



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	The University of Connecticut
Address	25 LeDoyt Road, U-3252, Storrs, CT 06269-3252
Equipment Location	240 Glenbrook Road (CUP Building), Storrs, CT 06269-3252
Equipment Description	120 MMBtu/hr Cleaver Brooks Boiler
Town-Permit Numbers	098-0063
Premises Number	015
Stack Number	1 (shared stack with Permit No. 098-0064)
Collateral Conditions	Part VII of this permit includes collateral conditions for a temporary boiler.
Permit Issue Date	
Expiration Date	None

Betsey C. Wingfield
Deputy Commissioner

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

The University of Connecticut (UConn), Storrs Campus, is an institution of higher education offering both graduate and undergraduate courses of study. The campus includes laboratories, classrooms, administrative offices, and residential buildings, as well as other buildings and areas associated with the operation of a university, such as a wastewater treatment facility, central utility plant, cogeneration facility, infirmary, various places of worship, library, and sports facilities.

This steam boiler is located at the Central Utility Plant (CUP) and provides steam to the Storrs Campus.

B. Equipment Design Specifications

1. Fuel Types:
 - a. Natural Gas
 - b. Ultra Low Sulfur Distillate (ULSD)
2. Maximum Fuel Firing Rate:
 - a. Natural Gas: 120,000 cf/hr @ 1,000 Btu/scf
 - b. ULSD: 827.0 gal/hr @ 137,000 Btu/gal
3. Maximum Gross Heat Input:
 - a. Natural Gas: 120 MMBtu/hr
 - b. ULSD: 113.3 MMBtu/hr

C. Control Equipment Design Specifications

1. Low NO_x Burner and Flue Gas Recirculation:
 - a. Make and Model: Cleaver Brooks Boiler Model NOS-3/S-75
 - b. Guaranteed NO_x Emission:
Natural Gas: 9 ppm or 0.011 lb/MMBtu
ULSD: 75 ppm or 0.098 lb/MMBtu

D. Stack Parameters (shared stack with Permit No. 098-0064)

1. Minimum Stack Height: 154 ft
2. Minimum Exhaust Gas Flow Rate: 30,751 acfm
3. Minimum Stack Exit Temperature: 273°F
4. Minimum Distance from Stack to Nearest Property Line: 570 ft

PART II. OPERATIONAL CONDITIONS

A. Equipment

1. Maximum Fuel Consumption over any Consecutive 12 Month Period for Permit Nos. 098-0063, 098-0064 and 098-0065 combined:
 - a. If boilers burn ONLY Natural Gas: 510, 216, 000 cf
 - b. If boilers burn a combination of Natural Gas and ULSD:
 - i. Natural Gas Consumption, in cf =
 $\{(510, 216, 000 \text{ cf}) - [(137) \times (\text{ULSD gallons consumed in any consecutive 12 month period})]\}$
 - ii. ULSD consumption shall not exceed 768,000 gallons in any consecutive 12 month period.
2. Maximum ULSD Fuel Sulfur Content (by weight, dry basis): 0.0015%
3. The Permittee shall properly operate the control equipment at all times when this equipment is in operation and emitting air pollutants.

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 (per boiler)

Pollutant	lb/MMBtu	ppmvd @ 3% O ₂
PM	0.008	
PM ₁₀	0.008	
PM _{2.5}	0.008	
SO ₂	0.001	
NO _x	0.011	9
VOC	0.006	
CO	0.038	50
Pb	5.0E-7	

2. ULSD (per boiler)

Pollutant	lb/MMBtu	ppmvd @ 3% O ₂
PM	0.017	
PM ₁₀	0.017	
PM _{2.5}	0.016	
SO ₂	0.002	
NO _x	0.098	75
VOC	0.002	
CO	0.060	75
Pb	9.0E-06	

B. Maximum Allowable Emissions for Permit Nos. 098-0063, 098-0064 and 098-0065 Combined

Pollutant	12 Consecutive Months ^(a)
PM	2.46
PM ₁₀	2.46
PM _{2.5}	2.37
SO ₂	0.21
NO _x	7.41
VOC	1.41
CO	10.7
Pb	5.70E-04

^(a) Maximum allowable emissions are based on the worst case scenario of both ULSD and natural gas consumption.

C. 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]

D. 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.

E. Demonstration of compliance with the above emission limits shall be met by calculating the emission rates using the most recent approved stack test results for that pollutant (except for pollutants that have CEM), or if unavailable, emission factors from the following sources:

Natural Gas

- NO_x: CEMs data
- CO: Manufacturer's information (CO: 50 ppmv @ 3% O₂, dry)
- VOC, PM, PM₁₀, PM_{2.5}, Pb, SO_x: AP-42, 5th Edition, Table 1.4-2

ULSD

- NO_x: CEMs data
- CO: Manufacturer's information (CO: 75 ppmv @ 3% O₂, dry)
- VOC: AP-42, 5th Edition, Table 1.3-3,
- PM, PM₁₀, PM_{2.5}: AP-42, 5th Edition, Table 1.3-2 and 1.3-7
- SO_x: AP-42, 5th Edition, Table 1.3-1
- Pb: AP-42, 5th Edition, Table 1.3-10

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:

Pollutant/Operational Parameter	Averaging Times	Emission Limit	Units
Opacity	six minute block	10	% Opacity
NO _x	Daily block average	Natural gas: 0.011 ULSD: 0.098	lb/MMBtu
O ₂	1 hour block		

2. The Permittee shall notify the commissioner in writing at least 30 days prior to conducting any performance or quality assurance testing of any CEM for NO_x. Any such testing shall be done in accordance with RCSA Section 22a-174-22e(m).
3. The Permittee shall continuously monitor fuel consumption using a non-resettable totalizing fuel meter per boiler.
4. The Permittee shall perform inspections of the control devices as recommended by the manufacturer.

B. Record Keeping

1. The Permittee shall keep records of monthly and consecutive 12 month fuel consumption per boiler and combined. 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 the fuel certification for each delivery of ULSD 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.

3. The Permittee shall calculate and record the monthly and consecutive 12 month PM, PM₁₀, PM_{2.5}, SO₂, NO_x, VOC, CO and Lead emissions in units of tons per boiler and combined. 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.
4. The Permittee shall make and keep records of the date and work performed for repairs, replacement of parts and other maintenance.
5. The Permittee shall make and keep records of the dates and times of all emission testing. Such records shall include the persons performing the measurements, the testing methods used, the operating conditions at the time of testing, and the results of such testing.
6. For the CEM system:
 - a. Records of all performance evaluations, calibration checks and adjustments on such monitor,
 - b. A record of maintenance performed,
 - c. All data necessary to complete the quarterly reports, and
 - d. Charts, electronically stored data, and printed records produced by such CEM system.
7. The Permittee shall make and keep records where applicable to show compliance with RCSA Section 22a-174-22e.
8. The Permittee shall make and keep records of all inspections of the burners and fuel gas recirculation system.
9. The Permittee shall keep records of the manufacturer's written specifications and written recommendations for operation and maintenance.
10. The Permittee shall keep copies of all reports and notifications submitted to the commissioner or Administrator as required in Part IV.C of this permit.
11. 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.

C. Reporting

1. The Permittee shall submit to the commissioner, on forms provided by the commissioner, written quarterly reports of excess emissions and CEM system malfunctions. Such reports shall be submitted to the commissioner on or before January 30, April 30, July 30 and October 30 of each year and shall include:
 - a. All daily block average data, in a format acceptable to the commissioner, for the three calendar month period ending the month before the due date of the report;
 - b. The date and time of commencement and completion of each period of excess emissions;
 - c. The magnitude and suspected cause of the excess emissions;

- d. Actions taken to correct the excess emissions;
 - e. The date and time when each malfunction of the CEM system commenced and ended;
 - f. Actions taken to correct each malfunction; and
 - g. If no excess emissions or CEM system malfunctions occur during a quarter, the Permittee shall indicate that no excess emissions or malfunctions occurred during the quarter.
2. Upon written notice, the commissioner may require the Permittee to provide all hourly CEM data, in a format acceptable to the commissioner, for the three calendar month period identified in such written notice.
 3. The Permittee shall comply with the reporting requirements in 40 CFR §60.49b.
 4. The Permittee shall notify the commissioner in writing of any exceedance of an operating parameter, and shall identify the cause or likely cause of such exceedance, all corrective actions and preventive measures taken with respect thereto, and the dates of such actions and measures as follows:
 - a. For any hazardous air pollutant, no later than 24 hours after such exceedance commenced; and
 - b. For any other regulated air pollutant or operating parameter, no later than ten days after such exceedance commenced.
 5. The Permittee shall notify the commissioner in writing of any malfunction of the boiler or the air pollution control equipment. Permittee shall submit such notification within ten days of the malfunction. The notification shall include the following:
 - a. a description of the malfunction and a description of the circumstances surrounding the cause or likely cause of such malfunction; and
 - b. a description of all corrective actions and preventive measures taken and/or planned with respect to such malfunction and the dates of such actions and measures.
 6. The Permittee shall notify the commissioner, in writing, of the date of commencement of construction and the date of the initial startup of this boiler. Such written notifications shall be submitted no later than 30 days after the subject event.

PART V. STACK EMISSION TEST REQUIREMENTS

- A.** Stack emission testing shall be performed in accordance with the Emission Test Guidelines available on the DEEP website at www.ct.gov/deep/stacktesting.
- B.** Initial stack testing shall be required for the following pollutants:
 NO_x CO Opacity (ULSD only)
- C.** The Permittee shall conduct initial stack testing within 60 days of achieving the maximum production rate, but not later than 180 days after initial startup.

- D.** The Permittee shall submit a written report of the results of the stack testing results not more than 60 days after the completion of the emissions test.
- E.** The Permittee shall conduct NO_x testing in accordance with RCSA Section 22a-174-22e.
- F.** Recurrent stack testing for the CO and Opacity shall be conducted within five years from the date of the previous stack test.
- G.** Stack test results shall be reported as follows: all pollutants in units of lb/MMBtu and ppmvd at 3% O₂.

PART VI. 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 Db 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 comply with all applicable sections of the following National Emission Standards for Hazardous Air Pollutants at all times.

Title 40 CFR Part 63, Subparts JJJJJJ and A

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

C. Premises Emissions Summary

1. On January 1st of each calendar year, if the potential emissions of NO_x and/or VOC from the premises are equal to or greater than 25 tons per year per pollutant, then for such pollutant(s), the Permittee shall:
 - a. Monitor NO_x and/or VOC emissions, as applicable, from the premises for such calendar year.
 - b. Calculate and record annual NO_x and/or VOC emissions, as applicable, from the premises for such calendar year, in units of tons. The Permittee shall make these calculations on or before February 1st of the following year with respect to the previous calendar year. Such records shall include a sample calculation(s).
 - c. If actual NO_x and/or VOC emissions, as applicable, from the premises are equal to or greater than 25 tons for such calendar year, the Permittee shall submit to the commissioner, on or before March 1st of the following year, an annual emissions summary with respect to the premises for the previous calendar year. Such summary shall be submitted on forms prescribed or provided by the commissioner.

2. A Permittee with either of the following premises is exempt from Part VI.C.1 requirements of this permit if, on January 1st of the subject year, the:
 - a. Premises is operating in accordance with a valid Title V permit issued pursuant to RCSA Section 22a-174-33; or
 - b. Premises is operating in accordance with a valid Approval of Registration issued pursuant to the General Permit to Limit Potential to Emit from Major Stationary Sources of Air Pollution issued on November 9, 2015.
- D. 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]
- E. 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]
- F. The Permittee shall resubmit for review and approval a Best Available Control Technology (BACT) analysis if such construction or phased construction has not commenced within the 18 months following the commissioner's approval of the current BACT determination (i.e., the date of this permit) for such construction or phase of construction. [RCSA §22a-174-3a(i)(4)]

PART VII. OPERATIONAL CONDITIONS FOR A TEMPORARY BOILER

A. Definitions

"Calendar year" means the period between January 1 and December 31, inclusive, for a given year.

"Day" means any calendar day.

"Temporary unit" has the same meaning as "Temporary boiler"

"Temporary unit" in accordance with RCSA Section 22a-174-22e(a)(29), means any gaseous or liquid fuel fired unit that is designed to, and is capable of, being carried or moved from one location to another by means of, for example, wheels, skids, carrying handles, dollies, trailers or platforms. A unit is *not* a "temporary unit" if any one of the following conditions exists:

1. The unit is attached to a foundation;
2. The unit or a replacement remains at the location within the facility and performs the same or similar function *for more than 12 consecutive months*, provided a temporary unit that replaces a temporary unit at a location and performs the same or similar function will be included in calculating such consecutive time period;
3. The unit is located at a seasonal facility and operates during the full annual operating period of the seasonal facility, remains at the facility for at least two years and operates at that facility for at least three months of the year; or

- The unit is moved from one location to another within the facility, but continues to perform the same or similar function and serve the same electricity, steam or hot water system in an attempt to circumvent the residence time specification of this definition.

B. Equipment Design Specifications

- Manufacturer and Model Number: Powerhouse WT-75
- Fuel Type: Natural Gas
- Maximum Fuel Firing Rate: 94,700 cf/hr
- Maximum Gross Heat Input: 94.7 MMBtu/hr

C. Operational Conditions

- The temporary boiler shall not operate for more than 90 days in any calendar year. [RCSA Section 22a-174-3a(a)(2)(B)(iii)]
- The temporary boiler shall be removed from the premises before the 12 month anniversary of the delivery of the unit to the premises.

D. Allowable Emission Limits

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

1. Phase 1: Criteria Pollutants - Calendar Year 2020

Pollutant	lb/MMBtu	Tons per 90 Days
PM	0.0076	0.78
PM ₁₀	0.0076	0.78
PM _{2.5}	0.0076	0.78
SO ₂	0.0006	0.06
NO _x	0.035	3.61
CO	0.084	8.59
VOC	0.006	0.61
Pb	5.0E-07	5.11E-05

2. Phase 2: Criteria Pollutants - Calendar Year 2021

Pollutant	lb/MMBtu	Tons per 90 Days
PM	0.0076	0.78
PM ₁₀	0.0076	0.78
PM _{2.5}	0.0076	0.78
SO ₂	0.0006	0.06
NO _x	0.035	3.61
CO	0.084	8.59
VOC	0.006	0.61
Pb	5.0E-07	5.11E-05

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

- NO_x: Manufacturer's information (30 ppm NO_x @ 3% O₂, dry)
- VOC, PM, PM₁₀, PM_{2.5}, Pb, SO_x: AP-42, 5th Edition, Table 1.4-2
- CO: AP-42, 5th Edition, Table 1.4-1

F. 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 – Table 1 Only. [STATE ONLY REQUIREMENT]

G. Record Keeping Requirements

1. The Permittee shall calculate and record the monthly and calendar year PM, PM₁₀, PM_{2.5}, SO₂, NO_x, VOC, and CO emissions in units of tons. The monthly emissions shall be determined by adding (for each pollutant) the current month's emissions to that of the previous month. 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.
2. The Permittee shall keep the following records:
 - a. Location of the temporary boiler;
 - b. Function the temporary boiler is performing;
 - c. Date of initial operation of the temporary boiler;
 - d. Date of final operation of temporary boiler;
 - e. Dates the temporary boiler is operated;
 - f. A running total of the number or days the boiler was operated in any calendar year; and
 - g. If the temporary boiler is moved, the new location at the premises and date of relocation.
3. The Permittee shall keep records in accordance with RCSA Section 22a-174-22e.
4. 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.

H. Reporting Requirements

1. The Permittee shall notify the commissioner, in writing, of the date the temporary boiler is *delivered to the premises*. Such written notification shall be submitted no later than 30 days after the subject event.
2. If applicable, the Permittee shall notify the commissioner, in writing, of the date the temporary boiler is *relocated within the premises*.
3. The Permittee shall notify the commissioner, in writing, of the date the temporary boiler is *removed from the premises*. Such written notification shall be submitted no later than 30 days after the subject event.

4. The Permittee shall submit the above notifications to the Supervisor of the Compliance Analysis & Coordination Unit, Enforcement Section, Bureau of Air Management; Department of Energy and Environmental Protection; 79 Elm Street, 5th Floor; Hartford, Connecticut 06106-5127.

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; 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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