



**AIR POLLUTION CONTROL
PERMIT TO CONSTRUCT**

Pursuant to the Air Pollution Control Rules of the State of North Dakota (North Dakota Administrative Code Article 33-15, Chapter 33-15-14 and Chapter 33-15-25), the North Dakota Department of Health hereby grants a Permit to Construct for the following source:

I. General Information:

- A. **Permit to Construct Number:** PTC10028
- B. **Source:**
 - 1. **Name:** R.M. Heskett Station Unit 2
 - 2. **Location:** Mandan, North Dakota, Morton County
 - 3. **Source Type:** Fossil-fuel fired steam electric unit with a nominal generating capacity of 916.5 million British thermal units per hour (10^6 Btu/hr).
- C. **Owner/Operator:**
 - 1. **Name:** Montana-Dakota Utilities Co.
 - 2. **Address:** 400 N Fourth Street
Bismarck, ND 58501-4092

II. Permit Conditions:

This Permit to Construct establishes sulfur dioxide emission limits for R.M. Heskett Station Unit 2 if, and when, EPA approves those limits as part of the North Dakota Regional Haze SIP. While this Permit to Construct authorizes the construction and initial operation of new or modified air pollution control equipment and process changes to reduce sulfur dioxide emissions, the permittee may be required to apply for a Prevention of Significant Deterioration (PSD) permit to authorize any significant net emissions increase of particulate matter, PM_{10} and/or $PM_{2.5}$, that will result from the installation of the new or modified pollution control equipment and the process changes.

If new emission units are created, a new Permit to Construct may be required in accordance with NDAC 33-15-14-02. The source shall be operated in accordance with the terms of this Permit to Construct, any required PSD permit and the Title V Permit to Operate until a revised Title V Permit to Operate is issued. The source is subject to all applicable rules, regulations, and orders now or hereafter in effect of the North Dakota Department of Health and to the conditions specified below:

A. Special Conditions:

1. **Emission Limits:** The term "12-month rolling average," as used in this permit, shall be determined by calculating an arithmetic average of all operating hourly rates for the current month and the previous 11 months. A new 12-month rolling average shall be calculated by the 30th day following the end of each month. Each 12-month rolling average rate shall include start-up, shutdown, emergency and malfunction periods unless those periods are exempt by this permit. The 12-month rolling average emission rate is calculated from average monthly values as follows:
 - If demonstrating compliance with the limit in Condition II.A.1.a(1), calculate the SO₂ removal efficiency for the month as determined by the outlet SO₂ emissions measured by the continuous emissions monitoring system (CEMS) and compare to the average sulfur input to the boiler. The average monthly sulfur input to the boiler shall be based on the amount of fuel combusted in the boiler and the average of the coal sulfur concentration samples measured during the month.
 - If demonstrating compliance with the limit in Condition II.A.1.a(2), provide the outlet SO₂ emissions as measured and calculated by the CEMS.
- a. The permittee shall not discharge or cause the discharge of sulfur dioxide (SO₂) into the atmosphere from Unit 2 in excess of either:
 - (1) 30.0% of the SO₂ equivalent reaching the inlet of the boiler (70.0% reduction) on a 12-month rolling average basis, or as an alternative;
 - (2) 0.60 pounds per million British thermal units (lb/10⁶ Btu) on a 12-month rolling average basis.
- b. The permittee shall conduct an optimization study to establish the highest sustained sulfur (SO₂) removal efficiency achievable by adding limestone to the bed material, taking into account any technical, operational, and reliability considerations, other pollutant emissions and environmental impacts, and cost effectiveness.
 - (1) Within 180 days of initial start-up of the limestone injection system, the permittee shall submit a protocol that describes the parameters to be monitored/measured during the study and provide a schedule for completion of the study and report.
 - (2) Upon Department approval of the test protocol and schedule, the optimization study shall be completed and a report submitted to the Department within the schedule approved in the study protocol.

- (3) If the study results indicates that sulfur (SO₂) removal beyond the limits in Condition II.A.1.a(1) and II.A.1.a(2) is achievable, after taking into account technical feasibility, operational and reliability consideration, other pollutant emissions and environmental impacts, and cost effectiveness, the permittee shall apply for a Permit to Construct to make the new SO₂ limit federally enforceable. The permittee shall begin complying with the new limit as outlined in the new, or amended, Permit to Construct.
- c. The SO₂ emission limits apply at all times including startup, shutdown, emergency and malfunction.
2. **Compliance Date:** Compliance with the emission limits and other requirements of this permit is required as expeditiously as practicable but in no event later than five years after the U.S. Environmental Protection Agency (EPA) approves this permit as part of the Regional Haze SIP. For purposes of establishing the first month of the 12-month rolling average limits in Condition II.A.1., the permittee shall begin monitoring for compliance within five years of EPA approval of the SIP, as described above, or within six months after initial startup of the limestone injection system, whichever is earlier.
3. **Continuous Emission Monitoring System (CEMS):** The emissions from Unit 2 (main stack) shall be measured by continuous emission monitors (CEM) for SO₂, CO₂, and flow. The monitoring requirements under Condition II.A.4 shall be the compliance determination method for SO₂.
4. **Monitoring Requirements and Conditions:**
- a. Requirements:

Testing and monitoring protocols used to demonstrate compliance with the emission limits of Condition II.A.1 above shall be as follows:

Table 1
Monitoring Requirements by Pollutant/Parameter

Pollutant/Parameter	Monitoring Requirement (Method)	Condition Number
SO ₂ (inlet)	Coal Sampling Data	4.b.(6)
SO ₂ (outlet)	CEMS	4.b.(1), 4.b.(2), 4.b.(3), 4.b.(4) & 4.b.(6)
CO ₂	CEMS	4.b.(1), 4.b.(2), & 4.b.(3) & 4.b.(4)
Flow	Flow Monitor	4.b.(1), 4.b.(2), & 4.b.(3) & 4.b.(4)

- b. Emission Monitoring Conditions:
- (1) The monitoring shall be in accordance with the following applicable requirements of Chapter 33-15-06 of the North Dakota Air Pollution

Control Rules and the Acid Rain Program. Emissions are calculated using 40 CFR Part 75.

- (a) Section 33-15-06-04 of the North Dakota Air Pollution Control Rules, Monitoring Requirements.
 - (b) 40 CFR 72 and 40 CFR 75.
- (2) The Department may require additional performance audits of the CEMS.
 - (3) When a failure of a continuous emission monitoring system occurs, an alternative method, acceptable to the Department, for measuring or estimating emissions must be undertaken as soon as possible. The procedures outlined in 40 CFR 75, Subpart D for substitution are considered an acceptable method for the emission rate limit. Timely repair of the emission monitoring system must be made.
 - (4) The permittee shall maintain and operate air pollution control monitoring equipment in a manner consistent with the manufacturer's recommended procedures, or a site-specific QA/QC Plan required by 40 CFR 75. The permittee shall have the QA/QC Plan available on-site and provide the Department with a copy when requested.
 - (5) Within 180 days of initial startup of the equipment required to meet the SO₂ limits, conduct an emissions test to measure particulate emissions, using EPA Test Method 5, 5B or Method 17 in 40 CFR Part 60, Appendix A. Other test methods may be used provided they are approved, in advance, by the Department.
 - (6) The requirements in 40 CFR 60, Appendix A, Method 19, Section 12.5.3 shall be used to determine overall reduction of SO₂ emissions based on outlet CEMS data and inlet coal sample analysis. Section 12.5.3.2 shall be used to calculate the inlet SO₂ rate. In place of the ASTM D 2234 requirements of 12.5.2.1 of Method 19, coal sample collection will be conducted at least daily when the boiler is in operation to generate the average monthly inlet SO₂ emission rate. Coal sample analysis shall occur at least weekly whenever samples are collected during that week. Daily samples within a calendar week may be combined to form a composite sample that is analyzed for the required parameters.

For purposes of determining compliance with the SO₂ percent reduction requirement, the reduction efficiency shall be determined as follows:

$$\% \text{ Reduction} = \frac{\text{Inlet SO}_2 \text{ Rate} - \text{Outlet SO}_2 \text{ Rate}}{\text{Inlet SO}_2 \text{ Rate}} \times 100$$

Where: The Inlet SO₂ Rate is in units of lb/10⁶ Btu or lb/hr and the Outlet SO₂ Rate is in the same units as the Inlet SO₂ Rate.

5. Recordkeeping Requirements:

- a. The permittee shall maintain compliance monitoring records for Unit 2 as outlined in Table 2 - Monitoring Records, that includes the following information:
- (1) A copy of the sample analysis report(s), including the date that the sample analysis was performed; the company, entity, or person that performed the analysis; and the testing techniques or methods used.
 - (2) The records of quality assurance for emissions measuring systems including but not limited to quality control activities, audits and calibration drifts as required by the applicable test method.
 - (3) A copy of all field data sheets from the emissions testing.
 - (4) A record shall be kept of all major maintenance activities conducted on the emission units or air pollution control equipment.
 - (5) Records shall be kept as to the type of fuel usage.

**Table 2
 Monitoring Records**

Pollutant/Parameter	Compliance Monitoring Record
SO ₂ outlet (lb/10 ⁶ Btu & lb/hr)	CEMS Data
SO ₂ inlet (lb/10 ⁶ Btu)	Coal Sampling Data
CO ₂	CEMS Data
Flow	Flow Monitor Data

- b. In addition to requirements outlined in Condition II.5.a., recordkeeping for Unit 2 shall be in accordance with the following applicable requirements of Chapter 33-15-06, Chapter 33-15-14 of the North Dakota Air Pollution Control Rules and the Acid Rain Program:
- (1) Section 33-15-06-05 of the North Dakota Air Pollution Control Rules, Reporting and Recordkeeping Requirements.
 - (2) 40 CFR 72 and 40 CFR 75 as incorporated by NDAC 33-15-21-08.1 and 09.
- c. The permittee shall retain records of all required compliance monitoring data and support information for a period of at least five years from the date of the compliance monitoring sampling, measurement, report, or application. Support information includes all maintenance records of the emission units and all original strip-chart recordings/computer printouts and calibrations of the continuous compliance monitoring instrumentation, and copies of all reports required by the permit.

6. **Reporting:**

a. Reporting shall be in accordance with the following applicable requirements of Chapter 33-15-06 and Chapter 33-15-14 of the North Dakota Air Pollution Control Rules and the Acid Rain Program:

- (1) Section 33-15-06-05 of the North Dakota Air Pollution Control Rules, Reporting and Recordkeeping Requirements.
- (2) 40 CFR 72 and 40 CFR 75 as incorporated by NDAC 33-15-21-08.1 and 09.
- (3) NDAC 33-15-14-06.5.

b. Quarterly excess emissions reports for Unit 2 shall be submitted no later than the 30th day following the end of each calendar quarter. Excess emissions are defined as emissions which exceed the emission limits for Unit 2 as outlined in Condition II.A.1.a(1) or (2). Excess emissions shall be reported for the following:

<u>Parameter</u>	<u>Reporting Period</u>
SO ₂ % reduction	(Monthly and 12-month rolling average)
or	
SO ₂ lb/10 ⁶ Btu at outlet	(Monthly and 12-month rolling average)

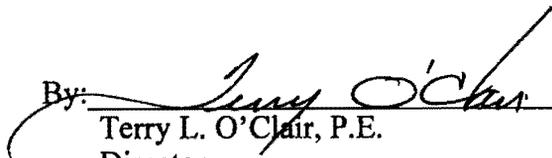
- c. The permittee shall submit a semi-annual report for all monitoring records required under Condition II.A.5 on forms supplied or approved by the Department. All instances of deviations from the permit must be identified in the report. A monitoring report shall be submitted within 45 days after June 30 and December 31 of each year.
- d. The permittee shall submit an annual compliance certification report within 45 days after December 31 of each year on forms supplied or approved by the Department.
- e. For emission units where the method of compliance monitoring is demonstrated by either an EPA Test Method or portable analyzer, the test report shall be submitted to the Department within 60 days after completion of the test.
- f. The permittee shall submit an annual emission inventory report on forms supplied or approved by the Department. This report shall be submitted by March 15 of each calendar year. Insignificant units/activities listed in this permit do not need to be included in the annual emission inventory report.
- g. The permittee shall notify the Department within 15 days of the actual startup date of the equipment required to meet the SO₂ permit limit.

B. General Conditions:

1. This permit shall in no way permit or authorize the maintenance of a public nuisance or danger to public health or safety.
2. The permittee shall comply with all State and Federal environmental laws and rules. In addition, the permittee shall comply with all local building, fire, zoning, and other applicable ordinances, codes, rules and regulations.
3. All reasonable precautions shall be taken by the permittee to prevent and/or minimize fugitive emissions during the construction period.
4. The permittee shall at all times, including periods of startup, shutdown, and malfunction, maintain and operate Unit 2 and all other emission units including associated air pollution equipment and fugitive dust suppression operations in a manner consistent with good air pollution control practices for minimizing emissions.
5. Any duly authorized officer, employee or agent of the North Dakota Department of Health may enter and inspect any property, premise or place at which the source listed in Item I.B. of this permit is or will be located at any time for the purpose of ascertaining the state of compliance with the North Dakota Air Pollution Control Rules and the conditions of this permit.
6. The conditions of this permit herein become, upon the effective date of this permit, enforceable by the Department pursuant to any remedies it now has or may in the future have, under the North Dakota Air Pollution Control Law, NDCC Chapter 23-25. Each and every condition of this permit is a material part thereof, and is not severable.

FOR THE NORTH DAKOTA
DEPARTMENT OF HEALTH

Date: 7/22/10

By: 
Terry L. O'Clair, P.E.
Director
Division of Air Quality