific conditions below.

Severability. The invalidity or unenforceability of any provision of this NSR Amendment or part thereof shall not affect the remainder of the provision or any other provisions. This NSR 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 (3) G. 2. d. in A-156-77-3-A (June 30, 2017) and in A-156-77-4-M (November 19, 2020):

(3) **Boiler #3**

G. Control Equipment

2. NO_x Control

- d. If Robbins Lumber cannot achieve compliance with the NO_x limit of 0.15 lb/MMBtu without add-on controls, Robbins Lumber shall have an SNCR system installed and operational by December 31, 2022. Until the SNCR system is operating and commissioned but no later than December 31, 2022, NO_x emissions shall be limited to 0.25 lb/MMBtu and CO emissions shall be limited to 0.60 lb/MMBtu. Starting December 31, 2022, NO_x emissions shall be limited to 0.15 lb/MMBtu and CO emissions shall be limited to 0.30 lb/MMBtu.

The following have been added to Specific Condition (3) G. 2. in A-156-77-3-A (June 30, 2017) and in A-156-77-4-M (November 19, 2020):

- f. If SNCR is installed and operated to achieve the final NO_x emission limit, the SNCR system shall be operating when Boiler #3 is in operation except for periods of startup and shutdown. The SNCR shall be operated and maintained according to the manufacturer's emissions-related written instructions, or Robbins Lumber shall develop a maintenance plan which provides to the extent practicable for the maintenance and operation of the SNCR system in a manner consistent with good air pollution control practice for minimizing emissions. [06-096 C.M.R. ch 115, BACT]

- g. In addition, Robbins Lumber shall be limited to 40 ppmdv of ammonia slip emissions @ 12% CO₂ based on an average of three, 1-hour run emission tests during the operation of the SNCR. The test shall be conducted every two calendar years using EPA's Conditional Test Method for Ammonia (CTM-027) or other method approved by the EPA or the Department. [06-096 C.M.R. ch. 115, BACT]
- (1) Robbins Lumber shall monitor reagent (ammonia or urea) injection flow rate for the SNCR. This parameter shall be monitored at all times the unit operates to demonstrate ongoing compliance with NO_x emission limits.
 - (2) Based on the results of stack testing, Robbins Lumber shall determine the minimum reagent injection rate corresponding to the required level of NO_x emissions control.
 - (3) The reagent injection flow rate meter must record accurate and reliable data. If the parameter monitor is recording accurate and reliable data less than 98% of the source operating time within any quarter of the calendar year, the Department may initiate enforcement action and may include in that enforcement action any period of time that the parameter monitor was not recording accurate and reliable data during that quarter unless the licensee can demonstrate to the satisfaction of the Department that the failure of the system to record accurate and reliable data was due to the performance of established quality assurance and quality control procedures or unavoidable malfunctions. [06-096 C.M.R. ch 115, BPT]
- h. Robbins Lumber shall provide to the Department updates every other month, through and including February of 2023, conveying the status of boiler combustion system evaluations, modeling results, and adjustments determined necessary to achieve the NO_x and CO emission limits, as well as the potential need to install SNCR and predicted related ammonia slip levels. The first update is due November 28, 2021.

The following shall replace Specific Condition (3) H. 3. & 5. in A-156-77-3-A (June 30, 2017) and in A-156-77-4-M (November 19, 2020):

H. Stack Testing

3. Robbins Lumber shall conduct stack testing for PM, PM₁₀, PM_{2.5}, NO_x, CO, and VOC to demonstrate compliance with the licensed emission limits on a lb/hr basis, as contained in Condition (3) C and for NO_x to demonstrate compliance with the licensed emission limits on a lb/MMBtu basis for NO_x contained in Condition (3) G. by March 31, 2023. When performing this stack testing for compliance purposes, Boiler #3 shall be operated under normal operating conditions. If SNCR is installed, the minimum ammonia injection rate to achieve

compliance with the NO_x emission shall be determined during the NO_x emissions testing. [06-096 C.M.R. ch. 115, BACT]

5. Robbins Lumber shall conduct HCl stack testing, utilizing EPA Test Methods 26 and 26A, by March 31, 2023, for the purpose of validating the HCl emission factor used to demonstrate that the total HCl emissions from the licensed boilers at the facility remain below the single HAP major source threshold of 10 TPY. [06-096 C.M.R. ch. 115, BACT]

DONE AND DATED IN AUGUSTA, MAINE THIS 28th DAY OF SEPTEMBER, 2021.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY:  for
MELANIE LOYZIM, COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 8/24/2021

Date of application acceptance: 8/26/2021

Date filed with the Board of Environmental Protection:

This Order prepared by Lisa P. Higgins, Bureau of Air Quality.

