

Iowa Department of Natural Resources Air Quality Construction Permit

Permit Holder

Firm: Interstate Power and Light Company –Sutherland Generating Station

Contact:

Alan Arnold
Senior Environmental Specialist

(319) 786-4476

PO Box 351
Cedar Rapids, IA 52406

Responsible Party:

Dale Withers
Vice President Construction

PO Box 351
Cedar Rapids, IA 52406

Permitted Equipment

Emission Unit(s): Boiler 4 [EU 248; 6,326 MMBTU/hr; 733.5 MW (gross)]

Control Equipment: Low NO_x Burners (LNB), Overfire Air (OFA), and Selective Catalytic Reduction (SCR, CE 248A), Dry Electrostatic Precipitator (DESP, CE 248B), Halogenated Powder Activated Carbon (PAC) Injection (CE 248C), Baghouse (CE 248D), Wet Flue Gas Desulfurization (WFGD, CE 248E), and Sorbent Injection (SI, CE 248F)

Emission Point: 248

Equipment Location: 3001 East Main Street
Marshalltown, IA 50158

Plant Number: 64-01-012

Permit No.	Proj. No.	Description	Date	Testing
08-A-542-P	07-602	Original PSD permit.		Yes

Under the Direction of the Director of
the Department of Natural Resources

PERMIT CONDITIONS

The permit holder, owner and operator of the facility shall assure that the installation, operation, and maintenance of this equipment is in compliance with all of the conditions of this permit and all other applicable requirements. This permit and its provisions are subject to the appeal rights set forth in Iowa Administrative Code (IAC), rule 561—7.5.

1. Departmental Review

This permit is issued based on information submitted by the applicant. Any misinformation, false statements or misrepresentations by the applicant shall cause this permit to be void. In addition, the applicant may be subject to criminal penalties according to Iowa Code Section 455B.146A.

This permit is issued under the authority of 567 Iowa Administrative Code (IAC) 22.3. The proposed equipment has been evaluated for conformance with Iowa Code Chapter 455B; 567 IAC Chapters 20 – 34; and 40 CFR Parts 51, 52, 60, 61, and 63 and has the potential to comply.

No review has been undertaken on the engineering aspects of the equipment or control equipment other than the potential of that equipment for reducing air contaminant emissions. The DNR assumes no liability, directly or indirectly, for any loss due to damage to persons or property caused by, resulting from, or arising out of the design, installation, maintenance or operation of the proposed equipment.

2. Transferability

As limited by 567 IAC 22.3(3)"F", this permit is not transferable from one location to another or from one piece of equipment to another, unless the equipment is portable. When portable equipment for which a permit has been issued is to be transferred from one location to another, the DNR shall be notified in writing at least thirty (30) days prior to transferring to the new location (See Permit Condition 8.A.6). The owner will be notified at least ten (10) days prior to the scheduled relocation if the relocation will cause a violation of the National Ambient Air Quality Standards (NAAQS). In such case, a supplements permit shall be required prior to the initiation of construction of additional control equipment or equipments modifications needed to meet the standards.

The permit is for the construction and operation of specific emission unit(s), control equipment, and emission point as described in this permit and in the application for this permit. Any owner or operator of the specified emission unit(s), control equipment, or emission point, including any person who becomes an owner or operator subsequent to the date on which this permit is issued, is responsible for compliance with the provisions of this permit. No person shall construct, install, reconstruct or alter this emissions unit, control equipment or emission point without the required revisions to this permit.

3. Construction

It is the owner's responsibility to ensure that construction conforms to the final plans and specifications as submitted, and that adequate operation and maintenance is provided to ensure that no condition of air pollution is created.

This permit shall become void if any one of the following conditions occur:

- (1) the construction or modification of the proposed project, as it affects the emission point(s) permitted herein, is not initiated within eighteen (18) months after the permit issuance date; or
- (2) the construction or modification of the proposed project, as it affects the emission point(s) permitted herein, is not completed within fifty-four (54) months after the permit issuance date; or
- (3) the construction or modification of the proposed project, as it affects the emission point(s) permitted herein, is not completed within a time period specified elsewhere in this permit.

3. Construction (Continued)

3.a. Original Permits

The owner or operator shall obtain a new permit if any changes are made to the final plans and specifications submitted for the proposed project.

3.b. Modified or Supplemental Permits

This permit supersedes any and all previous permits issued for the emission point(s) or emission unit(s) permitted herein.

However, the permittee may continue to act under the provisions of the previous permit for the emission point(s) or emission unit(s) until one of the following conditions occurs:

- (1) The proposed project authorized by this permit is completed as it affects the emission point(s) permitted herein; or
- (2) The permit becomes void.

The owner or operator shall obtain a new permit if:

- (1) Any changes are made to the final plans and specifications submitted for the proposed project; or
- (2) This permit becomes void.

4. Credible Evidence

As stated in 567 IAC 21.5 and also in 40 CFR Part 60.11(g), where applicable, any credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of any provisions specified in this permit or any provisions of 567 IAC Chapters 20 through 34.

5. Owner Responsibility

Issuance of this permit shall not relieve the owner or operator of the responsibility to comply fully with applicable provisions of the State Implementation Plan (SIP), and any other requirements of local, state, and federal law.

The owner or operator of any emission unit or control equipment shall maintain and operate the equipment and control equipment at all times in a manner consistent with good practice for minimizing emissions, as required by paragraph 567 IAC 24.2(1) "*Maintenance and Repair*".

6. Excess Emissions

Excess emissions during a period of startup, shutdown, or cleaning of control equipment are not a violation of the emission standard if it is accomplished expeditiously and in a manner consistent with good practice for minimizing emissions except when another regulation applicable to the unit or process provides otherwise. Cleaning of control equipment, which does not require the shutdown of process equipment, shall be limited to one six-minute period per one-hour period. An incident of excess emissions other than the above is a violation and may be subject to criminal penalties according to Iowa Code 455B.146A. If excess emissions are occurring, either the control equipment causing the excess shall be repaired in an expeditious manner, or the process generating the emissions shall be shutdown within a reasonable period of time, as specified in 567 IAC 24.1.

An incident of excess emissions shall be orally reported to the appropriate DNR field office within eight (8) hours of, or at the start of, the first working day following the onset of the incident (See section 8.B.1). A written report of an incident of excess emissions shall be submitted as a follow-up to all required oral reports within seven (7) days of the onset of the upset condition.

7. Disposal of Contaminants

The disposal of materials collected by the control equipment shall meet all applicable rules.

8. Notification, Reporting, and Recordkeeping

- A. The owner shall furnish the DNR the following written notifications:
1. The date construction, installation, or alteration is initiated postmarked within thirty (30) days following initiation of construction, installation, or alteration;
 2. The actual date of startup, postmarked within fifteen (15) days following the start of operation;
 3. The date of each compliance test required by Permit Condition 12, at least thirty (30) days before the anticipated compliance test date;
 4. The date of each pretest meeting, at least fifteen (15) days before the proposed meeting date. The owner shall request a proposed test plan protocol questionnaire at least sixty (60) days prior to each compliance test date. The completed questionnaire shall be received by the DNR at least fifteen (15) days before the pretest meeting date;
 5. Transfer of equipment ownership, within 30 days of the occurrence;
 6. Portable equipment relocation, at least thirty (30) days before equipment relocation.
- B. The owner shall furnish the DNR with the following reports:
1. Oral excess emissions reports, in accordance with 567 IAC 24.1;
 2. A written compliance demonstration report for each compliance testing event, whether successful or not, postmarked not later than six (6) weeks after the completion of the test period unless other regulations provide for other notification requirements. In that case, the more stringent reporting requirement shall be met;
 3. Operation of this emission unit(s) or control equipment outside of those limits specified in Permit Conditions 10 and 14 and according to the schedule set forth in 567 IAC 24.1.
- C. The owner shall send correspondence regarding this permit to the following address:
- Construction Permit Supervisor
Air Quality Bureau
Iowa Department of Natural Resources
7900 Hickman Road, Suite 1
Urbandale, IA 50322
Telephone: (515) 281-8189
Fax: (515) 242-5094
- D. The owner shall send correspondence concerning stack testing to:
- Stack Testing Coordinator
Air Quality Bureau
Iowa Department of Natural Resources
7900 Hickman Road, Suite 1
Urbandale, Iowa 50322
Telephone: (515) 242-6001
FAX: (515) 242-5127
- E. The owner shall send reports and notifications to:

Compliance Unit Supervisor Air Quality Bureau Iowa Department of Natural Resources 7900 Hickman Road, Suite 1 Urbandale, IA 50322 Telephone: (515) 281-8448 Fax: (515) 242-5127	Field Office 5 401 SW 7 th Suite 1 Des Moines, IA 50309 Telephone: (515) 725-0268 Fax: (515) 725-0218
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8. Notification, Reporting, and Recordkeeping (Continued)

- F. All data, records, reports, documentation, construction plans, and calculations required under this permit shall be available at the plant during normal business hours for inspection and copying by federal, state, or local air pollution regulatory agencies and their authorized representatives, for a minimum of two (2) years from the date of recording.

9. Permit Violations

Knowingly committing a violation of this permit may carry a criminal penalty of up to \$10,000 per day fine and 2 years in jail according to Iowa Code Section 455B.146A.

10a. Best Available Control Technology (BACT) Emission Limits

Pollutant	Tons/Yr ^{1,2}	Additional Limits
State Particulate Matter (PM)	465.5	0.145 lb/MWh (gross) ^{3,4}
PM ₁₀	465.5	0.145 lb/MWh (gross) ^{3,4}
Opacity ⁵	NA	5% ⁶
Sulfur Dioxide (SO ₂) ⁵	858.9	0.267 lb/MWh (gross) ^{4,7}
Nitrogen Oxides (NO _x) ⁵	969.8	0.302 lb/MWh (gross) ^{4,7}
Volatile Organic Compounds	94.2	0.029 lb/MWh (gross) ^{3,4}
Carbon Monoxide (CO) ⁵	2770.8	0.862 lb/MWh (gross) ^{4,8}
Flourides (F)	2.52	0.00078 lb/MWh (gross) ^{3,4}
Total Reduced Sulfur (TRS)	19.7	0.0061 lb/MWh (gross) ^{3,4}
Sulfuric Acid Mist (H ₂ SO ₄)	58.2	0.0181 lb/MWh (gross) ^{3,4}

¹ Standard is a 12-month rolling total.

² Standard includes all periods of operation.

³ Standard is the average of three (3) test runs.

⁴ The BACT limits listed in the table are the enforceable limits. They were established by converting the following heat input rates to output based emission limits:

PM – 0.0168 lb/MMBTU
 PM₁₀ – 0.0158 lb/MMBTU
 SO₂ – 0.031 lb/MMBTU
 NO_x – 0.035 lb/MMBTU
 VOC – 0.0034 lb/MMBTU

CO – 0.10 lb/MMBTU
 F – 0.000091 lb/MMBTU
 TRS – 0.00071 lb/MMBTU
 H₂SO₄ – 0.0021 lb/MMBTU

The formula used to convert to the above heat input rates to the output based emission limits is:

$$\frac{\text{Heat Input Rate (lb/MMBTU)} \times 6326 \frac{\text{MMBTU}}{\text{hr}}}{733.5 \text{ MW (gross)}}$$

⁵ Compliance with the emission standards shall be demonstrated through the use of Continuous Emission Monitoring Systems (CEMS). See Condition 12 and Condition 16 for more information on compliance with the use of CEMS.

⁶ Standard is a six (6) minute average.

⁷ Standard is a 30-day rolling average not including periods of startup, shutdown, and malfunction. Please see Condition 14.J. for BACT requirements for startup, shutdown, and malfunction.

⁸ Standard is a 24-hour rolling average not including periods of startup, shutdown, and malfunction. Please see Condition 14.J. for BACT requirements for startup, shutdown, and malfunction.

10b. 112(g) [Case-by-Case Maximum Achievable Control Technology (MACT)] Emission Limits

Pollutant	Tons/yr ^{1,2}	Additional Limits ³
Mercury ⁴	0.028	0.0000086 lb/ MWh (gross) ^{5,6,7} 95% reduction ^{7,8}
Hydrogen Chloride (HCl)	1.30	0.00040 lb/MWh (gross) ^{6,9} 99% reduction ^{8,9}
Hydrogen Fluoride (HF)	2.52	0.00078 lb/MWh (gross) ^{6,10} 99% reduction ^{8,10}
Total Selected Metals (TSM) ¹¹	4.24	0.0013 lb/MWh (gross) ⁶
Federal PM ^{4,12}	216.1	0.076 lb/MWh (gross) ⁶
Acetaldehyde ¹³	0.95	0.00030 lb/MWh (gross) ⁶
Benzene ¹³	2.17	0.00068 lb/MWh (gross) ⁶
Isophorone ¹³	0.97	0.00030 lb/MWh (gross) ⁶
Toluene ¹³	0.40	0.00013 lb/MWh (gross) ⁶
CO ^{4,13}	2770.8	0.862 lb/MWh (gross) ^{6,14}

¹ Standard is a 12-month rolling total.

² Standard includes all periods of operation.

³ Standard is the average of three (3) test runs unless otherwise indicated.

⁴ Compliance with the emission standards shall be demonstrated through the use of Continuous Emission Monitoring Systems (CEMS). See Condition 12 and Condition 16 for more information on compliance with the use of CEMS.

⁵ Standard is a 30-day rolling average not including periods of startup, shutdown, and malfunction.

⁶ The BACT limits listed in the table are the enforceable limits. They were established by converting the following heat input rates to output based emission limits:

Hg – 0.000001 lb/MMBTU	Acetaldehyde – 0.000034 lb/MMBTU
HCl – 0.000047 lb/MMBTU	Benzene – 0.000078 lb/MMBTU
HF – 0.00091 lb/MMBTU	Isophorone – 0.000035 lb/MMBTU
TSM – 0.000153 lb/MMBTU	Toluene – 0.0000145 lb/MMBTU
Federal PM – 0.0088 lb/MMBTU	CO – 0.10 lb/MMBTU

The formula used to convert to the above heat input rates to the output based emission limits is:

$$\frac{\text{Heat Input Rate (lb/MMBTU)} \times 6326 \text{ MMBTU/hr}}{793.5 \text{ MW (gross)}}$$

⁷ The emission limit of 0.0000086 lb/ MWh (gross) applies when the mercury concentration of the coal as fired is less than or equal to 0.09 ppm. When the mercury concentration of the coal as fired is greater than 0.09 ppm then the owner or operator shall meet 95% reduction based on the concentration in the coal as fired and the outlet emissions measured at the stack. Please see Condition 14.K. for the coal sampling procedures.

⁸ The following formula shall be used to calculate the percent reduction:

$$\% \text{ reduction} = \left[1 - \left(\frac{\text{outlet emissions}}{\text{boiler inlet}} \right) \right] \times 100\%$$

⁹ The emission limit of 0.00040 lb/ MWh (gross) applies when the chlorine concentration of the coal as fired is less than or equal to 136 ppm. When the chlorine concentration of the coal as fired is greater than 136 ppm then the owner or operator shall meet 99% reduction based on the concentration in the coal as fired and the outlet emissions measured at the stack. Please see Condition 14.K. for the coal sampling procedures.

¹⁰ The emission limit of 0.00078 lb/ MWh (gross) applies when the fluorine concentration of the coal as fired is less than or equal to 45 ppm. When the fluorine concentration of the coal as fired is greater than 45 ppm then the owner or operator shall meet 99% reduction based on the concentration in the coal as fired and the outlet emissions measured at the stack. Please see Condition 14.K. for the coal sampling procedures.

¹¹ Total Selected Metals (TSM) means the combination of the following metallic HAP: arsenic, beryllium, cadmium, chromium, lead, manganese, nickel, and selenium.

¹² The federal particulate matter standard listed is a surrogate to show continual compliance with the total selected metals standard.

¹³ The 112(g) emission limits are established on a temporary basis until actual test data has been gathered to establish a new emission limit. See permit Conditions 12 and 14.L. on testing requirements and the procedure for establishing the future limits.

¹⁴ Standard is a 24-hour rolling average not including periods of startup, shutdown, and malfunction.

10c. Other Emission Limits

Pollutant	lb/hr ¹	tons/yr ²	Additional Limits	Reference (567 IAC)
Particulate Matter (PM)	NA	NA	See Footnote 3	23.1(2)"z" ⁴
PM ₁₀	101.3 ^{5,6}	NA	NA	PSD significance
Opacity	NA	NA	20% ⁷	23.1(2)"z" ⁴
Sulfur Dioxide (SO ₂)	380.0 ⁵	NA	See Footnote 8	PSD significance & 23.1(2)"z" ⁴
Nitrogen Oxides (NO _x)	316.7 ⁵	NA	130 ng/J (gross energy output) ⁹	PSD significance & 23.1(2)"z" ⁴
Carbon Monoxide (CO)	760.0 ⁵	NA	NA	PSD significance
Lead (Pb)	0.11 ¹⁰	0.50 ¹⁰	NA	PSD increase threshold
Fluorine (F)	1.27 ¹¹	NA	NA	Ambient impacts
Total Reduced Sulfur (TRS)	6.33 ¹¹	NA	NA	Ambient impacts

¹ Standard is expressed as the average of three (3) runs.

² Standard is a 12-month rolling total and includes all periods of operation.

³ Per 40 CFR §60.42Da(c), PM emissions shall not exceed either:

- (a) 18 ng/J (0.14 lb/MWh) gross energy output; or
- (b) 6.4 ng/J (0.015 lb/MMBtu) heat input derived from the combustion of solid, liquid, or gaseous fuel.

Per 40 CFR §60.42Da(d), as an alternative to the standards of 40 CFR §60.42Da(c) the owner or operator may elect to limit PM emissions to:

- (a) 13 ng/J (0.03 lb/MMBtu) heat input derived from the combustion of solid, liquid, or gaseous fuel, and
- (b) 0.1 percent of the combustion concentration determined (99% reduction) according to the procedure in 40 CFR §60.48Da(o)(5).

⁴ Iowa reference to New Source Performance Standards (NSPS) Subpart Da (Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978; 40 CFR §60.40Da – 40 CFR §60.52Da).

⁵ Emission rate used in dispersion modeling to demonstrate Project Number 07-602 predicted ambient air concentrations below the applicable Prevention of Significant Deterioration (PSD) significant impact levels. Therefore, a full impact modeling analysis is not required.

⁶ Sulfuric acid mist (SAM, H₂SO₄) was accounted for in the modeled PM₁₀ emission rate.

⁷ Standard is a six (6) minute average.

⁸ Per 40 CFR §60.43Da(i), SO₂ emissions shall not exceed either:

- (a) 180 ng/J (1.4 lb/MWh) gross energy output on a 30-day rolling average basis; or
- (b) 5 percent of the potential combustion concentration (95 percent reduction) on a 30-day rolling average basis.

⁹ See 40 CFR §60.44Da(e). 130 ng/J = 1.0 lb/MWh (gross). NO_x is expressed as NO₂. Compliance with the standard is based on a thirty (30) day rolling average basis.

¹⁰ Emission limit established in order to limit emissions for Project 07-602 below the PSD significant increase threshold of 0.6 tons/yr.

¹¹ Emission rate used in the computer aided dispersion modeling to show the ambient air impact concentrations.

11. Emission Point Characteristics

This emission point shall conform to the specifications listed below:

Parameter	Value
Stack Height, (ft, from the ground)	601
Discharge Style	Unobstructed vertical
Stack Opening, (inches, dia.)	318
Exhaust Temperature (°F)	125 – 130
Exhaust Flowrate (scfm)	1,025,900 – 1,985,600

The temperature and flow rate are intended to be representative and characteristic of the design of the permitted emission point. The Department recognizes that the temperature and flow rate may vary with changes in the process and ambient conditions. If it is determined that any of the emission point design characteristics are different than the values stated above, the owner/operator must notify the Department and obtain a permit amendment, if required.

12. Compliance Demonstration(s) and Performance Testing

Pollutant	Initial	Subsequent	Methodology	Frequency
PM (federal)	Yes ¹	Yes ²	Stack test & CEMS ²	One time & Continuous ²
PM (state)	Yes	No	Stack test	One-time
PM ₁₀	Yes	No	Stack test	One-time
Opacity	Yes ^{1,3}	Yes	COMS ⁴	Continuous
SO ₂	Yes ^{1,3}	Yes	CEMS	Continuous
NO _x	Yes ^{1,3}	Yes	CEMS	Continuous
VOC	Yes	No	Stack test	One-time
CO ⁵	Yes ^{1,3}	Yes	CEMS	Continuous
Pb	Yes	No	Stack test	One-time
F	Yes	No	Stack test	One-time
TRS	Yes	No	Stack test	One-time
H ₂ SO ₄	Yes	No	Stack test	One-time
Hg	Yes ^{1,3}	Yes	CEMS	Continuous
HCl	Yes	No	Stack test	One-time
TSM	Yes	No	Stack test	One-time
Acetaldehyde ⁶	Yes	Yes	Stack test	Quarterly
Benzene ⁶	Yes	Yes	Stack test	Quarterly
Isophorone ⁶	Yes	Yes	Stack test	Quarterly
Toluene ⁶	Yes	Yes	Stack test	Quarterly

¹ See NSPS Subpart Da (40 CFR §60.40Da – 40 CFR §60.52Da) for initial performance testing requirements.

² The initial one time stack test is required for compliance with NSPS Subpart Da (40 CFR §60.40Da – 40 CFR §60.52Da). The subsequent testing through the use of the Continuous Emission Monitoring System (CEMS) is required for continual compliance of the 112(g) emission limit in Condition 10b. Please see Condition 16 of the permit for more details on the CEM requirements.

³ Compliance shall be measured continuously through the use of Continuous Emission Monitoring Systems (CEMS).

⁴ Per 40 CFR §60.48Da(p), the owner or operator can meet the compliance provisions by installing, certifying, and operating a CEMS measuring PM emissions discharged to the atmosphere and record the output of the system as specified in 40 CFR §60.48Da(p)(1) – 40 CFR §60.48Da(p)(8). The owner or operator is allowed to install a PM CEMS in lieu of a COMS for the NSPS, but the owner or operator is still required to install the COMS for measuring opacity to determine compliance with the BACT limit listed in Condition 10a.

⁵ If demonstrated, the CO CEMS data may also be used as a surrogate to demonstrate continual compliance with the organic HAP (acetaldehyde, benzene, Isophorone, and toluene) emission standards listed in Condition 10b. See Condition 14.L. for the requirements concerning CO and organic HAP emissions.

⁶ Testing shall be conducted once per quarter for the first year of operation of the emission unit. The tests shall be conducted with a minimum of forty-five (45) days between tests. The CO CEMS is required to be certified prior to the first test and each subsequent test.

12. Compliance Demonstration(s) and Performance Testing (Continued)

If an initial compliance demonstration specified above is testing, the owner shall verify compliance with the emission limitations contained in Permit Condition 10 within sixty (60) days after achieving maximum production rate and no later than one hundred eighty (180) days after the initial startup date of the proposed equipment. For this emission unit, initial startup is defined as the first steam to the turbine.

If subsequent testing is specified above, the owner shall verify compliance with the emission limitations contained in Permit Condition 10 according to the frequency noted above.

If testing is required, the owner shall use the test method and run time listed in the table below unless another testing methodology is approved by the Department prior to testing.

Pollutant	Test Run Time	Test Method
PM (federal)	2 hours	40 CFR 60, Appendix A, Method 5
PM (state)	3 hours	Iowa Compliance Sampling Manual Method 5
PM ₁₀	5 hours	40 CFR 51, Appendix M, 201A with 202
Opacity	1 hour	CEM
SO ₂	1 hour	40 CFR 60, Appendix A, Method 6C
NO _x	1 hour	40 CFR 60, Appendix A, Method 7E
VOC	1 hour	40 CFR 60, Appendix A, Method 25A
CO	1 hour	40 CFR 60, Appendix A, Method 10
Pb	1 hour	40 CFR 60, Appendix A, Method 12
F	1 hour	40 CFR 60, Appendix A, Method 13B or Method 26A
TRS	1 hour	40 CFR 60, Appendix A, Method 16B
H ₂ SO ₄	1 hour	40 CFR 60, Appendix A, Method 8
Hg	1 hour	40 CFR 60, Appendix A, Method 30A
HCl	1 hour	40 CFR 60, Appendix A, Method 26
TSM	1 hour	40 CFR 60, Appendix A, Method 29
Acetaldehyde	1 hour	40 CFR 60, Appendix A, Method 18
Benzene	1 hour	40 CFR 60, Appendix A, Method 18
Isophorone	1 hour	40 CFR 60, Appendix A, Method 18
Toluene	1 hour	40 CFR 60, Appendix A, Method 18

The unit(s) being sampled should be operated in a normal manner at its maximum continuous output as rated by the equipment manufacturer, or the rate specified by the owner as the maximum production rate at which this unit(s) will be operated. In cases where compliance is to be demonstrated at less than the maximum continuous output as rated by the manufacturer, and it is the owner's intent to limit the capacity to that rating, the owner may submit evidence to the Department that this unit(s) has been physically altered so that capacity cannot be exceeded, or the Department may require additional testing, continuous monitoring, reports of operating levels, or any other information deemed necessary by the Department to determine whether this unit(s) is in compliance.

Each emissions compliance test must be approved by the Department. Unless otherwise specified by the Department, each test shall consist of three (3) separate runs. The arithmetic mean of three (3) acceptable test runs shall apply for compliance, unless otherwise indicated by the Department.

A pretest meeting shall be held at a mutually agreeable site no less than fifteen (15) days prior to the date of each test. Representatives from the Department shall attend this meeting, along with the owner and the testing firm, if any. It shall be the responsibility of the owner to coordinate and schedule the pretest meeting. The owner shall be responsible for the installation and maintenance of test ports. The Department shall reserve the right to impose additional, different, or more detailed testing requirements.

13. NSPS, NESHAP, and Acid Rain Applicability

This emission unit is subject to Subparts A (General Provisions, 40 CFR §60.1 – 40 CFR §60.19) and Da (Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978, 40 CFR §60.40Da – 40 CFR §60.52Da) of the New Source Performance Standards (NSPS).

This emission unit is subject to Subparts A (General Provisions, 40 CFR §63.1 – 40 CFR §63.15) and B [Requirements for Control Technology Determinations for Major Sources in Accordance With Clean Air Act Sections, Sections 112(g) and 112(j), 40 CFR §63.40 – 40 CFR §63.56] of the National Emission Standard for Hazardous Air Pollutants (NESHAP). Consistent with the requirements of 40 CFR §63.44, if the EPA Administrator promulgates an applicable emission standard under Section 112(d) or Section 112(h) of the Act, or if the permitting authority issues a determination under Section 112(j) of the Act, this permit will be modified as necessary to make the terms of this permit consistent with the applicable standard.

The facility (plant number 64-01-012) is considered an affected source under 40 CFR 72, 73, 75, 76, 77, and 78 definitions as emission units at this source are subject to the acid rain emission reduction requirements or the acid rain emission limitations, as adopted by the Department by reference (See 567 IAC 22.120 – 567 IAC 22.148). Boiler 4 will be subject to the SO₂ allowance allocation, NO_x emission limitations, and monitoring provisions of the federal acid rain program.

14. Operating Limits

Operating limits for this emission unit shall be:

- A. This emission unit is limited to firing on bituminous coal, sub bituminous coal, natural gas, and biomass.
- B. This emission unit shall not fire more than 10% (by heat input) bituminous coal [averaged over three (3) hours].
- C. The sulfur content of the fuel combusted shall not exceed 1.35% S (by wt) [averaged over three (3) hours].
- D. Per 40 CFR §60.48Da(d), during emergency conditions in the principal company, an affected facility with a malfunctioning flue gas desulfurization system may be operated if sulfur dioxide emissions are minimized by:
 - (1) Operating all operable flue gas desulfurization system modules, and bringing back into operation any malfunctioned module as soon as repairs are completed,
 - (2) Bypassing flue gases around only those flue gas desulfurization system modules that have been taken out of operation because they were incapable of any SO₂ emission reduction or which would have suffered significant physical damage if they had remained in operation, and
 - (3) Designing, constructing, and operating a spare flue gas desulfurization system module for an affected facility larger than 365 MW (1,250 MMBTU/hr) heat input (approximately 125 MW electrical output capacity). The Administrator may at his discretion require the owner or operator within sixty (60) days of notification to demonstrate spare module capability. To demonstrate this capability, the owner or operator must demonstrate compliance with the appropriate requirements under paragraph (a), (b), (d), (e), and (h) under 60 CFR §60.43Da for any period of operation lasting from twenty-four (24) hours to thirty (30) days when:
 - (i) Any one flue gas desulfurization module is not operated,
 - (ii) The affected facility is operating at the maximum heat input rate,
 - (iii) The fuel fired during the twenty-four (24) hours to thirty (30) day period is representative of the type and average sulfur content of fuel used over a typical thirty (30) day period, and
 - (iv) The owner or operator has given the Administrator at least thirty (30) days notice of the date and period of time over which the demonstration will be performed.
- E. The owner or operator shall submit the written reports required under NSPS Subparts A and Da to the Administrator semiannually for each six (6) month period. All semiannual reports shall be postmarked by the thirtieth day following the end of each six (6) month period.

14. Operating Limits (Continued)

- F. The minimum limestone slurry feed rate (3-hr rolling average) of the Wet Flue Gas Desulfurization (WFGD) system shall be based on the following formula:

$$y = 0.0019x + 0.0136$$

where: y = limestone feed rate (gal/min)
x = heat input to the boiler (MMBTU/hr)

- G. The minimum recycled limestone slurry feed rate (3-hr rolling average) of the WFGD shall be 40,000 gal/min.
- H. The minimum ammonia (19% aqueous solution) feed rate (3-hr rolling average) of the Selective Catalytic Reduction (SCR) system shall be based on the following formula:

$$y = 0.3878x + 0.0644$$

where: y = ammonia feed rate (lb/hr)
x = heat input to the boiler (MMBTU/hr)

- I. The minimum halogenated activated carbon feed rate (3-hr rolling average) shall be based on the following formula:

$$y = 0.0609x + 36.774$$

where: y = halogenated activated carbon feed rate (lb/hr)
x = heat input to the boiler (MMBTU/hr)

- J. After one (1) year of operation the owner or operator may request to amend the minimum feed rate equations listed in Conditions 14.F, 14.H, and 14.I based on actual operational data. If the owner or operator chooses to make such a request, the owner or operator shall submit a permit amendment request along with the operational data from the previous year and an analysis of the operational data.
- K. The following requirements are BACT work practices for startup, shutdown, and malfunction operations:

- *Startup:*

Startup of the emission unit from cold conditions begins with the first introduction of natural gas fuel and continues until the boiler reaches its minimum safe stable load while firing coal, taking approximately twenty (20) hours. Startup BACT work practice standards contained herein are applicable to this emission unit until the completion of the following sequence, or twenty (20) hours, whichever occurs first:

- (a) The emission unit shall be initially fired on natural gas.
- (b) When the emission unit reaches approximately 10% load, or the minimum capacity of one coal mill, coal will be introduced in combination with natural gas for stabilization until the boiler load reaches approximately 25%.
- (c) Once the emission unit reaches approximately 25% load, a second coal mill will be introduced in combination with continued natural gas for stabilization until the boiler load reaches approximately 35%.
- (d) Once the emission unit reaches approximately 35% load, natural gas fuel will be reduced until stable operation on two coal mills is established, at which time the natural gas fuel will be discontinued and the boiler load will be increased while firing coal, with addition of coal mills as necessary, until the completion of startup.
- (e) The startup period ends when the boiler reaches its "minimum safe stable load". "Minimum safe stable load" shall be defined as that operating condition when two coal mills are in service, stabilizing natural gas fuel has been discontinued, and the emission control devices have reached their effective operating conditions as defined in the work practice standards below.

14. Operating Limits (Continued)

During startup, the following work practice standards shall be followed for the air pollution control equipment:

- The baghouse shall be used at all times.
- The WFGD system shall be used at all times when firing coal.
- The SCR system shall begin operation and ammonia shall be injected when the SCR system reaches an operating temperature of 600 °F.
- The halogenated PAC injection system shall be used at all times when firing coal.
- The SO₃ sorbent injection system shall be used at all times when firing coal.
- Good Combustion Practices shall be used at all times during startup.

- *Shutdown:*

Shutdown of the emission unit from full load requires approximately 4 hours to complete. Shutdown BACT work practice standards contained herein are applicable to this emission unit until the completion of shutdown. The shutdown period begins when the boiler reaches its minimum safe stable load and stabilizing natural gas is introduced as previously defined under startup.

During shutdown, the following work practice standards shall be followed for the air pollution control equipment:

- The baghouse shall be used at all times.
- The WFGD system shall be used at all times when firing coal.
- The SO₃ sorbent injection system shall be used at all times when firing coal.
- The SCR system operation and ammonia injection shall not be discontinued until the SCR system reaches an operating temperature of less than 600 °F.
- The halogenated PAC injection system shall be used at all times when firing coal.
- Good Combustion Practices shall be used at all times during shutdown.

- *Malfunction:*

During malfunction, the work practice standards shall be followed for the emission unit and its air pollution control equipment as stated in 567 IAC 24.1(4).

14. Operating Limits (Continued)

- L. After the initial compliance test, the owner or operator shall conduct representative coal sampling of the fuel being fired. The coal samples shall meet the following conditions:
- The frequency of coal sampling shall be at least once every week and whenever the owner or operator changes the coal supply fired in the boiler.
 - The sample shall be representative of the fuel fired on that day. If the fuel is switched during a day then representative samples shall be collected for each fuel for that day.
 - Coal sampling and analyses (CSA) is not required under this condition if the unit is not operated during the week.
 - Each composite sample shall meet the sampling requirements for special purpose sampling of ASTM D2234-76, any subsequent amendment to the ASTM procedure, or any future ASTM amendment approved by the Department.
 - The composite sample shall be collected as close to an “as-fired” condition as practicable.
 - The proposed location, sampling, and analytical collection methodology shall be submitted to and approved by the Department prior to operation of the emission unit.
 - For each coal sample collected by the owner or operator as required above, the owner or operator shall obtain analyses of the BTU content, S, Hg, Cl, and F content within four (4) weeks of sample collection.
 - After a year of operation of the emission unit, the owner or operator may request a revision or the elimination of the sampling frequency in Condition 14.K.i. if a lesser frequency appears appropriate.
 - Of its own accord, the Department may also revise the frequency and/or the CSA procedures of this condition if it determines that a revision is needed for purposes of verification of compliance with the S, Hg, Cl, and/or F emission limit(s) of this permit.
- M. Within sixty (60) days of Departmental approval of the last required test results from Condition 12 of this permit for acetaldehyde, benzene, isophorone, and toluene the owner or operator shall submit the following to the Department:
- An analysis for acetaldehyde, benzene, isophorone, and toluene to establish new 112(g) case-by-case MACT limits for those pollutants. This analysis shall include:
 - A summary of each test.
 - The result of each individual run.
 - All outliers in the data set and the methodology used to establish outliers.
 - The average of all runs conducted with the outliers removed.
 - The standard deviation of all runs conducted with the outliers removed.
 - The upper bound 95% confidence level of all runs conducted with the outliers removed. The formula used shall be:
$$95\% = \text{avg} + t \frac{S}{\sqrt{n}}$$
 - An analysis showing the correlation (or lack thereof) between CO and the organic HAPs that were tested.
 - A request to establish new 112(g) case-by-case limits for organic HAP emissions based on the testing conducted and the required analysis.
- N. The moisture content of the FGD scrubber waste shall be at least 5%. The owner or operator shall test the moisture content on a daily basis. If the moisture content is less than 5% the owner or operator shall submit a request for a Prevention of Significant (PSD) permit for the FGD scrubber waste handling within forty-five (45) days of the analysis showing a moisture content less than 5%.
- O. This emission unit is subject to all applicable operating limits set forth in NSPS Subparts A (40 CFR §60.1 – 40 CFR §63.19) and Da (40 CFR §60.40Da – 40 CFR §60.52Da) not specifically listed in this permit.
- P. The owner or operator shall submit proposed changes to the final plans and specifications (i.e. stack parameters, maximum rated capacity, operating parameters, other application changes, etc.) for this emission unit and its control equipment to the Department prior to making any proposed changes. The owner or operator shall not make the proposed change to the final plans and specifications until the owner or operator receives written approval from the Department.

14. Operating Limits (Continued)

- Q. The owner or operator shall submit all proposed construction changes (i.e. stack locations, plant layout, building heights, etc.) to Project Number 07-602 prior to making the proposed construction change. The owner or operator shall not make the proposed construction change until the owner or operator receives written approval from the Department.
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15. Operating Condition Monitoring

All records as required by this permit shall be kept on-site for a minimum of two (2) years and shall be available for inspection by the DNR. Records shall be legible and maintained in an orderly manner. These records shall show the following:

- A. For each day of operation:
- (1) The date,
 - (2) The type of fuel(s) combusted,
 - (3) If bituminous coal is fired on a specific date the percent (%) by heat input of bituminous coal fired for each three (3) hour average shall be listed.
 - (4) The sulfur content (by wt %) on an as-fired basis.
- B. Per 40 CFR §60.51Da(a), the performance test data from the initial performance test and from the performance evaluation of the continuous monitors (including the transmissometer) for NO_x, SO₂, and PM emissions shall be submitted to the Administrator.
- C. Per 40 CFR §60.51Da(b), the following information for NO_x and SO₂ shall be reported to the Administrator for each twenty-four (24) hour period:
- (1) Calendar date,
 - (2) The average sulfur dioxide and nitrogen oxide emission rates (ng/J or lb/million Btu) for each thirty (30) successive boiler operating days, ending with the last thirty (30) day period in the quarter; reasons for non-compliance with the emission standards; and, description of corrective actions taken.
 - (3) Percent reduction of the potential combustion concentration of sulfur dioxide for each thirty (30) successive boiler operating days, ending with the last thirty (30) day period in the quarter; reasons for non-compliance with the standard; and, description of corrective actions taken.
 - (4) Identification of the boiler operating days for which pollutant or diluent data have not been obtained by an approved method for at least eighteen (18) hours of operation of the facility; justification for not obtaining sufficient data; and description of corrective actions taken.
 - (5) Identification of the times when emissions data have been excluded from the calculation of average emission rates because of startup, shutdown, malfunction (NO_x only), emergency conditions (SO₂ only), or other reasons, and justification for excluding data for reasons other than startup, shutdown, malfunction, or emergency conditions.
 - (6) Identification of "F" factor used for calculations, method of determination, and type of fuel combusted.
 - (7) Identification of times when hourly averages have been obtained based on manual sampling methods.
 - (8) Identification of the times when the pollutant concentration exceeded full span of the continuous monitoring system.
 - (9) Description of any modifications to the continuous monitoring system which could affect the ability of the continuous monitoring system to comply with Performance Specifications 2 or 3.
- D. Per 40 CFR §60.51Da(c), if the minimum quantity of emission data as required by 40 CFR §60.49Da is not obtained for any 30 successive boiler operating days, the following information obtained under the requirements of 40 CFR §60.46a(h) shall be reported to the Administrator for that thirty (30) day period:
- (1) The number of hourly averages available for outlet emission rates (n_o) and inlet emission rates (n_i) as applicable.
 - (2) The standard deviation of hourly averages for outlet emission rates (s_o) and inlet emission rates (s_i) as applicable.
 - (3) The lower confidence limit for the mean outlet emission rate (E_o^{*}) and the upper confidence limit for the mean inlet emission rate (E_i^{*}) as applicable.
 - (4) The applicable potential combustion concentration.
 - (5) The ratio of the upper confidence limit for the mean outlet emission rate (E_o^{*}) and the allowable emission rate (E_{std}) as applicable

15. Operating Condition Monitoring (Continued)

- E. Per 40 CFR §60.51Da(d), if any standards under 40 CFR §60.43Da are exceeded during emergency conditions because of control system malfunction, the owner or operator of the affected facility shall submit a signed statement:
- (1) Indicating if emergency conditions existed and requirements under § 60.48Da(d) were met during each period, and
 - (2) Listing the following information:
 - (i) Time periods the emergency condition existed;
 - (ii) Electrical output and demand on the owner or operator's electric utility system and the affected facility;
 - (iii) Amount of power purchased from interconnected neighboring utility companies during the emergency period;
 - (iv) Percent reduction in emissions achieved;
 - (v) Atmospheric emission rate (ng/J) of the pollutant discharged; and
 - (vi) Actions taken to correct control system malfunction
- F. Per 40 CFR §60.51Da(e), if fuel pretreatment credit toward the sulfur dioxide emission standard under 40 CFR §60.43Da is claimed, the owner or operator of the affected facility shall submit a signed statement:
- (1) Indicating what percentage cleaning credit was taken for the calendar quarter, and whether the credit was determined in accordance with the provisions of 40 CFR §60.48a and Method 19 (appendix A); and
 - (2) Listing the quantity, heat content, and date each pretreated fuel shipment was received during the previous quarter; the name and location of the fuel pretreatment facility; and the total quantity and total heat content of all fuels received at the affected facility during the previous quarter.
- G. Per 40 CFR §60.51Da(f), any periods for which opacity, sulfur dioxide or nitrogen oxides emissions data are not available, the owner or operator of the affected facility shall submit a signed statement indicating if any changes were made in operation of the emission control system during the period of data unavailability. Operations of the control system and affected facility during periods of data unavailability are to be compared with operation of the control system and affected facility before and following the period of data unavailability
- H. Per 40 CFR §60.51Da(h), the owner or operator of the affected facility shall submit a signed statement indicating whether:
- (1) The required continuous monitoring system calibration, span, and drift checks or other periodic audits have or have not been performed as specified.
 - (2) The data used to show compliance was or was not obtained in accordance with approved methods and procedures of this part and is representative of plant performance.
 - (3) The minimum data requirements have or have not been met; or, the minimum data requirements have not been met for errors that were unavoidable.
 - (4) Compliance with the standards has or has not been achieved during the reporting period.
- I. Per 40 CFR §60.51Da(i), for the purposes of the reports required under 40 CFR §60.7, periods of excess emissions are defined as all 6-minute periods during which the average opacity exceeds the applicable opacity standards under 40 CFR §60.42Da(b). Opacity levels in excess of the applicable opacity standard and the date of such excesses are to be submitted to the Administrator each calendar quarter.
- J. Per 40 CFR §60.51Da(j), owner or operator shall submit the written reports required under 40 CFR §60.51Da and 40 CFR 60, Subpart A to the Administrator semiannually for each six (6) month period. All semiannual reports shall be postmarked by the thirtieth day following the end of each six (6) month period
- K. Per 40 CFR §60.51Da(k), the owner or operator of an affected facility may submit electronic quarterly reports for SO₂ and/or NO_x and/or opacity in lieu of submitting the written reports required under 40 CFR §60.49a(b) and 40 CFR §60.49Da(h). The format of each quarterly electronic report shall be coordinated with the permitting authority. The electronic report(s) shall be submitted no later than 30 days after the end of the calendar quarter and shall be accompanied by a certification statement from the owner or operator, indicating whether compliance with the applicable emission standards and minimum data requirements of this subpart was achieved during the reporting period. Before submitting reports in the electronic format, the owner or operator shall coordinate with the permitting authority to obtain their agreement to submit reports in this alternative form.

15. Operating Condition Monitoring (Continued)

- L. This emission unit is subject to all applicable recordkeeping and reporting requirements set forth in NSPS Subparts A (40 CFR §60.1 – 40 CFR §63.19) and Da (40 CFR §60.40Da – 40 CFR §60.52Da) not specifically listed in this permit.
 - M. The total limestone slurry feed rate of the Wet Flue Gas Desulfurization (WFGD) system.
 - N. The recycled limestone slurry feed rate of the WFGD system.
 - O. The ammonia feed rate of the Selective Catalytic Reduction (SCR) system.
 - P. The activated carbon feed rate of the activated carbon injection (ACI) system.
 - Q. The type of activated carbon fed into the ACI system.
 - R. For each startup, shutdown, and malfunction:
 - *Startup:*
The occurrence and duration of each startup of the emission unit shall be electronically recorded by the continuous monitoring equipment of the emission unit by the data acquisition system (DAS).
 - *Shutdown:*
The occurrence and duration of each shutdown of the emission unit shall be electronically recorded by the continuous monitoring equipment of the emission unit by the data acquisition system (DAS).
 - *Malfunction:*
The occurrence and duration of each malfunction of the emission unit shall be electronically recorded by the continuous monitoring equipment of the emission unit by the data acquisition system (DAS). The malfunction will be recorded in the emission unit's maintenance management system, and a work order will be generated by the operator to correct the malfunction.
 - S. The results of all coal sampling conducted per Condition 14.K.
 - T. The results of all FGD scrubber waste moisture content scrubber tests.
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16. Continuous Emission Monitoring

The following continuous emission monitoring requirements apply to this emission point and its associated emission unit(s) and control equipment:

- A. The following monitoring systems are required:

- *Opacity:*

In accordance with 40 CFR §60.49Da(a), the owner or operator shall install, calibrate, maintain, and operate a continuous monitoring system (CEMS) and record the output of the system, for measuring the opacity of emissions discharged to the atmosphere.

If opacity interference due to water droplets exists in the stack (for example, from the use of an FGD system), the opacity is monitored upstream of the interference (at the inlet to the FGD system). If opacity interference is experienced at all locations (both at the inlet and outlet of the sulfur dioxide control system), alternate parameters indicative of the particulate matter control system's performance are monitored (subject to the approval of the Administrator).

The system shall be designed to meet the 40 CFR 60, Appendix B, Performance Specification 1 (PS1).

Per 40 CFR §60.48Da(p), the owner or operator may elect to install, certify, maintain and operate a CEMS measuring PM emissions discharged to the atmosphere and record the output of the system as specified in 40 CFR §60.48Da(p)(1) through 40 CFR §60.48Da(p)(8). If the owner or operator elects to use the PM CEMS in lieu of an opacity monitor to demonstrate compliance with the NSPS, the opacity monitor is still required as the monitor shall also be used to demonstrate compliance with the BACT emission standards in this permit.

16. Continuous Emission Monitoring (Continued)

- SO_2 :

In accordance with 40 CFR §60.49Da(b), the owner or operator shall install, calibrate, maintain, and operate a continuous monitoring system (CEMS) and record the output of the system, for measuring sulfur dioxide (SO_2) emissions, except where natural gas is the only fuel combusted, as follows:

- (1) Install, calibrate, maintain, and operate a CEMS and record the output of the system, for measuring sulfur dioxide (SO_2) emissions discharged to the atmosphere or
- (2) If the owner or operator has installed and certified a SO_2 CEMS according to the requirements of 40 CFR §75.21 and 40 CFR 75, Appendix B that CEMS may be used to meet the SO_2 monitoring requirements provided:
 - (i) A CO_2 or O_2 continuous monitoring system is installed, calibrated, maintained and operated at the same location in accordance with 40 CFR §60.49Da(d) and
 - (ii) For sources subject to an SO_2 emission limit in lb/MMBTU under §60.43Da:
 - (a) When relative accuracy testing is conducted, the SO_2 concentration data and the CO_2 (or O_2) data are collected simultaneously and
 - (b) In addition to meeting the applicable SO_2 and CO_2 (or O_2) relative accuracy specifications in Figure 2 of 40 CFR 75 Appendix B, the relative accuracy (RA) standard in 40 CFR 60, Appendix B, Performance Specification 2 (PS2), Section 13.2 is met when the RA is calculated on a lb/MMBTU basis and
 - (iii) The reporting requirements of 40 CFR §60.51Da are met. The SO_2 and CO_2 (or O_2) data reported to meet the requirements of 40 CFR §60.51Da shall not include substitute data values derived from the missing data procedures in 40 CFR 75, Subpart D nor shall the SO_2 data have been bias adjusted according to the procedures of 40 CFR 75.

The system shall be designed to meet the 40 CFR 60, Appendix B, Performance Specification 2 (PS2) and Performance Specification 6 (PS6) requirements. The specifications of 40 CFR 60, Appendix F (Quality Assurance/Quality Control) shall apply. Appendix F requirements shall be supplemented with a quarterly notice to the Department with the dates of the quarterly cylinder gas audits and annual relative accuracy test audit.

This monitor shall also be used to demonstrate compliance with the non-NSPS emission standards in this permit.

- NO_x :

In accordance with 40 CFR §60.49Da(c), the owner or operator shall either:

- (1) Install, calibrate, maintain, and operate a CEMS and record the output of the system, for measuring nitrogen oxides (NO_x) emissions discharged to the atmosphere or
- (2) If the owner or operator has installed a NO_x emission rate CEMS to meet the requirements of 40 CFR 75 and is continuing to meet the ongoing requirements of 40 CFR 75, that CEMS may be used to meet the requirements of 40 CFR §60.49Da(c), except that the owner or operator shall also meet the requirements of 40 CFR §60.51Da. Data reported to meet the requirements of 40 CFR §60.51Da shall not include data substituted using the missing data procedures in 40 CFR 75, Subpart D nor shall the data have been bias adjusted according to the procedures of 40 CFR 75.

The system shall be designed to meet the 40 CFR 60, Appendix B, Performance Specification 2 (PS2) and Performance Specification 6 (PS6) requirements. The specifications of 40 CFR Appendix F (Quality Assurance/Quality Control) shall apply. Appendix F requirements shall be supplemented with a quarterly notice to the Department with the dates of the quarterly cylinder gas audits and annual relative accuracy test audit.

This monitor shall also be used to demonstrate compliance with the non-NSPS emission standards in this permit.

16. Continuous Emission Monitoring (Continued)

- *O₂ or CO₂:*

In accordance with 40 CFR §60.49Da(d), the owner or operator shall install, calibrate, maintain, and operate a CEMS and record the output of the system, for measuring the oxygen (O₂) or carbon dioxide (CO₂) content of the flue gases at each location where SO₂ or NO_x emissions are monitored.

- *CO:*

Compliance with the carbon monoxide (CO) emission limits of this permit shall be continuously demonstrated by the owner or operator through the use of a CEMS. Therefore, the owner or operator shall install, calibrate, maintain, and operate a CEMS for measuring CO emissions discharged to the atmosphere and record the output of the system.

The system shall be designed to meet the 40 CFR 60, Appendix B, Performance Specification 4A (PS4A) and Performance Specification 6 (PS6) requirements. The specifications of 40 CFR 60, Appendix F (Quality Assurance/Quality Control) shall apply. Appendix F requirements shall be supplemented with a quarterly notice to the Department with the dates of the quarterly cylinder gas audits and annual relative accuracy test audit.

- *Federal PM [112(g) limit in Condition 10b]:*

Compliance with the Federal particulate matter (Federal PM) emission limit in Condition 10b. of this permit shall be continuously demonstrated by the owner or operator through the use of a CEMS. Therefore, the owner or operator shall install, calibrate, maintain, and operate a CEMS for measuring Federal PM emissions discharged to the atmosphere and record the output of the system.

The system shall be designed to meet the 40 CFR 60, Appendix B, Performance Specification 11 (PS11). The specifications of 40 CFR 60, Appendix F (Quality Assurance/Quality Control), Procedure 2 shall apply. Appendix F requirements shall be supplemented with a semiannual notice to the Department with the dates of semiannual relative accuracy test audits.

- *Hg:*

Compliance with the mercury (Hg) emission limits of this permit shall be continuously demonstrated by the owner or operator through the use of CEMS. Therefore, the owner or operator shall install, calibrate, maintain, and operate a CEMS for measuring Hg emissions discharged to the atmosphere and record the output of the system.

The system shall be designed to meet 40 CFR 60, Appendix B, Performance Specification 12A (PS12A). The specifications of 40 CFR 60, Appendix F (Quality Assurance/Quality Control) shall apply. Appendix F requirements shall be supplemented with a quarterly notice to the Department with the dates of the quarterly cylinder gas audits and annual relative accuracy test audit.

- *Wattmeter:*

Per 40 CFR §60.49Da(k)(1), the owner or operator shall install, calibrate, maintain, and operate a wattmeter; measure gross electrical output in megawatt-hour on a continuous basis; and record the output of the monitor for demonstrating compliance with the output-based standard under 40 CFR §60.44Da(d)(1).

16. Continuous Emission Monitoring (Continued)

- *Flowmeter:*

Per 40 CFR §60.49Da(1), the owner or operator demonstrating compliance with the output-based standard under 40 CFR §60.42Da, 40 CFR §60.43Da, 40 CFR §60.44Da, or 40 CFR §60.45Da shall install, certify, operate, and maintain a continuous flow monitoring system meeting the requirements of 40 CFR 60, Appendix B, Performance Specification 6 and 40 CFR 60, Appendix F, Procedure 1. In addition, the owner or operator shall record the output of the system, for measuring the volumetric flow of exhaust gases discharged to the atmosphere or

Alternatively, per 40 CFR §60.49Da(m), data from a continuous flow monitoring system certified according to the requirements of 40 CFR §75.20(c) and 40 CFR 75, Appendix A and continuing to meet the applicable quality control and quality assurance requirements of 40 CFR §75.21 and 40 CFR 75, Appendix B may be used.

Flow rate data reported to meet the requirements of 40 CFR §60.51Da shall not include substitute data values derived from the missing data procedures of 40 CFR 75.

- B. In accordance with 40 CFR §60.49Da(e), the CEMS required in Condition 16.A. for SO₂, NO_x, and either O₂ or CO₂ shall be operated and the data recorded during all periods of operation including periods of startup, shutdown, malfunction or emergency conditions, except for CEMS breakdowns, repairs, calibration checks, and zero and span adjustments.
- C. In accordance with 40 CFR §60.49Da(f)(2), the owner or operator shall obtain emission data for at least 90 percent of all operating hours for each thirty (30) successive boiler operating days. If this minimum data cannot be met with a CEMS, the owner or operator shall supplement the emission data with other monitoring systems approved by the Administrator or the following reference methods and procedures:
 - (1) 40 CFR 60, Method 6 shall be used to determine the SO₂ concentration at the same location as the SO₂ monitor. Samples shall be taken at 60-minute intervals. The sampling time and sample volume for each sample shall be at least 20 minutes and 0.020 dscm (0.71 dscf). Each sample represents a 1-hour average.
 - (2) 40 CFR 60, Method 7 shall be used to determine the NO_x concentration at the same location as the NO_x monitor. Samples shall be taken at 30-minute intervals. The arithmetic average of two consecutive samples represents a 1-hour average.
 - (3) The emission rate correction factor, integrated bag sampling and analysis procedure of 40 CFR 60, Appendix A, Method 3B shall be used to determine the O₂ or CO₂ concentration at the same location as the O₂ or CO₂ monitor. Samples shall be taken for at least 30 minutes in each hour. Each sample represents a 1-hour average.
 - (4) The procedures in 40 CFR 60, Appendix A, Method 19 shall be used to compute each 1-hour average concentration in ng/J (1b/million Btu) heat input.

Acceptable alternative methods and procedures are given in Condition 16.F.

- D. The 1-hour averages required under 40 CFR §60.13(h) are expressed in ng/J (lb/million Btu) heat input and used to calculate the average emission rates under 40 CFR §60.48Da. The 1-hour averages are calculated using the data points required under 40 CFR §60.13(h)(2).

16. Continuous Emission Monitoring (Continued)

- E. Per 40 CFR §60.49Da(i), the owner or operator shall use the following methods and procedures to conduct monitoring system performance evaluations under 40 CFR §60.13(c) and calibration checks under 40 CFR §60.13(d):
- (1) Methods 3B, 6, and 7 shall be used to determine O₂, SO₂, and NO_x concentrations, respectively.
 - (2) SO₂ or NO_x (NO), as applicable, shall be used for preparing the calibration gas mixtures (in N₂, as applicable) under 40 CFR 60, Appendix B, Performance Specification 2.
 - (3) The span value for a continuous monitoring system for measuring opacity is between 60 and 80 percent and for a continuous monitoring system measuring NO_x is 1,000 ppm.
 - (4) The span value of the sulfur dioxide continuous monitoring system at the inlet to the sulfur dioxide control device is 125 percent of the maximum estimated hourly potential emissions of the fuel fired, and the outlet of the sulfur dioxide control device is 50 percent of maximum estimated hourly potential emissions of the fuel fired.

Acceptable alternative methods and procedures are given in Condition 16.F.

- F. The owner or operator may use the following as alternatives to the reference methods and procedures specified:
- (1) For 40 CFR 60, Appendix A: 40 CFR 60, Appendix A, Method 6, Method 6A or Method 6B (whenever 40 CFR 60, Appendix A, Method 6 and Method 3 or Method 3B data are used) or 40 CFR 60, Appendix A, Method 6C may be used. Each Method 6B sample obtained over 24 hours represents 24 1-hour averages. If either 40 CFR 60, Appendix A, Method 6A or 40 CFR 60, Appendix A, Method 6B is used under 40 CFR §60.49Da(i), the conditions under 40 CFR §60.49Da(d)(1) apply. These conditions do not apply under 40 CFR §60.49Da(h).
 - (2) For 40 CFR 60, Appendix A: 40 CFR 60, Appendix A, Method 7, Method 7A, 7C, 7D, or 7E may be used. If Method 7C, 7D, or 7E is used, the sampling time for each run shall be 1 hour.
 - (3) For 40 CFR 60, Appendix A, Method 3: 40 CFR 60, Appendix A, Method 3A or 3B may be used if the sampling time is 1 hour.
 - (4) For 40 CFR 60, Appendix A, Method 3B: 40 CFR 60, Appendix A, Method 3A may be used.
- G. The following data requirements shall apply to all CEMS for non-NSPS emission standards in this permit:
- (1) The CEMS required by this permit shall be operated and data recorded during all periods of operation of the emission unit except for CEM breakdowns and repairs. Data is recorded during calibration checks, and zero and span adjustments.
 - (2) The 1-hour average PM, Hg, SO₂, NO_x, and CO emission rates measured by the CEMS required by this permit shall be used to calculate compliance with the emission standards of this permit. At least 2 data points must be used to calculate each 1-hour average.
 - (3) For each hour of missing emission data (PM, Hg, NO_x, SO₂, or CO), the owner or operator shall substitute data by:
 - (i) If the monitor data availability is equal to or greater than 95.0%, the owner or operator shall calculate substitute data by means of the automated data acquisition and handling system for each hour of each missing data period according to the following procedures:
 - (a) For the missing data period less than or equal to 24 hours, substitute the average of the hourly concentrations recorded by a pollutant concentration monitor for the hour before and the hour after the missing data period.
 - (b) For a missing data period greater than 24 hours, substitute the greater of:
 - The 90th percentile hourly concentration recorded by a pollutant concentration monitor during the previous 720 quality-assured monitor operating hours; or
 - The average of the hourly concentrations recorded by a pollutant concentration monitor for the hour before and the hour after the missing data period.

16. Continuous Emission Monitoring (Continued)

- (ii) If the monitor data availability is at least 90.0% but less than 95.0%, the owner or operator shall calculate substitute data by means of the automated data acquisition and handling system for each hour of each missing data period according to the following procedures:
- (a) For a missing data period of less than or equal to 8 hours, substitute the average of the hourly concentrations recorded by a pollutant concentration monitor for the hour before and the hour after the missing data period.
 - (b) For the missing data period of more than 8 hours, substitute the greater of:
 - The 95th percentile hourly pollutant concentration recorded by a pollutant concentration monitor during the previous 720 quality-assured monitor operating hours; or
 - The average of the hourly concentrations recorded by a pollutant concentration monitor for the hour before and the hour after the missing data period.
- (iii) If the monitor data availability is less than 90.0%, the owner or operator shall obtain actual emission data by an alternate testing or monitoring method approved by the Department.
- H. If requested by the Department, the owner/operator shall coordinate the quarterly cylinder gas audits with the Department to afford the Department the opportunity to observe these audits. The relative accuracy test audits shall be coordinated with the Department.
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17. Description of Terms and Acronyms

acfm	Actual cubic feet per minute
Applicant	The owner, company official or authorized agent
CFR	Code of Federal Regulations
Department	Iowa Department of Natural Resources
DNR	Iowa Department of Natural Resources
gr/dscf	Grains per dry standard cubic foot
HAP	Hazardous Air Pollutant(s)
IAC	Iowa Administrative Code
Lb/bhp-hr	Pounds per brake horsepower hour
Lb/MWh	Pounds per megawatt hour
MMBTU	One million British thermal units
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NO _x	Nitrogen Oxides
Owner	The owner or authorized representative
Permit	This document including permit conditions and all submitted application materials
PM ₁₀	Particulate Matter equal to or less than 10 microns in aerodynamic diameter
scfm	Standard cubic feet per minute
SIP	State Implementation Plan
SO ₂	Sulfur Dioxide
VOC	Volatile Organic Compound

END OF PERMIT CONDITIONS