Attachment 2. MPW's Modified Air Construction Permits

Iowa Department of Natural Resources
Air Quality Construction Permit

Permit Holder

Firm: Muscatine Power and Water

Contact:

Jean Brewster
Mgr. Environmental Affairs

(563) 262-3259

3205 Cedar Street
Muscatine, IA 52761

Responsible Party:

Jean Brewster
Mgr. Environmental Affairs

Permitted Equipment

Emission Unit(s):	Cyclone Boiler, Unit 8 (EU80) Maximum Heat Input: 890 MMBtu/hr, fired by either coal or natural gas
Control Equipment:	Electrostatic Precipitator (ESP) (CE80A) Over-fired Air (CE81) Activated Carbon Injection (CE82)
Emission Point:	EP80
Equipment Location:	1700 Dick Drake Way Muscatine, IA 52761
Plant Number:	70-01-011

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.

Permit No.	Proj. No.	Description	Date	Stack Testing
95-A-373-P4	15-318	Add Activated Carbon Injection System	06/01/16	Yes

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

JC

CPFP:70011011:06012016:153189:5A373P4:

PERMIT CONDITIONS

1. Departmental Review

This permit is issued based on information submitted by the applicant. Any misinformation, false statements or misrepresentations by the applicant or by the applicant's representative(s) 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 – 35; and 40 Code of Federal Regulations (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 Department 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. Owner and Operator Responsibility

This 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. The permit holder, owner, and operator of the facility shall assure that the installation of the equipment listed in this permit conforms to the design in the application (i.e. type, maximum rated capacity, etc.). No person shall construct, install, reconstruct or alter this emission unit(s), control equipment, or emission point without the required amended 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 assuring that the installation, operation, and maintenance of the equipment listed in this permit is in compliance with the provisions of this permit and all other applicable requirements.

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"*.

3. 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 Department shall be notified in writing at least seven (7) days prior to transferring to the new location unless the equipment will be located in an area which is classified as nonattainment for the National Ambient Air Quality Standards (NAAQS) or is a maintenance area for the NAAQS in which case notification shall be given fourteen (14) days prior to the relocation of equipment[(1)] (See Permit Condition 8.A.2). The owner or operator will be notified at least ten (10) days prior to the scheduled relocation if the relocation will cause a violation of the (NAAQS). In such case, a supplemental permit shall be required prior to the initiation of construction of additional control equipment or modifications to equipment needed to meet the standards.

[(1)] A list of nonattainment areas and maintenance areas for the NAAQS can be obtained from the Department.

4. Construction

A. General Requirements

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.

4. Construction (Continued)

In permit amendments, all provisions of the original permit remain in full force and effect unless they are specifically changed by the permit amendment. If a proposed project is not timely completed, the owner or operator shall seek a permit amendment in order to revert back to the most recent previous version of the permit. The previous, unchanged permit provisions are included in the amendment for your convenience only and are unappealable.

This permit or amendment shall become void if any one of the following conditions occurs:
(1) the construction or implementation of the proposed project, as it affects the emission point permitted herein, is not initiated within eighteen (18) months after the permit issuance date; or
(2) the construction or implementation of the proposed project, as it affects the emission point permitted herein, is not completed within thirty-six (36) months after the permit issuance date; or
(3) the construction or implementation of the proposed project, as it affects the emission point permitted herein, is not completed within a time period specified elsewhere in this permit.

B. Changes to Plans and Specifications

The owner or operator shall amend this permit or amendment prior to startup of the equipment if:
(1) Any changes are made to the final plans and specifications submitted for the proposed project; or
(2) This permit becomes void.

Changes to the final plans and specification shall include changes to plans and specifications for permitted equipment and control equipment and the specified operation thereof.

C. Amended Permits

The owner or operator may continue to act under the provisions of the previous permit for the affected emission unit(s) and emission point, together with any previous amendment to the permit, until one of the following conditions occurs:
(1) The proposed project authorized by this amendment is completed as it affects the emission unit(s) and emission point permitted herein; or
(2) This current amendment becomes void.

5. 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 35.

6. Excess Emissions

Per 567 IAC 24.1(1), 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 (1) six-minute period per one (1) 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 by telephone, electronic mail or in person to the appropriate field office within eight (8) hours of, or at the start of, the first working day following the onset of the incident (See Permit Condition 8.B.1). A written report of an incident of excess emissions shall be submitted as a follow-up to all required initial reports within seven (7) days of the onset of the upset condition (See Permit Condition 8.B.2).

7. Permit Violations

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

8. Notification, Reporting, and Recordkeeping

A. The owner or operator shall furnish the Department the following written notifications:
   (1) Per 567 IAC 22.3(3)"b":
      (a) The date construction, installation, or alteration is initiated postmarked within thirty (30) days following initiation of construction, installation, or alteration;
      (b) The actual date of startup, postmarked within fifteen (15) days following the start of operation;
   (2) Per 567 IAC 22.3(3)"f", when portable equipment for which a permit has been issued is to be transferred from one location to another, the Department shall be notified:
      (a) at least fourteen (14) days before equipment relocation if the equipment will be located in a nonattainment area for the National Ambient Air Quality Standards (NAAQS) or a maintenance area for the NAAQS;
      (b) at least seven (7) days before equipment relocation.
   (3) Per 567 IAC 22.3(8), a new owner shall notify the Department of the transfer of equipment ownership within thirty (30) days of the occurrence. The notification shall be mailed to:

      Air Quality Bureau
      Iowa Department of Natural Resources
      7900 Hickman Road, Suite 1
      Windsor Heights, IA 50324

      and include the following information:
      - The date of ownership change,
      - The name, address, and telephone number of the responsible official, the contact person, and the owner of the equipment both before and after the ownership change; and
      - The construction permit number(s) of the equipment changing ownership.
   (4) Unless specified per a federal regulation, notification of each compliance test required by Permit Condition 12 shall be done not less than thirty (30) days before the required test or performance evaluation of a continuous emission monitor [567 IAC 25.1(7)]. The notification shall include:
      - the time,
      - the place,
      - the name of the person who will conduct the tests,
      - and other information as required by the Department;

      If the owner or operator does not provide timely notice to the Department, the Department shall not consider the test results or performance evaluation results to be a valid demonstration of compliance with the applicable rules or permit conditions. Upon written request, the Department may allow a notification period of less than thirty (30) days.

B. The owner or operator shall furnish the Department with the following reports:
   (1) Per 567 IAC 24.1(2), an incident of excess emissions as defined in 567 IAC 20.2 shall be reported within eight (8) hours or at the start of the first working day following the onset of the incident. The report may be made by electronic mail, in person or by telephone.
   (2) Per 567 IAC 24.1(3), a written report of an incident of excess emissions as defined in 567 IAC 20.2 shall be submitted as a follow-up to all required initial reports to the Department within seven (7) days of the onset of the upset condition.
   (3) Operation of this emission unit(s) or control equipment outside of those operating parameters specified in Permit Condition 14 in accordance to the schedule set forth in 567 IAC 24.1.
   (4) Per 567 IAC 25.1(6), the owner or operator of any facility required to install a continuous monitoring system or systems shall provide quarterly reports to the Director, no later than thirty (30) calendar days following the end of the calendar quarter, on forms provided by the Director.

8. Notification, Reporting, and Recordkeeping (Continued)

(5) Per 567 IAC 25.1(7), 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;

C. 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 unless otherwise required by another applicable law (i.e. NSPS, NESHAP, etc.)

D. The owner or operator 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
Windsor Heights, IA 50324
Telephone: (515) 725-9549
Fax: (515) 725-9501

E. The owner or operator shall send correspondence concerning stack testing to:

Stack Testing Coordinator
Air Quality Bureau
Iowa Department of Natural Resources
7900 Hickman Road, Suite 1
Windsor Heights, IA 50324
Telephone: (515) 725-9545
Fax: (515) 725-9502

F. The owner or operator shall send reports and notifications to:

Compliance Unit Supervisor Air Quality Bureau Iowa Department of Natural Resources 7900 Hickman Road, Suite 1 Windsor Heights, IA 50324 Telephone: (515) 725-9550 Fax: (515) 725-9502	IDNR Field Office 6 1023 West Madison Washington, IA 52353 Telephone: (319) 653-2135 Fax: (319) 653-2856

9. Appeal Rights

All conditions within an original permit may be appealed, subject to the appeal rights set forth in 561 IAC Chapter 7. Amended conditions within a permit amendment may be appealed, subject to the appeal rights set forth in 561 IAC Chapter 7. In permit amendments, all provisions of the original permit remain in full force and effect unless they are specifically changed by the permit amendment. The previous, unchanged permit provisions are included in the amendment for your convenience only and are unappealable.

Per 561 IAC 7.4(1), the owner or operator shall file any written notice of appeal within thirty (30) days of receipt of the issued permit. The written notice of appeal shall be filed with the Director of the Department with a copy to the Legal Services Bureau Chief at the following addresses:

Director Iowa Department of Natural Resources 502 East 9th Street Des Moines, IA 50319	Bureau Chief Legal Services Bureau Iowa Department of Natural Resources 502 East 9th Street Des Moines, IA 50319

10a. BACT Emission Limits

Pollutant	lb/hr[(1)]	tons/yr	Additional Limits
Carbon Monoxide (CO)	NA	960[(2)]	250 ppm[(3)]

(1) Standard is expressed as the average of three (3) runs.
(2) Standard is a 12-month rolling total, and includes startup, shutdown, and malfunctions.
(3) Standard is averaged over a calendar day, and does not include startup, shutdown and malfunction.

10b. Other Emission Limits

Pollutant	lb/hr[(1)]	tons/yr[(2)]	Additional Limits	Reference (567 IAC)
Particulate Matter (PM)	267.0[(3)]	1169[(3)]	0.30 lbs/MMBtu[(1)(3)]	Original Limit
PM_{10}	266.9[(4)]	NA	NA	NAAQS
$PM_{2.5}$	37.57[(5)]	NA	NA	NAAQS
Opacity	NA	NA	40%[(6)]	23.3(2)"d"
Sulfur Dioxide (SO_2)	2,772[(7)]	12,141[(8)]	6.0 lb/MMBtu[(13)]	23.3(3)"a"
Sulfur Dioxide (SO_2) - total	1153[(9)]	NA	NA	RACT
Nitrogen Oxides (NO_X)	NA	3352.45[(10)]	0.86 lb/MMBtu[(11)]	Synthetic Minor
Volatile Organic Compounds	NA	NA	NA	NA
Carbon Monoxide (CO)	432.4[(12)]	NA	NA	NAAQS
Individual HAP	NA	NA	NA	NA
Total HAP	NA	NA	NA	NA

(1) Standard is expressed as the average of 3 runs, unless specifically noted otherwise.
(2) Standard is a 12-month rolling total.
(3) Limit established in the original construction permit 95-267.
(4) Limits established and used in the computer aided dispersion modeling (facility-wide) to demonstrate no predicted exceedances of the National Ambient Air Quality Standards for PM_{10}.
(5) The limit for $PM_{2.5}$ emissions is established to address the "Finding of Substantial Inadequacy of Implementation Plan; Call for Iowa SIP Revision" for $PM_{2.5}$ published in the Federal Register (76 FR 9706) on February 22, 2011.
(6) The emission limit is a six (6) minute average.
(7) The combined total emission of sulfur dioxide from boiler 7 and boiler 8 shall not exceed 2,772 pounds per hour, averaged over a 24-hour calendar day, as required in the agreement between Muscatine Power & Water, IDNR and the EPA (see IDNR letter of 3/13/95). Compliance with this emission limit shall be demonstrated using the calculation methods detailed in Permit Condition 16.D.
(8) Beginning March 15, 1996, the combined total emission of sulfur dioxide from Boiler 7 and Boiler 8 shall not exceed 12,141 tons per rolling 12-month period. Compliance with this emission limit shall be demonstrated using the calculation methods detailed in Permit Condition 16.D.
(9) The SO_2 limit is established to address the nonattainment designation for a portion of Muscatine County published in the Federal Register (78 FR 47191) on August 5, 2013. The nonattainment designation is for the 1-hour SO_2 primary national ambient air quality standard promulgated by EPA in 2010 (75 FR 35519, June 22, 2010). Compliance with the emission standard shall be demonstrated through the use of a Continuous Emission Monitoring System (CEM) and shall be determined on a 21-day rolling average basis and includes startup, shutdown and malfunction emissions. Compliance with this emission limit shall be demonstrated using the formula found in Permit Condition 15.C. This emission limit becomes effective January 1, 2017.
(10) Requested limit. This is equal to the short term NOx limit multiplied by the maximum capacity of the boiler.
(11) As requested to remain an insignificant increase for PSD and to meet Acid Rain requirements in 40 CFR 76.6. Standard is a twelve month rolling average, and includes startup, shutdown and malfunctions. To allow for a shakedown period for the combustion optimization system, this standard becomes effective 90 boiler operating days after installation of the overfire air, or September 2, 2008, whichever comes first.
(12) Limit used for modeling an insignificant impact for NAAQS and increment in project 07-355.
(13) As required in the SIP, IAC 23.3(3)"a".

11. Emission Point Characteristics

This emission point shall conform to the specifications listed below:

Parameter	Value
Stack Height, (ft, from the ground)	225
Discharge Style	Vertical Unobstructed
Stack Opening (inches, diameter)	102.4
Exhaust Temperature (°F)	350
Exhaust Flowrate (scfm)	229,000

The temperature and flowrate 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 either the temperature or flowrate above are different than the values stated, the owner or operator shall submit a request to the Department within thirty (30) days of the discovery to determine if a permit amendment is required or submit a permit application requesting to amend the permit.

12. Compliance Demonstration(s)

Pollutant	Compliance Demonstration	Compliance Methodology	Frequency
PM – Federal	No	NA	NA
PM – State	Yes	Stack Testing	Once every 3 years(1)
PM_{10}	No	NA	NA
$PM_{2.5}$	Yes	Stack Testing	(2)
Opacity	Yes	COMS	Continuous
SO_2	Yes	CEMS(3)	Continuous
NO_x	Yes	CEMS(3)	Continuous
VOC	No	NA	NA
CO	Yes	CEMS(3)	Continuous
Pb	No	NA	NA
Individual HAP	No	NA	NA
Total HAP	No	NA	NA

(1) Performance testing shall be conducted once every three calendar years. Testing required by the Title V Operating Permit can be used to satisfy this requirement.
(2) Stack test for $PM_{2.5}$ is required if the results of any PM test (as a 3 run average) ever exceeds 37.57 pounds per hour. The test stack for PM2.5 shall be conducted within ninety (90) days after the report is received by the Iowa DNR showing the final results of the PM test. Stack testing for PM demonstrated compliance on August 20, 2013, with an average emission rate of 10.01 lb/hr.
(3) See Condition 16 of the permit for continuous emission monitoring requirements.

If subsequent testing is specified above, the owner or the owner's authorized agent shall verify compliance with the emission limitations contained in Permit Condition 10 according to the frequency and timeframe noted above.

12. Compliance Demonstration(s) (Continued)

If testing is required, the owner or the owner's authorized agent 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	1 hour	40 CFR 60, Appendix A, Method 5 40 CFR 51 Appendix M Method 202
PM_{10}	1 hour	40 CFR 51, Appendix M, 201A with 202
$PM_{2.5}$	1 hour	40 CFR 51, Appendix M, 201A with 202
Opacity	1 hour	40 CFR 60, Appendix A, Method 22
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
HAP	1 hour	40 CFR 60, Appendix A, Method 18

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.

Per 567 IAC 25.1(7)"a", at the Department's request, a pretest meeting shall be held not later than fifteen (15) days before the owner or operator conducts the compliance demonstration. A testing protocol shall be submitted to the Department no later than fifteen (15) days before the owner or operator conducts the compliance demonstration. 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. A representative of the Department shall be allowed to witness the test(s). The Department shall reserve the right to impose additional, different, or more detailed testing requirements.

The owner shall be responsible for the installation and maintenance of test ports. The unit(s) being sampled shall 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.

13. New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) Applicability

This emissions unit, EU80, is not subject to NSPS 40 CFR Part 60 Subpart D – Standards of Performance for Fossil-Fuel-Fired Steam Generators for which Construction is Commenced after August 17, 1971 (IAC 23.1(2)"a"). The construction date of the emissions unit pre-dates the NSPS date of applicability.

For information only: This equipment is of the source category affected by the following federal regulation: National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units (MATS) [40 CFR Part 63, Subpart UUUUU]. At this time Subpart UUUUU has not been adopted into Iowa rules.

Failure to include any NSPS or NESHAP requirements as a part of this permit does not relieve the permittee from the requirement to comply with all applicable NSPS or NESHAP requirements.

14. Operating Limits

Operating limits for this permit shall be:

A. Total emissions of sulfur dioxide from unit 7 and unit 8 shall not exceed 2,772 pounds per hour, averaged over a 24-hour calendar day. Compliance with this emission limit shall be demonstrated using the calculation methods detailed in Permit Condition 16.D.

B. The owner or operator shall develop an operating and maintenance plan for the electrostatic precipitator, CE80A, including a preventative maintenance schedule that is consistent with the manufacturer's instructions for routine and long-term maintenance.

C. The owner or operator shall combust coal and/or natural gas in this unit. Diesel oil and/or waste oil may be combusted in this unit for short periods of time to facilitate coal combustion and/or slag tapping.

D. Total emissions of sulfur dioxide from Unit 7, Unit 8 and Unit 9 shall not exceed 1153 pounds per hour on a 21-day rolling average as calculated in Permit Condition 15.C.

E. The owner or operator shall develop an operating and maintenance plan for the Activated Carbon Injection System (CE82), including a preventative maintenance schedule that is consistent with the manufacturer's instructions for routine and long-term maintenance.

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15. Operating Condition Monitoring and Recordkeeping

Unless specified by a federal regulation, all records as required by this permit shall be kept on-site for a minimum of five (5) years and shall be available for inspection by the Department. These records shall show the following:

A. The owner or operator shall monitor emissions from this unit and calculate the annual emissions, in tons per year on a calendar-year basis, for a period of five years following resumption of regular operations after the change made in project 07-355. This information shall be retained by the owner or operator for a period of ten years after project 07-355 is completed (IAC 567 33.3(18)"f"(4) & 33.3(18) "f"(5)).

B. The owner or operator shall make the information required to be documented and maintained pursuant to 567 IAC 33.3(18)"f" for project 07-355 available for review upon request for inspection by the Department or the general public pursuant to the requirements for Title V operating permits contained in 567 IAC 22.107(6).

C. The owner or operator shall maintain a file of computations to show the total hourly emission level for SO_2. The owner or operator shall use the total hourly SO_2 emission rates to calculate and record the average SO_2 emission rate for each calendar day. Effective January 1, 2017, the owner or operator shall use the daily average SO_2 emission rates to demonstrate compliance with the 21-day rolling average as calculated below:

$$SO_2 = 2.03*(\text{Unit 7}) + 0.84*(\text{Unit 8}) + 1.22*(\text{Unit 9})$$

Where,

SO_2 = total emissions, in pounds per hour, of sulfur dioxide from Unit 7, Unit 8 and Unit 9
Unit 7 = 24-hour average sulfur dioxide emission rate, lb/hr, for Unit 7
Unit 8 = 24-hour average sulfur dioxide emission rate, lb/hr, for Unit 8
Unit 9 = 24-hour average sulfur dioxide emission rate, lb/hr, for Unit 9

D. The owner or operator shall provide quarterly reports to the Department, no later than 30 calendar days following the end of the calendar quarter as specified in 567 IAC 25.1(6).

E. The owner or operator shall record the amount of diesel oil and/or used oil used on a monthly basis.

F. Using the data collected and recorded by the NOx CEMs, the owner or operator shall record monthly:

i. NOx emissions from the boiler (tons); and,
ii. the rolling 12-month total of NOx emissions from the boiler (tons).

G. The owner or operator shall maintain a log of all maintenance and inspection activities performed on the emission unit and control equipment. This log shall include, but is not limited to:

i. The date and time any inspection and/or maintenance was performed on the emission unit and/or control equipment;
ii. Any issues identified during the inspection and the date each issue was resolved;
iii. Any issues addressed during the maintenance activities and the date each issue was resolved; and,
iv. Identification of the staff person performing the maintenance or inspection.

16. Continuous Emission Monitoring

A. The owner or operator shall operate, maintain, and quality assure a continuous emission monitoring system (CEMS) for measuring emissions in the respective units (ppm, lb/hr, etc.) as required in Condition 10a or 10b. The CEMS shall be operated during any period that any fuel is combusted in the boiler.

B. The following monitoring systems are required by this permit:

- *Opacity*:
  The owner or operator shall install, calibrate, maintain, and operate a continuous emission monitoring system (CEMS) and record the output of the system, for measuring the opacity of emissions discharged to the atmosphere.

  The owner or operator shall purchase an opacity monitor that complies with ASTM D 6216-98 and obtain a certificate of conformance from the opacity monitor manufacturer.

  The owner or operator shall install the opacity monitor at a location where the opacity measurements are representative of the total emissions from the affected facility. The facility must meet this requirement by choosing a measurement location and a light beam path as follows:

  (i) Measurement Location. Select a measurement location that is (1) at least 4 duct diameters downstream from all particulate control equipment or flow disturbance, (2) at least 2 duct diameters upstream of a flow disturbance, (3) where condensed water vapor is not present, and (4) accessible in order to permit maintenance.
  (ii) Light Beam Path. Select a light beam path that passes through the centroidal area of the stack or duct. Also, the facility must follow the additional requirements or modifications for the measurement locations listed in the table below:

If your measurement location is in a:	**And is:**	**Then use a light beam path that is:**
1. Straight vertical section of stack or duct	Less than 4 equivalent diameters downstream from a bend	In the plane defined by the upstream bend
2. Straight vertical section of stack or duct	Less than 4 equivalent diameters upstream from a bend	In the plane defined by the downstream bend
3. Straight vertical section of stack or duct	Less than 4 equivalent diameters downstream and is also less than 1 diameter upstream from a bend	In the plane defined by the upstream bend
4. Horizontal section of stack or duct	At least 4 equivalent diameters downstream from a vertical bend	In the horizontal plane that is between 1/3 and 1/2 the distance up the vertical axis from the bottom of the duct
5. Horizontal section of duct	Less than 4 equivalent diameters downstream from a vertical bend	In the horizontal plane that is between 1/2 and 2/3 the distance up the vertical axis from the bottom of the duct for upward flow in the vertical section, and is between 1/3 and 1/2 the distance up the vertical axis from the bottom of the duct for downward flow

- *SO_2*:
  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, 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.

16. Continuous Emission Monitoring (Continued)

The CEMS data recorder output range shall include zero and a high-level value. The high-level value shall be chosen and recorded by the owner or operator. The CEMS design shall also allow the determination of calibration drift at the zero and high-level values. If this is not possible or practical, the design must allow these determinations to be conducted at a low-level value (zero to 20 percent of the high-level value) and at a value between 50 and 100 percent of the high-level value.

The CEMS shall be installed at an accessible location where the pollutant concentration or emission rate measurements are directly representative or can be corrected so as to be representative of the total emissions from the affected facility or at the measurement location cross section.

The owner or operator shall develop and implement a QC program. At a minimum, each QC program must include written procedures which describe in detail, complete, step-by-step procedures and operations for each of the following activities:

1. Calibration of CEMS.
2. Calibration drift determination and adjustment of CEMS.
3. Preventive maintenance of CEMS (including spare parts inventory).
4. Data recording, calculations, and reporting.
5. Accuracy audit procedures including sampling and analysis methods.
6. Program of corrective action for malfunctioning CEMS.

Whenever excessive inaccuracies occur for two consecutive quarters, the owner or operator shall revise the current written procedures or modify or replace the CEMS to correct the deficiency causing the excessive inaccuracies.

These written procedures must be kept on record and available for inspection by the enforcement agency.

The owner or operator shall periodically review the aggregate hourly emissions average and aggregate annual emissions data produced by the CEMS. If the review indicates that either may exceed the emission limitations found in Condition 10b, the owner or operator shall take steps to mitigate SO_2 emissions to, at, or below the applicable limitation.

The owner or operator shall maintain an on-site record of CEMS-related data for not less than two years from the origination. The record shall contain all hourly SO_2 and flow rate measurements, any missing data substitution, subsequent aggregate and averaging calculation, results of quality assurance and averaging calculations, results of quality assurance activities, and all performance test results. These records shall be made readily available for inspection by the IDNR, EPA, or any authorized agent of these agencies.

- *NOx*:

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 this requirement.

The CEMS data recorder output range shall include zero and a high-level value. The high-level value shall be chosen and recorded by the owner or operator. The CEMS design shall also allow the determination of calibration drift at the zero and high-level values. If this is not possible or practical, the design must allow these determinations to be conducted at a low-level value (zero to 20 percent of the high-level value) and at a value between 50 and 100 percent of the high-level value.

The CEMS shall be installed at an accessible location where the pollutant concentration or emission rate measurements are directly representative or can be corrected so as to be representative of the total emissions from the affected facility or at the measurement location cross section.

The owner or operator shall develop and implement a QC program. At a minimum, each QC program must include written procedures which describe in detail, complete, step-by-step procedures and operations for each of the following activities:

1. Calibration of CEMS.
2. Calibration drift determination and adjustment of CEMS.
3. Preventive maintenance of CEMS (including spare parts inventory).
4. Data recording, calculations, and reporting.
5. Accuracy audit procedures including sampling and analysis methods.
6. Program of corrective action for malfunctioning CEMS.

Whenever excessive inaccuracies occur for two consecutive quarters, the owner or operator shall revise the current written procedures or modify or replace the CEMS to correct the deficiency causing the excessive inaccuracies.

These written procedures must be kept on record and available for inspection by the enforcement agency.

- *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 CEMS data recorder output range shall include zero and a high-level value. The high-level value shall be chosen and recorded by the owner or operator. The CEMS shall be capable of measuring emission levels under normal conditions and under periods of short-duration peaks of high concentrations.

The owner or operator shall develop and implement a QC program. At a minimum, each QC program must include written procedures which describe in detail, complete, step-by-step procedures and operations for each of the following activities:

1. Calibration of CEMS.
2. Calibration drift determination and adjustment of CEMS.
3. Preventive maintenance of CEMS (including spare parts inventory).
4. Data recording, calculations, and reporting.
5. Accuracy audit procedures including sampling and analysis methods.
6. Program of corrective action for malfunctioning CEMS.

Whenever excessive inaccuracies occur for two consecutive quarters, the owner or operator shall revise the current written procedures or modify or replace the CEMS to correct the deficiency causing the excessive inaccuracies.

These written procedures must be kept on record and available for inspection by the enforcement agency.

- *O_2 or CO_2*:

The owner or operator shall install, calibrate, maintain, and operate a CEMS and record the output of the system, for measuring the oxygen (O_2) or carbon dioxide (CO_2) content of the flue gases at each location where SO_2 emissions are monitored.

C. The CEMS required in Condition 16.B. for SO_2, NOx and either 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.

16. Continuous Emission Monitoring (Continued)

D. Muscatine Power and Water shall use the following procedures to calculate the hourly SO_2 mass rate for Boilers 7 and 8.

(1) When measurements of SO_2 concentration and flow rate are on a wet basis, use the following equation to compute hourly SO_2 mass emission rate (in lb/hr):

$E_h = K*C_h*Q_h$

Where:
E_h = Hourly SO_2 mass emission rate during unit operation, lb/hr.
$K = 1.660 \times 10^{-7}$ for SO_2, (lb/scf)/ppm.
C_h = Hourly average SO_2 concentration during unit operation, stack moisture basis, ppm.
Q_h = Hourly average volumetric flow rate during unit operation, stack moisture basis, scfh.

(2) When measurements by the SO_2 pollutant concentration monitor are on a dry basis and the flow rate monitor measurements are on a wet basis, use the following equation to compute hourly SO_2 mass emission rate (in lb/hr):

$E_h = K*C_{hp}*Q_{hs}*[(100 - \%H_2O)/100]$

Where:
E_h = Hourly SO_2 mass emission rate during unit operation, lb/hr.
$K = 1.660 \times 10^{-7}$ for SO_2, (lb/scf)/ppm.
C_{hp} = Hourly average SO_2 concentration during unit operation, ppm (dry).
Q_{hs} = Hourly average volumetric flow rate during unit operation, scfh as measured (wet).
$\%H_2O$ = Hourly average stack moisture content during unit operation, percent by volume.

At the conclusion of each clock hour on a boiler operating day, Muscatine Power and Water shall calculate the aggregate daily emissions rate, summing all SO_2 emissions from boilers 7 and 8 for that day. Likewise, at the conclusion of each clock hour on a boiler operating day, Muscatine Power and Water shall calculate the aggregate average hourly emissions rate for Boilers 7 and 8, as the sum of all hourly emissions from Boilers 7 and 8 divided by the time elapsed on that day. Lastly, Muscatine Power and Water shall calculate aggregate annual emissions from Boilers 7 and 8, either as the sum of all hourly emissions or the sum of all daily emissions collected or substituted since January 1 of the current emissions year. For the purposes of this condition, a boiler operating day is any day in which any fuel is combusted in any of the affected boilers. A day shall be defined as the time between 12:01 AM and 12:00 midnight.

E. Muscatine Power and Water shall maintain an on-site record of CEMS-related data for not less than two years from the origination. The record shall contain all hourly SO_2 and flow rate measurements, any missing data substitution, subsequent aggregate and averaging calculation, results of quality assurance and averaging calculations, results of quality assurance activities, and all performance test results. These records shall be made readily available for inspection by the Iowa Department of Natural Resources, the Environmental Protection Agency, or any authorized agent of these agencies

F. Muscatine Power and Water shall provide a written report of all exceedences of the aggregate hourly emissions average for Boilers 7 and 8 no later than 30-days following the end of each calendar quarter on forms provided by the Department. In addition, Muscatine Power and Water shall report the aggregate annual emissions for Boilers 7 and 8 in each quarterly report, summarizing the year-end totals in the fourth-quarter report.

G. The following data requirements shall apply to all CEMS for the 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 SO_2, NOx, CO, and CO_2 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.

16. Continuous Emission Monitoring (Continued)

(3) For each hour of missing emission data (NOx, SO_2, CO, and CO_2), the owner or operator shall substitute data by:

For SO_2, CO and CO_2:

(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.

(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.

For NOx:

(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 a missing data period of less than or equal to 24 hours, substitute, as applicable, for each missing hour, the arithmetic average recorded by the monitoring system during the previous 2160 quality assured monitor operating hours at the corresponding unit load range or operational bin.
   (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 2160 quality-assured monitor operating hours at the corresponding unit load range or operational bin; 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, as applicable, the arithmetic average hourly emission rate recorded by a monitoring system during the previous 2160 quality-assured monitor operating hours at the corresponding unit load range or operational bin.
   (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 2160 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.

16. Continuous Emission Monitoring (Continued)

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.

17. Permit History

Permit No.	Proj. No.	Description	Date	Stack Testing
95-A-373	95-267	Permit existing source, Add ESP & SO2 limits	09/14/95	Yes
95-A-373-P1	07-355	Add overfire air, PSD for CO	10/31/07	Yes
95-A-373-P2	12-290	Add $PM_{2.5}$ limit, Add annual NOx limit	07/22/13	Yes
95-A-373-P3	15-196	Amend Operating Conditions	03/02/16	Yes

18. Description of Terms and Acronyms

The descriptions below are meant only as a brief explanation of terms contained within the permit and may not be the exact definition of the term or acronym as contained within the regulations.

acfm	Actual cubic feet per minute
Applicant	The owner, company official or authorized agent
BACT	Best Available Control Technology
Btu	British thermal unit
°C	Degrees Celsius
Condensable PM	Material that condenses and/or reacts upon cooling and dilution in the ambient air to form particulate matter immediately after discharge from the stack
Department	Iowa Department of Natural Resources
dia.	Diameter
°F	Degrees Fahrenheit
ft	Foot
g	grams
g/dscm	Grams per dry standard cubic meter
gr	Grains
gr/dscf	Grains per dry standard cubic foot
gr/scf	Grains per standard cubic foot
HAP	Hazardous Air Pollutant(s)
hp	horsepower
hr	Hour
LAER	Lowest Achievable Emission Rate
lb	Pound
lb/hr	Pounds per hour
m	Meter
mg	Milligram
MM	Million
MW	Megawatt
NA	Not Applicable
$PM_{2.5}$	Particulate Matter with an aerodynamic diameter equal to or less than 2.5 microns
PM_{10}	Particulate Matter with an aerodynamic diameter equal to or less than 10 microns
PM – Federal	Particulate Matter that does not include the condensable PM
PM – State	Particulate Matter that includes condensable PM
ppm	parts per million
ppm_v	parts per million by volume
ppm_w	parts per million by weight
RACT	Reasonably Available Control Technology
scfm	Standard cubic feet per minute
SHAP	Single hazardous air pollutant
THAP	Total hazardous air pollutants
tons/yr	Tons per year
yr	Year

END OF PERMIT

Iowa Department of Natural Resources
Air Quality Construction Permit

Permit Holder

Firm: Muscatine Power and Water

Contact:

Jean Brewster
Mgr. Environmental Affairs

(563) 262-3259

3205 Cedar Street
Muscatine, IA 52761

Responsible Party:

Jean Brewster
Mgr. Environmental Affairs

Permitted Equipment

Emission Unit(s):	Tangentially Fired Boiler, Unit 9 (EU90) Maximum Heat Input: 1556 MMBtu/hr, fired by either coal or fuel oil
Control Equipment:	2 Electrostatic Precipitators (ESP) (CE91, CE92), Over-fired Air (CE95) 2 Scrubbers (CE93, CE94), Activated Carbon Injection (CE96)
Emission Point:	EP90
Equipment Location:	1700 Dick Drake Way Muscatine, IA 52761
Plant Number:	70-01-011

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.

Permit No.	Proj. No.	Description	Date	Stack Testing
80-A-191-P4	15-318	Add Activated Carbon Injection System	06/01/16	Yes

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

[JJC]

CPFP:700101:06012016:PS318:80A191P4:

PERMIT CONDITIONS

1. Departmental Review

This permit is issued based on information submitted by the applicant. Any misinformation, false statements or misrepresentations by the applicant or by the applicant's representative(s) 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 – 35; and 40 Code of Federal Regulations (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 Department 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. Owner and Operator Responsibility

This 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. The permit holder, owner, and operator of the facility shall assure that the installation of the equipment listed in this permit conforms to the design in the application (i.e. type, maximum rated capacity, etc.). No person shall construct, install, reconstruct or alter this emission unit(s), control equipment, or emission point without the required amended 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 assuring that the installation, operation, and maintenance of the equipment listed in this permit is in compliance with the provisions of this permit and all other applicable requirements.

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"*.

3. 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 Department shall be notified in writing at least seven (7) days prior to transferring to the new location unless the equipment will be located in an area which is classified as nonattainment for the National Ambient Air Quality Standards (NAAQS) or is a maintenance area for the NAAQS in which case notification shall be given fourteen (14) days prior to the relocation of equipment[(1)] (See Permit Condition 8.A.2). The owner or operator will be notified at least ten (10) days prior to the scheduled relocation if the relocation will cause a violation of the (NAAQS). In such case, a supplemental permit shall be required prior to the initiation of construction of additional control equipment or modifications to equipment needed to meet the standards.

[(1)] A list of nonattainment areas and maintenance areas for the NAAQS can be obtained from the Department.

4. Construction

A. General Requirements

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.

4. Construction (Continued)

In permit amendments, all provisions of the original permit remain in full force and effect unless they are specifically changed by the permit amendment. If a proposed project is not timely completed, the owner or operator shall seek a permit amendment in order to revert back to the most recent previous version of the permit. The previous, unchanged permit provisions are included in the amendment for your convenience only and are unappealable.

This permit or amendment shall become void if any one of the following conditions occurs:
(1) the construction or implementation of the proposed project, as it affects the emission point permitted herein, is not initiated within eighteen (18) months after the permit issuance date; or
(2) the construction or implementation of the proposed project, as it affects the emission point permitted herein, is not completed within thirty-six (36) months after the permit issuance date; or
(3) the construction or implementation of the proposed project, as it affects the emission point permitted herein, is not completed within a time period specified elsewhere in this permit.

B. Changes to Plans and Specifications

The owner or operator shall amend this permit or amendment prior to startup of the equipment if:
(1) Any changes are made to the final plans and specifications submitted for the proposed project; or
(2) This permit becomes void.

Changes to the final plans and specification shall include changes to plans and specifications for permitted equipment and control equipment and the specified operation thereof.

C. Amended Permits

The owner or operator may continue to act under the provisions of the previous permit for the affected emission unit(s) and emission point, together with any previous amendment to the permit, until one of the following conditions occurs:
(1) The proposed project authorized by this amendment is completed as it affects the emission unit(s) and emission point permitted herein; or
(2) This current amendment becomes void.

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5. 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 35.

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6. Excess Emissions

Per 567 IAC 24.1(1), 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 (1) six-minute period per one (1) 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 by telephone, electronic mail or in person to the appropriate field office within eight (8) hours of, or at the start of, the first working day following the onset of the incident (See Permit Condition 8.B.1). A written report of an incident of excess emissions shall be submitted as a follow-up to all required initial reports within seven (7) days of the onset of the upset condition (See Permit Condition 8.B.2).

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7. Permit Violations

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

8. Notification, Reporting, and Recordkeeping

A. The owner or operator shall furnish the Department the following written notifications:
   (1) Per 567 IAC 22.3(3)"b":
      (a) The date construction, installation, or alteration is initiated postmarked within thirty (30) days following initiation of construction, installation, or alteration;
      (b) The actual date of startup, postmarked within fifteen (15) days following the start of operation;
   (2) Per 567 IAC 22.3(3)"f", when portable equipment for which a permit has been issued is to be transferred from one location to another, the Department shall be notified:
      (a) at least fourteen (14) days before equipment relocation if the equipment will be located in a nonattainment area for the National Ambient Air Quality Standards (NAAQS) or a maintenance area for the NAAQS;
      (b) at least seven (7) days before equipment relocation.
   (3) Per 567 IAC 22.3(8), a new owner shall notify the Department of the transfer of equipment ownership within thirty (30) days of the occurrence. The notification shall be mailed to:

      Air Quality Bureau
      Iowa Department of Natural Resources
      7900 Hickman Road, Suite 1
      Windsor Heights, IA 50324

      and include the following information:
      - The date of ownership change,
      - The name, address, and telephone number of the responsible official, the contact person, and the owner of the equipment both before and after the ownership change; and
      - The construction permit number(s) of the equipment changing ownership.
   (4) Unless specified per a federal regulation, notification of each compliance test required by Permit Condition 12 shall be done not less than thirty (30) days before the required test or performance evaluation of a continuous emission monitor [567 IAC 25.1(7)]. The notification shall include:
      - the time,
      - the place,
      - the name of the person who will conduct the tests,
      - and other information as required by the Department;

      If the owner or operator does not provide timely notice to the Department, the Department shall not consider the test results or performance evaluation results to be a valid demonstration of compliance with the applicable rules or permit conditions. Upon written request, the Department may allow a notification period of less than thirty (30) days.

B. The owner or operator shall furnish the Department with the following reports:
   (1) Per 567 IAC 24.1(2), an incident of excess emissions as defined in 567 IAC 20.2 shall be reported within eight (8) hours or at the start of the first working day following the onset of the incident. The report may be made by electronic mail, in person or by telephone.
   (2) Per 567 IAC 24.1(3), a written report of an incident of excess emissions as defined in 567 IAC 20.2 shall be submitted as a follow-up to all required initial reports to the Department within seven (7) days of the onset of the upset condition.
   (3) Operation of this emission unit(s) or control equipment outside of those operating parameters specified in Permit Condition 14 in accordance to the schedule set forth in 567 IAC 24.1.
   (4) Per 567 IAC 25.1(6), the owner or operator of any facility required to install a continuous monitoring system or systems shall provide quarterly reports to the Director, no later than thirty (30) calendar days following the end of the calendar quarter, on forms provided by the Director.

8. Notification, Reporting, and Recordkeeping (Continued)

(5) Per 567 IAC 25.1(7), 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;

C. 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 unless otherwise required by another applicable law (i.e. NSPS, NESHAP, etc.)

D. The owner or operator 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
Windsor Heights, IA 50324
Telephone: (515) 725-9549
Fax: (515) 725-9501

E. The owner or operator shall send correspondence concerning stack testing to:

Stack Testing Coordinator
Air Quality Bureau
Iowa Department of Natural Resources
7900 Hickman Road, Suite 1
Windsor Heights, IA 50324
Telephone: (515) 725-9545
Fax: (515) 725-9502

F. The owner or operator shall send reports and notifications to:

Compliance Unit Supervisor Air Quality Bureau Iowa Department of Natural Resources 7900 Hickman Road, Suite 1 Windsor Heights, IA 50324 Telephone: (515) 725-9550 Fax: (515) 725-9502	IDNR Field Office 6 1023 West Madison Washington, IA 52353 Telephone: (319) 653-2135 Fax: (319) 653-2856

9. Appeal Rights

All conditions within an original permit may be appealed, subject to the appeal rights set forth in 561 IAC Chapter 7. Amended conditions within a permit amendment may be appealed, subject to the appeal rights set forth in 561 IAC Chapter 7. In permit amendments, all provisions of the original permit remain in full force and effect unless they are specifically changed by the permit amendment. The previous, unchanged permit provisions are included in the amendment for your convenience only and are unappealable.

Per 561 IAC 7.4(1), the owner or operator shall file any written notice of appeal within thirty (30) days of receipt of the issued permit. The written notice of appeal shall be filed with the Director of the Department with a copy to the Legal Services Bureau Chief at the following addresses:

Director Iowa Department of Natural Resources 502 East 9th Street Des Moines, IA 50319	Bureau Chief Legal Services Bureau Iowa Department of Natural Resources 502 East 9th Street Des Moines, IA 50319

10a. Emission Limits

Pollutant	lb/hr[1]	tons/yr[2]	Additional Limits	Reference (567 IAC)
Particulate Matter (PM)	NA	NA	0.03 lb/MMBtu[1][11]	40 CFR 60.42 Da(a)
PM_{10}	46.68[3]	NA	NA	NAAQS
$PM_{2.5}$	43.59[4]	NA	NA	NAAQS
Opacity	NA	NA	20%[5]	40 CFR 60.42 Da(b)
Sulfur Dioxide (SO_2)	NA	NA	70% reduction[6]	40 CFR 60.42 Da(a)
Sulfur Dioxide (SO_2) – total	1153[12]	NA	NA	RACT
Nitrogen Oxides (NO_X)	NA	NA	0.60 lb/MMBTU[7] 65% reduction[8] 0.235 lb/MMTU[9]	40 CFR 60.42 Da(a)
Volatile Organic Compounds	NA	NA	NA	NA
Carbon Monoxide (CO)	329.2[10]	NA	NA	NAAQS
Individual HAP	NA	NA	NA	NA
Total HAP	NA	NA	NA	NA

[1] Standard is expressed as the average of 3 runs, unless specifically noted otherwise.
[2] Standard is a 12-month rolling total.
[3] The limit for PM_{10} emissions is established for air dispersion modeling.
[4] The limit for $PM_{2.5}$ emissions is established to address the "Finding of Substantial Inadequacy of Implementation Plan; Call for Iowa SIP Revision" for $PM_{2.5}$ published in the Federal Register (76 FR 9706) on February 22, 2011.
[5] Except for one 6-minute period per hour of not greater than 27% opacity. Standard is a 6-minute average.
[6] When combusting solid or solid-derived fuels, 30% of the potential combustion concentration (70% reduction). When combusting liquid or gaseous fuels, 0.8 lb/MMBtu and 10% of the potential combustion concentration, or 100% of the potential combustion concentration (zero percent reduction) when emissions are less than 0.20 lb/MMBtu. If different fuels are combusted simultaneously, the applicable standard is determined by proration using the formula set forth in 40 CFR 60.43Da(h)(2). Standard is a 30-day rolling average. (40 CFR 60.43Da(g)). After the initial performance test, compliance with the SO2 emission limitations and percentage reduction requirements under 60.43Da is based on the average emission rate for 30 successive boiler operating days. A separate performance tests is completed at the end of each boiler operating day after the initial performance test, and a new 30 day average emission rate for SO2 and a new percent reduction for SO2 are calculated to show compliance with the standards (40 CFR 60.48Da(e)) . Compliance shall be demonstrated by following the procedures in 40 CFR 60.48Da(g) and (h)).
[7] For bituminous coal. Limit for subbituminous coal is 0.50 lb/MMBtu, limit for oil is 0.30 lb/MMBtu, limit for gas is 0.20 lb/MMBtu, and for other fuel types, or if two or more fuels are combusted simultaneously, the NOx BACT limit shall be the limit specified in 40 CFR 60.44Da(a) and/or as determined by the proration procedures specified in 40 CFR 60.44a(c). Standard is a 30-day rolling average. This standard applies at all times except during periods of startup, shutdown or malfunction (40 CFR 60.48Da(c)). After the initial performance test, compliance with the NOx emission limitations under 60.44Da is based on the average emission rate for 30 successive boiler operating days. A separate performance tests is completed at the end of each boiler operating day after the initial performance test, and a new 30 day average emission rate for NOx are calculated to show compliance with the standards (40 CFR 60.48Da(e)) . Compliance shall be demonstrated by following the procedures in 40 CFR 60.48Da(g) and (h).
[8] For solid fuels. For liquid fuels, standard is a 30% reduction of potential combustion concentration. Compliance with the lb/MMBtu standard constitutes compliance with the percent reduction requirements (40 CFR 60.48a(b)).
[9] As requested to remain an insignificant increase for PSD and to meet Acid Rain requirements in 40 CFR 76.6. Standard is a twelve month rolling average, and includes startup, shutdown and malfunctions.
[10] Limit used for modeling an insignificant impact for NAAQS and increment in project 07-355.
[11] Standard also requires 1% potential combustion concentration (99% reduction) when combusting solid fuel, and 30% potential combustion concentration (70% reduction) when combusting liquid fuel (40 CFR 60.42Da(a)). Compliance with the 0.03 lb/MMBtu standard constitutes compliance with the percent reduction requirements (40 CFR 60.48Da(a)). This standard applies at all times except during periods of startup, shutdown or malfunction (40 CFR 60.48Da(c)).
[12] The SO_2 limit is established to address the nonattainment designation for a portion of Muscatine County published in the Federal Register (78 FR 47191) on August 5, 2013. The nonattainment designation is for the 1-hour SO_2 primary national ambient air quality standard promulgated by EPA in 2010 (75 FR 35519, June 22, 2010). Compliance with the emission standard shall be demonstrated through the use of a Continuous Emission Monitoring System (CEM) and shall be determined on a 21-day rolling average basis and includes startup, shutdown and malfunction emissions. Compliance with this emission limit shall be demonstrated using the formula found in Permit Condition 15.D. This emission limit becomes effective January 1, 2017.

10b. BACT/LAER Emission Limits

Pollutant	lb/day	tons/yr	Additional Limits	Reference (567 IAC)
Particulate Matter (PM)	NA	NA	0.03 lb/MMBtu[1]	31.20(1)"d", LAER
Nitrogen Oxides (NO_X)	NA	NA	0.60 lb/MMBtu[7]	BACT
Sulfur Dioxide (SO_2)	0.56 lb/MMBtu[5]	NA	0.45 lb/MMBtu[4] 92% reduction[6]	31.20(1)"d", LAER
Carbon Monoxide (CO)	NA	720[2]	100 ppm[3]	BACT

[1] Standard is expressed as the average of three (3) runs. Reference EPA permit 80-E-001 of January 24, 1980
[2] Standard is a 12-month rolling total, and includes startup, shutdown, and malfunctions.
[3] Standard is averaged over a calendar day, and does not include startup, shutdown and malfunction.
[4] From IDNR 12/14/82 "Revised Agreement Establishing Lowest Achievable Air Contaminant Emission Rate and Offsets for Sulfur Dioxide (SO2)". Standard is a 30-day rolling average
[5] From IDNR 12/14/82 "Revised Agreement Establishing Lowest Achievable Air Contaminant Emission Rate and Offsets for Sulfur Dioxide (SO2)". Standard is a maximum daily average.
[6] From IDNR 12/14/82 "Revised Agreement Establishing Lowest Achievable Air Contaminant Emission Rate and Offsets for Sulfur Dioxide (SO2)". Standard is a 30-day rolling average for the flue gas desulfurization system.
[7] For bituminous coal. BACT NOx emission limits are the NOx emission standards specified in NSPS Subpart Da; therefore, limit for subbituminous coal is 0.50 lb/MMBtu, limit for oil is 0.30 lb/MMBtu, limit for gas is 0.20 lb/MMBtu, and for other fuel types or if two or more fuels are combusted simultaneously, the NOx BACT limit shall be the limit specified in 40 CFR 60.44a(a) and/or as determined by the proration procedures specified in 40 CFR 60.44a(c). Reference EPA permit 80-E-001 of January 24, 1980. Standard is a 30-day rolling average.

11. Emission Point Characteristics

This emission point shall conform to the specifications listed below:

Parameter	Value
Stack Height, (ft, from the ground)	300
Discharge Style	Vertical Unobstructed
Stack Opening (inches, diameter)	126
Exhaust Temperature (°F)	180
Exhaust Flowrate (scfm)	430,625

The temperature and flowrate 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 either the temperature or flowrate above are different than the values stated, the owner or operator shall submit a request to the Department within thirty (30) days of the discovery to determine if a permit amendment is required or submit a permit application requesting to amend the permit.

12. Compliance Demonstration(s)

Pollutant	Compliance Demonstration	Compliance Methodology	Frequency
PM – Federal	No	NA	NA
PM – State	Yes	Stack Testing	Once every 3 years(1)
PM_{10}	No	NA	NA
$PM_{2.5}$	Yes	Stack Testing	(2)
Opacity	Yes	COMS	Continuous
SO_2	Yes	CEMS(3)	Continuous
NO_x	Yes	CEMS(3)	Continuous
VOC	No	NA	NA
CO	Yes	CEMS(3)	Continuous
Pb	No	NA	NA
Individual HAP	No	NA	NA
Total HAP	No	NA	NA

(1) Performance testing shall be conducted once every three calendar years. Testing required by the Title V Operating Permit can be used to satisfy this requirement.
(2) Stack test for $PM_{2.5}$ is required if the results of any PM test (as a 3 run average) ever exceeds 43.59 pounds per hour. The test stack for $PM_{2.5}$ shall be conducted within ninety (90) days after the report is received by the Iowa DNR showing the final results of the PM test. Stack testing for PM demonstrated compliance on August 22, 2013, with an average emission rate of 28.42 lb/hr.
(3) See Condition 16 of the permit for continuous emission monitoring requirements.

If subsequent testing is specified above, the owner or the owner's authorized agent shall verify compliance with the emission limitations contained in Permit Condition 10 according to the frequency and timeframe noted above.

If testing is required, the owner or the owner's authorized agent 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	1 hour	40 CFR 60, Appendix A, Method 5 40 CFR 51 Appendix M Method 202
PM_{10}	1 hour	40 CFR 51, Appendix M, 201A with 202
$PM_{2.5}$	1 hour	40 CFR 51, Appendix M, 201A with 202
Opacity	1 hour	40 CFR 60, Appendix A, Method 22
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
HAP	1 hour	40 CFR 60, Appendix A, Method 18

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.

Per 567 IAC 25.1(7)"a", at the Department's request, a pretest meeting shall be held not later than fifteen (15) days before the owner or operator conducts the compliance demonstration. A testing protocol shall be submitted to the Department no later than fifteen (15) days before the owner or operator conducts the compliance demonstration. 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. A representative of the Department shall be allowed to witness the test(s). The Department shall reserve the right to impose additional, different, or more detailed testing requirements.

12. Compliance Demonstration(s) (Continued)

The owner shall be responsible for the installation and maintenance of test ports. The unit(s) being sampled shall 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.

13. New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) Applicability

This emissions unit is subject to the NSPS standard Subpart Da, *Standards of Performance for Electric Utility Steam Generating Unit for which Construction is Commenced After September 18, 1978*.

For information only: This equipment is of the source category affected by the following federal regulation: National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units (MATS) [40 CFR Part 63, Subpart UUUUU]. At this time Subpart UUUUU has not been adopted into Iowa rules.

Failure to include any NSPS or NESHAP requirements as a part of this permit does not relieve the permittee from the requirement to comply with all applicable NSPS or NESHAP requirements.

14. Operating Limits

Operating limits for this permit shall be:

A. This emissions unit shall be limited to firing on coal and fuel oil.

B. The owner or operator shall develop an operating and maintenance plan for the scrubbers, CE93 & CE94, the electrostatic precipitators, CE91 & CE92, and the activated carbon injection system (CE96) including a preventative maintenance schedule that is consistent with the manufacturer’s instructions for routine and long-term maintenance.

C. Total emissions of sulfur dioxide from Unit 7, Unit 8 and Unit 9 shall not exceed 1153 pounds per hour on a 21-day rolling average as calculated in Permit Condition 15.C.

15. Operating Condition Monitoring and Recordkeeping

Unless specified by a federal regulation, all records as required by this permit shall be kept on-site for a minimum of five (5) years and shall be available for inspection by the Department. These records shall show the following:

A. The owner or operator shall monitor emissions from this unit and calculate the annual emissions, in tons per year on a calendar-year basis, for a period of five years following resumption of regular operations after the change made in Project 07-355. This information shall be retained by the owner or operator for a period of ten years after Project 07-355 was completed (IAC 567 33.3(18)”f”(4) & 33.3(18) “f”(5)).

B. The owner or operator shall make the information required to be documented and maintained pursuant to IAC 567-33.3(18)”f” available for review upon request for inspection by the Department or the general public pursuant to the requirements for Title V operating permits contained in 567-22.107(6).

15. Operating Condition Monitoring and Recordkeeping (Continued)

C. The owner or operator shall maintain a file of computations to show the total hourly emission level for SO_2. The owner or operator shall use the total hourly SO_2 emission rates to calculate and record the average SO_2 emission rate for each calendar day. Effective January 1, 2017, the owner or operator shall use the daily average SO_2 emission rates to demonstrate compliance with the 21-day rolling average as calculated below:

$$SO_2 = 2.03*(\text{Unit 7}) + 0.84*(\text{Unit 8}) + 1.22*(\text{Unit 9})$$

Where,

SO_2 = total emissions, in pounds per hour, of sulfur dioxide from Unit 7, Unit 8 and Unit 9
Unit 7 = 24-hour average sulfur dioxide emission rate, lb/hr, for Unit 7
Unit 8 = 24-hour average sulfur dioxide emission rate, lb/hr, for Unit 8
Unit 9 = 24-hour average sulfur dioxide emission rate, lb/hr, for Unit 9

The owner or operator shall provide quarterly reports to the Department, no later than 30 calendar days following the end of the calendar quarter as specified in 567 IAC 25.1(6).

D. The owner or operator shall maintain a log of all maintenance and inspection activities performed on the emission unit and control equipment. This log shall include, but is not limited to:

i. The date and time any inspection and/or maintenance was performed on the emission unit and/or control equipment;
ii. Any issues identified during the inspection and the date each issue was resolved;
iii. Any issues addressed during the maintenance activities and the date each issue was resolved; and,
iv. Identification of the staff person performing the maintenance or inspection.

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16. Continuous Emission Monitoring

A. The owner or operator shall operate, maintain, and quality assure a continuous emission monitoring system (CEMS) for measuring emissions in the respective units (ppm, lb/hr, etc.) as required in Condition 10a or 10b. The CEMS shall be operated during any period that any fuel is combusted in the boiler.

B. The following monitoring systems are required by this permit:

- *Opacity*:
  In accordance with 40 CFR §60.49Da(a), the owner or operator shall install, calibrate, maintain, and operate a continuous emission 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 requirements of 40 CFR Part 60, Appendix B, Performance Specification 1 (PS1).

- *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, 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

16. Continuous Emission Monitoring (Continued)

(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.

The owner or operator shall periodically review the aggregate hourly emissions average and aggregate annual emissions data produced by the CEMS. If the review indicates that either may exceed the emission limitations found in Condition 10, the owner or operator shall take steps to mitigate SO_2 emissions to, at, or below the applicable limitation.

The owner or operator shall maintain an on-site record of CEMS-related data for not less than two years from the origination. The record shall contain all hourly SO_2 and flow rate measurements, any missing data substitution, subsequent aggregate and averaging calculation, results of quality assurance and averaging calculations, results of quality assurance activities, and all performance test results. These records shall be made readily available for inspection by the IDNR, EPA, or any authorized agent of these agencies.

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

- *NOx*:

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.

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

16. Continuous Emission Monitoring (Continued)

- *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.

- *O_2 or CO_2*:

  In accordance with 40 CFR §60.49Da, the owner or operator shall install, calibrate, maintain, and operate a CEMS and record the output of the system, for measuring the oxygen (O_2) or carbon dioxide (CO_2) content of the flue gases at each location where SO_2 or NOx emissions are monitored.

- *Flowmeter*:

  Per 40 CFR §60.49Da(l), 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, 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.

C. The CEMS required in Condition 16.B. for SO_2, NOx and either 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.

D. In accordance with 40 CFR §60.49Da(f)(1), the owner or operator shall obtain emission data for at least 18 hours in at least 22 out of 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 monitoring systems approved by the Administrator (40 CFR Part 60 approved reference methods and procedures are listed below):

1. 40 CFR 60, Method 6 shall be used to determine the SO_2 concentration at the same location as the SO_2 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 O_2 or CO_2 concentration at the same location as the O_2 or CO_2 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.

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 O_2, SO_2, and NO_x concentrations, respectively.
   2. SO_2 or NO_x (NO), as applicable, shall be used for preparing the calibration gas mixtures (in N_2, 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.
   4. The span value for a continuous monitoring system measuring NO_x shall be:
      i. 1,000 ppm; or
      ii. the owner or operator of an affected facility may elect to use the NO_X span values determined according to Section 2.1.2 in Appendix A to 40 CFR Part 75.
   5. 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. Should the facility opt to determine span values for NOx under Permit Condition 16.E.4.ii, SO_2 span values shall be determined according to Section 2.1.1 in Appendix A to 40 CFR Part 75.
   6. The facility may elect to implement the following alternative data accuracy assessment procedures. For all required CO_2 and O_2 CEMS and for SO_2 and NO_X CEMS with span values greater than 30 ppm, quarterly linearity checks may be performed in accordance with Section 2.2.1 of Appendix B to 40 CFR Part 75, instead of performing the cylinder gas audits (CGAs) described in Procedure 1, Section 5.1.2 of Appendix F to 40 CFR Part 60. If this option is selected: The frequency of the linearity checks shall be as specified in Section 2.2.1 of Appendix B to 40 CFR Part 75; the applicable linearity specifications in Section 3.2 of Appendix A to 40 CFR Part 75 shall be met; the data validation and out-of-control criteria in Section 2.2.3 of Appendix B to 40 CFR Part 75 shall be followed instead of the excessive audit inaccuracy and out-of-control criteria in Procedure 1, Section 5.2 of Appendix F to 40 CFR Part 60; and the grace period provisions in Section 2.2.4 of Appendix B to 40 CFR Part 75 shall apply. For the purposes of data validation under this subpart, the cylinder gas audits described in Procedure 1, Section 5.1.2 of Appendix F to 40 CFR Part 60 shall be performed for SO_2 and NO_X span values less than or equal to 30 ppm.

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 SO_2, NOx, CO, and CO_2 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 (NOx, SO_2, CO, and CO_2), the owner or operator shall substitute data by:

16. Continuous Emission Monitoring (Continued)

For SO_2, CO and CO_2:

(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.

(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.

For NOx:

(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 a missing data period of less than or equal to 24 hours, substitute, as applicable, for each missing hour, the arithmetic average recorded by the monitoring system during the previous 2160 quality assured monitor operating hours at the corresponding unit load range or operational bin.
   (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 2160 quality-assured monitor operating hours at the corresponding unit load range or operational bin; 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, as applicable, the arithmetic average hourly emission rate recorded by a monitoring system during the previous 2160 quality-assured monitor operating hours at the corresponding unit load range or operational bin.
   (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 2160 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.

17. Permit History

Permit No.	Proj. No.	Description	Date	Stack Testing
80-A-191	80-243	Original DNR permit	11/21/80	Yes
80-A-191-P1	07-355	Add overfired air, PSD for CO	10/31/07	Yes
80-A-191-P2	12-290	Add PM_{10} & $PM_{2.5}$ limits	07/22/13	Yes
80-A-191-P3	15-196	Amend Operating Conditions	03/02/16	Yes

18. Description of Terms and Acronyms

The descriptions below are meant only as a brief explanation of terms contained within the permit and may not be the exact definition of the term or acronym as contained within the regulations.

acfm	Actual cubic feet per minute
Applicant	The owner, company official or authorized agent
BACT	Best Available Control Technology
Btu	British thermal unit
°C	Degrees Celsius
Condensable PM	Material that condenses and/or reacts upon cooling and dilution in the ambient air to form particulate matter immediately after discharge from the stack
Department	Iowa Department of Natural Resources
dia.	Diameter
°F	Degrees Fahrenheit
ft	Foot
g	grams
g/dscm	Grams per dry standard cubic meter
gr	Grains
gr/dscf	Grains per dry standard cubic foot
gr/scf	Grains per standard cubic foot
HAP	Hazardous Air Pollutant(s)
hp	horsepower
hr	Hour
LAER	Lowest Achievable Emission Rate
lb	Pound
lb/hr	Pounds per hour
m	Meter
mg	Milligram
MM	Million
MW	Megawatt
NA	Not Applicable
$PM_{2.5}$	Particulate Matter with an aerodynamic diameter equal to or less than 2.5 microns
PM_{10}	Particulate Matter with an aerodynamic diameter equal to or less than 10 microns
PM – Federal	Particulate Matter that does not include the condensable PM
PM – State	Particulate Matter that includes condensable PM
ppm	parts per million
ppm_v	parts per million by volume
ppm_w	parts per million by weight
RACT	Reasonably Available Control Technology
scfm	Standard cubic feet per minute
SHAP	Single hazardous air pollutant
THAP	Total hazardous air pollutants
tons/yr	Tons per year
yr	Year

END OF PERMIT