



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN ELIAS BALDACCI
GOVERNOR

DAVID P. LITTELL
COMMISSIONER

**S. D. Warren Company
Somerset County
Skowhegan, Maine
A-19-70-F-A**

**Departmental
Findings of Fact and Order
Part 70 Air Emission License
Amendment #2**

After review of the Part 70 License amendment 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, §344 and §590, the Department finds the following facts:

I. REGISTRATION

A. Introduction

FACILITY	S.D. Warren Company (SDW)
LICENSE TYPE	Part 70 Significant Modification
NAICS CODES	322121
NATURE OF BUSINESS	Pulp & Paper Manufacturer
FACILITY LOCATION	Skowhegan, Maine
AMENDMENT ISSUANCE DATE	December 9, 2009

B. Amendment Description

S.D. Warren Company (SDW) was issued a New Source Review (NSR) license A-19-77-2-A and an amendment A-19-77-4-M to address the following:

1. License an upgrade to the Recovery Boiler and supporting equipment.
2. Align the frequency of stack testing with State statute

SDW is now requesting that these changes be incorporated into their Part 70 air emission license.

C. Application Classification

The application for SDW does not violate any applicable federal or state requirements. A Best Available Control Technology (BACT) determination made per New Source Review (NSR) *Major and Minor Source Air Emission License Regulations*, 06-096 CMR 115 (last amended December 1, 2005) is in air emission license major modification A-19-77-2-A. The stack testing requirements in that air emission license and certain other stack testing requirements set forth in Part 70 air emission license A-19-70-A-I were modified in minor revision A-19-77-4-M. This action incorporates the requirements of these licenses into SDW's Part 70 license and is therefore determined to be a Part 70 Significant Modification and has been processed as such.

II. DETAILED AMENDMENT DESCRIPTION

A. Recovery Boiler Project Description

Currently, SDW can produce more black liquor in the digester than can be burned in the mill's Recovery Boiler. SDW has sent black liquor to other mills in the region to be burned and, in return, has received green liquor for use in the pulp production process. The Recovery Boiler upgrade project is intended to increase the capacity and efficiency of the Recovery Boiler to enable the mill to burn all of the black liquor it produces and to increase the energy efficiency of the mill. It is expected to reduce the mill's firing of fossil fuel by approximately 100,000 barrels of oil per year and increase pulp production capacity by approximately 3% to 4%. This project will not change the design or nature of the Recovery Boiler or evaporators.

This project consists of three primary changes:

1. The evaporator train will be upgraded by replacing the two existing concentrators with either two or three new concentrators. The vapor flow and liquor flows will be redirected through the existing evaporator bodies. In addition, new preheater(s) will be added to increase the total heat transfer surface area. These changes will increase the efficiency of the evaporator train by reducing the boiler steam usage per pound of water evaporated. The changes will also increase the capacity of the evaporator train to process enough liquor to support the recovery boiler upgrade.
2. The economizer on the Recovery Boiler will be replaced. This change will allow the mill to recover more heat from the Recovery Boiler flue gases reducing the heat lost through the stack, thereby improving the thermal efficiency of the Recovery Boiler and reducing fuel consumption in the mill's power boilers.

3. The existing Recovery Boiler combustion air system will be upgraded to meet BACT. The existing tertiary air system will be upgraded to a quaternary or five level air feed system. The upgraded/new air system will reduce the temperature of the flue gas entering the steam generating bank and therefore the likelihood of producing a sticky salt cake that could plug the generating bank. The new air system, through improved combustion control, will also reduce solids carryover and the concentration of carbon monoxide in the flue gas.

Other upgrades supporting the three primary changes noted above may include:

1. Replacing the steam drum internals of the Recovery Boiler to reduce the potential for water droplet carryover due to inadequate steam separation which could result in superheater deposits, corrosion and turbine generator blade deposits.
2. Upgrading the Recovery Boiler feed water control valve to accommodate the new feed water flow conditions.
3. The addition of two new smelt spouts to the four spouts currently in service on the Recovery Boiler to handle the increase in smelt flow.
4. Modification of the tubes on each side of the Recovery Boiler to increase the water velocity and reduce the risk of overheating the tubes.
5. Upgrade the green liquor transfer system with new valves and larger pumps to accommodate the increase in green liquor flow.
6. Potentially provide steam coil heaters in the combustion air system to improve the efficiency of the Recovery Boiler.
7. Install a vapor line from the evaporator system's fifth effect to the surface condenser. This will reduce the pressure drop and improve evaporator steam economy.
8. Install a black liquor bypass line which will allow the mill to run on one of the two second effect bodies. This will stabilize the evaporator operation during startups and while running under reduced loads.
9. Relocate the opacity monitor to optimize its location on the Recovery Boiler stack gas ductwork.

During this extended outage, maintenance that would otherwise be required will be performed. The steam tubes in the generating section of the Recovery Boiler may be replaced during this outage.

This project will not involve any physical changes to the Recovery Boiler oil firing system or the Smelt Dissolving Tanks. Because this project will not affect the oil firing system of the Recovery Boiler, this project does not trigger applicability of 40 CFR Part 60, Subpart D or Db for the Recovery Boiler.

B. Recovery Boiler BACT

SDW performed a BACT analysis on the Recovery Boiler for all criteria pollutants and TRS. This BACT analysis is described in detail in air emission license A-19-77-2-A.

C. Recovery Boiler Streamlining

1. Opacity

- a. 06-096 CMR 101, Section (2)(B)(5) and Section (3) contain an applicable opacity standard for the combined emissions from the Main Stack. No streamlining is requested.
- b. MACT, 40 CFR Part 63, Subpart MM contains an applicable opacity standard for emissions from the Recovery boiler in the duct to the Main Stack.
- c. NSPS, 40 CFR Subpart BB contains an applicable opacity standard.

SDW accepts streamlining for the opacity standards listed in 1(b) and 1(c) above. The MACT opacity standard is considered to be the most stringent and is therefore the only standard included in this license.

2. PM

- a. 06-096 CMR 105, Section (2) contains an applicable PM emission standard on a lb/air dried ton of pulp basis.
- b. MACT, 40 CFR Part 63, Subpart MM contains an applicable PM g/dscm (gr/dscf) emission standard. SDW established a PM limit pursuant to 63.862(a)(1)(ii). The emission limit was submitted as part of the notification of compliance status required under Subpart A of Part 63, pursuant to Section 63.867(b)(1). SDW may reestablish a different alternative PM limit by following the procedures required in 63.862(a)(1)(ii) and this will not be considered a modification.
- c. BACT establishes applicable PM gr/dscf emission limits based on the number of chambers on-line in the ESP.

SDW accepts streamlining for the PM standards in 2(a), 2(b), and 2(c) above. The BACT limits are determined to be most stringent and is therefore the only PM concentration standard included in this license.

- d. BACT establishes an applicable PM lb/hr emission limit for firing black liquor and a PM lb/hr limit for firing oil.
No streamlining is requested.

3. PM₁₀
BACT establishes the only applicable PM₁₀ lb/hr emission limit.
No streamlining is requested.
4. SO₂
 - a. 06-096 CMR 106, Section (2)(A) contains the only applicable fossil fuel sulfur content standard (this applies only when there is no smelt in the boiler). No streamlining is requested.
 - b. 06-096 CMR 106, Section (4) contains the only applicable SO₂ lb/MMBtu emission standard (this applies when there is smelt in the boiler). No streamlining is requested.
 - c. BACT establishes the only applicable SO₂ lb/hr emission limit. No streamlining is requested.
5. NO_x
 - a. 06-096 CMR 138, Section (3)(C) contains an applicable NO_x ppm emission standard. (120 ppmv on a wet basis and 24-hr average)
 - b. BACT establishes an applicable NO_x ppm emission limit. (120 ppmv on a dry basis and a 30-day rolling average)

SDW accepts streamlining for the NO_x ppm emission limit. The BACT limit is more stringent and is therefore the only NO_x ppm emission limit included in this license.

 - c. BACT establishes the only applicable NO_x lb/hr emission limit. No streamlining is requested.
6. CO
 - a. BACT establishes the only applicable CO ppm emission limit. No streamlining is requested.
 - b. BACT establishes the only applicable CO lb/hr emission limit. No streamlining is requested.
7. VOC
BACT establishes the only applicable VOC lb/hr emission limit.
No streamlining is requested.
8. Total Reduced Sulfur (TRS)
 - a. 06-096 CMR 124, Section (3)(H) contains an applicable TRS ppm emission standard.
 - b. NSPS, 40 CFR Subpart BB contains an applicable TRS ppm emission standard.
 - c. BACT establishes an applicable TRS ppm emission standard.

SDW accepts streamlining for the TRS ppm emission standard. The BACT limit is most stringent and is therefore the only ppm emission standard included in this license.

D. Multiple Effect Evaporators BACT

SDW performed a BACT analysis on the Multiple Effect Evaporators for VOC and TRS. Gases produced by the multiple effect evaporators are controlled by the mill's High Volume Low Concentration (HVLC) and Low Volume High Concentration (LVHC) collection systems. HVLC and LVHC gases are combusted in Power Boiler #1, Power Boiler #2, the Lime Kiln, and the Recovery Boiler. The existing redundant combustion control technologies are consistent with BACT for this equipment.

E. Multiple Effect Evaporators Streamlining

1. TRS

- a. 06-096 CMR 124 contains applicable TRS ppm emission standard.
- b. NSPS, 40 CFR Subpart BB contains an applicable TRS ppm emission standard.
- c. BACT establishes an applicable TRS ppm emission standard.

SDW accepts streamlining for the TRS ppm emission standard. All three ppm standards listed above are identical. Therefore, only the BACT limit is cited in this license.

2. VOC

This source is subject to and has been evaluated for VOC RACT per 06-096 CMR 134. No streamlining is requested.

3. HAPs

40 CFR Part 63, Subpart S contains applicable HAP standards.
No streamlining is requested.

F. Adjusting Stack Test Frequency

SDW has requested that the stack testing frequency listed in the license be adjusted to reflect recent changes in Maine Statute. Specifically, 38 MRSA 589 Subsection 2 states that facilities shall not be required to stack test for chlorine or chlorine dioxide more than once every five years. In addition, facilities monitored by a Continuous Opacity Monitor (COM) or appropriate surrogate parameters as required by the commissioner shall not be required to stack test for PM more than once every five years. If visible emissions, operating parameters, federal requirements, or other information indicates that the source may be operating out of compliance, additional testing may be required upon request of the Department.

G. Annual Emissions

SDW shall be restricted to the following annual emissions:

Total Licensed Annual Emission for the Facility (TPY)
(used to calculate the annual license fee)

	PM	PM ₁₀	SO ₂	NO _x	CO	VOC
Package Boiler	4.5	4.5	224.3	44.7	11.4	0.4
Power Boiler #1	963.6	963.6	3,258.7	1,309.6	9,942.6	60.0
Power Boiler #2	170.8	170.8	1,537.4	1,138.8	2,277.6	39.9
Recovery Boiler	906.7	906.7	8650.5	3,285.0	13,634.9	65.7
Smelt Tanks #1 &2	113.9	--	113.9	--	--	--
Lime Kiln	254.0	254.0	328.5	254.0	254.0	43.8
Total TPY	2,413.5	2,413.5	14,113.2	6,032.1	26,120.6	209.8

III. AIR QUALITY ANALYSIS

SDW 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. A summary of that analysis is included in air emission license A-19-77-2-A. An additional ambient air quality analysis is not required for this Part 70 license amendment.

ORDER

Based on the above Findings and subject to conditions listed below, the Department concludes that emissions from this sources:

- will receive Best Practical Treatment;
- will not violate applicable emissions standards
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants the Part 70 License A-19-70-F-A pursuant to 06-096 CMR 140 and the preconstruction permitting requirements of 06-096 CMR 115 and subject to the standard and special conditions below.

Federally enforceable conditions in this Part 70 license must be changed pursuant to the applicable requirements in 06-096 CMR 115 for making such changes and pursuant to the applicable requirements in 06-096 CMR 140.

For each standard and special condition which is state enforceable only, state-only enforceability is designated with the following statement: **Enforceable by State-only**.

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.

Except for Condition (18)(L) the following condition will replace Condition (18) of Part 70 Air Emission License A-19-70-A-I upon startup of the Recovery Boiler and Evaporator after the project. If the project is not undertaken, the following conditions will not take effect.

The following condition (18)(L) will replace Condition (18)L of Part 70 Air Emission License A-19-70-A-I upon signature date of this license regardless if the project is undertaken or not.

(18) Recovery Boiler

- A. The Recovery Boiler is licensed to fire #6 fuel oil, #2 fuel oil, used oil, black liquor, LVHC gases, and HVLC gases. [06-096 CMR 115, BACT]
- B. The sulfur content of the fuel oil fired including used oil shall not exceed 2.0% by weight when there is no smelt in the boiler and 2.5% by weight when there is smelt in the boiler. [06-096 CMR 106]
- C. Emissions from the Recovery Boiler shall not exceed the following when firing only black liquor:

Pollutant	ppmdv @ 8% O ₂	Origin	Enforceability
SO ₂	150	06-096 CMR 115, BACT	Federally Enforceable
NO _x	120	06-096 CMR 115, BACT	Federally Enforceable
CO	500	06-096 CMR 115, BACT	Federally Enforceable
TRS	5	06-096 CMR 124	Federally Enforceable

Pollutant	gr/dscf @ 8% O ₂	Origin	Enforceability
PM	0.030 (with 3 ESP chambers)	06-096 CMR 115, BACT	Federally Enforceable
PM	0.038 (with 1 or 2 ESP chambers)	06-096 CMR 115, BACT	Federally Enforceable

Pollutant	lb/MMBtu	Origin	Enforceability
SO ₂	1.92	06-096 CMR 106	Federally Enforceable

D. Emissions from the Recovery Boiler shall not exceed the following:

Pollutant	lb/hr	Origin	Enforceability
PM	207 ^a	06-096 CMR 115, BACT	Federally Enforceable
PM ₁₀	207 ^a	06-096 CMR 115, BACT	Federally Enforceable
SO ₂	1975	06-096 CMR 115, BACT	Federally Enforceable
NO _x	750	06-096 CMR 115, BACT	Federally Enforceable
CO	3113	06-096 CMR 115, BACT	Federally Enforceable
VOC	15	06-096 CMR 115, BACT	Federally Enforceable

^a Except when firing fuel oil as stated below.

E. Emissions from the Recovery Boiler shall not exceed the following whenever fuel oil is being fired:

Pollutant	lb/hr	Origin	Enforceability
PM	283	06-096 CMR 115, BACT	Federally Enforceable
PM ₁₀	283	06-096 CMR 115, BACT	Federally Enforceable

F. SDW is subject to and shall comply with the applicable requirements of 40 CFR Part 60, Subpart A and Subpart BB for the Recovery Boiler. [40 CFR Part 60, Subpart BB]

G. SDW is subject to and shall comply with the applicable requirements of 40 CFR Part 63, Subpart A and Subpart MM for the Recovery Boiler. [40 CFR Part 63, Subpart MM]

H. Compliance with the NO_x, SO₂ and CO ppm emission limits shall each be on a 30-day rolling average basis and demonstrated by means of CEMS. [06-096 CMR 115, BACT]

I. Compliance with the TRS ppm emission limit shall be determined on a 12-hr block average basis demonstrated by means of a CEMS, measured as H₂S. Pursuant to 06-096 CMR 124, Section 5(C)(1) and 40 CFR Part 60, Subpart BB, the first two 12-hour block averages in a quarter which exceed either license limits or emission standards in 06-096 CMR 124 are exempt and are not considered a violation. [06-096 CMR 124 and 117, BACT, and 40 CFR Part 60, Subpart BB]

- J. Compliance with the SO₂ lb/hr emission limit shall be on a 24-hr block demonstrated by means of a CEMS. [06-096 CMR 115 (BACT) and 117]
- K. Compliance with the PM emission limits shall be demonstrated by stack testing in accordance with 40 CFR Part 60, Appendix A, Method 5. [06-096 CMR 115, BACT]
- L. Compliance stack testing for PM while firing black liquor and operating less than 3 chambers of the ESP shall be performed:
- i. within 12 months of startup after the Recovery Boiler upgrade project; and [06-096 CMR 115, BACT]
 - ii. once every five calendar years thereafter. [06-096 CMR 115, BPT and 38 M.R.S.A 589, Subsection 2] **Enforceable by State-only**
- M. While firing fuel oil, compliance with the PM limit and with the CO lb/hr and VOC lb/hr limits shall be demonstrated by stack testing upon request by the Department. [06-096 CMR 115, BACT]
- N. While operating the Recovery Boiler, SDW shall operate the ESP for control of particulate emissions. SDW shall operate three ESP chambers at all operating times except for periods of startup, shutdown, malfunction, maintenance, and repair. During these periods the minimum chambers to be operated in the ESP shall be determined through Condition (18)(L). [06-096 CMR 115, BACT]
- O. The MACT CMS for the Recovery Boiler shall consist of a COMS to monitor opacity from the Recovery Boiler in the duct to the Main Stack in accordance with 40 CFR Part 63, Subpart MM and 40 CFR Part 60, Subpart BB. [40 CFR Part 63, Subpart MM §63.864(d) & 40 CFR Part 60, Subpart BB §60.284(a)]
- P. Pursuant to 40 CFR Part 63.864(k)(1)(i), SDW shall implement corrective action, as specified in the SSM plan, prepared under 40 CFR Part 63.866(a), when the average of ten consecutive 6-minute averages result in a measurement by the MACT CMS greater than 20% opacity. [40 CFR Part 63, Subpart MM §63.864(k)(1)(i)]
- Q. Pursuant to 40 CFR Part 63.864(k)(2)(i), SDW shall not exceed a measurement by the MACT CMS greater than 35 percent opacity for 6 percent or more of the operating time within a quarterly period. [40 CFR Part 63, Subpart MM §63.864(k)(2)(i)]

The following condition will replace Condition (26) of Part 70 Air Emission License A-19-70-A-I upon startup of the Recovery Boiler and Evaporator after the project. If the project is not undertaken, the following conditions will not take effect.

(26) Evaporator System

- A. Emissions of TRS from the “Evaporator System” as defined by 06-096 CMR 124 are to be collected by the LVHC or HVLC system and controlled in accordance with 06-096 CMR 124. The venting allowances in 06-096 CMR 124 shall apply to the Evaporator System. [06-096 CMR 115 (BACT) and 124 and 40 CFR Part 60, Subpart BB]
- B. The “Evaporator System” as defined by 40 CFR 63.441 is subject to and shall comply with 40 CFR Part 63 Subpart S. [40 CFR Part 63, Subpart S]
- C. The “Evaporator System” as defined by 40 CFR 60.280 is subject to and shall comply with 40 CFR Part 60 Subpart BB. [40 CFR Part 60, Subpart BB]

The following condition replaces Condition (15)(H) of Air Emission License A-19-70-A-I:

- H. Compliance stack testing for PM for PB#1 shall be performed once by December 31, 2013 and once every five calendar years thereafter. [06-096 CMR 115, BPT and 38 M.R.S.A 589, Subsection 2] **Enforceable by State-only**

The following condition replaces Condition (17)(F) of Air Emission License A-19-70-A-I:

- F. Compliance stack testing for PM for PB#2 shall be performed once by December 31, 2013 and once every five calendar years thereafter. [06-096 CMR 115, BPT and 38 M.R.S.A 589, Subsection 2] **Enforceable by State-only**

The following condition replaces Condition (20)(E) of Air Emission License A-19-70-A-I:

- E. Compliance stack testing for PM for the Lime Kiln shall be performed once by December 31, 2013 and once every five calendar years thereafter. The compliance tests shall be performed on the Lime Kiln emissions prior to gas extraction by the PCC plant. [06-096 CMR 115, BPT and 38 M.R.S.A 589, Subsection 2] **Enforceable by State-only**

The following conditions replace Conditions (23)(B), (C), and (D) of Air Emission License A-19-70-A-I:

- B. SDW shall perform compliance testing pursuant to the requirements of 06-096 CMR 122 (except for stack testing frequency) for the Central Absorber Scrubber by December 31, 2012 and once every five calendar years thereafter in accordance with NCASI Method 520 for sampling chlorine and chlorine dioxide. [06-096 CMR 122, 06-096 CMR 115, BPT and 38 M.R.S.A 589, Subsection 2] **Enforceable by State-only**
- C. SDW shall perform compliance testing pursuant to 06-096 CMR 122 (except for stack testing frequency) while operating the Back-up Scrubber by December 31, 2012 and once every five calendar years thereafter (to the extent that SDW wishes to operate in this mode) in accordance with NCASI Method 520 for sampling chlorine and chlorine dioxide. [06-096 CMR 122, 06-096 CMR 115, BPT and 38 M.R.S.A 589, Subsection 2] **Enforceable by State-only**
- D. SDW shall perform compliance testing pursuant to 06-096 CMR 122 (except for stack testing frequency) while venting the S-10 tower to atmosphere once every five calendar years, to the extent SDW wishes to operate in this mode, in accordance with NCASI Method 520 for sampling chlorine and chlorine dioxide. [06-096 CMR 122, 06-096 CMR 115, BPT and 38 M.R.S.A 589, Subsection 2] **Enforceable by State-only**

DONE AND DATED IN AUGUSTA, MAINE THIS *9th* DAY OF *December*, 2009.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: *James P. Brooks*

DAVID P. LITTELL, COMMISSIONER

The term of this amendment shall be concurrent with the term of Air Emission License A-19-70-A-I.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 7/7/09
Date of application acceptance: 7/15/09

Date filed with the Board of Environmental Protection: _____

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

