



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>	Yale University, Sterling Power Plant
<b>Address</b>	2 Whitney Avenue, 5 <sup>th</sup> Floor, New Haven, CT 06520-8297
<b>Equipment Location</b>	309 Congress Avenue, New Haven, CT 06520
<b>Equipment Description</b>	Nebraska Boiler No. 10, Model #NOS-2A-58, S/N 0-3374
<b>Town-Permit Numbers</b>	117-0220
<b>Premises Number</b>	0049
<b>Stack Number</b>	1/2
<b>Prior Permit Issue Date(s)</b>	November 14, 1997 April 8, 2004
<b>Modification Issue Date</b>	November 5, 2014
<b>Expiration Date</b>	None

/s/Anne Gobin for \_\_\_\_\_  
Robert J. Klee  
Commissioner

November 5, 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**

Nebraska Boiler

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

1. Fuel Types: Natural Gas, Distillate Oil
2. Maximum Fuel Firing Rates: 76,200 ft<sup>3</sup>/hr gas, 533 gal/hr oil
3. Maximum Gross Heat Input (MMBtu/hr): 76.2 gas, 73.5 oil

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

1. Low NO<sub>x</sub> Burner
  - a. Make and Model: TODD Variflame V565IG0XXX
  - b. Guaranteed NO<sub>x</sub> Emission Rate (lb/MMBtu): 0.04 gas, 0.12 oil
2. Flue Gas Recirculation

### **D. Stack Parameters**

1. Minimum Stack Height (ft): 123
2. Minimum Exhaust Gas Flow Rate (acfm): 22,403 gas, 23,506 oil
3. Minimum Stack Exit Temperature (°F): 346 gas, 350 oil
4. Minimum Distance from Stack to Property Line (ft): 149

## **PART II. OPERATIONAL CONDITIONS**

### **A. Equipment**

1. Maximum Fuel Consumption over any Consecutive 12 Month Period: 667.512 MMft<sup>3</sup> gas, 4,669,080 gal oil<sup>1</sup>
2. Maximum Fuel Sulfur Content (% by weight, dry basis): 0.0025 gas, 0.05 oil<sup>2</sup>
3. The total distillate oil allowed to be combusted in Boilers 8, 9, 10 and 11 (Permit Nos. 117-0105, 117-0326, 117-0220, 117-0355) shall not exceed 12,304,726 gal/yr (0.05% sulfur by weight dry basis)

## PART II. OPERATIONAL CONDITIONS, continued

- <sup>1</sup> This fuel limit is one portion of the 12,304,726 gallon annual total distillate oil allowed to be combusted in Boiler Nos. 8, 9, 10 and 11 (Permit Nos. 117-0105, 117-0326, 117-0220, 117-0355, respectively)
- <sup>2</sup> Compliance with fuel sulfur content shall be demonstrated in accordance with the provisions of Part IV.B.3. of this permit.

## PART III. ALLOWABLE EMISSION LIMITS

The Permittee shall not cause or allow this equipment to exceed the emission limits stated herein at any time.

### A. Criteria Pollutants

#### 1. Natural Gas

Pollutant	lb/hr	lb/MMBtu	tpy
PM <sub>10</sub>	0.58	0.0076	2.54
SO <sub>2</sub>	0.046	0.0006	0.2
NO <sub>x</sub>	3.05	0.040	13.4
VOC	1.22	0.016	5.34
CO	5.56	0.073	24.4

#### 2. Distillate Oil

Pollutant	lb/hr	lb/MMBtu	tpy
PM <sub>10</sub>	1.23	0.0170	5.37
SO <sub>2</sub>	3.83	0.052	16.8
NO <sub>x</sub>	8.82	0.120	38.6
VOC	0.29	0.0040	0.47
CO	2.66	0.036	11.66

#### 3. Total Annual Emissions Allowed<sup>3</sup>

Pollutant	tpy
PM <sub>10</sub>	15.66
SO <sub>2</sub>	44.43
NO <sub>x</sub>	116.6
VOC	21.43
CO	130.5

- <sup>4</sup> The Permittee shall not exceed total actual annual NO<sub>x</sub> emissions of 116.6 tons for all fuel burning equipment at the premises and not limited to the following: Boilers 8, 9, 10 and 11 (Permit Nos. 117-0105, 117-0326, 117-0220, 117-0355) and any sources at the premises operating under RCSA §22a-174-3b.

### **PART III. ALLOWABLE EMISSION LIMITS, continued**

<sup>3</sup> Combined allowable emissions for Boilers 8, 9, 10 and 11 (Permit Nos. 117-0105, 117-0326, 117-220, 117-0355, respectively)

#### **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]

#### **C. Opacity**

This equipment shall not exceed 10% opacity during any six minute block average as measured by 40 CFR Part 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:

- Manufacturer's emission data provided in original permit application
- AP-42, Section 1.4 dated July 1998, Table 1.4-2 (SO<sub>2</sub>)
- AP-42, Section 1.3 dated May 2010, Table 1.3-1 (SO<sub>2</sub>)

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 AND RECORD KEEPING REQUIREMENTS**

#### **A. Monitoring**

The Permittee shall continuously monitor fuel consumption using a non-resettable totalizing fuel meter.

#### **B. Record Keeping**

1. The Permittee shall keep records of 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 monthly and 12 month annual fuel oil consumption for boilers 8, 9, 10 and 11 (Permit Nos. 117-0105, 117-0326, 117-0220, 117-0355). The Permittee shall make the monthly calculation within 30 days of the end of the previous month and the annual calculation for the previous year by January 31 of the current year.
3. 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 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.

**PART IV. MONITORING AND RECORD KEEPING REQUIREMENTS, continued**

- 4. The Permittee shall calculate and record the monthly and consecutive 12 month PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>x</sub>, VOC, and CO emissions in units of tons. The consecutive 12 month emissions shall be determined by adding (for each pollutant) the current month's emissions to that of the previous 11 months. Such records shall include a sample calculation for each pollutant. The Permittee shall make these calculations within 30 days of the end of the previous month.
- 5. The Permittee shall calculate and record the monthly and consecutive 12 month PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>x</sub>, VOC, and CO emissions in units of tons for boilers 8, 9, 10 and 11 (Permit Nos. 117-0105, 117-0326, 117-0220, 117-0355). The consecutive 12 month emissions shall be determined by adding (for each pollutant) the current month's emissions to that of the previous 11 months. Such records shall include a sample calculation for each pollutant. The Permittee shall make these calculations within 30 days of the end of the previous month.
- 6. The Permittee shall calculate and record total actual annual NO<sub>x</sub> emissions for all sources of NO<sub>x</sub> at the premises.
- 7. 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. STACK EMISSION TEST REQUIREMENTS**

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

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

- PM     PM<sub>10</sub>     PM<sub>2.5</sub>     SO<sub>2</sub>     NO<sub>x</sub>     CO  
 VOC     Opacity     Other (HAPs):

Recurrent stack testing for the above pollutants shall be conducted within five years from the date of the previous stack test in coordination with the testing requirements in RCSA §22a-174-22(k) and the most current Title V Permit for the premises.

Stack test results shall be reported as follows: all pollutants in units of lb/hr, HAPs in units of µg/m<sup>3</sup> and ppmvd at 15% O<sub>2</sub>.

Visual monitoring shall be conducted in accordance with 40 CFR §60.47c.

## **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 at all times that this equipment is in operation and emitting air pollutants.

## **PART VII. SPECIAL REQUIREMENTS**

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

Title 40 CFR Part 60, Subparts Dc and A

Copies of the Code of Federal Regulations (CFR) are available online at the U.S. Government Printing Office website.

- B.** The Permittee shall not cause or permit the emission of any substance or combination of substances which creates or contributes to an odor beyond the property boundary of the premises that constitutes a nuisance as set forth in RCSA Section 22a-174-23. [STATE ONLY REQUIREMENT]
- C.** 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]

## **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.

## **PART VIII. ADDITIONAL TERMS AND CONDITIONS, continued**

- 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.