



**STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
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).

Owner/Operator:	Pratt & Whitney, Division of United Technologies Corp.
Address:	Aircraft Road, Middletown, CT 06457
Equipment Location:	Aircraft Road, Middletown, CT 06457
Equipment Description:	X-960 Experimental Engine Combustion Rig

Town-Permit Numbers:	104-0030
Town-Premises Numbers:	104-0007
Modification Issue Date:	October 21, 2010
Prior Permit Issue Dates:	August 24, 1977 (Permit to Construct) July 18, 1980 (Permit to Operate) April 10, 1996 (Modification)
Expiration Date:	None

/s/ Anne Gobin for
Amey Marrella
Commissioner

October 21, 2010
Date

PERMIT FOR FUEL BURNING EQUIPMENT**STATE OF CONNECTICUT, DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR MANAGEMENT**

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 (P&W) Middletown facility engages in manufacturing processes, assembly and testing of experimental and production aircraft engines, ground based gas turbine engines and components, as well as overhaul and repair of these jet engines. The combustion test rig tests both jet and turbine engines.

B. Equipment Design Specifications

1. Fuel Types: Aviation Fuel OR No.2 Oil/diesel OR Natural Gas
2. Maximum Fuel Firing Rates*: 7,650 lb/hr (liquid fuel)
153,400 CF/hr Natural Gas
3. Maximum Gross Heat Input (MMBTU/hr): 153.4

The maximum fuel firing rate is defined as the total fuel burned by the total test time.

C. Stack Parameters

1. Minimum Stack Height (ft): 100
2. Minimum Exhaust Gas Flow Rate (acfm): 99,070
3. Stack Exit Temperature (°F): 400
4. Minimum Distance from Stack to Property Line (ft): 1600

PART II OPERATIONAL CONDITIONS**A. Equipment**

1. Maximum Fuel Consumption over any Consecutive 12 Month Period:
294,502 gallons Aviation Fuel OR No.2 Oil/diesel OR
36 MMCF Natural Gas, where 1 MMCF Natural Gas may be
substituted for each 8180.6 gallons of liquid fuel
2. Maximum Fuel Sulfur Content (% by weight, dry basis): 0.1
3. Maximum Daily Hours of Operation: 14

FIRM NAME: Pratt & Whitney, Division of UTC
EQUIPMENT LOCATION: Aircraft Road, Middletown, CT 06457
EQUIPMENT DESCRIPTION: X-960 Experimental Engine Combustion Rig

Town No: 104 Premises No: 0007 Permit No: 0030 Stack No: 117

PERMIT FOR FUEL BURNING EQUIPMENT**STATE OF CONNECTICUT, DEPARTMENT OF ENVIRONMENTAL PROTECTION
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1. The Permittee shall continuously monitor fuel consumption using a non-resettable totalizing fuel meter.

B. Record Keeping

1. The Permittee shall record the 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 keep records of the fuel certification for each delivery of aviation fuel and No.2 Oil/diesel from a bulk petroleum provider or a copy of the current contract with the fuel supplier supplying the fuel used by this equipment that includes the applicable sulfur content of the fuel as a condition of each shipment. The shipping receipt or contract shall include the date of delivery, the name of the fuel supplier, type of fuel delivered, the percentage of sulfur in such fuel, by weight, dry basis, and the method used to determine the sulfur content of such fuel.
3. The Permittee shall keep all records of the daily hours of operation. Records shall include the name or clock number of the responsible individual, the date and the hours run each day. The Permittee shall total the hours of operation annually.
4. 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.

PART IV. OPERATION AND MAINTENANCE REQUIREMENTS

- A.** The Permittee shall operate and maintain this equipment in accordance with the manufacturer's specifications and written recommendations.

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PART V. ALLOWABLE EMISSION LIMITS

The Permittee shall not cause or allow this equipment to exceed the consecutive 12 month emission limit stated herein at any time.

A. Criteria Pollutants

	lb/MMBTU <u>Liq. Fuel</u>	lb/MMBTU <u>Nat. Gas</u>	tons per 12 <u>consecutive months</u>
PM-10/PM-2.5	0.006	0.042	0.75
SOx	0.100	0.0006	1.99
NOx	0.889	0.44	17.67
VOC	0.104	0.091	2.06
CO	0.148	0.317	5.71
Pb	0.000058		0.001

- 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 RCSA Section 22a-174-29.
[STATE ONLY REQUIREMENT]

Demonstration of compliance with the above emission limits shall be met by calculating the emission rates using emission factors from the following sources:

1. Liquid Fuel: PM-10/PM-2.5, NOx, VOC, CO: P&W Average Engine Test Data, 2/15/96.
2. Aviation Fuel: SOx: Emission factor of 135*S lb/1000 gal, where S is the maximum percent sulfur content by weight of the fuel.
3. No. 2 Oil/diesel: SOx: Emission factor of 142*S lb/1000 gal, where S is the maximum percent sulfur content by weight of the fuel.
4. Liquid Fuel: Pb & HAPs: Compilation of Air Pollutant Emission Factors, AP-42, fifth edition, Section 3.1, Table 3.1-7, 1/1995.
5. Natural Gas: PM-10/PM-2.5, SOx, NOx: Compilation of Air Pollutant Emission Factors, AP-42, fifth edition, Section 3.1, Table 3.1-2, 1/1995.
6. Natural Gas: VOC & CO: P&W Average Engine Test Data, 3/13/96.

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.

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- 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 the DEP 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."

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- 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.
- 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; Engineering & Enforcement Division; Bureau of Air Management; Department of Environmental Protection; 79 Elm Street, 5th Floor; Hartford, Connecticut 06106-5127.

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