November 3, 2008

Ken Wangler
Montana Dakota Utilities, Inc. – Glendive Operating Station
2001 N. Merrill Ave.
Glendive, MT 59330

Dear Mr. Wangler:

Air Quality Permit #1551-06 is deemed final as of November 3, 2008, by the Department of Environmental Quality (Department). This permit is for the operation of an electrical generation peaking unit. All conditions of the Department's Decision remain the same. Enclosed is a copy of your permit with the final date indicated.

For the Department,

Vickie Walsh

Vickie Walsh	Trista Glazier
Air Permitting Program Supervisor	Environmental Science Specialist
Air Resources Management Bureau	Air Resources Management Bureau
(406) 444-9741	(406) 444-

VW:TG
Enclosure

Montana Department of Environmental Quality
Permitting and Compliance Division

Air Quality Permit #1551-06

Montana Dakota Utilities, Inc.
Glendive Operating Station
2001 N. Merrill Ave.
Glendive, MT 59330

November 3, 2008

AIR QUALITY PERMIT

Issued to: Montana-Dakota Utilities, Inc.
Glendive Generating Station
2001 N. Merrill Ave.
Glendive, MT 59330

Permit #: 1551-06
Administrative Amendment (AA) Request Received: 10/1/07
Department Decision on AA Issued: 10/16/08
Permit Final: 11/3/08
AFS Number: 021-0005

An air quality permit, with conditions, is hereby granted to Montana-Dakota Utilities, Inc. - Glendive Generating Station (MDU), pursuant to Sections 75-2-204 and 211 of the Montana Code Annotated (MCA), as amended, and Administrative Rules of Montana (ARM) 17.8.740, *et seq*., as amended, for the following:

SECTION I: Permitted Facilities

A. Plant Location

The MDU facility is located in the SE¼ and Lot 4 of Section 15, Township 15 North, Range 55 East, in Dawson County, Montana. MDU has been used primarily as a peaking unit. A list of the permitted equipment is located in Section I.A of the permit analysis.

B. Current Permit Action

On October 1, 2007, the Department of Environmental Quality (Department) received a request from MDU to amend Permit #1551-05. The letter requested that Section II.A.7 be changed to clarify that 40 CFR 60, Subpart GG is only applicable to Unit 2. No change was made to Section II.A.7 because the condition is clear in requiring MDU to comply with all the requirements of 40 CFR 60 Subpart GG, *as applicable*. In addition, the applicability of 40 CFR 60, Subpart GG to Unit 2 is clearly outlined in the Permit Analysis. The request also noted a number of inaccuracies in the Permit Analysis. The current permit action corrects those inaccuracies.

SECTION II: Conditions and Limitations

A. Conditions

1. MDU is authorized to operate two turbines (Units 1 and 2) for generating electricity. Unit 1 includes a diesel start-up engine and both units include their No.2 fuel oil storage tanks (ARM 17.8.749).

2. MDU shall only combust pipeline quality natural gas or No.2 fuel oil in Units 1 and 2 (ARM 17.8.749).

3. MDU shall not exceed the following hours of operation for Unit 1, the General Electric MS-6000 Turbine (ARM 17.8.752):

   a. 2,620 hours per rolling 12-month period when combusting solely pipeline quality natural gas;

   b. 1,667 hours per rolling 12-month period when combusting solely No.2 fuel oil; and

   c. X hours per rolling 12-month period when pipeline quality natural gas and No.2 fuel oil are combusted during a given year. X hours shall be determined as follows (ARM 17.8.752):

X = 2,620 hours - 1.572*Y hours

Where X = Total adjusted hours of operation
Y= Number of hours burning No.2 fuel oil
2,620 = Hours of natural gas operation
1.572 = The ratio of emissions from burning No.2 fuel oil compared to natural gas;

4. MDU shall not exceed 225 tons of total nitrogen oxides (NO_x) emissions from Unit 1 (combusting pipeline quality natural gas or a combination of pipeline quality natural gas and No.2 fuel oil) and its associated startup engine per rolling 12-month period. Compliance is determined when total emissions are less than or equal to 225 total tons, using the following equation on a rolling 12-month basis (ARM 17.8.752):

Total NO_x Emissions (tons) = [(A hours * ERG)+(B hours * ERF)]/2000

Where,

A hours = actual hours of operation when combusting natural gas;

B hours = actual hours of operation when combusting No.2 fuel oil;

ERG = hourly emission rate (pound per hour (lb/hr)) when combusting natural gas; and

ERF = hourly emission rate (lb/hr) when combusting No.2 fuel oil.

Emission rates[1] for each hours of operation shall be calculated as follows:

Emissions of NO_x = hours of operation using fuel X stack test (lb/hr).

5. MDU shall not exceed the following hours of operation for Unit 2, the General Electric LM6000 Turbine (ARM 17.8.749):

a. 6,500 hours per rolling 12-month period when combusting solely pipeline quality natural gas;

b. 3,254 hours per rolling 12-month period when combusting solely No.2 fuel oil; and

c. X hours per rolling 12-month period when pipeline quality natural gas and No.2 fuel oil are combusted during a given year. X hours shall be determined as follows:

X = 6,500 hours - 1.998*Y hours

[1]In determining emission rates, emissions tests conducted between September 1 and April 30 shall only be used to estimate emissions from the hours of operation, which occur during this time of the year. Emission tests conducted between May 1 and August 31 may be used to estimate emissions from the hours of operation that occur during any time of the year.

Where X = Total adjusted hours of operation
Y= Number of hours burning No.2 fuel oil
6,500 = Hours of operation using natural gas
1.998 = The ratio of emissions from burning No.2 fuel oil compared to burning natural gas.

6. MDU shall limit the hours of operation and/or the fuel combusted such that the sum of the NO_x emissions from Unit 2 do not exceed 247 tons per rolling 12-month period when combusting pipeline quality natural gas, No.2 fuel oil, or a combination of pipeline quality natural gas and No.2 fuel oil. Any calculations used to establish NO_x emissions shall be approved by the Department. MDU shall track NO_x emissions and maintain records consistent with Section II.C of this permit (ARM 17.8.749).

7. MDU shall comply with all of the requirements, as applicable, including emission limitations, monitoring, recordkeeping, reporting, and testing requirements, of 40 Code of Federal Regulations (CFR) 60, Subpart A, General Provisions, and Subpart GG, Standards of Performance for Stationary Gas Turbines (ARM 17.8.340 and 40 CFR 60, Subpart GG).

8. Emissions from Unit 2, while combusting pipeline quality natural gas, shall not exceed the following (ARM 17.8.749):

a.	NO_x	76.0 lb/hr;
b.	Carbon monoxide (CO)	17.0 lb/hr.

9. Emissions from Unit 2, while combusting No.2 fuel oil, shall not exceed the following (ARM 17.8.749):

a.	NO_x	151.8 lb/hr;
b.	Sulfur dioxide (SO_2)	90.8 lb/hr.

10. MDU shall operate the 2 megawatt (MW) CAT diesel-powered generator no more than 1000 hours per rolling 12-month period (ARM 17.8.749).

11. MDU shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.304).

12. MDU shall not cause or authorize the production, handling, transportation, or storage of any material unless reasonable precautions to control emissions of particulate matter are taken. Such emissions of airborne particulate matter from any stationary source shall not exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.308).

13. MDU shall not cause or authorize the use of any street, road or parking lot without taking reasonable precautions to control emissions of airborne particulate matter (ARM 17.8.308).

B. Testing Requirements

1. MDU shall test the Unit 1 turbine and demonstrate compliance with the NO_x emission limit contained in Section II.A.6 within 40 days of the hours of operation equaling 1,620 in any 12-month period. The turbine shall be tested using the major fuel combusted during the previous 500 hours of operation. All testing and reporting of tests shall include a determination of the amount of NO_x and the amount of NO_2 emissions from the turbine. Testing is not required to be conducted more frequently than once every 4 years, regardless of hours operated (ARM 17.8.749 and ARM 17.8.106).

2. MDU shall test the Unit 2 turbine and demonstrate compliance with the NO_x and CO emission limits contained in Section II.A.8 of this permit. The performance test shall be conducted while the Unit 2 turbine is combusting natural gas. Testing shall occur on an every 2-year basis or according to another testing/monitoring schedule as may be approved by the Department. All testing and reporting of tests shall include a determination of the amount of NO_x and the amount of nitrogen dioxide (NO_2) emissions from the turbine (ARM 17.8.749 and ARM 17.8.106).

3. MDU shall test the Unit 2 turbine and demonstrate compliance with the NO_x and SO_2 emission limits contained in Section II.A.9 of this permit. The performance test shall be conducted while the Unit 2 turbine is combusting No.2 fuel oil. Testing shall occur on an every 2-year basis or according to another testing/monitoring schedule as may be approved by the Department. All testing and reporting of tests shall include a determination of the amount of NO_x and the amount of NO_2 emissions from the turbine (ARM 17.8.749 and ARM 17.8.106).

4. All compliance source tests shall conform to the requirements of the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

5. The Department may require further testing (ARM 17.8.105).

C. Operational Monitoring and Reporting Requirements

1. MDU shall document, by month, the number of hours that Unit 1 combusted pipeline quality natural gas, No.2 fuel oil, and the corresponding adjusted hours of operation as determined according to Section II.A.5.c , while burning pipeline quality natural gas and No.2 fuel oil during the previous rolling 12-month period. By the 25th of each month, MDU shall total the hours that Unit 1 combusted pipeline quality natural gas, No.2 fuel oil, and the corresponding adjusted hours of operation while burning pipeline quality natural gas and No.2 fuel oil, respectively, during the previous 12 months to verify compliance with the limitations in Section II.A.3.a, II.A.3.b, and II.A.3.c. A written report of the compliance verification shall be submitted along with the annual emissions inventory (ARM 17.8.749).

2. MDU shall document, by month, the NO_x emissions from Unit 1 and its associated startup engine. By the 25th of each month, MDU shall total the NO_x emissions from Unit 1 and its associated startup engine during the previous 12 months to verify compliance with the limitation in Section II.A.4. A written report of the compliance verification shall be submitted along with the annual emissions inventory (ARM 17.8.749).

3. MDU shall document, by month, the number of hours that Unit 2 combusted

pipeline quality natural gas, No.2 fuel oil, and the corresponding adjusted hours of operation as determined according to Section II.A.5.c, while burning pipeline quality natural gas and No.2 fuel oil during the previous rolling 12-month period. By the 25th of each month, MDU shall total the hours that Unit 2 combusted pipeline quality natural gas, No.2 fuel oil, and the corresponding adjusted hours of operation while burning pipeline quality natural gas and No.2 fuel oil, respectively, during the previous 12 months to verify compliance with the limitations in Section II.A.5.a, II.A.5.b, and II.A.5.c. A written report of the compliance verification shall be submitted along with the annual emissions inventory (ARM 17.8.749).

4. MDU shall document, by month, the NO_x emissions from Unit 2. By the 25th of each month, MDU shall total the NO_x emissions from Unit 2 during the previous 12 months to verify compliance with the limitation in Section II.A.6. A written report of the compliance verification shall be submitted along with the annual emissions inventory (ARM 17.8.749).

5. MDU shall document, by month, the hours of operation of the 2 MW diesel generator. By the 25th of each month, MDU shall total the hours of operation from the diesel generator during the previous 12 months to verify compliance with the limitation in Section II.A.10. A written report of the compliance verification shall be submitted along with the annual emissions inventory (ARM 17.8.749).

6. MDU shall supply the Department with annual production information for all emission points, as required, by the Department in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in the emission inventory.

   Production information shall be gathered on a calendar-year basis and submitted to the Department by the date required in the emission inventory request. Information shall be in the units required by the Department. This information is required for the annual emission inventory and to verify compliance with permit limitations (ARM 17.8.505).

7. MDU shall notify the Department of any construction or improvement project conducted pursuant to ARM 17.8.745 that would include a change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation or the addition of a new emission unit. The notice must be submitted to the Department, in writing, 10 days prior to start up or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.745(1)(d) (ARM 17.8.745).

8. All records compiled in accordance with this permit must be maintained by MDU as a permanent business record for at least 5 years following the date of the measurement, must be available at the plant site for inspection by the Department, and must be submitted to the Department upon request (ARM 17.8.749).

SECTION III: General Conditions

A. Inspection – MDU shall allow the Department's representatives access to the source at all reasonable times for the purpose of making inspections, surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.

B. Waiver - The permit and all the terms, conditions, and matters stated herein shall be deemed accepted if MDU fails to appeal as indicated below.

C. Compliance with Statutes and Regulations - Nothing in this permit shall be construed as relieving MDU of the responsibility for complying with any applicable federal or Montana statute, rule or standard, except as specifically provided in ARM 17.8.740, *et seq*. (ARM 17.8.756).

D. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties or other enforcement as specified in Section 75-2-401, *et seq*., MCA.

E. Appeals - Any person or persons jointly or severally adversely affected by the Department's decision may request, within 15 days after the Department renders its decision, upon affidavit setting forth the grounds therefore, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The filing of a request for a hearing does not stay the Department's decision, unless the Board issues a stay upon receipt of a petition and a finding that a stay is appropriate under Section 75-2-211(11)(b), MCA. The issuance of a stay on a permit by the Board postpones the effective date of the Department's decision until conclusion of the hearing and issuance of a final decision by the Board. If a stay is not issued by the Board, the Department's decision on the application is final 16 days after the Department's decision is made.

F. Permit Inspection - As required by ARM 17.8.755, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by the Department at the location of the permitted source.

G. Construction Commencement - Construction must begin within 3 years of permit issuance and proceed with due diligence until the project is complete or the permit shall be revoked (ARM 17.8.762).

H. Permit Fees - Pursuant to Section 75-2-220, MCA, as amended by the 1991 Legislature, failure to pay the annual operation fee by MDU may be grounds for revocation of this permit, as required, by that Section and rules adopted thereunder by the Board.

Permit Analysis
Montana-Dakota Utilities Co.
Glendive Generating Station
Permit #1551-06

I. Introduction/Process Description

A. Permitted Equipment and Facilities

The Montana-Dakota Utilities – Glendive Generating Station (MDU) consists of two dual-fuel turbines for generating electricity as a peaking unit. The first turbine (Unit 1) is a General Electric Model MS-6000. The package generator is a six-frame, 43,000 horsepower (hp), single-shaft, and simple-cycle turbine. The turbine is rated at 34 megawatts (MW) and has a peak load capability of approximately 39 MW. The normal operating range is approximately 25.8 MW, due to the elevation. Unit 1 is also equipped with fogging equipment. The fogging equipment consists of an electric water pumping station and a distribution and spray system on the air inlet duct. There is a 50,000 gallon water tank which serves both Unit 1 and Unit 2 which supplies water for fogging equipment. A listing of other associated equipment for Unit 1 includes a 600-hp Detroit Diesel startup engine, a 75,000-gallon No.2 fuel oil storage tank, and a 200-gallon startup diesel fuel oil storage tank. In addition, MDU utilizes a natural gas fired liquid fuel heater that heats No. 2 fuel used in Units 1 and 2

The MDU facility also includes a second dual fuel turbine: Unit 2 that includes an electric startup engine as well as other associated equipment. Unit 2, a General Electric simple cycle turbine - Model LM6000, has a maximum generator nameplate capacity estimated at 43 MW. Unit 2 will be equipped with dry low nitrous oxides (NO_x) and carbon monoxide (CO) burners, fogging equipment and a water spray inner-cooling system. The fogging equipment consists of the 50,000 gallon water tank, which will also supply water to the water spray inner-cooling system when it is operating. Unit 2 will typically operate between 35-37 MW. During peak demand, the water spray inner-cooling system will run to boost efficiency of the unit and operate closer to the 43 MW capacity of the unit. The LM6000 will meet the New Source Performance Standard (NSPS) as determined in 40 Code of Federal Regulations (CFR) 60.332 (Subpart GG) when burning fuel oil. Other associated equipment will be located on site.

B. Process Description

The MDU Generating Station is an electrical generation facility located in SE¼ and Lot 4 of Section 15, Township 15 North, Range 55 East, in Dawson County. The site is approximately four miles south of the City of Glendive, Montana and is bordered on the West by Marsh Road.

A turbine is a type of machine in which the kinetic energy of the moving fluid is converted to mechanical power by the impulse or reaction of the moving fluid with a series of buckets, paddles, or blades arrayed about the circumference of a wheel or cylinder. The axial-flow turbines used for power generation are simple, and have three basic components: a compressor to compress the incoming air to high pressure, a combustion area to burn the fuel and produce high pressure and high velocity gas, and a turbine (impeller blades) to extract the energy from the high pressure, high velocity gas flowing from the combustion chamber. In the case of power generation turbines, a startup engine rotates the intake and compressor fans (as well as the turbine impeller fans) at the inlet of the turbine. Fuel, either natural gas or No.2 fuel oil, is introduced into the compressed high velocity incoming air stream. The fuel injection and combustion takes place near the center of the turbine. This combustion area is can shaped, with the fuel injectors at the leading edge of the combustion area. The newly formed gasses that are the product of combustion accelerate out of the can and rotate the turbine impeller blades. The turbine will operate independent of the startup engine when the kinetic energy from combustion (turbine revolutions) is great enough to maintain the compression and combustion process. In a single shaft gas turbine, all compressor and turbine stages are fixed to a single continuous shaft and operate at the same speed. The single shaft configuration is typically used to drive electric generators. A significant percentage (50%) of the kinetic energy generated is required to drive the internal compressor section. The balance of the recovered shaft energy is available to drive the external loadunit, the electric generators.

Alternatively, a turbine may incorporate two sets of turbine impellers. The first set would directly drive the compressor, such that the turbine impellers, the shaft and the compressor all turn as a single unit. The second set of turbine impellers would drive the output shaft. This final turbine stage and the output shaft can then be a completely stand-alone, freewheeling unit, without any connection to the rest of the engine.

The emergency generator would be used for additional generation during emergency situations or as a supply of additional peaking capacity of approximately 2 MW. In an emergency situation, the generator would be moved to supply power to a city or locality that would become isolated from the electrical grid for more than a few hours due to equipment failure, malfunction, or the necessary replacement of equipment to prevent an equipment failure.

C. Permit History

MDU submitted the original application for the construction of the turbine on July 1, 1977. The application was for a PG6431A turbine for generating electricity and for the construction of the peaking unit. The preconstruction permit was issued as **Permit #1085-00** on September 9, 1977. This permit limited the hours of operation of the unit to 600 hours per year (hr/yr). The unit was authorized to combust No.2 fuel oil and natural gas.

On December 15, 1980, MDU submitted a permit application in accordance with the Administrative Rules of Montana (ARM) §16.8.1104. The application was required (by rule) for all facilities operating in the state of Montana. On February 3, 1981, the Montana Department of Health and Environmental Sciences issued **Permit #1551-00** for the turbine.

On January 8, 1998, MDU submitted a complete preconstruction permit application. The application included a request to increase the hours of operation of the unit to 2,620 hours. The Department of Environmental Quality (Department) agreed to allow the increase in hours of operation as long as the other limits contained in the permit were also met. The permit allowed the facility to increase their emissions to above 100 tons per year (TPY), but will limit emissions of all pollutants, including NO_x, to less than 250 TPY. Since this limit was established in a federally enforceable permit ensuring that the facility would "minor out" of Prevention of Significant Deterioration (PSD) review, any change to the hourly limit or an increase in the allowable tons per year of emissions will be reviewed as though this permitting action did not take place. This would include the need for a new Best Available Control Technology (BACT) determination. The determination was based on the emissions limited by the hourly and annual emission limits. It was determined that the limited amount of NO_x emissions did not require additional controls; but, without the limit, controls might be appropriate for BACT and to protect the ambient air quality. A future change to these conditions may subject the

facility to an evaluation of all the emissions from the facility for BACT purposes and not just the proposed increase.
This permit required testing to ensure that the emission estimates contained in the application were appropriate for the facility and no other applicable requirements were triggered by the operation of the turbine. **Permit #1551-01** replaced Permit #1551-00.

Permit #1551-02 was an alteration to Permit #1551-01. MDU requested to add fogging and TIPP equipment to the Glendive Generating Station. The addition of this equipment allowed the combustion turbine to operate more efficiently during periods of warm weather. By adding the new equipment to the facility the actual emissions increased; however, the permitted allowable emissions were not increased.

This MDU facility has a federally enforceable hourly operational limit that maintained the potential emissions below major source thresholds for New Source Review (NSR). Permit #1551-02 did not increase the permitted allowable emissions; therefore this facility remained below the major source threshold for NSR. Additional restrictions beyond those found in the Permit #1551-01 were not necessary to prevent this facility from triggering NSR.

On September 25, 2001, MDU was issued an alteration to air quality Permit #1551-02. MDU was permitted to install an additional multi-fuel turbine, rated at 43 MW capacity, at their Glendive Generating Station. The new turbine, designated as Unit 2, has its own 600-hp diesel starting engine and a fuel tank for the starting engine.

Unit 2 is subject to the NSPS requirements of 40 CFR 60, Subpart GG. Unit 2 initially (and primarily) burns only natural gas, but has the capability to also burn No.2 fuel oil. Unit 2 cannot satisfy NSPS emission requirements when combusting No.2 fuel oil unless emission controls are installed. The permit required MDU to install emission control equipment prior to combusting No.2 fuel oil. If No.2 fuel oil is burned in the turbine, the existing 75,000-gallon diesel (No.2 fuel oil) tank will supply fuel to both turbines. The turbine was also equipped with fogging equipment.

The permit has operational limitations that capped NO_x and sulfur dioxide (SO_2) emissions from the turbine below the PSD threshold of 250 TPY. Therefore the permitting action was not subject to PSD requirements. In addition to the operational limits discussed above, hourly NO_x and SO_2 emission limits were placed on Unit 2, consistent with the potential emissions used in the modeling demonstrations performed as part of this permit application.

The Department received the permit application for the action on March 13, 2001. The application was deemed incomplete in a letter issued to MDU on April 5, 2001. MDU responded by letter on April 23, 2001, to temporarily suspend processing the permit application to perform the additional modeling requested by the Department in the April 5, 2001, communication. MDU's contractor submitted the additional modeling demonstration on July 2, 2001. However, this second submittal provided an incomplete modeling demonstration based upon MDU's request to the Department to address the potential future use of No.2 fuel oil as an alternative fuel to natural gas in the permit. The Department directed MDU to submit the additional modeling necessary to demonstrate that both turbines could combust No.2 fuel oil without violating an ambient standard. MDU's contractor provided the requested modeling on July 10, 2001. MDU provided a fourth, updated, modeling demonstration for this permitting action on July 31, 2001.

The fourth submittal received by the Department indicated that both turbines, operating continuously (8,760 hours) and both combusting No.2 fuel oil with emissions uncontrolled, have the potential to exceed the Montana Ambient Air Quality Standards (MAAQS). However, Unit 1 has an existing limit of 1,667 hours of annual operation when combusting No.2 fuel oil, and the permitting action limits Unit 2 to 3,254 hours of annual operation when combusting No.2 fuel oil. In addition, this permitting action imposes the installation and operation of NO_x emission reduction equipment if No.2 fuel oil is to be combusted in the new turbine. Also, NO_x controls are necessary for the new turbine to satisfy the requirements of Subpart GG when combusting No.2 fuel oil. Permit #1551-03 requires MDU to install and operate a water injection system, or an alternative NO_x emission control device approved by the Department, prior to firing No.2 fuel oil in Unit 2. **Permit #1551-03** replaced Permit #1551-02.

On October 25, 2002, the Department issued **Permit #1551-04** to MDU for a modification to change the model of the turbine permitted as Unit 2 from a General Electric PG6561 (B), which was never installed, to a General Electric LM6000 with Dry Low Emission burners. This model has dry low NO_x capabilities when burning fuel oil. The LM6000 meets the new source performance standard calculated at 143 parts per million (ppm) as determined in 40 CFR 60.332 when burning fuel oil. Fuel oil is used as an emergency backup fuel and is not intended to be used as a primary fuel.

Also, the LM6000 has an electric/hydraulic starting motor. The startup diesel engine for Unit 2, Source I.D. #5 has been removed from the permit.

The differences in operating characteristics are the stack velocity increase and the stack temperature decrease at normal operating conditions. Bison Engineering, on behalf of MDU, submitted modeling to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS) for the airborne concentrations of NO_x and SO_2. The Department determined that the modeling submitted in support of Permit Application #1551-04 shows compliance with the ambient standards. Permit #1551-04 replaced Permit #1551-03.

On December 3, 2004, MDU submitted an application for the addition of a 2 MW emergency generator to be available to supply additional peaking capacity during periods of equipment failure, malfunction, or the necessary replacement of equipment to prevent an equipment failure. The generator would also be available to supply an additional peaking capacity of approximately 2 MW. The facility accepted a federally enforceable limit for the generator of 1,000 hours/year to keep emissions below major modification significant emissions thresholds. Therefore, the action is not subject to NSR/PSD review. The permit format, language, and rule references were updated to reflect the Department's current permit format, language, and rule references. **Permit #1551-05** replaces Permit #1551-04.

D. Current Permit Action

On October 1, 2007 the Department received a request to amend Permit #1551-05. The letter requested that Section II.A.7 be changed to clarify that 40 CFR 60, Subpart GG is only applicable to Unit 2. No change was made to Section II.A.7 because the condition is clear in requiring MDU to comply with all the requirements of 40 CFR 60, Subpart GG, *as applicable*. In addition, the request noted a number of inaccuracies in the Permit Analysis. The current permit action corrects those inaccuracies.

In addition, the Department received notifications from MDU of de minimis actions. First, on November 26, 2007, MDU provided notification they would be installing a 60 kilowatt (kW), 94.5 hp diesel-powered generator as an uninterruptible power supply. In the event of a power outage, the generator is used to supply electrical power to the site for normal site functions and so Units 1 and 2 may be started if needed. Second, on May 9, 2007, notification was received for an action to install and operate a natural gas fired liquid fuel heater that will be used to heat No. 2 fuel used in Units 1 and 2. No changes were made to Permit #1551-06 as a result of these actions, but they were noted in the permit analysis under permitted equipment. **Permit #1551-06** replaces Permit #1551-05.

E. Response to Public Comments

Person/Group Commenting	Permit Reference	Comment	Department Response
MDU	Permit Analysis, Section I.A.	The permit lists a 25,000 gallon water tank associated with Unit 1 and an 8,000 gallon water tank with Unit 2. Neither of these tanks exist. One 50,000 gallon water tank serves both Unit 1 and Unit 2.	Corrected
MDU	Permit Analysis, Item II.C.7	MDU agrees with the addition of references to 40 CFR 60 Subparts A and GG. MDU would like to keep items a, b, and h. found in the Permit Analysis, Section II.C.7 of Permit #1551-05 to help emphasize certain portions of the regulation.	Those items were added back into the permit.

F. Additional Information

Additional information, such as applicable rules and regulations, BACT/Reasonably Available Control Technology (RACT) determinations, air quality impacts, and environmental assessments are included in the analysis associated with each change to the permit.

II. Applicable Rules and Regulations

The following are partial explanations of some applicable rules and regulations that apply to the facility. The complete rules are stated in the ARMs and are available upon request from the Department. Upon request, the Department will provide references for locations of complete copies of all applicable rules and regulations or copies where appropriate.

A. ARM 17.8, Subchapter 1 - General Provisions, including, but not limited to:

1. ARM 17.8.101 Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.105 Testing Requirements. Any person or persons responsible for the emissions of any air contaminant into the outdoor atmosphere shall, upon written request of the Department, provide the facilities and necessary equipment (including instruments and sensing devices) and shall conduct tests, emission or ambient, for such periods of time as may be necessary using methods approved by the Department.
MDU is required to perform source tests on Unit 1 and Unit 2 in accordance with

the testing requirements in the permit.

3. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by the Department, any source, or other entity, as required, by any rule in this chapter, or any permit or order issued pursuant to this chapter, or the provisions of the Clean Air Act of Montana, 75-2-101, *et seq*., MCA.

   MDU shall comply with the requirements contained in the Montana Source Test Protocol and Procedures Manual, including, but not limited to, using the proper test methods and supplying the required reports. A copy of the Montana Source Test Protocol and Procedures Manual is available from the Department upon request.

4. ARM 17.8.110 Malfunctions. (2) The Department must be notified promptly by telephone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation, or to continue for a period greater than 4 hours.

5. ARM 17.8.111 Circumvention. (1) No person shall cause or permit the installation or use of any device or any means that, without resulting in reduction in the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant that would otherwise violate an air pollution control regulation. (2) No equipment that may produce emissions shall be operated or maintained in such a manner that a public nuisance is created.

B. ARM 17.8, Subchapter 2 - Ambient Air Quality. The following ambient air quality standards or requirements apply, including, but not limited to:

1. ARM 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide
2. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide
3. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide
4. ARM 17.8.213 Ambient Air Quality Standard for Ozone
5. ARM 17.8.214 Ambient Air Quality Standard for Hydrogen Sulfide
6. ARM 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter
7. ARM 17.8.221 Ambient Air Quality Standard for Visibility
8. ARM 17.8.222 Ambient Air Quality Standard for Lead
9. ARM 17.8.223 Ambient Air Quality Standard for PM_{10}
10. ARM 17.8.230 Fluoride in Forage

MDU must maintain compliance with the applicable ambient air quality standards.

C. ARM 17.8, Subchapter 3 - Emission Standards, including, but not limited to:

1. ARM 17.8.304 Visible Air Contaminants. This rule requires that no person may cause or authorize emissions to be discharged to an outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes.

2. ARM 17.8.308 Particulate Matter, Airborne. This rule requires that MDU shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.

3. ARM 17.8.309 Particulate Matter, Fuel Burning Equipment. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere

particulate matter caused by the combustion of fuel in excess of the amount determined by this section.

4. ARM 17.8.310 Particulate Matter, Industrial Process. This rule requires that no person shall cause or authorize to be discharged into the atmosphere particulate matter in excess of the amount set forth in this section.

5. ARM 17.8.322 Sulfur Oxide Emissions - Sulfur in Fuel. This rule requires that no person shall burn liquid, solid, or gaseous fuel in excess of the amount set forth in this section. Commencing July 1, 1972, MDU shall not burn any gaseous fuel containing sulfur compounds in excess of 50 grains per 100 cubic feet of gaseous fuel, calculated as hydrogen sulfide at standard conditions.

6. ARM 17.8.324(3) Hydrocarbon Emissions--Petroleum Products. No person shall load or permit the loading of gasoline into any stationary tank with a capacity of 250 gallons or more from any tank truck or trailer, except through a permanent submerged fill pipe, unless such tank, truck, or trailer is equipped with a vapor loss control device as described in (1) of this rule, or is a pressure tank as described in (1) of this rule.

7. ARM 17.8.340 Standard of Performance for New Stationary Sources. This rule incorporates by reference 40 CFR Part 60, Standards of Performance for New Stationary Sources.

   a. 40 CFR 60, Subpart A – General Provisions apply to all equipment or facilities subject to an NSPS Subpart as listed below:

   b. 40 CFR 60, Subpart GG - Standards of Performance for Stationary Gas Turbines. Subpart GG applies to all gas turbines constructed after October 3, 1977, with heat input at peak load equal to or greater than 10.7 gigajoules per hour. Unit 2, a stationary simple cycle gas turbine with an estimated capacity of 43 MW, is equivalent to 154.8 gigajoules per hour. Subpart GG requirements include, but are not limited to:

      i. MDU-Glendive shall not discharge into the atmosphere, from Unit 2, any gasses that contain NO_x in excess of STD = ((0.0075)x(14.4/Y))+F, where STD is the allowable NO_x emissions (percent by volume at 15% oxygen and on a dry basis), Y is the manufacturers rated heat rate at manufacturer's rated load (kilojoules per watt hour), and F is the NO_x emission allowance for fuel-bound nitrogen as defined in 40 CFR 60.332(a)(3);

      ii. MDU-Glendive shall not discharge into the atmosphere, from Unit 2, any gasses that contain SO_2 in excess of 0.015% by volume at 15% oxygen and on a dry basis; or MDU-Glendive shall not burn, in Unit 2, any fuel that contains sulfur in excess of 0.8% by weight; and

      iii. Semiannually, MDU-Glendive shall submit a compliance report. Reports for the operating period of January through June shall be submitted no later than August 15. Reports for the operating period of July through December shall be submitted no later than February 15.

D. ARM 17.8, Subchapter 5 - Air Quality Permit Application, Operation, and Open Burning

Fees, including, but not limited to:

1. ARM 17.8.504 Air Quality Permit Application Fees. This rule requires that an applicant submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the Department. No application fee was required because this action is an administrative action.

2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit, excluding an open burning permit, issued by the Department; and the air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

   An air quality operation fee is separate and distinct from an air quality permit application fee. The annual assessment and collection of the air quality operation fee as described above shall take place on a calendar-year basis. The Department may insert into any final permit issued after the effective date of these rules such conditions as may be necessary to require the payment of an air quality operation fee on a calendar-year basis, including provisions that pro-rate the required fee amount.

E. ARM 17.8, Subchapter 7 - Permit, Construction, and Operation of Air Contaminant Sources, including, but not limited to:

1. ARM 17.8.740 Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.743 Montana Air Quality Permits – When Required. This rule requires a person to obtain an air quality permit or permit alteration to construct, alter or use any air contaminant sources that have the Potential to Emit (PTE) greater than 25 TPY of any pollutant. MDU has a PTE greater than 25 TPY of NO_x, CO, and SO_2, therefore, an air quality permit is required.

3. ARM 17.8.744 Montana Air Quality Permits - General Exclusions. This rule identifies the activities that are not subject to the Montana Air Quality Permit program.

4. ARM 17.8.745 Montana Air Quality Permits – Exclusion for De Minimis Changes. This rule identifies the de minimis changes at permitted facilities that do not require a permit under the Montana Air Quality Permit Program.

5. ARM 17.8.748 New or Modified Emitting Units - Permit Application Requirements. (1) This rule requires that a permit application be submitted prior to installation, alteration, or use of a source. MDU was not required to submit a permit application for the current permit action because it is an administrative action. (7) This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. MDU was not required to submit an affidavit of publication of public notice for the current permit action because it is an administrative action.

6. ARM 17.8.749 Conditions for Issuance or Denial of Permit. This rule requires that the permits issued by the Department must authorize the construction and operation of the facility or emitting unit subject to the conditions in the permit and the requirements of this subchapter. This rule also requires that the permit must contain any conditions necessary to assure compliance with the Federal Clean Air Act (FCAA), the Clean Air Act of Montana, and rules adopted under those acts.

7. ARM 17.8.752 Emission Control Requirements. This rule requires a source to install the maximum air pollution control capability that is technically practicable and economically feasible, except that BACT shall be utilized. The required BACT analysis is included in Section III of this permit analysis.

8. ARM 17.8.755 Inspection of Permit. This rule requires that air quality permits shall be made available for inspection by the Department at the location of the source.

9. ARM 17.8.756 Compliance with Other Statutes and Rules. This rule states that nothing in the permit shall be construed as relieving MDU of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq*.

10. ARM 17.8.759 Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those permit applications that do not require the preparation of an environmental impact statement.

11. ARM 17.8.762 Duration of Permit. An air quality permit shall be valid until revoked or modified as provided in this subchapter, except that a permit issued prior to construction of a new or altered source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit; which in no event, may be less than 1 year after the permit is issued.

12. ARM 17.8.763 Revocation of Permit. An air quality permit may be revoked upon written request of the permittee, or for violations of any requirement of the Clean Air Act of Montana, rules adopted under the Clean Air Act of Montana, the FCAA, rules adopted under the FCAA, or any applicable requirement contained in the Montana State Implementation Plan (SIP).

13. ARM 17.8.764 Administrative Amendment to Permit. An air quality permit may be amended for changes in any applicable rules and standards adopted by the Board of Environmental Review (Board) or changed conditions of operation at a source or stack that do not result in an increase of emissions as a result of those changed conditions. The owner or operator of a facility may not increase the facility's emissions beyond permit limits unless the increase meets the criteria in ARM 17.8.745 for a de minimis change not requiring a permit, or unless the owner or operator applies for and receives another permit in accordance with ARM 17.8.748, ARM 17.8.752, ARM 17.8.755, and ARM 17.8.756, and with all applicable requirements in ARM title 17, Chapter 8, Subchapters 8, 9, and 10.

14. ARM 17.8.765 Transfer of Permit. This rule states that an air quality permit may be transferred from one person to another if written notice of Intent to Transfer, including the names of the transferor and the transferee, is sent to the Department.

F. ARM 17.8, Subchapter 8 - Prevention of Significant Deterioration of Air Quality, including, but not limited to:

1. ARM 17.8.801 Definitions. This rule is a list of applicable definitions used in this subchapter.

2. ARM 17.8.818 Review of Major Stationary Sources and Major Modifications--Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through 17.8.827 shall apply to any major stationary source and any major modification, with respect to each pollutant subject to the FCAA that it would emit, except as this subchapter would otherwise allow.

   MDU does not contain a steam electric plant and is not a listed source. Therefore, the facility is not subject to PSD requirements.

G. ARM 17.8, Subchapter 12 - Operating Permit Program Applicability, including, but not limited to:

1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the FCAA is defined as any source having:

   a. PTE > 100 TPY of any pollutant;

   b. PTE > 10 TPY of any one Hazardous Air Pollutant (HAP), PTE > 25 TPY of a combination of all HAPs, or lesser quantity as the Department may establish by rule; or

   c. Sources with the PTE > 70 TPY of particular matter with an aerodynamic diameter of 10 microns or less (PM_{10}) in a serious PM_{10} nonattainment area.

2. ARM 17.8.1204 Air Quality Operating Permit Program. (1) Title V of the FCAA amendments of 1990 requires that all sources, as defined in ARM 17.8.1204 (1), obtain a Title V Operating Permit. In reviewing and issuing Air Quality Permit #1551-06 for MDU, the following conclusions were made:

   a. The facility's PTE is greater than 100 TPY for SO_2, NO_x, and CO.

   b. The facility's PTE is less than 10 TPY for any one HAP and less than 25 TPY of all HAPs.

   c. This source is not located in a serious PM_{10} nonattainment area.

   d. This facility is subject to a current NSPS (40 CFR 60, Subpart GG).

   e. This facility is not subject to any current NESHAP standards.

   f. This source is a Title IV affected source, but is not a solid waste combustion unit.

g. This source is not an EPA designated Title V sources.

Based on these facts, the Department has determined that MDU is a major source of emissions as defined under Title V. MDU's Title V Permit #OP1551-04 was issued final on August 26, 2005.

III. BACT Determination

A BACT determination is required for each new or altered source. MDU shall install on the new or altered source the maximum air pollution control capability that is technologically practicable and economically feasible, except that BACT shall be used.

A BACT analysis was not required for the current permit action because the current permit action is considered an administrative permit action.

IV. Emission Inventory

The potential emission calculations for this emission inventory were based on the turbines operating at their permitted maximum allowable hours, combusting only natural gas since that will be the primary fuel used.

Emissions (TPY)

Emission Units	**TSP**	**PM_{10}**	**SO_2**	**NO_x**	**VOC**	**CO**
UNIT 1 – Natural Gas	23.67	23.67	0.30	225.0	13.53	61.99
Startup Engine – Unit 1	-----	5.78	5.39	-----	6.48	17.56
Unit 1 – Fuel Oil	19.5	19.5	324.49	224.57	5.46	15.42
UNIT 2 – Natural Gas	9.03	6.43	0.74	247.0	28.72	112.1
Unit 2 – Fuel Oil	44.97	44.97	744.57	515.30	12.53	35.39
Fuel Oil Storage Tanks	-----	-----	-----	-----	-----	-----
CAT V16 Diesel Generator (2 MW)	0.63	0.63	9.19	29.12	0.82	7.74
TOTAL EMISSIONS Natural Gas	**32.70**	**35.88**	**6.43**	**472.0**	**48.73**	**191.65**
TOTAL EMISSIONS **No.2 Fuel Oil**	65.10	65.10	1078.25	768.99	18.81	58.55

Unit 1: Maximum allowable hours of operation on Natural Gas is 2,620.
Maximum allowable hours of operation on No.2 Fuel Oil is 1,666.67.
SO_2 emission estimate for oil combustion is based on a 79.6 pound per hour emission rate.

Unit 2: Maximum allowable hours of operation on Natural Gas is 6,500.
Maximum allowable hours of operation on No.2 Fuel Oil is 3,254.
SO_2 emission estimate for oil combustion is based on a 90.8 pound per hour emission rate

NOTE: No. 2 Fuel Oil is planned as an emergency backup fuel and is not intended to be used as a primary fuel.

Unit #1 - General Electric MS-6000 Turbine (Natural Gas)

Operating Hours: 2,620 Hours
Natural Gas Used: 1,127,124.0 Million cubic feet/year
Control Efficiency: 0.0% (No Control)

TSP Emissions:
Emission Factor: 0.042 lb/MMcf Natural Gas (FIRE, 20200201)
Calculations: 1,127,124.0 MMcf/Yr * 0.04lb/MMcf Natural Gas = 47,339.21 lb/yr
47,339.21 lb/yr * 1 ton/2,000 lb = 23.67 ton/yr

PM_{10} Emissions:
Emission Factor: 0.042 lb/MMcf Natural Gas (FIRE, 20200201)
Calculations: 1,127,124.0 MMcf/yr * 0.04lb/MMcf Natural Gas = 47,339.21 lb/yr

47,339.21 lb/yr * 1 ton/2,000 lb = 23.67 ton/yr

SO_2 Emissions:
Emission Factor: 0.0005 lb/MMcf Natural Gas (Estimate from % sulfur in natural gas)
Calculations: 1,127,124.0 MMcf/yr * 0.0005 lb/MMcf Natural Gas = 608.65 lb/yr
608.65 lb/yr * 1 ton/2,000 lb = 0.30 ton/yr

NO_x Emissions:
Emission Factor: 0.44 lb/MMcf Natural Gas (FIRE, 20200201)
Calculations: 1,127,124.0 MMcf/yr * 0.44lb/MMcf Natural Gas = 495,934.56 lb/yr
495,934.56 lb/yr * 1 ton/2,000 lb = 247.97 ton/yr
(The permit limits NO_x from Unit #1 and startup engine to 225 ton/yr)

VOC Emissions:
Emission Factor: 0.024 lb/MMcf of Natural Gas Burned (FIRE, 20200201)
Calculations: 1,127,124.0 MMcf/Yr * 0.024 lb/MMcf of Natural Gas Burned = 27,050.98lb/yr
27,050.98 lb/yr * 1 ton/2,000 lb = 13.53 ton/yr

CO Emissions:
Emission Factor: 0.11 lb/MMcf of Natural Gas Burned (FIRE, 20200201)
Calculations: 1,127,124.0 MMcf/yr * 0.11lb/MMcf of Natural Gas Burned = 123,983.64 lb/yr
123,983.64 lb/yr * 1 ton/2,000 lb = 61.99 ton/yr

Unit #1 - General Electric MS-6000 Turbine (No.2 Fuel Oil)

Operating Hours:	1,667 Hours
No 2 Fuel Oil Used:	642,555 MMBtu/yr
Maximum Heat Input	393.0 MMBtu/hr
Fuel Heat Content:	1,165 MMBtu/MCF
Fuel Usage	0.4 MCF/hr
Control Efficiency:	0.0% (No Control)

TSP Emissions:
Emission Factor: 0.061 lb/MMBtu (AP-42, 200100101)
Calculations: 642,555 MMBtu/Yr * 0.061lb/MMBtu = 39195.9 lb/yr
39,195.9 lb/yr * 1 ton/2,000 lb = 19.6 ton/yr

PM_{10} Emissions:
Emission Factor: 0.061 lb/MMBtu (AP-42, 200100101)
Calculations: 642,555 MMBtu/yr * 0.061 lb/MMBtu = 39195.9 lb/yr
39,195.9 lb/yr * 1 ton/2,000 lb = 19.6 ton/yr

SO_2 Emissions:
Emission Factor: 1.01 lb/MMBtu (AP-42, 200100101)
Calculations: 642,555 MMBtu/yr * 1.01 lb/MMBtu = 648,980.60 lb/yr
648,980.60 lb/yr * 1 ton/2,000 lb = 324.49 ton/yr

NO_x Emissions:
Emission Factor: 0.699 lb/MBtu (AP-42, 200100101)
Calculations: 642,555 MBtu/yr * 0.699 lb/MBtu = 449,145.90 lb/yr
449,145.90 lb/yr * 1 ton/2,000 lb = 224.57 ton/yr
(The permit limits NO_x from Unit #1 and startup engine to 225 ton/yr)

VOC Emissions:
Emission Factor: 0.0170 lb/MBtu (AP-42, 200100101)
Calculations: 642,555 MBtu/Yr * 0.0170 lb/MBtu = 10923.40 lb/yr
10,923.40 lb/yr * 1 ton/2,000 lb = 5.46 ton/yr

CO Emissions:
Emission Factor: 0.048 lb/MBtu (AP-42, 200100101)
Calculations: 642,555 MBtu/yr * 0.048lb/MBtu = 30,842.60 lb/yr
30,842.60 lb/yr * 1 ton/2,000 lb = 15.42 ton/yr

Start-up Engine for Unit #1

Operating Hours: 8,760 Hours

Size: 600 hp
Control Efficiency: 0.0% (No Control)

PM_{10} Emissions:
Emission Factor: 0.00220 lb/hp-hr (AP-42, Table 3.3-1, 10/96)
Calculations: 0.00220 lb/hp-hr * 600 hp = 1.32 lb/yr
1.32 lb/hr * 1 ton/2,000 lb * 8,760 hr/yr = 5.78 ton/yr

SO_2 Emissions:
Emission Factor: 0.00205 lb/hp-hr (AP-42, Table 3.3-1, 10/96)
Calculations: 0.00205 lb/hp-hr * 600 hp = 1.23 lb/yr
1.23 lb/hr * 1 ton/2,000 lb * 8,760 hr/yr = 5.39 ton/yr

NO_x Emissions:
Emission Factor: 0.031 lb/hp-hr (AP-42, Table 3.3-1, 10/96)
Calculations: 0.031 lb/hp-hr * 600 hp = 18.60 lb/yr
18.60 lb/hr * 1 ton/2,000 lb * 8,760 hr/yr = 81.47 ton/yr

VOC Emissions:
Emission Factor: 0.00247 lb/hp-hr (AP-42, Table 3.3-1, 10/96)
Calculations: 0.00247 lb/hp-hr * 600 hp = 1.48 lb/yr
1.48 lb/hr * 1 ton/2,000 lb * 8,760 hr/yr = 6.48 ton/yr

CO Emissions:
Emission Factor: 0.00668 lb/hp-hr (AP-42, Table 3.3-1, 10/96)
Calculations: 0.00668 lb/hp-hr * 600 hp = 4.01 lb/yr
4.01 lb/hr * 1 ton/2,000 lb * 8,760 hr/yr = 17.56 ton/yr

Unit #2 – General Electric LM6000 Turbine – (Natural Gas)

Operating Hours: 6,500 Hours
Heat Content: 140,000 Btu/hour
Control Efficiency: 0.0% (No Control)

TSP Emissions:
Emission Factor: 0.0066 lb/MMBtu Natural Gas (AP-42, Table 3.1-2, 4/00)
Calculations: 0.0066 lb/MMBtu * 420.8 MMBtu/hr = 2.78 lb/hr
2.78 lb/hr * 1 ton/2,000 lb * 6,500 hr/yr = 9.03 ton/yr

PM_{10} Emissions:
Emission Factor: 0.0047 lb/MMBtu Natural Gas (AP-42, Table 3.1-2, 4/00)
Calculations: 0.0047 lb/MMBtu * 420.8 MMBtu/hr = 1.98 lb/hr
1.98 lb/hr * 1 ton/2,000 lb * 6,500 hr/yr = 6.43 ton/yr

SO_2 Emissions:
Emission Factor: 0.00054 lb/MMBtu Natural Gas (Information from MDU)
Calculations: 0.00054 lb/MMBtu * 420.8 MMBtu/hr = 0.23 lb/yr
0.23 lb/hr * 1 ton/2000 lb * 6500 hr/yr = 0.74 ton/yr

NO_x Emissions:
Emission Factor: 0.32 lb/MMBtu Natural Gas (AP-42, Table 3.1-1, 4/00)
Calculations: 0.32 lb/MMBtu * 420.8 MMBtu/hr = 134.66 lb/hr
134.66 lb/hr * 1 ton/2,000 lb * 6,500hr/yr = 437.63 ton/yr
(The permit limits NO_x to 247 ton/yr)

VOC Emissions:
Emission Factor: 0.021 lb/MMBtu of Natural Gas (AP-42, Table 3.1-2, 4/00)
Calculations: 0.021 lb/MMBtu * 420.8 MMBtu/hr = 8.84 lb/hr
8.84 lb/hr * 1 ton/2,000 lb * 6,500 hr/yr = 28.72 ton/yr

CO Emissions:
Emission Factor: 0.082 lb/MMBtu of Natural Gas (AP-42, Table 3.1-1, 4/00)
Calculations: 0.082 lb/MMBtu * 420.8 MMBtu/hr of Natural Gas Burned = 34.51 lb/hr
34.51 lb/hr * 1 ton/2,000 lb * 6,500 hr/yr = 112.1 ton/yr

Unit #2 – General Electric LM6000 Turbine – (No.2 Fuel Oil)

Operating Hours: 3,254 Hours
Maximum Heat Input: 453.1 MBtu/hour
Fuel Heat Content: 1,165 MBtu/MCF
Fuel Usage: 0.4 MCF/hr
Control Efficiency: 0.0% (No Control)

TSP Emissions:
Emission Factor: 0.061 lb/MMBtu No.2 Fuel Oil (AP-42, Table 3.1-2, 4/00)
Calculations: 0.061 lb/MMBtu * 1,474,387.40 MMBtu/yr = 89,937.63 lb/yr
89,937.63 lb/yr * 1 ton/2,000 lb = 44.97 ton/yr

PM_{10} Emissions:
Emission Factor: 0.061 lb/MMBtu No. 2 Fuel Oil (AP-42, Table 3.1-2, 4/00)
Calculations: 0.061 lb/MMBtu * 1,474,387.40 MBtu/yr = 89,937.63 lb/yr
89,937.63 lb/yr * 1 ton/2,000 lb = 44.97 ton/yr

SO_2 Emissions:
Emission Factor: 1.01 lb/MMBtu No. 2 Fuel Oil (Information from MDU)
Calculations: 1.01 lb/MBtu * 1,474,387.40 MBtu/yr = 1,489,131.27 lb/yr
1,489,131.27 lb/yr * 1 ton/2,000 lb = 744.57 ton/yr

NO_x Emissions:
Emission Factor: 0.699 lb/MMBtu No. 2 Fuel Oil (AP-42, Table 3.1-1, 4/00)
Calculations: 0.699 lb/MMBtu * 1,474,387.40 MMBtu/yr = 1,030,596.79 lb/yr
1,030,596.79 lb/yr * 1 ton/2,000 lb = 515.30 ton/yr
(The permit limits NO_x to 247 ton/yr)

VOC Emissions:
Emission Factor: 0.0170 lb/MMBtu No. 2 Fuel Oil (AP-42, Table 3.1-2, 4/00)
Calculations: 0.0170 lb/MMBtu * 1,474,387.40 MMBtu/yr = 25,064.59 lb/yr
25,064.59 lb/yr * 1 ton/2,000 lb = 12.53 ton/yr

CO Emissions:
Emission Factor: 0.048 lb/MMBtu No. 2 Fuel Oil (AP-42, Table 3.1-1, 4/00)
Calculations: 0.048 lb/MMBtu * 1,474,387.40 MMBtu/yr = 70,770.60 lb/yr
70,770.60 lb/yr * 1 ton/2,000 lb = 35.39 ton/yr

CAT Diesel Engine (2 MW)

Maximum Heat Input: 18.2 MMbtu/hr
Fuel Heat Content: 140,000 Btu/gal
Fuel Usage 130.0 gal/hr
Hours of Operation: 1,000 hr/yr

PM Emissions
Emission Factor: 6.97×10^{-02} lb/MMBtu (AP-42 Table 3.4-6 10/96)
Calculations: 6.97×10^{-02} lb/MMBtu * 18.2 MMBtu/hr * 1,000 hr/yr * 0.0005 ton/lb =0.63 ton/yr

PM_{10} Emissions
Emission Factor: 6.97×10^{-02} lb/MMBtu (AP-42 Table 3.4-6 10/96)
Calculations: 6.97×10^{-02} lb/MMBtu * 18.2 MMBtu/hr * 1,000 hr/yr * 0.0005 ton/lb =0.63 ton/yr

SO_X Emissions
Emission Factor: 1.01 lb/MMBtu (AP-42 Table 3.4-5 10/96)
Calculations: 1.01 lb/MMBtu * 18.2 MMBtu/hr * 1,000 hr/yr * 0.0005 ton/lb = 9.19 ton/yr

CO Emissions
Emission Factor: 0.85 lb/MMBtu (AP-42 Table 3.4-5 10/96)
Calculations: 0.85 lb/MMBtu * 18.2 MMBtu/hr *1,000 hr/yr * 0.0005 ton/lb = 7.74 ton/yr

VOC Emissions
Emission Factor: 9.0×10^{-02}lb/MMBtu (AP-42 Table 3.3-1 10/96)
Calculations: 9.0×10^{-02}lb/MMBtu * 18.2 MMBtu/hr * 1,000 hr/yr * 0.0005 ton/lb = 0.82 ton/yr

NO_X Emissions

Emission Factor: 3.20 lb/MMBtu (AP-42 Table 3.3-1 10/96)

Calculations: 3.20 lb/MMBtu * 18.2 MMBtu/hr * 1,000 hr/yr * 0.0005 ton/lb = 29.12 ton/yr

Fuel Oil Storage Tanks

No.2 fuel oil storage tank (TANKS 3.0)	0.000 ton/yr
No.2 fuel oil storage tank – Startup Diesel Generator #1 Day Tank (TANKS 3.0)	0.000 ton/yr
No.2 fuel oil storage tank – Startup Diesel Generator #2 Day Tank (TANKS 3.0)	0.000 ton/yr

V. Existing Air Quality and Monitoring Requirements

The airshed that this facility is located in is classified as attainment for all pollutants. The existing air quality of the area is expected to be in compliance with all state and federal requirements. MDU previously conducted ambient air quality modeling to demonstrate that all ambient air quality standards would be protected. The modeling showed that, based upon the requirements placed within this permit, both the NAAQS and the MAAQS will be protected.

It is important to note that the modeling demonstration for No.2 fuel oil combustion was based upon 8,760 hours of continuous operation and not the permitted allowable hours of 1,667 and 3,254 annually for Units 1 and 2 respectively.

The two turbines are designated as peaking units that MDU intends to operate only during peak demand for electrical power. The proposed generator will operate in specified emergency scenarios and be available to supply an additional peaking capacity of approximately 2MW. Furthermore, the Department limited the operation of this facility (combusting natural gas) to 2,620 hours for Unit 1, 6,500 hours for Unit 2, and 1,000 hours for the emergency generator. These limits will maintain MDU's annual NO_x emissions below 250 tons for each unit, but the facility will be considered a major source for NSR for future significant actions.

VI. Taking or Damaging Implication Analysis

As required by 2-10-105, MCA, the Department conducted the following private property taking and damaging assessment.

YES	**NO**	
X		1. Does the action pertain to land or water management or environmental regulation affecting private real property or water rights?
	X	2. Does the action result in either a permanent or indefinite physical occupation of private property?
	X	3. Does the action deny a fundamental attribute of ownership? (ex.: right to exclude others, disposal of property)
	X	4. Does the action deprive the owner of all economically viable uses of the property?
	X	5. Does the action require a property owner to dedicate a portion of property or to grant an easement? [If no, go to (6)].
		5a. Is there a reasonable, specific connection between the government requirement and legitimate state interests?
		5b. Is the government requirement roughly proportional to the impact of the proposed use of the property?
	X	6. Does the action have a severe impact on the value of the property? (consider economic impact, investment-backed expectations, character of government action)
	X	7. Does the action damage the property by causing some physical disturbance with respect to the property in excess of that sustained by the pubic generally?
	X	7a. Is the impact of government action direct, peculiar, and significant?

YES	NO	
	X	7b. Has government action resulted in the property becoming practically inaccessible, waterlogged or flooded?
	X	7c. Has government action lowered property values by more than 30% and necessitated the physical taking of adjacent property or property across a public way from the property in question?
	X	Takings or damaging implications? (Taking or damaging implications exist if YES is checked in response to question 1 and also to any one or more of the following questions: 2, 3, 4, 6, 7a, 7b, 7c; or if NO is checked in response to questions 5a or 5b; the shaded areas)

Based on this analysis, the Department determined there are no taking or damaging implications associated with this permit action.

VII. Environmental Assessment

This permitting action will not result in an increase of emissions from the facility and is considered an administrative action; therefore, an Environmental Assessment is not required.

Prepared by: Trista Glazier
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