STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

ANGUS S. KING, JR.
GOVERNOR

EDWARD O. SULLIVAN
COMMISSIONER

Statler Industries Incorporated	)	Departmental
Kennebec County	)	Findings of Fact and Order
Augusta, Maine	)	Air Emission License
A-195-71-D-A/R	)	

After review of the air emission license renewal/amendment application, staff investigation reports, and other documents in the applicant's file in the Bureau of Air Quality Control, pursuant to 38 M.R.S.A., Section 344 and Section 590, the Department finds the following facts:

I. REGISTRATION

A. Introduction

Statler Industries Incorporated of Augusta, Maine has applied to renew their Air Emission License, permitting the operation of emission sources associated with their sanitary paper products facility.

Statler Industries Incorporated was issued Air Emission License A-195-71-A-R on May 24, 1988. This license was subsequently amended on October 17, 1988 and again on March 23, 1993.

Statler Industries Incorporated has submitted amendment applications to the Department to include NO_x RACT into their existing license pursuant to Maine Air Regulations Chapter 138 and also to revise certain license criteria along with updating emission sources.

B. Emission Equipment

Statler Industries Incorporated is authorized to operate the following emission units:

Fuel Burning Equipment

Equipment	Date of Construction	Maximum Capacity (MMBtu/hr)	Fuel Type, %Sulfur	Maximum Firing Rate (gal/hr)	Stack #
Boiler #3	1951	75	#6, 2.0%	500	1
Boiler #4	1947	64	#6, 2.0%	427	1
Boiler #5	1955	95	#6, 2.0%	633	1

* The previously licensed boiler #2 was shut down in 1989.

AUGUSTA
STATE HOUSE STATION 17
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826
OFFICE LOCATED AT: RAY BUILDING, HOSPITAL STREET

PORTLAND
312 CANCO ROAD
PORTLAND, ME 04103
(207) 822-6300 FAX: (207) 822-6303

BANGOR
106 HOGAN ROAD
BANGOR, ME 04401
(207) 941-4570 FAX: (207) 941-4584

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, ME 04769
(207) 764-0477 FAX: (207) 764-1507

C. Application Classification

The application for Statler Industries, Inc. includes the licensing of increased particulate emissions from 0.12 lb/MMBtu to 0.15 lb/MMBtu, and a decrease in the annual fuel limit from 13,560,480 to 10,900,000 gallons, but does not include the licensing of increased annual emissions or the installation of new or modified equipment. Certain license criteria have been adjusted to include the burning of waste oil, the elimination of boiler #2 and calcium hypochlorite production and the addition of NO_x RACT requirements with the renewal.

II. BEST PRACTICAL TREATMENT

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 Air 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 any stationary source that has the potential to emit quantities of NO_x greater than or equal to 100 tons per year requires that emissions are receiving Reasonably Available Control Technology (RACT) as defined in Chapter 138 of the Air Regulations. RACT is that method of treatment that is reasonably available as a retrofit to existing processes or equipment involved considering the existing state of technology, current federal guidelines for determining the degree of emission reduction achievable and the type and unique character of affected sources.

B. Boiler Sources

Statler Industries Incorporated operates Boilers #3 and #5 which have a maximum design heat input capacity of 75 MMBtu/hr and 95 MMBtu/hr, respectively. These two boilers will be firing #6 fuel oil along with specification and off-specification waste oil generated on-site as well as waste oil generated at other locations. The maximum sulfur content of the oil being fired is not to exceed 2.0% based on a weighted average.

Boiler #3 is a Wicks Boiler manufactured in 1951 and Boiler #5 is a Combustion Engineering Boiler manufactured in 1955 and therefore neither are subject to EPA New Source Performance Standards (NSPS) Subpart Dc, for boilers with a heat input of 10 MMBtu/hr or greater and manufactured after June 9, 1989.

Boiler #4 is a Babcock and Wilcox Boiler manufactured in 1947 and is not subject to NSPS Subpart Dc for boilers with a heat input of 10 MMBtu/hr or greater and manufactured after June 9, 1989. Boiler #4 is used as an auxiliary/standby boiler only and has a maximum design heat input capacity of 64 MMBtu/hr and will be firing #6 fuel oil along with specification and off-specification waste oil generated on-site as well as waste oil generated at other locations. The maximum sulfur content is not to exceed 2.0% based on a weighted average.

The regulated pollutants emitted from the boilers are particulate matter (PM), particulate matter with a diameter smaller than ten microns (PM_{10}), sulfur dioxide (SO_2), nitrogen oxides (NO_X), carbon monoxide (CO), and volatile organic compounds (VOC).

RACT options for boilers #3, #4 and #5 are described in the following paragraphs.

D. Boilers #3 and #5

Statler Industries Incorporated proposes to control NO_X emissions from boilers #3 and #5 by means of annual boiler tune-ups to meet the requirements of an alternative NO_X RACT while maintaining the needed boiler operational flexibility and steam demands. Practical minimum excess air levels using the instrumentation and burner hardware are to be established during the initial tune-up. Operator training sessions are to be conducted to instruct the operating staff on the best means of minimizing NO_X levels by operating at or near these minimum excess air levels. These procedures are expected to reduce NO_X levels by 5% from current levels.

The various control equipment that was analyzed as meeting RACT included alternate fuels, low excess air (LEA), reduced air temperature, low NOx burners, limited burner hardware changes, selective catalytic reduction (SCR), selective non-catalytic reduction (SNCR), overfire air (OFA), burners out of service (BOOS), flue gas recirculation (FGR) and biased firing. Each available technology was looked at with respect to technical feasibility and cost effectiveness.

LEA operations reduce NO_x by restricting the availability of oxygen throughout the combustion process. The effectiveness of LEA was demonstrated during testing in which reductions of approximately 7% were achieved for each boiler. Caution must be given to reducing excess air levels on these boilers due to the swing load nature of their operation. Additional O_2 and CO instrumentation would be required. LEA is a technically feasible option.

Limited burner hardware such as baffles to provide uniform air flow to the burners, modifications to flame impellers to provide improved control of air and fuel mixing patterns and reduced swirl, modification to oil burner tips to generate fuel rich/fuel lean zones, and air slides to allow for fine tuning of the air flow would have limited effectiveness on NO_x reductions due to the relatively old burner configurations and short windbox for boiler #3 and due to shallow furnace depth and high-turbulent mixing burner of boiler #5. Limited burner hardware is questionably feasible.

Low NOx burners (LNB) involve the redesign of the burner to control the combustion staging. To stage the combustion process the injection and mixing patterns of oil and air through the burner must be controlled subsequently affecting the shape of the flame. The main limitation of LNBs are the length of the furnace, as flame impingement on the rear wall of the furnace can damage the boiler refractory. Boiler #3 has tightly spaced burners and limited area on the burner deck for replacement of the existing burners. Boiler #5 is also restricted by several physical restraints, most importantly the shallow furnace depth (11 feet) and narrow width. Extensive boiler modifications would be required to achieve an estimated 30% NO_x reduction. LNBs are questionably feasible.

OFA can also stage the combustion process by injecting a portion of the combustion air through specially arranged air ports located above the oil burners. The air must be injected with sufficient intensity to mix with the flame tips. Rapid and complete mixing are required to burnoff the carbon present and control the release of unburned carbon (soot). OFA can not be implemented on swing load boilers due to the difficulties in controlling air flow. Boiler #3 is a conventional A-type furnace in which the flames fan out rather than moving upwards making it difficult to spot an effective OFA location. Boiler #5 has a boiler bank and superheater cavities located on the rear wall of the furnace thus making it impossible to locate the OFA ports directly in front of the flame. For these reasons OFA is technically infeasible.

BOOS can also achieve staged combustion with multiple levels of burners. Boiler #3 utilizes a two-over one burner configuration. BOOS would require the removal from service of one of the upper burners and would not be conducive to this type of arrangement. Boiler #5 has a one-over-two pattern and removing a burner from service would limit the load using the existing tip configuration. BOOS is technically infeasible.

FGR utilizes the recirculation of a portion of the exhaust gas back to the combustion zone to decrease flame temperature and the formation of thermal NO_x. Application to boiler #3 is limited by the relative size of the air supply ducts and the existing windbox. Boiler #5 is restricted by excessively high gas velocities through the generating bank and modification to the bank is not feasible. FGR is technically infeasible.

Peak flame temperature can also be reduced by lowering combustion air temperatures. The overall impact on NO_x emissions is on the order of only 5%. Tests on boiler #3 have indicated such a NO_x reduction however, operation of the air heater bypass results in a significant decrease in the boilers thermal efficiency. Boiler #5 is not equipped with an air heater bypass but installation is possible with comparable NO_x reductions. Reduced combustion air temperature is technically feasible.

Fuel biasing involves the operation of the burners in the lower burner elevations at lower stoichiometries with the burners above at more fuel lean conditions. Fuel biasing generally can not be applied to smaller industrial boilers as it requires a steady load. Due to the swing load operation of these two boilers fuel biasing is technically infeasible.

Alternative fuels with a low nitrogen content could be fired in these boilers. Significant modifications to the fuel handling and atomization systems and combustion controls would be necessary. NO_x reductions would be expected to be approximately 40% to 50%, depending on the relative change in fuel-bound nitrogen. Alternative fuels are technically feasible.

SNCR involves injecting a NO_x reducing agent, such as urea or ammonia, into the exhaust gas which in turn reduces the NO_x to nitrogen and water. SNCR is designed to operate in the range of 1600°-1900°F. It is expected that the furnace outlet temperature in boiler #3 is well in excess of the SNCR operating temperature window making this technology ineffective. For boiler #5 injection of urea into the upper furnace could be considered but would be expected to result in degraded SNCR performance and injection may also degrade superheater screen tubes and ammonia slip could result in pluggage of the air heater. Lower temperatures suitable for ammonia injection would be present at the superheater outlet but the estimated residence time is very short, on the order of 0.05 seconds, insufficient for the application for SNCR. SNCR is technically infeasible.

SCR uses similar reduction reactions to SNCR, but at lower temperatures and in the presence of a catalyst. The installation of SCR requires flue gas temperatures in excess of 600°F. Boiler #3 would require major modifications to the arrangement of the air heater to create an appropriate flue gas temperature profile. Boiler #5 has gas temperatures of 365°F which are well below the required SCR temperature window. Again, major modifications to the arrangement of the gas flow path of the boiler bank and air heater would be required to create an appropriate flue gas temperature profile. SCR is technically infeasible.

The cost effectiveness values for these control technologies vary from near \$1300/ton NO_x to in excess of \$17,000/ton NO_x. These values are generally high as compared to accepted cost effectiveness thresholds.

E. Boiler #4

Boiler #4 is used as an auxiliary/standby boiler only. Therefore, according to Chapter 138 the boiler is subject to:

1. NO_x emissions of less than 100 TPY on a 12 month rolling average basis beginning August 1, 1994,
2. NO_x emissions of less than 20 tons per any calendar month, and
3. an annual boiler tune-up with recordkeeping and reporting requirements as defined by Chapter 138.

F. RACT Determination

1. The Department has determined RACT for boilers #3 and #5 to be an annual tune-up to meet the requirements of the alternative NO_x RACT proposal while maintaining the needed boiler operational flexibility and steam demands. Records of such boiler tune-ups shall be kept according to section 3(L)(2) of Chapter 138. Practical minimum excess air levels using the instrumentation and burner hardware are to be established during the initial tune-up. Subsequent boiler tune-ups will be conducted on an annual basis consistent with Chapter 138. Operator training sessions are to be conducted to instruct the operating staff on the best means of minimizing NO_x levels by operating at or near these minimum excess air levels. These procedures are expected to reduce NO_x levels by 5% from current levels.

2. The Department has determined RACT for boiler #4 to be an annual tune-up to meet the requirements of an auxiliary/standby boiler pursuant to Chapter 138 as follows:
   a. NO_x emissions of less than 100 TPY on a 12 month rolling average basis beginning August 1, 1994,
   b. NO_x emissions of less than 20 tons per any calendar month, and
   c. an annual boiler tune-up with recordkeeping and reporting requirements as defined by Chapter 138.

3. By May 31, 1995, Statler Industries Incorporated shall comply with the conditions in the NO_x RACT as determined by the Department for boilers #3, #4 and #5. Two years from the signature date of this Air Emission License, Statler Industries Incorporated will reevaluate the RACT alternatives described above, along with any new control technologies, and submit a report to the Department within 90 days of such evaluation. If at that time any technology is deemed both technically and economically feasible the Department will require that technology be implemented.

III. EMISSION STANDARDS

A. Emission Equipment

The combined exhaust of boilers #3, #4 and #5 shall not exceed the following emission limits firing #6 fuel oil as well as waste oil, with a sulfur content of the oil being fired not to exceed 2.0% based on a weighted average:

Boiler Emission Limits

Pollutant	lb/MMBtu	lb/hr
PM	0.15	35.0
PM_{10}	0.15	35.0
SO_2	2.1	488.2
NO_X	0.44	102.8
CO	0.04	7.9
VOC	0.01	0.47

B. Facility Emissions and Fuel Use Caps

Facility emissions are based on a fuel limit of 10,900,000 gallons/year of #6 fuel oil and waste oil, with a sulfur content of the oil being fired not to exceed 2.0% based on a weighted average, and a combined facility firing rate limit of 233.6 MMBtu/hr:

Total Allowable Annual Emissions for the Facility
(used to calculate the annual license fee)

Pollutant	TPY
PM	122.6
PM_{10}	122.6
SO_2	1708.6
NO_X	359.7
CO	27.8
VOC	1.6

C. Visible Emission Limits

Visible emissions from boilers #3, #4 and #5 shall not exceed 30% opacity for more than 15 minutes in any continuous 3-hour period.

IV. AIR QUALITY ANALYSIS

According to the Maine Regulations Chapter 115, the level of air quality analyses required for a source shall be determined on a case-by-case basis. Based on the previous modeling performed Statler Industries will not violate Maine Ambient Air Quality Standards (MAAQS).

V. COMPLIANCE ASSURANCE

A. The licensee shall maintain sufficient records to accurately document compliance with emission standards, including visible emission, and license conditions and shall maintain such records for a minimum of 6 years. The records shall be submitted to the Department upon written request.

B. The licensee shall maintain sufficient records and annually report to the Department, in a specified format, fuel use, operating rates, use of materials and other information necessary to accurately update the State's emission inventory.

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-195-71-D-A/R, subject to the following conditions :

(1) Employees and authorized representatives of the Department shall be allowed access to the premises of the licensee during business hours, or any time during which any of the licensed emissions units are in operation, and at such other times as the Commissioner deems necessary for the purpose of performing tests, collecting samples, conducting inspections or examining records relating to emissions.

(2) The licensee shall acquire a new or amended emission license prior to commencing construction of a modification.

(3) The licensee shall comply with all applicable ambient air quality standards, emission standards, Department regulations and orders.

(4) The licensee shall maintain sufficient records to accurately document compliance with emission standards, including visible emission, and license conditions and shall maintain such records for a minimum of 6 years. The records shall be submitted to the Department upon written request.

(5) The licensee shall maintain records of malfunctions, failures, downtime, and any other change in operation of air pollution control apparatus or the emissions unit itself that would affect emissions. The licensee shall notify the Department within two working days (48 hrs.) of such occasions. Within 5 working days, the licensee shall submit a written report describing the cause, duration, remedial action, and steps to be taken to prevent recurrence of such malfunctions, failures or downtimes.

(6) Approval to construct shall become invalid if the source has not commenced construction within 18 months after receipt of such approval or if construction is discontinued for a period of 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 requirements or the ambient air quality impact analysis, or both.

(7) The licensee shall perform stack testing and submit a written report within 90 days of receipt of notice to test from the Department, 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. Such testing shall be conducted in accordance with 40 CFR Part 60 or other method approved or required by the Department and EPA. The licensee shall 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.

(8) The licensee shall establish and maintain a continuing program for best management practices for suppression of fugitive particulate matter during any periods of construction, renovation, or normal operation which may result in fugitive dust and submit a description of the program upon request by the Department.

(9) The licensee shall maintain sufficient records and annually report to the Department, in a specified format, fuel use, operating rates, use of materials and other information necessary to accurately update the State's emission inventory.

(10) The granting of this permit is dependent upon and limited to the proposals and plans contained in the application and supporting documents submitted and affirmed to by the applicant. Any variation from the plans. proposals, and supporting documents must be reviewed and approved by the Department prior to implementation.

(11) Within 60 days receipt of a notification to test from the Department or EPA, or pursuant to any other requirement of this license to perform stack testing, the licensee shall perform stack testing in accordance with the Department's air emission compliance test protocol, and demonstrate compliance with the applicable emission standards. All testing performed pursuant to this condition shall be conducted under circumstances representative of the facility's normal process and operating conditions. Test results indicating emissions in excess of the applicable standards shall be evidence of emission violations subject to enforcement action for each operating day from the date of the test until compliance is demonstrated under normal and representative process and operating conditions. For any emission source whose stack test results yield an emission rate greater than the applicable standard, the licensee shall, within 30 days following receipt of such test results, retest the noncomplying emission source. Any such retesting shall be performed under circumstances representative of the facility's normal process and operating conditions.

(12) RACT Determination

A. The Department has determined RACT for boilers #3 and #5 to be an annual tune-up to meet the requirements of an alternative NO_x RACT while maintaining the needed boiler operational flexibility and steam demands. Records of such boiler tune-ups shall be kept according to section 3(L)(2) of Chapter 138. Practical minimum excess air levels using the instrumentation and burner hardware are to be established during the initial tune-up. Subsequent boiler tune-ups will be conducted on an annual basis consistent with Chapter 138. Annual operator training sessions are to be conducted to instruct the operating staff on the best means of minimizing NO_x levels by operating at or near these minimum excess air levels.

B. The Department has determined RACT for boiler #4 to be an annual tune-up to meet the requirements of an auxiliary/standby boiler pursuant to Chapter 138 as follows:

1. NO_x emissions of less than 100 TPY on a 12 month rolling average basis beginning August 1, 1994,
2. NO_x emissions of less than 20 tons per any calendar month, and
3. an annual boiler tune-up with recordkeeping and reporting requirements as defined by Chapter 138.

C. By May 31, 1995, Statler Industries Incorporated shall comply with the conditions in the NO_x RACT as determined by the Department for boilers #3, #4 and #5. Two years from the signature date below, Statler Industries Incorporated shall reevaluate the RACT alternatives described above, along with any new control technologies, and submit a report to the Department within 90 days of such evaluation. If at that time any technology is deemed both technically and economically feasible the Department shall require that technology be implemented.

(13) Statler Industries shall conduct annual NO_x emission stack testing on boilers #3 and #5 in accordance with 40 CFR part 60 or other methods approved by the Department and EPA. The Department shall be notified at least 30 days prior to the scheduled stack test. Following the Department's review and evaluation of two consecutive annual stack test reports, the license shall be amended to incorporate a NO_x emission limit established by the Department to meet the requirements of BPT.

(14) The licensee may apply to amend the license to reduce the frequency of stack testing upon successful compliance demonstration of two consecutive annual stack tests.

(15) Conditions (13) and (14) shall be effective within three months after the facility resumes operations reflective of any proposed start up plan.

(16) Boiler Emissions

The combined exhaust of boilers #3, #4 and #5 shall not exceed the following emission limits firing #6 fuel oil as well as waste oil, with a sulfur content of the oil being fired not to exceed 2.0% based on a weighted average:

Pollutant	lb/MMBtu	lb/hr
PM	0.15	35.0
PM_{10}	0.15	35.0
SO_2	2.1	488.2
NO_X	0.44	102.8
CO	0.04	7.9
VOC	0.01	0.47

(17) Visible emissions from boilers #3, #4 and #5 shall not exceed 30% opacity for more than 15 minutes in any continuous 3-hour period.

(18) Statler Industries shall not exceed a fuel limit of 10,900,000 gallons/year (12 month rolling total) or a combined facility firing rate of 233.6 MMBtu/hr.

(19) Boiler #5 shall not operate alone except for emergencies, or start-ups and shut-downs.

(20) The existing viscosity controls shall be operated, properly maintained and calibrated as specified by the manufacturers of the equipment.

(21) Statler shall not combust fuel oil having a sulfur content greater than that fuel oil combusted during Statler's most recent demonstration of compliance with its licensed particulate emission limits. Upon written notification to the Department, and in accordance with the Bureau of Air Quality Control Air Emission Compliance Test Protocol, Statler may perform additional particulate emission testing to demonstrate compliance combusting fuel oil having a sulfur content equal to or less than 2.0%, but under no circumstances shall Statler be relieved of its obligation to meet its licensed emission limits.

(22) Statler Industries shall keep fuel records of all waste oil burned (quantity and type), for specification waste oil generated on-site as well as that delivered from off-site. Statler shall also keep a log of test results from the specification waste oil that was delivered from off-site.

(23) This term of this license shall be five years from the signature date below.

DONE AND DATED IN AUGUSTA, MAINE THIS 16th DAY OF June 1995.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: _____
EDWARD O. SULLIVAN, COMMISSIONER

PLEASE NOTE THE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application December 6, 1994
Date of application acceptance December 6, 1994

Date filed with the Board of Environmental Protection

FILED
JUN 16 1995
BOARD OF ENVIRONMENTAL PROT.
STATE OF MAINE

This Order prepared by Stephanie L. Carver, Bureau of Air Quality Control