

217/782-2113

CONSTRUCTION PERMIT

PERMITTEE

Archer Daniels Midland Company
Attn: Michelle Bublitz
4666 Faries Parkway
Decatur, Illinois 62526

Application No.: 06020065

I.D. No.: 001815AAF

Applicant's Designation:

Date Received: February 15, 2006

Subject: Spray Dryer Absorber System for Coal-fired Boilers

Date Issued:

Location: 2100 Gardner Expressway, Quincy, Adams County

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of spray dryer absorber system for two existing coal fired boilers, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special conditions:

- 1.1 a. This permit authorizes construction of a spray dryer absorber (SDA) control system, for existing boilers 1 and 2 (the affected boilers), which will control sulfur dioxide (SO₂) emissions of the boilers to enable firing of higher-sulfur coal.
- b. This permit authorizes construction of the following equipment and facilities as part of this project:
- i. A dry scrubbing system, including two fluid nozzle spray dryer absorbers.
- ii. Lime receiving, lime storage and handling, slurry makeup, and slurry pumping system.
- c. This permit also authorizes handling of additional waste material from the affected boilers.
- d. This permit does not authorize other changes to the affected boilers that would increase capacity or emissions of NO_x, PM, or other PSD pollutants.

Note: A separate application for changes to the original construction permit for affected boilers to address use of higher-sulfur coal with an SO₂ control system, Application No. 83050033 is currently under review by the Illinois EPA.

- 1.2 a. This permit is issued based on this project, i.e., the construction of a SDA system and operation of the affected boilers with this SDA system, not being subject to the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21. This is because this project will not significantly increase emissions of SO₂ from the affected boilers and will not increase emissions of other PSD pollutants from the affected boilers. (See also Condition 1.4(a).)

For new support equipment and modified operation of existing support equipment, as constrained by the limitations and requirements in this permit, this permit is issued based on this project also not being a major modification for purposes of the federal PSD rules. This is because the net increases in emissions of individual PSD pollutants is less than the significant emission rates set in the PSD rules.

- b. i. The permit is issued based on this project not being a modification of the affected boilers for emissions of PM, NO_x or mercury for purposes of the federal New Source Performance Standards (NSPS) because it does not increase the heat input capacity of the boilers.
- ii. This permit is issued based on the affected boilers not being subject to the NSPS for emissions of SO₂ because there will be no increase in emissions, comparing past emissions and future emissions, on an hourly basis, which would otherwise trigger applicability for NSPS. For the high-sulfur coal that may be burned in the boiler, which would emit more than 1.8 pounds SO₂ per million Btu if emissions were uncontrolled, this is a consequence of the control of SO₂ emissions provided by new SDA system.
- 1.3 a. The emissions of particulate matter (PM), SO₂, nitrogen oxides (NO_x), and carbon monoxide (CO) from the affected boilers shall not exceed applicable state emission standards except as authorized pursuant to 35 IAC Part 201, Subpart I.

PM: 0.1 lbs/mmBtu, as filterable PM, 35 IAC 212.204
SO₂: 1.8 lbs/million Btu, 35 IAC 214.122
NO_x: 0.7 lbs/million Btu, 35 IAC 217.121
CO: 200 ppm @ 50% excess air, 35 IAC 216.121

- b. This permit does not relax or revise requirements for the affected boilers and associated equipment contained in the current CAAPP permit for the source, including provisions authorizing startup and continued operation during malfunction and breakdown with excess emissions and testing, monitoring, recordkeeping and reporting requirements.
- 1.4 a. The emissions of SO₂ from the affected boilers after initial startup of the SDA system shall not exceed 180 tons/month and

1,420 tons/year. This annual limit is based on the past actual SO₂ emissions of the affected boilers (1,381 tons/year) plus a less than significant increase (39 tons/year).

- b. At all times, when the SDA system is being relied for compliance with standards and limits for SO₂ emissions, the Permittee shall operate and maintain the affected boilers and associated control equipment in a manner consistent with good air pollution control practice for minimizing emissions.
- 1.5
- a. Within 180 days after the initial startup of the affected boilers with the SDA system, PM, NO_x and CO emissions of the boilers shall be measured by an approved testing service during conditions that are representative of full load.
 - 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 and 40 CFR Part 51, Appendix M for USEPA test methods.

Location of Sample Points	USEPA Method 1
Gas Flow & Velocity	USEPA Method 2
Particulate Matter	USEPA Methods 5 or 5B and 202
Nitrogen Oxides	Method 19 as further developed by 40CFR 60.48a (d)
Carbon Monoxide	Method 10

- c. Prior to carrying out these tests, the Illinois EPA shall be notified a minimum of 30 days prior to the expected date of these tests and further notified a minimum of 5 working days prior to the test of the exact date, time and place of these tests, to enable the Illinois EPA to witness these tests.
- 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 following information shall be submitted with the test results:
 - i. The sulfur content of the coal supply to the boilers during testing, pound sulfur per million Btu heat content.
 - ii. The steam generation rates of the boilers during the tests.
 - iii. Significant operating parameters of the SDA system, such as slurry flow rate and lime concentration as measured during the tests.
 - iv. SO₂ emission data during the period of testing, as collected by the continuous emissions monitoring system.
 - v. Opacity data collected by the continuous opacity monitoring system during each test run and, if conditions are suitable

for such observation, observations of opacity at the stack (two 6-minute averages) for each test conducted to determine particulate matter emissions.

- 1.6 a. i. The Permittee shall install, certify, operate, calibrate, and maintain a continuous monitoring system on the affected boilers for emissions of SO₂ and either oxygen or carbon dioxide in the exhaust. This system shall be installed, operated and maintained to comply with relevant requirements of the NSPS, 40 CFR 60.47b, Subpart Db, for outlet monitoring of SO₂ emissions from the boilers, except that provisions related to determining uncontrolled SO₂ emissions and the SO₂ control efficiency of the SDA system shall not be applicable.
 - ii. The Permittee shall maintain records for the data collected by this system and operation of this monitoring system in accordance with relevant recordkeeping requirements of the NSPS, including records of measured SO₂ emission rates from the affected boilers on an hourly, daily average and running total of 30 boiler operating days.
 - iii. The Permittee shall maintain records for mass of SO₂ emissions emitted from the affected boilers as determined from the data collected by this monitoring system, including the daily, monthly and annual emissions of SO₂.
 - b. i. The Permittee shall install, operate and maintain instrumentation to measure the following operating parameters of the control devices for the affected boilers:
 - A For the SDA system, slurry feed rate and pressure drop across the spray chamber.
 - B. For the baghouse, pressure drop across the device.
 - ii. The Permittee shall maintain the records of the measurements made by these instruments as recorded on a regular basis and records of the maintenance activity associated with these instruments.
- 1.7 a. The Permittee shall maintain a file for the affected boilers containing the following information, which shall be kept current:
 - i. The specification for the sulfur content (lb sulfur per million Btu) for each source of coal for the boilers.
 - ii. If the coal to the boilers is mixture of coal from different sources, the Permittee's procedures for blending the coal supply to the boilers.

- b. The Permittee shall maintain operating log(s) or other operating records for the SDA system on the affected boiler that, at a minimum, include the following information:
 - i. Information identifying periods when the affected boiler(s) were in operation, including which boilers were operating and the mode of SO₂ compliance (compliant coal, noncompliant coal with SDA system, or transition);
 - ii. For periods when SDA system is operating normally, relevant process information to generally confirm normal operation; and
 - iii. For periods when the affected boiler(s) are in service and the SDA system is not operating normally, identification of each such period, with detailed information describing the operation of the unit(s) and the potential consequences for additional emissions from the boiler(s), with explanation.
- c. The Permittee shall maintain inspection, maintenance and repair log(s) or other operating records for the SDA system on the affected boilers that, at a minimum, include the following information:
 - i. For inspections, a description of the inspection, findings, and any recommended actions, with reason; and
 - ii. For maintenance and repair activity, a description actions taken, reason for action, e.g., preventative measure or corrective action as a result of inspection, and the condition of equipment following completion of the activity.
- d. The Permittee shall maintain records of the amount of lime used for the SDA system (tons/month).
- e. The Permittee shall maintain the following records related to the SO₂ emissions of the affected boilers:
 - i. Records of the operation of the affected boilers and SDA system so as to be able to accurately account for SO₂ emissions of the affected boilers during any periods when the continuous emissions monitoring system required by Condition 1.6 is out of service or is not providing credible data.
 - ii. Records of SO₂ emissions of the affected boilers during such periods (tons), with supporting calculations.
 - iii. Records of the total SO₂ emissions of the affected boilers, combining the above emission data and the emission data

collected by the continuous emissions monitoring system (tons/month and tons/year).

- 1.8 a. The Permittee shall notify the Illinois EPA within 21 days of the initial startup of the SDA system.
- b. The Permittee shall notify the Illinois EPA of deviations with the requirements of this by permit for the affected boilers as follows. These notifications shall include the information specified by Section 39.5(7)(f)(ii) of the Environmental Protection Act:
 - i. Deviations from requirements for SO₂ emissions shall be reported with periodic continuous emissions monitoring reports.
 - ii. Other deviations shall be reported in accordance with the provisions in the CAAPP permit for the source addressing reporting of deviations by the affected boilers.
- 2.1 a. This permit is issued based on the emission units that handle lime not being subject to the NSPS, 40 CFR 60 Subpart 000 because lime is not listed a nonmetallic mineral as defined by 40 CFR 60.671, so that these units do not constitute a nonmetallic mineral processing plant.
- 2.2 a. This permit is issued based upon minimal hourly emissions and negligible annual emissions of PM from the handling of lime and lime slurry, i.e., no more than 0.1 tons/year.
- b. Emissions of PM from the receiving of lime shall be controlled with a baghouse or bin vent filter designed to emit no more than 0.01 grains/dry standard cubic foot.
- 2.3 a. This permit is issued based upon minimal hourly emissions and negligible annual emissions of PM from coal storage silos, coal crushers, coal conveyors and ash silo, i.e. no more than 0.1 tons/year.
- b. Emissions of PM from coal receiving and coal storage piles at the plant shall not exceed 1.7 tons/year.

Note: Current PM emissions from these operations are estimated as 1.2 tons/year.
- c. Emissions of particulate matter from truck traffic associated with transport of coal, lime and boiler waste for or from the affected boilers shall not exceed 0.7 tons/year.

Note: An increase in PM emissions from roadways is not expected as all coal is currently delivered to the plant by truck.

- 2.4
 - a. The Permittee shall conduct inspections of the material handling equipment including the enclosure and any dust suppressant application devices at least once per month when equipment is in operation to confirm compliance with the requirements of this permit.
 - b. The Permittee shall perform maintenance and repair of enclosures, suppressant devices and other control devices as needed to assure that such devices function properly as needed when material is being handled.
 - c. The Permittee shall maintain records of the above inspections and maintenance/repair activity in an operating and maintenance log or other records. These records shall contain, at a minimum, the time and description of the inspections or maintenance/repair activities.
- 2.5
 - a. The Permittee shall maintain a file containing the specifications for the exhaust dust loading of the filter for receiving of lime, with supporting documentation.
 - b. The Permittee shall maintain records for the following items for the affected boilers:
 - i. Amounts of coal received at the plant by truck and by rail, tons/month and tons/year;
 - ii. Amounts of lime received at the plant for the boilers by truck and by rail, tons/month and tons/year; and
 - iii. Amounts of boiler waste (ash and spent lime) shipped from the boilers by truck and by rail, tons/month and tons/year.
 - c. The Permittee shall maintain operating logs or other operating records for the handling of coal, lime, slurry and boiler waste for the affected boilers, which records shall at a minimum include information:
 - i. For periods when a unit or group of related units is in service and operating normally, relevant process information to generally confirm normal operation; and
 - ii. For periods when a unit or group of related units is in service and is not operating normally, identification of each such period, with detailed information describing the operation of the unit(s) and the potential consequences for additional PM emissions from unit(s), with explanation.
 - d. The Permittee shall maintain records of the implementation for fugitive dust control measures on roadways used by trucks that handle coal, lime or boiler waste for or from the affected boilers.

- e. The Permittee shall maintain the following records related to PM emissions associated with the affected boilers (tons/month and tons/year) with supporting documentation and calculations:
 - i. PM emissions from lime and slurry operations.
 - ii. PM emissions from handling boiler waste.
 - iii. PM emissions from truck traffic associated with transport of coal, lime and boiler waste.
- 3. Compliance with the annual limits in this permit shall be determined from a running total of 12 months of data.
- 4a. The affected boilers with SDA system and other new and modified units may operate for up to one year* under this permit in order to complete shakedown and emissions testing.
 - * This period of time may be extended by the Illinois EPA upon written request by the Permittee as needed to reasonably accommodate unforeseen delays in the shakedown or testing of the SDA system.
- b. Following completion of required testing, the Permittee is allowed to operate the affected boilers with the SDA system under this permit provided that the Permittee submits a complete and timely application for a revised CAAPP permit.
- c. These conditions supersede Standard Condition 6.

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

Edwin C. Bakowski, P.E.
Acting Manager, Permit Section
Division of Air Pollution Control

Date Signed: _____

ECB:SRS:psj

cc: Region 2