

**BUREAU OF AIR MANAGEMENT  
NEW SOURCE REVIEW PERMIT  
TO CONSTRUCT AND OPERATE A STATIONARY SOURCE**

Issued pursuant to Title 22a of the Connecticut General Statutes (CGS) and Section 22a-174-3a of the Regulations of Connecticut State Agencies (RCSA).

<b>Owner/Operator</b>	RTX Corporation, Pratt & Whitney Division
<b>Address</b>	1 Aircraft Road, Middletown, CT 06457
<b>Equipment Location</b>	1 Aircraft Road, Middletown, CT 06457
<b>Equipment Description</b>	Non-Vitiated Air Heater - West
<b>Town-Permit Numbers</b>	104-0158
<b>Premises Number</b>	0007
<b>Stack Number</b>	121
<b>Permit Issue Date</b>	
<b>Expiration Date</b>	None

\_\_\_\_\_  
Emma Cimino  
Deputy Commissioner

\_\_\_\_\_  
Date

This permit specifies necessary terms and conditions for the operation of this equipment to comply with state and federal air quality standards. The Permittee shall at all times comply with the terms and conditions stated herein.

## PART I. DESIGN SPECIFICATIONS

### A. General Description

The Pratt & Whitney Middletown facility engages in manufacturing processes, assembly and testing of experimental and production aircraft engines, ground based turbine engines and components, as well as overhaul and repair of these jet engines. The non-vitiated inlet air heaters are used to heat the gas turbine inlet air prior to the X-960 experimental engine combustion rig. The air heater is ignited with propane and operates during testing on Jet-A fuel.

### B. Equipment Design Specifications

1. Fuel Types: Jet A (Primary Fuel); Propane (Ignition Fuel)
2. Maximum Fuel Firing Rates (gal/hr):
  - a. Jet A: 680
  - b. Propane: 91
3. Maximum Gross Heat Input (MMBTU/hr):
  - a. Jet-A (Primary Fuel): 91.857
  - b. Propane (Ignition Fuel): 8.33

### C. Control Equipment Design Specifications

1. Low NO<sub>x</sub> Burner and Flue Gas Recirculation
  - a. Make and Model: Preferred Special Combustion Engineering, Model SPEC-COM-PAF-26

### D. Stack Parameters

1. Minimum Stack Height (ft): 70
2. Minimum Exhaust Gas Flow Rate (acfm): 27,510
3. Minimum Stack Exit Temperature (°F): 780
4. Minimum Distance from Stack to Nearest Property Line (ft): 900

## PART II. OPERATIONAL CONDITIONS

### A. Equipment

1. Maximum Fuel Consumption over any Consecutive 12 Month Period (gallons):
  - a. Jet-A: 510,000
  - b. Propane: 68,250
2. Maximum Fuel Sulfur Content, Jet-A (% by weight, dry basis): 0.1%

## PART III. ALLOWABLE EMISSION LIMITS

The Permittee shall not cause or allow this equipment to exceed the emission limits stated herein at any time.

### A. Criteria Pollutants

#### 1. Jet-A

Pollutant	lb/hr	lb/MMBtu
PM <sub>10</sub>	1.47	0.016
PM <sub>2.5</sub>	1.47	0.016
SO <sub>2</sub>	9.2	0.10
NO <sub>x</sub>	18.4	0.19
VOC	0.735	0.008
CO	7.35	0.08
Pb	8.3E-4	
H <sub>2</sub> SO <sub>4</sub>	0.165	

#### 2. Propane

Pollutant	lb/hr	lb/MMBtu
PM <sub>10</sub>	0.53	0.064
PM <sub>2.5</sub>	0.53	0.064
SO <sub>2</sub>	0.002	2.0E-4
NO <sub>x</sub>	1.6	0.19
VOC	0.08	0.009
CO	0.68	0.082

#### 3. Combined Worst Case Annual Emissions

Pollutant	Tons/year
PM <sub>10</sub>	0.75
PM <sub>2.5</sub>	0.75
SO <sub>2</sub>	3.45
NO <sub>x</sub>	7.49
VOC	0.30
CO	3.0
Pb	3.1E-4
H <sub>2</sub> SO <sub>4</sub>	0.062

### B. Hazardous Air Pollutants

This equipment shall not cause an exceedance of the Maximum Allowable Stack Concentration (MASC) for any hazardous air pollutant (HAP) emitted and listed in RCSCA Section 22a-174-29.  
[STATE ONLY REQUIREMENT]

### C. Opacity

This equipment shall not exceed 10% opacity during any six minute block average as measured by 40 CFR 60, Appendix A, Reference Method 9.

- D.** Demonstration of compliance with the above emission limits may be met by calculating the emission rates using emission factors from the following sources:

Jet-A

- All PM and NO<sub>x</sub>: Most Recent Stack Test
- CO, VOC: Manufacturer's Guarantee
- Lead: AP-42, Fifth Edition, External Combustion Sources, Chapter 1.3
- SO<sub>2</sub>: CTDEEP emission factor of 135 S lb/1000 gal, where S is the maximum percent sulfur content by weight
- H<sub>2</sub>SO<sub>4</sub>: CTDEEP emission factor of 2.45 S lb/1000 gal, where S is the maximum percent sulfur content by weight

Propane

- All PM, NO<sub>x</sub>, and CO: Manufacturer's Guarantee
- VOC, SO<sub>2</sub>: AP-42, Fifth Edition, External Combustion Sources, Chapter 1.5

The commissioner may require other means (e.g. stack testing) to demonstrate compliance with the above emission limits, as allowed by state or federal statute, law or regulation.

## **PART IV. MONITORING, RECORD KEEPING AND REPORTING REQUIREMENTS**

### **A. Monitoring**

1. The Permittee shall continuously monitor fuel consumption, for each fuel, using a non-resettable totalizing fuel meter.
2. The Permittee shall perform inspections of the control devices as recommended by the manufacturer.

### **B. Record Keeping**

1. The Permittee shall keep records of monthly and consecutive 12 month fuel consumption. The consecutive 12 month fuel consumption shall be determined by adding (for each fuel) the current month's fuel consumption to that of the previous 11 months. The Permittee shall make these calculations within 30 days of the end of the previous month.
2. The Permittee shall maintain records of the sulfur content of fuel oil combusted. A written certification or a written contract with a fuel supplier is sufficient to satisfy this requirement if the certification or contract identifies:
  - a. The name of the fuel seller;
  - b. The type of fuel purchased;
  - c. The sulfur content of the fuel purchased; and
  - d. The method used to determine the sulfur content of the fuel purchased.

3. The Permittee shall calculate and record the monthly and consecutive 12 month  $PM_{10}$ ,  $PM_{2.5}$ ,  $SO_2$ ,  $NO_x$ , VOC, CO, Pb, and  $H_2SO_4$  emissions in units of tons. The consecutive 12 month emissions shall be determined by adding (for each pollutant) the current month's emissions to that of the previous 11 months. Such records shall include a sample calculation for each pollutant. The Permittee shall make these calculations within 30 days of the end of the previous month.
4. The Permittee shall comply with the applicable record keeping requirements pursuant to RCSA Section 22a-174-22e.
5. The Permittee shall keep records of the manufacturer's maintenance, tune-up, and repair requirements.
6. The Permittee shall keep records of all maintenance, tune-up, and repair activities. The records shall include:
  - a. the name of the person;
  - b. the date;
  - c. the results or action.
7. The Permittee shall keep all records required by this permit for a period of no less than five years and shall submit such records to the commissioner upon request.

## C. Reporting

1. The Permittee shall notify the commissioner, in writing, of the following:
  - a. the date of commencement of construction as defined in RCSA Section 22a-174-1(27);
  - b. the date of initial startup of this equipment/process.

Any required written notification above shall be submitted to [DEEP.CACU@ct.gov](mailto:DEEP.CACU@ct.gov), and [DEEP.BAM.AirPermits@ct.gov](mailto:DEEP.BAM.AirPermits@ct.gov) no later than 30 days after the subject event.

## PART V. STACK EMISSION TEST REQUIREMENTS

Stack emission testing shall be performed in accordance with the Emission Test Guidelines available on the DEEP website at [www.ct.gov/deep/stacktesting](http://www.ct.gov/deep/stacktesting).

Initial stack testing shall be required for the following pollutants:

- ☒  $NO_x$  (Jet-A Only)
- ☒  $PM_{10}$  &  $PM_{2.5}$  (Jet-A Only)
- ☒ Opacity (Jet-A Only)

The Permittee shall conduct initial stack testing within 60 days of achieving the maximum production rate, but not later than 180 days after initial startup. The Permittee shall submit test results within 60 days after completion of testing.

Stack test results shall be reported as follows:  $NO_x$  and PM in units of lb/hr and lb/MMBtu.

## PART VI. OPERATION AND MAINTENANCE REQUIREMENTS

- A. The Permittee shall operate and maintain this equipment in accordance with the manufacturer's specifications and written recommendations.
- B. The Permittee shall properly operate the control equipment at all times that this equipment is in operation and emitting air pollutants.

## PART VII. SPECIAL REQUIREMENTS

- A. The Permittee shall comply with all applicable sections of the following National Emission Standards for Hazardous Air Pollutants at all times.

Title 40 CFR Part 63, Subparts DDDDD and A

Copies of the Code of Federal Regulations (CFR) are available online at the U.S. Government Printing Office website.

### B. Premises Emissions Summary

1. On January 1<sup>st</sup> of each calendar year, if the potential emissions of NO<sub>x</sub> or VOC from the premises are equal to or greater than 25 tons per year per pollutant, then for such pollutant(s), the Permittee shall:
    - a. Monitor NO<sub>x</sub> and/or VOC emissions, as applicable, from the premises for such calendar year.
    - b. Calculate and record annual NO<sub>x</sub> and/or VOC emissions, as applicable, from the premises for such calendar year, in units of tons. The Permittee shall make these calculations on or before February 1<sup>st</sup> of the following year with respect to the previous calendar year. Such records shall include a sample calculation(s).
    - c. If actual NO<sub>x</sub> and/or VOC emissions, as applicable, from the premises are equal to or greater than 25 tons for such calendar year, the Permittee shall submit to the commissioner, on or before March 1<sup>st</sup> of the following year, an annual emissions summary with respect to the premises for the previous calendar year. Such summary shall be submitted on forms prescribed or provided by the commissioner.
  2. A Permittee is exempt from Part VII.B.1 requirements of this permit if, on January 1<sup>st</sup> of the subject year, the premises was operating in accordance with any of the following:
    - a. A valid Title V permit issued pursuant to RCSA section 22a-174-33;
    - b. RCSA section 22a-174-33a; or
    - c. RCSA section 22a-174-33b.
- C. The Permittee shall not cause or permit the emission of any substance or combination of substances which creates or contributes to an odor beyond the property boundary of the premises that constitutes a nuisance as set forth in RCSA Section 22a-174-23. [STATE ONLY REQUIREMENT]
  - D. The Permittee shall resubmit for review and approval a Best Available Control Technology (BACT) analysis if such construction or phased construction has not commenced within the 18 months following the commissioner's approval of the current BACT determination (i.e., the date of this permit) for such construction or phase of construction. [RCSA §22a-174-3a(i)(4)]

## PART VIII. ADDITIONAL TERMS AND CONDITIONS

- A.** This permit does not relieve the Permittee of the responsibility to conduct, maintain and operate the regulated activity in compliance with all applicable requirements of any federal, municipal or other state agency. Nothing in this permit shall relieve the Permittee of other obligations under applicable federal, state and local law.
- B.** Any representative of DEEP may enter the Permittee's site in accordance with constitutional limitations at all reasonable times without prior notice, for the purposes of inspecting, monitoring and enforcing the terms and conditions of this permit and applicable state law.
- C.** This permit may be revoked, suspended, modified or transferred in accordance with applicable law.
- D.** This permit is subject to and in no way derogates from any present or future property rights or other rights or powers of the State of Connecticut and conveys no property rights in real estate or material, nor any exclusive privileges, and is further subject to any and all public and private rights and to any federal, state or local laws or regulations pertinent to the facility or regulated activity affected thereby. This permit shall neither create nor affect any rights of persons or municipalities who are not parties to this permit.
- E.** Any document, including any notice, which is required to be submitted to the commissioner under this permit shall be signed by a duly authorized representative of the Permittee and by the person who is responsible for actually preparing such document, each of whom shall certify in writing as follows: "I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that any false statement made in the submitted information may be punishable as a criminal offense under section 22a-175 of the Connecticut General Statutes, under section 53a-157b of the Connecticut General Statutes, and in accordance with any applicable statute."
- F.** Nothing in this permit shall affect the commissioner's authority to institute any proceeding or take any other action to prevent or abate violations of law, prevent or abate pollution, recover costs and natural resource damages, and to impose penalties for violations of law, including but not limited to violations of this or any other permit issued to the Permittee by the commissioner.
- G.** Within 15 days of the date the Permittee becomes aware of a change in any information submitted to the commissioner under this permit, or that any such information was inaccurate or misleading or that any relevant information was omitted, the Permittee shall submit the correct or omitted information to the commissioner.
- H.** The date of submission to the commissioner of any document required by this permit shall be the date such document is received by the commissioner. The date of any notice by the commissioner under this permit, including but not limited to notice of approval or disapproval of any document or other action, shall be the date such notice is personally delivered or the date three days after it is mailed by the commissioner, whichever is earlier. Except as otherwise specified in this permit, the word "day" means calendar day. Any document or action which is required by this permit to be submitted or performed by a date which falls on a Saturday, Sunday or legal holiday shall be submitted or performed by the next business day thereafter.

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- I. Any document required to be submitted to the commissioner under this permit shall, unless otherwise specified in writing by the commissioner, be directed to: Office of Director, Enforcement Division, Bureau of Air Management; Department of Energy and Environmental Protection; 79 Elm Street, 5th Floor; Hartford, Connecticut 06106-5127.