

US EPA ARCHIVE DOCUMENT



One Congress Street, Suite 1100
Boston, MA 02114

Prevention of Significant Deterioration Air Permit

issued to the

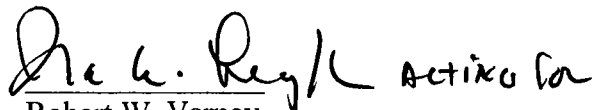
**Braintree Electric Light Department
150 Potter Road
Braintree, MA 02184**

for the

**Thomas A. Watson Generating Station
PSD Permit Number
049-119-MA10**

Pursuant to the provisions of the Clean Air Act (CAA), Subchapter I, Part C (42 U.S.C. Section 7470, *et. seq*), and the Code of Federal Regulations (CFR) Title 40, Section 52.21, the United States Environmental Protection Agency-New England (EPA) is issuing a *Prevention of Significant Deterioration* (PSD) air quality permit to the Braintree Electric Light Department (BELD). The permit applies to the construction and operation of a new 116 mega-watt (MW) quick-start, simple cycle, dual-fuel electric generating facility at BELD's existing Potter Road Facility in East Braintree, Massachusetts. The new facility, referred to as the Thomas A. Watson Generating Station ("Watson Station" or "the Project"), is a major modification to the Potter Road facility.

The design, construction and operation of Watson Station shall be subject to the attached permit conditions and permit limitations. This Permit is valid only for the equipment described herein and as submitted to EPA on May 8, 2007 in the application for a New Source Review (NSR)/Prevention of Significant Deterioration (PSD) permit under 40 CFR 52.21. This permit shall be effective immediately upon signature and shall remain in effect until rescinded by or surrendered to EPA. This permit becomes invalid if BELD does not commence construction within 18 months after the date of signature. EPA may extend the 18-month period upon a satisfactory showing that an extension is justified. This permit does not relieve the BELD from the obligation to comply with applicable state and federal air pollution control rules and regulations.


Robert W. Varney
Regional Administrator

4/4/08
Date of signature

Environmental Protection Agency - New England

Prevention of Significant Deterioration Air Permit

Braintree Electric Light Department Thomas A. Watson Generating Station

Permit Terms and Conditions

Background for informational purposes:

Braintree Electric Light Department (BELD) currently operates the Potter Road municipal generating facility located in Braintree, Massachusetts. On May 8, 2007, BELD submitted a Prevention of Significant Deterioration Permit application to the U.S. EPA to construct and operate a new 116 mega-watt (MW) quick-start, simple cycle, dual-fuel electric generating facility at the existing Potter Road Facility. The new power station, named the Thomas A. Watson Generating Station ("Watson Station" or "the Project"), is a major modification to the existing major source Potter Road facility. Watson Station will consist of two quick-start, simple cycle 58 MW Rolls-Royce Trent 60 WLE combustion turbines firing natural gas and/or ultra low sulfur diesel (ULSD) fuel oil. BELD will install selective catalytic reduction (SCR) systems and oxidation catalysts (OC) on each turbine. The proposed facility will also include a 300 foot interconnecting 115 kV overhead transmission line, a short run high pressure gas line from a new meter station and an upgrade to the existing oil pipeline from the adjoining Citgo marine petroleum terminal.

I. Emission Limitations

1. Except during startup and shutdown (SUSD) operations as defined in Part I.3 below, the owner/operator shall not discharge or cause to discharge into the atmosphere in excess of either of the following emission limits for each turbine firing natural gas:

- a. Particulate Matter less than 10 micrometers (PM_{10}) (1- hour block average):
0.02 pounds per million British thermal units (0.02 lbs/MMBtu) and 5.0 lbs per hour (lbs/hr)
- b. Nitrogen oxide (NO_x) (1- hour block average):
2.5 part per million by volume on the dry basis corrected to 15% oxygen (ppmvd @ 15% O_2) and 5.0 lbs/hr

2. Except during startup and shutdown (SUSD) operations as defined in Part I.3 below, the owner/operator shall not discharge or cause to discharge into the atmosphere in excess of either of the following emission limits for each turbine while firing ULSD:

- a. PM_{10} (1- hour block average):
 0.05 lbs/MMBtu and 15 lbs/hr
 - b. NO_x (1- hour block average):
 5 ppmvd @15% O_2 and 10.3 lbs/hr
3. For startup and shutdown (SUSD) operations, the owner/operator shall not exceed the emission limits listed in Table 1. The start up period is defined as the period from the beginning of turbine operations to a turbine operating at 50% or more of full rated power and shall not exceed 10 minutes. The shutdown period is defined as the period from the moment a turbine's operations falls to below 50% of full rated power to the end of operations and shall not exceed 5 minutes.

Table 1: SUSD Emission Rates

Natural Gas				
Pollutant	Start Up lb/MMBtu	Shut Down lb/MMBtu	Start Up lbs/hr	Shut Down lbs/hr
NO_x	0.092	0.047	6.14	6.06
PM_{10}	0.020	0.020	5.00	5.00

ULSD				
Pollutant	Start Up lb/MMBtu	Shut Down lb/MMBtu	Start Up lbs/hr	Shut Down lbs/hr
NO_x	0.124	0.060	11.15	10.95
PM_{10}	0.061	0.079	15.00	15.64

- a. The start up lb/MMBtu limit is the average emissions limit over a 10 minute start up period.
 - b. The shut down lb/MMBtu is the average emissions limit over a 5 minute shutdown period.
 - c. The lbs/hr startup emission rate reflects start up emissions during the first ten minutes of the hour and the subsequent 50 minutes of emissions at 50% or greater load.
 - d. The lbs/hr shutdown emission rate reflects shutdown emissions during the last five minutes and full (50% or greater) load operation for the preceding 55 minutes of operation.
4. The total NO_x emissions from the two turbines shall not exceed 58.8 tons on a 12-month rolling basis.

II. Operational conditions

1. The owner/operator shall operate the SCR at all times while the turbines are in operation and the turbine exhaust temperature exceeds 650°F.
2. Each turbine will operate at or above 50% power, with the exception of start up or shutdown periods.
3. The owner/operator shall only combust natural gas or ULSD fuel.
4. Neither turbine shall combust ULSD in excess of 2,880 hours in any rolling 12-month period.
5. The sulfur content of natural gas shall not exceed 1.6 grains/100ft³.
6. The sulfur content of the ULSD shall not exceed 15 ppm (0.0015 percent by weight).
7. The total heat input into each turbine shall not exceed 546 MMBtu/hr while firing natural gas.
8. The total heat input into each turbine shall not exceed 535 MMBtu/hr while firing ULSD.

III. Monitoring Requirements

1. The owner/operator shall install, operate and maintain two Continuous Emission Monitoring Systems (CEMS) to monitor the Oxygen (O₂) and (NO_x) from each turbine. The CEMS shall satisfy the requirements of Performance Specification 2 (PS-2) and Performance Specification 3 (PS-3) of 40 CFR Part 60, Appendix B and Appendix F.
2. No less than 60 days before initial startup, the owner/operator shall submit to EPA-New England for review and approval a quality control/quality assurance (QA/QC) program for the long-term operation of the CEMS. The QA/QC plan shall conform to the requirements of 40 CFR Part 60, Appendix F, and all applicable portions of 40 CFR Parts 72 and 75. EPA-New England will provide a written response either approving the proposed QA/QC program as submitted, or approving it subject to changes as stated. The owner/operator must conduct the QA/QC program in accordance with the conditions of EPA-New England's written response. The owner/operator shall not modify or depart from the QA/QC program except with the advance written approval of EPA.
3. The owner/operator shall determine total annual NO_x emissions for Condition I.4 (58.8 tons on a 12 month rolling average) by using the totalizing function of the NO_x CEMS.
4. The owner/operator shall install and operate a single certified natural gas flow meter. The owner/operator shall apportion the hourly natural gas flow and heat input among the two turbines using the methods specified in 40 CFR 75 (Section 2.1.2 and 3.4.3 of Appendix D and Equation F-21d.)
5. The owner/operator shall install and operate a single certified ULSD flow meter. The owner/operator shall apportion the hourly ULSD flow and heat input among the two turbines using the methods specified in 40 CFR 75 (Section 2.1.2 and 3.4.3 of Appendix D and Equation F-21d.)
6. The owner/operator shall install and maintain non-resettable elapsed operating hour meters or the equivalent software to accurately indicate the elapsed operating time of each turbine.
7. The owner/operator shall provide documentation that the sulfur content of the ULSD meets the 15 ppm sulfur in fuel limit for each fuel delivery.
8. The sulfur content shall be determined by ASTM D1072, Standard Test Method for Total Sulfur in Fuel Gases.

9. The owner/operator shall install and operate two thermometers to measure the temperature of the exhaust temperature of each turbine.

IV. Testing Requirements

1. The owner/operator will ensure that all stack and exhaust ducts are to accommodate the emission testing requirements stipulated in 40 CFR Part 60, Appendix A.
2. The owner/operator shall complete the turbine emissions tests within 180 days after initial start-up of the turbines.
 - a. NO_x testing shall be conducted in accordance with EPA Methods 1-4 and 7E.
 - b. PM₁₀ testing shall be conducted in accordance with EPA Method 201 or 201A and Method 202.
 - c. Volumetric flow rate and velocity testing shall be conducted in accordance with EPA Method 2, 2F, or 2G.
3. Performance tests using EPA methods shall be conducted and the results reported in accordance with the test methods set forth in 40 CFR 60.8 and 40 CFR 60, Appendix A.
4. The owner/operator shall notify EPA of the tests in writing and provide EPA with a test protocol at least 45 days prior to such tests. The test protocol shall include a detailed description of sampling port locations, sampling equipment, sampling and analytical procedures, and operating conditions for any such emissions testing on each turbine. The owner/operator shall revise the plan upon EPA request.
5. Within 45 days after the completion of the tests required above, a preliminary report of the test results shall be submitted to EPA. The test report shall indicate:
 - a. The emissions of NO_x and PM₁₀ in lb/MMBtu and lbs/hr.
 - b. The fuel flow rate for the turbines under which the tests were conducted.
6. The owner/operator shall submit the final emissions test report(s) to the EPA-New England within 60 days after the completion of each of the tests.

V. Record Keeping Requirements

1. The owner/operator shall maintain the records of all information used to show compliance with the terms and conditions of this permit. The owner/operator shall maintain the records for five years in a location accessible to staff personnel from EPA and the Massachusetts Department of Environmental Protection.

2. The record keeping shall, at a minimum, include:
 - a. All compliance records for the turbines. Such records shall include, but are not limited to, fuel and ammonia usage; emissions test results; monitoring equipment data and reports; hours of operation of each turbine including start-ups and shut-downs; records of all fuel receipts; daily records of turbine exhaust temperature; and the records showing the hourly and monthly ULSD and natural gas consumption of each turbine.
 - b. All records of malfunctions on the turbine and CEMS equipment including, at a minimum: the date and time the malfunction occurred; a description of the malfunction and the corrective action taken; the date and time corrective actions were initiated; and the date and time corrective actions were completed and the modified equipment was returned to compliance. For purposes of this permit, a malfunction is a sudden and reasonably unforeseeable failure that results in an exceedance of the emission limits in this permit.
3. The owner/operator shall comply with any request by EPA to supply any of the above records.

VI. Reporting Requirements

1. All notifications and reporting required by this permit shall be submitted to the address listed in Section XII below.
2. The owner/operator shall submit to EPA New England semi-annual reports postmarked by January 30th and July 30th of each year, which contains the following information from the prior calendar 6-month period: rolling 12-month NO_x emissions as calculated by the owner/operators' emissions monitoring system emissions, monthly fuel usage, and turbine NO_x emission calculations.

VII. General Requirements

1. A copy of this permit shall be affixed at or adjacent to the subject equipment.
2. After the occurrence of any upsets or malfunctions to the turbines that result in a violation of any emission limitation contained herein, the owner/operator must notify EPA New England, Office of Environmental Stewardship, attention Compliance and Enforcement Chief, by FAX at (617) 918-1810 within two business days, and subsequently in writing to the address listed in Section XII below within seven calendar days.

VIII. Right of Entry

The owner/operator shall allow all authorized representatives of EPA, upon presentation of credentials, to enter upon or through the facility where records required under this permit are kept. The owner/operator shall allow such authorized representatives, at reasonable times:

- a. To access and copy any records that must be kept under this permit;
- b. To inspect any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit; and
- c. To monitor substances or parameters for the purpose of assuring compliance with this permit.

IX. Transfer of Ownership

In the event of any changes in control or ownership of the BELD facility, this permit shall be binding on all subsequent owners and operators. The owner/operator shall notify the succeeding owner and operator of the existence of this permit and its conditions. Notification shall be by letter with a copy forwarded to the EPA.

X. Severability

The provisions of this permit are severable, and if any provision of the permit is held invalid, the remainder of this permit will not be affected thereby.

XI. Other Applicable Regulations

The owner/operator shall construct and operate the turbines in compliance with all other applicable provisions of federal and state regulations.

XII. Agency Addresses

All correspondence required by this permit shall be forwarded to:

Air Compliance Clerk
U.S. EPA New England
One Congress Street, Suite 1100-SEA
Boston, MA 02114-2023