



**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 and Section 22a-174-3a of the Regulations of Connecticut State Agencies.

Owner/Operator: Yale University, School of Medicine
Address: 2 Whitney Grove, New Haven, CT 06520
Equipment Location: Sterling Power Plant, 309 Congress Ave.
New Haven, CT 06520
Equipment Description: Babcock & Wilcox Boiler No.8, Model FM103-70,
S/N 24848

Permit Number: 117-0105
Town/Premises Numbers: 117/49
Original Permit Issue Date: 6/29/87
Final Operating Permit Issue Date: 12/11/90
Revision Issue Date: 5/11/04
Expiration Date: None

Arthur J. Rocque, Jr.

5/11/04

Arthur J. Rocque, Jr.
Commissioner

Date

PERMIT FOR FUEL BURNING EQUIPMENT

STATE OF CONNECTICUT, DEPARTMENT OF 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): Natural Gas and Distillate Oil
2. Maximum Fuel Consumption over any Consecutive Twelve (12) Month Period: 5,129,043 gallons Distillate oil ** 561 MMft³ Nat. Gas
3. Fuel Sulfur Content (% by weight, dry basis): 0.05%
4. Maximum Hours of Operation: Daily 24; Over any Consecutive Twelve(12) Month Period: 8760

**** Please note: This fuel limit is one portion of the 12.3 million gallon annual total distillate oil allowed to be combusted in this boiler as well as boiler numbers 5,6,7,9,10 and 11. (Registration Nos. R117-0170, R117-0171, R117-0995 and Permit Nos. 117-0326, 117-0220, 117-0355 respectively)**

B. Design Specifications

1. Maximum Fuel Firing Rate(s): 586 Gallons per hour of distillate oil or 85,000 cubic feet per hour of natural gas
2. Maximum Gross Heat Input (MM BTU/hr): 80.8 MMBtu/hr distillate oil; 85.0 MMBtu/hr natural gas
3. Minimum Stack Height (ft): 125 feet
4. Minimum Exhaust Gas Flow Rate (acfm): 33,107
5. Stack Exit Temperature (°F): 375
6. Minimum Distance from Stack to Property Line (ft): 125 feet

PART II. CONTROL EQUIPMENT (Applicable if -X- Checked) (See Appendix E for 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 checked="" type="checkbox"/> Low NO _x Burner |
| <input type="checkbox"/> Cyclone | <input type="checkbox"/> Fabric Filter |
| <input type="checkbox"/> Multi-Cyclone | <input type="checkbox"/> Particulate Trap |
| <input type="checkbox"/> Thermal DeNO _x | <input type="checkbox"/> Other |

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)**

<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"/> SO _x	3 hour rolling		
<input type="checkbox"/> NO _x	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		

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.

B. Record Keeping

1. The permittee shall keep records of annual operating hours and fuel consumption. Annual operating hours and fuel consumption shall be based on any consecutive twelve (12) month time period and shall be determined by adding (for each fuel) the current month's fuel usage to that of the previous eleven (11) months. The permittee shall make these calculations within thirty (30) days of the end of the previous month.
2. The permittee shall keep records of the fuel certification for each delivery of fuel 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 make and keep records indicating continual compliance with all of the above conditions at all times for a minimum of five (5) years commencing on the date such records were created. Such records shall be made available upon request by the Commissioner.

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PART V. ALLOWABLE EMISSION LIMITS

The Permittee shall not exceed any emission limit stated herein at any time, except during periods of start-up, shutdown, and malfunction.

Criteria Pollutants

<u>Natural Gas</u>	<u>lbs./hr</u>	<u>lbs./MMBtu</u>	<u>TPY</u>
PM-10	0.650	0.0076	
SOx	0.051	0.0006	
NOx	11.90	0.140	
VOC	0.470	0.0055	
CO	7.140	0.084	
Distillate Oil			
PM-10	1.37	0.0170	
SOx	4.22	0.0522	
NOx	11.31	0.140	
VOC	0.320	0.004	
CO	2.93	0.0363	

Total Annual Emissions Allowed *

PM-10	15.66
SOx	44.43
NOx	116.6
VOC	21.43
CO	130.05

**Non-Criteria
Pollutants**

	MASC (Maximum allowable stack concentration) (ug/m³)
Sulfuric Acid	5,266
Formaldehyde	3,160

* Combined allowable emissions for Boilers 5, 6, 7, 8, 9, 10, and 11 (Registration Numbers 117-0170, 117-0171, and 117-0995, and Permit Numbers 117-0105, 117-0326, 117-0220, and 117-0355).

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

1. Manufacturers emission data
2. AP-42, Section 1.4 dated October, 1996, Table 1.4-1 (SOx)
3. AP-42, Section 1.3 dated September, 1998, Table 1.3-11
4. Manufacturers emission data provided in permit application.

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.

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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
- TSP SOx NOx CO
- VOC PM-10 Pb
- Other (HAPS): _____, _____,

Stack testing shall be repeated once every five years in coordination with the testing requirements in Section 22a-174-22(k) of the Regulations of Connecticut State Agencies (RCSA) and the most current Title V permit for the premises.

(See Appendix B for General Requirements)

PART VII. APPLICABLE REGULATORY REFERENCES

(The Regulations of Connecticut State Agencies, hereinafter referred to as the Regulations)

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.

PART VIII. SPECIAL REQUIREMENTS

A. The Permittee shall operate and maintain this equipment in accordance with the manufacturer's specifications and written recommendations.

B. *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 Sections 22a-69-1 through 22a-69-7.4 of the Regulations.

C. 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
(See Appendix C for Detailed Requirements)

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PART VIII. SPECIAL REQUIREMENTS, continued:

- D. The permittee shall not exceed total actual annual NO_x emissions of 116.6 tons. This limit includes emissions from all fuel burning equipment at the premises, including the following: Boilers 5,6,7,8,9,10, and 11 (Registration Nos.: R1a17-0170, R117-0171, R117-0995; Permit Nos.: 117-0105, 117-0326, 117-0220, 117-0355), any sources at the Premises operating under Section 22a-174-3b of RCSA, and any other source of NO_x emissions added to the Premises within the five consecutive calendar year period that commences on the date of issuance of this permit. Compliance with this emissions cap shall be determined based on annual actual NO_x emissions. Any NO_x emissions resulting from a modification or a new emissions unit shall be considered de minimis within the meaning of section 182(c)(6) and (f) of the Clean Air Act, 42 U.S.C. 7511a(c)(6) and (f), and section 22a-174-3a(6) of RCSA. If, during this five calendar year period, the permittee proposes to increase NO_x emissions above the emissions cap, then such emissions increase shall be considered to be a major modification subject to major new source review.

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BUREAU OF AIR MANAGEMENT**

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 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: "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.

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PART IX. ADDITIONAL TERMS AND CONDITIONS, continued:

- G.** Within fifteen 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 Assistant Director; Compliance & Field Operations Division; Bureau of Air Management; Department of Environmental Protection; 79 Elm Street, 5th Floor; Hartford, Connecticut 06106-5127.
- J.** The fuel sulfur content for oil combusted in boilers 5, 6, and 7 (Registration Nos. R117-0170, R117-0171, R117-0995) shall not exceed 0.05% sulfur by weight, dry basis, except as provided for in Part VIII.F of this permit.

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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 Specifications

APPENDIX E
Control Equipment Specifications

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

The permittee shall comply with the procedures for malfunction of control equipment as specified in Section 7 of the Regulations.

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 (EF): _____
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 Specifications

Low NOx Burner

Make and Model: Todd horizontally opposed burner
Guaranteed NOx Emission Rate (lb/MM BTU): 0.140 lbs./MMBtu
Design Removal Efficiency (%): _____

Particulate Trap

Make and Model: _____
Design Removal Efficiency (%): _____

Fabric Filter

Make and Model: _____
Number of Bags in Use: _____
Air/Cloth Ratio: _____
Bag Material: _____
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: _____

