



Connecticut Department of
**ENERGY &
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:	Connecticut Jet Power, LLC
Address:	P.O. Box 1001, Middletown, CT 06457
Equipment Location:	Cos Cob Station, Sound Shore Drive, Greenwich, CT 06830
Equipment Description:	20 MW Pratt & Whitney FT4A-9 combustion turbine with water injection.

Town-Permit Numbers:	067-0097
Town-Premises Numbers:	067-17
Revision Issue Date:	3-22-2012
Prior Permit Issue Date:	2/15/08
Expiration Date:	None

/s/ Anne Gobin for
Daniel C. Esty
Commissioner

March 22, 2012
Date

PERMIT FOR FUEL BURNING EQUIPMENT

DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION BUREAU OF AIR MANAGEMENT

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): Ultra low sulfur diesel (ULSD); natural gas
2. Maximum Fuel Consumption over any Consecutive 12 Month Period ^(Note 1)
1.754 MM gallons/yr; 284.571 MM ft³/yr
3. Maximum Fuel Sulfur Content (% by weight, dry basis): 0.0015 ^(Note 2)

Note 1 Fuel limitation is the maximum annual natural gas and/or distillate oil to be combusted in this unit as well as permit number 067-0098.

Note 2 Sulfur Content to be limited to 0.0015% by weight, dry basis (15ppm) for all fuel burning sources on the premises including permit number 067-0098 and registration numbers R067-0052, R067-053, R067-054 (Units 10, 11, & 12)

B. Design Specifications

1. Maximum Fuel Firing Rate(s): 2,300 gal/hr (oil); 311,000 ft³/hr
2. Maximum Gross Heat Input (MMBTU/hr): 308

C. Stack Parameters

1. Minimum Stack Height (ft): 40
2. Minimum Exhaust Gas Flow Rate (acfm): 663,000
3. Stack Exit Temperature (°F): 860
4. Minimum Distance from Stack to Property Line (ft): 50

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 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 checked="" type="checkbox"/> Water Injection |

B. Minimum Efficiency

1. Capture Efficiency (%): _____
2. Removal Efficiency (%): _____
3. Overall Efficiency (%): _____

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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 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		
<input checked="" type="checkbox"/> Water-to-fuel ratio ^(Note 3)	continuous		lb/lb

^{Note 3} Ratio will be determined by the initial performance test to show compliance with NOx emission rates in Part VI of this permit.

(See Appendix A for General Requirements)

PART IV. MONITORING, RECORD KEEPING AND REPORTING REQUIREMENTS

A. Monitoring

1. When more than one fuel supply tank is to service this source or when multiple sources are supplied by one fuel tank, the Permittee shall use a non-resettable totalizing fuel metering device to continuously monitor fuel feed to this permitted source.
2. The permittee shall continuously monitor the water-to-fuel ratio.
3. The Permittee shall comply with the monitoring requirements pursuant to RCSA 22a-174-22b(n), after May 1, 2009 the permittee shall comply with the requirements of RCSA 22a-174-22c(i).

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.

FIRM NAME: Connecticut Jet Power LLC
 EQUIPMENT LOCATION: Cos Cob Station, Sound Shore Drive, Greenwich, CT
 EQUIPMENT DESCRIPTION: Pratt & Whitney FT4A-9 combustion turbine with water injection

Town No: 067

Premises No: 017

Permit No: 0097

Stack No: 4

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

2. The Permittee shall keep records of the fuel certification for each delivery of fuel oil from a bulk petroleum provider or a copy of the current contract with the fuel supplier supplying the fuel used by the 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 maintain records of the significant maintenance/repairs/parts replacement that would constitute "reconstruction" as defined in 40 CFR 60.15 for this unit, permit number 067-0098 and registration numbers R067-052, R067-053, R067-054 (Units 10, 11, & 12). The date of service and costs of service shall makeup the maintenance records.
4. The Permittee shall comply with the record keeping requirements pursuant to RCSA 22a-174-22b(o), after May 1, 2009 the permittee shall comply with the requirements of RCSA 22a-174-22c(i).
5. The Permittee shall make and keep records pursuant to RCSA 22a-174-19a(i).
6. The Permittee shall make and keep records of the fuel use, CO emissions, NOx emissions, and water-fuel ratio for the registered units. (R067-052, R067-053, R067-054)
7. The Permittee shall install water injection on Units 10, 11, and 12 (Registration Nos. R067-52, R067-53, R067-54) and be operational no later than June 1, 2008, or 90 days after permit issuance, whichever is later. If the installation schedule for the water injection cannot be completed by this date, the permittee shall notify the commissioner within 15 days of a change in the schedule. Allowable construction delays are limited to uncontrollable circumstances such as: late or no delivery of parts from the vendor, lack of or a strike by the contracted vendor, or system emergency. A system emergency shall only be declared by ISO-NE, in that the scheduled outage shall not take place as planned.
8. The Permittee shall keep all records required by this permit for a period of no less than five years and may maintain the above records at an off-site location and shall submit such records to the commissioner upon request.

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

C. Reporting

1. The permittee shall submit all required reports pursuant to RCSA 22a-174-19a(j).
2. The Permittee shall submit all required reports pursuant to RCSA 22a-174-22(l).
3. The Permittee shall comply with the reporting requirements pursuant to RCSA 22a-174-22b(p), after May 1, 2009 the Permittee shall comply with the requirements of RCSA 22a-174-22c(i).

PART V. ALLOWABLE EMISSION LIMITS

The Permittee shall not exceed the emission limits stated herein at any time, except during periods of start-up, shut-down, and malfunction for a period of time not to exceed 1 hour for each occurrence.

1. Natural Gas:

Criteria Pollutants	lb/hr	lb/MMBtu	tpy ^(Note 4)
PM-10	2.05		1.03
SOx	0.18		0.1
NOx	54	0.175	40 ppmvd @15% O ₂ 24.9
VOC	0.65		0.33
CO	214.6		96.4

2. Ultra Low Sulfur Diesel (15 ppm Sulfur content, by weight, or less):

Criteria Pollutants	lb/hr	lb/MMBtu	tpy ^(Note 4)
PM-10	3.73		1.34
SOx	0.46		0.17
NOx	68	0.22	50 ppmvd @15% O ₂ 24.9
VOC	0.13		0.05
CO	154		56.36
Pb	0.02		0.01

Note 4 Emission limits are combined worst case for each pollutant for this unit as well as permit 067-0098, using either natural gas for a maximum of 1016 hours/yr or distillate oil for a maximum of 732 hours/year at maximum rated capacity or a combination thereof. Hourly operational limits are not to be considered an enforceable limitation.

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PART V. ALLOWABLE EMISSION LIMITS, continued

3. Maximum Allowable emissions:

<u>Criteria Pollutants</u>	<u>TPY^(Note 4)</u>
PM-10	1.34
SOx	0.17
NOx	24.9
VOC	0.33
CO	99 ^(Note 5)
Pb	0.01

Note 4 Emission limits are combined worst case for each pollutant for this unit as well as permit 067-0098, using either natural gas for a maximum of 1016 hours/yr or distillate oil for a maximum of 732 hours/year at maximum rated capacity or a combination thereof. Hourly operational limits are not to be considered an enforceable limitation.

Note 5 CO emissions are limited for all fuel burning sources on the premises including permit number 067-0098 and registration numbers R067-052, R067-053, R067-054 (Units 10, 11, & 12)

4. Hazardous Air Pollutants:

<u>Hazardous Air Pollutants</u>	<u>MASC^(Note 6) ($\mu\text{g}/\text{m}^3$)</u>
Sulfuric Acid	31.83
Arsenic	0.08
Beryllium	0.02
Chromium	3.98
Cadmium	0.64
Formaldehyde	19.10
Lead	4.77
Mercury	1.59

Note 6 Maximum allowable stack concentration, worst case for either oil or gas firing.

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PART V. ALLOWABLE EMISSION LIMITS, continued

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

1. Manufacturers Data
2. Calculated from 0.0015%S or less in fuel oil.
3. AP-42, Section 3.1, dated 04/2000

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 VI. STACK EMISSION TEST REQUIREMENTS (Applicable if -X- Checked)

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

None at this time

PM SOx NOx CO VOC Pb

Other (HAPs): _____, _____,

Note: Stack emission testing for NOx shall be conducted according to the requirements in RCSA 22a-174-22(k). Stack emission testing for CO shall be conducted only during the initial performance test. The initial stack test shall be conducted using distillate oil only. If at any future date this unit is operated using natural gas, the initial stack testing requirements will be required for this fuel.

Stack testing for NOx and CO is required within 180 days of initial startup after the installation of the water injection system for the registered units 10, 11, and 12. (Registration Nos. R067-052, R067-53, and R067-54)

Stack testing shall be conducted at or above ninety percent (90%) of maximum rated capacity. If the source does not achieve ninety percent maximum rated capacity during the stack test, the Permittee shall apply for a minor modification of this permit to address the actual maximum rated capacity achieved in practice.

(See Appendix B for General Requirements)

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PART VII. APPLICABLE REGULATORY REFERENCES

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

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

PART VIII. SPECIAL REQUIREMENTS

- A. *Start-up* shall be defined as that period of time from initiation of combustion firing until the unit reaches steady state operation.
- B. *Shut-down* shall be defined as that period of time from the initial lowering of turbine output until the point at which the combustion process has stopped.
- C. *Malfunction* means any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance, careless operation, or any other preventable upset condition or careless operation are not malfunctions. [RCSA §22a-174-1(58) and 40 CFR 60.2]
- D. Pursuant to RCSA 22a-174-22(e)(3) the source shall not exceed an emission limit of 0.15 lbs/MMBtu during the period from October 1 to April 30, inclusive. The Permittee may use NOx DERCS and/or NOx allowances to comply with the applicable limitations contained in RCSA 22a-174-22(e).
- E. The Permittee shall operate and maintain this equipment in accordance with the manufacturer's specifications and written recommendations.
- F. *Noise (for non-emergency use)*

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 Sections 22a-69-1 through 22a-69-7.4.

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PART VIII. SPECIAL REQUIREMENTS, continued

G. Carbon Dioxide (CO₂) Offsets (State-enforceable only)

1. Prior to issuance of the final permit, the Permittee shall submit a CO₂ offset plan for review and approval by the commissioner. Such plan shall provide:
 - i. the methodology for calculating the amount of actual CO₂ emissions on an annual basis,
 - ii. the procedures for the planting of trees or turf grass in accordance with CGS 22a-174d to offset the difference of the actual CO₂ emissions from this unit compared to a state-of-the-art comparable turbine,
 - iii. the procedures to purchase Regional Greenhouse Gas Initiative (RGGI) CO₂ offset credits to offset the difference of the actual CO₂ emissions from this unit compared to a state-of-the-art comparable turbine.
 - iv. notwithstanding the above, the Permittee may use either trees/turf grass or RGGI offset credits to offset the difference of the actual CO₂ emissions from this unit compared to a state-of-the-art comparable turbine.
 - v. Upon review and approval of the Commissioner, the Permittee may amend the CO₂ offset plan to allow the use of other procedures to offset the difference of the actual CO₂ emissions from this unit compared to a state-of-the-art comparable turbine.

2. Such CO₂ offset plan shall, at a minimum, include:
 - i. an CO₂ offset ratio of 1:1, for the differential CO₂ emissions compared to a state-of-the-art comparable turbine.
 - ii. provisions to report the status of offset projects on a periodic basis,
 - iii. verification of the completion of projects.

3. Connecticut Jet Power, LLC must comply with the CO₂ offset plan as approved by the Commissioner.

H. The Permittee shall comply with all applicable sections of the following New Source Performance Standard(s) at all times. (Applicable if -X-checked)

40 CFR Part 60, Subpart: Db Dc GG A

None

(See Appendix C for Detailed Requirements)

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PART VIII. SPECIAL REQUIREMENTS, continued

- I. The Permittee shall comply with all applicable sections of the following National Emission Standards for Hazardous Air Pollutants at all times. (Applicable if -X- checked)
40 CFR Part 63, Subpart: DDDDD A

PART IX. 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 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."

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PART IX. ADDITIONAL TERMS AND CONDITIONS, continued

- 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 Energy and 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
- E Control Equipment Design Specifications

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: _____
Catalyst Type: _____
Minimum Gas Flow Rate at Maximum Rated Capacity (acfm): _____
Pressure Drop (in H₂O): _____
Ammonia Injection Rate at Maximum Rated Capacity (lb/hr): _____
Design Removal Efficiency (%): _____

APPENDIX E
Control Equipment Design Specifications

Low NOx Burner

Make and Model: _____
Guaranteed NOx Emission Rate (lb/MM BTU): _____
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 (%): _____

Water injection

Guaranteed NOx Emission Rate (ppmvd): 50 (oil); 40 (gas)
Expected Design Removal Efficiency (%): 73