# 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):** Auxiliary Boiler (EU 249; 268.64 MMBTU/hr; 263,373 cubic feet of natural gas/hr)

**Control Equipment:** Low $NO_x$ Burner (LNB) & Flue Gas Recirculation (FGR, CE 249)
Carbon monoxide (CO) Oxidation Catalyst (CE 249B)

**Emission Point:** 249

**Equipment Location:** 3001 East Main Street
Marshalltown, IA 50158

**Plant Number:** 64-01-012

| Permit No. | Proj. No. | Description | Date | Testing |
|---|---|---|---|---|
| 08-A-543-P | 07-602 | Original PSD permit. | | Yes |
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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.

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**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.

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**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"*.

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**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.

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## 7. Disposal of Contaminants

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

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## 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<br>Air Quality Bureau<br>Iowa Department of Natural Resources<br>7900 Hickman Road, Suite 1<br>Urbandale, IA 50322<br>Telephone: (515) 281-8448<br>Fax: (515) 242-5127 | Field Office 5<br>401 SW 7th<br>Suite 1<br>Des Moines, IA 50309<br>Telephone: (515) 725-0268<br>Fax: (515) 725-0218 |

**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.

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**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.

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

| Pollutant | Tons/Yr[1, 2] | Additional Limits |
|---|---|---|
| State Particulate Matter (PM) | 0.54 | 0.002 lb/MMBTU[3] |
| $PM_{10}$ | 0.54 | 0.002 lb/MMBTU[3] |
| Opacity | NA | No visible emissions |
| Sulfur Dioxide ($SO_2$) | 0.27 | 0.001 lb/MMBTU[4] |
| Nitrogen Oxides ($NO_X$) | 9.93 | 0.037 lb/MMBTU[4, 5] |
| Volatile Organic Compounds | 0.27 | 0.001 lb/MMBTU[3] |
| Carbon Monoxide (CO) | 1.88 | 0.007 lb/MMBTU[4, 5] |
| Total Reduced Sulfur (TRS) | 0.08 | 0.0003 lb/MMBTU[3] |
| Sulfuric Acid Mist ($H_2SO_4$) | 0.24 | 0.0009 lb/MMBTU[3] |

[1] Standard is a 12-month rolling total.
[2] Standard includes all periods of operations.
[3] Standard is the average of three (3) test runs.
[4] Standard is a 30-day rolling average, based on thirty (30) days of boiler operation.
[5] Does not include periods of startup, shutdown, and malfunction. Please see Condition 14 for BACT requirements for startup, shutdown, and malfunction.

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

| Pollutant | Tons/yr[1, 2] | Additional Limits[3] |
|---|---|---|
| Formaldehyde[4] | 0.02 | 0.000074 lb/MMBTU |
| Hexane[4] | 0.48 | 0.0018 lb/MMBTU |
| CO[4] | 1.88 | 0.007 lb/MMBTU[5, 6] |

[1] Standard is a 12-month rolling total.
[2] Standard includes all periods of operations.
[3] Standard is the average of three (3) test runs unless otherwise indicated.
[4] The 112(j) 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.G. on testing requirements and the procedure for establishing the future limits.
[5] Standard is a thirty (30) operating day rolling average not including periods of startup, shutdown, and malfunction. Please see Condition 14.C. for BACT requirements for startup, shutdown, and malfunction.
[6] 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.

## 10c. Other Emission Limits

| Pollutant | lb/hr[1] | tons/yr[2] | Additional Limits | Reference (567 IAC) |
|---|---|---|---|---|
| Particulate Matter (PM) | NA | NA | NA | NA |
| $PM_{10}$ | 1.88[3, 4] | NA | NA | PSD significance |
| Opacity | NA | NA | NA | NA |
| Sulfur Dioxide ($SO_2$) | 0.16[3] | NA | See Footnote 5 | PSD significance & 23.1(2)"ccc"[6] |
| Nitrogen Oxides ($NO_X$) | 9.94[3] | NA | 43 ng/J[7] | PSD significance & 23.1(2)"ccc"[6] |
| Carbon Monoxide (CO) | 19.88[3] | NA | NA | PSD significance |
| Lead (Pb) | NA | NA | NA | NA |
| Total Reduced Sulfur (TRS) | 0.08[8] | NA | NA | Ambient impacts |

[1] Standard is expressed as the average of three (3) runs.
[2] Standard is a 12-month rolling total.
[3] 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.
[4] Sulfuric acid mist (SAM, $H_2SO_4$) was accounted for in the modeled $PM_{10}$ emission rate.
[5] Per 40 CFR §60.42b(k)(1), $SO_2$ emissions shall not exceed either:
(a) 87 ng/J (0.20 lb/MMBTU) heat input; or
(b) 8 percent (0.08) of the potential $SO_2$ emission rate (92 percent reduction and 520 ng/J (1.2 lb/MMBTU) heat input.
[6] Iowa reference to New Source Performance Standards (NSPS) Subpart Db (Standards of Performance for Standards of Performance for Industrial-Commercial, Institutional Steam Generating Units, 40 CFR §60.40b – 40 CFR §60.49b).
[7] Per 40 CFR §60.44b(a)(1), $NO_x$ emissions shall not exceed 43 ng/J (0.10 lb/MMBTU) for low heat release.
[8] 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) | 285 |
| Discharge Style | Unobstructed vertical |
| Stack Opening, (inches, dia.) | 60 |
| Exhaust Temperature (°F) | 650 |
| Exhaust Flowrate (scfm) | 24,800 |

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) | No | No | No | No |
| PM (state) | Yes | No | Stack test | One-time |
| $PM_{10}$ | Yes | No | Stack test | One-time |
| Opacity | Yes | No | Stack test | One-time |
| $SO_2$ | Yes | No | Stack test | One-time |
| $NO_X$ | Yes[1, 2] | Yes | CEMS | Continuous |
| VOC | Yes | No | Stack test | One-time |
| CO[3] | Yes[1, 2] | Yes | CEMS | Continuous |
| Pb | No | No | No | No |
| TRS | No | No | No | No |
| $H_2SO_4$ | No | No | No | No |
| Formaldehyde[4] | Yes | Yes | Stack test | Quarterly |
| Hexane[4] | Yes | Yes | Stack test | Quarterly |

[1] See NSPS Subpart Db (40 CFR §60.40b – 40 CFR §60.49b) for initial performance testing requirements.
[2] Compliance shall be measured continuously through the use of Continuous Emission Monitoring Systems (CEMS).
[3] If demonstrated, the CO CEMS data may also be used as a surrogate to demonstrate continual compliance with the organic HAP (formaldehyde and hexane) emission standards listed in Condition 10b. See Condition 14.G. for the requirements concerning CO and organic HAP emissions.
[4] 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.

**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.

**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) | 1 hour | 40 CFR 60, Appendix A, Method 5 |
| PM (state) | 2 hours | Iowa Compliance Sampling Manual Method 5 |
| $PM_{10}$ | 4 hours | 40 CFR 51, Appendix M, 201A with 202 |
| Opacity | 1 hour | 40 CFR 60, Appendix A, Method 9 |
| $SO_2$ | 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[4] | 1 hour | 40 CFR 60, Appendix A, Method 10 |
| Pb | 1 hour | 40 CFR 60, Appendix A, Method 12 |
| TRS | 1 hour | 40 CFR 60, Appendix A, Method 16B |
| $H_2SO_4$ | 1 hour | 40 CFR 60, Appendix A, Method 8 |
| Formaldehyde | 1 hour | 40 CFR 60, Appendix A, Method 18 |
| Hexane | 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.

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

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.

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**13. NSPS and NESHAP Applicability**

This emission unit is subject to Subparts A (General Provisions, 40 CFR §60.1 – 40 CFR §60.19) and Db (Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units 40 CFR §60.40b – 40 CFR §60.49b) 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.

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**14. Operating Limits**

Operating limits for this emission unit shall be:

A. This emission unit is limited to firing on only natural gas.
B. This emission unit shall not combust more than 527 million cubic feet of natural gas per rolling twelve-month period.
C. 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 to full load which is approximately four (4) hours in duration. Startup BACT work practice standards contained herein are applicable to this emission unit until the completion of startup or four (4) hours, whichever occurs first. The startup period ends when the boiler reaches the manufacturer's specified minimum safe stable load and the emission control devices have reached their effective operating conditions. The emission unit shall startup and operate on natural gas.

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

     - The oxidation catalyst shall begin operation when it reaches a minimum temperature of 600 $^{o}$F.
     - Good Combustion Practices shall be used at all times during startup.

**14. Operating Limits** (Continued)

- *Shutdown:*
  The shutdown period begins when the boiler reaches its minimum safe stable load as specified by the manufacturer. Shutdown of the emission unit from full load is approximately one (1) hour in duration. Shutdown BACT work practice standards contained herein are applicable to this emission unit until the completion of shutdown.

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

  - The oxidation catalyst shall continue to operate until it cools down below its effective CO control temperature range of 600 $^{o}$F..

- *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).

D. The minimum operating temperature of the CO Oxidation Catalyst shall be 600 $^{o}$F when the emission unit is operating.

E. The owner or operator shall install, operate, and maintain a system to continuously track the temperature of the catalyst.

F. 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 Db (40 CFR §60.40b – 40 CFR §60.49b) not specifically listed in this permit.

G. Within sixty (60) days of approval of the last required tests for formaldehyde and hexane the owner or operator shall submit the following to the Department:

(1) An analysis for formaldehyde and hexane to establish new 112(j) 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:

$$95\% = \text{avg} + t\frac{S}{\sqrt{n}}$$

where: avg = average of the test runs
S = standard deviation of the test runs
t = percentage point of the *t* distribution with n-1 degrees of freedom
n = number of test runs

(2) An analysis showing the correlation (or lack thereof) between CO and the organic HAPs that were tested.

(3) A request to establish new 112(j) case-by-case limits for organic HAP emissions based on the testing conducted and the required analysis.

H. 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.

I. 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.

## 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 the first twelve (12) months of operation, determine the total amount of natural gas fired by the boiler for each month of operation.
B. After the first twelve (12) months of operation, determine the annual amount of natural gas fired by the boiler on a rolling-12-month basis for each month of operation.
C. Per 40 CFR §60.49b(g), the owner or operator shall maintain records of the following information for each steam generating unit operating day for the boiler:
   (1) Calendar date.
   (2) The average hourly nitrogen oxides emission rates (expressed as NO2) (ng/J or lb/million Btu heat input) measured or predicted.
   (3) The 30-day average nitrogen oxides emission rates (ng/J or lb/million Btu heat input) calculated at the end of each steam generating unit operating day from the measured or predicted hourly nitrogen oxide emission rates for the preceding 30 steam generating unit operating days.
   (4) Identification of the steam generating unit operating days when the calculated 30-day average nitrogen oxides emission rates are in excess of the nitrogen oxides emissions standards under §60.44b, with the reasons for such excess emissions as well as a description of corrective actions taken.
   (5) Identification of the steam generating unit operating days for which pollutant data have not been obtained, including reasons for not obtaining sufficient data and a description of corrective actions taken.
   (6) Identification of the times when emission data have been excluded from the calculation of average emission rates and the reasons for excluding data.
   (7) Identification of "F" factor used for calculations, method of determination, and type of fuel combusted.
   (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 that could affect the ability of the continuous monitoring system to comply with Performance Specification 2 or 3.
   (10) Results of daily CEMS drift tests and quarterly accuracy assessments as required under appendix F, Procedure 1.
D. The results of the temperature monitor for the oxidation catalyst.
E. 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.
F. Per 40 CFR §60.49b(h), the owner or operator shall submit excess emissions that occurred during the reporting period.
G. 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 Db (40 CFR §60.40b – 40 CFR §60.49b) not specifically listed in this permit.

## 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:

- *$NO_x$:*

  In accordance with 40 CFR §60.48b(b), 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 §60.48b(c), except that the owner or operator shall also meet the requirements of 40 CFR §60.49b. Data reported to meet the requirements of 40 CFR §60.49b 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.

- *$O_2$ or $CO_2$:*

  In accordance with 40 CFR §60.48b(b), the owner or operator shall install, calibrate, maintain, and operate a CEMS and record the output of the system, for measuring either the oxygen ($O_2$) content or the carbon dioxide ($CO_2$) content of the flue gas.

- *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.

B. In accordance with 40 CFR §60.49b(c), the CEMS required in Condition 16.A. for $NO_x$ and $O_2$ or $CO_2$ 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. Per 40 CFR §60.49b(e), the procedures under 40 CFR §60.13 shall be followed for installation, evaluation, and operation of the continuous monitoring system.

**16. Continuous Emission Monitoring** (Continued)

D. Per 40 CFR §60.49b(f), when $NO_x$ emissions are not obtained because of CEMS breakdowns, repairs, calibration checks and zero and span adjustments, emission data shall be obtained by using standby monitoring systems, 40 CFR 60, Appendix A, Method 7, 40 CFR 60, Appendix A, Method 7A, or other approved reference methods to provide emission data for a minimum of 75 percent of the operating hours in each steam generating unit operating day, in at least 22 out of 30 successive steam generating unit operating days.

E. 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 §60.44b. The 1-hour averages are calculated using the data points required under 40 CFR §60.13(h)(2).

F. 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 $NO_x$ 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 ($NO_x$ 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 an 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 $90^{th}$ 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.

(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 $95^{th}$ 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.

G. 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.

**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