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

DEPARTMENT ORDER

RTX Corporation **Pratt & Whitney** **York County** **North Berwick, Maine** **A-453-71-X-A**	**Departmental** **Findings of Fact and Order** **Air Emission License** **Amendment #3**

FINDINGS OF FACT

After review of the air emission license amendment application, staff investigation reports, and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 Maine Revised Statutes (M.R.S.) § 344 and § 590, the Maine Department of Environmental Protection (Department) finds the following facts:

I. REGISTRATION

A. Introduction

Pratt & Whitney (P&W) was issued Air Emission License A-453-71-T-R/A on January 3, 2013, for the operation of emission sources associated with the manufacture and repair of aircraft engine parts. The license was subsequently amended on June 29, 2021 (A-453-71-U-A) to add a natural gas-fired pyrolysis oven and a 250-kW emergency generator, and on November 10, 2022 (A-453-71-V-A) to add two new emergency generators and to remove three existing emergency generators.

P&W has requested an amendment to their license in order to replace two existing natural gas-fired boilers with two new natural gas-fired boilers. P&W will also remove an additional boiler and an emergency generator.

The equipment addressed in this license amendment is located at 113 Wells St, North Berwick, Maine.

B. Emission Equipment

The following equipment is addressed in this air emission license amendment:

Boilers

Equipment	Max. Capacity (MMBtu/hr)	Maximum Firing Rate	Fuel Type	Date of Manuf.	Date of Install.
Boiler #4	16.3	16,329 scf/hr	Natural gas	2023	2024
Boiler #5	16.3	16,329 scf/hr	Natural gas	2023	2024
*Boiler #1**	*30*	*30,000 scf/hr*	*Natural gas*	*1963*	*1963*
*Boiler #2**	*24*	*24,000 scf/hr*	*Natural gas*	*1978*	*1978*
*Boiler #3**	*52*	*52,000 scf/hr*	*Natural gas*	*1990*	*1990*

* Unit will be removed from license.

Stationary Engines

Equipment	Max. Input Capacity (MMBtu/hr)	Fuel Type	Firing Rate (scf/hr)	Date of Manuf.
*Emergency Generator #1**	*0.6*	*Natural Gas*	*563*	*1963*

* Unit will be removed from license.

C. Definitions

Records or *Logs* mean either hardcopy or electronic records.

D. Application Classification

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

The modification of a minor source is considered a major or minor modification based on whether or not expected emission increases exceed the "Significant Emissions" levels as defined in the Department's *Definitions Regulation*, 06-096 Code of Maine Rules (C.M.R.) ch. 100. The emission increases are determined by subtracting the current licensed annual emissions preceding the modification from the maximum future licensed annual emissions, as follows:

Pollutant	Current License (tpy)	Future License (tpy)	Net Change (tpy)	Significant Emission Levels
PM	1.9	7.9	6.0	100
PM_{10}	1.9	7.9	6.0	100
$PM_{2.5}$	1.9	7.9	6.0	100
SO_2	1.6	1.5	-0.1	100
NO_x	23.1	16.2	-6.9	100
CO	16.1	17.9	1.8	100
VOC	24.9	24.9	0.0	50*

* P&W is located in an area of the state included in the Ozone Transport Region. Therefore, the significant emission level for VOC is 50 tpy.

This modification is determined to be a minor modification and has been processed as such.

E. Facility Classification

With the facility wide VOC limit, and the operating hours restriction on the emergency engines, the facility is licensed as follows:

- As a synthetic minor source of air emissions for criteria pollutants, because P&W is subject to license restrictions that keep facility emissions below major source thresholds for criteria pollutants; and
- As an area source of hazardous air pollutants (HAP), because the licensed emissions are below the major source thresholds for HAP.

II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

In order to receive a license, the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in *Definitions Regulation*, 06-096 C.M.R. ch. 100. Separate control requirement categories exist for new and existing equipment.

BPT for new sources and modifications requires a demonstration that emissions are receiving Best Available Control Technology (BACT), as defined in *Definitions Regulation*, 06-096 C.M.R. ch. 100. BACT is a top-down approach to selecting air emission controls considering economic, environmental, and energy impacts.

B. Boilers #4 and #5

P&W has proposed to install and operate Boilers #4 and #5 for steam and heat. The boilers are both rated at 16.3 MMBtu/hr and will fire natural gas. The boilers will be installed in 2024. Each boiler will exhaust through its own stack.

1. BACT Findings

P&W submitted a BACT analysis for control of emissions from Boilers #4 and #5.

a. Particulate Matter (PM, PM_{10}, $PM_{2.5}$)
P&W has proposed to burn only low-ash content fuels (natural gas) in the boilers and to optimize combustion conditions using oxygen trim systems. An oxygen (O_2) trim system monitors the O_2 content in the exhaust gas and automatically adjusts the fuel valve or air damper to optimize the air-to-fuel ratio. Additional add-on pollution controls are not economically feasible.

BACT for $PM/PM_{10}/PM_{2.5}$ emissions from Boilers #4 and #5 is the use of an oxygen trim system and the emission limits listed in the tables below.

b. Sulfur Dioxide (SO_2)
P&W has proposed to fire only natural gas in Boilers #4 and #5. The use of this fuel results in minimal emissions of SO_2, and additional add-on pollution controls are not economically feasible.

BACT for SO_2 emissions from Boiler #4 and #5 is the use of natural gas and the emission limits listed in the tables below.

c. Nitrogen Oxides (NO_x)
P&W considered several control strategies for the control of NO_x including Selective Catalytic Reduction (SCR), Selective Non-Catalytic Reduction (SNCR), water/steam injection, flue gas recirculation (FGR), low-NO_x burners, and use of oxygen trim systems.

Both SCR and SNCR are technically feasible control technologies for minimizing NO_x. Both methods include injection of a NO_x reducing agent, typically ammonia or urea, into the boiler combustion gases, where the reagent reacts with NO_x to form nitrogen and water. Each technology is effective within a specific temperature range, 500 – 1,200 °F for SCR and 1,400 – 1,600 °F for SNCR. However, both SCR and SNCR have the negative environmental impact of emissions of unreacted ammonia. In addition, due to the initial capital cost and the annual operating costs, these systems are typically only considered cost effective for units larger than Boilers #4 and #5.

The use of low-NO_x burners and an oxygen trim system on Boilers #4 and #5 has been determined to be feasible and has been selected as part of the BACT strategy.

BACT for NO_x emissions from Boilers #4 and #5 is the use of low-NO_x burners, an oxygen trim system, and the emission limits listed in the tables below.

d. Carbon Monoxide (CO) and Volatile Organic Compounds (VOC)
P&W considered several control strategies for the control of CO and VOC including oxidation catalysts, thermal oxidizers, and use of an oxygen trim system.

Oxidation catalysts and thermal oxidizers both have high capital, maintenance, and operational costs considering the size of the boiler in question. These controls were determined to be economically infeasible.

The use of an oxygen trim system has been determined to be feasible and has been selected as part of the BACT strategy for Boilers #4 and #5.

BACT for CO and VOC emissions from Boilers #4 and #5 is the use of an oxygen trim system and the emission limits listed in the tables below.

e. Emission Limits

The BACT emission limits for Boilers #4 and #5 were based on the following:

Natural Gas

$PM/PM_{10}/PM_{2.5}$	–	0.05 lb/MMBtu based on 06-096 C.M.R. ch. 115, BACT
SO_2	–	0.6 lb/MMscf based on AP-42 Table 1.4-2 dated 7/98
NO_x	–	0.035 lb/MMBtu based on manufacturer's specifications
CO	–	84 lb/MMscf based on AP-42 Table 1.4-1 dated 7/98
VOC	–	5.5 lb/MMscf based on AP-42 Table 1.4-2 dated 7/98
Visible Emissions	–	06-096 C.M.R. ch. 101

The BACT emission limits for Boilers #4 and #5 are the following:

Unit	Pollutant	lb/MMBtu
Boiler #4	PM	0.05
Boiler #5	PM	0.05

Unit	PM (lb/hr)	PM_{10} (lb/hr)	$PM_{2.5}$ (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Boiler #4 *natural gas*	0.82	0.82	0.82	0.01	0.57	1.33	0.09
Boiler #5 *natural gas*	0.82	0.82	0.82	0.01	0.57	1.33	0.09

2. Visible Emissions

Visible emissions from each boiler shall not exceed 10% opacity on a six-minute block average basis.

3. Periodic Monitoring

Periodic monitoring for Boilers #4 and #5 shall include recordkeeping to document fuel use both on a monthly and 12-month rolling total basis.

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

Due to the size and year of manufacture, the boilers are subject to *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units* 40 C.F.R. Part 60, Subpart Dc for units greater than 10 MMBtu/hr manufactured after June 9, 1989. [40 C.F.R. § 60.40c]

P&W shall comply with all requirements of 40 C.F.R. Part 60, Subpart Dc applicable to Boilers #4 and #5 including, but not limited to, the following:

a. Notifications

P&W shall submit notification to EPA and the Department of the date of construction, anticipated start-up, and actual start-up. This notification shall include the design heat input capacity of the boiler and the type of fuel to be combusted. [40 C.F.R. § 60.48c(a)]

b. Reporting and Recordkeeping

(1) P&W shall maintain records of the amounts of fuel combusted in each boiler during each calendar month. [40 C.F.R. § 60.48c(g)(2)]

(2) P&W shall maintain records required by Subpart Dc for a period of two years following the date of the record. [40 C.F.R. § 60.48c(i)] Note: Standard Condition (8) of this license requires all records be retained for six years; therefore, the two-year record retention requirement of Subpart Dc shall be streamlined to the more stringent six-year requirement.

5. National Emission Standards for Hazardous Air Pollutants (NESHAP): 40 C.F.R. Part 63, Subpart JJJJJJ

Boilers #4 and #5 are not subject to the *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources*, 40 C.F.R. Part 63, Subpart JJJJJJ, because the units will fire only natural gas. [40 C.F.R. § 63.11195]

C. Annual Emissions

The table below provides an estimate of facility-wide annual emissions for the purposes of calculating the facility's annual air license fee and establishing the facility's potential to emit (PTE). Only licensed equipment is included, i.e., emissions from insignificant activities are excluded. Similarly, unquantifiable fugitive particulate matter emissions are not included except when required by state or federal regulations. Maximum potential emissions were calculated based on the following assumptions:

- Operating the Emergency Generators and Fire Pump for 100 hrs/yr each;
- Operating the boilers for 8,760 hr/yr each;
- Operating the Pyrolysis Ovens for 8,760 hr/yr.

This information does not represent a comprehensive list of license restrictions or permissions. That information is provided in the Order section of this license.

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

	PM	PM_{10}	$PM_{2.5}$	SO_2	NO_x	CO	VOC
Boilers #4 and #5	7.1	7.1	7.1	0.1	5.0	11.6	0.8
Emergency Generator #5	--	--	--	--	0.2	0.1	--
Emergency Generator #6	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Emergency Generator #7	--	--	--	--	--	--	--
Emergency Generator #8	--	--	--	--	--	--	--
Fire Pump #2	--	--	--	--	0.2	0.1	--
Emissions from process equipment including nitric acid, ceramic coating areas, & adhesive bonding stations	0.5	0.5	0.5	1.1	7.4	4.5	23.7
Pyrolysis Ovens #1-#3	0.1	0.1	0.1	0.1	2.0	0.4	0.1
Pyrolysis Oven #4	0.1	0.1	0.1	0.1	1.3	1.1	0.2
Total TPY	**7.9**	**7.9**	**7.9**	**1.5**	**16.2**	**17.9**	**24.9**

Pollutant	Tons/year
Single HAP	9.9
Total HAP	24.9

III. AMBIENT AIR QUALITY ANALYSIS

The level of ambient air quality impact modeling required for a minor source is determined by the Department on a case-by case basis. In accordance with 06-096 C.M.R. ch. 115, an ambient air quality impact analysis is not required for a minor source if the total licensed annual emissions of any pollutant released do not exceed the following levels and there are no extenuating circumstances:

Pollutant	Tons/Year
PM_{10}	25
$PM_{2.5}$	15
SO_2	50
NO_x	50
CO	250

The total licensed annual emissions for the facility are below the emission levels contained in the table above and there are no extenuating circumstances; therefore, an ambient air quality impact analysis is not required as part of this license amendment.

This determination is based on information provided by the applicant regarding the expected construction and operation of the proposed emission units. If the Department determines that any parameter (e.g., stack size, configuration, flow rate, emission rates, nearby structures, etc.) deviates from what was included in the application, the Department may require P&W to submit additional information and may require an ambient air quality impact analysis at that time.

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, and
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License Amendment A-453-71-X-A subject to the conditions found in Air Emission License A-453-71-T-R/A, in amendments A-453-71-U-A and A-453-71-V-A, and the following conditions.

Severability. The invalidity or unenforceability of any provision of this License Amendment or part thereof shall not affect the remainder of the provision or any other provisions. This License Amendment shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

SPECIFIC CONDITIONS

The following shall replace Condition (16) of Air Emission License A-453-71-T-R/A:

(16) **Boilers #4 and #5**

A. P&W is licensed to fire natural gas in Boilers #4 and #5. [06-096 C.M.R. ch. 115, BACT]

B. P&W shall install and operate low-NO_x burners and an oxygen trim system on both Boilers #4 and #5. [06-096 C.M.R. ch. 115, BACT]

C. Emissions shall not exceed the following:

Emission Unit	Pollutant	lb/MMBtu	Origin and Authority
Boiler #4	PM	0.05	06-096 C.M.R. ch. 115, BACT
Boiler #5	PM	0.05	06-096 C.M.R. ch. 115, BACT

D. Emissions shall not exceed the following [06-096 C.M.R. ch. 115, BACT]:

Emission Unit	PM (lb/hr)	PM_{10} (lb/hr)	$PM_{2.5}$ (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Boiler #4	0.82	0.82	0.82	0.01	0.57	1.33	0.09
Boiler #5	0.82	0.82	0.82	0.01	0.57	1.33	0.09

E. Visible emissions from Boilers #4 and #5 shall each not exceed 10% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 101, § 4(A)(3)]

F. P&W shall comply with all requirements of 40 C.F.R. Part 60, Subpart Dc applicable to Boilers #4 and #5 including, but not limited to, the following:

1. Notification

P&W shall submit notification to EPA and the Department of the date of construction, anticipated start-up, and actual start-up. This notification shall include the design heat input capacity of the boiler and the type of fuel to be combusted. [40 C.F.R. § 60.48c(a)]

2. Reporting and Recordkeeping

P&W shall maintain records of the amounts of each fuel combusted during each calendar month. [40 C.F.R. § 60.48c(g)(2)]

The following shall replace Condition (22) of Air Emission License A-453-71-T-R/A as amended in Air Emission License Amendment A-453-71-V-A:

(22) **Emergency Generator #5**

A. Emergency Generator #5 shall be limited to 100 hours of operation per calendar year, excluding operating hours during emergency situations. [06-096 C.M.R. ch. 115, BPT]

B. The fuel sulfur content for Emergency Generator #5 shall be limited to 0.0015% sulfur by weight. Compliance shall be demonstrated by fuel delivery receipts from the

supplier, fuel supplier certification, certificate of analysis, or testing of the fuel in the tank on-site. [06-096 C.M.R. ch. 115, BPT]

C. Emissions shall not exceed the following [06-096 C.M.R. ch. 115, BPT]:

Unit	PM (lb/hr)	PM_{10} (lb/hr)	$PM_{2.5}$ (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Emergency Generator #5	0.12	0.12	0.12	0.1	4.4	1.0	0.4

D. Visible Emissions

Visible emissions from the emergency generator shall not exceed 20% opacity on a six-minute block average basis except for periods of startup during which time P&W shall either meet the normal operating visible emissions standard or the following work practice standards and alternative visible emissions standard.

1. The duration of the startup shall not exceed 30 minutes per event;
2. Visible emissions shall not exceed 50% opacity on a six-minute block average basis; and
3. P&W shall keep records of the date, time, and duration of each startup.

Use of the work practice standards and alternative visible emissions standard in lieu of the normal operating standard is limited to no more than once per day.

Note: This does not limit the engine to one startup per day. It only limits the use of the alternative emission standard to once per day.

[06-096 C.M.R. ch. 101, § 4(A)(4)]

E. Emergency Generator #5 shall meet the applicable requirements of 40 C.F.R. Part 63, Subpart ZZZZ, including the following:
[incorporated under 06-096 C.M.R. chs. 115, BPT]

1. P&W shall meet the following operational limitations for the compression ignition emergency engine:

   a. Change the oil and filter every 500 hours of operation or annually, whichever comes first;
   b. Inspect the air cleaner every 1,000 hours of operation or annually, whichever comes first, and replace as necessary; and
   c. Inspect the hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

Records shall be maintained documenting compliance with the operational limitations.

[40 C.F.R. § 63.6603(a) and Table 2(d); and 06-096 C.M.R. ch. 115]

2. Oil Analysis Program Option
   P&W has the option of utilizing an oil analysis program which complies with the requirements of § 63.6625(i) in order to extend the specified oil change requirement. If this option is used, P&W must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for each engine. The analysis program must be part of the maintenance plan for each engine. [40 C.F.R. § 63.6625(i)]

3. Non-Resettable Hour Meter
   A non-resettable hour meter shall be installed and operated on the engine. [40 C.F.R. § 63.6625(f)]

4. Maintenance, Testing, and Non-Emergency Operating Situations

   a. As an emergency engine, the unit shall be limited to 100 hours/year for maintenance checks and readiness testing. Up to 50 hours/year of the 100 hours/year may be used in non-emergency situations (this does not include peak shaving, demand response, or to generate income for a facility by providing power to an electric grid or otherwise to supply power as part of a financial arrangement with another entity). These limits are based on a calendar year. Compliance shall be demonstrated by records (electronic or written logs) of all engine operating hours. [40 C.F.R. § 63.6640(f) and 06-096 C.M.R. ch. 115]
   b. P&W shall keep records that include maintenance conducted on the engine and the hours of operation of the engine recorded through the non-resettable hour meter. Documentation shall include the number of hours the unit operated for emergency purposes, the number of hours the unit operated for non-emergency purposes, and the reason the engine was in operation during each time. [40 C.F.R. §§ 63.6655(e) and (f)]

5. Operation and Maintenance
   The engine shall be operated and maintained according to the manufacturer's emission-related written instructions, or P&W shall develop a maintenance plan which provides to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions. [40 C.F.R. § 63.6625(e)]

P&W shall have available for review by the Department a copy of the manufacturer's emission-related written instructions for engine operation and maintenance. [06-096 C.M.R. ch. 115, BPT]

6. Startup Idle and Startup Time Minimization
During periods of startup, the facility must minimize the engine's time spent at idle and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes. [40 C.F.R. § 63.6625(h) & 40 C.F.R. Part 63, Subpart ZZZZ Table 2d]

The following is a new condition:

(34) If the Department determines that any parameter value pertaining to construction and operation of the emissions units, including but not limited to stack size, configuration, flow rate, emission rates, nearby structures, etc., deviates from what was submitted in the application or ambient air quality impact analysis for this air emission license, P&W may be required to submit additional information. Upon written request from the Department, P&W shall provide information necessary to demonstrate AAQS will not be exceeded, potentially including submission of an ambient air quality impact analysis or an application to amend this air emission license to resolve any deficiencies and ensure compliance with AAQS. Submission of this information is due within 60 days of the Department's written request unless otherwise stated in the Department's letter.
[06-096 C.M.R. ch. 115, § 2(O)]

DONE AND DATED IN AUGUSTA, MAINE THIS 14th DAY OF JUNE, 2024.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: _____ for _____
MELANIE LOYZIM, COMMISSIONER

The term of this license amendment shall be concurrent with the term of Air Emission License A-453-71-T-R/A (issued 1/3/2013).

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: February 7, 2024
Date of application acceptance: February 12, 2024

Date filed with the Board of Environmental Protection:

This Order prepared by Benjamin Goundie, Bureau of Air Quality.

FILED

JUN 14, 2024

State of Maine
Board of Environmental Protection