



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).

<b>Owner/Operator</b>	Connecticut Jet Power, LLC
<b>Address</b>	1 Manresa Island Avenue, Norwalk, CT 06854
<b>Equipment Location</b>	Cos Cob Station, Sound Shore Drive, Greenwich, CT 06830
<b>Equipment Description</b>	20 Mw (Nominal Power Rating) Pratt & Whitney FT4A-9 combustion turbine with water injection.
<b>Collateral Conditions</b>	This permit contains collateral conditions on registered units R067-0052, R067-0053, R067-0054, and permit 067-0097 as specified in Parts II through Parts IV of this permit.
<b>Town-Permit Numbers</b>	067-0098
<b>Premises Number</b>	17
<b>Stack Number</b>	5
<b>Modification Issue Date</b>	June 13, 2014
<b>Prior Permit Issue Dates</b>	2/15/2008 (Original Permit to Construct & Operate) 3/22/2012 (Permit Revision)
<b>Expiration Date</b>	None

/s/ Anne Gobin for  
Robert J. Klee  
Commissioner

June 13, 2014  
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**

This permit covers a 1969 vintage Pratt & Whitney turbine engine Model# FT4A-9 (Nominal power Rating 20Mw) that was originally installed at the Cos Cob Station in 2008. The engine fires ultra low sulfur distillate fuel and is equipped with a water injection system to control NOx emissions.

### **B. Equipment Design Specifications**

1. Fuel Type(s): Ultra Low Sulfur Distillate (ULSD)
2. Maximum Fuel Firing Rate: 2,300 gal/hr at 59 (°F) and based on 135,000 Btu/gal of fuel, and by the equation  $X=(Y-819.67)/(-0.3333)$   
Where X = Fuel Flow in gallons per hour (gph) and Y = Ambient Air Temperature (°F)
3. Maximum Gross Heat Input (MMBTU/hr): 308 at 59 (°F) and based on 135,000 Btu/gal of fuel.

### **C. Control Equipment Design Specifications**

1. Water Injection System to reduce NOx emissions  
Design Removal Efficiency = 75%  
Maximum. NOx Emission Rate: 50 ppmvd @ 15% O<sub>2</sub>

### **D. Stack Parameters**

1. Minimum Stack Height (ft): 40
2. Nominal Exhaust Gas Flow Rate (acfm): 663,000, based on Pratt & Whitney Estimated Engine Performance information.
3. Nominal Stack Exit Temperature (°F): 860, based on Pratt & Whitney Estimated Engine Performance information.
4. Minimum Distance from Stack to Property Line (ft): 50

## **PART II. OPERATIONAL CONDITIONS**

### **A. Equipment**

1. Maximum Fuel Consumption over any Consecutive 12 Month Period: 1.754 MM gallons/yr in combination with turbine Unit 13 covered under permit number 067-0097.
2. Maximum Fuel Sulfur Content (% by weight, dry basis): 0.0015

### PART III. ALLOWABLE EMISSION LIMITS

#### A. Criteria Pollutants

1. The Permittee shall not cause or allow this equipment to 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.

Pollutant	lb/hr	Lb/MMBtu	ppmvd @15% O <sub>2</sub>
PM <sub>10</sub>	3.73		
SO <sub>x</sub>	0.46		
NO <sub>x</sub>	68	0.22	50
VOC	0.13		
CO	154		
Pb	0.02		

2. The permittee shall not cause or allow this equipment, in combination with permit number 067-0097 (Unit 13) to exceed the annual emission limits stated below at any time. Annual emissions shall include periods of start-up, shut-down, and malfunction for this unit as well as permit number 067-0097 (Unit 13)

Pollutant	tpy
PM <sub>10</sub>	1.34
SO <sub>x</sub>	0.17
NO <sub>x</sub>	24.9
VOC	0.33
CO	56.36
Pb	0.01

3. Annual CO emissions from all fuel burning sources on the premises including permit number 067-0097 (Unit 13) and registration numbers R067-0052, R067-0053, R067-0054 (Units 10, 11, &12) shall not exceed the limit stated below.

Pollutant	tpy
CO	99

#### 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 shall be met by calculating the emission rates using emission factors from the following sources:

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

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 comply with the CEM requirements as set forth in RCSA Section 22a-174-4. CEM shall be required for the following pollutant/operational parameters and enforced on the following basis:

<b>Pollutant/Operational Parameter</b>	<b>Averaging Times</b>	<b>Range</b>	<b>Units</b>
Water-to-fuel ratio	continuous	(0.37 to 1.04)	lb/ lb

2. The Permittee shall use a non-resettable totalizing fuel metering device to continuously monitor fuel feed to this permitted source.
3. The Permittee shall comply with the monitoring requirements pursuant to 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.
2. The Permittee shall keep records of the fuel certification/analysis for each delivery to the facility of fuel oil from a bulk petroleum provider or a copy of the current contract with the fuel supplier supplying the fuel used at this facility 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 placement that would constitute "reconstruction" as defined in 40 CFR 60.15 for this unit, Unit 13 (permit 067-0097) and registered Units 10, 11, & 12 (registration numbers R067-0052, R067-0053, R067-0054). The date of service and costs of service shall be included with the maintenance records.
4. The Permittee shall comply with the requirements of RCSA §22a-174-22c(i).

5. The Permittee shall make and keep daily records of the fuel use, CO emissions, NOx emissions, and continuous electronic recording of water-to-fuel ratio for this unit, Unit 13 (permit 067-0097) and registered Units 10, 11, and 12 (registration numbers (R067-0052, R067-0053, and R067-0054).
6. The Permittee shall make and keep records of NOx emissions versus MMBtu during the period October 1 to April 30 pursuant to RCSA §22a-174-22(e)(3).
7. The Permittee shall make and keep records of the combined annual emissions of all criteria pollutants from Unit 13 (permit 067-0097) and Unit 14 (permit 067-0098).
8. The Permittee shall make and keep records of the CO emissions from all fuel burning sources on the premises including Unit 13 (permit 067-0097) and registered Units 10, 11, and 12 (registration numbers R067-0052, R067-0053, R067-0054).
9. The Permittee shall keep all records required by this permit for a period of no less than 5 years and may maintain the above records at an off-site location and shall submit such records to the commissioner upon request.

### **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 of RCSA §22a-174-22c(i).

## **PART V. STACK EMISSION TEST REQUIREMENTS**

Stack emission testing shall be performed in accordance with the [Emission Test Guidelines](#) available on the DEEP website.

Recurrent stack testing for NOx and CO shall be conducted within (5) years from the date of the previous stack test for NOx.

Stack emission testing for NOx shall be conducted according to the requirements in RCSA §22a-174-22(k).

Stack testing shall be conducted at or above 90% of maximum fuel firing rate as determined in Part I.B.2 of this permit using the equation to include ambient temperature.

## **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 in accordance with manufacturer's specifications whenever the emission unit is in operation.

## **PART VII. 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 Part 60.2]
- D.** Pursuant to RCSA §22a-174-22(e)(3) the source shall not exceed an emission limit of 0.15 lbs NO<sub>x</sub>/MMBtu during the period from October 1, to April 30, inclusive. The Permittee may use NO<sub>x</sub> DERCs to comply with the applicable limitations contained in §22a-174-22(e).
- E.** Fuel Sulfur content to be limited to 0.0015% by weight, dry basis (15ppm) for any fuel burning source on the premises including units covered by permit number 067-0097 (Unit 13) and registration numbers R067-0052, R067-0053, and R067-0054 (Units 10, 11, & 12).
- F.** 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. [STATE ONLY REQUIREMENT]
- G.** Carbon Dioxide (CO<sub>2</sub>) Offsets [STATE ONLY REQUIREMENT]
  - 1. The Permittee shall maintain in compliance with its approved CO<sub>2</sub> offset plan. Such plan shall provide:
    - a. the methodology for calculating the amount of actual CO<sub>2</sub> emissions on an annual basis,
    - b. the procedures for the planting of trees or turf grass in accordance with CGS § 22a-174d to offset the difference of the actual CO<sub>2</sub> emissions from this unit compared to a state-of-the-art comparable turbine,
    - c. the procedures to purchase Regional Greenhouse Gas Initiative (RGGI) CO<sub>2</sub> offset credits to offset the difference to the actual CO<sub>2</sub> emissions from this unit compared to a state-of-the-art comparable turbine,
    - d. notwithstanding the above, the Permittee may use either tree/turf grass or RGGI offset credits to offset the difference of the actual CO<sub>2</sub> emissions from this unit compared to a state-of-the-art comparable turbine.
  - 2. Such CO<sub>2</sub> offset plan provisions shall, at a minimum, include:
    - a. a CO<sub>2</sub> offset ratio of 1:1, for the differential CO<sub>2</sub> emissions compared to a state-of-the-art comparable turbine,
    - b. provisions to report the status of offset projects on a periodic basis,
    - c. verification of the completion of projects.
  - 3. The Permittee shall comply with the CO<sub>2</sub> offset plan as approved by the commissioner.

## **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.

- 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.