

217/782-2113

CONSTRUCTION PERMIT - NSPS SOURCE

DRAFT

PERMITTEE

Archer Daniels Midland Co.
Attn: Jim McQuellon, Environmental Supervisor
One Edmund Street
Peoria, IL 61602

Application No.: 07080056

I.D. No.: 143065AJE

Applicant's Designation:

Date Received: August 23, 2007

Subject: Boiler No. 14

Date Issued: TBD

Location: One Edmund Street, Peoria, Peoria County

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of one 385 mmBtu/hr rated capacity new gas fired boiler # 14 with low-NO_x burners and flue gas recirculation system as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

- 1a. New boiler # 14 (the affected boiler) is subject to the New Source Performance Standard (NSPS) for Industrial-Commercial-Institutional Steam Generating Units, 40 CFR 60, Subparts A and Db. The Illinois EPA is administering NSPS in Illinois on behalf of the United States EPA under a delegation agreement.
- b. The emissions of nitrogen oxides (NO_x) from the affected boiler shall not exceed 0.2 lb/mmBtu of actual heat input, on a 30-day rolling average, including periods of startup, shutdown, or malfunction, pursuant to 40 CFR 60.44b(1)(1), (h), (i) and 60.46b(a).
- c. At all times, the Permittee shall maintain and operate the affected boiler, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions, as required pursuant to the NSPS, 40 CFR 60.11(d).
- 2a. This permit is issued based on the affected boiler not being subject to emission standards or other requirements pursuant to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers and Process Heaters, 40 CFR 63, Subpart DDDDD. This is because this NESHAP has been vacated by a court mandate, pursuant to a request by USEPA, and is no longer in effect.

Note: As "large gaseous fuel unit," this NESHAP would have limited CO emissions from affected boiler to no more than 400 ppm, dry basis at 3 percent oxygen, 30-day rolling average, excluding periods of startup, shutdown, malfunction, which is less stringent than the standard set by 35 IAC 216.121. (See Condition 3(b).)

- b. This permit is issued based on the affected boiler not being a major source of hazardous air pollutants (HAPs) for purposes of Section 112(g) of the Clean Air Act so that a case-by-case determination of Maximum Achievable Control Technology (MACT) is not required for the boiler pursuant to Section 112(g). This is because the affected boiler is being constructed at a developed site, the affected unit is a separate process or production unit as defined by 40 CFR 63.41, and the potential annual emissions of HAPs from the unit are less than 10 tons of any individual HAP and less than 25 tons of any combination of HAPs.
- c. The affected boiler and the Permittee shall comply in a timely manner with all applicable provisions of a NESHAP adopted by USEPA or a case-by-case MACT determination made by the Illinois EPA that applies to the affected boiler. For this purpose, the Permittee shall address the affected boiler, as well as existing boilers at the source, in the application submitted to the Illinois EPA pursuant to Section 112(j) of the Clean Air Act to support a case-by-case determination of MACT for the boilers at the source.
- 3a. The emissions of NO_x from the affected boiler shall not exceed 0.20 lb/mmBtu of actual heat input in any one hour period, pursuant to 35 IAC 217.121(a).
- b. The affected boiler is subject to 35 IAC 216.121, which provides that no person shall cause or allow the emission of CO into the atmosphere from any fuel combustion emission source with actual heat input greater than 10 mmBtu/hr to exceed 200 ppm, corrected to 50 percent excess air.
- c. The affected boiler is subject to 35 IAC 212.122 which provides that no person shall cause or allow the opacity from a new fuel combustion emission unit with a heat input greater than 250 mmBtu/hr to exceed 20 percent, except as provided by 35 IAC 212.122(b).
- 4. This permit is issued based on the affected boiler not being subject to the federal Acid Rain program because it is not a utility unit as it does not supply steam to an electric generator. (Refer to 40 CFR 72.2 and 72.6)
- 5a. Natural gas shall be the only fuel fired in the affected boiler.
- b. The rated heat input capacity of the affected boiler shall not exceed 385 mmBtu/hour.
- c. The affected boiler shall be equipped, operated, and maintained with low-NO_x combustors to control NO_x emissions. In addition to low-NO_x burners, the Permittee may utilize flue gas recirculation system to further control emissions of NO_x.
- d. i. Short-term emissions from the affected boiler shall not exceed the following limits, except during startup and shutdown as addressed by Condition 6. These emission limits are based on the information provided in the permit application. For limits of NO_x (and CO, if monitoring is conducted), for which continuous emission monitoring is performed, the compliance

time period is a 30-day rolling average, consistent with the NSPS. For hourly limits on other pollutants, for which continuous emission monitoring is not performed, the compliance time period is three hours (three test runs).

<u>NO_x</u> <u>(lb/mmBtu)^a</u>	<u>CO</u> <u>(lb/mmBtu)^a</u>	<u>PM/PM10</u> <u>(lb/hr)</u>	<u>VOM</u> <u>(lb/hr)</u>
0.023 ^b	0.053 ^b	2.9	2.1

^a Based on Higher Heating Value (HHV).

^b As an alternative to these limits, the Permittee may comply with limits of 8.9 and 13.9 lb/hour, for NO_x and CO respectively, on a 30-day rolling average.

- ii. A. Annual emissions (ton/year) from the affected boiler shall not exceed the following limits:

<u>NO_x</u>	<u>CO</u>	<u>PM/PM10</u>	<u>VOM</u>	<u>SO₂</u>
39.0	89.4	12.8	9.3	1.0

Compliance with these limitations shall be determined as a running total of 12 months of emission data.

- B. For purpose of determining compliance with these annual emission limitations:

I. Emissions of NO_x (and CO, if monitoring is conducted) shall be determined by continuous emission monitoring in accordance with Condition 8.

II. Emissions shall be determined from emission factors developed from analysis of fuel sulfur content or standard factors (SO₂) and testing in accordance with Condition 9 (VOM and PM/PM₁₀) and.

III. The establishment of the above procedures for determining compliance with the annual emission limits shall not shield the Permittee from responsibility to account for all emissions from the source, including emissions during startup and malfunction, as other credible information may demonstrate that the above procedures do not adequately account for the actual emissions of the source.

- e. This permit is issued based on this project supplying additional steam for the source so as to not cause or contribute to increases in production and emissions from process units at the plant.

Note: The above requirements are established to address applicability of 40 CFR 52.21, the federal rules for Prevention of Significant Deterioration of Air Quality (PSD). These limitations ensure that the construction and operation of the boiler do not constitute a major modification pursuant to PSD. In this regard, the Permittee has stated that the addition of the affected boiler is expected to reduce the burden on the existing natural gas-fired

boilers and facilitate improved maintenance practices for the existing coal-fired boilers, to provide reliable steam supply for use in the processes at the plant and not to increase overall steam generation at the plant.

- 6a. The Permittee shall operate the affected boiler and associated air pollution control equipment in accordance with good air pollution control practice to minimize emissions, by operating in accordance with detailed written operating procedures as it is safe to do so. These procedures at a minimum shall:
- i. Address startup, normal operation, shutdown and malfunction events.
 - ii. A. With respect to malfunction, identify and address likely malfunction events with specific programs of corrective actions, and provide that upon occurrence of a malfunction that will result in emissions in excess of the applicable limits in Condition 5(d), the Permittee shall, as soon as practicable, repair the affected equipment, reduce the operating rate of the boiler or remove the boiler from service so that excess emissions cease.
 - B. Consistent with the above, if the Permittee has maintained and operated a boiler and associated air pollution control equipment so that malfunctions are infrequent, sudden, not caused by poor maintenance or careless operation, and in general are not reasonably preventable, the Permittee shall begin shutdown of the boiler within 4 hours, unless the malfunction is expected to be repaired within 8 hours or such shutdown could threaten the safety of personnel or equipment. In such case, shutdown of the system shall be undertaken when it is apparent that repair will not be accomplished within 8 hours or shutdown will not endanger the safety of personnel or equipment. In no case shall shutdown of the boiler be delayed solely for the economic benefit of the Permittee.
- Note: If the Permittee determines that the continuous emission monitoring system (CEMS) is inaccurately reporting excess emissions, the boiler may continue to operate provided the Permittee records the information it is relying upon to conclude that the boiler and associated emission control systems are functioning properly and the CEMS is reporting inaccurate data and the Permittee takes prompt action to resolve the accuracy of the CEMS.
- b. The Permittee shall maintain the affected boiler and associated air pollution control equipment in accordance with good air pollution control practice to assure proper functioning of equipment and minimize malfunctions, including maintaining the boiler in accordance with written procedures developed for this purpose.
- 7a. Under this permit, the affected boiler may be operated for a period of up to 180 days from initial startup to allow for equipment shakedown and emissions testing as required. The Illinois EPA, upon request of the Permittee, may extend this period if additional time

is needed to complete shakedown or perform emission testing.

- b. Upon successful completion of emission testing for the affected boiler demonstrating compliance with applicable short-term limitations, the Permittee may continue to operate the boiler pursuant to this permit until the CAAPP Permit is revised to include the unit.
 - c. This condition supersedes Standard Condition 6.
- 8a.
- i. The Permittee shall install, operate, and maintain a Continuous Emissions Monitoring System (CEMS) on the affected boiler to measure emissions of NO_x, pursuant to 40 CFR 60.48b(b) and (e). The applicable procedures under 40 CFR 60.13 shall be followed for the installation, evaluation, and operation of the NO_x CEM system, in accordance with 40 CFR 60.48b(e).
 - ii. When NO_x emission data are not obtained because of continuous monitoring systems breakdowns, repairs, calibration checks and zero and span adjustments, emission data will be obtained by using standby monitoring systems, Method 7, Method 7a, or other approved methods to provide emission data for a minimum of 75 percent of the operating hours in the steam generating unit operating day, in at least 22 out of 30 successive steam generating unit operating days, pursuant to 40 CFR 60.48b(f).
 - iii. The Permittee shall also measure oxygen or CO₂ concentration in the exhaust of the affected boiler.
 - iv. In addition to determining compliance with the NO_x standard of the NSPS, these systems shall also be used to address compliance with the NO_x emission limitation in Condition 5(d)(i).
 - b. i. If the CO emissions of the boiler measured by testing in accordance with Condition 9 are greater than 0.050 lb/mmBtu, the Permittee shall within two years from the date of initial startup of the boiler install, calibrate, operate and maintain CEMS for measuring CO emissions from the affected boiler. The relevant monitoring procedures in 40 CFR 60.48b(j)(4) shall be followed for the CEMS until and unless USEPA adopts procedures that would be directly applicable for continuous monitoring of CO emissions from boilers.
 - ii. This CEMS (if installed) and the oxygen or CO₂ monitoring system required by Condition 8(a)(iii) shall be used to address compliance with 35 IAC 216.121 and the CO emission limitation in Condition 5(d)(i).
 - iii. In the operating permit for the source, the requirements for monitoring CO emissions may be revised to be consistent with applicable provisions of new NESHAP rules for boilers adopted by USEPA, in conjunction with a case-by-case determination of Maximum Achievable Control Technology (MACT) for the affected boiler made by the Illinois EPA, or, otherwise, in accordance with the results of an evaluation by the Illinois EPA of the continued need for such monitoring for affected boiler(s) based on the data that has been collected.

- c. i. The Permittee shall conduct the following performance tests required by the NSPS prior to or in conjunction with the emission testing required by Condition 9. The Permittee shall follow appropriate notification and reporting of the performance tests in accordance with general provisions of 40 CFR 60.8 under the NSPS.
 - A. Measurements for NO_x shall be conducted as required under the NSPS, 40 CFR 60.8 and 40 CFR 60.46b(e), using the NO_x CEMS.

9a. The carbon monoxide (CO) and opacity in the exhaust of the affected boiler while operating at the maximum load range shall be measured by testing service approved by the Illinois EPA as follows to determine compliance with the applicable emissions limits in Condition 5(d):

- i. Within 60 days after operating the boiler at the greatest load at which it will normally be operated but not later than 180 days after its initial startup.
- ii. Within 90 days after a written request from the Illinois EPA, for such pollutants listed above as specified by the request.

Note: Any extension to these time periods that may be provided at its discretion by the Illinois EPA will not alter the Permittee's obligation to perform emission testing for NO_x emissions for purpose of the NSPS, in a timely manner as specified by 40 CFR 60.8.

b. The following methods and procedures shall be used for testing of opacity and emissions of CO unless alternative test procedures are approved by Illinois EPA:

Location of Sample Points	USEPA Method 1
Gas Flow and Velocity	USEPA Method 2
Flue Gas Weight	USEPA Method 3 or 3A
Moisture	USEPA Method 4
Opacity	USEPA Method 9
Carbon Monoxide	USEPA Method 10

- c. At least 60 days prior to the actual date of initial performance testing, a written test plan shall be submitted to the Illinois EPA for review. This plan shall describe the specific procedures for testing and shall include as a minimum:
 - i. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 - ii. The specific conditions under which testing shall be performed including a discussion of why these conditions will be representative of maximum emissions and the means by which the operating parameters for the affected boiler will be tracked and recorded.
 - iii. The specific determinations of emissions that are intended to be made, including sampling and monitoring locations; the test method(s) that will be used, with the specific analysis

method, if the method can be used with different analysis methods.

- d. The Illinois EPA shall be notified prior to these tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of thirty (30) days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of five (5) working days prior to the actual date of the test. The Illinois EPA may, at its discretion, accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe the testing.
- e. Three copies of the final reports for emission tests shall be forwarded to the Compliance Section in Springfield within 30 days after the test results are compiled and finalized. The final report from testing shall contain a minimum:
 - i. A summary of results.
 - ii. General information.
 - 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. Fuel consumption (standard ft³).
 - B. Firing rate (million Btu/hr).
 - C. Boiler steam production rate (lb/hr).
 - v. Monitored emission data for NOx (individual test runs and average) during the period of the test.
 - vi. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration.
- 10a. The Permittee shall maintain a file of the following items:
 - i. The rated heat input capacity of the boiler (mmBtu/hr) with supporting documentation, which data shall be updated by the Permittee as necessary to represent the best available data for the rated capacity of the boiler.
 - ii. Heat content of the natural gas (Btu/ft³) being fired, with supporting documentation, on a quarterly basis.
 - iii. A copy of the Final Report(s) for emission testing conducted pursuant to Condition 8(c) and 9.
 - iv. The Permittee shall maintain records for all opacity measurements made in accordance with USEPA Method 9 for the

affected boiler that it conducts or that are conducted on its behest by individuals who are qualified to make such observations. For each occasion on which such measurements are made, these records shall include the formal report for the measurements if conducted pursuant to Condition 9, or otherwise the identity of the observer, a description of the measurements that were made, the operating condition of the boiler, the observed opacity, and copies of the raw data sheets for the measurements.

- b. The Permittee shall maintain the following operating records for the affected boiler:
 - i. The quantity of fuel consumed (standard cubic feet/day).
 - ii. Steam production (lb/month).
- c. The Permittee shall maintain the following records related to each startup of the affected boiler:
 - i. Date and time of startup.
 - ii. A description of the startup, if written operating procedures are not followed during the startup or significant problems occur during the startup, including detailed explanation.
 - iii. If normal operation is not achieved within 6 hours (or such other period of time set by the source's CAAPP permit) or if established startup procedures are not followed:
 - A. A detailed explanation why startup could not be completed sooner or established procedures could not be followed.
 - B. Documentation for the established startup procedures that were followed.
 - C. Estimates of magnitude of NO_x, CO, and VOM emissions emitted in excess of the applicable limitations and standards during startup.
- d. The Permittee shall keep inspection, maintenance, and repair logs with dates and the nature of such activities for the affected boiler.
- e. The Permittee shall maintain records of the following information for the affected boiler:
 - i. The following information for each steam generating unit operating day, as defined by 40 CFR 60.41b, pursuant to 40 CFR 60.49b(g):
 - A. Calendar date.
 - B. The average hourly NO_x emission rates (expressed as NO₂) (lb/mmBtu heat input), measured using the NO_x CEMS.

Note: This data shall also be used to verify compliance

with Condition 3(a).

- C. The 30-day average NOx emission rates (lb/mmBtu heat input) calculated at the end of each operating day from the measured hourly NOx emission rates for the preceding 30 operating days (30-day rolling average).
 - D. Identification of the operating days when the calculated 30-day average NOx emission rates are in excess of the NOx emissions standard under 40 CFR 60.44b (Condition 1(a)(ii)), with the reasons for such excess emissions as well as a description of corrective actions taken.
 - E. Identification of the operating days for which pollutant data have not been obtained, including reasons for not obtaining sufficient data and a description of corrective actions taken.
 - F. Identification of the times when emission data have been excluded from the calculation of average emission rates and the reasons for excluding data.
 - G. Identification of "F" factor used for calculations, method of determination, and type of fuel combusted.
 - H. Identification of the times when the pollutant concentration exceeded full span of the continuous monitoring system.
 - I. Description of any modifications to the continuous monitoring system that could affect the ability of continuous monitoring system to comply with 40 CFR 60, Appendix B, Performance Specification 2 or 3.
 - J. Results of daily CEMS drift tests and quarterly accuracy assessments as required under 40 CFR 60, Appendix F, Procedure 1.
- ii. The following information to verify compliance with the NOx requirements of Condition 5(d)(i):
 - A. NOx emissions in lb/hour, on a 30-day rolling average basis as derived from the data obtained by the NOx CEMS.
 - iii. If a CEMS is present for CO, the following information to verify compliance with the CO limitations of Conditions 3(b) and 5(d)(i):
 - A. CO emissions, in ppm corrected to 50 percent excess air, as derived from the data obtained from the CO CEMS and the oxygen monitoring system.
 - B. CO emissions in lb/hour, on a 30-day rolling average basis as derived from the data obtained by the CO CEMS.

- iv. Any day in which emissions exceeded an applicable standard or limitation, with the calculated emission rate and explanation for the incident.
- f. The Permittee shall maintain the following records related to emissions from the affected boiler:
 - i. Other data, not addressed above, used or relied upon by the Permittee to determine emissions.
 - ii. Monthly and annual emissions of NO_x, CO, PM/PM10, VOM, and SO₂ emissions (tons/month and tons/year) with supporting data or calculations.
- g. The Permittee shall maintain following records for the NO_x and CO CEMS for the affected boiler:
 - i. Continuous monitoring system performance testing measurements.
 - ii. Performance evaluations and other quality assurance/control activities.
 - iii. Calibration checks.
 - iv. Maintenance and adjustments performed.
 - v. Periods when the CEMS was inoperative, with date, time and reason.
 - vi. Data reduction information.
 - vii. Quarterly monitoring reports.
- 11. All records required by this permit shall be retained on site for a period of at least five years and shall be readily available for inspection and copying by the Illinois EPA upon request. Any record retained in an electronic format (e.g., computer) shall be capable of being retrieved and printed on paper during normal source office hours so as to be able to respond to an Illinois EPA request for records during the course of a source inspection.
- 12. The Permittee shall furnish the Illinois EPA with written notification as follows with respect to commencement of construction and operation of the affected boiler:
 - a. The date construction of the boiler commenced postmarked no later than 30 days after such date, pursuant to 40 CFR 60.7(a)(1).
 - b. The actual date of initial startup of the boiler, postmarked within 15 days after such date, pursuant to 40 CFR 60.7(a)(3) and 60.49b(a), which shall be accompanied by the following information:
 - i. The design heat input capacity of the boiler and identification of the fuels to be combusted in the boiler, pursuant to 40 CFR 60.49b(a)(1).

- ii. The annual capacity factor at which the Permittee anticipates operating the boiler based on fuel fired, pursuant to 40 CFR 60.49b(a)(3).
- 13. The Permittee shall submit semi-annual reports as required by 40 CFR 60.7(c) or (d), and 60.49b(h).
- 14a. If there is any deviation of the requirements of this permit, as determined by the records required by this permit or by other means, the Permittee shall promptly report to the Illinois EPA as specified below until such time the affected boiler is addressed by the CAAPP permit.
 - i. Deviations from Condition 1, 3, 5(d) and 6 shall be reported with the reports required by the NSPS.
 - ii. Other deviations shall be reported within 30 days and include a description of the incident, a discussion of the probable cause of such deviation, a description of the corrective actions taken, and a description of the preventative measures taken.
- b. In conjunction with the Annual Emission Report required by 35 IAC Part 254, the Permittee shall provide the following information for the affected boiler:
 - The total number of startups and the total fuel consumption during the preceding calendar year.
- 15. Two copies of required reports and notifications shall be sent to:
 - Illinois Environmental Protection Agency
 - Division of Air Pollution Control
 - Compliance Section (#40)
 - P.O. Box 19276
 - Springfield, Illinois 62794-9276
 - Telephone: 217/782-5811 Fax: 217/782-6348

and one copy shall be sent to the Illinois EPA's regional office at the following address, unless otherwise indicated:

 - Illinois Environmental Protection Agency
 - Division of Air Pollution Control - Regional Office
 - 5415 N. University
 - Peoria, Illinois 61614
 - Telephone: 309/693-5461 Fax: 309/693-5467
- 16a. This Permit for the above referenced project does not relieve the Permittee from the responsibility to comply with all Local, State and Federal Regulations which are part of the applicable Illinois State Implementation Plan, as well as all other applicable Federal, State, and Local requirements.
- b. In particular, this Permit does not relieve the Permittee from the

Page 12 of 12

responsibility to carry out practices during construction and operation, such as application of water or dust suppressant sprays to unpaved traffic areas, to minimize fugitive dust and prevent an air pollution nuisance from fugitive dust, as prohibited by 35 IAC 201.141.

If you have any questions concerning this permit, please contact Manish Patel at 217/782-2113.

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

Date Signed: _____

ECB:MNP

cc: FOS - Region 2, Illinois EPA
CAAPP Permit Analyst, Illinois EPA