

| | | |
|---------------------------------|---|-----------------------------------|
| RUMFORD POWER ASSOCIATES |) | DEPARTMENT |
| OXFORD COUNTY |) | FINDINGS OF FACT AND ORDER |
| RUMFORD, MAINE |) | AIR EMISSION LICENSE |
| A-724-71-A-N |) | |

After review of the air emission license 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., Section 344 and Section 590, the Department finds the following facts:

I. REGISTRATION

A. Introduction

1. Rumford Power Associates (RPA) submitted an application for a new major source on December 23, 1997.
2. RPA will be a nominally-rated 265 megawatt (MW) electric power plant utilizing a combustion turbine designed to operate on natural gas with a maximum heat input of 1,906 MMBtu/hour followed by a heat recovery steam generator (HRSG) to produce superheated steam.
3. RPA will be located in the Rumford Industrial Park off Route 108 approximately two miles south of the commercial centers of Rumford and Mexico and one and one-half miles south of the Mead Corporation's Rumford Mill. The facility will supply electricity to the regional grid (NEPOOL) through an interconnection with Central Maine Power (CMP) transmission lines.

B. Emission Equipment to be Licensed

Fuel Burning Equipment

| Equipment | Licensed Capacity (MMBtu/hr) | Fuel Type, %Sulfur | Nominal Design Firing Rate | Stack # and Stack height |
|-----------------------|-------------------------------------|---------------------------|-----------------------------------|---------------------------------|
| Turbine #1 | 1906 | Natural Gas | 1.85 x10 ⁶ scf/hr* | 1 (150 ft) |
| Air Inlet Chiller #1 | 22.12 | Natural Gas | 2.1 x10 ⁴ scf/hr* | 2 (120 ft) |
| Air Inlet Chiller #2 | 22.12 | Natural Gas | 2.1 x10 ⁴ scf/hr* | 2 (120 ft) |
| Emrg diesel fire pump | 1.5 | Diesel fuel | 10.9 gal/hr | 3 |

*Assuming 1030 Btu/scf

C. Application Classification

A new source is considered major based on whether or not its maximum licensed allowed emissions exceed the "Significant Emission Levels" as given in Maine's Air Regulations. The future maximum licensed allowed emissions are as follows:

| Pollutant | Future License | Sig.Level |
|------------------|-----------------------|------------------|
| | (TPY) | (TPY) |
| PM | 61.7 | 100 |
| PM ₁₀ | 61.7 | 100 |
| SO ₂ | 46.6 | 100 |
| NO _x | 128.5 | 100 |
| CO | 270.9 | 100 |
| VOC | 19.7 | 50 |

Therefore, the new source is major for NO_x and CO, all other criteria pollutants including PM, PM₁₀, SO₂, and VOC are below significant emission levels. All criteria pollutant emissions associated with this new source are subject to Best Available Control Technology (BACT) requirements.

Oxford County has received a NO_x waiver under the Clean Air Act Section 182(f) from the requirements to obtain NO_x emission offsets or apply Lowest Achievable Emission Rates (LAER) for a new major source of NO_x emissions.

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. Descriptions of the applicable requirements are provided below under the appropriate headings.

The RPA facility will operate a combustion turbine, which consists of the following major mechanical plant components:

- An advanced technology natural gas-fired turbine providing high reliability.
- Advanced dry low nitrogen oxide (DLN) combustor that achieves low nitrogen oxide (NO_x) levels without consuming water. This combustor firing natural gas is combined with selective catalytic reduction (SCR).

- Combustion turbine inlet chilling system to increase output during warm weather operation.
- High-pressure reheat, superheated steam generation, with high-efficiency, tandem compound turbine for maximum combined cycle efficiency. There will be no auxiliary gas firing of the heat recovery steam generator (HRSG).
- Air (dry)-cooled condenser system which provides for cycle cooling without the need for consuming the large quantities of water and the continuous water vapor plume associated with conventional systems.
- The plant will fire only natural gas fuel, eliminating higher levels of air emissions typically associated with backup oil firing. There is no need to deliver or store fuel oil.

Emissions are formed by the combustion of natural gas in the single 1.9 billion Btu/hr turbine generator set and the combustion of natural gas in the two 22.1 MMBtu/hr air inlet chillers and are therefore addressed in the BACT analysis.

B. New Emission Units

BPT for new sources and modifications requires a demonstration that emissions are receiving Best Available Control Technology (BACT) as defined in Chapter 100 of the Air Regulations. BACT is a top down approach to selecting air emission controls considering economic, environmental and energy impacts.

Project Description

The generation of electricity by a combined cycle combustion turbine generator set can be described as follows: combustion air enters through the inlet air filters and the inlet aircooler coils, and compressed by the turbine-driven compressor. The air cooling will be accomplished by direct, overfeed refrigeration to subcool the air when the ambient temperature is significantly greater than 45°F. Fuel and compressed air are mixed and burned in the combustion section of the turbine, creating a high-pressure, hot gas. This gas is then expanded through the three-stage power turbine section where most of its thermal energy is converted to work as it turns the turbine. The turbine drives both the air compressor and the electric generator.

The combustion turbine proposed will be a General Electric (GE) product. It is an advanced technology machine rated at approximately 178 MW at 45°F and 190.5 MW at 15°F, and is designed to operate on natural gas with a maximum heat input

of 1,906 MMBtu/hour. This corresponds to a gas consumption rate of 1.85 million standard cubic feet per hour.

The turbine exhaust is nearly at atmospheric pressure, but is relatively hot at around 1,110°F. Most of this heat will be recovered in the heat recovery steam generator (HRSG) by passing the gas over water and steam-filled tubes to make high pressure steam. The HRSG will be a three-pressure, natural circulation, reheat unit with no supplemental fuel firing. Within the HRSG, the exhaust gas passes through a Selective Catalytic Reduction (SCR) unit, with an accompanying ammonia (NH₃) injection grid for further NO_x reduction,. Exhaust gas leaving the air pollution control system then exits to the atmosphere through a 150 foot exhaust stack. Steam generated in the HRSG is expanded through a steam turbine generator, providing an additional 93 MW of electricity at 45°F. After extracting all usable heat energy, the steam is sent to the air-cooled condenser, where it condenses and enters the hotwell as a liquid. The condensed steam, which is now referred to as condensate, is pumped back to the HRSG where it is reused as boiler makeup.

BACT for the Main Turbine Generator

The turbine is subject to New Source Performance Standards (NSPS), 40 CFR Part 60, Subpart GG - Standards of Performance for Stationary Gas Turbines, for which construction is commenced after October 3, 1977.

40 CFR Part 60, Subpart GG establishes the following emission limits: Pursuant to 40 CFR Part 60.333 SO₂ is limited to (a) 0.015% by volume @ 15% O₂ on a dry basis or (b) the fuel sulfur content shall not exceed 0.8% by weight.

Pursuant to 40 CFR Part 60.332(a)(1) NO_x is limited based on the following equation:

$$\text{NO}_x \text{ - STD} = 0.0075 * (14.4/Y) + F,$$

where STD is the allowable NO_x emissions (percent by volume at 15% O₂ and on a dry basis), Y is a function of the manufacturer's rated load (kilojoules per watt hour), and F is a function of the fuel-bound nitrogen.

The NSPS establishes a nominal NO_x emission limit for RPA of 75 ppmdv at 100% load. Subpart GG also limits the fuel sulfur content to no more than 0.8% by weight. While the NSPS does apply, the proposed BACT is substantially more stringent; compliance with BACT will insure compliance with the NSPS.

A summary of the BACT analysis for each of the pollutants is discussed below:

Nitrogen Oxides

NO_x emitted from combustion sources results from oxidation of both fuel bound nitrogen and atmospheric nitrogen (thermal NO_x). Natural gas has very low fuel bound nitrogen so reducing NO_x emissions must focus on reducing the thermal NO_x. The GE dry low NO_x combustor provides a staging of combustion, resulting in lean fuel-air mixtures throughout the combustion zone thereby eliminating high flame temperatures and thermal NO_x formation. The RACT/BACT/LAER Clearinghouse data demonstrates that progressively lower NO_x limits have been required over the last several years. The dry low NO_x (DLN) combustor is a key component of the control technology assessment since it represents what is now considered the state of combustion turbine technology without supplemental control.

RPA searched the Clearinghouse data to find the latest NO_x control strategies, which is detailed in the air emission application. Several NO_x control strategies were determined either technically or economically infeasible, therefore RPA primarily focused on SCR technology. SCR uses an ammonia injection system and a catalytic reactor to reduce NO_x. An injection grid disperses NH₃ into the flue gas upstream of the catalyst and the NH₃ and NO_x are reduced to nitrogen gas (N₂) and water vapor (H₂O) in the presence of the catalyst reactor. The Clearinghouse data show the first required Selective Catalytic Reduction (SCR) units were in the late 1980's in California. New Jersey and New York followed, requiring their first SCR equipped units in 1991 and 1992 respectively. The early SCR permits typically established an emission limit of 9 ppm, or greater and were required on the basis of a LAER requirement. Data from the Clearinghouse, supplemented by information concerning recently submitted applications in New England, demonstrate that selective catalytic reduction (SCR) satisfies the definition of a technically available technology. The lowest reported emission limitation using this technology is 3.5 ppm_{dv}. Therefore, SCR is selected as the BACT technology with a NO_x emission rate of 3.5 ppm_{dv}. The NO_x emissions limit of 3.5 ppm_{dv} shall be on a 24 hour block average, which differs from recent LAER determinations' averaging period of three hours. The longer averaging period provides flexibility for NO_x emission "spiking".

Particulate Matter and PM₁₀

RPA identified several options for potential particulate control including the combustion of clean fuels and good combustion practices. However, add-on controls such as baghouses, electrostatic precipitators, and scrubbers have not been applied on gas or oil-fired turbine facilities. RPA has determined that add-

on controls would create unacceptable back pressure, thus reducing efficiency and increasing fuel usage and the high level of excess air produced by combustion turbines would in turn increase the size and cost of the add-on control, making them economically infeasible. RPA then further evaluated and has proposed the combustion of clean fuels and good combustion practices as BACT for particulate matter emissions from the combustion turbine. The use of natural gas represents the most stringent degree of control.

Sulfur Dioxide (SO₂)

SO₂ emissions are formed from oxidation of sulfur in fuel. Flue gas desulfurization systems have not been applied to natural gas or oil-fired combustion turbine facilities. The only feasible means for controlling SO₂ emissions from combustion turbines is to limit the sulfur content of the fuel. The EPA established NSPS for gas turbines which commenced construction, modification, or reconstruction after October 3, 1979. The NSPS limit for sulfur in fuel is 0.8% by weight.

RPA has committed to burning only natural gas at the Rumford facility, which is considered the most stringent degree of SO₂ control. Natural gas is considered a "clean fuel", having little or no sulfur. Only trace amounts of sulfur occur in most gas fields, however, some may be added as an odorant by the natural gas suppliers for safety reasons. BACT for the RPA Rumford project is proposed as exclusive use of natural gas.

Carbon Monoxide

Carbon Monoxide (CO) results from the incomplete combustion of gas in the turbine. As with other types of combustors, combustion efficiency is optimized at the design load case. The NESCAUM Stationary Source Committee noted that with high levels of steam or water injection to meet the proposed NO_x limitations, CO emissions were likely to increase and that States might then require oxidation catalysts to minimize CO emissions. As the water/steam injection technology was replaced by the development of the dry low NO_x combustor technology, the need for an oxidation catalyst shifted to the performance of the combustor.

The GE Dry low NO_x combustor has been demonstrated to be able to achieve very low CO emissions over a range of operating loads from 100% to 50%. Most combined cycle projects have satisfied the BACT requirement by demonstrating good combustion control. A few facilities have added a combustion catalyst usually to avoid major source status for either CO or VOC or to accommodate low load operation using equipment whose emissions on low load operation are

relatively high. Others were installed because of LAER provisions for CO nonattainment areas thus combustion catalysts are considered a demonstrated technology and must be considered in the BACT analysis. However, RPA has determined that a combustion catalyst to reduce CO is not feasible based on the following reasons. The oxidation catalyst will also oxidize some of the SO₂ present to sulfate (SO₃). The sulfate may react with ammonia injected to control NO_x emissions resulting in the formation of ammonium bisulfate or ammonia salt. Either would increase particulate emissions which can poison the SCR catalyst, thus inhibiting the efficiency of the NO_x control and create a spent catalyst which could potentially be classified as a hazardous waste. Therefore, in this case a CO catalyst was not selected as BACT.

In addition, the air quality impact assessment for the Rumford facility shows that PM₁₀ emissions result in impacts that are greater than the significant impact level of 5 µg/m³ on a 24 -hour basis and 1 µg/m³ on an annual basis. The background air quality analysis also shows that PM₁₀ is generally the limiting air quality parameter based on combined impacts from other sources in the area. Furthermore, RPA conducted an extensive cost analysis of a CO catalyst and determined the cost in excess of \$4,000 per ton. Based on the economics and the potential negative environmental impacts associated with potential hazardous waste generation, increased particulate emissions in an area where particulate air quality is impacted by existing sources to a more significant degree than with respect to CO, the CO catalyst is rejected as BACT. Therefore, BACT is the combination of the proposed GE dry low NO_x combustor, and associated good combustion practices and instrumentation and controls.

Volatile Organic Compounds (VOC)

After review of the RACT/BACT/LAER clearinghouse, RPA found that thermal oxidation, adsorption, and condensation systems have not been applied to combustion turbines or HRSGs, thus they were not considered as technologically feasible and rejected as BACT. The dry low NO_x (DLN) system is a sophisticated system that provides integration of a staged, premixed combustor, with computer controlled air and fuel feed systems, and performance monitoring sensors. At full load VOC emissions will be 2 ppm_{dv} @ 15%O₂ which is approximately equivalent to 0.003 lb/MMBtu and 6 lb/hour. Emissions and control are those guaranteed by GE and are equivalent to LAER permit requirements elsewhere and are considered BACT for the Rumford project.

BACT for the Air Intake Chiller Engines

The proposed project includes a chiller on the air intake to the turbine. The chiller will be sized to reduce intake air temperature to 45°F and thus will operate only during periods when the ambient temperature exceeds 45°F. The chiller package consists of two generators, each rated at 2,530 kw (electrical) which is equivalent to a rating of 3,393 brake horse power. The generators will be driven by two Wartsila (or comparable) engines each with a rated heat input capacity of 22.12 MMBtu/hr. The engines will burn exclusively natural gas. Emissions of primary concern would therefore be nitrogen oxide.

Based on the absence of a compelling environmental reason to provide the additional NO_x reduction that would be achievable by installation of a selective catalytic reduction system, the cost in excess of \$8,750 per ton supports rejection on the basis of economics. The decision is supported by the review of the RACT/BACT/LAER Clearinghouse which contain several entries for similar sized gas fired engines without add-on pollution control. BACT is, therefore the proposed low NO_x combustor design, and associated good combustion practices to achieve its guaranteed emission rate of 95 ppm_{dv} at 100% load and 15°F. For all other air pollutants, BACT is satisfied by burning only natural gas in the engines and an operational limit for the two air intake chiller engines of a total of 5,500 hours per year.

BACT for the emergency diesel fire pump

A diesel fuel fired emergency fire pump rated at 1.5 MMBtu/hr is included in the project. Operation of the fire pump will be restricted to less than 500 hours per year and maximum potential emissions are less than 1 ton/year of any air pollutant. BACT for all criteria pollutants including PM, PM₁₀, NO_x, SO₂, CO, and VOC is achieved by proper operation and maintenance of the fire pump.

III. EMISSION STANDARDS

The following is a brief description of the origin of some of the emission limits which RPA is subject to. In the situations where RPA is subject to both a regulatory limit and a BACT or NSPS limit, the most stringent limit is listed within the order of this license and demonstration with that limit is considered to be a demonstration of the other limits.

A. Natural gas-fired turbine

1. Visible Emissions

a. Chapter 101

Visible emissions from the turbine shall not exceed 40 percent opacity for more than 15 minutes in any continuous 3-hour period.

b. BACT
 Visible emissions from the turbine shall not exceed 20% opacity, measured as 6 minute averages, except for one 6 minute average period per hour of not more than 27% opacity.

2. Particulate Matter Emissions

a. Chapter 103
 The Turbine shall each not exceed 0.06 lbs. particulate matter per million BTU.
 b. BACT
 see III.B(1). below

3. Low Sulfur Fuel

a. BACT
 RPA shall combust only natural gas in the 1.9 billion Btu/hr turbine generator.
 b. Sulfur content monitoring of natural gas shall be bimonthly, followed by quarterly, and thereafter semiannually, given at least 6 months of data demonstrating little variability in the sulfur content and compliance with 40 CFR 60.333.

4. Other Emission Limits:

a. SO₂, NSPS 40 CFR Part 60.333(a) or (b)
 RPA shall (a) not exceed an SO₂ emission rate of 0.015% by volume @ 15% O₂ on a dry basis, or (b) shall not burn liquid fossil fuel containing over 0.8 percent sulfur by weight as fired in the turbine.
 b. NO_x, NSPS 40 CFR Part 60.332(a)(1)
 RPA shall not exceed a NO_x emission rate from the turbine based on the following equation:

$$NO_x- STD = 0.0075 * (14.4/Y) + F,$$

where STD is the allowable NO_x emissions (percent by volume at 15% O₂ and on a dry basis), Y is a function of the manufacturer's rated load (kilojoules per watt hour), and F is a function of the fuel-bound nitrogen

c. BACT see III.B. below

B. Combustion Turbine, BACT

1. Emissions from the combustion turbine shall not exceed the following limits when firing natural gas in the 1.9 billion Btu/hr turbine generator, except during startup/shutdown:

| Pollutant | Load | ppmdv | ppmdv avg time | lb/MMBtu | lb/hr | Control Technology |
|-----------|------|-------|----------------|----------|-------|--------------------|
| PM | All | -- | -- | 0.007 | 13.4 | Natural gas only |

| | | | | | | |
|------------------|-----|--|-----------------|-------|------|-------------------------------------|
| PM ₁₀ | All | -- | -- | 0.007 | 13.4 | Natural gas only |
| SO ₂ | All | -- | -- | -- | 11 | Natural gas only (2 gr/100 scf) |
| NO _x | All | 3.5 (corrected to 15% O ₂) | 24 hr block avg | -- | 24.3 | DLN Technology & SCR |
| CO | All | 15 (corrected to 15% O ₂) | 24 hr block avg | -- | 52 | Good Combustion & GE DLN technology |
| VOC | All | -- | -- | -- | 6 | Good Combustion control |
| Ammonia | All | 10 (corrected to 15% O ₂) | 24 hr block avg | -- | 26 | -- |

- Compliance with the PM and PM₁₀ lb/MMBtu and lb/hour emission limits shall be determined through stack test using EPA Methods 1-5.
- Compliance with the SO₂ lb/hour emission limit shall be demonstrated by firing rate and by fuel sample analysis of the natural gas' sulfur content as required by NSPS Subpart GG.
- Compliance with the NO_x, CO, and ammonia ppm_{dv} emission limits shall be demonstrated by the use of continuous emission monitors (CEMs). The NO_x, CO, VOC, and ammonia lb/hour emission limits shall be demonstrated through stack testing.
- Compliance with the visible emission limit shall be demonstrated by EPA Method 9.

C. Air intake chiller engines

1. Total emissions from the two 22.2 MMBtu/hr natural gas-fired engines shall not exceed the following limits:

| Pollutant | Emission factor | Emission rate (lb/hour) | Annual Emissions (TPY) | Reference |
|------------------|------------------------|--------------------------------|-------------------------------|------------------|
| PM | 0.046 lb/MMBtu | 2.04 | 2.8 | AP-42 |
| PM ₁₀ | 0.046 lb/MMBtu | 2.04 | 2.8 | AP-42 |
| SO ₂ | 2 gr/100 scf | 0.24 | 0.33 | AP-42 |
| NO _x | 1.37 gr/kW hr | 15.87 | 20.9 | Wartsila |
| CO | 2.8 gr/kW hr | 30.3 | 42.9 | Wartsila |
| VOC | 0.11 lb/MMBtu | 4.87 | 6.7 | AP-42 |

Compliance with the above emission limits shall be based on stack tests. Visible emissions from the air intake chiller engines shall not exceed 20% opacity, measured as 6 minute averages, except for one 6 minute average period per hour of not more than 27% opacity.

D. Facility Emissions

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

| Pollutant | TPY |
|------------------|-------|
| PM | 61.7 |
| PM ₁₀ | 61.7 |
| SO ₂ | 46.6 |
| NO _x | 128.5 |
| CO | 270.9 |
| VOC | 19.7 |

IV. AMBIENT AIR QUALITY ANALYSIS

A. Overview

A combination of screening and refined modeling was performed to show that the applicant's facility's emissions, in conjunction with other sources, would not cause or contribute to violations of Maine Ambient Air Quality Standards (MAAQS) for SO₂, PM₁₀, NO₂ and CO or to Class I or II increments for SO₂, PM₁₀ and NO₂.

Since the proposed source is entirely increment consuming and the nearest Class I area is approximately 65 kilometers away, Class I and II SO₂, PM₁₀ and NO₂ increment analyses were performed. In addition, analyses were performed to show that the applicant's emissions will not adversely impact other Class I and II air quality related values (AQRVs).

B. Model Inputs

The SCREEN3 and ISCST3 model (in simple terrain mode) were used to address standards and increments in all areas. In addition, the SCREEN3 model was used to evaluate impacts in intermediate and complex terrain, i.e., areas where terrain elevations exceed the proposed stack-top elevations. A cavity analysis was performed for all of the applicant's stacks that are less than $H + 0.5L$ (where H is the height of the controlling structure and L is the lesser of the height or maximum projected width of that structure).

All modeling was performed in accordance with all applicable requirements of the Maine Department of Environmental Protection, Bureau of Air Quality (MEDEP-BAQ) and the United States Environmental Protection Agency (USEPA).

A five-year hourly meteorological off-site database was used in the refined modeling. The primary wind data was collected at a height of 100 meters at

the Mead (formerly Boise Cascade) meteorological monitoring site during the five-year period 1992-1996. Each year of meteorological data met the 90% data recovery requirement, both singularly and jointly, with values ranging from 95.8 to 98.1%. Missing data were interpolated or coded as missing. Sigma-theta data (calculated using four 15-minute averages), and wind data measured at the 10 meter level, were used to determine stability. Hourly mixing heights were derived from Caribou NWS surface and upper air data.

Stack parameters used in the modeling for the applicant's proposed facility and other nearby sources are listed in Table IV-1. The modeling analyses accounted for the potential of building wake effects on emissions from all modeled stacks that are below their respective formula GEP stack heights.

Table IV-1. Stack Parameters

| Facility/Stack | Stack Base Elev. (m) | Stack Height (m) | GEP Stack Height (m) | Stack Dia. (m) | UTM E (km) | UTM N (km) |
|--------------------------------------|----------------------|------------------|----------------------|----------------|------------|------------|
| CURRENT/PROPOSED | | | | | | |
| Rumford Power Associates | | | | | | |
| Main Stack | 185.90 | 45.72 | 72.39 | 5.79 | 379.079 | 4931.689 |
| Generator Stack | 185.90 | 36.58 | 67.05 | 0.91 | 379.077 | 4931.778 |
| Highland Lumber Company (HLC) | | | | | | |
| Stack #1 (Dillon Boilers) | 128.48 | 30.48 | 31.76 | 1.21 | 384.482 | 4931.912 |
| Stack #2 (Burnham Boiler) | 128.48 | 27.43 | 31.76 | 0.60 | 384.485 | 4921.899 |
| Stack #3 (IBC Boiler) | 128.54 | 41.18 | 61.23 | 0.91 | 384.657 | 4932.154 |
| Mead Corporation | | | | | | |
| Boilers 3 & 5 | 138.30 | 110.34 | 120.89 | 2.43 | 377.438 | 4934.092 |
| Boilers 6 & 7 | 135.60 | 125.27 | 125.27 | 3.51 | 377.486 | 4932.238 |
| Recovery C | 136.20 | 88.39 | 123.26 | 2.83 | 377.478 | 4943.147 |
| Smelt Tank C | 131.10 | 60.96 | 128.38 | 1.22 | 377.438 | 4934.162 |
| New Lime Kiln | 140.20 | 66.30 | 66.30 | 1.52 | 377.567 | 4933.939 |
| BASELINE - 1987 | | | | | | |
| Highland Lumber Company (HLC) | | | | | | |
| Stack #1 (Dillon Boilers) | 128.48 | 30.48 | 31.76 | 1.21 | 384.482 | 4931.912 |
| Mead Corporation | | | | | | |
| Boilers 1 & 2 | 139.60 | 60.96 | 119.55 | 3.72 | 377.425 | 4934.082 |
| Boiler 3 | 138.30 | 60.96 | 120.89 | 3.72 | 377.438 | 4934.092 |
| Boiler 4 | 139.60 | 60.96 | 119.55 | 2.13 | 377.412 | 4934.089 |
| Boiler 5 | 135.60 | 60.96 | 123.57 | 2.74 | 377.449 | 4934.118 |
| Old Lime Kiln | 141.10 | 30.48 | 107.04 | 1.37 | 377.646 | 4933.978 |
| Recovery C | 136.20 | 88.39 | 123.26 | 2.83 | 377.478 | 4943.147 |
| Smelt Tank C | 131.10 | 60.96 | 128.38 | 1.22 | 377.438 | 4934.162 |
| BASELINE - 1977 | | | | | | |

| Highland Lumber Company (HLC) | | | | | | |
|--------------------------------------|--------|-------|-------|------|---------|----------|
| Stack #1 (Dillon Boilers) | 128.48 | 30.48 | 31.76 | 1.21 | 384.482 | 4931.912 |
| Mead Corporation | | | | | | |
| Boilers 1 & 2 | 139.60 | 30.48 | 85.35 | 3.72 | 377.425 | 4934.082 |
| Boiler 3 & Recovery A | 138.30 | 60.96 | 88.70 | 3.72 | 377.438 | 4934.092 |
| Boiler 4 | 139.60 | 30.48 | 85.35 | 1.40 | 377.423 | 4934.074 |
| Boiler 5 | 135.60 | 30.48 | 95.40 | 2.74 | 377.449 | 4934.118 |
| Old Lime Kiln | 141.10 | 30.48 | 64.15 | 1.37 | 377.646 | 4933.978 |
| Recovery B | 138.90 | 87.05 | 60.96 | 2.13 | 377.412 | 4943.089 |
| Smelt Tank A | 137.00 | 30.48 | 91.83 | 0.91 | 377.411 | 4934.119 |
| Smelt Tank B | 142.60 | 30.48 | 77.73 | 1.20 | 377.400 | 4934.109 |

The emission parameters for the applicant's facility and other nearby sources for MAAQS and increment modeling are listed in Table IV-2. The emission parameters for the applicant's facility are based on the maximum license allowed and 50% load operating configurations. For the purpose of determining NO₂ and PM₁₀ impacts, all NO_x and PM emissions were conservatively assumed to convert to NO₂ and PM₁₀, respectively.

Table IV-2. Emission Parameters

| Facility/ Stack | Averaging Period(s) | SO ₂ (g/s) | PM ₁₀ (g/s) | NO ₂ (g/s) | CO (g/s) | Temp (K) | Stack Vel. (m/s) |
|---------------------------------|------------------------|--------------------------|---------------------------|--------------------------|-------------|-------------|------------------------|
| CURRENT/PROPOSED | | | | | | | |
| Rumford Power Associates | | | | | | | |
| Main Stack - 100% Load | All | 1.34 | 1.69 | 3.06 | 6.55 | 366 | 19.37 |
| Main Stack - 50% Load | All | 0.80 | 1.56 | 1.76 | 4.16 | 358 | 12.07 |
| Generator Stack - 100% Load | All | 0.03 | 0.25 | 2.00 | 3.82 | 394 | 18.38 |
| Highland Lumber Company | | | | | | | |
| Stack #1 (Dillon Boilers) | All | 0.003 | 0.810 | 1.20 | 5.16 | 477 | 4.33 |
| Stack #2 (Burnham Boiler) | All | 1.10 | 0.097 | .079 | 0.55 | 477 | 11.50 |
| Stack #3 (IBC Boiler) | All | 0.006 | 1.16 | 2.32 | 9.74 | 491 | 21.27 |
| Mead Corporation | | | | | | | |
| Boilers 3 & 5 | All | 19.70 | 3.80 | 34.00 | nm | 328 | 16.60 |
| Boilers 6 & 7 | All | 40.40 | 4.40 | 86.40 | nm | 422 | 23.17 |
| Recovery C | All | 26.00 | 8.20 | 16.90 | nm | 497 | 36.58 |
| Smelt Tank C | All | 0.70 | 2.00 | 0.00 | nm | 343 | 10.10 |
| New Lime Kiln | All | 2.90 | 3.00 | 6.60 | nm | 346 | 11.72 |
| BASELINE - 1987 | | | | | | | |
| Highland Lumber Company | | | | | | | |
| Stack #1 (Dillon Boilers) | Annual | nm | nm | .307 | nm | 477 | 3.03 |
| Mead Corporation | | | | | | | |
| Boilers 1 & 2 | Annual | nm | nm | 11.50 | nm | 413 | 6.10 |
| Boiler 3 | Annual | nm | nm | 9.20 | nm | 537 | 5.48 |
| Boiler 4 | Annual | nm | nm | 2.30 | nm | 533 | 5.65 |

| | | | | | | | |
|--------------------------------|--------|-------|-------|-------|----|-----|-------|
| Boiler 5 | Annual | nm | nm | 11.90 | nm | 336 | 7.72 |
| Old Lime Kiln | Annual | nm | nm | 0.50 | nm | 339 | 5.60 |
| Recovery C | Annual | nm | nm | 10.90 | nm | 511 | 29.44 |
| Smelt Tank C | Annual | nm | nm | 0.00 | nm | 343 | 10.10 |
| BASELINE - 1977 | | | | | | | |
| Highland Lumber Company | | | | | | | |
| Stack #1 (Dillon Boilers) | All | 0.02 | 7.18 | nm | nm | 477 | 4.33 |
| Mead Corporation | | | | | | | |
| Boilers 1 & 2 | All | 74.20 | 6.00 | nm | nm | 413 | 6.10 |
| Boiler 3 & Recovery A | All | 78.80 | 10.50 | nm | nm | 437 | 9.78 |
| Boiler 4 | All | 14.80 | 1.20 | nm | nm | 533 | 13.08 |
| Boiler 5 | All | 4.60 | 9.40 | nm | nm | 336 | 7.72 |
| Old Lime Kiln | All | 0.70 | 3.30 | nm | nm | 339 | 5.60 |
| Recovery B | All | 8.20 | 7.50 | nm | nm | 415 | 16.82 |
| Smelt Tank A | All | 0.20 | 0.70 | nm | nm | 347 | 8.75 |
| Smelt Tank B | All | 0.20 | 0.90 | nm | nm | 336 | 8.53 |

Key: nm = Not Modeled

C. Applicant's modeled impacts.

Simple and complex terrain SCREEN3 modeling was performed for operating scenarios that represent maximum, typical and minimum operations for the applicant. Further modeling was performed for the load cases (100% and 50% loads) predicting the highest impacts using the ISCST3 model in refined mode. Complex terrain impacts were conservatively estimated by adding the maximum impacts from the main stack and the generator stack, regardless of receptor location.

The model results for the applicant alone in simple and complex terrain are shown in Tables IV-3 and IV-4, respectively. Only 24-hour PM₁₀ and annual NO₂ averaging periods were significant in the ISCST3 simple terrain modeling analysis. Annual SO₂, 24-hour and annual PM₁₀ and annual NO₂ averaging period were significant in the SCREEN3 complex terrain analysis. It was demonstrated that the applicant would have no significant impacts for all CO and 24-hour SO₂ averaging periods in simple and complex terrain. Thus, no further analysis was required for these pollutant/terrain combinations. Also, no further 3-hour SO₂, annual SO₂ or annual PM₁₀ simple terrain modeling is required, as it was also demonstrated that the applicant would have no significant impacts.

Table IV-3. Maximum ISCST3 Simple Terrain Impacts from RPA Alone

| Pollutant | Averaging Period | Max Impact ($\mu\text{g}/\text{m}^3$) | Receptor UTM E (km) | Receptor UTM N (km) | Receptor Elevation (m) | De Minimus Level ($\mu\text{g}/\text{m}^3$) | Class II Significance Level ($\mu\text{g}/\text{m}^3$) |
|------------------|------------------|---|---------------------|---------------------|------------------------|---|--|
| SO ₂ | 3-hour | 5.47 | 378.900 | 4931.900 | 195.00 | None | 25 |
| SO ₂ | 24-hour | 1.47 | 378.700 | 4931.900 | 219.00 | 13 | 5 |
| SO ₂ | Annual | 0.13 | 380.250 | 4930.75 | 237.70 | None | 1 |
| PM ₁₀ | 24-hour | 8.88 | 378.700 | 4931.700 | 240.00 | 10 | 5 |
| PM ₁₀ | Annual | 0.46 | 380.250 | 4930.750 | 237.70 | None | 1 |
| NO ₂ | Annual | 2.61 | 380.250 | 4930.750 | 237.70 | 14 | 1 |
| CO | 1-hour | 1820.00* | NA | NA | NA | None | 2,000 |
| CO | 8-hour | 141.60 | 378.700 | 4931.700 | 240.00 | 575 | 500 |

Key : *= SCREEN3 Screening impact

Table IV-4. Maximum SCREEN-3 Complex Terrain Impacts from RPA Alone

| Pollutant | Averaging Period | Max Impact ($\mu\text{g}/\text{m}^3$) | De Minimus Level ($\mu\text{g}/\text{m}^3$) | Class II Significance Level ($\mu\text{g}/\text{m}^3$) |
|------------------|------------------|---|---|--|
| SO ₂ | 3-hour | 17.60 | None | 25 |
| SO ₂ | 24-hour | 4.33 | 13 | 5 |
| SO ₂ | Annual | 1.32 | None | 1 |
| PM ₁₀ | 24-hour | 13.40* | 10 | 5 |
| PM ₁₀ | Annual | 2.75 | None | 1 |
| NO ₂ | Annual | 7.17 | 14 | 1 |
| CO | 1-hour | 525.00 | None | 2,000 |
| CO | 8-hour | 368.00 | 575 | 500 |

Key : *= Justification has been made to waive the pre-construction monitoring requirement.

D. Combined Source Modeling.

Because modeled impacts from the applicant's facility were greater than significance levels for annual SO₂ and all PM₁₀ and NO₂ averaging periods, other sources not explicitly included in the modeling analysis must be included by using representative background concentrations for the area. Background concentrations used were based on conservative central Maine rural background monitoring data for SO₂ from data collected in the Dedham area, for NO₂ from data collected in the Portland area and for PM₁₀ from the Skowhegan (Eaton Ridge) area. These background values are listed in Table IV-5.

TABLE IV-5. Background Concentrations ($\mu\text{g}/\text{m}^3$)

| Pollutant | Averaging Period | Background |
|------------------|------------------|------------|
| SO ₂ | Annual | 5 |
| PM ₁₀ | 24-hour | 40 |
| | Annual | 12 |
| NO ₂ | Annual | 11 |

MEDEP-BAQ identified other sources whose impacts would potentially be significant in the applicant's significant impact area. The other sources explicitly included in the modeling were The Mead Corporation (Rumford) and Highland Lumber Company (Dixfield).

Tables IV-6 and IV-7 summarize the maximum combined source impacts for simple and complex terrain, respectively. The predicted impacts are added to conservative background concentrations to demonstrate compliance with MAAQS. All simple terrain SO₂, PM₁₀ and NO₂ averaging period impacts from the applicant's proposed facility and other sources including background were below their respective MAAQS. Complex terrain impacts were attained by adding maximum impacts from each source's individual modeling analysis (i.e., adding max-to-max-to-max), then adding the background data.

Table IV-6. ISCST3 Maximum Combined Source Simple Terrain Impacts

| Pollutant | Averaging Period | ISCST3 Max (µg/m ³) | Receptor UTM-E (km) | Receptor UTM-N (km) | Receptor Elevation (m) | Back-ground (µg/m ³) | Max Total Impact (µg/m ³) | MAAQS (µg/m ³) |
|------------------|------------------|---------------------------------|---------------------|---------------------|------------------------|----------------------------------|---------------------------------------|----------------------------|
| PM ₁₀ | 24-hour | 75.08 | 378.000 | 4933.250 | 207.30 | 40 | 115.08 | 150 |
| NO ₂ | Annual | 18.46 | 378.125 | 4933.375 | 207.30 | 11 | 29.46 | 100 |

Table IV-7. Maximum Combined Source SCREEN-3 Complex Terrain Impacts

| Pollutant | Averaging Period | Max RPA Impact (µg/m ³) | Max Mead Impact (µg/m ³) | Max HLC Impact (µg/m ³) | Back-ground (µg/m ³) | Max Total Impact (µg/m ³) | MAAQS (µg/m ³) |
|------------------|------------------|-------------------------------------|--------------------------------------|-------------------------------------|----------------------------------|---------------------------------------|----------------------------|
| SO ₂ | Annual | 1.32 | 21.70 | 0.34 | 5 | 28.36 | 57 |
| PM ₁₀ | 24-hour | 13.40 | 49.70 | 4.12 | 40 | 67.22 | 150 |
| PM ₁₀ | Annual | 2.75 | 9.39 | 1.51 | 12 | 25.65 | 40 |
| NO ₂ | Annual | 7.17 | 34.90 | 5.41 | 11 | 58.48 | 100 |

E. Increment

The applicant's maximum increment impacts were predicted using ISCST3 refined modeling in simple terrain and SCREEN3 screening in complex

terrain. For addressing increment impacts in intermediate terrain (i.e., terrain above stack top and below plume centerline), the ISCST3 and SCREEN3-VALLEY were run individually, and the higher of the two increment impacts chosen, per EPA Model Clearinghouse guidance Memo #77. The maximum license allowed emissions limits were used in the increment analysis.

Results of the simple and complex terrain combined source increment analyses are shown in Table IV-7 and Table IV-8, respectively. All applicant facility alone modeled increment impacts were below all SO₂, PM₁₀ and NO₂ increment standards. Because the predicted increment impacts using this method meet increment standards, no further Class II increment modeling needed to be performed.

Table IV-8. Combined Source Class II Simple Terrain Increment Impacts

| Pollutant | Averaging Period | Max Impact (µg/m ³) | Receptor UTM-E (km) | Receptor UTM-N (km) | Receptor Elevation (m) | Class II Increment (µg/m ³) |
|------------------|------------------|---------------------------------|---------------------|---------------------|------------------------|---|
| PM ₁₀ | 24-hour | 15.10 | 385.130 | 4931.900 | 176.80 | 30 |
| NO ₂ | Annual | 18.50 | 378.130 | 4933.380 | 207.30 | 25 |

Table IV-9. Combined Source Class II Intermediate/Complex Terrain Impacts

| Pollutant | Averaging Period | Max RPA Impact (µg/m ³) | Max Mead Impact (µg/m ³) | Max HLC Impact (µg/m ³) | Max Total Impact (µg/m ³) | Class II Increment (µg/m ³) |
|------------------|------------------|-------------------------------------|--------------------------------------|-------------------------------------|---------------------------------------|---|
| SO ₂ | Annual | 1.32 | 17.20 | 0.35 | 18.87 | 20 |
| PM ₁₀ | 24-hour | 13.40 | 11.10 | 4.12 | 28.62 | 30 |
| PM ₁₀ | Annual | 2.75 | 8.80 | 1.51 | 13.06 | 17 |
| NO ₂ | Annual | 7.17 | 9.70 | 5.41 | 22.28 | 25 |

Federal guidance and Chapter 140 of the DEP regulations require that any new major source provide additional increment analyses of further impacts that would occur as a direct result of the general, commercial, residential, industrial and mobile-source growth associated with the construction and operation of that source.

GENERAL GROWTH: Some increases in local emissions due to construction related activities are expected to occur for approximately 12 months, with the majority of emissions due to truck traffic (soil removal, concrete pouring, delivery of materials, etc.). Increases in potential emissions of NO_x due to commuting by construction workers will be temporary and short-lived. Emissions of dust from construction related activities will be

minimized by the use of "Best Management Practices" for construction on-site.

RESIDENTIAL GROWTH: Population growth in the impact area of the proposed source can be used as a surrogate factor for the growth in emissions from residential combustion sources. Construction of the facility is expected to create approximately 15 new full-time jobs. As a result of the minimal manpower requirements, operations and support required for the facility will, for the most part, be available from the region. It is expected that no new significant residential growth will follow from this source.

COMMERCIAL AND INDUSTRIAL GROWTH: RPA will be constructed for the sale of electricity only. No significant commercial or industrial growth is expected to occur as a result of this project.

MOBILE SOURCE AND AREA SOURCE GROWTH: Since area and mobile sources are considered minor sources of NO₂, their contribution to increment has to be evaluated. Technical guidance from the Environmental Protection Agency points out that screening procedures can be used to determine whether detailed analyses of minor source emissions are required. A minor source inventory may not be required if it can be shown that little or no growth has taken place in the impact area of the proposed source since the minor source baseline date (February 8, 1988) was established. Emissions during the calendar year 1987 are used to determine baseline emissions. The population in the Rumford-Dixfield Area has declined approximately 1% per year since the minor source baseline date was established. Therefore, no further assessment of additional area source growth of NO₂ increment is needed.

Any emissions associated with the minimal increases in vehicle miles traveled have been more than offset by decreases in NO_x emissions in terms of reduced average grams-per-vehicle-mile emission rates since the minor source baseline date was established. Therefore, no increase in actual NO_x emissions from mobile sources is expected. No further detailed analyses of mobile NO₂ emissions are needed.

F. Class I Impacts

Since the proposed emissions from RPA are entirely increment consuming and the nearest Class I area is approximately 65 kilometers away, a Class I increment analysis was performed

The maximum increment impacts for RPA alone in the Class I area of the Presidential Range Dry River Wilderness Area screening modeling were predicted to be insignificant for all pollutants as shown in Tables IV-10. Maximum impacts from the main stack were conservatively added to the maximum impacts of the generator stack, regardless of receptor location, to achieve the total predicted impact. Because all impacts were below all Class I significance levels, no other sources were included in the analysis.

Since maximum predicted impacts in the closest Class I area (Presidential Range Dry River Wilderness Area) meet all Class I increment standards, the other more distant Class I areas (Acadia National Park, Moosehorn National Wildlife Refuge and Roosevelt Campobello International Park) were not evaluated.

Table IV-10. Increment Consumption in the Presidential Range-Dry River Wilderness Class I Area, (ug/m³)

| Pollutant | Averaging Period | Maximum Impact | Class I Significance | Class I Increment |
|------------------|------------------|----------------|----------------------|-------------------|
| SO ₂ | 3-hour | 0.317 | 1.00 | 25 |
| | 24-hour | 0.141 | 0.20 | 5 |
| | Annual | 0.027 | 0.08 | 2 |
| PM ₁₀ | 24-hour | 0.241 | 0.32 | 10 |
| | Annual | 0.041 | 0.16 | 5 |
| NO _x | Annual | 0.086 | 0.10 | 2.5 |

Note: Maximum Main Stack Impact : (317.730 km E, 4884.340 km N, 329.20 meter elevation)

Maximum Generator Stack Impact : (316.380 km E, 4884,090 km N, 249.90 meter elevation)

G. Additional Impacts

CLASS I VISIBILITY: A VISCREEN Level-1 analysis was used to assess visibility impacts on Class I areas in the White Mountains (Great Gulf/Presidential Range/Dry River Wilderness Areas). Table IV-11 summarizes the VISCREEN model input data for the Class I area's Level-1 analysis. Data include source emission strengths for the facility, distances to the Class I areas, plume-observer angle, background visual range, model default values for meteorological conditions and background air quality levels. No assessment of potential plume visibility impacts on integral vistas was performed.

Table IV-11. VISCREEN Input Data

| POLLUTANT INPUT DATA | | | |
|--|--|--------------------------------------|--------------------------------------|
| Pollutant | Maximum Operating Case Emissions (g/s) | | |
| Particulates | 1.95 | | |
| NO _x (as NO ₂) | 5.06 | | |
| Primary NO ₂ | 0.00 | | |
| Soot | 0.00 | | |
| Primary SO ₄ | 0.00 | | |
| DEFAULT PARTICLE CHARACTERISTICS | | | |
| Background Ozone | 0.04 ppm | | |
| Background Visual Range | 90.00 km | | |
| Plume-Source-Observer Angle | 11.25° | | |
| DISTANCE INPUT DATA | | | |
| Class I Area | DISTANCE TO CLASS I AREAS | | |
| | Source-Observer Distance (km) | Minimum Source-Class I Distance (km) | Maximum Source-Class I Distance (km) |
| Great Gulf/Presidential Range - Dry River Wilderness Areas | 62.00 | 62.00 | 83.00 |

Results of the Level-1 analyses are summarized in Table IV-11. This table presents the worst-case plume perceptibility (Delta-E) and plume contrast values obtained for each situation analyzed. Level-1 screening results indicate that the applicant's facility will not cause plume visibility impacts within the

White Mountain Class I area. Because critical visibility values could be met using this method, no Level-2 visibility analysis was performed.

Table IV-11. VISCREEN Model Results in Class I Areas

| Level 1 Analysis | | | | |
|---|---------------------|--------------|-----------------|--------------|
| | Inside Class I Area | | Integral Vistas | |
| | Delta E | Contrast (±) | Delta E | Contrast (±) |
| CRITICAL VALUES | 2.0 | 0.05 | 2.00 | 0.05 |
| GREAT GULF/PRESIDENTIAL RANGE-DRY RIVER WILDERNESS AREAS | | | | |

| Case | Background | Sun Angle | Delta E | Contrast (±) | Delta E | Contrast (±) |
|---------|------------|-----------|---------|--------------|---------|--------------|
| Maximum | Sky | 10° | 0.407 | 0.003 | N/A | N/A |
| Maximum | Sky | 140° | 0.178 | -0.004 | N/A | N/A |
| Maximum | Terrain | 10° | 0.377 | 0.004 | N/A | N/A |
| Maximum | Terrain | 140° | 0.057 | 0.002 | N/A | N/A |

CLASS II VISIBILITY: Visible emissions from the proposed facility will be minimized by controlling emissions through the implementation of BACT.

SOILS AND VEGETATION: Impacts on sensitive vegetation and soils were evaluated using the maximum impacts from the ISCST3 and SCREEN3 modeling. The results of the soil and vegetation impacts are shown in Table IV-12. Evaluation of impacts on sensitive vegetation and soils was performed by comparison of predicted facility impacts with screening levels presented in *A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils and Animals* (EPA, December, 1980, EPA 450/2-81-078). Any acute or chronic deleterious effects to the soils and vegetation would be expected to occur only at ambient concentration levels substantially higher than impacts predicted by dispersion modeling. Proposed emissions from RPA are not expected to impact even the more sensitive soils or vegetation near the facility. Because the soil and vegetation impacts near the facility (non-Class I) are well below the vegetation sensitivity levels, impacts in Class I areas were not evaluated.

TABLE IV-12 Soil and Vegetation Impacts, Rumford Power Alone

| Pollutant | Averaging Period | Max RPA Class II Impact (µg/m³) | Sensitivity Screening Levels (µg/m³) |
|-----------------|------------------|---------------------------------|--------------------------------------|
| SO ₂ | 1-hour | 19.55 | 917 |
| | 3-hour | 17.60 | 786 |
| | Annual | 1.32 | 18 |
| NO _x | 4-hour | 80.66 ¹ | 3,760 |
| | 8-hour | 62.73 | 3,760 |
| | 1-Month | 35.85 ² | 564 |
| | Annual | 7.17 | 94 |
| CO | 1-Week | 525.00 ³ | 1,800,000 |

KEY:

¹ = 3-hour maximum NO_x impact used

² = 24-hour maximum NO_x impact used

³ = 1-hour maximum CO impact used

H. Summary

It has been demonstrated that the applicant's facility in its proposed configuration will not cause or contribute to a violation of any SO₂, PM₁₀, NO₂ or CO averaging period MAAQS. It has also been demonstrated that the applicant's facility in its proposed configuration will not cause or contribute to a violation of any SO₂, PM₁₀, or NO₂ averaging period Class I or Class II increment standards. In addition, the applicant's facility, in its proposed configuration will cause no impairment AQRVs in Class I or II areas.

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-724-71-A-N subject to the following conditions:

STANDARD CONDITIONS

- (1) Employees and authorized representatives of the Department shall be allowed access to the licensee's premises during business hours, or any time during which any emissions units are in operation, and at such other times as the Department deems necessary for the purpose of performing tests, collecting samples, conducting inspections, or examining and copying records relating to emissions.
- (2) The licensee shall acquire a new or amended air emission license prior to commencing construction of a modification, unless specifically provided for in Chapter 115.
- (3) Approval to construct shall become invalid if the source has not commenced construction within eighteen (18) months after receipt of such approval or if construction is discontinued for a period of eighteen (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 analysis or the ambient air quality standards analysis, or both.

- (4) The licensee shall establish and maintain a continuing program of best management practices for suppression of fugitive particulate matter during any period of construction, reconstruction, or operation which may result in fugitive dust, and shall submit a description of the program to the Department upon request.
- (5) The licensee shall pay the annual air emission license fee to the Department, calculated pursuant to Title 38 MRSA §353.
- (6) The license does not convey any property rights of any sort, or any exclusive privilege.
- (7) The licensee shall maintain and operate all emission units and air pollution control systems required by the air emission license in a manner consistent with good air pollution control practice for minimizing emissions.
- (8) The licensee shall maintain sufficient records, to accurately document compliance with emission standards and license conditions and shall maintain such records for a minimum of six (6) years. The records shall be submitted to the Department upon written request.
- (9) The licensee shall comply with all terms and conditions of the air emission license. The filing of an appeal by the licensee, the notification of planned changes or anticipated noncompliance by the licensee, or the filing of an application by the licensee for the renewal of a license or amendment shall not stay any condition of the license.
- (10) The licensee may not use as a defense in an enforcement action that the disruption, cessation, or reduction of licensed operations would have been necessary in order to maintain compliance with the conditions of the air emission license.
- (11) In accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department, the licensee shall:
 - A. perform stack testing to demonstrate compliance with the applicable emission standards under circumstances representative of the facility's normal process and operating conditions:

1. within sixty (60) calendar days of receipt of a notification to test from the Department or EPA, 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; or
 2. pursuant to any other requirement of this license to perform stack testing.
- B. 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; and
- C. submit a written report to the Department within thirty (30) days from date of test completion.
- (12) If the results of a stack test performed under circumstances representative of the facility's normal process and operating conditions indicate emissions in excess of the applicable standards, then:
- A. within thirty (30) days following receipt of such test results, the licensee shall re-test the non-complying emission source under circumstances representative of the facility's normal process and operating conditions and in accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department; and
 - B. the days of violation shall be presumed to include the date of stack test and each and every day of operation thereafter until compliance is demonstrated under normal and representative process and operating conditions, except to the extent that the facility can prove to the satisfaction of the Department that there were intervening days during which no violation occurred or that the violation was not continuing in nature; and
 - C. the licensee may, upon the approval of the Department following the successful demonstration of compliance at alternative load conditions, operate under such alternative load conditions on an interim basis prior to a demonstration of compliance under normal and representative process and operating conditions.
- (13) Notwithstanding any other provision in the State Implementation Plan approved by the EPA or Section 114(a) of the CAA, any credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of any statute, regulation, or Part 70 license requirement.

- (14) The licensee shall maintain records of malfunctions, failures, downtime, and any other similar change in operation of air pollution control systems or the emissions unit itself that would affect emissions and that is not consistent with the terms and conditions of the air emission license. The licensee shall notify the Department within two (2) days or the next state working day, whichever is later, of such occasions where such changes result in an increase of emissions. The licensee shall report all excess emissions in the units of the applicable emission limitation.
- (15) Upon the written request of the Department, the licensee shall establish and maintain such records, make such reports, install, use, and maintain such monitoring equipment, sample such emissions (in accordance with such methods, at such locations, at such intervals, and in such manner as the Department shall prescribe), and provide other information as the Department may reasonably require to determine the licensee's compliance status.
- (16) The licensee shall maintain records of all deviations from license requirements. Such deviations shall include, but are not limited to malfunctions, failures, downtime, and any other similar change in operation of air pollution control systems or the emissions unit itself that is not consistent with the terms and conditions of the air emission license. The licensee shall notify the Department within two (2) days or the next working day, whichever is later, of such occasions and shall report the probable cause, corrective action, and any excess emissions in the units of the applicable emission limitation;

SPECIFIC CONDITIONS

- (17) Combustion Turbine
- A. The combustion turbine shall consist of a combustion turbine followed by a heat recovery steam generator (HRSG).
- B. Turbine #1
1. The maximum heat input rate to the gas turbine shall not exceed 1906 million Btu/hr. RPA shall fire only natural gas in the combustion turbine generator.
 2. Visible emissions from the turbine shall not exceed 20% opacity, measured as 6 minute averages, except for one 6 minute average period per hour of not more than 27% opacity.

3. RPA shall operate a Selective Catalytic Reduction (SCR) system to reduce NOx emissions.
4. The exhaust from the combustion turbine shall be vented through a 150 foot above ground level stack.

(18) Emissions from the combustion turbine shall not exceed the following limits when firing natural gas in the 1.9 billion Btu/hr turbine generator during all times:

| Pollutant | Load | ppmdv | ppmdv Avg Time | lb/MMBtu | lb/hr | Control Technology |
|------------------|------|--|--------------------|----------|-------|-------------------------------------|
| PM | All | -- | -- | 0.007 | 13.4 | Natural gas only |
| PM ₁₀ | All | -- | -- | 0.007 | 13.4 | Natural gas only |
| SO ₂ | All | -- | -- | -- | 11 | Natural gas only (2gr/100 scf) |
| NOx | All | 3.5 (corrected to 15% O ₂) | 24 hr block avg | -- | 24.3 | DLN Technology & SCR |
| CO | All | 15 (corrected to 15% O ₂) | 24 hr block avg | -- | 52 | Good Combustion & GE DLN technology |
| VOC | All | -- | -- | -- | 6 | Good Combustion control |
| Ammonia | All | 10 (corrected to 15% O ₂) | 24 hr block avg | -- | 26 | -- |

- (19) Compliance with the PM and PM₁₀ lb/MMBtu and lb/hour emission limits shall be determined through stack test using EPA Methods 1-5.
- (20) Compliance with the SO₂ lb/hour emission limit shall be demonstrated by firing rate and by fuel sample analysis of the natural gas' sulfur content as required by NSPS Subpart GG.
- (21) RPA is required to operate CEMs and shall meet the following conditions:
 - (a) Compliance with the NOx, CO, and ammonia ppmdv emission limits shall be demonstrated by the use of continuous emission monitors (CEMs). The monitors shall meet the criteria of the appropriate performance specification of 40 CFR Part 60 Appendix B. The NOx, CO, VOC, and ammonia lb/hour emission limits shall be demonstrated through stack testing upon Department request.
 - (b) A 24-hour block average basis shall be calculated as the arithmetic average of not more than 24 - one hour block periods. Only one 24-hour block average shall be calculated for one day, beginning at midnight.

- (c) RPA shall monitor and record the following as specified, for the Combustion turbine:

| Parameters for the Combustion turbine | Monitor | Record |
|---------------------------------------|--------------|--------------|
| turbine natural gas firing rate | continuously | continuously |
| electric load level | continuously | continuously |
| turbine air inlet temperature | continuously | continuously |

The parameter monitors shall be properly maintained, calibrated, and operated at all times the source or process being monitored is operating except for outages not exceeding five percent (5%) of the source operating time on a quarterly basis which are attributable to QA/QC activities, sudden, unforeseen equipment malfunctions or failure not associated with operator error, poor maintenance or any other reasonably preventable condition.

- (d) Continuous emission monitors and process monitoring
- The combustion turbine shall be equipped with continuous emission monitoring equipment for nitrogen oxides, carbon monoxide, ammonia, and oxygen.
 - The continuous monitors must satisfy EPA performance specifications in 40 CFR Part 60, Appendices B&F, and part 75, appendices A&B.
 - Performance specifications, monitor location, calibration and operating procedures and quality assurance procedures for each monitor must be submitted to the Bureau of Air Quality for review and approval at least 180 days prior to expected start-up.
 - All data shall be monitored and recorded continuously.
 - Natural gas flow to the combustion turbine shall be continuously measured and recorded.
 - Catalyst bed temperatures shall be continuously measured and recorded.
- (e) RPA shall submit to the Bureau of Air Quality, 60 days prior to startup, for approval a report indicating how compliance with the ppm_{dv} CEMS emission limits shall be performed.
- (22) Pursuant to 40 CFR, Part 60, Subpart GG, the Turbine is subject to the following:
- A. RPA shall continuously monitor and record the fuel consumption being fired into the turbine on an hourly block average basis. Records shall be maintained according to Condition (8) and 40 CFR Part 60, Subpart GG.

B. Sulfur content monitoring of natural gas shall be bimonthly. If 6 months of data show little variability in the sulfur content, RPA may obtain approval from EPA to decrease the monitoring frequency to a quarterly basis and, thereafter, to a semiannual basis. In all case, RPA must comply with 40 CFR 60.333.

- (23) Combined emissions from the two natural gas-fired 22.2 MMBtu/hr air intake chillers engines shall meet the following limits:

| Pollutant | Emission factor | Emission rate (lb/hour) | Annual Emissions (TPY) | Reference |
|------------------|-----------------|-------------------------|------------------------|-----------|
| PM | 0.046 lb/MMBtu | 2.04 | 2.8 | AP-42 |
| PM ₁₀ | 0.046 lb/MMBtu | 2.04 | 2.8 | AP-42 |
| SO ₂ | 2 gr/100 scf | 0.24 | 0.33 | AP-42 |
| NO _x | 1.37 gr/kW hr | 15.87 | 20.9 | Wartsila |
| CO | 2.8 gr/kW hr | 30.3 | 42.9 | Wartsila |
| VOC | 0.11 lb/MMBtu | 4.87 | 6.7 | AP-42 |

* Compliance with the above emission limits shall be demonstrated by stack testing upon the Department's request.

- (24) The two air intake chiller engines shall be limited to a total of 5,500 hours per year of operation. Visible emissions from the exhaust of the air inlet chillers shall not exceed 20% opacity, measured as 6 minute averages, except for one 6 minute average period per hour of not more than 27% opacity. Compliance with visible emissions (opacity) shall be demonstrated through EPA Method 9.
- (25) The emergency diesel fire pump shall be limited in operation to 500 hours per year which will be equipped with a non-resettable elapsed time meter. The emergency diesel fire pump shall be operated only during emergency situations that would require the pump to operate to fight a fire at the facility or for maintenance purposes to assure that the system is in working order.
- (26) RPA shall limit total facility emissions to the following:

| Pollutant | TPY |
|------------------|-------|
| PM | 61.7 |
| PM ₁₀ | 61.7 |
| SO ₂ | 46.6 |
| NO _x | 128.5 |
| CO | 270.9 |
| VOC | 19.7 |

- (27) The facility shall be designed, constructed, and operated consistent with the representation of the facility in the PSD permit application.
- (28) This facility shall comply with the requirements of the Federal New Source Performance Standards 40 CFR 60, Subparts A (General provisions), and Subpart GG (Stationary Gas Turbines). RPA shall comply with the notification and recordkeeping requirements of 40 CFR Part 60.7.
- (29) RPA is subject to the requirements of the Federal Acid Rain Program found in 40 CFR Parts 72 through 78. compliance with all applicable provisions of these regulations is required. By January 1, 1999, or 24 months before commencing operations, RPA shall apply for a permit pursuant to 40 CFR, Part 72, as a Phase II Acid Rain facility. A copy of the permit application shall be sent to the Bureau when filing to the EPA.
- (30) RPA shall obtain and hold in the EPA Allowance Management System, sufficient Acid Rain allowances for each ton of SO₂ emitted annually in accordance with the requirements of 40 CFR, Part 72.
- (31) Turbine Startup/ Shutdown
- A. RPA shall minimize emissions from the gas turbines to the maximum extent practicable during startup and shutdown, under maintenance or adjustment conditions, during equipment cleaning conditions, and during initial gas turbine commissioning by following proper operating procedures to minimize the emission of air contaminants to the maximum extent practical.
1. Turbine startup/shutdown shall be defined as that period of time from initiation of combustion turbine firing until the unit reaches steady state load operation. Steady state operation shall be reached when the combustion turbine reaches minimum load (60%) and the steam turbine is declared available for load changes. This period shall not exceed 60 minutes for a hot start, 180 minutes for a warm start, nor 240 minutes for a cold start. A hot start shall be defined as startup when the generating unit has been down for less than 2 hours. A warm start shall be defined as startup when the generating unit has been down for more for more than 2 hours and less than or equal to 48 hours. A cold start shall be defined as startup when the generating unit has been down for more than 48 hours. Unit shutdown shall be defined as that period of time from steady state operation to cessation of combustion turbine firing. This period shall not exceed 60 minutes.

2. Initial turbine commissioning shall be defined as the period of time from initial turbine startup to the date of the initial performance test, but not later than 180 days after the initial startup.
 3. The emission limitations of Condition (17) shall apply at all times, except during turbine startup/shutdown conditions for the period of time from the turbine's first fire to twelve months from the initial performance test. Within twelve months from the initial performance testing required by Condition (26) the owner/operator shall propose to the Bureau of Air Quality, numerical emission limits to apply during turbine startup and shutdown conditions. Continuous emission monitoring and/or stack test data gathered during startups and shutdowns shall be used as the basis for these limits.
- (32) Ammonia will not be injected into the HRSG during start-up or shutdown unless the catalyst bed is at, or above, the manufacturer's specified minimum operation temperature.
- (33) Performance Tests
RPA shall conduct the following initial performance tests within 60 days after achieving the maximum production rate at which the plant will be operated but not later than 180 days after the initial startup. All testing shall comply with all of the requirements of the DEP Compliance Test Protocol and with 40 CFR Part 60, as appropriate, or other methods approved by the Bureau of Air Quality. A representative of the DEP or Environmental Protection Agency (EPA) shall be given the opportunity to observe the compliance testing.
- (34) For Compliance Assurance, RPA shall comply with the following:
The Bureau of Air Quality finds the following Compliance Assurance Plan to be reasonable and appropriate.
- A. Quarterly Reporting
1. The licensee shall submit a Quarterly Report to the Bureau of Air Quality within 30 days after the end of each calendar quarter, detailing the following, for the Control Equipment, Parameter Monitors, Continuous Emission Monitoring Systems (CEMS) required by this license:
 - a. All control equipment downtimes and malfunctions;
 - b. All CEMS downtimes and malfunctions;
 - c. All downtimes of the above specified parameter monitors;
 - d. All excess events of emission and operational limitations set by this Order, statute, state or federal regulation, as appropriate; and

e. A report certifying there were no excess emissions, if that is the case.

2. The following information shall be reported for each excess event:
 - a. Standard exceeded;
 - b. Date, time, and duration of excess event;
 - c. Maximum and average values of the excess event, reported in the units of the applicable standard, and copies of pertinent strip charts and print-outs when requested;
 - d. A description of what caused the excess event;
 - e. The strategy employed to minimize the excess event;
 - f. The strategy employed to prevent reoccurrence; and

B. Record-Keeping

1. For all of the equipment parameter monitoring and recording, required by this license, the licensee shall maintain records of the most current six year period and the records shall include:
 - a. Documentation which shows monitor operational status during all source operating time, including specifics for calibration and audits; and
 - b. A complete data set of all monitored parameters as specified in this license. All parameter records shall be made available to the Bureau of Air Quality upon request.
2. The CEMS required by this license shall be the primary means of demonstrating compliance with emission standards set by this Order, statute, state or federal regulation, as applicable. For all CEMS, the licensee shall maintain records of the most current six year period and the records shall include:
 - a. Documentation that all CEMS are continuously accurate, reliable and operated in accordance with Chapter 117, 40 CFR part 51 appendix P and 40 CFR part 60 appendix B&F; and
 - b. Upon the written request by the Department, a report or other data indicative of compliance with the applicable emission standard for those periods when the CEMS were not in operation or produced invalid data. In the event the Bureau of Air Quality does not concur with the licensee's compliance determination, the licensee shall, upon the Bureau of Air Quality's request, provide additional data, and shall have the burden of demonstrating that the data is indicative of compliance with the applicable standard.

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

RUMFORD POWER ASSOCIATES)
OXFORD COUNTY) DEPARTMENT
RUMFORD, MAINE) FINDINGS OF FACT AND ORDER
A-724-71-A-N) AIR EMISSION LICENSE
32

DONE AND DATED IN AUGUSTA, MAINE THIS DAY OF 1998.

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 23, 1997

Date of application acceptance December 23, 1997

Date filed with the Board of Environmental Protection _____

This Order prepared by Edwin L. Cousins, Bureau of Air Quality