UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
1 CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

July 27, 2005

David J. MacKenzie, Executive Director
University of Massachusetts Building Authority
One Beacon Street, 26th Floor
Boston, MA 02108

Dear Mr. MacKenzie:

The Environmental Protection Agency-New England office has reviewed and approved your Prevention of Significant Deterioration (PSD) permit application to install and operate a new central heating plant at the University of Massachusetts' Amherst Campus.

Enclosed is the final PSD permit issued pursuant to our review of your application.

If you have any questions concerning this permit, please contact Brendan McCahill at (617) 918-1652.

Sincerely;

Dan Brown, Manager
Air Permits, Toxics and Indoor Programs Unit

Attachment

cc: Ian Thompson, Earth Tech, Inc.
Barbara Kwetz, Massachusetts DEP
Craig Goff, Massachusetts DEP
Donald Squires, Massachusetts DEP

EPA United States Environmental Protection Agency New England

One Congress Street, Suite 1100
Boston, MA 02114

Prevention of Significant Deterioration Air Permit

issued to the

University of Massachusetts Building Authority
One Beacon Street, 26th Floor
Boston, MA 02108

for the

University of Massachusetts-Amherst Campus
Central Heating Plant

PSD Permit Number 046-026-MA07

Pursuant to the provisions of the Clean Air Act, Subchapter I, Part C (42 U.S.C. Section 7470, *et. seq*) and the regulations found at the Code of Federal Regulations Title 40, Section 52.21, the United States Environmental Protection Agency-New England office (EPA-New England) is issuing a Prevention of Significant Deterioration (PSD) air quality permit to the University of Massachusetts Building Authority (the Authority) to install and operate a new central heating plant (CHP) at the University's Amherst, Massachusetts campus. The CHP consists of a combustion turbine (CT) nominally rated at 10 megawatts, a heat recovery steam generator (HRSG) with a duct burner (DB) rated at 77.4 million British thermal units (Btu) per hour, and four conventional package boilers each rated at 131,250 pounds per hour of steam. The turbine and four boilers will be equipped with selective catalytic reduction systems and oxidation catalysts. The design, construction and operation of the CHP project shall be subject to the attached permit conditions and permit limitations. This permit shall be effective 30 days from receipt of notice from EPA of permit issuance and shall remain in effect until rescinded by or surrendered to EPA. This permit becomes invalid if the Authority does not commence construction within 18 months after receipt of permit issuance. EPA may extend the 18-month period upon a satisfactory showing that an extension is justified. This permit does not relieve the Authority from the obligation to comply with applicable state and federal air pollution control rules and regulations.

Robert W. Varney
Regional Administrator

7-25-05
Date of issuance

Environmental Protection Agency -New England

Prevention of Significant Deterioration Air Permit

University of Massachusetts-Amherst Campus
Central Heating Plant

Permit Terms and Conditions

I. Emission Limitations

1. The emission rate of particulate matter less than 10 microns (PM_{10}) discharged to the atmosphere shall not exceed the following emission limits in pounds per million British Thermal Units (lbs/MMBtu) and pounds per hour (lbs/hour) for each emission unit.

Emission unit	Natural Gas	Motor Vehicle Diesel Fuel
CT/HRSG without DB	0.03 lbs/MMBtu 4.12 lbs/hr	0.04 lbs/MMbtu 5.46 lbs/hr
CT/HRSG and DB	0.03 lbs/MMBtu 6.45 lbs/hr	0.04 lbs/MMBtu 8.56 lbs/hr
Package Boiler (per unit)	0.02 lbs/MMBtu 3.40 lbs/hr	0.04 lbs/MMBtu 6.49 lbs/hr
Package Boiler (per unit)		0.03 lbs/MMBtu Filterable emissions only

Notes

(a) The hourly emission rates are based on worst case scenarios (100% load and 0° F ambient temperature).

(b) The lbs/hr and lbs/MMBtu emission rates are based on a 1-hour block average.

(c) Emission limits apply at all times including startup and shut down.

2. For each package boiler, the emission rate of ammonia discharged to the atmosphere shall not exceed 2.0 parts per million, on a dry volumetric basis, corrected to 3 percent oxygen (1-hour average).

3. For the CT/HRSG, the emission rate of ammonia discharged to the atmosphere shall not exceed 10.0 parts per million, on a dry volumetric basis, corrected to 15 percent oxygen (1-hour average).

II. Operating Requirements

1. The owner/operator shall combust natural gas or motor vehicle diesel fuel.

2. The owner/operator shall operate the emergency engine and emergency fire pump only during emergency situations or for routine maintenance testing. Total hours of operation for each engine shall not exceed 300 hours during any 12-month period.

3. Sulfur in natural gas shall not exceed 0.8 grains/100ft^3.

4. Sulfur in diesel fuel shall not exceed 0.05 percent by weight.

III. Testing Requirements

1. The owner/operator shall ensure that all stacks and exhaust ducts are constructed so as to accommodate the emissions testing requirements stipulated in 40 CFR Part 60, Appendix A. The CT/HRSG and boiler ducts shall include two outlet sampling ports 90 degrees apart from each other. The sampling ports must be located at a minimum of one duct diameter upstream and two duct diameters downstream of any flow disturbance.

2. The owner/operator shall measure the 0.03 lbs/MMBtu filterable PM_{10} emission limit using 40 CFR 51, Appendix M, Test Method 201or 201A. For all other PM_{10} emission limits, the owner/operator shall measure PM_{10} using 40 CFR 51, Appendix M, Test Method 201 or 201A and Test Method 202.

3. The owner/operator shall conduct initial PM_{10} compliance emission tests for the CT/HRSG/DB and boilers at 100% of maximum load to determine compliance with the emission limits in lbs/hr and lbs/MMBtu established for PM_{10} while burning motor vehicle diesel fuel.

4. The owner/operator shall conduct initial ammonia compliance emission test for the CT/HRSG/DB and boilers at 100% of maximum load using EPA Conditional Test Method 27 or an equivalent test method approved by EPA- New England.

5. The owner/operator shall complete the boiler emissions tests within 180 days after initial start-up of the boilers. The owner/operator shall conduct a second emissions test one year after initial stack is completed. If the second stack test shows that the emissions unit is in compliance, additional stack testing shall be required only when requested by EPA-New England.

6. The owner/operator shall complete CT/HRSG/DB emissions tests within 180 days after initial start-up of the CT/HRSG/DB. The owner/operator shall conduct a second emissions test one year after initial stack is completed. If the second stack test shows that the emissions unit is in compliance, additional stack testing shall be required only when requested by EPA-New England.

7 The owner/operator shall submit emissions test protocol(s) to EPA-New England for review and written approval at least 30 days prior to the date of actual testing.

8. 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.

IV. Monitoring Requirements

1. The owner/operator shall monitor sulfur content of each new shipment of motor vehicle diesel fuel received. Compliance with the percent sulfur-in-fuel requirement can be demonstrated through testing (testing certification) or by maintaining a shipping receipt from the fuel supplier (shipping receipt certification) provided the testing certification or shipping receipt certification documenting the sulfur content is done in accordance with the applicable ASTM test methods (D4294-90) or any other method approved by the EPA-New England.

2. The owner/operator shall install, operate and maintain a Continuous Emission Monitoring System (CEMS) for ammonia or a nitrogen oxides CEMS with an ammonia injection rate monitor to calculate ammonia emissions. The CEMS shall satisfy the requirements of Performance Specification 2 (PS-2) of 40 CFR Part 60, Appendix B and Appendix F.

V. Recordkeeping Requirements

1. The owner/operator shall maintain a log to record problems, upsets or failures associated with the ammonia handling system.

2. The owner/operator shall maintain records of all periods of excess ammonia emissions, even if attributable to an emergency/malfunction or startup/shutdown, and shall quantify these emissions.

3. The owner/operator shall maintain records of all measurements, performance evaluations, calibration checks, maintenance, and adjustments for the ammonia CEMS.

4. The owner/operator shall maintain on-site permanent records of output from ammonia CEMS and make these records available to the EPA-New England on request.

5. The owner/operator shall maintain records of the testing certification or shipping receipt certification used to certify that each new shipment of motor vehicle diesel fuel complies with the percent sulfur-in-fuel requirement specified herein.

6. The owner/operator shall maintain and make available to the EPA-New England upon inspection all operating and monitoring records and logs for the last five years.

7. The owner/operator shall establish a recordkeeping system with sufficient detail to document that the operation of each emergency generator and diesel fire pump does not exceed 300 hours for any rolling 12-month period.

VI. Reporting Requirements

The owner/operator shall submit to the EPA-New England a semi-annual report postmarked by January 30th and July 30th of each year, which contains for the prior calendar 6-month period the following information, at a minimum:

a) Reports from the facility's ammonia CEMS summary data;
b) For each period of excess emissions or excursions from allowable operating conditions, the owner/operator shall list the duration, cause (including whether it is attributable to a malfunction or emergency), the response taken, and the amount of excess emissions. Periods of excess emissions shall include malfunctions, emergency, and upsets or failures associated with the emission control system and CEMS; and
c) A tabulation of oil use during the period.

VII. SPECIAL TERMS AND CONDITIONS

1. The owner/operator shall only burn natural gas or motor vehicle diesel fuel in the CT and the package boilers, and only natural gas in the DB.

2. The owner/operator shall comply with any Massachusetts Department of Environmental Protection plan approval that applies to the CHP project.

3. The owner/operator shall tune each package boiler annually in accordance with procedures contained in EPA 340/1-83-023 "Combustion Efficiency Optimization Manual for Operators of Oil and Gas Fired Boilers" (or equivalent) with the goal of reducing air pollutant emissions to optimum levels.

4. At the time of fuel purchase, the owner/operator shall ensure that the sulfur content of the fuel used in the emergency generator (which may also burn natural gas) and the engine for the fire suppression water pump(s) conforms with the then current sulfur limit applied to on-road specification oil as defined in the Code of Federal Regulations (at the time of issuance of this permit, defined in 40 CFR § 80.29(a)(i)).

5. Upon startup and certification of the new CHP plant, the owner/operator shall decommission and disable the existing oil/coal-fired boilers.