



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:	Combined Heat and Power Cogeneration Facility Consisting of a 7.5 Megawatt Solar Taurus 70-10301S Axial Gas Turbine and Rentech Heat Recovery Steam Generator

Town-Permit Numbers:	104-0142
Town-Premises Numbers:	104-0007
Permit Issue Date:	
Expiration Date:	None

/s/ Gina McCarthy
Gina McCarthy
Commissioner

12/8/2006
Date

PERMIT FOR FUEL BURNING EQUIPMENT

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The conditions on all pages of this permit and attached appendices shall be verified at all times except those noted as design specifications. Design specifications need not be verified on a continuous basis; however, if requested by the commissioner, demonstration of compliance shall be shown.

PART I. OPERATIONAL CONDITIONS

A. Operating Limits

1. Fuel Type(s): Natural Gas and No. 2 Oil
2. Maximum Fuel Consumption over any Consecutive 12 Month Period:
726.06 Million Cubic Feet (Natural Gas)
539,140 Gallons (No. 2 Oil)
3. Maximum Fuel Sulfur Content (% by weight, dry basis): 0.05

B. Design Specifications

1. Maximum Fuel Firing Rate(s): 82,884 cfh¹ (Natural Gas)
539.1 gph¹ (No. 2 Oil)
2. Maximum Gross Heat Input (MMBTU/hr): 82.88¹

¹ ISO Standard Conditions

C. Stack Parameters

1. Minimum Stack Height (ft): 55
2. Minimum Stack Diameter (ft): 4.33
3. Minimum Exhaust Gas Flow Rate (acfm): 66,300
4. Stack Exit Temperature (°F): 300
5. Minimum Distance from Stack to Property Line (ft): 900

PART II. CONTROL EQUIPMENT (Applicable if -X- Checked) (See Appendix E for Design Specifications)

A. Type

- | | |
|---|---|
| <input type="checkbox"/> None | <input type="checkbox"/> Selective Non-Catalytic Reduction |
| <input type="checkbox"/> Scrubber | <input checked="" type="checkbox"/> Selective Catalytic Reduction |
| <input type="checkbox"/> Electrostatic Precipitator | <input type="checkbox"/> Low NOx Burner |
| <input type="checkbox"/> Cyclone | <input type="checkbox"/> Fabric Filter |
| <input type="checkbox"/> Multi-Cyclone | <input type="checkbox"/> Particulate Trap |
| <input type="checkbox"/> Thermal DeNOx | <input type="checkbox"/> Other: |

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**PART III. CONTINUOUS EMISSION MONITORING REQUIREMENTS AND
ASSOCIATED EMISSION LIMITS (Applicable if -X- Checked)**

CEM shall be required for the following pollutant/operational parameters and enforced on the following basis:

<u>Pollutant/Operational Parameter</u>	<u>Averaging Times</u>	<u>Emission Limit</u>	<u>Units</u>
<input checked="" type="checkbox"/> None			
<input type="checkbox"/> Opacity	six minute block		
<input type="checkbox"/> SOx	3 hour rolling		
<input type="checkbox"/> NOx	24 hour rolling		
<input type="checkbox"/> CO	1 hour block		
<input type="checkbox"/> CO ₂	1 hour block		
<input type="checkbox"/> O ₂	1 hour block		
<input type="checkbox"/> Temperature	continuous		

(See Appendix A for General Requirements)

PART IV. MONITORING, RECORD KEEPING AND REPORTING REQUIREMENTS

A. Monitoring

1. The Permittee shall use a non-resettable totalizing fuel metering device or a billing meter to continuously monitor natural gas and No. 2 oil feed to this turbine.
2. The Permittee shall inspect the SCR catalyst once per year, at a minimum, and replace it as required through the monitoring of the catalyst test pieces.

B. Record Keeping

1. The Permittee shall keep records of annual fuel consumption. Annual fuel consumption shall be based on any consecutive 12 month time period and shall be determined by adding (for each fuel) the current month's fuel usage to that of the previous 11 months. The Permittee shall make these calculations within 30 days of the end of the previous month.

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PART IV. MONITORING, RECORD KEEPING AND REPORTING REQUIREMENTS, cont.

2. The Permittee shall make and keep records of the sulfur content of each shipment of liquid fuel received at the Middletown plant, either by (1) a shipping receipt and certification from the fuel supplier, or (2) performing an analysis using the method found in ASTM D4294, or (3) a copy of a current fuel supplier contract. Records for a fuel certification and analysis shall include the following information: 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. Records for a current contract shall include the following information: the name of the fuel supplier, type or grade of fuel delivered and the maximum percentage of sulfur in such fuel, by weight, dry basis.
3. 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 V. 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 turbine is in operation and emitting air pollutants.
- C. STATE ONLY REQUIREMENT: The Permittee shall operate this facility at all times in a manner so as not to violate or contribute significantly to the violation of any applicable state noise control regulations, as set forth in RCSA §§22a-69-1 through 22a-69-7.4.

PART VI. ALLOWABLE EMISSION LIMITS

The Permittee shall not exceed the emission limits stated herein at any time.

Criteria	ppmvd ¹	tons per 12
<u>Pollutants</u>	<u>@15% O₂</u>	<u>consecutive months</u>
PM-10		2.58
SO ₂		2.00
NOx	2.5 ² , 9.6 ³	5.16
VOC		14.10
CO	50	48.76
Pb		5.28E-4

¹ At ISO Standard conditions

² 2.5 ppmvd @15% O₂ when operating on natural gas

³ 9.6 ppmvd @15% O₂ when operating on No. 2 oil

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Non-Criteria	ppmvd ¹
<u>Pollutants</u>	<u>@15% O₂</u>
Ammonia	5

¹ At ISO Standard Conditions

STATE ONLY REQUIREMENT: This unit shall not cause an exceedance of the Maximum Allowable Stack Concentration (MASC) for any hazardous air pollutant (HAP) listed in RCSA Section 22a-174-29.

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

1. PM-10, SO_x, VOC, Pb, HAPs: Compilation of Air Pollutant Emission Factors, AP-42, fifth edition, Section 3.1, April 2000.
2. NO_x, CO, Ammonia: Manufacturer's data.

The above statement shall not preclude the commissioner from requiring 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 VII. STACK EMISSION TEST REQUIREMENTS (Applicable if -X- Checked)

Stack emission testing shall be required for the following pollutant(s):

PM Opacity SO_x CO VOC Pb

NO_x (40 CFR §60.4400¹) Other (HAPs): Ammonia²

¹ Continuous compliance for NO_x may be demonstrated through annual performance tests in accordance with 40 CFR §60.4400. If the NO_x emission result from the performance test is less than or equal to 75% of the NO_x emission limits in Table 1 of 40 CFR Part 60 Subpart KKKK for the turbine, the frequency of subsequent performance tests may be reduced to once every two years.

² Stack emission testing shall be required for ammonia every 4 years from date of initial performance test.

(See Appendix B for General Requirements)

PART VIII. APPLICABLE REGULATORY REFERENCES

RCSA §§22a-174-3a; 22a-174-18; 22a-174-19; 22a-174-22; 22a-174-29(b)

These references are not intended to be all inclusive - other sections of the regulations may apply.

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PART IX. SPECIAL REQUIREMENTS (Applicable if -X- checked)

- A.** The Permittee shall comply with all applicable sections of the following New Source Performance Standard(s) at all times. (See Appendix C for Detailed Requirements)

40 CFR Part 60, Subpart: KKKK A

- B.** The Permittee shall comply with all applicable sections of the following National Emission Standards for Hazardous Air Pollutants at all times. (See Appendix D for Detailed Requirements)

40 CFR Part 63, Subpart: YYYY A

PART X. 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 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:

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PART X. ADDITIONAL TERMS AND CONDITIONS, continued:

"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.
- 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; Compliance & Field Operations Division; Bureau of Air Management; Department of Environmental Protection; 79 Elm Street, 5th Floor; Hartford, Connecticut 06106-5127.

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Appendices attached (Applicable if -X- checked):

- A Continuous Emission Monitoring Requirements
- B Stack Emission Test Requirements
- C New Source Performance Standards
- D National Emission Standards for Hazardous Air Pollutants
- E Control Equipment Design Specifications

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APPENDIX E
Control Equipment Design Specifications

Air Pollution Control Equipment (applicable if -X- checked).

The following specifications need not be verified on a continuous basis, however, if requested by the Bureau, demonstration shall be shown.

None

Scrubber

Make and Model: _____
Reagent: _____
Reagent Flow Rate: _____
Pressure Drop (in H₂O): _____
Minimum Gas Flow Rate at Maximum Rated Capacity (acfm): _____
PH: _____
Design Outlet Grain Loading (gr/dscf): _____
Design Removal Efficiency (%): _____

Electrostatic Precipitator (ESP)

Make and Model: _____
Number of Fields: _____
Minimum Gas Flow Rate at Maximum Rated Capacity (acfm): _____
Design Outlet Grain Loading (gr/dscf): _____
Design Removal Efficiency (%): _____

Cyclone Multicyclone

Make and Model: _____
Pressure Drop (in H₂O): _____
Minimum Gas Flow Rate at Maximum Rated Capacity (acfm): _____

Selective Non-catalytic Reduction (SNCR)

Urea Ammonia

Make and Model: _____
Injection Rate at Maximum Rated Capacity (lb/hr): _____
Operating Temperature Range (°F): _____
Minimum Gas Flow Rate at Maximum Rated Capacity (acfm): _____
Design Removal Efficiency (%): _____

Selective Catalytic Reduction (SCR)

Make and Model: Solar/Rentech
Catalyst Type: Cormetech vanadia-titania or equivalent
Minimum Gas Flow Rate at Maximum Rated Capacity (acfm): 66,300
Pressure Drop (in H₂O): 9 to 11
Ammonia Injection Rate at Maximum Rated Capacity (lb/hr): 3 to 10
Design Removal Efficiency (%): 90

APPENDIX E
Control Equipment Design Specifications

- Low NOx Burner
Make and Model: _____
Guaranteed NOx Emission Rate (lb/MMBTU): _____
Design Removal Efficiency (%): _____

- Particulate Trap
Make and Model: _____
Design Removal Efficiency (%): _____

- Fabric Filter
Make and Model: _____
Number of Bags in Use: _____
Bag Material: _____
Air/Cloth Ratio: _____
Net Cloth Area (ft²): _____
Cleaning Method: _____
Pressure Drop (in H₂O): _____
Minimum Gas Flow Rate at Maximum Rated Capacity (acfm): _____
Design Outlet Grain Loading (gr/dscf): _____
Design Removal Efficiency (%): _____

- Other: _____
