

CONSTRUCTION PERMIT GRANT - OPERATING PERMIT DENIAL

PERMITTEE

Illinois Department of Human Services
 Attn: Don Shroyer
 100 N. 9th Street, Room 104
 Springfield, Illinois 62765-0002

Draft

Application No.: 99090050

I.D. No.: 107035AAM

Applicant's Designation:

Date Received: November 24, 1999

Subject: Ashworth Combustor Retrofit

Date Issued:

Location: Lincoln Development center, 861 S. State Street, Lincoln

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of coal-combustor retrofit on existing gas converted stoker boiler #2 and limestone (or lime) dry scrubber, baghouse, and associated coal feed system with filters, and coal storage and handling system, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

- 1a. The combustor is subject to a New Source Performance Standard (NSPS) for Industrial-Commercial-Institutional Steam Generating Units, 40 CFR 60, Subparts A and Dc. The Illinois EPA is administering NSPS in Illinois on behalf of the USEPA under a delegation agreement.
- b. The emissions of particulate matter (PM), sulfur dioxide (SO₂) and nitrogen oxides (NO_x) from combustor shall not exceed the applicable emissions limits pursuant to 40 CFR 60, Subparts A, Dc, and 35 Ill. Adm. Code, Part 203 for major stationary sources construction and modification as follows:

SO₂ 1.2 lbs of SO₂/mmBtu when burning coal with annual capacity factor of 55% or less

NO_x 0.15 lb/mmBtu when firing coal
 0.14 lb/mmBtu when firing natural gas

PM 0.1 lb/mmBtu when burning natural gas with an annual capacity factor of 10% or more.
 0.1 lb/mmBtu when burning coal with an annual capacity factor of 30% or more.

CO 200 ppm converted to 50% excess air.

Compliance with these limits shall be determined by emission testing conducted in accordance with Condition 10, monitoring in accordance with Conditions 11 and 12, fuel sampling in accordance with Condition 13 and recordkeeping and reporting in accordance with Condition 14, 15, and 16, as further specified below.

- c. The opacity of the exhaust stream from the boiler stack shall not exceed 20 percent, pursuant to 40 CFR 60.43(c).
 - d. The emission limitations for two coal fired boilers #1 and #3 covered under permit # 73120033 shall apply in concurrence with combustor/boiler (either coal or gas firing mode) which is covered under this permit.
 - e. This permit is issued based on the operation of the modified boiler #2 not constituting a major modification for SO₂, NO_x, CO or PM, subject to the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21. This is a consequence of no increase in emissions as a result of decrease in emissions for combustor retrofit on # 2 boiler which will accompany this project, as required by the condition of this permit.
 - f. The potential emissions from modified boiler house facility showing net change in emissions from the existing boiler house facility are shown in Table I.
2. The combustor shall be equipped and operated with operating system that will control the feed of fuel. Except during startup and shutdown, and for purposes of emission testing, coal fuel shall only be fed to the gasifier while the gasifier and associated control equipment are operating properly as defined by the following criteria. These criteria have initially been set based upon equipment design and may be revised using operating data collected during emission testing in accordance with Condition 10.
- a. The gasifier combustion temperature shall be greater than 1500EF.
 - b. The air pollution control equipment operating parameters shall be as follows:
Fabric filter pressure drop shall be less than 10 inch water column.
 - c. The monitored stack gas parameters shall be as follows:
Carbon monoxide emissions shall be less than 200 ppm corrected to 50% excess air, based upon a one hour rolling average.
3. Emissions of particulate matter from the limestone and ash silos shall be limited through installation of bag filters designed to emit no more than 0.01 grains/dry standard cubic foot.
4. Emissions of particulate matter from coal handling and conveying for combustor unit shall be controlled with enclosure and aspiration to bag filters by existing system in place.
5. Emissions from coal bin shall be controlled by existing enclosure in place.
- 6a. The combustor shall not operate for more than 5,040 hours per year. Compliance with this limit shall be determined from a running total of monthly operating data.
- b. i. The total amount of pulverized coal fired in the combustor shall

not exceed 252,000 million Btu per year.

- ii. The maximum fuel input to the combustor shall not exceed 50 mmBtu/hr.
- c. Emissions of the combustor/boiler in both mode of operation (e.g. coal firing and/or gas firing) shall not exceed the following limits. Compliance with hourly emission rate limitations shall be determined by means of three (3) hour arithmetic averaging, with the exception of emissions of nitrogen oxides and carbon monoxide which shall be determined by a 30 day rolling average and a 24 hour rolling arithmetic average, respectively. Compliance with annual limits shall be determined from a running total of 365 days of data.

<u>Pollutant</u>	<u>(Lb/Hr)</u>	<u>(T/Yr)</u>
Particulate Matter	5.0	12.6
Sulfur Dioxide	60.0	151.2
Nitrogen Oxides	7.5	18.9
Carbon Monoxide	11.4	28.7
Volatile Organic Compounds	0.1	0.4

- 7. Particulate matter emission from the material handling processes for the limestone, ash and fuel conveying are limited to 1.0 ton per year. Compliance with this requirement will be based upon the observation of no visible particulate emissions as determined by USEPA Method 22.
- 8. Equipment covered by this permit may be operated for a period of 180 days under this construction permit. The equipment shall not begin operation until construction, including construction of any air pollution control equipment, is complete, and reasonable measures short of actual operation have been taken to verify proper operation.
- 9a. The Permittee shall submit three copies of the following documents at least 60 days prior to the initial startup of the combustor, for Illinois EPA approval:
 - i. Emission Testing Program.
 - ii. Continuous Emission Monitoring Procedures.
- b. The Permittee shall submit three copies of the following documents, at least 60 days prior to the initial startup of the combustor:
 - i. Operator Training Program.
 - ii. Boiler Operating Procedures, including procedures for startup, normal operation, normal shutdowns and other shutdowns.
 - iii. Gasifier/Boiler Preventative Maintenance Procedures.
- 10a. i. Within 180 days of initial burning of pulverized coal, the

emissions of the combustor shall be measured by an approved testing service. These tests shall be performed during conditions which are representative of maximum emissions.

- ii. Within 60 days of a subsequent written request, the emissions of the boiler shall be measured by an approved testing service. The Illinois EPA will provide additional time for performance of this testing upon request from the Permittee which shows that it is not feasible to perform representative testing within 60 days.
- b. The following methods and procedures shall be used for testing of emissions, unless another method is approved by the Illinois EPA. Refer to 40 CFR 60, Appendix A for USEPA test methods:

Location of Sample Points	USEPA Method 1
Gas Flow and Velocity	USEPA Method 2
Particulate Matter	USEPA Method 5
Sulfur Dioxide	USEPA Method 6C
Opacity	USEPA Method 9
Carbon Monoxide	USEPA Method 10
Volatile Organic Compounds	USEPA Method 18
Nitrogen Oxides	USEPA Method 7E

- c. The Illinois EPA's Air Compliance Section and regional office shall be notified a minimum of thirty (30) days prior to the expected date of these tests and further notified a minimum of five (5) working days prior to the test of the exact date, time, and place of these tests, to enable the Illinois EPA to witness the tests.

Illinois Environmental Protection Agency
Division of Air Pollution Control
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

- d. Three copies of the Final Report(s) for these tests shall be submitted to the Illinois EPA within 14 days after the test results are compiled and finalized. The Final Report shall include as a minimum:
 - i. General information (data of test, testing personnel, and observers).
 - ii. A summary of results.
 - iii. Description of test method(s), including description of sampling points, sampling train, analysis equipment, and test schedule.
 - iv. Detailed description of test conditions, including:
 - A. Process information, i.e., fuel consumption rate and composition, heat input rate, steam production and other parameters monitored pursuant to Condition 11.
 - B. Control equipment operation, i.e., equipment condition and operating parameters during testing as monitored pursuant

to Condition 11.

- C. Emission data as monitored pursuant to Condition 11.
 - v. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration.
- 11a. The Permittee shall install, operate, and maintain emission monitors and opacity monitoring devices as required by the NSPS, 40 CFR 60, subpart D_c.
- b. The Permittee shall install, operate, and maintain the following continuous monitors and instrumentation for the combustor when alternative monitoring is approved by the Illinois EPA:
 - i. Continuous monitoring equipment, installed "in the stack" after the baghouse, for the following parameters:
 - A. Carbon Monoxide Concentration (ppmv).
 - B. Nitrogen Oxides Concentration (ppmv).
 - C. Sulfur Dioxide Concentration (ppmv).
 - D. Oxygen Concentration (%).
 - E. Stack Gas Flow (acfm).
 - F. Stack Gas Temperature (EF).
 - ii. Combustor instrumentation to continuously measure the following parameters:
 - A. Coal Feed Rate(s) (lbs/hr).
 - B. Combustor Operating Temperature (EF).
 - C. Boiler Steam Flow (lbs/hr).
 - iii. Air pollution control equipment instrumentation to continuously measure the following parameters:
 - i. Gasifier Limestone Injection Rate (lb/hr).
 - ii. Fabric Filter Pressure Drop (in. water column).
 - iii. Fabric Filter Inlet temperature (EF).
 - c. At least 45 days before purchasing the data logging and telecommunication system, the Permittee shall submit the equipment and report format specification to the Illinois EPA for review and comment.
 - d. At least 60 days prior to initial startup of the combustor the

Permittee shall submit a Monitor and Instrumentation Certification program for approval by the Illinois EPA which details how the instruments will be demonstrated to be accurate and how routine calibrations will be completed.

- e. The Permittee shall keep records of the calibration, maintenance and repair of monitoring equipment.
12. The Permittee shall install, operate, and maintain a computer data logging system meeting the following data recordkeeping and reporting requirements. This operating data shall be kept for a minimum of three years at the plant and be made available for inspection by the Illinois EPA personnel upon request.
- a. The system shall record and store hourly averages of one minute data samples for the following listed parameters as monitored pursuant to Condition 13.
 - b. The system shall record and store 6-minute averages of opacity data collected in accordance with 40 CFR 60.13.
 - c. The system shall record and store hourly data for the following listed parameters.
 - i. Fuel Feed Rate(s).
 - ii. Hours of Operation.
 - d. The system shall calculate the following hourly pollutant emissions using the emission monitors, stack temperature and stack flow and store the result of those calculations.
 - e. The computer data logging system shall accomplish the following:
 - i. Record one minute averages of all the parameters in Condition 11a and 11b.
 - ii. Provide periodic daily, weekly, monthly, and yearly reports summarizing data and operating events in accord with an Illinois EPA approved format and calculation methods.
 - iii. Make available to the Illinois EPA all recorded data and reports.
13. The Permittee shall keep all other records necessary to demonstrate compliance with the Conditions as set forth in this permit.
14. The Permittee shall retain all records required by this permit for a period of five years at a site at the source that is readily accessible to the Illinois EPA or USEPA and shall make these records available for inspection and copying by the Illinois EPA or USEPA upon request.
15. On or before the 30th day after each calendar quarter, the Permittee shall submit to the Illinois EPA a report for the last preceding calendar quarter prepared using information from the data logging

system.

- a. The report shall summarize the boiler operation and provide the following information:
 - i. Emissions of NO_x, SO₂, and CO (lbs/day and tons/year).
 - ii. Opacity (percent); maximum, minimum and average for each day.
 - iii. Weight of coal fuel in tons(each day and each calendar month).
 - iv. Operating hours of the boiler (hours/month and hours/year).
 - b. The report shall identify any and all continuous monitoring measurements which exceed the limits as set forth in this permit. This exceedance report shall provide, for each incident, the levels recorded for each monitored pollutant, as well as the date and span of such incident. These reports shall also specify, for each incident, whether it occurred during startup, shut-down, or malfunction. If a malfunction is indicated in the report, all corrective actions taken, if any, shall also be reported.
 - c. The reports shall also specify, the date of those periods during which the continuous monitoring systems were not in operation for particular parameters.
16. With the Annual Emission Report required by 35 Ill. Adm. Code 254, the Permittee shall provide an annual summary of the amount of fuel burned, by type, with supporting calculations.
17. All reports required pursuant to this permit shall be sent to the following address unless otherwise specified:
- Illinois Environmental Protection Agency
Division of Air Pollution Control
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276
18. This permit does not relieve the Permittee of the responsibility to comply with all applicable local, state, and federal requirements.

The OPERATING permit application is DENIED because the Illinois Environmental Protection Act, Section 9, and 35 Ill. Adm. Code 201.160 might be violated.

Pursuant to Section 201.160, an operating permit for retrofit boiler #2 may not be issued until the equipment has been constructed or modified in accordance with applicable conditions in this construction permit. The Illinois EPA suggests that you reapply for the operating permit after the construction is completed in accordance with the construction permit. This information must be submitted in duplicate and should reference the application and I.D. numbers assigned above.

If you have any questions on this permit, please call Shashi Shah at 217/782-2113.

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

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cc: Region 2
USEPA, Region V

Table I

	Emission Summary (Tons/ Year)			
	<u>NOx</u>	<u>SO₂</u>	<u>PM</u>	<u>CO</u>
Modified & Improved Facility ¹	19.8	297.3	12.6	28.7
Existing Facility ²	25.1	433.3	28.7	28.7
Net Change	-5.3	-136.0	-16.1	0.0

- 1 Modified and improved facility includes existing boilers #1 & #3 and combustor retrofitted boiler #2 with a common baghouse for each boiler. Boilers #1 and 3 currently have multiple cyclone dust collectors which would exhaust through a baghouse after modification.

Emissions from combustor/boiler at reduced emission rates in lb per million btu, and balance of steam load shall be from other two boilers.

- 2 Existing facility emissions reflect the actual emissions or emissions based on standard USEPA emission factors for three year period from June 1996 through May 1999.