

217/782-2113

CONSTRUCTION PERMIT - PSD - NSPS

PERMITTEE

Southern Illinois Power Cooperative
Attn: Mr. Richard G. Myott
11543 Lake of Egypt Road
Marion, Illinois 62959-8500

Draft

Application No.: 00070030 I.D. No.: 199856AAC
Applicant's Designation: CFB BOILER Date Received: July 12, 2000
Subject: Circulating Fluidized Bed Boiler (Power Production)
Date Issued:
Location: 11543 Lake of Egypt Road, Marion

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission units and air pollution control equipment in conjunction with a repowering project described in the above referenced permit application, including one circulating fluidized bed (CFB) boiler capable of burning coal refuse, coal, petroleum coke, tire derived fuel, wood chips, and fuel oil; solid fuel storage piles and silos and reclaiming and conveying equipment; limestone storage pile and silo and reclaiming and conveying equipment; ash storage silos; and associated air pollution control equipment and other support equipment. This Permit is granted based upon and subject to the findings and conditions that follow:

In conjunction with this permit, approval is given with respect to the Prevention of Significant Deterioration (PSD) Air Quality Regulations to construct the above referenced project, in that the Illinois Environmental Protection Agency (Illinois EPA) finds that the application fulfills all applicable requirements of 40 CFR 52.21. This approval is issued pursuant to the Clean Air Act, as amended, 42 U.S.C. 7401 et. seq., the Federal regulations promulgated thereunder at 40 CFR 52.21, and a Delegation of Authority agreement between the United States Environmental Protection Agency (USEPA) and the Illinois EPA for the administration of the PSD Program. This approval becomes effective in accordance with the provisions of 40 CFR 124.15 and may be appealed in accordance with the provisions of 40 CFR 124.19. This approval is also based upon and subject to the following findings and conditions.

FINDINGS

- 1a. Southern Illinois Power Cooperative (SIPC) is presently comprised of four solid fuel fired coal fired generating units and has requested a permit to construct a new solid fuel fired boiler to replace existing coal fired Units 1-3. Units 1-3 are each rated at 33 MW. The boiler would be designed to use coal refuse, which is a low Btu, high ash fuel, as its main fuel. The CFB boiler will produce enough steam to serve the three existing steam turbines with a total nominal generating capacity of 120 MW (gross).

- b. The proposed new boiler will be a circulating fluidized bed boiler with limestone injection in the combustor, ammonia injection as necessary in the cyclone section of the boiler, and a baghouse for particulate emission control. Associated emission units include fuel handling systems for coal refuse, coal, petroleum coke, wood chips and tire derived fuel; new limestone storage silo and conveying equipment; two ash storage silos and other ancillary equipment.
- c.
 - i. Concurrent with the boiler project, SIPC is proposing to construct two simple cycle combustion turbines (CTs). SIPC is also proposing to install a selective catalytic reduction system on Unit 4, an existing coal-fired boiler at the Marion Generating Station rated at 173 MW.
 - ii Separate permit applications have been submitted for the simple cycle combustion turbines and the selective catalytic reduction system for Unit 4. However, for air quality purposes they can be considered a single project.
- 2. The CFB boiler project will be located at SIPC's existing Marion Generating Station located in Williamson County. The area is designated attainment for all criteria air pollutants. The county has a Class II designation for Prevention of Significant Deterioration (PSD) permit review.
- 3a. The existing plant is a major source under PSD rules. The proposed CFB boiler will have potential annual emissions of 3690 tons/year of sulfur dioxide (SO₂), 841 tons/yr of nitrogen oxides (NO_x), 67.5 tons/yr of particulate matter (PM), 921 tons/yr of carbon monoxide (CO), and 44.2 tons/yr of volatile organic materials (VOM).
- b. SIPC has submitted a PSD netting demonstration that addresses the decrease in emissions from shutdown of existing boilers that occurs with this repowering project. The netting demonstration, summarized in Attachment B, shows that the proposed repowering project will result in a significant net increase in emissions for one regulated PSD pollutant, carbon monoxide (CO). All other regulated PSD pollutants will experience either a net decrease or an insignificant net increase in annual emissions. Therefore, the CFB boiler is subject to PSD review for CO and only provisions of this permit that relate to emissions of CO are considered part of the PSD approval.
- 4. The air quality analysis submitted by SIPC and reviewed by the Illinois EPA shows that the proposed repowering project will not cause a violation of the ambient air quality standard for CO. The air quality analysis demonstrated compliance with the allowable increment levels for CO established under the PSD regulations.
- 5. After reviewing the materials submitted by SIPC, the Illinois EPA has determined that the proposed CFB boiler will (i) comply with

applicable state air emission standards, (ii) comply with applicable federal New Source Performance Standards standards, 40 CFR 60, Subpart Da (iii) comply with all applicable Illinois Air Pollution Board Regulations and (iv) utilize Best Available Control Technology (BACT) on emissions of CO as required by regulations, 40 CFR 52.21(Conditions 3 and 7 as applied to emissions of CO represent the application of BACT for CO, as required by Section 165 of the Clean Air Act.), and (v) utilize BACT on emission associated with burning of tires as required by section 55(h) of the Environmental Protection Act.(Conditions 2,3 and 7 represent the application of BACT)

6. The CFB boiler is an affected unit under the Acid Rain Deposition Control Program pursuant to Title IV of the Clean Air Act and is subject to certain control requirements and emission monitoring requirements pursuant to 40 CFR Parts 72, 73, and 75. As an affected unit under the Acid Rain Program, an Acid Rain Permit application must be submitted in accordance with the applicable requirements of 40 CFR 72.30 before commencing operation and must hold calendar year allowances for each ton of SO₂ emitted.
- 7 This permit is issued based on the proposed CFB boiler not being a major new source of hazardous air pollutants for purposes of Section 112(g) of the Clean Air Act. This reflects a finding that the CFB boiler should reduce emissions of hazardous air pollutants from the Marion Generating Station, as it generally reduces emissions of air pollutants (refer to Attachment B, Table 1). In addition, the application indicates that the emission of hazardous air pollutants from the boiler itself would be below the criteria for a major source hazardous air pollutants.
8. A copy of the air permit application, the project summary and a draft of this permit were placed in a location in the vicinity of the proposed project site. The public has been given notice and an opportunity to examine this material and to submit comments. A public hearing was held in the vicinity of Marion Generating Station to allow public comment on this matter.

The Illinois EPA is issuing approval to construct the proposed repowering project subject to the following Special Conditions and consistent with the materials included in the air permit application. Any departure from the conditions of this permit approval or intent of the terms expressed in the air permit application would need to receive prior written authorization by the Illinois EPA.

SPECIAL CONDITIONS

1. Standard Conditions for issuance of construction permits, attached hereto and incorporated herein by reference, shall apply to this project, unless superceded by the following Special Conditions.

- 2a. The CFB boiler is subject to a New Source Performance Standard (NSPS) for Electric Utility Steam Generating Units, 40 CFR 60, Subparts A, and Da. The Illinois EPA is administering NSPS in Illinois on behalf of the USEPA under a delegation agreement.
- b. The emissions from CFB boiler shall not exceed the applicable limits pursuant to the New Source Performance Standard, as follows:
- i. The NO_x emissions from the CFB boiler system shall not exceed 1.6 lb/MW-hr gross energy output, based on a 30-day rolling average, pursuant to 40 CFR 60.44a(d). The SNCR system shall be operated and maintained to the extent necessary to ensure compliance with the applicable NSPS and achieve the emission limitations contained in Attachment A.
 - ii. The SO₂ emissions from the CFB boiler system shall comply with the requirements of 40 CFR 60.43a(a). Compliance with the SO₂ emission limitation and percent reduction requirement shall be determined on a 30-day rolling average basis.
 - iii. The PM emissions from the CFB boiler system shall not exceed 0.03 lb/mmBtu heat input and 1 percent of potential combustion concentration when combusting solid fuel, and 30 percent of the potential combustion concentration when combusting liquid fuel pursuant to 40 CFR 60.42a(a). Compliance with the PM emission limitation constitutes compliance with the percent reduction requirements.
 - iv. Pursuant to 40 CFR 60.46a(c), the emission limitations established above shall apply at all times, except during periods of startup, shutdown or malfunction as defined by 40 CFR 60.2.
- c. At all times, the Permittee shall maintain and operate the CFB boiler, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions, as required per NSPS, 40 CFR 60.11(d).
- 3a. The Permittee shall use good combustion practices to minimize CO emissions from the CFB boiler.
- bi. The CO emissions from the CFB boiler shall not exceed the following limit except during startup, malfunction or breakdown and shutdown as addressed by Condition 7.
- 0.15 lb/million Btu, based on a 3-hour block average.
- ii. The Permittee shall evaluate CO emissions from the CFB boiler to determine whether a lower CO emission limit (as low as 0.10) may be reliably achieved while complying with other emission limits without

significant risk to equipment or personnel and unreasonable increase in maintenance and repair needed for the boiler .

- 4a. The fuel storage silos, limestone storage silo and ash storage silos shall each be equipped with a baghouse (fabric filter) to control PM emissions. The baghouses shall be operated and maintained so as to ensure compliance with the PM emission limitations indicated in the application.
 - b. The Permittee shall employ good operating practices for the operation of the active fuel and limestone storage piles as to minimize the emission of PM from the storage piles.
5. The Permittee shall comply with the following requirements with respect to opacity and visible emissions.
- a. The emission of smoke or other particulate matter from the CFB boiler shall not have an opacity greater than 20 percent, pursuant to 35 IAC 212.122(a), except as allowed by 35 IAC 201.149, 212.122(b) or 212.124. Opacity measurements taken to demonstrate compliance with these provisions shall be based on a 6-minute average.
 - b. The emission of smoke or other particulate matter from baghouses associated with the fuel storage, limestone storage and ash storage silos shall not have an opacity greater than 30 percent, pursuant to 35 IAC 212.123(a), except as allowed by 35 IAC 201.149, 212.123(b) or 212.124. Opacity measurements taken to demonstrate compliance with these provisions shall be based on a 6-minute average.
 - c. Visible emission of particulate matter associated with fuel storage pile, the limestone storage pile, and the associated material handling operations shall comply with the provisions of 35 IAC 212.301.
- 6a. i. Emissions from the CFB boiler shall not exceed the limits in Attachment A, Table 2, except during startup, malfunction or shutdown as addressed by Condition 7. Compliance with the limits ensures that emissions from the CFB boiler project are within the overall project totals shown in Attachment B. The total increase in emissions in Attachment B will ensure that the CFB boiler and associated projects do not constitute a major modification pursuant to PSD for any pollutant except CO. Compliance with these hourly limits shall be determined as a 3-hour block average for all pollutants consistent with testing and monitoring as required by Conditions 12 and 14.
- ii. Annual emissions from the CFB boiler shall not exceed the limits in attachment A, Table 2. Compliance with the annual

limits shall be determined from a running total of 12 months of emission and fuel consumption data.

- b. PM emissions from the operation of the fuel silos, limestone silo and ash silos shall not exceed the limits of 0.137 lb/hour each for silos S1 through S5, and 0.645 lb/hour each for silos S6 and S7, as indicated in the application.
7. The CFB boiler and air pollution control equipment shall be operated to minimize emissions during startup, malfunction and shutdown including:
- a.
 - i. Operation in accordance with the manufacturer's written instructions, or other written instructions developed and maintained by the Permittee; and
 - ii. Review of operating parameters of the units during startup, malfunction, breakdown or shutdown as necessary to make adjustments to reduce or eliminate excess emissions.
 - b. The Permittee shall maintain the CFB boiler and air pollution control equipment in accordance with written procedures developed and maintained by the Permittee. These procedures shall be reviewed at least annually and enhanced consistent with good air pollution control practice based on actual operating experience and performance.
 - c. Upon malfunction of the CFB boiler or any air pollution control equipment that will result in emissions in excess of the applicable limits in Condition 6, the Permittee shall, as soon as practicable, repair the affected system or remove the system from service so that excess emissions cease.
 - d. Consistent with the above, if the Permittee has maintained and operated the CFB boiler and 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 system within 90 minutes, unless the malfunction is expected to be repaired within 120 minutes or such shutdown could threaten the stability of the regional electrical power system. In such case, shutdown of the system shall be undertaken when it is apparent that repair will not be accomplished within 120 minutes or shutdown will not endanger the regional power system. In no case shall shutdown of the CFB boiler be delayed solely for the economic benefit of the Permittee.
 - e. Notwithstanding the above, if the Permittee determines that the continuous emission monitoring system (CEMS) is

inaccurately reporting excess emissions, the Permittee may continue operation provided the Permittee records the information it is relying upon to conclude that the CFB boiler and 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.

- 8a. The fuel feed stream combusted into the CFB boiler shall contain no more than 20 percent by weight, on a calendar quarter basis, of tires, tire derived fuel, and other materials which constitute municipal solid waste as defined in 40 CFR 60.51a.
 - b. The Permittee shall keep records on a calendar quarter basis of the weight of tires, tire derived fuel and other material which constitute municipal solid waste combusted in each CFB boiler and the weight of all other materials, by type, burned in each CFB boiler.
 - c. As a consequence of the above conditions, this permit is issued based on the CFB boiler constituting a co-fired boiler pursuant to 40 CFR 60.50b(g) provided the Permittee notifies the USEPA of this status accompanied by a copy of this permit, with a copy of such notification also sent to the Illinois EPA.
- 9a. This permit allows use of tires and tire derived fuel, as defined in Section 54 of the Act, and clean wood, as defined in 40 CFR 60.51b, as supplemental fuels in the CFB boilers.
 - b. Supplemental fuels shall be burned in a blend with commercial fuels (coal refuse, coal, petroleum coke, etc.) so as to not exceed 20 percent by weight in the total fuel supply to the CFB boiler, determined on a daily basis.
 - c. The Permittee shall handle supplemental fuels for the CFB boiler in accordance with a written fuel management plan designed to assure that acceptable fuel is received and fuel is safely stored and handled. This plan shall include the specifications for acceptable fuel, anticipated sources of fuel, procedures for qualifying fuel suppliers, procedures for inspection of fuel shipments, procedures for rejection of unacceptable shipments, and procedures for on-site handling and storage of fuel.
 - d. The Permittee shall burn supplemental fuels in the CFB boiler in accordance with written operating procedures designed to assure a uniform and consistent blend of fuel to the boilers and operation of the boilers in compliance with applicable requirements of this permit. This plan shall include the design and maximum amount of the fuel in the total blend, procedures for blending fuels, changes to normal operating procedures for the boiler, if any, and

acceptable ranges for boiler and air pollution control equipment operating parameters, if different than normal.

- e. The Permittee shall keep appropriate records to demonstrate that it is complying with the above requirements.
- f. i. The Permittee shall promptly submit monthly progress reports to the Illinois EPA while it is initially introducing a supplemental fuel into a CFB boiler. This report shall include the firing rate(s) being evaluated, a description of the events and findings during the month, and a summary of CEM's emission data.
 - ii. At the conclusion of the introduction of a supplemental fuel, the Permittee shall promptly submit a final report to the Illinois EPA stating the maximum rate at which the fuel will be burned and providing a summary of the written fuel management plan and operating procedures prepared for use of the fuel and the range of emission rates expected from operation with such fuel.
- g. Nothing in this condition shall excuse the Permittee from compliance with applicable statutes and rules governing supplemental fuels, including rules governing storage of tires.
- 10a. The Permittee shall not burn wastes that are generated by another person's activities, other than tires and tire derived fuel in the boiler, without first having obtained local approval pursuant to Section 39.2 of the Act, if required, and appropriate permits from the Illinois EPA.
 - b. For purposes of this condition, a clean wood material may be considered a waste if it is a discarded material.

This condition is imposed to address compliance with State requirements under Section 39.2 of the Act.

- 11a. Under this permit, the CFB boiler and associated equipment may be operated for a period that ends 180 days after the CFB boiler first generates electricity to allow for equipment shakedown and emissions testing as required. This period may be extended by Illinois EPA upon request of the Permittee if additional time is needed to complete shakedown or perform emission testing of the CFB boiler.
 - b. Upon successful completion of emission testing of the CFB boiler demonstrating compliance with applicable limitations, the Permittee may continue to operate the facility as allowed by Section 39.5(5) of the Environmental Protection Act.
 - c. This condition supersedes Standard Condition 6.

- 12a i. Within 60 days after operating the CFB boiler at the greatest load at which it will normally be operated, but not later than 180 days after its initial startup, the Permittee shall have emissions tests for the CFB boiler system performed as follows:
- A. Emissions shall be measured by an approved testing service.
 - B. Emissions shall be measured for NO_x, CO, PM, VOM, SO₂ and opacity.
 - C. Emissions testing shall be conducted under conditions that are representative of maximum emissions.
 - D. These tests shall be used as the initial compliance tests to demonstrate compliance with the limits and conditions set in this permit.
- ii. In addition to the initial emission testing required above, the Permittee shall have emission tests performed within 45 days of a written request by the Illinois EPA. The Illinois EPA may request these tests if, based on observations by field personnel, the CFB boiler or air pollution control systems are poorly maintained or operated so as to make compliance with permit limitations uncertain.
- b. Unless otherwise specified or approved by the Illinois EPA, the following USEPA methods and procedures shall be used for testing of emissions:

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
Particulate Matter	USEPA Method 5, or Method 201, or 201A (40 CFR 51, Appendix M), or Method 19 as specified in 40 CFR 60.48a(b)
Nitrogen Oxides	USEPA Method 7, 7E or 19 as specified in 40 CFR 60.48a(d)
Sulfur Dioxides	USEPA Method 6 or 19 as specified in 40 CFR 60.48a(c)
Opacity	USEPA Method 9
Carbon Monoxide	USEPA Method 10
Volatile Organic Material	USEPA Method 18, 25, or 25A

- i. The Permittee may report all PM emissions measured by USEPA Method 5 as PM₁₀, including back half condensable particulate. If the Permittee reports USEPA Method 5 PM emissions as PM₁₀, testing using USEPA method 201 or 201A need not be performed.

- ii. Permittee may exclude methane, ethane and other exempt compounds from the results of any VOM test provided that the test protocol to quantify and correct for any such compounds is included in the test plan approved by the Illinois EPA.
- c. At least 60 days prior to the actual date of 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 CFB boiler system will be tracked and recorded.
 - iii. The specific determinations of emissions that are intended to be made, including sampling and monitoring locations. As part of this plan, the Permittee may set forth a strategy for performing emission testing in the normal load range of the CFB boiler.
 - iv. The test method(s) which 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 it to observe these tests. Notification for the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 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 testing.
- e. Three copies of the Final Reports for these tests shall be submitted to the Illinois EPA 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 a description of sampling points, sampling train, analysis equipment, and test schedule; and
- iv. Detailed description of test conditions, including:
 - A. Fuel consumption (in tons) of the unit being tested;
 - B. Firing rate (million Btu/hr) of the unit being tested;
 - C. Turbine/Generator output rate (MWe); and
 - D. Data and calculations, including copies of all raw data sheets and records of laboratory analysis, sample calculations, and data on equipment calibration.
- 13. The Permittee shall install, operate and maintain systems to measure the consumption of different fuels by the boiler.
- 14a. The Permittee shall install, operate, and maintain a Continuous Emissions Monitoring (CEM) system in accordance with the provisions of the Acid Rain Program (40 CFR Part 75) and the NSPS (40 CFR 60.47a) to measure CO₂ or O₂ and emissions of SO₂, NO_x, and opacity from the CFB boiler system. The procedures under 40 CFR 60.13, 40 CFR 60.47a(c) and the applicable procedures under 40 CFR 75 Subpart B shall be followed for the installation, evaluation and operation of these CEM systems.
 - b. At least 30 days prior to initial startup of the CFB boiler system, the Permittee shall submit to the Illinois EPA for review and comment a detailed monitoring plan. This plan shall describe the configuration and operation of the NO_x, SO₂, and opacity CEM systems.
 - c. These CEM monitoring systems shall be operated and collect data in accordance with the applicable provisions of the Acid Rain Program.
- 15a. The Permittee shall maintain a file of the following items:
 - i. Written procedures used by the Permittee as good combustion practices and good air pollution control practice for the boiler to minimize emission in accordance with Condition 7.
 - ii. The heat and sulfur content of the each of solid fuels fired in the boiler in Btu/lb; and
- b. The Permittee shall keep inspection, maintenance, and repair logs with dates and nature of such activities for the CFB boiler, the SNCR system, the CFB baghouse, each silo baghouse, and the materials handling system.

- c. The Permittee shall maintain the following daily operation records for the CFB boiler:
 - i. The quantity of each fuel consumed by the boiler in tons.
 - ii. The quantity of electricity generated by the plant.

- d. The Permittee shall maintain the following records related to startup, malfunction, breakdown and shutdown of the CFB boiler and SNCR system:
 - i. The time and date of startup, malfunction, breakdown or shutdown and confirmation that standard practices were followed; and
 - ii. For each incident when operation continued during malfunction or breakdown with excess emissions, the following information shall be included:
 - A. Date and duration of malfunction or breakdown;
 - B. A description of the malfunction or breakdown;
 - C. The reason continued operation was necessary, including supporting documentation; and
 - D. The corrective actions used to reduce the quantity of emissions and the duration of the incident.

- e. The Permittee shall keep the following records with regards to emissions:
 - i. O₂ or CO₂ concentration in the exhaust from the CFB boiler system recorded hourly.
 - ii. SO₂ emission rates (lb/million Btu) from the CFB boiler system recorded hourly by combining the SO₂ concentration (ppm) and diluent concentration measurements according to the procedures in 40 CFR 75 Appendix F.
 - iii. NO_x emission rates (lb/million Btu) from the CFB boiler system recorded hourly by combining the NO_x concentration (ppm) and diluent concentration measurements according to the procedures in 40 CFR 75 Appendix F.
 - iv. Opacity readings from the opacity monitoring system.
 - v. Monthly emissions of NO_x, CO, SO₂, VOM and PM from the CFB boiler system (ton/month), compiled at least on a quarterly basis. SO₂ and NO_x emissions may be based on data from the CEM.

All other emissions shall be calculated based on fuel consumption and relevant factors developed from emission test data and fuel composition, with supporting calculations.

- vi. Annual facility emissions of NO_x, CO, SO₂, VOM and PM.
- f. The Permittee shall maintain records that identify:
 - i. Any periods during which a required continuous monitoring system was not operational, with explanation; and
 - ii. Any day in which emissions exceeded an applicable standard or limit.
- g. All records required by this permit shall be retained for a period of at least 5 years. The most recent 3 years of data must be kept on site and made available to the Illinois EPA for inspection and copying upon Illinois EPA request during normal business hours. Records may be maintained in electronic format.
- 16. Pursuant to the NSPS in 40 CFR 60.7, the Permittee shall furnish the Illinois EPA with written notification regarding the CFB boiler system as follows:
 - a. The date construction commenced, postmarked no later than 30 days after such date;
 - b. The actual date of initial startup postmarked within 15 days after such date; and
 - c. The date upon which demonstration of the continuous monitoring system performance commences in accordance with 60.13(c), postmarked not less than 30 days prior to such date.
- 17a. The Permittee shall comply with the applicable NSPS recordkeeping and reporting requirements in 40 CFR 60.7 and 60.49a.
 - b. If there is any other exceedance of the requirements of Conditions 2 through 6 of this permit not addressed by the NSPS quarterly report, the Permittee shall submit a report to the Illinois EPA within 30 days after the exceedance. The report shall include a description of the exceedance, a copy of relevant records, and a description of the exceedance or violation and efforts to reduce emissions and future occurrences.
 - c. The Permittee shall comply with the applicable annual emission reporting requirements in 35 IAC Part 254.
 - d. The Permittee shall comply with applicable reporting requirements under the Acid Rain Program (40 CFR Part 75 Subpart G). In addition

to reporting to USEPA, copies of such reports shall also be provided to the Illinois EPA, upon request.

- 18a. Two copies of any required reports and notifications concerning equipment operation, emission testing, or a monitoring system, except the Annual Emission Report required by 35 Ill. Adm. Code 254, shall be sent to the Illinois EPA at the following address unless otherwise indicated:

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

Telephone: 217/782-5811 Facsimile: 217/782-4710

- b. One copy of required reports and notifications, other than the Annual Emission report shall be sent to the Illinois EPA at the following address:

Illinois Environmental Protection Agency
Division of Air Pollution Control - Regional Office
2009 Mall Street
Collinsville, Illinois 62234

Telephone: 618/346-5120 Facsimile: 618/346-5155

- 19a. The Permittee shall permanently shut down three existing coal fired boilers identified as Marion Units 1, 2 and 3. Shutdown of Units 1, 2, and 3 shall occur within 180 days after the CFB boiler system becomes operational. For the purpose of this permit, the CFB boiler system shall be considered operational when it begins to generate electricity for sale to customers under contract. Prior to the operational date, the unit will go through a sequence of shakedown modes including testing for the proper operation of the boiler. This period may be extended as reasonably necessary by the Illinois EPA at the written request of the Permittee if the orderly shakedown of the new boiler is interrupted and operation of the existing boilers must be resumed for the Permittee to provide electric power.
- b. The Permittee shall notify the Illinois EPA within 30 days of shutdown of each of the existing coal-fired boilers on a permanent basis.
- 20a. The Permittee shall perform the evaluation of CO emissions from the CFB boilers required by Condition 3(b)ii in accordance with a plan submitted to the Illinois EPA for review and comment. The initial plan shall be submitted to the Illinois EPA for review and comment

no later than 60 days after completion of the emission tests required by Condition 12(a) (i).

- b. The plan shall provide for systematic evaluation of changes, within the normal or feasible range of operation, in the following elements as related to the monitored CO emissions:

- Boiler operating load and operating settings
- Flue gas temperature at selected points in the boiler
- Composition of fuel supply
- Bed and combustion settings, including excess oxygen
- Amount and type of limestone added to the bed
- Fabric filter pressure drop, cleaning cycle and operation
- Opacity and particulate matter emissions
- SO₂ emission rate
- NOx emission rate and ammonia slip

- c. The Permittee shall promptly begin this evaluation after the CFB boiler demonstrates compliance with the applicable emission limits as shown by emission testing and monitoring, and after IEPA approves the evaluation plan required by Condition 20 (a). If necessary, the Permittee shall submit an update to the plan that describes its findings with respect to control of CO emissions during the shakedown of the boiler, which highlights possible areas of concern for the evaluation.

- d. i. This evaluation shall be completed and a detailed written report submitted to the Illinois EPA within two years after completion of the emission tests required by Condition 12(a)(i).

ii. This deadline may be extended for an additional year if the Permittee submits an interim report demonstrating the need for additional time to effectively evaluate CO emissions and propose an alternative limit or limits for CO emissions.

- e. i. More stringent emission limits for CO emissions shall be set as a result of this evaluation if the Illinois EPA finds that a CFB boiler can consistently comply with such limits. Additional parameters or factors, e.g., the composition of the fuel supply, may be included in such limits to address particular modes of operation during which such limits may or may not be achievable.

ii. If the Permittee fails to complete the evaluation or submit the required report in a timely manner, the CO emission limit shall automatically revert to the lower limit identified in Condition 3(b)(ii), i.e., 0.10 lb CO/mmBtu.

20. The approval for the above referenced project does not relieve the Permittee of 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.

Please note that additional rules addressing NOx emissions from this boiler are being adopted by the Illinois Pollution control Board in response to USEPA's NOx SIP call" and the development of Illinois' plans for attainment of the ozone air quality standard in the Chicago and Metro-East ozone nonattainment areas.

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

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

DES:SRS:jar 3/1/2001 10:40:16 PM//cfbslcomments5.doc

Attachment A

Table 1
Emission Units

Unit I.D.	Description	Number	Control
CFB Boiler	Circulating Fluidized Bed Solid-fuel Fired Boiler Rated heat input- 1402 million Btu HHV/hr	1	Selective Non-Catalytic Reduction System, Limestone Injection and Baghouse
S1, S2, S3, S4	Fuel Storage Silo	4	Baghouse
S5	Limestone Storage Silo	1	Baghouse
S6	CFB Bottom Ash Storage Silo	1	Baghouse
S7	CFB Fly Ash Storage Silo	1	Baghouse
MH1	Coal Refuse/Coal Material Handling	1	Material Characteristic--
MH2	Petroleum Coke Material Handling	1	Material Characteristic -
MH3	Tire Fuel Material Handling	1	Material Characteristic -
MH4	Wood Chips Material Handling	1	Material Charac
MH5	Limestone Material Handling	1	Material Characteristic -

* Nominal capacity rating

Table 2
CFB Boiler Emission Limitations

Pollutant	Emission Rate	Emissions (Lb/Hr)	Emissions (tpy)
NO _x	1.6 lb/MW-hr	192	841
CO	0.150 lb/MMBtu	210	921
VOM	0.01 lb/MMBtu	10.1	44.2
SO ₂	0.6 lb/MMBtu	841	3,690
TSP/PM ₁₀	0.011 lb/MMBtu*	15.4*	67.5*

Notes: The hourly emission limits and lb/mmBtu emission limits shall not apply during start-up, shutdown, or malfunction. Compliance shall be based on 3 - hour block average.

Tons per year (tpy) limits are based on continuous operation at the hourly emission limit and 100% annual capacity factor.

NO_x and SO₂ emission limits are based on the applicable limit in the NSPS 40 CFR Part 60 Subpart Da. CO emission limit is based on BACT evaluation.

The hourly emission limits reflect compliance with the following emission rates: NO_x - 1.6 lb/MW-hr; CO - 0.150 lb/MMBtu; VOM - 0.01 lb/MMBtu; SO₂ - 0.6 lb/MMBtu; and TSP/PM - 0.011 lb/MMBtu (front-half particulates only).

*TSP and PM₁₀ emission limits only include front-half (filterable) particulates.

Attachment B

Table 1

Annual Net Emissions Change for Marion Generating Station

Pollutant	New Unit Emissions - CFB Boiler and Turbine (Tons/Year)	Emission Decreases - Shutdown of Three Boilers (Tons/Year)	Net Change (Tons/Year)	Major Modification Threshold (Tons/Year)
NO _x	833.7	2,329	- 1,495.3	40
SO ₂	3,142.8	12,227	- 9,084.2	40
CO	888.9	55.4	833.5	100
VOM	41.5	9.5	32.1	40
TSP	78.1	83.0	- 5.0	25
PM ₁₀ *	70.3	56.4	13.9	15
Lead	0.09	0.09	0	0.60
H ₂ SO ₄	49.1	278.2	- 229.0	7

*Net change evaluated in terms of filterable PM10 (front half of Method 5 Sampling Train).

Notes:

The New Unit Emissions represent the operation of the new CFB boiler, including the associated material handling operations, at a projected maximum annual capacity factor of 85%, and the operation of two new turbines at a projected maximum annual capacity factor of 22%. Construction of the CFB boiler system is addressed in this permit, while construction of the turbines is addressed in a separate permit.

The Emission Decrease represents the actual reduction in emissions from retirement of three existing boilers (Units 1 through 3), as addressed by this permit. It does not include the decrease in emissions from installation of selective catalytic reduction (SCR) on a fourth existing boiler (Unit 4), as addressed by a separate permit. The anticipated reduction in actual NO_x emission from the SCR system on Unit 4 is estimated at 2361 tons/year.

The Net Change in emissions is the sum of the New Unit Emissions and the Emission Decreases. As shown, there will not be a net increase above the Major Modification Threshold for any pollutant except carbon monoxide.

SRS:jar