STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

Irving Forest Products, Inc. **Oxford County** **Dixfield, Maine** **A-409-77-3-M**	**Departmental** **Findings of Fact and Order** **New Source Review** **NSR #3**

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	Irving Forest Products, Inc.
LICENSE TYPE	06-096 C.M.R. ch. 115, Minor Revision
NAICS CODES	321912, 321113, 321999
NATURE OF BUSINESS	Lumber Manufacturer
FACILITY LOCATION	24 Hall Hill Road, Dixfield, Maine

B. NSR License Description

Irving Forest Products, Inc. (IFP) has requested a New Source Review (NSR) license amendment to correct the heat input capacities of Boilers #1, #2, and #4.

C. Emission Equipment

The following equipment is addressed in this NSR license amendment:

Boilers

Equipment	Maximum Heat Input Capacity (MMBtu/hr)	Fuel Type, % sulfur	Manufacture Date	Install Date	Stack #
Boiler #1	20.6	biomass, negligible	1959	1959	1
Boiler #2	20.6	biomass, negligible	1960	1960	1
Boiler #4	49.3	biomass, negligible	pre-1984	1994	3

D. Definitions

Biomass. For the purposes of this license and in accordance with 40 Code of Federal Regulations (C.F.R.) Part 63, Subpart JJJJJJ, *biomass* means any biomass-based solid fuel that is not a solid waste. This includes, but is not limited to, wood residue and wood products (e.g., trees, tree stumps, tree limbs, bark, lumber, sawdust, sander dust, chips, scraps, slabs, millings, and shavings); and vegetative agricultural and sylvicultural materials, such as logging residues (slash). This definition also includes wood as defined in 40 C.F.R. Part 60, Subpart Dc.

E. Application Classification

All rules, regulations, or statutes referenced in this air emission license refer to the amended version in effect as of the issued date of this license.

The application submitted by IFP does not violate any applicable federal or state requirements and does not reduce monitoring, reporting, testing, or recordkeeping requirements. It does not seek to modify performance-based emission limits (e.g., lb/MMBtu) established through a Best Available Control Technology (BACT) analysis. However, the application requests the correction of the boilers' rated heat input capacity which necessitates the revision of mass-based emission limits (e.g., lb/hr).

Therefore, this NSR license amendment is determined to be a minor revision under *Minor and Major Source Air Emission License Regulations* 06-096 Code of Maine Rules (C.M.R.) ch. 115. An application to incorporate the requirements of this NSR license into the Part 70 air emission license was submitted with the NSR amendment application.

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 C.M.R. ch. 100. 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 06-096 C.M.R. ch. 100. BACT is a top-down approach to selecting air emission controls considering economic, environmental and energy impacts.

Note: Determining the heat input capacity of biomass-fired boilers is an inexact science involving many variables including moisture content of the fuel, fuel size and species, and heat transfer efficiency. The Department believes that the most accurate and up to date information has been used in the calculations contained in this license.

B. Boilers #1 and #2

Boilers #1 and #2 (also known as the Dillon Boilers) are biomass-fired boilers manufactured in 1959 and 1960 respectively. They were originally licensed prior to 1988 with a maximum heat input rating of 12.0 MMBtu/hr.

IFP has reviewed their records for Boilers #1 and #2 and determined that the heat input capacity was originally listed incorrectly, and this error has been carried forward through subsequent licensing actions. IFP provided a letter dated 8/9/2018 from Dillon Boiler Services Co., Inc. stating that the correct capacity for each boiler is 412.4 horsepower. This corresponds to a heat input rating of 20.6 MMBtu/hr based on an efficiency of 73%.

IFP has requested that their license be revised to reflect the correct maximum heat input for each boiler. This change does not reflect any physical change or change in the method of operation and will not result in any change in actual emissions. However, this change will require revisions to licensed emission limits which correspond to the correct boiler size.

1. BACT Findings

Emission limits for Boilers #1 and #2 were last addressed in an NSR license issued 1/19/2001 (A-409-71-O-A). Emission rates for SO_2, CO, and VOC in that license were based on EPA's AP-42 emission factors available at the time for wood-fired boilers. Since then, the AP-42 emission factors for these pollutants have been updated. Therefore, the most current emission factors have been used in this license.

In addition, a previous BACT analysis established a PM_{10} lb/MMBtu emission limit lower than that used for PM as it did not include emissions of condensables. Since the definition of PM_{10} now includes the condensable fraction, the PM_{10} emission limits have been adjusted accordingly.

BACT emission limits for Boilers #1 and #2 were based on the following:

PM/PM_{10}	–	0.30 lb/MMBtu based on 06-096 C.M.R. ch. 115, BACT
SO_2	–	0.025 lb/MMBtu based on AP-42 Table 1.6-2 dated 9/03
NO_x	–	0.40 lb/MMBtu based on 06-096 C.M.R. ch. 115, BACT
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
Visible Emissions	–	06-096 C.M.R. ch. 115, BACT

The BACT emission limits for Boilers #1 and #2 are the following:

Unit	Pollutant	lb/MMBtu
Boiler #1	PM	0.30
Boiler #2	PM	0.30

Unit	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Boiler #1	6.17	6.17	0.51	8.22	12.34	0.35
Boiler #2	6.17	6.17	0.51	8.22	12.34	0.35

2. Visible Emissions

Visible emissions from Stack #1 (Boilers #1 and #2) shall not exceed 30% opacity on a six (6) minute block average basis except for periods of startup, shutdown, and malfunction, during which time IFP may elect to demonstrate compliance by complying with all of the following work practice standards.

a. IFP shall maintain a log (written or electronic) of the date, time, and duration of all operating time, startups, shutdowns, and malfunctions for each boiler (Boilers #1 and #2).

b. IFP shall develop and implement a written startup and shutdown plan for Boilers #1 and #2.

c. Boilers #1 and #2 shall be operated at all times in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Department that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the unit.

For the purposes of this license, startup and shutdown of Boilers #1 and #2 are defined as follows:

A *startup period* is defined as a period of time commencing when fuel is first fired in the boiler and ending when the combustion chamber temperature exceeds 1,600 °F. The total duration of this period shall not exceed four (4) hours.

A *shutdown period* is defined as a period of time commencing when fuel is no longer being fed into the boiler and ending when ash is no longer exiting the ash handling system. The total duration of this period shall not exceed four (4) hours.

3. New Source Performance Standards (NSPS): 40 C.F.R. Part 60, Subpart Dc

Boilers #1 and #2 underwent physical changes per air emission license A-409-74-D-R/A, issued 3/11/1993. The boilers were retrofit in two ways; by changing the fuel delivery method and installing a multi-zone underfire air grate system. An infeed screw auger system replaced the air swept spreader stoker, and a 12-zone underfire air grate system was added to allow for increased control of where underfire air was introduced. Both of these changes were intended to reduce emissions of particulate matter. Since neither of these changes resulted in increased emissions, these changes were not considered a modification as defined by 40 C.F.R. Part 60.

This NSR license amendment does not make any physical changes or changes to the way the boilers are operated. Therefore, the changes addressed in this license are not considered a modification under 40 C.F.R. Part 60.

Therefore, due to their year of manufacture, Boilers #1 and #2 are not subject to *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units* 40 C.F.R. Part 60, Subpart Dc for units greater than 10 MMBtu/hr manufactured after June 9, 1989. [40 C.F.R. § 60.40c]

C. Boiler #4

Boiler #4 (also known as the IBC Boiler) is a 1,000 horsepower biomass-fired boiler manufactured and installed at Bates College in Lewiston, Maine prior to 1984 and moved to the IFP facility in 1994. It was originally licensed by IFP in air emission license A-409-74-E-A, issued 10/4/1994, with a maximum heat input rating of 46.2 MMBtu/hr.

IFP has identified an error in the calculations used during the initial licensing of this boiler. Calculations used at the time listed an enthalpy of steam of 1,004.4 Btu/lb of steam. However, Boiler #4 operates at a feedwater temperature of 180 °F, and the steam is heated to a temperature of 414 °F at 275 psig, resulting in an enthalpy of 1,044 Btu/lb. IFP believes the use of 1,004.4 Btu/lb vs. 1,044 Btu/lb was a transposition error made by the engineering consultant at the time.

When the correct enthalpy is used, the maximum heat input for Boiler #4 is calculated to be 49.3 MMBtu/hr. These calculations are consistent with the capacity listed for Boiler #2 operated by Robbins Lumber, Inc. in Searsmont, a boiler which is believed to be identical.

IFP has requested that their license be revised to reflect the correct maximum heat input for Boiler #4. This change does not reflect any physical change or change in the method of operation and will not result in any change in actual emissions. However, this change will require revisions to licensed emission limits which correspond to the correct boiler size.

1. BACT Findings

Emission limits for Boiler #4 were last addressed in an NSR license issued 12/15/1998 (A-409-71-L-M). Emission rates for SO_2, CO, and VOC in that license were based on EPA's AP-42 emission factors available at the time for wood-fired boilers. Since then, the AP-42 emission factors for these pollutants have been updated. Therefore, the most current emission factors have been used in this license.

BACT emission limits for Boiler #4 were based on the following:

PM/PM_{10}	–	0.27 lb/MMBtu based on 06-096 C.M.R. ch. 115, BACT
SO_2	–	0.025 lb/MMBtu based on AP-42 Table 1.6-2 dated 9/03
NO_x	–	0.40 lb/MMBtu based on 06-096 C.M.R. ch. 115, BACT
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
Visible Emissions	–	06-096 C.M.R. ch. 115, BACT

The BACT emission limits for Boiler #4 are the following:

Unit	Pollutant	lb/MMBtu
Boiler #4	PM	0.27

Unit	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Boiler #4	13.31	13.31	1.23	19.72	29.58	0.84

2. Visible Emissions

Visible emissions from Stack #3 (Boiler #4) shall not exceed 30% opacity on a six (6) minute block average basis except for periods of startup, shutdown, and malfunction, during which time IFP may elect to demonstrate compliance by complying with all of the following work practice standards.

a. IFP shall maintain a log (written or electronic) of the date, time, and duration of all operating time, startups, shutdowns, and malfunctions for Boiler #4.

b. IFP shall develop and implement a written startup and shutdown plan for Boiler #4.

c. Boiler #4 shall be operated at all times in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Department that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the unit.

For the purposes of this license, startup and shutdown of Boiler #4 are defined as follows:

A *startup period* is defined as a period of time commencing when fuel is first fired in the boiler and ending when the combustion chamber temperature exceeds 1,925 °F. The total duration of this period shall not exceed four (4) hours.

A *shutdown period* is defined as a period of time commencing when fuel is no longer being fed into the boiler and ending when ash is no longer exiting the ash handling system. The total duration of this period shall not exceed four (4) hours.

3. New Source Performance Standards (NSPS): 40 C.F.R. Part 60, Subpart Dc

This NSR license amendment does not make any physical changes or changes to the way Boiler #4 is operated. Therefore, the changes addressed in this license are not considered a modification under 40 C.F.R. Part 60.

Therefore, due to the year of manufacture, Boiler #4 is not subject to *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units* 40 C.F.R. Part 60, Subpart Dc for units greater than 10 MMBtu/hr manufactured after June 9, 1989. [40 C.F.R. § 60.40c]

D. Incorporation Into the Part 70 Air Emission License

The requirements in this 06-096 C.M.R. ch. 115 New Source Review license shall apply to the facility upon issuance. Per *Part 70 Air Emission License Regulations*, 06-096 C.M.R. ch. 140 § 1(C)(8), for a modification at the facility that has undergone NSR requirements or been processed through 06-096 C.M.R. ch. 115, the source must apply for an amendment to their Part 70 license within one year of commencing the proposed operations, as provided in 40 C.F.R. Part 70.5. IFP has applied to incorporate the requirements of this NSR license amendment as part of the facility's pending Part 70 renewal.

E. Annual Emissions

1. Emission Totals

IFP is licensed for the following annual emissions, based on a 12-month rolling total. The tons per year limits were calculated based on the following:

- Operation of Boilers #1, #2, and #4 at full capacity for 8,760 hours/year each;
- Operation of Fire Pump #1 and Generator #1 for 100 hours/year each; and
- Drying 108.05 MMBF/year in the kilns.

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

	PM	PM_{10}	SO_2	NO_x	CO	VOC
Boiler #1	27.0	27.0	2.3	36.0	54.0	1.5
Boiler #2	27.0	27.0	2.3	36.0	54.0	1.5
Boiler #4	58.3	58.3	5.4	86.4	129.6	3.7
Fire Pump #1	–	–	–	0.4	0.1	–
Generator #1	–	–	–	0.3	0.1	–
Kilns #1 - #11	–	–	–	–	–	122.1
Total TPY	**112.3**	**112.3**	**10.0**	**159.1**	**237.8**	**128.8**

Pollutant	Tons/year
Single HAP	9.9
Total HAP	24.9

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 C.F.R. Part 52, Subpart A, § 52.21, *Prevention of Significant Deterioration*

of Air Quality rule. Greenhouse gases, as defined in 06-096 C.M.R. ch. 100 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 (CO_2e).

The quantity of CO_2e emissions from this facility is less than 100,000 tons per year, based on the following:

- the facility's fuel use;
- worst case emission factors from the following sources: U.S. EPA's AP-42, the Intergovernmental Panel on Climate Change (IPCC), and *Mandatory Greenhouse Gas Reporting,* 40 C.F.R. Part 98,; and
- global warming potentials contained in 40 C.F.R. Part 98.

No additional licensing actions to address GHG emissions are required at this time.

III. AMBIENT AIR QUALITY ANALYSIS

IFP previously submitted an ambient air quality analysis demonstrating that emissions from the facility, in conjunction with all other sources, do not violate ambient air quality standards (see license A-409-71-O-A, issued on 1/19/01). After reviewing the changes to short-term and annual emission rates addressed in this license amendment, the Department has determined that an additional ambient air quality analysis is not required for this NSR license amendment.

ORDER

The Department hereby grants New Source Review Minor Revision A-409-77-3-M pursuant to the preconstruction licensing requirements of 06-096 C.M.R. ch. 115 and subject to the standard and special conditions below.

Severability. The invalidity or unenforceability of any provision of this License or part thereof 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.

SPECIFIC CONDITIONS

The following shall replace the BACT Conditions for Boilers #1 and #2 found in air emission licenses A-409-71-L-M Condition (41), A-409-71-O-A Conditions (13) and (37), and any other previously issued NSR license:

(1) **Boilers #1 and #2**

A. Boilers #1 and #2 are licensed to fire biomass and chipped pallets. The chipped pallets fired in Boilers #1 and #2 shall not be coated, painted, or treated in any way, and all fasteners shall be removed. [06-096 C.M.R. ch. 115, BACT]

B. Boilers #1 and #2 shall each not exceed an annual fuel usage of 20,000 ton/year (12-month rolling total basis) of biomass at an assumed moisture of 50% by weight. IFP shall keep records of fuel usage in each boiler on a monthly and 12-month rolling total basis. [06-096 C.M.R. ch. 115, BACT]

C. Boilers #1 and #2 Emission Limits

1. Emissions from Boilers #1 and #2 shall each not exceed the following limits: [06-096 C.M.R. ch. 115, BACT]

Unit	Pollutant	lb/MMBtu
Boiler #1	PM	0.30
Boiler #2	PM	0.30

Unit	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Boiler #1	6.17	6.17	0.51	8.22	12.34	0.35
Boiler #2	6.17	6.17	0.51	8.22	12.34	0.35

2. Visible emissions from Stack #1 (Boilers #1 and #2) shall not exceed 30% opacity on a six (6) minute block average basis, except for periods of startup, shutdown, and malfunction during which time IFP may elect to demonstrate compliance by complying with all of the following work practice standards.

a. IFP shall maintain a log (written or electronic) of the date, time, and duration of all operating time, startups, shutdowns, and malfunctions for each boiler (Boilers #1 and #2).

b. IFP shall develop and implement a written startup and shutdown plan for Boilers #1 and #2.

c. Boilers #1 and #2 shall be operated at all times in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Department that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the unit.

For the purposes of this license, startup and shutdown of Boilers #1 and #2 are defined as follows:

A *startup period* is defined as a period of time commencing when fuel is first fired in the boiler and ending when the combustion chamber temperature exceeds 1,600 °F. The total duration of this period shall not exceed four (4) hours.

A *shutdown period* is defined as a period of time commencing when fuel is no longer being fed into the boiler and ending when ash is no longer exiting the ash handling system. The total duration of this period shall not exceed four (4) hours.

[06-096 C.M.R. ch. 115, BACT]

The following shall replace the BACT Conditions for Boiler #4 found in air emission licenses A-409-74-E-A Conditions (28) and (29), A-409-71-L-M Conditions (30) and (41), A-409-71-O-A Condition (37), and any other previously issued NSR license:

(2) **Boiler #4**

A. Boiler #4 is licensed to fire biomass and chipped pallets. The chipped pallets fired in Boiler #4 shall not be coated, painted, or treated in any way, and all fasteners shall be removed. [06-096 C.M.R. ch. 115, BACT]

B. Boiler #4 shall not exceed an annual fuel usage of 48,000 ton/year (12-month rolling total basis) of biomass at an assumed moisture of 50% by weight. IFP shall keep records of fuel usage in Boiler #4 on a monthly and 12-month rolling total basis. [06-096 C.M.R. ch. 115, BACT]

C. Emissions of particulate matter from Boiler #4 shall be controlled by the operation and maintenance of two multi-cyclones operated in series during all operating times. [06-096 C.M.R. ch. 115, BACT]

D. IFP shall operate and maintain an opacity monitor (non-specification) and an oxygen monitor on Boiler #4. Records of opacity and oxygen (O_2) shall be maintained by IFP with readings logged at least once per 4-hour period during all times Boiler #4 is in operation. [06-096 C.M.R. ch. 115, BACT]

E. Boiler #4 Emission Limits

1. Emissions from Boiler #4 shall not exceed the following limits: [06-096 C.M.R. ch. 115, BACT]

Unit	Pollutant	lb/MMBtu
Boiler #4	PM	0.27

Unit	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Boiler #4	13.31	13.31	1.23	19.72	29.58	0.84

2. Visible emissions from Stack #3 (Boiler #4) shall not exceed 30% opacity on a six (6) minute block average basis, except for periods of startup, shutdown, and malfunction during which time IFP may elect to demonstrate compliance by complying with all of the following work practice standards.

   a. IFP shall maintain a log (written or electronic) of the date, time, and duration of all operating time, startups, shutdowns, and malfunctions for Boiler #4.

   b. IFP shall develop and implement a written startup and shutdown plan for Boiler #4.

   c. Boiler #4 shall be operated at all times in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Department that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the unit.

   For the purposes of this license, startup and shutdown of Boiler #4 are defined as follows:

   A *startup period* is defined as a period of time commencing when fuel is first fired in the boiler and ending when the combustion chamber temperature exceeds 1,925 °F. The total duration of this period shall not exceed four (4) hours.

A *shutdown period* is defined as a period of time commencing when fuel is no longer being fed into the boiler and ending when ash is no longer exiting the ash handling system. The total duration of this period shall not exceed four (4) hours.

[06-096 C.M.R. ch. 115, BACT]

DONE AND DATED IN AUGUSTA, MAINE THIS 2 DAY OF October , 2018.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Marc Allen Robert Cone for
PAUL MERCER, COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 8/29/18
Date of application acceptance: 8/30/18

Date filed with the Board of Environmental Protection:

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

Filed
OCT 2 2018
State of Maine
Board of Environmental Protection