



AIR EMISSION PERMIT NO. 06100004-006
Major Amendment

IS ISSUED TO

ALLETE Inc. d/b/a Minnesota Power Inc.
Wisconsin Public Power Inc. System
Minnesota Power Inc. - Boswell Energy Center
1210 3rd Street Northwest
Cohasset, Itasca County, Minnesota 55721

The emission units, control equipment and emission stacks at the stationary source authorized in this permit amendment are as described in the Permit Applications Table.

This permit amendment supersedes Air Emission Permit No. 06100004-005, and authorizes the Permittee to operate the stationary source at the address listed above unless otherwise noted in Table A. The Permittee must comply with all the conditions of the permit. Any changes or modifications to the stationary source must be performed in compliance with Minn. R. 7007.1150 to 7007.1500. Terms used in the permit are as defined in the state air pollution control rules unless the term is explicitly defined in the permit.

Unless otherwise indicated, all the Minnesota rules cited as the origin of the permit terms are incorporated into the SIP under 40 CFR § 52.1220 and as such as are enforceable by U.S. Environmental Protection Agency (EPA) Administrator or citizens under the Clean Air Act.

Permit Type: Federal; Part 70/Major for NSR

Operating Permit Issue Date: 03/27/2007

Major Amendment Issue Date: 6/21/2011

Expiration Date: 03/27/2012 – Title I Conditions do not expire.

A handwritten signature in black ink, appearing to read "Don Smith", is written over a horizontal line.

Don Smith, P.E., Manager
Air Quality Permits Section
Industrial Division

for Paul Assen
Commissioner
Minnesota Pollution Control Agency

Permit Applications Table

Permit Type	Application Date	Permit Action
Total Facility Operating Permit - Reissuance	September 24, 2001	003
Major Amendment	June 26, 2008	004
Major Amendment	September 15, 2008	004
Major Amendment	December 3, 2008	004
Major Amendment	September 5, 2008	004
Reopening	January 22, 2009	004
Reopening	October 9, 2008	004
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B-2. Dispersion Modeling Parameters For BEC4 CO Emissions

C. Acid Rain Program Forms and Requirements

NOTICE TO THE PERMITTEE:

Your stationary source may be subject to the requirements of the Minnesota Pollution Control Agency's (MPCA) solid waste, hazardous waste, and water quality programs. If you wish to obtain information on these programs, including information on obtaining any required permits, please contact the MPCA general information number at:

Metro Area	651-296-6300
Outside Metro Area	1-800-657-3864
TTY	651-282-5332

The rules governing these programs are contained in Minn. R. chs. 7000-7105. Written questions may be sent to: Minnesota Pollution Control Agency, 520 Lafayette Road North, St. Paul, Minnesota 55155-4194.

Questions about this air emission permit or about air quality requirements can also be directed to the telephone numbers and address listed above.

PERMIT SHIELD:

Subject to the limitations in Minn. R. 7007.1800, compliance with the conditions of this permit shall be deemed compliance with the specific provision of the applicable requirement identified in the permit as the basis of each condition. Subject to the limitations of Minn. R. 7007.1800 and 7017.0100, subp. 2, notwithstanding the conditions of this permit specifying compliance practices for applicable requirements, any person (including the Permittee) may also use other credible evidence to establish compliance or noncompliance with applicable requirements.

FACILITY DESCRIPTION:

The Boswell Energy Center (facility) is a coal-fired electric utility steam generating plant. Emission units at the facility include four power boilers, emergency engine generators, and fuel, additive and ash handling equipment. The main fuel for all boilers is sub-bituminous coal. They may also burn pipeline natural gas, distillate oil, limited amounts of boiler cleaning agents, used oil, oily coal, oily paper-based floor dry, wastewater treatment plant sludge, and oily materials (earth substrate with petroleum product).

Boilers 1 and 2 emissions are controlled by baghouses, over-fire air, and selective non-catalytic reduction. Boiler 3 emissions are controlled by Low Nitrogen Oxide Burners (LNB), over-fire air, selective catalytic reduction, a baghouse filter, activated carbon injection, and wet flue gas desulfurization. Boiler 4 emissions are controlled by a wet venturi scrubber/electrostatic precipitator, selective non-catalytic reduction, LNB, separated over-fire air, and a sulfur dioxide spray tower scrubber.

AMENDMENTS DESCRIPTION:

Amendment 004 authorized installation of natural gas fired igniters/heat guns on all four boilers, revised the size of emergency generator (EU 023) from 100 kW to 300 kW, and included installation of new Continuous Emissions Monitoring Systems (CEMS).

Amendment 005 authorized installation of LNB and separated over-fire air in boiler No. 4, and updated changes to boiler # 4 continuous emission monitors.

Amendment 006 is a major amendment to incorporate the revised PM/PM₁₀ compliance assurance monitoring (CAM) plan for Boiler #3 (EU 003); add deadlines for future EU 003 PM, PM₁₀, lead, and hydrogen fluoride emissions testing; clarify the purpose of the continuous opacity monitor in the existing particulate matter CAM plans for Boilers #1, #2, and #4; and remove completed requirements triggered by recent permit actions (Boiler #3 PM/PM₁₀ CAM plan submittal and Boiler #4 startup notification requirement after completion of modifications authorized by permit No. 06100004-005).

TABLE A: LIMITS AND OTHER REQUIREMENTS

A-1 06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Table A contains limits and other requirements with which your facility must comply. The limits are located in the first column of the table (What To do). The limits can be emission limits or operational limits. This column also contains the actions that you must take and the records you must keep to show that you are complying with the limits. The second column of Table A (Why to do it) lists the regulatory basis for these limits. Appendices included as conditions of your permit are listed in Table A under total facility requirements.

Subject Item: Total Facility

What to do	Why to do it
DETERMINING IF A PROJECT/MODIFICATION IS SUBJECT TO NEW SOURCE REVIEW	hdr
<p>These requirements apply if a reasonable possibility (RP) as defined in 40 CFR Section 52.21(r)(6)(vi) exists that a proposed project, analyzed using the actual-to-projected-actual (ATPA) test (either by itself or as part of the hybrid test at Section 52.21(a)(2)(iv)(f)) and found to not be part of a major modification, may result in a significant emissions increase (SEI). If the ATPA test is not used for the project, or if there is no RP that the proposed project could result in a SEI, these requirements do not apply to that project. The Permittee is only subject to the Preconstruction Documentation requirement for a project where a RP occurs only within the meaning of Section 52.21(r)(6)(vi)(b).</p> <p>Even though a particular modification is not subject to New Source Review (NSR), or where there isn't a RP that a proposed project could result in a SEI, a permit amendment, recordkeeping, or notification may still be required by Minn. R. 7007.1150 - 7007.1500.</p>	Title I Condition: 40 CFR Section 52.21(r)(6); Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2
<p>Preconstruction Documentation -- Before beginning actual construction on a project, the Permittee shall document the following:</p> <ol style="list-style-type: none"> 1. Project description 2. Identification of any emission unit (EU) whose emissions of an NSR pollutant could be affected 3. Pre-change potential emissions of any affected existing EU, and the projected post-change potential emissions of any affected existing or new EU. 4. A description of the applicability test used to determine that the project is not a major modification for any regulated NSR pollutant, including the baseline actual emissions, the projected actual emissions, the amount of emissions excluded due to increases not associated with the modification and that the EU could have accommodated during the baseline period, an explanation of why the amounts were excluded, and any creditable contemporaneous increases and decreases that were considered in the determination. <p>The Permittee shall maintain records of this documentation.</p>	Title I Condition: 40 CFR Section 52.21(r)(6); Minn. R. 7007.3000; Minn. R. 7007.1200, subp. 4; Minn. R. 7007.0800, subps. 4 & 5
<p>The Permittee shall monitor the actual emissions of any regulated NSR pollutant that could increase as a result of the project and that were analyzed using the ATPA test, and the potential emissions of any regulated NSR pollutant that could increase as a result of the project and that were analyzed using potential emissions in the hybrid test. The Permittee shall calculate and maintain a record of the sum of the actual and potential (if the hybrid test was used in the analysis) emissions of the regulated pollutant, in tons per year on a calendar year basis, for a period of 5 years following resumption of regular operations after the change, or for a period of 10 years following resumption of regular operations after the change if the project increases the design capacity of or potential to emit of any unit associated with the project.</p>	Title I Condition: 40 CFR Section 52.21(r)(6); Minn. R. 7007.3000; Minn. R. 7007.0800, subps. 4 & 5
<p>Before beginning actual construction of any project which includes any electric utility steam generating unit (EUSGU), the Permittee shall submit a copy of the preconstruction documentation (items 1-4 under Preconstruction Documentation, above) to the Agency.</p>	Title I Condition: 40 CFR Section 52.21(r)(6)(ii) and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4 & 5
<p>For any project which includes any EUSGU, the Permittee must submit an annual report to the Agency, within 60 days after the end of the calendar year. The report shall contain:</p> <ol style="list-style-type: none"> a. The name and ID number of the facility, and the name and telephone number of the facility contact person b. The quantified annual emissions analyzed using the ATPA test, plus the potential emissions associated with the same project analyzed as part of a hybrid test. c. Any other information, such as an explanation as to why the summed emissions differ from the preconstruction projection, if that is the case. 	Title I Condition: 40 CFR Section 52.21(r)(6) and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4 & 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

A-2 06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

For any project which does not include any EUSGU, the Permittee must submit a report to the Agency if the annual summed (actual, plus potential used in hybrid test) emissions differ from the preconstruction projection and exceed the baseline actual emissions by a significant amount as listed at 40 CFR Section 52.21(b)(23). Such report shall be submitted to the Agency within 60 days after the end of the year in which the exceedances occur. The report shall contain:	Title I Condition: 40 CFR Section 52.21(r)(6) and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4 & 5
<p>a. The name and ID number of the facility, and the name and telephone number of the facility contact person</p> <p>b. The annual emissions (actual, plus potential if any part of the project was analyzed using the hybrid test) for each pollutant for which the preconstruction projection and significant emissions rate is exceeded.</p> <p>c. Any other information, such as an explanation as to why the summed emissions differ from the preconstruction projection.</p>	
OPERATIONAL REQUIREMENTS	hdr
Permit Appendices: This permit contains appendices as listed in the permit Table of Contents. The Permittee shall comply with all requirements contained in Appendices A and C.	Minn. R. 7007.0800, subp. 2
Notwithstanding the previous paragraph, modeling parameters in Appendices B-1 and B-2 are included for reference only and compliance with these parameters is achieved through meeting the requirement(s) under the header 'DISPERSION MODELING REQUIREMENTS' listed on pages A-4 and A-5 in the total facility section of table A of this permit.	
Circumvention: Do not install or use a device or means that conceals or dilutes emissions, which would otherwise violate a federal or state air pollution control rule, without reducing the total amount of pollutant emitted.	Minn. R. 7011.0020
Air Pollution Control Equipment: Operate all pollution control equipment whenever the corresponding process equipment and emission units are operated, unless otherwise noted in Table A.	Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subp. 16(J)
Operation and Maintenance Plan: Retain at the stationary source an operation and maintenance plan for all air pollution control equipment. At a minimum, the O & M plan shall identify all air pollution control equipment and control practices and shall include a preventative maintenance program for the equipment and practices, a description of (the minimum but not necessarily the only) corrective actions to be taken to restore the equipment and practices to proper operation to meet applicable permit conditions, a description of the employee training program for proper operation and maintenance of the control equipment and practices, and the records kept to demonstrate plan implementation.	Minn. R. 7007.0800, subp. 14 and Minn. R. 7007.0800, subp. 16(J)
Fugitive Emissions: Do not cause or permit the handling, use, transporting, or storage of any material in a manner which may allow avoidable amounts of particulate matter to become airborne. Comply with all other requirements listed in Minn. R. 7011.0150.	Minn. R. 7011.0150
Noise: The Permittee shall comply with the noise standards set forth in Minn. R. 7030.0010 to 7030.0080 at all times during the operation of any emission units. This is a state requirement only and is not federally enforceable.	Minn. R. 7030.0010-7030.0080
Inspections: Upon presentation of credentials and other documents as may be required by law, allow the Agency, or its representative, to enter the Permittee's premises, to have access to and copy any records required by this permit, to inspect at reasonable times (which include any time the source is operating) any facilities, equipment, practices or operations, and to sample or monitor any substances or parameters at any location. The Permittee may require that MPCA inspectors be accompanied by MP staff during the inspection. Permittee's staff shall be available whenever the plant is operating.	Minn. R. 7007.0800, subp. 9(A)
Comply with general conditions listed in Minn. R. 7007.0800, subp. 16.	Minn. R. 7007.0800, subp. 16
Comply with Fugitive Emissions Control Plan: Follow the actions and record keeping specified in the control plan. The plan may be amended with the Commissioner's approval. If the Commissioner determines that you are out of compliance with Minn. R. 7011.0150 or the control plan, then you may be required to amend the control plan and/or install and operate particulate matter ambient monitors.	Minn. Stat. Section 116.07, subd. 4a; Minn. R. 7007.0100; Minn. R. 7007.0800, subp. 2; Minn. R. 7011.0150; Minn. R. 7009.0020
Oily Floor Dry: Limit combustion to: 1) cellulose based only, 2) 25 tons per year, and 3) 1.25 tons per hour.	Title I Condition: To avoid classification as a major modification under 40 CFR Section 52.21 and Minn. R. 7007.3000

TABLE A: LIMITS AND OTHER REQUIREMENTS

A-3 06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

The following does not apply to Boilers No. 001, 002, 003, and 004. These units contain specific operating and/or production limits requirements.	Minn. R. 7017.2025
Operating and/or production limits will be placed on emission units based on operating conditions during compliance testing. Limits set as a result of a compliance test (conducted before or after permit issuance) apply until new operating/production limits are set following formal review of a performance test as specified by Minn. R. 7017.2025.	
PERFORMANCE TESTING	hdr
<p>Performance Test Notifications and Submittals:</p> <p>Performance Tests are due as outlined in Tables A and B of the permit. See Table B for additional testing requirements.</p> <p>Performance Test Notification (written): due 30 days before each Performance Test Performance Test Plan: due 30 days before each Performance Test Performance Test Pre-test Meeting: due 7 days before each Performance Test Performance Test Report: due 45 days after each Performance Test Performance Test Report - Microfiche Copy: due 105 days after each Performance Test</p> <p>The Notification, Test Plan, and Test Report may be submitted in alternative format as allowed by Minn. R. 7017.2018.</p>	Minn. R. 7017.2030, subp. 1-4, 7017.2018 and Minn. R. 7017.2035, subp. 1-2
Performance Testing: Conduct all performance tests in accordance with Minn. R. ch. 7017 unless otherwise noted in Tables A, B, and/or C.	Minn. R. ch. 7017
MONITORING REQUIREMENTS	hdr
Monitoring Equipment Calibration: Annually calibrate all required monitoring equipment (any requirements applying to continuous emission monitors are listed separately in this permit).	Minn. R. 7007.0800, subp. 4(D)
Operation of Monitoring Equipment: Unless otherwise noted in Tables A, B, and/or C, monitoring a process or control equipment connected to that process is not necessary during periods when the process is shutdown, or during checks of the monitoring systems, such as calibration checks and zero and span adjustments. If monitoring records are required, they should reflect any such periods of process shutdown or checks of the monitoring system.	Minn. R. 7007.0800, subp. 4(D)
RECORDKEEPING	hdr
Recordkeeping: Maintain records describing any insignificant modifications (as required by Minn. R. 7007.1250, subp. 3) or changes contravening permit terms (as required by Minn. R. 7007.1350, subp. 2), including records of the emissions resulting from those changes.	Minn. R. 7007.0800, subp. 5(B)
Recordkeeping: Retain all records at the stationary source for a period of five (5) years from the date of monitoring, sample, measurement, or report. Records which must be retained at this location include all calibration and maintenance records, all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by the permit. Records must conform to the requirements listed in Minn. R. 7007.0800, subp. 5(A).	Minn. R. 7007.0800, subp. 5(C)
REPORTING	hdr
Application for Permit Amendment: If you need a permit amendment, submit application in accordance with the requirements of Minn. R. 7007.1150 through Minn. R. 7007.1500. Submittal dates vary, depending on the type of amendment needed.	Minn. R. 7007.1150 through Minn. R. 7007.1500
Notification of Deviations Endangering Human Health or the Environment: As soon as possible after discovery, notify the Commissioner or the state duty officer, either orally or by facsimile, of any deviation from permit conditions which could endanger human health or the environment.	Minn. R. 7019.1000, subp. 1
<p>Notification of Deviations Endangering Human Health or the Environment Report:</p> <p>Within 2 working days of discovery, notify the Commissioner in writing of any deviation from permit conditions which could endanger human health or the environment. Include the following information in this written description:</p> <ol style="list-style-type: none"> 1. the cause of the deviation; 2. the exact dates of the period of the deviation, if the deviation has been corrected; 3. whether or not the deviation has been corrected; 4. the anticipated time by which the deviation is expected to be corrected, if not yet corrected; and 5. steps taken or planned to reduce, eliminate, and prevent reoccurrence of the deviation. 	Minn. R. 7019.1000 subp. 1

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-4** 06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Shutdown Notifications: Notify the Commissioner at least 24 hours in advance of a planned shutdown of any control equipment or process equipment if the shutdown would cause any increase in the emissions of any regulated air pollutant. If the owner or operator does not have advance knowledge of the shutdown, notification shall be made to the Commissioner as soon as possible after the shutdown. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 3. At the time of notification, the owner or operator shall inform the Commissioner of the cause of the shutdown and the estimated duration. The owner or operator shall notify the Commissioner when the shutdown is over.	Minn. R. 7019.1000, subp. 3
Breakdown Notifications: Notify the Commissioner within 24 hours of a breakdown of more than one hour duration of any control equipment or process equipment if the breakdown causes any increase in the emissions of any regulated air pollutant. The 24-hour time period starts when the breakdown was discovered or reasonably should have been discovered by the owner or operator. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 2. At the time of notification or as soon as possible thereafter, the owner or operator shall inform the Commissioner of the cause of the breakdown and the estimated duration. The owner or operator shall notify the Commissioner when the breakdown is over.	Minn. R. 7019.1000, subp. 2
Shutdown and Breakdown Reporting Requirement for the Dust Collector Systems for Material Handling Equipment: Shutdowns and breakdowns shall be reported on a quarterly basis to the Agency. The quarterly report shall include an identification of the dust collector that broke down or was shutdown, the time and reason for the breakdown or shutdown, a description of any repairs made, and the date and time the dust collector was placed back in service.	Minn. R. 7019.1000, subp. 2
Emission Inventory Report: due on or before April 1 of each calendar year following permit issuance. To be submitted on a form approved by the Commissioner.	Minn. R. 7019.3000 through Minn. R. 7019.3100
Emission Fees: due 60 days after receipt of an MPCA bill	Minn. R. 7002.0005 through Minn. R. 7002.0095
Extension Requests: The permittee may apply for an Administrative Amendment to extend a deadline in a permit by no more than 120 days, provided the proposed deadline extension meets the requirements of Minn. R. 7007.1400, subp. 1(H).	Minn. R. 7007.1400, subp. 1(H)
ACID RAIN PROGRAM REQUIREMENTS	hdr
Emissions from the stationary source cannot exceed any allowances that the source lawfully holds under federal acid rain regulations, except as allowed by Minn. R. 7007.0800, subp. 7.	Minn. R. 7007.0800, subp. 7
Acid Rain Certification Report: due 60 days after end of each calendar year.	40 CFR Section 72.90(b) and 40 CFR Section 72.90(c)
If the unit has excess emissions, the designated representative shall submit a proposed offset plan in accordance with 40 CFR Section 72.9(e).	40 CFR Section 72.9(e)
Keep the certificate of representation, all emissions monitoring information, copies of all reports, compliance certifications and related submissions and all records made or required under the Acid Rain Program on site for a period of 5 years from the date the document was created.	40 CFR Section 72.9(f)
Hold allowances as of the allowance transfer deadline, in the facility's compliance account. Allowances may not be less than the total annual emissions of sulfur dioxide from the previous calendar year from the facility.	40 CFR Section 72.9(c)
DISPERSION MODELING REQUIREMENTS	hdr
The Permittee shall comply with National Primary and Secondary Ambient Air Quality Standards, 40 CFR pt. 50, and the Minnesota Ambient Air Quality Standards, Minn. R. 7009.0010 to 7009.0080. Compliance shall be demonstrated upon written request by the MPCA.	40 CFR pt. 50; Minn. Stat. Sec. 116.07, subds. 4a and 9; Minn. R. 7007.0100, subps. 7A, 7L and 7M; Minn. R. 7007.0800, subps. 1, 2, and 4; Minn. R. 7009.0010-7009.0080
The parameters used in SO ₂ and PM ₁₀ modeling for permit No. 06100004-004 are listed in Appendix B-1 of this permit.	Minn. Stat. Section 116.07, subds. 4a & 9; Minn. R. 7009.0020; Minn. R. 7007.0100; Minn. R. 7007.0800, subp. 2
The parameters used in CO modeling for permit No. 06100004-005 are listed in Appendix B-2 of this permit and for CO modeling for permit No. 06100004-004 are listed in Appendix B-1 of this permit.	Title I Condition: 40 CFR Section 52.21(k); Minn. R. 7007.3000; Minn. Stat. Section 116.07, subds. 4a & 9; Minn. R. 7009.0020; Minn. R. 7007.0100; Minn. R. 7007.0800, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

A-5 06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

<p>The parameters used in NOx modeling for permit No. 06100004-004 are listed in Appendix B-1 of this permit.</p> <p>NOx Modeling Triggers: For changes that do not require a permit amendment or that require a minor permit amendment, and that affect any modeled parameter or emission rate, a Remodeling Submittal requirement is not triggered. The Permittee shall keep updated records on site of all parameters and emission rates. The Permittee shall submit any changes to parameters and emission rates with the next required remodeling submittal.</p> <p>For changes that require a moderate or major permit amendment and affect any modeled parameter or increase in an emission rate, a Remodeling Submittal requirement is triggered. The Permittee shall include previously made changes to parameters and emission rates that did not trigger a remodeling submittal with this modeling submittal.</p>	<p>Minn. Stat. Section 116.07, subds. 4a & 9; Minn. R. 7009.0020; Minn. R. 7007.0100; Minn. R. 7007.0800, subp. 2</p>
<p>NOx Remodeling Submittal: The Permittee must submit to the Commissioner for approval changes meeting the above criteria and must wait for a written approval (in the form of an issued permit amendment) before making such changes. The information submitted must include, for stack and vent sources, source emission rate, location, height, diameters, exit velocity, exit temperature, discharge direction, use of rain caps or rain hats, and, if applicable, locations and dimensions of nearby buildings. For non-stack/vent sources, this includes the source emission rate, location, size and shape, release height, and, if applicable, any emissions rate scalars, and the initial lateral dimensions and initial vertical dimensions and adjacent building heights.</p> <p>(continued)</p>	<p>Minn. Stat. Section 116.07, subds. 4a & 9; Minn. R. 7009.0020; Minn. R. 7007.0100; Minn. R. 7007.0800, subp. 2</p>
<p>NOx Remodeling Submittal (continued): The plume dispersion characteristics due to the revisions of the information must be equivalent to or better than the latest dispersion characteristics modeled. The Permittee shall demonstrate this equivalency in the proposal. If the information does not demonstrate equivalent or better dispersion characteristics, or if a conclusion cannot readily be made about the dispersion, the Permittee must submit full remodeling.</p>	<p>Minn. Stat. Section 116.07, subds. 4a & 9; Minn. R. 7009.0020; Minn. R. 7007.0100; Minn. R. 7007.0800, subp. 2</p>
<p>CLEAN AIR INTERSTATE RULE</p>	<p>hdr</p>
<p>At the present time, the permittee must comply with all the applicable requirements in 40 CFR pt. 97 for a CAIR NOx source, a CAIR SO2 source, a CAIR NOx unit, and a CAIR SO2 unit as defined in 40 CFR Sections 97.102 and 97.202.</p> <p>If the US Environmental Protection Agency promulgates a rule to stay 40 CFR pt. 97 in Minnesota, this requirement will be of no further force and effect upon the effective date of the rule.</p>	<p>40 CFR pt. 97; 40 CFR Section 52.1240; Minn. R. 7007.0800, subp. 2.</p>
<p>OIL & NATURAL GAS CARBON MONOXIDE LIMIT</p>	<p>hdr</p>
<p>Carbon Monoxide: less than or equal to 319 tons/year using 12-month Rolling Sum. This limit was taken to avoid an Air Emissions Increase Analysis when installing natural gas ignitor/heat guns. This limit is derived to limit the potential to emit increase to 95 tons/yr of CO.</p> <p>Combined CO emissions from oil and natural gas combustion used in all igniters and warm-up guns in EU 001, EU 002, EU 003, and EU 004 shall not exceed 319 tons per year of CO. This excludes CO emissions from coal combustion and other permitted fuels. This limit applies on a 12-month rolling sum basis and must be evaluated monthly. The following emission factors shall be used: Fuel Oil - 5 lbs CO/1000 gallons; Natural Gas - 84 lbs CO/million cubic feet.</p>	<p>Minn. R. 7007.0800 subp. 2</p>
<p>Recordkeeping: by the last day of each month calculate and record the CO emissions for the previous month and the previous 12-month period (12-month rolling sum) from the combustion of natural gas and fuel oil in the boilers ignitor guns.</p>	<p>Minn. R. 7007.0800 subp. 5</p>

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-6**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: GP 002 Opacity Monitors**Associated Items:** MR 020 Blr 1 Opacity

MR 021 Blr 2 Opacity

MR 027 Blr 3 Opacity

MR 040 Blr 4 Opacity

What to do	Why to do it
CONTINUOUS OPACITY MONITORING SYSTEMS (COMS) Requirements (Additional requirements are located under the associated MR subject items and in Table B)	hdr
All COMS shall complete a minimum of one cycle of sampling and analyzing for each successive 10-second period and one cycle of data for each successive 6-minute period.	Minn. R. 7017.1200, subp. 1, 2 & 3; 40 CFR Section 60.13(e)(1); 40 CFR Section 60.13(h)
Continuous Operation: COMS must be operated and data recorded during all periods of emission unit operation including periods of emission unit start-up, shutdown, or malfunction except for periods of acceptable monitor downtime. This requirement applies whether or not a numerical emission limit applies during these periods. A COMS must not be bypassed except in emergencies where failure to bypass would endanger human health, safety, or plant equipment. Acceptable monitor downtime includes reasonable periods as listed in Items A, B, C and D of Minn. R. 7017.1090, subp. 2.	Minn. R. 7017.1090, subp. 1; 40 CFR Section 60.13(e)
COMS QA/QC: The owner or operator of an affected facility is subject to the performance specifications listed in 40 CFR pt. 60, Appendix B and shall operate, calibrate, and maintain each COMS according to the QA/QC procedures in Minn. R. 7017.1210.	40 CFR Section 60.13(a); Minn. R. 7017.1210
COMS Daily Calibration Drift Check: The Permittee must automatically, intrinsic to the opacity monitor, check the zero and upscale (span) calibration drifts at least once daily. The acceptable range is as defined in 40 CFR pt. 60, Appendix B, PS-1. The optical surfaces shall be cleaned when the cumulative automatic zero compensation exceeds 4 percent opacity. Minimum procedures must include an automated method for producing a simulated zero opacity condition and an upscale opacity condition as specified in 40 CFR 60.13(d)(2).	Minn. R. 7017.1210, subp. 2; 40 CFR Section 60.13(d)(1) regarding COMS and 60.13(d)(2)
Attenuator Calibration: The Permittee shall have an independent testing company conduct calibrations of each of the neutral density filters used in the calibration error audit according to the procedure in Code of Federal Regulations, Title 40, Part 60, Appendix B, Section 7.1.3.1 within the time frame of opacity stability guaranteed by the attenuator manufacturer. The manufacturer's guarantee of stability shall be on site available for inspection.	Minn. R. 7017.1210, subp. 4
Recordkeeping: The owner or operator must retain records of all COMS monitoring data and support information for a period of five years from the date of the monitoring sample, measurement or report. Records shall be kept at the source.	Minn. R. 7017.1130

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-7**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: GP 003 NOx and SO2 Monitors**Associated Items:** MR 028 Blr 1 SO2

MR 029 Blr 1 NOx

MR 032 Blr 2 SO2

MR 033 Blr 2 NOx

MR 036 Blr 3 SO2

MR 037 Blr 3 NOx

MR 042 Blr 4 SO2

MR 043 Blr 4 NOx

What to do	Why to do it
CONTINUOUS EMISSION MONITORING SYSTEMS (CEMS) REQUIREMENTS Additional requirements are located under the associated MR subject items and in Table B	hdr
CEMS QA/QC: The owner or operator of an affected facility shall operate, calibrate, and maintain each CEMS according to the QA/QC procedures in 40 CFR pt. 75, appendix B as amended.	40 CFR Section 75.21
Daily Calibration error (CE) Test: conduct daily CE testing on all CEMS required by the Acid Rain Program, in accordance with 40 CFR pt. 75, appendix B.	40 CFR pt. 75, Appendix B, section 2.1
Relative Accuracy Test Audit (RATA) Notification: due 30 days before CEMS Relative Accuracy Test Audit (RATA)).	Minn. R. 7017.1180, subp. 2
Recordkeeping: The owner or operator must retain records of all CEMS monitoring data and support information for a period of five years from the date of the monitoring sample, measurement or report. Records shall be kept at the source.	Minn. R. 7017.1130; and 40 CFR pt. 75, subp. F
Continuous Operation: CEMS must be operated and data recorded during all periods of emission unit operation including periods of emission unit start-up, shutdown, or malfunction except for periods of acceptable monitor downtime. This requirement applies whether or not a numerical emission limit applies during these periods. A CEMS must not be bypassed except in emergencies where failure to bypass would endanger human health, safety, or plant equipment.	40 CFR Section 60.13(e); Minn. R. 7017.1090
SO2 Monitoring: Use MR 028, MR 032, MR 036, and MR 042 to continuously monitor SO2 emissions from EU 001, EU 002, EU 003, and EU 004, respectively. NOx Monitoring: Use MR 029, MR 033, MR 037, and MR 043 to continuously monitor NOx emissions from EU 001, EU 002, EU 003, and EU 004, respectively.	Minn. R. 7007.0800, subp. 4

TABLE A: LIMITS AND OTHER REQUIREMENTS

A-8

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: GP 004 Boilers 1-4 Sulfur Dioxide Limits**Associated Items:** EU 001 Power Boiler 1

EU 002 Power Boiler 2

EU 003 Power Boiler 3

EU 004 Power Boiler 4

What to do	Why to do it
BOILER 3 AND 4 COMBINED LIMITS	hdr
When EU 001 and EU 002 are not operating, sulfur dioxide emissions are limited to less than or equal to the following: Condition 1) 3.52 lb/mmBtu for SV 003 and 1.2 lb/mmBtu for SV 004, both on a one-hour average; OR, Condition 2) 4.0 lb/mmBtu for SV 003 and 0.88 lb/mmBtu for SV 004, both on a one-hour average; OR, Condition 3) 3.67 lb/mmBtu for SV 003 and 1.10 lb/mmBtu for SV 004, both on a one-hour average.	Minn. R. ch. 7009; 40 CFR pt. 50
BOILER 1 EMISSION LIMITS	hdr
When the EU 001 flue gasses are vented through SV 001: Sulfur Dioxide: less than or equal to 1.18 lbs/million BTU heat input using 1 Hour Average	Minn. R. 7009.0020
Sulfur Dioxide: less than or equal to 4.0 lbs/million Btu heat input using 1-Hour Average and a 3-Hour Average for solid fuels, and 2.0 lbs/mmBtu when burning liquid fuels. When solid and liquid fossil fuels are burned simultaneously in any combination, the applicable standard shall be determined by proration using the following formula: $w = [2y + 4z] / (y + z)$ where y is the % heat input from liquid fossil fuel and z is the % heat from solid fuels. This limit applies only when EU001 is vented through SV003.	Minn. R. 7011.0510, subp. 1 Minn. R. 7009
BOILER 2 EMISSION LIMITS	hdr
When EU 002 flue gasses are vented through SV 001. Sulfur Dioxide: less than or equal to 1.18 lbs/million Btu heat input using 1-Hour Average	Minn. R. 7009.0020
Sulfur Dioxide: less than or equal to 4.0 lbs/million Btu heat input using 1-Hour Average and a 3-Hour Average for solid fuels, and 2.0 lbs/mmBtu when burning liquid fuels. When liquid and solid fossil fuels are burned simultaneously in any combination, the applicable standard shall be determined by proration using the following formula: $w = [2y + 4z] / (y + z)$ where y is the % heat input from liquid fossil fuel and z is the % heat from solid fuels. This limit applies only when EU 002 is vented through SV 003.	Minn. R. 7011.0510, subp. 1 Minn. R. 7009
BOILER 3 LIMITS	hdr
Sulfur Dioxide: less than or equal to 2.97 lbs/million Btu heat input using 1-Hour Average when EU 001 and EU 002 are operating, and the EU 001 and EU 002 emissions are vented through SV 001.	Minn. R. 7009.0020
Sulfur Dioxide: less than or equal to 0.09 lbs/million Btu heat input based on a 30-day rolling average. This limit does not apply during times of startup, shutdown or malfunction. (Boiler 3 limit). This limit applies regardless of the operation and venting of the other boilers.	Minn. R. 7007.0800, subp. 2
Sulfur Dioxide: less than or equal to 4.0 lbs/million Btu heat input using 1-Hour Average and a 3-Hour Average for solid fuels, and 2.0 lbs/mmBtu when burning liquid fuels. When solid and liquid fossil fuels are burned simultaneously in any combination, the applicable standard shall be determined by proration using the following formula: $w = [2y + 4z] / (y + z)$ where y is the % heat input from liquid fossil fuel and z is the % heat from solid fuels. The EU003 sulfur dioxide limit applies regardless if EU001 and EU002 are operating.	Minn. R. 7011.0510, subp. 1 Minn. R. 7009
BOILER 4 EMISSION LIMITS	hdr
Sulfur Dioxide: less than or equal to 1.2 lbs/million Btu heat input using 1-Hour Average period for solid fossil fuel, and 0.8 lb/million BTU using 1 Hour Average period for liquid fossil fuel. When solid and liquid fossil fuels are burned simultaneously in any combination, the applicable standard shall be determined by proration using the following formula: $w = [0.8y + 1.2z] / (y + z)$ where y is the % heat input from liquid fossil fuel and z is the % heat from solid fuels.	Title I Condition: 40 CFR Section 52.21(j) PSD BACT limit and ambient impacts analysis; 40 CFR Section 60.43
Sulfur Dioxide: less than or equal to 0.33 lbs/million Btu heat input based on an annual average.	Minn. R. 7021.0050, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-9**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: GP 005 Low Temperature Fabric Filters

Associated Items: CE 007 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
 CE 008 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
 CE 009 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
 CE 010 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
 CE 013 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
 CE 015 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
 CE 016 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
 CE 017 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
 CE 018 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

What to do	Why to do it
The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 99 percent control efficiency	Minn. R. 7007.0800, subp. 2 and 14
The Permittee shall operate and maintain the fabric filter at all times that any emission unit controlled by the fabric filter is in operation. The Permittee shall document periods of non-operation of the control equipment.	Minn. R. 7007.0800, subp. 2 and 14
Visible Emissions: The Permittee shall check the fabric filter stacks for any visible emissions once each day of operation during daylight hours.	Minn. R. 7007.0800, subp. 4 and 5
The Permittee shall operate and maintain the fabric filter in accordance with the Operation and Maintenance (O & M) Plan. The Permittee shall keep copies of the O & M Plan available onsite for use by staff and MPCA staff.	Minn. R. 7007.0800, subp. 14
Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - visible emissions are observed; or - the fabric filter or any of its components are found during the inspections to need repair. Corrective actions shall eliminate visible emissions, and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee shall keep a record of the type and date of any corrective action taken for each filter.	Minn. R. 7007.0800, subp. 4, 5, and 14
Periodic Inspections: At least once per calendar quarter, or more frequently as required by the manufacturing specifications, the Permittee shall inspect the control equipment components. The Permittee shall maintain a written record of these inspections.	Minn. R. 7007.0800, subp. 4, 5 and 14

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-10**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: EU 001 Power Boiler 1**Associated Items:** CE 001 Fabric Filter - High Temperature, i.e., T>250 Degrees F

CE 023 ROTA-Mix SNCR

CE 025 ROFA

GP 004 Boilers 1-4 Sulfur Dioxide Limits

MR 020 Blr 1 Opacity

MR 028 Blr 1 SO2

MR 029 Blr 1 NOx

MR 030 Blr 1 CO2

MR 031 Blr 1 Air Flow

SV 001

SV 003

What to do	Why to do it								
EMISSION LIMITS	hdr								
Total Particulate Matter: less than or equal to 0.1 lbs/million BTU heat input	Title I condition: 40 CFR Section 52.21(k) (ambient air impacts analysis); also meets the requirements of Minn. R. 7011.0510, subp. 1								
Opacity: less than or equal to 20 percent opacity using 6-minute Average except for one six-minute period per hour of not more than 60 percent opacity.	Minn. R. 7011.0510, subp. 2								
See GP004 for sulfur dioxide limits.	hdr								
Comply with the applicable Acid Rain emissions limitation for sulfur dioxide.	40 CFR Section 72.9(c)(1)(ii), 40 CFR Section 72.9(g)(4)								
<p>NOx Averaging Plan</p> <p>Maintain an annual average NOx emission rate of 0.46 lbs/MMBtu and limit the annual heat input to less than or equal to 3,500,000 mmBtu per year.</p> <p>OR</p> <p>Maintain a Btu-weighted annual average emission rate in lbs/mmBtu, averaged over the units specified in the NOx averaging plan, that is less than or equal to the Btu-weighted annual average emission rate averaged over the same units had they each been operated during the same period of time in compliance with the applicable emission limitations in 40 CFR Sections 76.5, 76.6, or 76.7. Units covered in the plan are:</p> <table> <tr> <td>Plant</td><td>Boiler ID#</td></tr> <tr> <td>Clay Boswell</td><td>1, 2, 3, 4</td></tr> <tr> <td>Syl Laskin</td><td>1, 2</td></tr> <tr> <td>Taconite Harbor</td><td>1, 2, 3</td></tr> </table>	Plant	Boiler ID#	Clay Boswell	1, 2, 3, 4	Syl Laskin	1, 2	Taconite Harbor	1, 2, 3	<p>40 CFR Section 76.11</p> <p>Minn. R. 7011.0553</p>
Plant	Boiler ID#								
Clay Boswell	1, 2, 3, 4								
Syl Laskin	1, 2								
Taconite Harbor	1, 2, 3								
OPERATIONAL LIMITS AND REQUIREMENTS	hdr								
Fuel use: limited to sub-bituminous coal, boiler cleaning agents, distillate oil, oily coal, used oil, oily paper-based floor dry, pipeline natural gas, and propane.	Minn. R. 7007.0800, subp. 2								
Boiler cleaning agents limited to: EDTA type and Ammonium Bromate, are generated on-site, 5% of total mass input, oxygen limited to 3% or greater, agents may only be burned while the boiler is operating at 75 percent of rated capacity or greater.	Minn. R. 7007.0800, subp. 2								
Burn off-specification and on-specification used oil in accordance with Minn. R. ch. 7045, not to exceed 17.5% of rated heat input on an hourly basis (equal to 963 gallons/hr.).	Minn. R. 7007.0800, subp. 2								
Vent all emissions to a fabric filter that meets the requirements of CE001 for particulate matter control when burning coal. The fabric filter may be bypassed during startup.	Title I Condition: control of particulate emissions.								
Bypassing of the fabric filter shall be for as short a time as is practicable while avoiding damage to the fabric filter and its components, but shall not exceed 8 hours.									
CONTINUOUS MONITORING REQUIREMENTS	hdr								

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-11**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

The owner or operator shall measure opacity, and all SO ₂ , NO _x , and CO ₂ emissions from affected units in accordance with 40 CFR Section 75.10. See GP002 for requirements regarding opacity monitoring, and GP003 for requirements regarding SO ₂ and NO _x monitoring. The SO ₂ and NO _x monitors shall be capable of producing emission rates in units of lb/mmBtu on a one-hour average, a three-hour average and on a 30-day rolling average.	40 CFR Section 75.10 Minn. R. 7017.1020
Operate and maintain the continuous opacity monitor as a partial indicator of compliance with the PM limit.	40 CFR pt. 64
PERFORMANCE TESTING	hdr
Performance Test: due before end of each 60 months starting 09/16/1997 to determine compliance with the Title I condition particulate matter emission limit. The tests shall be conducted at an interval not to exceed 60 months between test dates.	Title I Condition: monitoring for the particulate matter emission limit set under 40 CFR 52.21; Minn. R. 7017.2020, subp. 1, and 40 CFR pt. 64
Boiler Alternative Operating Conditions for Performance Testing: Alternative Operating Conditions during testing are defined as 90% to 100% of the boiler's maximum normal (continuous) operating load or the maximum permitted operating rate, whichever is lower. The basis for this number must be included in the test plan. If testing is conducted at the alternative operating condition established, an operating limit will not be established as a result of performance testing. In no case will the new operating rate limit be higher than allowed by an existing permit condition.	Minn. R. 7017.2025, subp. 2(A) and 3(B)
Boiler Operating Conditions Not Meeting the Alternative Operating Conditions During Performance Testing: If performance testing is not conducted at or above the established alternative operating condition, then the boiler operating rate will be limited on an 8-hour block average based on the following: (1) If the results of the performance test are greater than 80% of any applicable emission limit for which compliance is demonstrated, then boiler operation will be limited to the tested operating rate. (2) If results are less than or equal to 80% of all applicable emission limits for which compliance is demonstrated, boiler operation will be limited to 110% of the tested operating rate. In no case will the new operating rate limit be higher than allowed by an existing permit condition.	Minn. R. 7017.2025, subp. 3(B)
STET (Short Term Emergency and Testing) Operating hours limit: The boiler may operate up to 40 hours per year to demonstrate the Uniform Rating of Generating Equipment (URGE) capacity and to meet emergency energy supply needs. Maintain documentation of all STET operation to demonstrate compliance with this limit. The boiler must meet emission limits during STET operation.	Minn. R. 7007.0800, subp. 2.
STET Operation Definition that applies to Boilers that Meet or do Not Meet the Alternative Operating Condition for Performance Testing: If performance test results demonstrate compliance at 80% or less of any applicable emission limits for any tested pollutant, STET operation is defined as operation beyond 110% of the average operating rate achieved during that performance test. If performance test results demonstrate compliance at greater than 80% any applicable emission limit for any tested pollutant, STET operation is defined as operation beyond 100% of the average operating rate achieved during that performance test. In no case will STET operation be higher than allowed by an existing permit condition.	Minn. R. 7007.0800, subp. 2.
The results of a performance test are not final until issuance of a review letter by MPCA, unless specified otherwise by Minn. R. 7017.2001 - 7017.2060.	Minn. R. 7017.2020, subp. 4.

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-12**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: EU 002 Power Boiler 2**Associated Items:** CE 002 Fabric Filter - High Temperature, i.e., T>250 Degrees F

CE 024 ROTA-Mix SNCR

CE 026 ROFA

GP 004 Boilers 1-4 Sulfur Dioxide Limits

MR 021 Blr 2 Opacity

MR 032 Blr 2 SO2

MR 033 Blr 2 NOx

MR 034 Blr 2 CO2

MR 035 Blr 2 Air Flow

SV 001

SV 003

What to do	Why to do it								
EMISSION LIMITS	hdr								
Total Particulate Matter: less than or equal to 0.1 lbs/million BTU heat input	Title I condition: 40 CFR Section 52.21(k) (ambient air impacts analysis); also meets the requirements of Minn. R. 7011.0510, subp. 1								
Opacity: less than or equal to 20 percent opacity using 6-minute Average except for one six-minute period per hour of not more than 60 percent opacity.	Minn. R. 7011.0510, subp. 2								
See GP004 for sulfur dioxide limits.	hdr								
Comply with the applicable Acid Rain emissions limitation for sulfur dioxide.	40 CFR Section 72.9(c)(1)(ii), 40 CFR Section 72.9(g)(4)								
<p>NOx Averaging Plan</p> <p>Maintain an annual average NOx emission rate of 0.46 lbs/MMBtu and limit the annual heat input to less than or equal to 3,500,000 mmBtu per year.</p> <p>OR</p> <p>Maintain a Btu-weighted annual average emission rate in lbs/mmBtu, averaged over the units specified in the NOx averaging plan, that is less than or equal to the Btu-weighted annual average emission rate averaged over the same units had they each been operated during the same period of time in compliance with the applicable emission limitations in 40 CFR Sections 76.5, 76.6, or 76.7. Units covered in the plan are:</p> <table> <tr> <td>Plant</td><td>Boiler ID#</td></tr> <tr> <td>Clay Boswell</td><td>1, 2, 3, 4</td></tr> <tr> <td>Syl Laskin</td><td>1, 2</td></tr> <tr> <td>Taconite Harbor</td><td>1, 2, 3</td></tr> </table>	Plant	Boiler ID#	Clay Boswell	1, 2, 3, 4	Syl Laskin	1, 2	Taconite Harbor	1, 2, 3	<p>40 CFR Section 76.11</p> <p>Minn. R. 7011.0553</p>
Plant	Boiler ID#								
Clay Boswell	1, 2, 3, 4								
Syl Laskin	1, 2								
Taconite Harbor	1, 2, 3								
OPERATIONAL LIMITS AND REQUIREMENTS	hdr								
Fuel use: limited to sub-bituminous coal, boiler cleaning agents, distillate oil, oily coal, used oil, oily paper-based floor dry, pipeline natural gas, and propane.	Minn. R. 7007.0800, subp. 2								
Boiler cleaning agents limited to: EDTA type and Ammonium Bromate, are generated on-site, 5% of total mass input, oxygen limited to 3% or greater, agents may only be burned while the boiler is operating at 75 percent of rated capacity or greater.	Minn. R. 7007.0800, subp. 2								
Burn off-specification and on-specification used oil in accordance with Minn. R. ch. 7045, not to exceed 17.5% of rated heat input on an hourly basis (equal to 963 gallons/hr.).	Minn. R. 7007.0800, subp. 2								
Vent all emissions to a fabric filter that meets the requirements of CE002 for particulate matter control when burning coal. The fabric filter may be bypassed during startup.	Title I Condition: control of particulate emissions.								
Bypassing of the fabric filter shall be for as short a time as is practicable while avoiding damage to the fabric filter and its components, but shall not exceed 8 hours.									
CONTINUOUS MONITORING REQUIREMENTS	hdr								

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-13**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

The owner or operator shall measure opacity, and all SO ₂ , NO _x , and CO ₂ emissions from affected units in accordance with 40 CFR Section 75.10. See GP002 for requirements regarding opacity monitoring, and GP003 for requirements regarding SO ₂ and NO _x monitoring. The SO ₂ and NO _x monitors shall be capable of producing emission rates in units of lb/mmBtu on a one-hour average, a three-hour average and on a 30-day rolling average.	40 CFR Section 75.10 Minn. R. 7017.1020
Operate and maintain the continuous opacity monitor as a partial indicator of compliance with the particulate matter limit.	40 CFR pt. 64
PERFORMANCE TESTING	hdr
Performance Test: due before end of each 60 months starting 09/16/1997 to determine compliance with the Title I condition particulate matter emission limit. The tests shall be conducted at an interval not to exceed 60 months between test dates.	Title I Condition: monitoring for the particulate matter emission limit set under 40 CFR 52.21; Minn. R. 7017.2020, subp. 1, and 40 CFR pt. 64
Boiler Alternative Operating Conditions for Performance Testing: Alternative Operating Conditions during testing are defined as 90% to 100% of the boiler's maximum normal (continuous) operating load or the maximum permitted operating rate, whichever is lower. The basis for this number must be included in the test plan. If testing is conducted at the alternative operating condition established, an operating limit will not be established as a result of performance testing. In no case will the new operating rate limit be higher than allowed by an existing permit condition.	Minn. R. 7017.2025, subp. 2(A) and 3(B)
Boiler Operating Conditions Not Meeting the Alternative Operating Conditions During Performance Testing: If performance testing is not conducted at or above the established alternative operating condition, then the boiler operating rate will be limited on an 8-hour block average based on the following: (1) If the results of the performance test are greater than 80% of any applicable emission limit for which compliance is demonstrated, then boiler operation will be limited to the tested operating rate. (2) If results are less than or equal to 80% of all applicable emission limits for which compliance is demonstrated, boiler operation will be limited to 110% of the tested operating rate. In no case will the new operating rate limit be higher than allowed by an existing permit condition.	Minn. R. 7017.2025, subp. 3(B)
STET (Short Term Emergency and Testing) Operating hours limit: The boiler may operate up to 40 hours per year to demonstrate the Uniform Rating of Generating Equipment (URGE) capacity and to meet emergency energy supply needs. Maintain documentation of all STET operation to demonstrate compliance with this limit. The boiler must meet emission limits during STET operation.	Minn. R. 7007.0800, subp. 2.
STET Operation Definition that applies to Boilers that Meet or do Not Meet the Alternative Operating Condition for Performance Testing: If performance test results demonstrate compliance at 80% or less of any applicable emission limits for any tested pollutant, STET operation is defined as operation beyond 110% of the average operating rate achieved during that performance test. If performance test results demonstrate compliance at greater than 80% any applicable emission limit for any tested pollutant, STET operation is defined as operation beyond 100% of the average operating rate achieved during that performance test. In no case will STET operation be higher than allowed by an existing permit condition.	Minn. R. 7007.0800, subp. 2.
The results of a performance test are not final until issuance of a review letter by MPCA, unless specified otherwise by Minn. R. 7017.2001 - 7017.2060.	Minn. R. 7017.2020, subp. 4.

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-14**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: EU 003 Power Boiler 3

Associated Items: CE 019 Low NOx Burners/Over-Fire Air
CE 020 SCR (Selective Catalytic Reduction)
CE 021 Fabric Filter - High Temperature, i.e., T>250 Degrees F
CE 022 Wet Flue Gas Desulfurization
CE 029 Carbon Injection
GP 004 Boilers 1-4 Sulfur Dioxide Limits
MR 024 Blr 3 CO
MR 025 Blr 3 Mercury
MR 027 Blr 3 Opacity
MR 036 Blr 3 SO2
MR 037 Blr 3 NOx
MR 038 Blr 3 CO2
MR 039 Blr 3 Air Flow
SV 003

What to do	Why to do it
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.60 lbs/million Btu heat input	Minn. R. 7011.0510, subp. 1
Total Particulate Matter: less than or equal to 0.014 lbs/million Btu heat input for filterable PM.	Minn. R. 7007.0800, subp. 2
PM < 10 micron: less than or equal to 0.035 lbs/million Btu heat input filterable plus organic and inorganic condensables.	Minn. R. 7007.0800, subp. 2
Opacity: less than or equal to 20 percent opacity using 6-minute Average except for one six-minute period per hour of not more than 60 percent opacity.	Minn. R. 7011.0510, subp. 2
NOx Averaging Plan Maintain an annual average NOx emission rate of 0.40 lbs/MMBtu and limit the annual heat input to less than or equal to 19,000,000 mmBtu per year. OR Maintain a Btu-weighted annual average emission rate in lbs/mmBtu, averaged over the units specified in the NOx averaging plan, that is less than or equal to the Btu-weighted annual average emission rate averaged over the same units had they each been operated during the same period of time in compliance with the applicable emission limitations in 40 CFR Sections 76.5, 76.6, or 76.7. Units covered in the plan are: Plant Boiler ID# Clay Boswell 1, 2, 3, 4 Syl Laskin 1, 2 Taconite Harbor 1, 2, 3	40 CFR Section 76.8 Early election for Group 1, Phase II boilers and 40 CFR Section 76.5(a)(1) Minn. R. 7011.0553
Nitrogen Oxides: less than or equal to 0.07 lbs/million Btu heat input based on a 30-day rolling average. This limit does not apply during times of startup, shutdown or malfunction.	Minn. R. 7007.0800, subp. 2
See GP004 for sulfur dioxide limits.	hdr
Hydrogen fluoride: less than or equal to 0.0018 lbs/million Btu heat input .	Title I Condition: to avoid major modification classification under 40 CFR Section 52.21 and Minn. R. 7007.3000
Carbon Monoxide: less than or equal to 0.15 lbs/million Btu heat input on a 24-hour rolling average. This limit does not apply during periods of startup, shutdown, or malfunction.	Title I Condition: 40 CFR Section 52.21 BACT limit
Lead: less than or equal to 0.00004 lbs/million Btu heat input .	Title I Condition: to avoid major modification classification under 40 CFR Section 52.21 and Minn. R. 7007.3000
OPERATING REQUIREMENTS	hdr

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-15**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Fuel use: limited to sub-bituminous coal, boiler cleaning agents, distillate oil, oily coal, used oil, wastewater treatment plant sludge, oily paper-based floor dry, pipeline natural gas, propane, and oily materials (includes mixtures of earth substrate (soil, rocks, sod, etc.) or man-made petroleum adsorption material and various petroleum derived fuels (hydraulic, transformer (less than 50 ppm PCB), crankcase or lubricating oils, diesel fuel, and crude oil)).	Minn. R. 7007.0800, subp. 2
Note: the Permittee is prohibited from using oily materials or wastewater treatment plant sludge as fuel until the Permittee satisfactorily completes the performance testing requirements for these fuels under EU003.	
Boiler cleaning agents limited to: EDTA type and Ammonium Bromate, are generated on-site, 5% of total mass input, oxygen limited to 3% or greater, agents may only be burned while the boiler is operating at 75 percent of rated capacity or greater.	Minn. R. 7007.0800, subp. 2
Burn off-specification and on-specification used oil in accordance with Minn. R. ch. 7045, and not to exceed 2,456 gallons per hour.	Minn. R. 7007.0800, subp. 2
Vent all emissions to a selective catalytic reduction system (CE 020), a fabric filter (CE 021), and a wet flue gas desulfurization system (CE 022).	Minn. R. 7007.0800, subp. 2
CONTINUOUS MONITORING	hdr
Measure all opacity, SO ₂ , NO _x , and CO ₂ emissions from affected units in accordance with 40 CFR Section 75.10. See GP 002 for requirements regarding opacity monitoring, and GP 003 for requirements regarding SO ₂ and NO _x monitoring. The SO ₂ and NO _x monitors shall be capable of producing emission rates in units of lb/mmBtu on a one-hour average, a three-hour average and on a 30-day rolling average.	40 CFR Section 75.10; Minn. R. 7017.1020; 40 CFR pt. 64
The opacity monitor required by this permit shall be located after the fabric filter and prior to the flue gas desulfurization unit.	
Operate a continuous emission monitor to measure all EU 003 CO emissions. The monitor shall be capable of producing emission rates in units of lb/mmBtu on a 24-hour rolling average. See MR 024 for requirements regarding CO monitoring.	Title I Condition: monitoring for BACT limit; Minn. R. 7007.0800, subp. 4
Operate and maintain the continuous opacity monitor as a partial indicator of compliance with the PM and PM ₁₀ limits.	40 CFR pt. 64
Mercury Emissions Monitoring: Use a Hg CEMS to measure Hg emissions from EU 003. Additional Hg monitoring requirements are located under subject item MR 025.	Minn. Stat. Section 216B.681
Establish Baseline Mercury Emission Rate: Use mercury monitors to establish the baseline mercury emission rate for EU 003.	Minn. Stat. Section 216B.681
This is a state only requirement and is not enforceable by the EPA administrator and citizens under the Clean Air Act.	
PERFORMANCE TESTING	hdr
Performance Test: due before end of each calendar 60 months starting 04/01/2010 for PM ₁₀ emissions.	Minn. R. 7017.2020, subp. 1 40 CFR pt. 64
Performance Test: due before end of each calendar 60 months starting 03/31/2010 for (front-half) particulate matter emissions.	Minn. R. 7017.2020, subp. 1 40 CFR pt. 64
Performance Test: due before end of each calendar 60 months starting 03/31/2010 for hydrogen fluoride emissions.	Title I Condition: to avoid major modification classification under 40 CFR Section 52.21 and Minn. R. 7007.3000
Performance Test: due before end of each calendar 60 months starting 03/30/2010 lead emissions.	Title I Condition: to avoid major modification classification under 40 CFR Section 52.21 and Minn. R. 7007.3000
Boiler Alternative Operating Conditions for Performance Testing: Alternative Operating Conditions during testing are defined as 90% to 100% of the boiler's maximum normal (continuous) operating load or the maximum permitted operating rate, whichever is lower. The basis for this number must be included in the test plan. If testing is conducted at the alternative operating condition established, an operating limit will not be established as a result of performance testing. In no case will the new operating rate limit be higher than allowed by an existing permit condition.	Minn. R. 7017.2025, subp. 2(A) and 3(B)

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-16**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

<p>Boiler Operating Conditions Not Meeting the Alternative Operating Conditions During Performance Testing:</p> <p>If performance testing is not conducted at or above the established alternative operating condition, then the boiler operating rate will be limited on an 8-hour block average based on the following:</p> <p>(1) If the results of the performance test are greater than 80% of any applicable emission limit for which compliance is demonstrated, then boiler operation will be limited to the tested operating rate.</p> <p>(2) If results are less than or equal to 80% of all applicable emission limits for which compliance is demonstrated, boiler operation will be limited to 110% of the tested operating rate.</p> <p>In no case will the new operating rate limit be higher than allowed by an existing permit condition.</p>	Minn. R. 7017.2025, subp. 3(B)
<p>STET (Short Term Emergency and Testing) Operating hours limit:</p> <p>The boiler may operate up to 40 hours per year to demonstrate the Uniform Rating of Generating Equipment (URGE) capacity and to meet emergency energy supply needs. Maintain documentation of all STET operation to demonstrate compliance with this limit. The boiler must meet emission limits during STET operation.</p>	Minn. R. 7007.0800, subp. 2
<p>STET Operation Definition that applies to Boilers that Meet or do Not Meet the Alternative Operating Condition for Performance Testing:</p> <p>If performance test results demonstrate compliance at 80% or less of any applicable emission limits for any tested pollutant, STET operation is defined as operation beyond 110% of the average operating rate achieved during that performance test.</p> <p>If performance test results demonstrate compliance at greater than 80% any applicable emission limit for any tested pollutant, STET operation is defined as operation beyond 100% of the average operating rate achieved during that performance test.</p> <p>In no case will STET operation be higher than allowed by an existing permit condition.</p>	Minn. R. 7007.0800, subp. 2
<p>The results of a performance test are not final until issuance of a review letter by MPCA, unless specified otherwise by Minn. R. 7017.2001 - 7017.2060.</p>	Minn. R. 7017.2020, subp. 4
<p>Performance Test: due 30 days after Performance Test Notification (written) of intent to conduct a performance test while burning waste water sludge. The test shall be for determining compliance with the particulate matter emission limit in Minn. R. 7011.0510, subp. 1. The Permittee shall also concurrently measure CO emissions. Except for the purpose of conducting this performance test, the Permittee shall not use this material as a fuel until the Permittee receives notification from the agency that compliance was demonstrated during the Waste Water Sludge Performance Test.</p>	Minn. R. 7017.2020, subp. 1
<p>Performance Test: due 30 days after Performance Test Notification (written) of intent to conduct a performance test while burning oily materials. The test shall be for determining compliance with the particulate matter emission limit in Minn. R. 7011.0510, subp. 1. The Permittee shall also concurrently measure CO emissions. Except for the purpose of conducting this performance test, the Permittee shall not use this material as a fuel until the Permittee receives notification from the agency that compliance was demonstrated during the Oily Materials Performance Test.</p>	Minn. R. 7017.2020, subp. 1.

TABLE A: LIMITS AND OTHER REQUIREMENTS
A-17 06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: EU 004 Power Boiler 4

Associated Items:

- CE 004 Venturi Scrubber
- CE 005 Electrostatic Precipitator - High Efficiency
- CE 006 Spray Tower
- CE 027 LNB/SOFA
- CE 028 ROTA-Mix SNCR
- GP 004 Boilers 1-4 Sulfur Dioxide Limits
- MR 026 Blr 4 Mercury
- MR 040 Blr 4 Opacity
- MR 041 Blr 4 Air Flow
- MR 042 Blr 4 SO2
- MR 043 Blr 4 NOx
- MR 044 Blr 4 CO2
- MR 045 Blr 4 CO
- SV 004

What to do	Why to do it								
EMISSION LIMITS	hdr								
Total Particulate Matter: less than or equal to 0.10 lbs/million Btu heat input	Title I Condition: 40 CFR Section 52.21(j) PSD BACT limit and ambient impacts analysis; 40 CFR Section 60.42(a)(1)								
Opacity: less than or equal to 20 percent opacity based on a six-minute average, except for one six-minute average per hour not to exceed 27%.	40 CFR Section 60.42(a)(2); Minn. R. 7011.0555								
See GP 004 for sulfur dioxide limits.	hdr								
Comply with the applicable Acid Rain emissions limitation for sulfur dioxide. Takes effect for years beginning January 1, 2000.	40 CFR Section 72.9(c)(1)(ii), 40 CFR Section 72.9(g)(4)								
Nitrogen Oxides: less than or equal to 0.7 lbs/million Btu heat input using 3-hour Average for solid fossil fuels, less than 0.3 lb/mmBtu from liquid fossil fuels, and less than 0.2 lb/mmBtu for gaseous fossil fuels. When fossil fuels are burned simultaneously in any combination, the applicable standard shall be determined by proration using the following formula: $PS = [0.2x + 0.3y + 0.7z]/(x+y+z)$ where PS is the prorated NOx standard, x is the % heat input from gaseous fossil fuels, y is the % heat input from liquid fossil fuels, and z is the % heat input from solid fossil fuels.	Title I Condition: 40 CFR Section 52.21(j) PSD BACT limit and ambient impacts analysis; 40 CFR Section 60.44								
<p>NOx Averaging Plan</p> <p>Maintain an annual average NOx emission rate of 0.40 lbs/MMBtu and limit the annual heat input to less than or equal to 33,000,000 mmBtu per year.</p> <p style="text-align: center;">OR</p> <p>Maintain a Btu-weighted annual average emission rate in lbs/mmBtu, averaged over the units specified in the NOx averaging plan, that is less than or equal to the Btu-weighted annual average emission rate averaged over the same units had they each been operated during the same period of time in compliance with the applicable emission limitations in 40 CFR Sections 76.5, 76.6, or 76.7. Units covered in the plan are:</p> <table> <tr> <td>Plant</td><td>Boiler ID#</td></tr> <tr> <td>Clay Boswell</td><td>1, 2, 3, 4</td></tr> <tr> <td>Syl Laskin</td><td>1, 2</td></tr> <tr> <td>Taconite Harbor</td><td>1, 2, 3</td></tr> </table>	Plant	Boiler ID#	Clay Boswell	1, 2, 3, 4	Syl Laskin	1, 2	Taconite Harbor	1, 2, 3	40 CFR Section 76.11; Minn. R. 7011.0553
Plant	Boiler ID#								
Clay Boswell	1, 2, 3, 4								
Syl Laskin	1, 2								
Taconite Harbor	1, 2, 3								
<p>Carbon Monoxide: less than or equal to 0.15 lbs/million Btu heat input using 30-day Rolling Average .</p> <p>This limit does not apply during periods of startup, shutdown, or malfunction. This limit applies upon return of EU 004 to regular operation (as defined in this permit) following modification of the boiler as authorized by permit No. 06100004-005.</p>	Title I Condition: 40 CFR Section 52.21(j) PSD BACT limit								

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-18**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Carbon Monoxide: less than or equal to 28,826 lbs/hour using 1-Hour Average . This limit applies only during startup and shutdown upon return of EU 004 to regular operation (as defined in this permit) following modification of the boiler as authorized by permit No. 06100004-005.	Title I Condition: 40 CFR Section 52.21(j) PSD BACT limit
OPERATING REQUIREMENTS	hdr
Fuel use: limited to sub-bituminous coal, boiler cleaning agents, distillate oil, oily coal, oily paper-based floor dry, used oil, pipeline natural gas, and propane.	Minn. R. 7007.0800, subp. 2
Boiler cleaning agents limited to: EDTA type and Ammonium Bromate, are generated on-site, 5% of total mass input, oxygen limited to 3% or greater, agents may only be burned while the boiler is operating at 75 percent of rated capacity or greater.	Minn. R. 7007.0800, subp. 2
Burn off-specification and on-specification used oil in accordance with Minn. R. ch. 7045, not to exceed 3824 gallons/hour (approximately 10 percent of rated capacity of 5,109 mmBtu/hour) on an hourly basis.	Minn. R. 7007.0800, subp. 2
Maintain SV 004 exit flue gas temperature at a minimum of 135 degrees F.	Minn. R. ch. 7009
Vent all emissions to a venturi scrubber, electrostatic precipitator and spray tower.	Title I Condition: control of particulate matter and sulfur dioxide
Regular Operation for Unit 4 is defined as operation at more than 320 gross MW of load for more than 14 consecutive days after start-up of the unit is completed after installation of LNB/OFA equipment.	Minn. R. 7007.0800, subp. 2
Startup and Shutdown Operations: EU 004 startup and shutdown operation is defined as all EU 004 operation during which the gross MW electric production is less than or equal to 320 MW.	Title I Condition: 40 CFR Section 52.21(j) PSD BACT limit
PERFORMANCE TESTING	hdr
Performance Test: due before end of each 60 months starting 09/27/1997 to determine compliance with the Title I condition particulate matter emission limit. The tests shall be conducted at an interval not to exceed 60 months between test dates.	Title I Condition: monitoring for the particulate emission limit set under 40 CFR Section 52.21; Minn. R. 7017.2020, subp. 1
Boiler Alternative Operating Conditions for Performance Testing: Alternative Operating Conditions during testing are defined as 90% to 100% of the boiler's maximum normal (continuous) operating load or the maximum permitted operating rate, whichever is lower. The basis for this number must be included in the test plan. If testing is conducted at the alternative operating condition established, an operating limit will not be established as a result of performance testing. In no case will the new operating rate limit be higher than allowed by an existing permit condition.	Minn. R. 7017.2025, subp. 2(A) and 3(B)
Boiler Operating Conditions Not Meeting the Alternative Operating Conditions During Performance Testing: If performance testing is not conducted at or above the established alternative operating condition, then the boiler operating rate will be limited on an 8-hour block average based on the following: (1) If the results of the performance test are greater than 80% of any applicable emission limit for which compliance is demonstrated, then boiler operation will be limited to the tested operating rate. (2) If results are less than or equal to 80% of all applicable emission limits for which compliance is demonstrated, boiler operation will be limited to 110% of the tested operating rate. In no case will the new operating rate limit be higher than allowed by an existing permit condition.	Minn. R. 7017.2025, subp. 3(B)
STET (Short Term Emergency and Testing) Operating hours limit: The boiler may operate up to 40 hours per year to demonstrate the Uniform Rating of Generating Equipment (URGE) capacity and to meet emergency energy supply needs. Maintain documentation of all STET operation to demonstrate compliance with this limit. The boiler must meet emission limits during STET operation.	Minn. R. 7007.0800, subp. 2.

TABLE A: LIMITS AND OTHER REQUIREMENTS
A-19

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

<p>STET Operation Definition that applies to Boilers that Meet or do Not Meet the Alternative Operating Condition for Performance Testing:</p> <p>If performance test results demonstrate compliance at 80% or less of any applicable emission limits for any tested pollutant, STET operation is defined as operation beyond 110% of the average operating rate achieved during that performance test.</p> <p>If performance test results demonstrate compliance at greater than 80% any applicable emission limit for any tested pollutant, STET operation is defined as operation beyond 100% of the average operating rate achieved during that performance test.</p> <p>In no case will STET operation be higher than allowed by an existing permit condition.</p>	<p>Minn. R. 7007.0800, subp. 2.</p>
<p>The results of a performance test are not final until issuance of a review letter by MPCA, unless specified otherwise by Minn. R. 7017.2001 - 7017.2060.</p>	<p>Minn. R. 7017.2020, subp. 4.</p>
<p>CONTINUOUS MONITORING REQUIREMENTS</p>	<p>hdr</p>
<p>Measure all Opacity, SO₂, NO_x, and CO₂ emissions from affected units in accordance with 40 CFR Section 75.10. See GP 002 for requirements regarding opacity monitoring, and GP 003 for requirements regarding SO₂ and NO_x monitoring. The SO₂ and NO_x monitors shall be capable of producing emission rates in units of lb/mmBtu on a one-hour average, a three hour average and on a 30-day rolling average.</p> <p>Using the 30-day averages for SO₂, calculate and submit the annual SO₂ emission rate along with the annual compliance certification.</p>	<p>40 CFR Section 75.10 and Minn. R. ch. 7017</p>
<p>Operate and maintain the continuous opacity monitor as a partial indicator of compliance with the PM limit.</p>	<p>40 CFR pt. 64</p>
<p>Measure stack gas exit temperature.</p>	<p>Minn. R. ch. 7009</p>
<p>Mercury Emissions Monitoring: Use a Hg CEMS to measure Hg emissions from EU 004 by July 1, 2007. Additional Hg monitoring requirements are located under subject item MR 026.</p>	<p>Minn. Stat. Section 216B.681</p>
<p>Establish Baseline Mercury Emission Rate: Use mercury monitors to establish the baseline mercury emission rate for EU 004.</p> <p>This is a state only requirement and is not enforceable by the EPA administrator and citizens under the Clean Air Act.</p>	<p>Minn. Stat. Section 216B.681</p>
<p>Install and operate a CO continuous emission monitor (CEMS) according to 40 CFR pt. 60, Appendix B, Performance Standard 4 to measure all CO emissions. The monitor shall produce emission rates in units of lb/mmBtu on a 30-day rolling average and lb/hr on a 1-hour average.</p> <p>The CO CEMS shall be installed upon Unit #4 startup following the modifications authorized by this permit (No. 06100004-005). See subject item MR 045 for requirements regarding CO monitoring.</p>	<p>Title I Condition: 40 CFR Section 52.21 monitoring for BACT limit; 40 CFR pt. 60, Appendix B; Minn. R. 7017.1006; Minn. R. 7017.1160, subp. 3</p>
<p>Determination of CO lb/mmBtu and lb/hr Emission Rates:</p> <p>The Permittee shall determine CO lb/mmBtu 30-day rolling emission rates by first determining the one-minute CO emissions on a lb/mmBtu basis using the following equation:</p> $\text{CO lb/mmBtu} = [(\text{CO ppmv}) * (\text{CO mol wt}) * (2.59\text{E-}09) * (\text{Fc-factor})] * [100/(\text{CO}_2\text{ \%})]$ <p>where:</p> <p>CO ppmv = CO measured by MR 045 (ppmv) CO mol wt = CO molecular weight (28) 2.59E-09 = combustion calculation formula constant (lb/dscf) Fc-Factor = subbituminous coal CO₂-based Fc-factor, dscf CO₂/mmBtu established by EPA (1840 as of 02/2009) 100 = percent correction factor CO₂ % = CO₂ % (by volume) measured by EU 004 CO₂ CEMS (MR 044)</p> <p>One-minute lb/mmBtu CO emissions are used to calculate the hourly block average CO lb/mmBtu emission rate. Hourly average emission rates are averaged over each 30-day period to determine the 30-day rolling average CO lb/mmBtu emission rate.</p> <p>(continued)</p>	<p>Minn. R. 7007.0800, subp. 4.B</p>

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-20**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Determination of CO lb/mmBtu and lb/hr Emission Rates (continued): Hourly CO lb/hr emission rates are determined once each hour using the following equation: $\text{CO lb/hr} = [\text{CO lb/mmBtu (hourly)}] * [\text{Heat Input (hourly)}]$ where: CO lb/hr = hourly CO emissions in pounds per hour CO lb/mmBtu (hourly) = lb/mmBtu CO hourly emission rate determined with CO CEMS (MR 045) Heat Input (hourly) = heat input during the hour corresponding to the lb/mmBtu CO emission rate determined with the Data Acquisition Handling and System	Minn. R. 7007.0800, subp. 4.B
REPORTING - refer to Table B for additional EU 004 reporting requirements	hdr
Submit the calculations and annual average emission rate of sulfur dioxide along with the annual compliance certification.	Minn. R. 7021.0050

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-21**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: EU 007 Emergency Generator 1**Associated Items:** SV 007

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity once operating temperatures have been attained.	Minn. R. 7011.2300, subp. 1
Sulfur Dioxide: less than or equal to 0.5 lbs/million Btu heat input	Minn. R. 7011.2300, subp. 2
Fuel type: liquid propane only	Minn. R. 7005.0100, subp. 35a

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-22**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: EU 009 Emergency Generator 3**Associated Items:** SV 009 Diesel Emergency Generator 3

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity once operating temperatures have been attained.	Minn. R. 7011.2300, subp. 1
Sulfur Dioxide: less than or equal to 0.5 lbs/million Btu heat input	Minn. R. 7011.2300, subp. 2
Fuel type: Diesel fuel oil or distillate fuel oil only	Minn. R. 7005.0100, subp. 35a
Fuel Supplier Certification: The Permittee shall obtain and maintain a fuel supplier certification for each shipment of fuel oil, certifying that the sulfur content does not exceed 0.5% by weight.	Minn. R. 7007.0800, subps. 4 & 5

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-23**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: EU 010 Emergency Generator 4**Associated Items:** SV 010

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity once operating temperatures have been attained.	Minn. R. 7011.2300, subp. 1
Sulfur Dioxide: less than or equal to 0.5 lbs/million Btu heat input	Minn. R. 7011.2300, subp. 2
Fuel type: Diesel fuel oil or distillate fuel oil only	Minn. R. 7005.0100, subp. 35a
Fuel Supplier Certification: The Permittee shall obtain and maintain a fuel supplier certification for each shipment of fuel oil, certifying that the sulfur content does not exceed 0.5% by weight.	Minn. R. 7007.0800, subps. 4 & 5

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-24**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: EU 011 Coal Handling-Crusher Building**Associated Items:** CE 007 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
SV 011

What to do	Why to do it
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 1(B)
Operate fabric filter when emissions from the equipment are vented to the atmosphere that meets the requirements of GP005.	Minn. Stat. Section 116.07, subd. 4(a); Minn. R. 7007.0800, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-25**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: EU 012 Coal Handling-Crusher & Sampler House**Associated Items:** CE 008 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
SV 012

What to do	Why to do it
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 1(B)
Operate fabric filter when emissions from the equipment are vented to the atmosphere that meets the requirements of GP005.	Minn. Stat. Section 116.07, subd. 4(a); Minn. R. 7007.0800, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-26**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: EU 013 Fly Ash - #1&2 Storage Silo**Associated Items:** CE 009 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
SV 013

What to do	Why to do it
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 1(B)
Operate fabric filter when emissions from the equipment are vented to the atmosphere that meets the requirements of GP005.	Minn. Stat. Section 116.07, subd. 4(a); Minn. R. 7007.0800, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-27**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: EU 014 Fly Ash - #1&2 Ash Hoppers**Associated Items:** CE 010 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
SV 014

What to do	Why to do it
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 1(B)
Operate fabric filter when emissions from the equipment are vented to the atmosphere that meets the requirements of GP005.	Minn. Stat. Section 116.07, subd. 4(a); Minn. R. 7007.0800, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-28**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: EU 015 Hg Additive Handling and Storage**Associated Items:** CE 013 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

SV 015 Additive Handling and Storage

What to do	Why to do it
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.01 grains/dry standard cubic foot unless required to further reduce emissions to comply with the less stringent of either Minn. R. 7011.0730 or Minn. R. 7011.0735.	Title I Condition: to avoid major modification classification under 40 CFR Section 52.21 and Minn. R. 7007.3000, also meets the requirements of Minn. R. 7011.0715 subp. 1(A)
Opacity: less than or equal to 20 percent	Minn. R. 7011.0715, subp. 1(B)
OPERATING CONDITIONS	hdr
Vent all emissions to a fabric filter that meets the requirements of GP005.	Title I Condition: to avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-29**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: EU 017 Fly Ash Storage - Bin Vent**Associated Items:** CE 015 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

SV 017 Fly Ash Storage-Bin Vent

What to do	Why to do it
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.005 grains/dry standard cubic foot unless required to further reduce emissions to comply with the less stringent of either Minn. R. 7011.0730 or Minn. R. 7011.0735.	Title I Condition: to limit potential emission increases to less than significant under 40 CFR 52.21 and Minn. R. 7007.3000, also meets the requirements of Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent	Minn. R. 7011.0715, subp. 1(B)
OPERATING CONDITIONS	hdr
Vent all emissions to a fabric filter that meets the requirements of GP005.	Title I Condition: to avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-30**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: EU 018 Fly Ash Loadout**Associated Items:** SV 018 Fly Ash Loadout via general vent

What to do	Why to do it
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.30 grains/dry standard cubic foot unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent	Minn. R. 7011.0715, subp. 1(B)
OPERATING REQUIREMENTS	hdr
Add moisture to the flyash prior to loadout. Operation of the unit without moisture addition shall be a reportable deviation.	Minn. R. 7007.0800, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-31**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: EU 019 Limestone Storage - Bin Vent**Associated Items:** CE 016 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

SV 019 Limestone Storage - Bin Vent

What to do	Why to do it
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.005 grains/dry standard cubic foot unless required to further reduce emissions to comply with the less stringent of either Minn. R. 7011.0730 or Minn. R. 7011.0735.	Title I Condition: to limit potential emission increases to less than significant under 40 CFR 52.21 and Minn. R. 7007.3000, also meets the requirements of Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent	Minn. R. 7011.0715, subp. 1(B)
OPERATING CONDITIONS	hdr
Vent all emissions to a fabric filter that meets the requirements of GP005.	Title I Condition: to avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-32**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: EU 020 Limestone Day Bin 1**Associated Items:** CE 017 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

SV 020 Limestone Day Bin 1 - Bin Vent

What to do	Why to do it
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.005 grains/dry standard cubic foot unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735.	Title I Condition: to limit potential emissions increases to less than significant under 40 CFR 52.21 and Minn. R. 7007.3000, also meets Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent	Minn. R. 7011.0715, subp. 1(B)
OPERATING REQUIREMENTS	hdr
Vent all emissions to a fabric filter that meets the requirements of GP005.	Title I Condition: to avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-33**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: EU 021 Limestone Day Bin 2**Associated Items:** CE 018 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

SV 021 Limestone Day Bin 2 - Bin Vent

What to do	Why to do it
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.005 grains/dry standard cubic foot unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735.	Title I Condition: to limit potential emission increases to less than significant under 40 CFR 52.21 and Minn. R. 7007.3000 , also meets Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent	Minn. R. 7011.0715, subp. 1(B)
OPERATING REQUIREMENTS	hdr
Vent all emissions to a fabric filter that meets the requirements of GP005.	Title I Condition: to avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-34**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: EU 023 Emergency Gen. Unit 3 - 300Kw - CI**Associated Items:** SV 022 Emergency Generator - Unit 3

What to do	Why to do it
EMISSION LIMITS	hdr
Opacity: less than or equal to 20 percent once operating temperatures have been attained.	Minn. R. 7011.2300, subp. 1
Opacity: less than or equal to 20 percent during accelartion mode; 15 percent during lugging mode; and 50 percent during the peaks in either the acceleration or lugging modes.	40 CFR Section 60.4205(b)
Carbon Monoxide: less than or equal to 3.0 grams per kilowatt-hour.	Title I Condition: 40 CFR Section 52.21(j), BACT emission limit, also meets the requirements of 40 CFR Section 60.4205(b)
Non-methane Hydrocarbons plus Nitrogen Oxides: Less than or equal to 4.0 grams per kilowatt-hour	40 CFR Section 60.4205(b)
Total Particulate Matter: less than or equal to 0.20 grams per kilowatt-hour.	40 CFR Section 60.4205(b)
Sulfur Dioxide: less than or equal to 0.5 lbs/million Btu heat input . Combustion of fuel with a sulfur content of 0.5 percent by weight or less meets this requirement.	Minn. R. 7011.2300, subp. 2
OPERATING REQUIREMENTS	hdr
Use diesel fuel that meets the requirements of 40 CFR Section 80.510(b): (1) Sulfur content. 15 ppm maximum for Non-Road diesel fuel. (2) Cetane index or aromatic content, as follows: (i) A minimum cetane index of 40; or (ii) A maximum aromatic content of 35 volume percent.	40 CFR Section 60.4207(b)
Owners and operators of pre-2011 model year stationary CI ICE subject to this subpart may petition the Administrator for approval to use remaining non-compliant fuel that does not meet the fuel requirements of paragraphs (a) and (b) of this section beyond the dates required for the purpose of using up existing fuel inventories. If approved, the petition will be valid for a period of up to 6 months. If additional time is needed, the owner or operator is required to submit a new petition to the Administrator.	40 CFR Section 60.4207(c)
Operate and maintain the engine according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer. Only change those settings that are permitted by the manufacturer. The permittee shall also meet the requirements of 40 CFR parts 89, 94, and 1068 as they apply to you.	40 CFR Section 60.4211(a)
Meet the definition of "Emergency stationary internal combustion engine" - any stationary internal combustion engine whose operation is limited to emergency situations and required testing and maintenance. Examples include stationary ICE used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or stationary ICE used to pump water in the case of fire or flood, etc. Stationary CI ICE used to supply power to an electric grid or that supply power as part of a financial arrangement with another entity are not considered to be emergency engines.	40 CFR Section 60.4219
Operate the emergency engine for the purpose of maintenance checks and readiness testing provided that the tests are recommended by Federal, State or local government, the manufacturer, the vendor; or the insurance company associated with the engine. Maintenance checks and readiness testing for the emergency engine is limited to 100 hours per year. Anyone may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing. A petition is not required if the owner or operator maintains records indicating that the Federal State, or local standards require maintenance and testing of emergency ICE beyond 100 hours per year. There is no time limit of the use of emergency stationary ICE in emergency situations. Any operation other than emergency operation, maintenance and testing, as permitted in Section 60.4211, is prohibited.	40 CFR Section 60.4211(e)
After December 31, 2008, the permittee may not install a stationary CI ICE that does not meet the applicable requirements for 2007 model year engines.	40 CFR Section 60.4208(a)

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-35**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

MONITORING	hdr
Install a non-resettable hour meter prior to startup of the engine.	40 CFR Section 60.4209(a)
PERFORMANCE TESTING	hdr
If the permittee conduct performance tests, the tests must be completed in accordance with 40 CFR Section 60.4212(a) through 40 CFR Section 60.4212(d).	40 CFR Section 60.4212
Performance Test: due 180 days after achieving maximum capacity for CO emissions.	Title I Condition: monitoring for CO BACT limit
COMPLIANCE DEMONSTRATION	hdr
Operate and maintain the unit in accordance with the standards as required by 40 CFR Section 60.4205, according to the manufacturer's written instructions, or according to the procedures developed by the owner or operator that are approved by the engine manufacturer, for the entire life of the engine. Settings for the unit may not be changed unless permitted by the manufacturer.	40 CFR Section 60.4206 and 40 CFR Section 60.4211(a)
The permittee must demonstrate compliance by purchasing an engine certified to conform with the emission standards listed in 40 CFR Section 52.05(b) for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications.	40 CFR Section 60.4211(c)
Recordkeeping - Hours of operation: The permittee shall maintain documentation on-site that the unit is to be used for emergency (including training and testing) purposes, only that qualifies under the limitation above of 100 hours per year for checks and readiness testing. (40 CFR Section 60.4211(e)).	Minn. R. 7007.0800, subps. 4 and 5
Recordkeeping - Fuel Type: The permittee shall keep records of the type of fuel burned in this unit when in operation.	Minn. R. 7007.0800, subp. 4 and 5
The permittee shall maintain records of the operation of the engine in emergency service that is recorded through the non-resettable hour meter. The record must include the time of operation and the reason the generator was in operation during that time. This requirement is applicable when using a generator whose model year is 2012 or later, if the emergency engine also does not meet the standards for non-emergency engines for the 2012 model.	40 CFR Section 60.4214(b)
40 CFR Part 63, Subp. ZZZZ	hdr
Initial Notification: Submit an initial notification to the administrator as required by 40 CFR Section 63.9 within 120 days of initial startup. The initial notification shall include the following information: (i) The name and address of the owner or operator; (ii) The address (i.e., physical location) of the affected source; (iii) An identification of the relevant standard, or other requirement, that is the basis of the notification and the source's compliance date; (iv) A brief description of the nature, size, design, and method of operation of the source and an identification of the types of emission points within the affected source subject to the relevant standard and types of hazardous air pollutants emitted; and (v) A statement of whether the affected source is a major source or an area source.	40 CFR Section 63.9(b)(2)
In addition, the notification shall contain a statement that the facilities stationary RICE has no additional requirements and explain the basis of the exclusion of the unit from the requirements of 40 CFR Part 63, Subp. ZZZZ (for example, that it operates exclusively as an emergency/limited use stationary RICE or is less than 500 hp).	continued from above

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-36**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: CE 001 Fabric Filter - High Temperature, i.e., T>250 Degrees F**Associated Items:** EU 001 Power Boiler 1

What to do	Why to do it
The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 99 percent collection efficiency	Title I Condition: operating requirement for PM limit set under 40 CFR Section 52.21(k); Minn. R. 7007.0800, subp. 2 and 14
The Permittee shall operate and maintain the fabric filter in accordance with the Operation and Maintenance (O & M) Plan. The Permittee shall keep copies of the O & M Plan available onsite for use by staff and MPCA staff.	Minn. R. 7007.0800, subp. 14
Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - the recorded opacity exceeds the permitted limit; or - the fabric filter or any of its components are found during the inspections to need repair. Corrective actions shall return the opacity to within the permitted range, and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee shall keep a record of the type and date of any corrective action taken for each filter.	Minn. R. 7007.0800, subp. 4, 5, and 14
COMPLIANCE ASSURANCE MONITORING	hdr
The owner or operator shall comply with the approved monitoring for particulate matter. The owner or operator shall use opacity as a surrogate for monitoring particulate matter, and shall measure the opacity by means of a COM. Parameter range indicating normal operation is opacity as a six-minute average less than or equal to 20 percent opacity.	40 CFR Section 64.3(b) or (d) 40 CFR Section 64.6(c)(1)(i) 40 CFR Section 64.6(c)(1)(ii) Minn. R. 7017.0200
The owner or operator shall conduct the monitoring required under this part upon permit issuance.	40 CFR Section 64.7(a) Minn. R. 7017.0200
The owner or operator shall maintain the monitoring instruments and recorders, including but not limited to maintaining necessary parts for routine repairs of the monitoring equipment.	40 CFR Section 64.7(b) Minn. R. 7017.0200
Continuous Operation: Except for, as applicable, monitoring malfunctions, associated repairs, and required quality assurance or control activities, the owner or operator shall conduct all monitoring in continuous operation at all times the pollutant-specific emissions unit is operating.	40 CFR Section 64.7(c) Minn. R. 7017.0200
Response to excursions or exceedances: Upon detecting an excursion or exceedance, the owner or operator shall restore operation of the pollutant-specific emissions unit to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions.	40 CFR Section 64.7(d)(1) Minn. R. 7017.0200
Documentation of need for improved monitoring: After approval of monitoring under this part, if the owner or operator identifies a failure to achieve compliance with an emission limitation or standard for which the approved monitoring did not provide an indication of an excursion or exceedance while providing valid data, or the results of compliance or performance testing document a need to modify the existing indicator ranges or designated conditions, the owner or operator shall promptly notify the permitting authority and, if necessary, submit a proposed modification to the part 70 permit to address the necessary monitoring changes.	40 CFR Section 64.7(e) Minn. R. 7017.0200
The owner or operator shall maintain records of monitoring data, monitor performance data, corrective actions taken, any written quality improvement plan required pursuant to 64.8 and any activities undertaken to implement a quality improvement plan, and other supporting information required to be maintained. The owner or operator may maintain records on alternative media, such as microfilm, computer files, magnetic tape disks, or microfiche, provided that the use of such alternative media allows for expeditious inspection and review, and does not conflict with other applicable recordkeeping requirements.	40 CFR Section 64.9(b) Minn. R. 7017.0200
The owner or operator shall report exceedances or excursions under Section 64.7 and Section 64.8 when the exceedance or excursion are greater than the limit and averaging period with the Semiannual Deviations Report.	40 CFR Section 64.9(a)(2)(i) Minn. R. 7017.0200

TABLE A: LIMITS AND OTHER REQUIREMENTS

A-37

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: CE 002 Fabric Filter - High Temperature, i.e., T>250 Degrees F**Associated Items:** EU 002 Power Boiler 2

What to do	Why to do it
The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 99 percent collection efficiency	Title I Condition: operating requirement for PM limit set under 40 CFR Section 52.21(k); Minn. R. 7007.0800, subp. 2 and 14
The Permittee shall operate and maintain the fabric filter in accordance with the Operation and Maintenance (O & M) Plan. The Permittee shall keep copies of the O & M Plan available onsite for use by staff and MPCA staff.	Minn. R. 7007.0800, subp. 14
Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - the recorded opacity exceeds the permitted limit; or - the fabric filter or any of its components are found during the inspections to need repair. Corrective actions shall return the opacity to within the permitted range, and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee shall keep a record of the type and date of any corrective action taken for each filter.	Minn. R. 7007.0800, subp. 4, 5, and 14
COMPLIANCE ASSURANCE MONITORING	hdr
The owner or operator shall comply with the approved monitoring for particulate matter. The owner or operator shall use opacity as a surrogate for monitoring particulate matter, and shall measure the opacity by means of a COM. Parameter range indicating normal operation is opacity as a six-minute average less than or equal to 20 percent opacity.	40 CFR Section 64.3(b) or (d) 40 CFR Section 64.6(c)(1)(i) 40 CFR Section 64.6(c)(1)(ii) Minn. R. 7017.0200
The owner or operator shall conduct the monitoring required under this part upon permit issuance.	40 CFR Section 64.7(a) Minn. R. 7017.0200
The owner or operator shall maintain the monitoring instruments and recorders, including but not limited to maintaining necessary parts for routine repairs of the monitoring equipment.	40 CFR Section 64.7(b) Minn. R. 7017.0200
Continuous Operation: Except for, as applicable, monitoring malfunctions, associated repairs, and required quality assurance or control activities, the owner or operator shall conduct all monitoring in continuous operation at all times the pollutant-specific emissions unit is operating.	40 CFR Section 64.7(c) Minn. R. 7017.0200
Response to excursions or exceedances: Upon detecting an excursion or exceedance, the owner or operator shall restore operation of the pollutant-specific emissions unit to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions.	40 CFR Section 64.7(d)(1) Minn. R. 7017.0200
Documentation of need for improved monitoring: After approval of monitoring under this part, if the owner or operator identifies a failure to achieve compliance with an emission limitation or standard for which the approved monitoring did not provide an indication of an excursion or exceedance while providing valid data, or the results of compliance or performance testing document a need to modify the existing indicator ranges or designated conditions, the owner or operator shall promptly notify the permitting authority and, if necessary, submit a proposed modification to the part 70 permit to address the necessary monitoring changes.	40 CFR Section 64.7(e) Minn. R. 7017.0200
The owner or operator shall maintain records of monitoring data, monitor performance data, corrective actions taken, any written quality improvement plan required pursuant to 64.8 and any activities undertaken to implement a quality improvement plan, and other supporting information required to be maintained. The owner or operator may maintain records on alternative media, such as microfilm, computer files, magnetic tape disks, or microfiche, provided that the use of such alternative media allows for expeditious inspection and review, and does not conflict with other applicable recordkeeping requirements.	40 CFR Section 64.9(b) Minn. R. 7017.0200
The owner or operator shall report exceedances or excursions under Section 64.7 and Section 64.8 when the exceedance or excursion are greater than the limit and averaging period with the Semiannual Deviations Report.	40 CFR Section 64.9(a)(2)(i) Minn. R. 7017.0200

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-38**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: CE 004 Venturi Scrubber**Associated Items:** EU 004 Power Boiler 4

What to do	Why to do it
A minimum of one venturi slurry pump for each particulate scrubber module in service shall be operated at all times during the operation of EU004.	Title I Condition: operating requirement for PM limit set under 40 CFR Section 52.21(k)
COMPLIANCE ASSURANCE MONITORING	hdr
The owner or operator shall comply with the approved monitoring for PM. The owner or operator shall use opacity as a surrogate for monitoring PM, and shall measure the opacity by means of a COM. Parameter range indicating normal operation is opacity as a six-minute average less than or equal to 20 percent opacity.	40 CFR Section 64.3(b) or (d) 40 CFR Section 64.6(c)(1)(i) 40 CFR Section 64.6(c)(1)(ii) Minn. R. 7017.0200
The owner or operator shall conduct the monitoring required under this part upon permit issuance.	40 CFR Section 64.7(a) Minn. R. 7017.0200
The owner or operator shall maintain the monitoring instruments and recorders, including but not limited to maintaining necessary parts for routine repairs of the monitoring equipment.	40 CFR Section 64.7(b) Minn. R. 7017.0200
Continuous Operation: Except for, as applicable, monitoring malfunctions, associated repairs, and required quality assurance or control activities, the owner or operator shall conduct all monitoring in continuous operation at all times the pollutant-specific emissions unit is operating.	40 CFR Section 64.7(c) Minn. R. 7017.0200
Response to excursions or exceedances: Upon detecting an excursion or exceedance, the owner or operator shall restore operation of the pollutant-specific emissions unit to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions.	40 CFR Section 64.7(d)(1) Minn. R. 7017.0200
Documentation of need for improved monitoring: After approval of monitoring under this part, if the owner or operator identifies a failure to achieve compliance with an emission limitation or standard for which the approved monitoring did not provide an indication of an excursion or exceedance while providing valid data, or the results of compliance or performance testing document a need to modify the existing indicator ranges or designated conditions, the owner or operator shall promptly notify the permitting authority and, if necessary, submit a proposed modification to the part 70 permit to address the necessary monitoring changes.	40 CFR Section 64.7(e) Minn. R. 7017.0200
The owner or operator shall maintain records of monitoring data, monitor performance data, corrective actions taken, any written quality improvement plan required pursuant to 64.8 and any activities undertaken to implement a quality improvement plan, and other supporting information required to be maintained. The owner or operator may maintain records on alternative media, such as microfilm, computer files, magnetic tape disks, or microfiche, provided that the use of such alternative media allows for expeditious inspection and review, and does not conflict with other applicable recordkeeping requirements.	40 CFR Section 64.9(b) Minn. R. 7017.0200
The owner or operator shall report exceedances or excursions under Section 64.7 and Section 64.8 when the exceedance or excursion are greater than the limit and averaging period with the Semiannual Deviations Report.	40 CFR Section 64.9(a)(2)(i) Minn. R. 7017.0200

TABLE A: LIMITS AND OTHER REQUIREMENTS

A-39

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: CE 005 Electrostatic Precipitator - High Efficiency**Associated Items:** EU 004 Power Boiler 4

What to do	Why to do it
<p>When bypass reheat is required to maintain compliance with the minimum flue gas exit temperature specified under SV004 in this permit, a portion of the total flue gas from EU004 may bypass the particulate matter emissions scrubber (CE004) and sulfur dioxide absorber (CE006), and be treated by a minimum of one unit of CE005 (electrostatic precipitator). When required to operate, CE005 shall not be operated with more than three of the bus-sections de-energized.</p> <p>When bypass reheat is not required to maintain compliance with the minimum flue gas exit temperature, all of the EU004 flue gas shall be treated by the particulate matter emissions scrubber (CE004) and sulfur dioxide absorber (CE006). After closing the inlet and outlet dampers to CE005, the Permittee may de-energize CE005.</p>	Title I Condition: operating requirement for PM limit set under 40 CFR Section 52.21(k); Minn. R. 7007.0800, subp. 2 and 14
COMPLIANCE ASSURANCE MONITORING	hdr
<p>The owner or operator shall comply with the approved monitoring for PM. The owner or operator shall use opacity as a surrogate for monitoring PM, and shall measure the opacity by means of a COM.</p> <p>Parameter range indicating normal operation is opacity as a six-minute average less than or equal to 20 percent opacity.</p>	<p>40 CFR Section 64.3(b) or (d) 40 CFR Section 64.6(c)(1)(i) 40 CFR Section 64.6(c)(1)(ii) Minn. R. 7017.0200</p>
The owner or operator shall conduct the monitoring required under this part upon permit issuance.	40 CFR Section 64.7(a) Minn. R. 7017.0200
The owner or operator shall maintain the monitoring instruments and recorders, including but not limited to maintaining necessary parts for routine repairs of the monitoring equipment.	40 CFR Section 64.7(b) Minn. R. 7017.0200
Continuous Operation: Except for, as applicable, monitoring malfunctions, associated repairs, and required quality assurance or control activities, the owner or operator shall conduct all monitoring in continuous operation at all times the pollutant-specific emissions unit is operating.	40 CFR Section 64.7(c) Minn. R. 7017.0200
Response to excursions or exceedances: Upon detecting an excursion or exceedance, the owner or operator shall restore operation of the pollutant-specific emissions unit to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions.	40 CFR Section 64.7(d)(1) Minn. R. 7017.0200
Documentation of need for improved monitoring: After approval of monitoring under this part, if the owner or operator identifies a failure to achieve compliance with an emission limitation or standard for which the approved monitoring did not provide an indication of an excursion or exceedance while providing valid data, or the results of compliance or performance testing document a need to modify the existing indicator ranges or designated conditions, the owner or operator shall promptly notify the permitting authority and, if necessary, submit a proposed modification to the part 70 permit to address the necessary monitoring changes.	40 CFR Section 64.7(e) Minn. R. 7017.0200
The owner or operator shall maintain records of monitoring data, monitor performance data, corrective actions taken, any written quality improvement plan required pursuant to 64.8 and any activities undertaken to implement a quality improvement plan, and other supporting information required to be maintained. The owner or operator may maintain records on alternative media, such as microfilm, computer files, magnetic tape disks, or microfiche, provided that the use of such alternative media allows for expeditious inspection and review, and does not conflict with other applicable recordkeeping requirements.	40 CFR Section 64.9(b) Minn. R. 7017.0200
The owner or operator shall report exceedances or excursions under Section 64.7 and Section 64.8 when the exceedance or excursion are greater than the limit and averaging period with the Semiannual Deviations Report.	40 CFR Section 64.9(a)(2)(i) Minn. R. 7017.0200

TABLE A: LIMITS AND OTHER REQUIREMENTS

A-40

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: CE 021 Fabric Filter - High Temperature, i.e., T>250 Degrees F**Associated Items:** EU 003 Power Boiler 3

What to do	Why to do it
The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 99 percent collection efficiency	Minn. R. 7007.0800, subp. 2 and 14
The Permittee shall operate and maintain the fabric filter in accordance with the Operation and Maintenance (O & M) Plan. The Permittee shall keep copies of the O & M Plan available onsite for use by staff and MPCA staff.	Minn. R. 7007.0800, subp. 14
Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - the recorded opacity exceeds the permitted limit; or - the fabric filter or any of its components are found during the inspections to need repair. Corrective actions shall return the opacity to within the permitted range, and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee shall keep a record of the type and date of any corrective action taken for each filter.	Minn. R. 7007.0800, subp. 4, 5, and 14
COMPLIANCE ASSURANCE MONITORING	hdr
The owner or operator shall comply with the approved monitoring for PM and PM10. The owner or operator shall use opacity and pressure differential as surrogates for monitoring PM and PM10. Opacity shall be measured opacity by means of a COM and differential pressure shall be measured by a differential pressure gauge. Parameter range indicating normal operation is opacity (3-hour rolling average) less than or equal to 14 percent opacity, and differential pressure (1 minute average) less than or equal to 11.0 inches water column. The 14% opacity value is a trigger value that prompts response to the excursion and is not an enforceable opacity limit.	40 CFR Section 64.3(b) or (d) 40 CFR Section 64.6(c)(1)(i) 40 CFR Section 64.6(c)(1)(ii) Minn. R. 7017.0200
An excursion or exceedance from the specified parameter range occurs when: 1. the measured pressure drop deviates from the specified minimum or maximum by 0.1 inch WC or more on a 1-minute average basis, or 2. the measured opacity exceeds 14% on a 3-hour rolling average.	40 CFR Section 64.6(c)(2)
The owner or operator shall conduct the monitoring required under this part upon permit issuance.	40 CFR Section 64.7(a) Minn. R. 7017.0200
The owner or operator shall maintain the monitoring instruments and recorders, including but not limited to maintaining necessary parts for routine repairs of the monitoring equipment.	40 CFR Section 64.7(b) Minn. R. 7017.0200
Continuous Operation: Except for, as applicable, monitoring malfunctions, associated repairs, and required quality assurance or control activities, the owner or operator shall conduct all monitoring in continuous operation at all times the pollutant-specific emissions unit is operating.	40 CFR Section 64.7(c) Minn. R. 7017.0200
Response to excursions or exceedances: Upon detecting an excursion or exceedance, the owner or operator shall restore operation of the pollutant-specific emissions unit to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions.	40 CFR Section 64.7(d)(1) Minn. R. 7017.0200
Documentation of need for improved monitoring: After approval of monitoring under this part, if the owner or operator identifies a failure to achieve compliance with an emission limitation or standard for which the approved monitoring did not provide an indication of an excursion or exceedance while providing valid data, or the results of compliance or performance testing document a need to modify the existing indicator ranges or designated conditions, the owner or operator shall promptly notify the permitting authority and, if necessary, submit a proposed modification to the part 70 permit to address the necessary monitoring changes.	40 CFR Section 64.7(e) Minn. R. 7017.0200

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-41**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

The owner or operator shall maintain records of monitoring data, monitor performance data, corrective actions taken, any written quality improvement plan required pursuant to 64.8 and any activities undertaken to implement a quality improvement plan, and other supporting information required to be maintained. The owner or operator may maintain records on alternative media, such as microfilm, computer files, magnetic tape disks, or microfiche, provided that the use of such alternative media allows for expeditious inspection and review, and does not conflict with other applicable recordkeeping requirements.	40 CFR Section 64.9(b) Minn. R. 7017.0200
The owner or operator shall report exceedances or excursions under 64.7 and 64.8 when the exceedance or excursion are greater than the limit and averaging period with the Semiannual Deviations Report.	40 CFR Section 64.9(a)(2)(i) Minn. R. 7017.0200

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-42**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: FS 004 Unpaved Roads

What to do	Why to do it
OPERATING CONDITIONS These requirements apply after 4/1/2007.	hdr
Fugitive Dust Control - EU003 dry fly ash haul roads: - apply at least 3 gallons for each 100 square feet every 24 hours, - a rainfall of at least 0.1 inch during the previous 24 hours shall substitute for one water application, - if the road cannot be watered because the ambient air temperature is less than 35 degrees F or if conditions due to weather, in combination with the application of water, could create hazardous driving conditions, then watering shall be postponed and accomplished as soon as the conditions preventing water application have abated, - water application is not required on days when there is no vehicle traffic, and - following any day when water is not applied based on the absence of traffic, water shall be applied within 3 hours of commencement of vehicle traffic, unless another criterion for not watering is met.	Minn. R. 7011.0150
RECORDKEEPING	hdr
Maintain daily records of: - whether there was 0.1 inch or more of rainfall in the last 24 hours, - temperature, - if conditions exist where watering would create hazardous driving, - dates of watering and areas watered, and - amounts of water applied.	Minn. R. 7007.0800, subp. 4

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-43**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: FS 007 Paved Roads

What to do	Why to do it
OPERATING REQUIREMENTS These requirements apply after 4/1/2007. Under dry pavement conditions, if the temperature is less than 35 degrees, or if conditions due to weather in combination with the application of water, could create hazardous driving conditions, paved plant roads shall be swept weekly. Sweeping is not required if the pavement is snow or ice covered. Under dry pavement conditions, if the temperature is greater than 35 degrees, and conditions due to weather in combination with the application of water will not create hazardous driving conditions, paved plant roads shall be swept and flushed weekly.	hdr Title I Condition: to avoid major modification classification under 40 CFR Section 52.21 and Minn. R. 7007.3000
RECORDKEEPING Maintain daily records of: - whether and which areas are snow and ice covered, - whether and which areas are dry, - dates of sweeping and areas swept, - dates of flushing and areas flushed, and - amounts of water applied when flushing.	hdr Minn. R. 7007.0800, subp. 4

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-44**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: MR 020 Blr 1 Opacity**Associated Items:** CM 004 Boiler 1: 20% Opacity, EU001, 6-min ave.

EU 001 Power Boiler 1

GP 002 Opacity Monitors

What to do	Why to do it
CONTINUOUS OPACITY MONITORING SYSTEMS (COMS) Requirements (Additional requirements are located under the associated GP subject item)	hdr
COMS Calibration Error Audit: due before end of each calendar half-year starting 03/28/2007 for MR020. Conduct three point calibration error audits at least 3 months apart but no greater than 8 months apart. Conduct audits in accordance with Minn. R. 7017.1210, subp. 3.	Minn. R. 7017.1210, subp. 3

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-45**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: MR 021 Blr 2 Opacity**Associated Items:** CM 005 Boiler 2: 20% Opacity, EU002, 6-min ave.

EU 002 Power Boiler 2

GP 002 Opacity Monitors

What to do	Why to do it
CONTINUOUS OPACITY MONITORING SYSTEMS (COMS) Requirements (Additional requirements are located under the associated GP subject item and in Table B.)	hdr
COMS Calibration Error Audit: due before end of each calendar half-year starting 03/28/2007 for MR021. Conduct three point calibration error audits at least 3 months apart but no greater than 8 months apart. Conduct audits in accordance with Minn. R. 7017.1210, subp. 3.	Minn. R. 7017.1210, subp. 3

TABLE A: LIMITS AND OTHER REQUIREMENTS

A-46

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: MR 024 Blr 3 CO

Associated Items: EU 003 Power Boiler 3

What to do	Why to do it
CONTINUOUS EMISSION MONITORING SYSTEMS (CEMS) Requirements (Additional requirements are located in Table B.)	hdr
Emissions Monitoring: The owner or operator shall use a CO CEMS to measure EU 003 CO emissions.	Minn. R. 7017.1006
CEMS Relative Accuracy Test Audit (RATA): due before end of each year following CEM Certification Test. A RATA is not required in any calendar year if a RATA conducted in the previous year demonstrated a relative accuracy value of less than 15 percent or if the associated emissions unit operated less than 48 hours during the calendar year. If the exception is used, the next RATA shall be conducted during the first half of the following calendar year. RATAs shall be conducted at least 3 months apart according to 40 CFR pt. 60, Appendix F, section 5.1.1.	Minn. R. 7017.1170, subp. 5
Relative Accuracy Test Audit (RATA) Notification: due 30 days before CEMS Relative Accuracy Test Audit (RATA)).	Minn. R. 7017.1180, subp. 2
Continuous Operation: CEMS must be operated and data recorded during all periods of emission unit operation including periods of emission unit start-up, shutdown, or malfunction except for periods of acceptable monitor downtime. This requirement applies whether or not a numerical emission limit applies during these periods. A CEMS must not be bypassed except in emergencies where failure to bypass would endanger human health, safety, or plant equipment.	Minn. R. 7017.1090
Monitoring Data: All data points collected by a CEMS shall be used to calculate individual hourly emission averages unless another applicable requirement requires more frequent averaging. In order for an hour of data to be considered, it must contain the following minimum number of data points: A. four data points, equally spaced, if the emission unit operated during the entire hour; B. two data points, at least 15 minutes apart, during periods of monitor calibration or routine maintenance; C. one data point if the emission unit operated for 15 minutes or less during the hour.	Minn. R. 7017.1160, subp. 1 and 2
Quality Assurance Plan: Develop and implement a written quality assurance plan that covers each CEMS. The plan shall be on site and available for inspection within 30 days after monitor certification. The plan shall contain all of the information required by 40 CFR pt. 60, Appendix F, section 3. The plan shall include the manufacturer's spare parts list for each CEMS and require that those parts be kept at the facility unless the Commissioner gives written approval to exclude specific spare parts from the list.	Minn. R. 7017.1170, subp. 2
CEMS Daily Calibration Drift (CD) Test: The CD shall be quantified and recorded at zero (low-level) and upscale (high-level) gas concentrations at least once daily according to the procedures listed in Minn. R. 7017.1170, subp. 3(A) or 3(B) as applicable, and 40 CFR Section 60.13(d)(1) for each pollutant concentration, each diluent monitor, and for each monitor range. The CEMS shall be adjusted whenever the CD exceeds twice the specification of 40 CFR pt. 60, Appendix B. If no span value is specified in the applicable requirement or in a compliance document, the Permittee shall use a span value equivalent to 1.5 times the emission limit. 40 CFR pt. 60, Appendix F, shall be used to determine out-of-control periods for CEMS. Follow the procedures in 40 CFR pt. 60, Appendix F.	Minn. R. 7017.1170, subp. 3
Cylinder Gas Audit: due before end of each calendar half-year following CEM Certification Test, except that a cylinder gas audit (CGA) is not required during any calendar half-year in which a RATA was performed. The initial CGA must be performed within 180 days following certification of the CEMS. The CGAs shall be conducted at least three months apart but no more than eight months apart. A CGA shall be conducted according to the procedures in 40 CFR pt. 60, Appendix F, section 5.1.2. If the monitored emission unit was operated for less than 24 hours during the calendar half-year, a CGA is not required for that calendar half-year.	Minn. R. 7017.1170, subp. 4
Recordkeeping: The owner or operator must retain records of all CEMS monitoring data and support information for a period of five years from the date of the monitoring sample, measurement or report. Records shall be kept at the source.	Minn. R. 7017.1130

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-47**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: MR 025 Blr 3 Mercury**Associated Items:** EU 003 Power Boiler 3

GP 006 Boilers 3 and 4 Mercury Monitors

What to do	Why to do it
CONTINUOUS EMISSION MONITORING SYSTEMS (CEMS) Requirements: (Additional requirements are located under the Subject Item EU 003 and in Table B.)	hdr
CEMS QA/QC: The owner or operator shall meet the applicable QA/QC requirements in 40 CFR Section 75.80(e) or as approved by the MPCA.	Minn. Stat. 216B.681
CEMS Relative Accuracy Test Audit (RATA): due before end of each year following CEM Certification Test A RATA is not required in any calendar year if a RATA conducted in the previous year demonstrated a relative accuracy value of less than 15 percent or if the associated emissions unit operated less than 48 hours during the calendar year. If the exception is used, the next RATA shall be conducted during the first half of the following calendar year. RATAs may be conducted using an alternate test method as approved by the MPCA.	40 CFR Section 75.80(e); Minn. R. 7017.1170, subp. 5
Recordkeeping and Recording: Follow the provisions listed under 40 CFR Section 75.84. This requirement is effective beginning January 1, 2009.	Minn. Stat. 216B.681

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-48**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: MR 026 Blr 4 Mercury**Associated Items:** EU 004 Power Boiler 4

GP 006 Boilers 3 and 4 Mercury Monitors

What to do	Why to do it
CONTINUOUS EMISSION MONITORING SYSTEMS (CEMS) Requirements (Additional requirements are found under the Subject Item EU 004 and in Table B)	hdr
CEMS QA/QC: The owner or operator shall meet the applicable QA/QC requirements in 40 CFR Section 75.80(e) or as approved by the MPCA.	Minn. Stat. 216B.681
CEMS Relative Accuracy Test Audit (RATA): due before end of each year starting 03/28/2007 A RATA is not required in any calendar year if a RATA conducted in the previous year demonstrated a relative accuracy value of less than 15 percent or if the associated emissions unit operated less than 48 hours during the calendar year. If the exception is used, the next RATA shall be conducted during the first half of the following calendar year. RATAs may be conducted using an alternative test method as approved by the MPCA.	40 CFR Section 75.80(e); Minn. R. 7017.1170, subp. 5
Recordkeeping and Recording: Follow the provisions listed under 40 CFR Section 75.84. This requirement is effective beginning January 1, 2009.	Minn. Stat. 216B.681

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-49**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: MR 027 Blr 3 Opacity**Associated Items:** EU 003 Power Boiler 3

GP 002 Opacity Monitors

What to do	Why to do it
CONTINUOUS OPACITY MONITORING SYSTEMS (COMS) Requirements (Additional requirements are located under GP 002 in Tables A and B.)	hdr
COMS Calibration Error Audit: due before end of each calendar half-year starting 03/28/2007 for MR 027. Conduct three point calibration error audits at least 3 months apart but no greater than 8 months apart. Conduct audits in accordance with Minn. R. 7017.1210, subp. 3.	Minn. R. 7017.1210, subp. 3

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-50**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: MR 028 Blr 1 SO2**Associated Items:** CM 009 Boilers 1, 2 & 3: SO2, 1-hr ave.

EU 001 Power Boiler 1

GP 003 NOx and SO2 Monitors

What to do	Why to do it
CONTINUOUS EMISSION MONITORING SYSTEMS (CEMS) Requirements (additional requirements are located under the associated GP subject item and in Table B.)	hdr
CEMS Relative Accuracy Test Audit (RATA): due before end of each calendar half-year following CEM Certification Test, i.e., once every two successive QA operating quarters (calendar quarter in which there are at least 168 unit operating hours). Conduct a RATA on all CEMS required by the Acid Rain Program, in accordance with 40 CFR pt. 75, Appendix B. Relative accuracy test audits may be performed annually (i.e., once every four successive QA operating quarters, rather than once every two successive QA operating quarters) if any of the conditions listed in 40 CFR pt. 75, Appendix B, Section 2.3.1.2(a) through Section 2.3.1.2(i) are met.	40 CFR pt. 75, Appendix B, section 2.3.1; Minn. R. 7017.1020
Linearity and Leak Check Test (Acid Rain Program): due before end of each QA operating quarter (as defined in Section 72.) in accordance with procedures in 40 CFR pt. 75, Appendix B, Sections 2.2.1 and 2.2.2, and Appendix A, Section 6.2. Perform a leak check at least once during each QA operating quarter (calendar quarter in which there are at least 168 unit operating hours) and no less than 30 days apart.	40 CFR pt. 75, Appendix B, section 2.2.1 & section 2.2.2; Minn. R. 7017.1020
CEM Certification Test: due 60 days after achieving normal operation but not later than 180 days after initial startup or within 90 days after the due date of the first excess emissions report, whichever is more stringent.	Minn. R. 7017.1050, subp. 1
CEMS Certification Test Plan: due 30 days before CEMS Certification Test.	Minn. R. 7017.1080, subp. 1, 2, & 4
CEMS Certification Test Pretest Meeting: due 7 days before CEMS Certification Test.	Minn. R. 7017.1060, subp. 3
CEMS Certification Test Report - Microfiche or CD Copy: due 105 days after CEMS Certification Test.	Minn. R. 7017.1080, subp. 3
CEMS Certification Test Report - Microfiche or CD Copy: due 105 days after CEMS Certification Test.	Minn. R. 7017.1080, subp. 3

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-51**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: MR 029 Blr 1 NOx**Associated Items:** CM 010 Boilers 1 & 2: NOx Title IV

EU 001 Power Boiler 1

GP 003 NOx and SO2 Monitors

What to do	Why to do it
CONTINUOUS EMISSION MONITORING SYSTEMS (CEMS) Requirements (additional requirements are located under the associated GP subject item and in Table B.)	hdr
CEMS Relative Accuracy Test Audit (RATA): due before end of each calendar half-year following CEM Certification Test, i.e., once every two successive QA operating quarters (calendar quarter in which there are at least 168 unit operating hours). Conduct a RATA on all CEMS required by the Acid Rain Program, in accordance with 40 CFR pt. 75, Appendix B. Relative accuracy test audits may be performed annually (i.e., once every four successive QA operating quarters, rather than once every two successive QA operating quarters) if any of the conditions listed in 40 CFR pt. 75, Appendix B, Section 2.3.1.2(a) through Section 2.3.1.2(i) are met.	40 CFR pt. 75, Appendix B, section 2.3.1; Minn. R. 7017.1020
Linearity and Leak Check Test (Acid Rain Program): due before end of each QA operating quarter (as defined in Section 72.) in accordance with procedures in 40 CFR pt. 75, Appendix B, Sections 2.2.1 and 2.2.2, and Appendix A, Section 6.2. Perform a leak check at least once during each QA operating quarter (calendar quarter in which there are at least 168 unit operating hours) and no less than 30 days apart.	40 CFR pt. 75, Appendix B, section 2.2.1 & section 2.2.2; Minn. R. 7017.1020
CEM Certification Test: due 60 days after achieving normal operation but not later than 180 days after initial startup or within 90 days after the due date of the first excess emissions report, whichever is more stringent.	Minn. R. 7017.1050, subp. 1
CEMS Certification Test Plan: due 30 days before CEMS Certification Test.	Minn. R. 7017.1080, subp. 1, 2, & 4
CEMS Certification Test Pretest Meeting: due 7 days before CEMS Certification Test.	Minn. R. 7017.1060, subp. 3
CEMS Certification Test Report - Microfiche or CD Copy: due 105 days after CEMS Certification Test.	Minn. R. 7017.1080, subp. 3
CEMS Certification Test Report - Microfiche or CD Copy: due 105 days after CEMS Certification Test.	Minn. R. 7017.1080, subp. 3

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-52**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: MR 032 Blr 2 SO2**Associated Items:** CM 009 Boilers 1, 2 & 3: SO2, 1-hr ave.

EU 002 Power Boiler 2

GP 003 NOx and SO2 Monitors

What to do	Why to do it
CONTINUOUS EMISSION MONITORING SYSTEMS (CEMS) Requirements (additional requirements are located under the associated GP subject item and in Table B.)	hdr
CEMS Relative Accuracy Test Audit (RATA): due before end of each calendar half-year following CEM Certification Test, i.e., once every two successive QA operating quarters (calendar quarter in which there are at least 168 unit operating hours). Conduct a RATA on all CEMS required by the Acid Rain Program, in accordance with 40 CFR pt. 75, Appendix B. Relative accuracy test audits may be performed annually (i.e., once every four successive QA operating quarters, rather than once every two successive QA operating quarters) if any of the conditions listed in 40 CFR pt. 75, Appendix B, Section 2.3.1.2(a) through Section 2.3.1.2(i) are met.	40 CFR pt. 75, Appendix B, section 2.3.1; Minn. R. 7017.1020
Linearity and Leak Check Test (Acid Rain Program): due before end of each QA operating quarter (as defined in Section 72.) in accordance with procedures in 40 CFR pt. 75, Appendix B, Sections 2.2.1 and 2.2.2, and Appendix A, Section 6.2. Perform a leak check at least once during each QA operating quarter (calendar quarter in which there are at least 168 unit operating hours) and no less than 30 days apart.	40 CFR pt. 75, Appendix B, section 2.2.1 & section 2.2.2; Minn. R. 7017.1020
CEM Certification Test: due 60 days after achieving normal operation but not later than 180 days after initial startup or within 90 days after the due date of the first excess emissions report, whichever is more stringent.	Minn. R. 7017.1050, subp. 1
CEMS Certification Test Plan: due 30 days before CEMS Certification Test.	Minn. R. 7017.1080, subp. 1, 2, & 4
CEMS Certification Test Pretest Meeting: due 7 days before CEMS Certification Test.	Minn. R. 7017.1060, subp. 3
CEMS Certification Test Report - Microfiche or CD Copy: due 105 days after CEMS Certification Test.	Minn. R. 7017.1080, subp. 3
CEMS Certification Test Report - Microfiche or CD Copy: due 105 days after CEMS Certification Test.	Minn. R. 7017.1080, subp. 3

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-53**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: MR 033 Blr 2 NOx**Associated Items:** CM 010 Boilers 1 & 2: NOx Title IV

EU 002 Power Boiler 2

GP 003 NOx and SO2 Monitors

What to do	Why to do it
CONTINUOUS EMISSION MONITORING SYSTEMS (CEMS) Requirements (additional requirements are located under the associated GP subject item and in Table B.)	hdr
CEMS Relative Accuracy Test Audit (RATA): due before end of each calendar half-year following CEM Certification Test, i.e., once every two successive QA operating quarters (calendar quarter in which there are at least 168 unit operating hours). Conduct a RATA on all CEMS required by the Acid Rain Program, in accordance with 40 CFR pt. 75, Appendix B. Relative accuracy test audits may be performed annually (i.e., once every four successive QA operating quarters, rather than once every two successive QA operating quarters) if any of the conditions listed in 40 CFR pt. 75, Appendix B, Section 2.3.1.2(a) through Section 2.3.1.2(i) are met.	40 CFR pt. 75, Appendix B, section 2.3.1; Minn. R. 7017.1020
Linearity and Leak Check Test (Acid Rain Program): due before end of each QA operating quarter (as defined in Section 72.) in accordance with procedures in 40 CFR pt. 75, Appendix B, Sections 2.2.1 and 2.2.2, and Appendix A, Section 6.2. Perform a leak check at least once during each QA operating quarter (calendar quarter in which there are at least 168 unit operating hours) and no less than 30 days apart.	40 CFR pt. 75, Appendix B, section 2.2.1 & section 2.2.2; Minn. R. 7017.1020
CEM Certification Test: due 60 days after achieving normal operation but not later than 180 days after initial startup or within 90 days after the due date of the first excess emissions report, whichever is more stringent.	Minn. R. 7017.1050, subp. 1
CEMS Certification Test Plan: due 30 days before CEMS Certification Test.	Minn. R. 7017.1080, subp. 1, 2, & 4
CEMS Certification Test Pretest Meeting: due 7 days before CEMS Certification Test.	Minn. R. 7017.1060, subp. 3
CEMS Certification Test Report - Microfiche or CD Copy: due 105 days after CEMS Certification Test.	Minn. R. 7017.1080, subp. 3
CEMS Certification Test Report - Microfiche or CD Copy: due 105 days after CEMS Certification Test.	Minn. R. 7017.1080, subp. 3

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-54**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: MR 036 Blr 3 SO2**Associated Items:** CM 009 Boilers 1, 2 & 3: SO2, 1-hr ave.

EU 003 Power Boiler 3

GP 003 NOx and SO2 Monitors

What to do	Why to do it
CONTINUOUS EMISSION MONITORING SYSTEMS (CEMS) Requirements (additional requirements are located under the associated GP subject item and in Table B.)	hdr
CEMS Relative Accuracy Test Audit (RATA): due before end of each calendar half-year following CEM Certification Test, i.e., once every two successive QA operating quarters (calendar quarter in which there are at least 168 unit operating hours). Conduct a RATA on all CEMS required by the Acid Rain Program, in accordance with 40 CFR pt. 75, Appendix B. Relative accuracy test audits may be performed annually (i.e., once every four successive QA operating quarters, rather than once every two successive QA operating quarters) if any of the conditions listed in 40 CFR pt. 75, Appendix B, Section 2.3.1.2(a) through Section 2.3.1.2(i) are met.	40 CFR pt. 75, Appendix B, section 2.3.1; Minn. R. 7017.1020
Linearity and Leak Check Test (Acid Rain Program): due before end of each QA operating quarter (as defined in Section 72.) in accordance with procedures in 40 CFR pt. 75, Appendix B, Sections 2.2.1 and 2.2.2, and Appendix A, Section 6.2. Perform a leak check at least once during each QA operating quarter (calendar quarter in which there are at least 168 unit operating hours) and no less than 30 days apart.	40 CFR pt. 75, Appendix B, section 2.2.1 & section 2.2.2; Minn. R. 7017.1020
CEM Certification Test: due 60 days after achieving normal operation but not later than 180 days after initial startup or within 90 days after the due date of the first excess emissions report, whichever is more stringent.	Minn. R. 7017.1050, subp. 1
CEMS Certification Test Plan: due 30 days before CEMS Certification Test.	Minn. R. 7017.1080, subp. 1, 2, & 4
CEMS Certification Test Pretest Meeting: due 7 days before CEMS Certification Test.	Minn. R. 7017.1060, subp. 3
CEMS Certification Test Report - Microfiche or CD Copy: due 105 days after CEMS Certification Test.	Minn. R. 7017.1080, subp. 3
CEMS Certification Test Report - Microfiche or CD Copy: due 105 days after CEMS Certification Test.	Minn. R. 7017.1080, subp. 3

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-55**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: MR 037 Blr 3 NOx**Associated Items:** CM 008 Boiler 3, Title IV NOx

EU 003 Power Boiler 3

GP 003 NOx and SO2 Monitors

What to do	Why to do it
CONTINUOUS EMISSION MONITORING SYSTEMS (CEMS) Requirements (additional requirements are located under the associated GP subject item and in Table B.)	hdr
CEMS Relative Accuracy Test Audit (RATA): due before end of each calendar half-year following CEM Certification Test, i.e., once every two successive QA operating quarters (calendar quarter in which there are at least 168 unit operating hours). Conduct a RATA on all CEMS required by the Acid Rain Program, in accordance with 40 CFR pt. 75, Appendix B. Relative accuracy test audits may be performed annually (i.e., once every four successive QA operating quarters, rather than once every two successive QA operating quarters) if any of the conditions listed in 40 CFR pt. 75, Appendix B, Section 2.3.1.2(a) through Section 2.3.1.2(i) are met.	40 CFR pt. 75, Appendix B, section 2.3.1; Minn. R. 7017.1020
Linearity and Leak Check Test (Acid Rain Program): due before end of each QA operating quarter (as defined in Section 72.) in accordance with procedures in 40 CFR pt. 75, Appendix B, Sections 2.2.1 and 2.2.2, and Appendix A, Section 6.2. Perform a leak check at least once during each QA operating quarter (calendar quarter in which there are at least 168 unit operating hours) and no less than 30 days apart.	40 CFR pt. 75, Appendix B, section 2.2.1 & section 2.2.2; Minn. R. 7017.1020
CEM Certification Test: due 60 days after achieving normal operation but not later than 180 days after initial startup or within 90 days after the due date of the first excess emissions report, whichever is more stringent.	Minn. R. 7017.1050, subp. 1
CEMS Certification Test Plan: due 30 days before CEMS Certification Test.	Minn. R. 7017.1080, subp. 1, 2, & 4
CEMS Certification Test Pretest Meeting: due 7 days before CEMS Certification Test.	Minn. R. 7017.1060, subp. 3
CEMS Certification Test Report - Microfiche or CD Copy: due 105 days after CEMS Certification Test.	Minn. R. 7017.1080, subp. 3
CEMS Certification Test Report - Microfiche or CD Copy: due 105 days after CEMS Certification Test.	Minn. R. 7017.1080, subp. 3

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-56**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: MR 040 Blr 4 Opacity**Associated Items:** EU 004 Power Boiler 4

GP 002 Opacity Monitors

What to do	Why to do it
CONTINUOUS OPACITY MONITORING SYSTEMS (COMS) Requirements (Additional requirements are located under GP 002 in Table A and MR 040 in Table B.)	hdr
COMS Calibration Error Audit: due before end of each calendar half-year starting 02/14/2008 for MR 040. Conduct three point calibration error audits at least 3 months apart but no greater than 8 months apart. Conduct audits in accordance with Minn. R. 7017.1210, subp. 3.	Minn. R. 7017.1210, subp. 3

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-57**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: MR 042 Blr 4 SO2**Associated Items:** CM 002 Boiler 4: 1.2 lbs SO2/mmBtu, EU004, 1-hr ave.

EU 004 Power Boiler 4

GP 003 NOx and SO2 Monitors

What to do	Why to do it
CONTINUOUS EMISSION MONITORING SYSTEMS (CEMS) Requirements (Additional requirements are located under the associated GP subject item and in Table B.)	hdr
CEMS Relative Accuracy Test Audit (RATA): due before end of each calendar half-year for MR 042 (Boiler 4 SO2) following CEM Certification Test, i.e., once every two successive QA operating quarters (calendar quarter in which there are at least 168 unit operating hours). Conduct a RATA on all CEMS required by the Acid Rain Program, in accordance with 40 CFR pt. 75, Appendix B. Relative accuracy test audits may be performed annually (i.e., once every four successive QA operating quarters, rather than once every two successive QA operating quarters) if any of the conditions listed in 40 CFR pt. 75, Appendix B, Section 2.3.1.2(a) through Section 2.3.1.2(i) are met.	40 CFR pt. 75, Appendix B, Section 2.3.1, Minn. R. 7017.1020
Linearity and Leak Check Test (Acid Rain Program): due before end of each QA operating quarter (as defined in Section 72.) in accordance with procedures in 40 CFR pt. 75, Appendix B, Sections 2.2.1 and 2.2.2, and Appendix A, Section 6.2. Perform a leak check at least once during each QA operating quarter (calendar quarter in which there are at least 168 unit operating hours) and no less than 30 days apart.	40 CFR pt. 75, Appendix B, Section 2.2.1 & Section 2.2.2; Minn. R. 7017.1020

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-58**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: MR 043 Blr 4 NOx**Associated Items:** CM 003 Boiler 4: 0.7 lbs NOx/mmBtu, EU004, 3-hr ave.

EU 004 Power Boiler 4

GP 003 NOx and SO2 Monitors

What to do	Why to do it
CONTINUOUS EMISSION MONITORING SYSTEMS (CEMS) Requirements (Additional requirements are located under the associated GP subject item and in Table B.)	hdr
CEMS Relative Accuracy Test Audit (RATA): due before end of each calendar half-year for MR 043 (Boiler 4 NOx) following CEM Certification Test, i.e., once every two successive QA operating quarters (calendar quarter in which there are at least 168 unit operating hours). Conduct a RATA on all CEMS required by the Acid Rain Program, in accordance with 40 CFR pt. 75, Appendix B. Relative accuracy test audits may be performed annually (i.e., once every four successive QA operating quarters, rather than once every two successive QA operating quarters) if any of the conditions listed in 40 CFR pt. 75, Appendix B, Section 2.3.1.2(a) through Section 2.3.1.2(i) are met.	40 CFR pt. 75, Appendix B, Section 2.3.1, Minn. R. 7017.1020
Linearity and Leak Check Test (Acid Rain Program): due before end of each QA operating quarter (as defined in Section 72.) in accordance with procedures in 40 CFR pt. 75, Appendix B, Sections 2.2.1 and 2.2.2, and Appendix A, Section 6.2. Perform a leak check at least once during each QA operating quarter (calendar quarter in which there are at least 168 unit operating hours) and no less than 30 days apart.	40 CFR pt. 75, Appendix B, Section 2.2.1 & Section 2.2.2; Minn. R. 7017.1020

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-59**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: MR 045 Blr 4 CO**Associated Items:** CM 011 Boiler 4 CO

EU 004 Power Boiler 4

What to do	Why to do it
CONTINUOUS EMISSION MONITORING SYSTEMS (CEMS) Requirements (Additional requirements are located in Table B.)	hdr
Emissions Monitoring: The owner or operator shall use a CO CEMS to measure EU 004 CO emissions.	Minn. R. 7017.1006
CEM Certification Test: due 90 days after Excess Emissions/Downtime Reports (EER's) are first required for MR 045 Boiler 4 CO CEMS. The first EER is due 30 days after the end of the calendar quarter following permit issuance. Follow the Performance Specifications listed in 40 CFR pt. 60, Appendix B.	Minn. R. 7017.1050, subp. 1
CEMS Test Notification and Submittals: CEMS Certification Test Plan: due 30 days before CEMS Certification Test; CEMS Certification Test Pretest Meeting: due 7 days before CEMS Certification Test; CEMS Certification Test Report: due 45 days after CEMS Certification Test; CEMS Certification Test Report - Microfiche Copy: due 105 days after CEMS Certification Test. The Notification, Test Plan, and Test Report may be submitted in alternate format as allowed by Minn. R. 7017.1120, subp. 2	Minn. R. 7017.1060, subp. 1-3; and Minn. R. 7017.1080, subp. 1-4
Continuous Operation: CEMS must be operated and data recorded during all periods of emission unit operation including periods of emission unit start-up, shutdown, or malfunction except for periods of acceptable monitor downtime. This requirement applies whether or not a numerical emission limit applies during these periods. A CEMS must not be bypassed except in emergencies where failure to bypass would endanger human health, safety, or plant equipment.	Minn. R. 7017.1090
Monitoring Data: All data points collected by a CEMS shall be used to calculate individual hourly emission averages unless another applicable requirement requires more frequent averaging. In order for an hour of data to be considered, it must contain the following minimum number of data points: A. four data points, equally spaced, if the emission unit operated during the entire hour; B. two data points, at least 15 minutes apart, during periods of monitor calibration or routine maintenance; C. one data point if the emission unit operated for 15 minutes or less during the hour.	Minn. R. 7017.1160, subp. 1 and 2
CEMS Relative Accuracy Test Audit (RATA): due before end of each year following CEM Certification Test. A RATA is not required in any calendar year if a RATA conducted in the previous year demonstrated a relative accuracy value of less than 15 percent or if the associated emissions unit operated less than 48 hours during the calendar year. If the exception is used, the next RATA shall be conducted during the first half of the following calendar year. RATAs shall be conducted at least 3 months apart according to 40 CFR pt. 60, Appendix F, section 5.1.1.	Minn. R. 7017.1170, subp. 5
Relative Accuracy Test Audit (RATA) Notification: due 30 days before CEMS RATA.	Minn. R. 7017.1180, subp. 2
Quality Assurance Plan: Develop and implement a written quality assurance plan that covers each CEMS. The plan shall be on site and available for inspection within 30 days after monitor certification. The plan shall contain all of the information required by 40 CFR pt. 60, Appendix F, section 3. The plan shall include the manufacturer's spare parts list for each CEMS and require that those parts be kept at the facility unless the Commissioner gives written approval to exclude specific spare parts from the list.	Minn. R. 7017.1170, subp. 2
CEMS Daily Calibration Drift (CD) Test: The CD shall be quantified and recorded at zero (low-level) and upscale (high-level) gas concentrations at least once daily according to the procedures listed in Minn. R. 7017.1170, subp. 3(A) or 3(B) as applicable, and 40 CFR Section 60.13(d)(1) for each pollutant concentration, each diluent monitor, and for each monitor range. The CEMS shall be adjusted whenever the CD exceeds twice the specification of 40 CFR pt. 60, Appendix B. If no span value is specified in the applicable requirement or in a compliance document, the Permittee shall use a span value equivalent to 1.5 times the emission limit. 40 CFR pt. 60, Appendix F, shall be used to determine out-of-control periods for CEMS. Follow the procedures in 40 CFR pt. 60, Appendix F.	Minn. R. 7017.1170, subp. 3

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-60**

06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Cylinder Gas Audit: due before end of each calendar half-year following CEM Certification Test, except that a cylinder gas audit (CGA) is not required during any calendar half-year in which a RATA was performed. The initial CGA must be performed within 180 days following certification of the CEMS. The CGAs shall be conducted at least three months apart but no more than eight months apart. A CGA shall be conducted according to the procedures in 40 CFR pt. 60, Appendix F, section 5.1.2. If the monitored emission unit was operated for less than 24 hours during the calendar half-year, a CGA is not required for that calendar half-year.	Minn. R. 7017.1170, subp. 4
Recordkeeping: The owner or operator must retain records of all CEMS monitoring data and support information for a period of five years from the date of the monitoring sample, measurement or report. Records shall be kept at the source.	Minn. R. 7017.1130

TABLE B: SUBMITTALS

B-1 06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr
Permit Number: 06100004 - 006

Also, where required by an applicable rule or permit condition, send to the Permit Document Coordinator notices of:

- accumulated insignificant activities,
- installation of control equipment,
- replacement of an emissions unit, and
- changes that contravene a permit term.

Send submittals that are required to be submitted to the U.S. EPA regional office to:

Mr. George Czerniak
Air and Radiation Branch
EPA Region V
77 West Jackson Boulevard
Chicago, Illinois 60604

Unless another person is identified in the applicable Table, send all other submittals to:

AQ Compliance Tracking Coordinator
Industrial Division
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

Send submittals that are required by the Acid Rain Program to:

U.S. Environmental Protection Agency
Clean Air Markets Division
1200 Pennsylvania Avenue NW (6204N)
Washington, D.C. 20460

Send any application for a permit or permit amendment to:

AQ Permit Document Coordinator
Industrial Division
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

Table B lists most of the submittals required by this permit. Please note that some submittal requirements may appear in Table A or, if applicable, within a compliance schedule located in Table C. Table B is divided into two sections in order to separately list one-time only and recurrent submittal requirements.

Each submittal must be postmarked or received by the date specified in the applicable Table. Those submittals required by parts 7007.0100 to 7007.1850 must be certified by a responsible official, defined in Minn. R. 7007.0100, subp. 21. Other submittals shall be certified as appropriate if certification is required by an applicable rule or permit condition.

TABLE B: ONE TIME SUBMITTALS OR NOTIFICATIONS**B-2** 06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

What to send	When to send	Portion of Facility Affected
Annual Report	<p>due 182 days after 01/01/2011 (due 7/1 commencing 7/1/11) until the Permittee files its plan for EU 004 mercury emissions reduction. The Permittee must submit the report to the MPCA containing the following information:</p> <p>(1) Mercury control plans for EU 004, including how elements of the plans may affect the performance and cost-effectiveness of emission controls for air pollutants other than mercury;</p> <p>(2) an assessment of the impacts of federal laws regulating various air pollutants emitted by coal-fired power plants that can reasonably be expected to be enacted by 2018 on the Permittee's units subject to this section, and potential Permittee responses to those laws, including, but not limited to:</p> <p>(i) installing pollution control equipment;</p> <p>(ii) using pollution allowances to achieve regulatory compliance; and,</p> <p>(iii) retiring or repowering the plant that is the subject of the filing with cleaner fuels considering the costs of complying with state and federal environmental regulations.</p>	EU004
Application for Permit Reissuance	due 180 days before expiration of Existing Permit	Total Facility
Plans and Specifications	due before 07/01/2011 for mercury removal as prescribed by Minn. Stat. Section 216B.6851, subd. 5. The plan shall contain the information specified in Minn. Stat. 216B.682, subd. 3.	EU004

TABLE B: RECURRENT SUBMITTALS**B-3** 06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

What to send	When to send	Portion of Facility Affected
Cylinder Gas Audit (CGA) Results Summary	due 30 days after end of each calendar quarter following CEM Certification Test, if a CGA was conducted during the previous calendar quarter.	MR024, MR045
Excess Emissions/Downtime Reports (EER's)	due 30 days after end of each calendar quarter following Initial Startup of the Monitor. Submit Deviations Reporting Form DRF-1 as amended. The EER shall indicate all periods of monitor bypass and all periods of exceedances of the limit including exceedances allowed by an applicable standard, i.e. during startup, shutdown, and malfunctions. The EER must be submitted even if there were no excess emissions, downtime or bypasses during the quarter.	Total Facility
Linearity Test Results Summary	due 30 days after end of each calendar quarter following CEM Certification Test in which a Linearity and Leak Check Test was conducted.	MR028, MR029, MR032, MR033, MR036, MR037
Linearity Test Results Summary	due 30 days after end of each calendar quarter following Linearity and Leak Check Test (Acid Rain Program), if performed.	MR043
Linearity Test Results Summary	due 30 days after end of each calendar quarter starting 08/19/2010 , if performed on MR 042, Boiler 4 SO2.	MR042
Quarterly Report	due 30 days after end of each calendar quarter starting 01/01/2009 as referenced by 40 CFR Section 75.84(f).	MR026
Quarterly Report	due 30 days after end of each calendar quarter starting 01/01/2009 as required by 40 CFR Section 75.84(f).	MR025
Relative Accuracy Test Audit (RATA) Results Summary	due 30 days after end of each calendar quarter following CEM Certification Test in which the CEMS RATA was conducted.	MR028, MR029, MR032, MR033, MR036, MR037
Relative Accuracy Test Audit (RATA) Results Summary	due 30 days after end of each calendar quarter following CEM Certification Test.	MR045
Relative Accuracy Test Audit (RATA) Results Summary	due 30 days after end of each calendar quarter following CEMS Relative Accuracy Test Audit (RATA)	MR025, MR026
COMS Calibration Error Audit Results Summary	due 30 days after end of each calendar half-year following COMS Certification Test for MR027, Boiler 3 Opacity.	MR027
COMS Calibration Error Audit Results Summary	due 30 days after end of each calendar half-year starting 02/04/2008 for MR 040, Boiler 4 Opacity.	MR040
COMS Calibration Error Audit Results Summary	due 30 days after end of each calendar half-year starting 03/28/2007 for MR 020, Boiler 1 Opacity.	MR020
COMS Calibration Error Audit Results Summary	due 30 days after end of each calendar half-year starting 03/28/2007 for MR 021, Boiler 2 Opacity.	MR021
Relative Accuracy Test Audit (RATA) Results Summary	due 30 days after end of each calendar half-year starting 08/19/2010 in which the CEMs RATA was conducted for MR 042, Boiler 4 SO2.	MR042
Relative Accuracy Test Audit (RATA) Results Summary	due 30 days after end of each calendar half-year starting 09/21/2006 in which the CEMs RATA was conducted for MR 043, Boiler 4 NOx.	MR043

TABLE B: RECURRENT SUBMITTALS**B-4** 06/21/11

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Semiannual Deviations Report	due 30 days after end of each calendar half-year starting 03/28/2007 . The first semiannual report submitted by the Permittee shall cover the calendar half-year in which the permit is issued. The first report of each calendar year covers January 1 - June 30. The second report of each calendar year covers July 1 - December 31. If no deviations have occurred, the Permittee shall submit the report stating no deviations.	Total Facility
Annual Report	<p>due 60 days after end of each calendar year following Initial Startup of EU 004 after the completion of EU 004 modifications allowed by permit No. 06100004-005. This requirement terminates upon submittal of the fifth required calendar year report following resumption of EU 004 normal operation.</p> <p>The Permittee shall submit an annual report stating the EU 004 SO2 emissions tons for the previous calendar year. The report shall be generated using the same EU 004 SO2 CEMS-based data that is reported to the EPA Clean Air Markets program.</p> <p>If calendar year SO2 emissions exceed 3145 tons (future projected actual emissions plus excludable emissions determined for permit No. 06100004-005, plus 50 percent of the 40 ton per year SO2 significant emission rate), the Permittee shall also submit with the report an explanation of why the calendar year SO2 emissions exceeded 3145 tons.</p>	EU004
Compliance Certification	due 31 days after end of each calendar year starting 03/28/2007 (for the previous calendar year). To be submitted on a form approved by the Commissioner, both to the Commissioner and to the US EPA regional office in Chicago. This report covers all deviations experienced during the calendar year.	Total Facility
Relative Accuracy Test Audit (RATA) Results Summary	due 30 days after end of each calendar year starting 10/03/2006 in which the CEMs RATA was conducted for MR 024, Boiler 3 CO.	MR024

APPENDIX A
Insignificant Activities
Minnesota Power - Boswell Energy Center
Permit Number: 06100004-006

Activity	Rule Citation	Applicable Regulations
Grinders	Minn. R. 7007.1300, subp. 3.D.(2)	Minn. R. 7011.0715
Gasoline Tanks	Minn. R. 7007.1300, subp. 3.E(1)	NA
Welding Equipment	Minn. R. 7007.1300, subp. 3.H(4)	Minn. R. 7011.0715
Sandblasting	Minn. R. 7007.1300, subp. 4.B(2)	Minn. R. 7011.0715
Coal Stockpile loading	Minn. R. 7007.1300, subp. 4.B(2)	Minn. R. 7011.0150
Coal Stockpile, equipment traffic	Minn. R. 7007.1300, subp. 4.B(2)	Minn. R. 7011.0150
Conveyor drop onto stockpile, reclaimer	Minn. R. 7007.1300, subp. 4.B(2)	Minn. R. 7011.0150
Conveyor Drop onto Stockpile –Side Chute	Minn. R. 7007.1300, subp. 4.B(2)	Minn. R. 7011.0150
Rail Car Unloading	Minn. R. 7007.1300, subp. 4.B(2)	Minn. R. 7011.0150
Rail Car Load Out	Minn. R. 7007.1300, subp. 4.B(2)	Minn. R. 7011.0150
Lab Hoods (4)	Minn. R. 7007.1300, subp. 4.B(2)	Minn. R. 7011.0715
Coal Transfer Tower A	Minn. R. 7007.1300, subp. 4.B(2)	Minn. R. 7011.0150
Coal Transfer Tower B	Minn. R. 7007.1300, subp. 4.B(2)	Minn. R. 7011.0150
Coal Conveyor Belt C3	Minn. R. 7007.1300, subp. 4.B(2)	Minn. R. 7011.0150
Coal Rotary Car Dumper	Minn. R. 7007.1300, subp. 4.B(2)	Minn. R. 7011.0150
Coal Rotary Car TP	Minn. R. 7007.1300, subp. 4.B(2)	Minn. R. 7011.0150
Coal Transfer and Sampling House	Minn. R. 7007.1300, subp. 4.B(2)	Minn. R. 7011.0150
Coal Storage Silo	Minn. R. 7007.1300, subp. 4.B(2)	Minn. R. 7011.0715
Coal Tripper Transfer	Minn. R. 7007.1300, subp. 4.B(2)	Minn. R. 7011.0715
#4 Coal Bunker	Minn. R. 7007.1300, subp. 4.B(2)	Minn. R. 7011.0715

APPENDIX B-1

Dispersion Modeling Parameters (From modeling conducted for permit No. 06100004-004)

Minnesota Power - Boswell Energy Center

Permit Number: 06100004-006

```
*** N01 Itr 2; INL-INL, MN Metdata 1987 *** 17:19:28
**MODELOPTs:
CONC DFAULT ELEV
*** POINT SOURCE DATA ***
SOURCE  NUMBER EMISSION RATE  BASE  STACK  STACK  STACK  STACK  BLDG  URBAN  CAP/  EMIS RATE
ID      PART.  (GRAMS/SEC)  X      Y      ELEV.  HEIGHT  TEMP.  EXIT VEL.  DIAMETER  EXISTS  SOURCE HOR  SCALAR
      CATS.      (METERS) (METERS) (METERS) (METERS) (DEG.K) (M/SEC) (METERS)
-----
BEC_SV03  0  0.11653E+03  450543.2  5234354.5  392.6  192.44  361.48  12.64  8.84  YES  NO  NO
BEC_SV04  0  0.25749E+03  450653.8  5234624.5  394.6  170.31  343.15  35.85  6.10  YES  NO  NO
BEC_SV09  0  0.63000E-01  450631.3  5234411.0  396.2  13.72  699.82  20.21  0.24  YES  NO  NO
BEC_SV10  0  0.60480E+01  450683.1  5234583.0  395.4  8.23  699.82  8.80  0.64  YES  NO  NO
BEC_SV22  0  0.60000E-02  450555.3  5234413.5  394.3  9.14  847.04  10.49  0.20  YES  NO  NO

*** THE SUMMARY OF MAXIMUM PERIOD ( 8760 HRS) RESULTS ***
** CONC OF NOX      IN MICROGRAMS/M**3      **
GROUP ID      AVERAGE CONC      RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
-----
ALL      1ST HIGHEST VALUE IS      59.05281 AT ( 450572.66, 5234629.00, 392.04, 392.04, 0.00) DC
```

APPENDIX B-1
Dispersion Modeling Parameters (From modeling conducted for permit No. 06100004-004)
Minnesota Power - Boswell Energy Center
Permit Number: 06100004-006

*** N04 Itr 2; INL-INL, MN Metdata 1987

***18:49:21

**MODELOPTs:

PAGE2

CONC

DFAULT ELEV

*** POINT SOURCE DATA ***													
SOURCE	NUMBER	EMISSION RATE			BASE	STACK	STACK	STACK	STACK	BLDG	URBAN	CAP/	EMIS RATE
ID	PART.	(GRAMS/SEC)	X	Y	ELEV.	HEIGHT	TEMP.	EXIT VEL.	DIAMETER	EXISTS	SOURCE	HOR	SCALAR
	CATS.		(METERS)	(METERS)	(METERS)	(METERS)	(DEG.K)	(M/SEC)	(METERS)				VARY BY
BEC_SV03	0	0.29590E+02	450543.2	5234354.5	392.6	192.44	329.26	8.50	8.84	YES	NO	NO	
BEC_SV04	0	0.25749E+03	450653.8	5234624.5	394.6	170.31	343.15	35.85	6.10	YES	NO	NO	
BEC_SV09	0	0.63000E-01	450631.3	5234411.0	396.2	13.72	699.82	20.21	0.24	YES	NO	NO	
BEC_SV10	0	0.60480E+01	450683.1	5234583.0	395.4	8.23	699.82	8.80	0.64	YES	NO	NO	
BEC_SV22	0	0.60000E-02	450555.3	5234413.5	394.3	9.14	847.04	10.49	0.20	YES	NO	NO	

*** THE SUMMARY OF MAXIMUM PERIOD (8760 HRS) RESULTS ***

** CONC OF NOXIN MICROGRAMS/M**3**

GROUP ID	AVERAGE CONC	RECEPTOR	(XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	GRID-ID
ALL	1ST HIGHEST VALUE IS	59.05276 AT (	450572.66, 5234629.00, 392.04, 392.04,	0.00)	DC

APPENDIX B-1

Dispersion Modeling Parameters (From modeling conducted for permit No. 06100004-004)

Minnesota Power - Boswell Energy Center

Permit Number: 06100004-006

**MODELOPTs:

PAGE 2

CONC

DFAULT ELEV

MULTYR

*** POINT SOURCE DATA ***

NUMBER EMISSION RATE					BASE	STACK	STACK	STACK	STACK	BLDG	URBAN	CAP/	EMIS RATE
SOURCE	PART.	(GRAMS/SEC)	X	Y	ELEV.	HEIGHT	TEMP.	EXIT VEL.	DIAMETER	EXISTS	SOURCE	HOR	SCALAR
ID	CATS.		(METERS)	(METERS)	(METERS)	(METERS)	(DEG.K)	(M/SEC)	(METERS)				VARY BY
BEC_SV03	0	0.33695E+02	450543.2	5234354.5	392.6	192.44	361.48	12.64	8.84	YES	NO	NO	
BEC_SV04	0	0.64372E+02	450653.8	5234624.5	394.6	170.31	343.15	35.85	6.10	YES	NO	NO	
BEC_SV09	0	0.78000E-01	450631.3	5234411.0	396.2	13.72	699.82	20.21	0.24	YES	NO	NO	
BEC_SV10	0	0.94000E-01	450683.1	5234583.0	395.4	8.23	699.82	8.80	0.64	YES	NO	NO	
BEC_SV15	0	0.27000E-01	450581.8	5234460.0	394.4	17.98	294.26	0.00	0.15	YES	NO	NO	
BEC_SV16	0	0.43000E-01	450296.8	5234813.5	396.2	46.33	294.26	0.00	0.15	YES	NO	NO	
BEC_SV17	0	0.15000E-01	450303.2	5234810.0	396.2	46.33	294.26	0.00	0.15	YES	NO	NO	
BEC_SV18	0	0.12000E-01	450298.0	5234808.0	396.2	46.33	294.26	0.00	0.15	YES	NO	NO	
BEC_SV20	0	0.18000E-01	450620.7	5234623.5	394.4	17.22	294.26	0.00	1.23	YES	NO	NO	
BEC_SV21	0	0.18000E-01	450617.9	5234627.0	394.4	17.22	294.26	0.00	1.23	YES	NO	NO	
BEC_SV22	0	0.80000E-02	450555.3	5234413.5	394.3	9.14	847.04	10.49	0.20	YES	NO	NO	
BEC_SV23	0	0.25200E+00	450736.8	5234139.0	397.5	6.40	294.26	46.04	1.42	YES	NO	NO	

*** THE SUMMARY OF MAXIMUM PERIOD (8784 HRS) RESULTS ***

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	GRID-ID
ALL	1ST HIGHEST VALUE IS	7.50431 AT (450543.22, 5234704.50, 391.86, 391.86, 0.00)	DC	

*** THE SUMMARY OF HIGHEST 24-HR RESULTS ***

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	GRID-ID
ALL	HIGH 1ST HIGH VALUE IS	61.66373 ON 89112024: AT (450687.31, 5233790.50, 394.96, 394.96, 0.00)	DC	

APPENDIX B-1

Dispersion Modeling Parameters (From modeling conducted for permit No. 06100004-004)

Minnesota Power - Boswell Energy Center

Permit Number: 06100004-006

HIGH	2ND HIGH VALUE IS	56.72338	ON 90011124: AT (	450687.31,	5233790.50,	394.96,	394.96,	0.00)	DC
HIGH	3RD HIGH VALUE IS	52.64199c	ON 86011224: AT (	450687.31,	5233790.50,	394.96,	394.96,	0.00)	DC
HIGH	4TH HIGH VALUE IS	47.35564c	ON 86011224: AT (	450677.31,	5233790.50,	395.00,	396.24,	0.00)	DC
HIGH	5TH HIGH VALUE IS	34.63295	ON 90041624: AT (	450687.31,	5233790.50,	394.96,	394.96,	0.00)	DC
HIGH	6TH HIGH VALUE IS	30.75789	ON 89092224: AT (	450657.31,	5233790.50,	396.03,	396.03,	0.00)	DC

Dispersion Modeling Parameters (From modeling conducted for permit No. 06100004-004)
Minnesota Power - Boswell Energy Center
Permit Number: 06100004-006

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ALL	HIGH	1ST HIGH VALUE IS	62.38565	ON 89112024: AT (450687.31,	5233790.50,	394.96,	394.96,	0.00)	DC
	HIGH	2ND HIGH VALUE IS	56.71721	ON 90011124: AT (	450687.31,	5233790.50,	394.96,	394.96,	0.00)	DC

APPENDIX B-1

Dispersion Modeling Parameters (From modeling conducted for permit No. 06100004-004)

Minnesota Power - Boswell Energy Center

Permit Number: 06100004-006

HIGH	3RD HIGH VALUE IS	54.43631c	ON 86011224: AT (	450687.31,	5233790.50,	394.96,	394.96,	0.00)	DC
HIGH	4TH HIGH VALUE IS	49.72771	ON 89050524: AT (	450687.31,	5233790.50,	394.96,	394.96,	0.00)	DC
HIGH	5TH HIGH VALUE IS	34.65719	ON 90041624: AT (	450687.31,	5233790.50,	394.96,	394.96,	0.00)	DC
HIGH	6TH HIGH VALUE IS	31.19517	ON 89092224: AT (	450667.31,	5233790.50,	395.46,	395.46,	0.00)	DC

APPENDIX B-1

Dispersion Modeling Parameters (From modeling conducted for permit No. 06100004-004)

Minnesota Power - Boswell Energy Center

Permit Number: 06100004-006

*** S01 Annual Itr 2; INL-INL, MN Metdata 1987

*** 20:19:10

**MODELOPTs:

PAGE 2

CONC

DFAULT ELEV

*** POINT SOURCE DATA ***

SOURCE	PART.	EMISSION RATE (GRAMS/SEC)	X	Y	BASE ELEV.	STACK HEIGHT	STACK TEMP.	STACK EXIT VEL.	STACK DIAMETER	BLDG EXISTS	URBAN SOURCE	CAP/ HOR	EMIS RATE SCALAR
ID	CATS.		(METERS)	(METERS)	(METERS)	(METERS)	(DEG.K)	(M/SEC)	(METERS)				VARY BY
BEC_SV03	0	0.79403E+03	450543.2	5234354.5	392.6	192.44	361.48	12.64	8.84	YES	NO	NO	
BEC_SV04	0	0.21243E+03	450653.8	5234624.5	394.6	170.31	343.15	35.85	6.10	YES	NO	NO	
BEC_SV09	0	0.70000E-02	450631.3	5234411.0	396.2	13.72	699.82	20.21	0.24	YES	NO	NO	
BEC_SV10	0	0.94500E+00	450683.1	5234583.0	395.4	8.23	699.82	8.80	0.64	YES	NO	NO	
BEC_SV22	0	0.20000E-02	450555.3	5234413.5	394.3	9.14	847.04	10.49	0.20	YES	NO	NO	

*** THE SUMMARY OF MAXIMUM PERIOD (8760 HRS) RESULTS ***

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	GRID-ID
ALL	1ST HIGHEST VALUE IS 9.22156 AT (	450572.66, 5234629.00,	392.04, 392.04,	0.00) DC

Dispersion Modeling Parameters (From modeling conducted for permit No. 06100004-004)
Minnesota Power - Boswell Energy Center
Permit Number: 06100004-006

*** 22:23:50

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DFAULT ELEV

NUMBER EMISSION RATE					BASE	STACK	STACK	STACK	STACK	BLDG	URBAN	CAP/	EMIS RATE
SOURCE	PART.	(GRAMS/SEC)	X	Y	ELEV.	HEIGHT	TEMP.	EXIT VEL.	DIAMETER	EXISTS	SOURCE	HOR	SCALAR
ID	CATS.		(METERS)	(METERS)	(METERS)	(METERS)	(DEG.K)	(M/SEC)	(METERS)				VARY BY
BEC_SV03	0	0.24469E+04	450543.2	5234354.5	392.6	192.44	361.48	12.64	8.84	YES	NO	NO	
BEC_SV04	0	0.77246E+03	450653.8	5234624.5	394.6	170.31	343.15	35.85	6.10	YES	NO	NO	
BEC_SV09	0	0.12600E+00	450631.3	5234411.0	396.2	13.72	699.82	20.21	0.24	YES	NO	NO	
BEC_SV10	0	0.94500E+00	450683.1	5234583.0	395.4	8.23	699.82	8.80	0.64	YES	NO	NO	
BEC_SV22	0	0.35000E-01	450555.3	5234413.5	394.3	9.14	847.04	10.49	0.20	YES	NO	NO	

GROUP ID		DATE										NETWORK	
		AVERAGE CONC	(YYMMDDHH)	RECEPTOR	(XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	GRID-ID						
ALL	HIGH 1ST HIGH VALUE IS	796.42310	ON 89032314: AT (	449175.12,	5238113.50,	392.89,	392.89,	0.00)	DC			
	HIGH 2ND HIGH VALUE IS	548.07581	ON 89032314: AT (	449935.44,	5237801.50,	392.58,	392.58,	0.00)	DC			

GROUP ID		DATE										NETWORK	
		AVERAGE CONC	(YYMMDDHH)	RECEPTOR	(XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	GRID-ID						
ALL	HIGH 1ST HIGH VALUE IS	456.37442	ON 89071812: AT (	450334.84,	5233172.50,	390.14,	390.14,	0.00)	DC			
	HIGH 2ND HIGH VALUE IS	424.45447	ON 89071412: AT (450334.84,	5233172.50,	390.14,	390.14,	0.00)	DC				

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** CONC OF SO2      IN MICROGRAMS/M**3      **

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APPENDIX B-1
Dispersion Modeling Parameters (From modeling conducted for permit No. 06100004-004)
Minnesota Power - Boswell Energy Center
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GROUP ID		AVERAGE CONC		DATE (YYMMDDHH)		RECEPTOR		(XR, YR, ZELEV, ZHILL, ZFLAG)		NETWORK OF TYPE GRID-ID	
ALL	HIGH	1ST HIGH VALUE IS	179.11818c	ON 87070824:	AT (	450300.12,	5232976.00,	390.40,	390.40,	0.00)	DC
	HIGH	2ND HIGH VALUE IS	157.92535	ON 87071224:	AT (	450230.66,	5232582.00,	390.14,	390.14,	0.00)	DC

APPENDIX B-1

Dispersion Modeling Parameters (From modeling conducted for permit No. 06100004-004)

Minnesota Power - Boswell Energy Center

Permit Number: 06100004-006

*** S02 Annual Itr 2; INL-INL, MN Metdata 1990

*** 23:25:58

**MODELOPTs:

PAGE 2

CONC

DFAULT ELEV

*** POINT SOURCE DATA ***

SOURCE	NUMBER	EMISSION RATE			BASE	STACK	STACK	STACK	STACK	BLDG	URBAN	CAP/	EMIS RATE
ID	PART.	(GRAMS/SEC)	X	Y	ELEV.	HEIGHT	TEMP.	EXIT VEL.	DIAMETER	EXISTS	SOURCE	HOR	SCALAR
	CATS.		(METERS)	(METERS)	(METERS)	(METERS)	(DEG.K)	(M/SEC)	(METERS)				VARY BY
BEC_SV03	0	0.59552E+03	450543.2	5234354.5	392.6	192.44	355.37	9.48	8.84	YES	NO	NO	
BEC_SV04	0	0.15932E+03	450653.8	5234624.5	394.6	170.31	338.71	26.89	6.10	YES	NO	NO	

*** THE SUMMARY OF MAXIMUM PERIOD (8760 HRS) RESULTS ***

GROUP ID		** CONC OF SO2	IN MICROGRAMS/M**3		**	
	AVERAGE CONC	RECEPTOR	(XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	GRID-ID	
ALL	1ST HIGHEST VALUE IS	3.70379 AT (	452275.28, 5233354.50,	388.01,	388.01,	0.00) DC

Dispersion Modeling Parameters (From modeling conducted for permit No. 06100004-004)
Minnesota Power - Boswell Energy Center
Permit Number: 06100004-006

*** 23:50:43

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DFAULT ELEV

	NUMBER	EMISSION RATE			BASE	STACK	STACK	STACK	STACK	BLDG	URBAN	CAP/	EMIS	RATE
SOURCE	PART.	(GRAMS/SEC)	X	Y	ELEV.	HEIGHT	TEMP.	EXIT	VEL.	DIAMETER	EXISTS	SOURCE	HOR	SCALAR
ID	CATS.		(METERS)	(METERS)	(METERS)	(METERS)	(DEG.K)	(M/SEC)		(METERS)				VARY BY
BEC_SV03	0	0.18352E+04	450543.2	5234354.5	392.6	192.44	355.37	9.48		8.84	YES	NO	NO	
BEC_SV04	0	0.57935E+03	450653.8	5234624.5	394.6	170.31	338.71	26.89		6.10	YES	NO	NO	

* *

GROUP ID		DATE										NETWORK	
		AVERAGE CONC	(YYMMDDHH)	RECEPTOR	(XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	GRID-ID						
ALL	HIGH 1ST HIGH VALUE IS	725.31946	ON 89032314: AT (	449346.16,	5237643.50,	392.58,	392.58,	0.00)	DC			
	HIGH 2ND HIGH VALUE IS	468.49081	ON 89032713: AT (	450022.28,	5237309.00,	392.28,	392.28,	0.00)	DC			

* *

GROUP ID		DATE										NETWORK	
		AVERAGE CONC	(YYMMDDHH)	RECEPTOR	(XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	GRID-ID						
ALL	HIGH 1ST HIGH VALUE IS	420.11865	ON 89072012: AT (	450751.59,	5233172.50,	388.01,	388.01,	0.00)	DC			
	HIGH 2ND HIGH VALUE IS	387.68100	ON 89071412: AT (	450334.84,	5233172.50,	390.14,	390.14,	0.00)	DC			

* *

		DATE	NETWORK				
GROUP ID	AVERAGE CONC	(YYMMDDHH)	RECEPTOR	(XR, YR,	ZELEV, ZHILL,	ZFLAG)	OF TYPE GRID-ID

APPENDIX B-1

Dispersion Modeling Parameters (From modeling conducted for permit No. 06100004-004)

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ALL	HIGH	1ST HIGH VALUE IS	163.01523c ON 87070724: AT (450543.22,	5232954.50,	389.84,	389.84,	0.00)	DC
	HIGH	2ND HIGH VALUE IS	139.78828c ON 87082724: AT (	450334.84,	5233172.50,	390.14,	390.14,	0.00)	DC

APPENDIX B-1

Dispersion Modeling Parameters (From modeling conducted for permit No. 06100004-004)

Minnesota Power - Boswell Energy Center

Permit Number: 06100004-006

*** S04 Annual Itr 2; INL-INL, MN Metdata 1987

*** 00:21:47

**MODELOPTs:

PAGE 2

CONC

DFAULT ELEV

*** POINT SOURCE DATA ***

SOURCE	NUMBER	EMISSION RATE			BASE	STACK	STACK	STACK	STACK	BLDG	URBAN	CAP/	EMIS RATE
ID	PART.	(GRAMS/SEC)	X	Y	ELEV.	HEIGHT	TEMP.	EXIT VEL.	DIAMETER	EXISTS	SOURCE	HOR	SCALAR
	CATS.		(METERS)	(METERS)	(METERS)	(METERS)	(DEG.K)	(M/SEC)	(METERS)				VARY BY
BEC_SV03	0	0.38045E+02	450543.2	5234354.5	392.6	192.44	329.26	8.50	8.84	YES	NO	NO	
BEC_SV04	0	0.21243E+03	450653.8	5234624.5	394.6	170.31	343.15	35.85	6.10	YES	NO	NO	
BEC_SV09	0	0.70000E-02	450631.3	5234411.0	396.2	13.72	699.82	20.21	0.24	YES	NO	NO	
BEC_SV10	0	0.94500E+00	450683.1	5234583.0	395.4	8.23	699.82	8.80	0.64	YES	NO	NO	
BEC_SV22	0	0.20000E-02	450555.3	5234413.5	394.3	9.14	847.04	10.49	0.20	YES	NO	NO	

*** THE SUMMARY OF MAXIMUM PERIOD (8760 HRS) RESULTS ***

GROUP ID	** CONC OF SO2	IN MICROGRAMS/M**3	**
	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE GRID-ID
ALL	1ST HIGHEST VALUE IS	9.22035 AT (450572.66, 5234629.00, 392.04, 392.04,	0.00) DC

APPENDIX B-1
Dispersion Modeling Parameters (From modeling conducted for permit No. 06100004-004)
Minnesota Power - Boswell Energy Center
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*** S04 Short-term Itr 2; INL-INL, MN Metdata 1987 *** 01:51:37
 **MODELOPTs: PAGE 2
 CONC DFAULT ELEV

*** POINT SOURCE DATA ***													
SOURCE	NUMBER	EMISSION	RATE		BASE	STACK	STACK	STACK	STACK	BLDG	URBAN	CAP/	EMIS RATE
ID	PART.	(GRAMS/SEC)	X	Y	ELEV.	HEIGHT	TEMP.	EXIT	VEL.	DIAMETER	EXISTS	SOURCE	HOR
	CATS.		(METERS)	(METERS)	(METERS)	(METERS)	(DEG.K)	(M/SEC)	(METERS)				SCALAR
													VARY BY
BEC_SV03	0	0.12555E+04	450543.2	5234354.5	392.6	192.44	329.26	8.50	8.84	YES	NO	NO	
BEC_SV04	0	0.77246E+03	450653.8	5234624.5	394.6	170.31	343.15	35.85	6.10	YES	NO	NO	
BEC_SV09	0	0.12600E+00	450631.3	5234411.0	396.2	13.72	699.82	20.21	0.24	YES	NO	NO	
BEC_SV10	0	0.94500E+00	450683.1	5234583.0	395.4	8.23	699.82	8.80	0.64	YES	NO	NO	
BEC_SV22	0	0.35000E-01	450555.3	5234413.5	394.3	9.14	847.04	10.49	0.20	YES	NO	NO	

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***													
** CONC OF SO2 IN MICROGRAMS/M**3 **													
DATE												NETWORK	
GROUP	ID	AVERAGE CONC		(YYMMDDHH)		RECEPTOR		(XR, YR, ZELEV, ZHILL, ZFLAG)				OF TYPE	GRID-ID
ALL	HIGH	1ST HIGH VALUE IS	688.04608	ON 87112214:	AT (	450543.22,	5237354.50,	392.88,	392.88,	0.00)	DC		
	HIGH	2ND HIGH VALUE IS	427.86185	ON 87072815:	AT (	449943.22,	5233315.50,	388.01,	388.01,	0.00)	DC		

*** THE SUMMARY OF HIGHEST 3-HR RESULTS ***													
** CONC OF SO2 IN MICROGRAMS/M**3 **													
DATE												NETWORK	
GROUP	ID	AVERAGE CONC		(YYMMDDHH)		RECEPTOR		(XR, YR, ZELEV, ZHILL, ZFLAG)				OF TYPE	GRID-ID
ALL	HIGH	1ST HIGH VALUE IS	398.49915	ON 89072012:	AT (	450716.88,	5233369.50,	388.01,	388.01,	0.00)	DC		
	HIGH	2ND HIGH VALUE IS	363.01028	ON 89071412:	AT (	450369.56,	5233369.50,	388.01,	388.01,	0.00)	DC		

*** THE SUMMARY OF HIGHEST 24-HR RESULTS ***
 ** CONC OF SO2 IN MICROGRAMS/M**3 **

APPENDIX B-1
Dispersion Modeling Parameters (From modeling conducted for permit No. 06100004-004)
Minnesota Power - Boswell Energy Center
Permit Number: 06100004-006

GROUP ID		AVERAGE CONC		DATE (YYMMDDHH)		RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)				NETWORK OF TYPE GRID-ID	
ALL	HIGH	1ST HIGH VALUE IS	155.74730c	ON 87070724:	AT (	450543.22,	5232954.50,	389.84,	389.84,	0.00)	DC
	HIGH	2ND HIGH VALUE IS	132.83893c	ON 87082724:	AT (	450334.84,	5233172.50,	390.14,	390.14,	0.00)	DC

APPENDIX B-1

Dispersion Modeling Parameters (From modeling conducted for permit No. 06100004-004)

Minnesota Power - Boswell Energy Center

Permit Number: 06100004-006

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*** AERMOD - VERSION 07026 ***      *** 0959-20 MN Power - Boswell Energy Center      ***      08/14/08
*** CO AERMOD Modeling; INL-INL, MN Metdata 1986      ***      16:34:23
**MODELOPTs:                                     PAGE 2
CONC                                DFAULT ELEV

*** POINT SOURCE DATA ***
SOURCE  NUMBER  EMISSION RATE      BASE  STACK  STACK  STACK  STACK  BLDG  URBAN  CAP/  EMIS RATE
ID      PART.   (GRAMS/SEC)    X      Y      ELEV.  HEIGHT TEMP.  EXIT VEL.  DIAMETER  EXISTS SOURCE HOR  SCALAR
-----
BEC_SV03  0    0.63408E+03  450543.2  5234354.5  392.6   192.44  329.26   8.50    8.84    YES    NO    NO
BEC_SV22  0    0.25000E+00  450519.0  5234415.0  394.3    9.14   772.59  22.92    0.25    YES    NO    NO
```

APPENDIX B-2**Dispersion Modeling Parameters For BEC4 CO Emissions** (Modeling conducted for permit No. 06100004-005)**Minnesota Power - Boswell Energy Center****Permit Number: 06100004-006**

Air Dispersion Modeling Point Source Parameters for MN Power – Boswell Energy Center (All Ave. Times)								
SRCID	X Coord.	Y Coord.	Elev.	Emis. Rate	Stack Height	Temp	Exit Velocity	Stack Diameter
	m	m	m	g/s	m	K	m/s	m
BEC_SV04	450,653.8	5,234,624.3	394.59	1210.67	170.31	343.15	35.85	6.10

APPENDIX C
Acid Rain Program Forms and Requirements
Minnesota Power - Boswell Energy Center
Permit Number: 06100004-006

Phase II NOx Compliance Plan

For more information, see instructions and refer to 40 CFR 76.9

This submission is: ☒ New (*Renewal*) ☐ Revised

Step 1 Indicate plant name, State, and ORIS code from NADB, if applicable	Clay Boswell Plant Name	MN State	1893 ORIS Code
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Step 2 Identify each affected Group 1 and Group 2 boiler using the boiler ID# from NADB, if applicable. Indicate boiler type: "CB" for cell burner, "CY" for cyclone, "DBW" for dry bottom wall-fired, "T" for tangentially fired, "V" for vertically fired, and "WB" for wet bottom. Indicate the compliance option selected for each unit

ID# 1	ID# 2	ID# 3	ID# 4	ID#	ID#
DBW	DBW	T	T		
Type	Type	Type	Type	Type	Type

(a) Standard annual average emission limitation of 0.50 lb/mmBtu (for <u>Phase I</u> dry bottom wall-fired boilers)						
(b) Standard annual average emission limitation of 0.45 lb/mmBtu (for <u>Phase I</u> tangentially fired boilers)						
(c) EPA-approved early election plan under 40 CFR 76.8 through 12/31/07 (also indicate above emission limit specified in plan)						

APPENDIX C
Acid Rain Program Forms and Requirements
Minnesota Power - Boswell Energy Center
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(d) Standard annual average emission limitation of 0.46 lb/mmBtu (for Phase II dry bottom wall-fired boilers)						
(e) Standard annual average emission limitation of 0.40 lb/mmBtu (for Phase II tangentially fired boilers)						
(f) Standard annual average emission limitation of 0.68 lb/mmBtu (for cell burner boilers)						
(g) Standard annual average emission limitation of 0.86 lb/mmBtu (for cyclone boilers)						
(h) Standard annual average emission limitation of 0.80 lb/mmBtu (for vertically fired boilers)						
(i) Standard annual average emission limitation of 0.84 lb/mmBtu (for wet bottom boilers)						
(j) NOx Averaging Plan (include NOx Averaging form)	X	X	X	X		
(k) Common stack pursuant to 40 CFR 75.17(a)(2)(i)(A) (check the standard emission limitation box above for most stringent limitation applicable to any unit utilizing stack)						

APPENDIX C
Acid Rain Program Forms and Requirements
Minnesota Power - Boswell Energy Center
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(l) Common stack pursuant to 40 CFR 75.17(a)(2)(i)(B) with NO_x Averaging (check the NO_x Averaging Plan box and include NO_x Averaging form)	X	X				
(m) EPA-approved common stack apportionment method pursuant to 40 CFR 75.17 (a)(2)(i)(C), (a)(2)(iii)(B), or (b)(2)						
(n) AEL (include Phase II AEL Demonstration Period, Final AEL Petition, or AEL Renewal form as appropriate)						
(o) Petition for AEL demonstration period or final AEL under review by U.S. EPA or demonstration period ongoing						
(p) Repowering extension plan approved or under review						

Standard Requirements

General. This source is subject to the standard requirements in 40 CFR 72.9 (consistent with 40 CFR 76.8(e)(1)(i)). These requirements are listed in this source's Acid Rain Permit.

Special Provisions for Early Election Units

Nitrogen Oxides. A unit that is governed by an approved early election plan shall be subject to an emissions limitation for NO_x as provided under 40 CFR 76.8(a)(2) except as provided under 40 CFR 76.8(e)(3)(iii).

Liability. The owners and operators of a unit governed by an approved early election plan shall be liable for any violation of the plan or 40 CFR 76.8 at that unit. The owners and operators shall be liable, beginning January 1, 2000, for fulfilling the obligations specified in 40 CFR Part 77.

Termination. An approved early election plan shall be in effect only until the earlier of January 1, 2008 or January 1 of the calendar year for which a termination of the plan takes effect. If the designated representative of the unit under an approved early election plan fails to demonstrate compliance with the applicable emissions limitation under 40 CFR 76.5 for any year during the period beginning January 1 of the first year the early election takes effect and ending December 31, 2007, the permitting authority will terminate the plan. The termination will take effect beginning January 1 of the year after the year for which there is a failure to demonstrate compliance, and the designated representative may not submit a new early election plan. The designated representative of the unit under an approved early election plan may terminate the plan any year prior to 2008 but may not submit a new early election plan. In order to terminate the plan, the designated representative must submit a notice under 40 CFR 72.40(d) by January 1 of the year for which the termination is to take effect. If an early election plan is terminated any year prior to 2000, the unit shall meet, beginning January 1, 2000, the applicable emissions limitation for NO_x for Phase II units with Group 1 boilers under 40 CFR 76.7. If an early election plan is terminated on or after 2000, the unit shall meet, beginning on the effective date of the termination, the applicable emissions limitation for NO_x for Phase II units with Group 1 boilers under 40 CFR 76.7.

APPENDIX C
Acid Rain Program Forms and Requirements
Minnesota Power - Boswell Energy Center
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Phase II NOx Averaging Plan

For more information, see instructions and refer to 40 CFR 76.11

This submission is: New ☐ ☒ Revised

Step 1

Identify the units participating in this averaging plan by plant name, State, and boiler ID# from NADB. In column (a), fill in each unit's applicable emission limitation from 40 CFR 76.5, 76.6, or 76.7. In column (b), assign an alternative contemporaneous annual emissions limitation in lb/mmBtu to each unit. In column (c), assign an annual heat input limitation in mmBtu to each unit. Continue to page 3 if necessary.

Plant Name	State	ID#	(a) Emission Limitation	(b) Alt. Contemp. Emission Limitation	(c) Annual Heat Input Limit
Clay Boswell	MN	1	0.46	0.45	3,500,000
Clay Boswell	MN	2	0.46	0.45	3,500,000
Clay Boswell	MN	3	0.40	0.39	19,000,000
Clay Boswell	MN	4	0.40	0.35	33,000,000
Syl Laskin	MN	1	0.40	0.50	4,600,000
Syl Laskin	MN	2	0.40	0.50	4,600,000
Taconite Harbor	MN	1	0.40	0.45	5,600,000
Taconite Harbor	MN	2	0.40	0.45	5,600,000
Taconite Harbor	MN	3	0.40	0.45	5,600,000

Step 2

Use the formula to enter the Btu-weighted annual emission rate averaged over the units if they are operated in accordance with the proposed averaging plan and the Btu-weighted annual average emission rate for the same units if they are operated in compliance with 40 CFR 76.5, 76.6, or 76.7. The former must be less than or equal to the latter.

Btu-weighted annual emission rate
averaged over the units if they are
operated in accordance with the
proposed averaging plan

Btu-weighted annual average
emission rate for same units
operated in compliance with
40 CFR 76.5, 76.6, or 76.7

0.40

0.40

APPENDIX C
Acid Rain Program Forms and Requirements
Minnesota Power - Boswell Energy Center
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$$\frac{\sum_{i=1}^n (R_{Li} \times HI_i)}{\sum_{i=1}^n HI_i} \leq \frac{\sum_{i=1}^n [R_{li} \times HI_i]}{\sum_{i=1}^n HI_i}$$

Where,

R_{Li} = Alternative contemporaneous annual emission limitation unit i, in lb/mmBtu, as specified in column (b) of Step 1:

R_{li} = Applicable emission limitation for unit i, in lb/mmBtu, as specified in column (a) of Step 1:

HI_i = Annual heat input for unit i, in mmBtu, as specified in column (c) of Step 1:

n = Number of units in the averaging plan

☒ This plan is effective for calendar year 2008 through calendar year 2012 unless notification to terminate the plan is given.

☐ Treat this plan as ☐ identical plans, each effective for one calendar year for the following calendar years _____, _____, _____, _____, and _____ unless notification to terminate one or more of these plans is given.

APPENDIX C
Acid Rain Program Forms and Requirements
Minnesota Power - Boswell Energy Center
Permit Number: 06100004-006

Special Provisions

Emission Limitations

Each affected unit in an approved averaging plan is in compliance with the Acid Rain emission limitation for NO_x under the plan only if the following requirements are met:

- (i) For each unit, the unit's actual annual average emission rate for the calendar year, in lb/mmBtu, is less than or equal to its alternative contemporaneous annual emission limitation in the averaging plan, and
 - (a) For each unit with an alternative contemporaneous emission limitation less stringent than the applicable emission limitation in 40 CFR 76.5, 76.6, or 76.7, the actual annual heat input for the calendar year does not exceed the annual heat input limit in the averaging plan,
 - (b) For each unit with an alternative contemporaneous emission limitation more stringent than the applicable emission limitation in 40 CFR 76.5, 76.6, or 76.7, the actual annual heat input for the calendar year is not less than the annual heat input limit in the averaging plan, or
- (ii) If one or more of the units does not meet the requirements of (i), the designated representative shall demonstrate, in accordance with 40 CFR 76.11(d)(1)(ii)(A) and (B), that the actual Btu-weighted annual average emission rate for the units in the plan is less than or equal to the Btu-weighted annual average rate for the same units had they each been operated, during the same period of time, in compliance with the applicable emission limitations in 40 CFR 76.5, 76.6, or 76.7.
- (iii) If there is a successful group showing of compliance under 40 CFR 76.11(d)(1)(ii)(A) and (B) for a calendar year, then all units in the averaging plan shall be deemed to be in compliance for that year with their alternative contemporaneous emission limitations and annual heat input limits under (i).

Liability

The owners and operators of a unit governed by an approved averaging plan shall be liable for any violation of the plan or this section at that unit or any other unit in the plan, including liability for fulfilling the obligations specified in part 77 of this chapter and sections 113 and 411 of the Act.

Termination

The designated representative may submit a notification to terminate an approved averaging plan, in accordance with 40 CFR 72.40(d), no later than October 1 of the calendar year for which the plan is to be terminated.

APPENDIX C
Acid Rain Program Forms and Requirements
Minnesota Power - Boswell Energy Center
Permit Number: 06100004-006

Phase II Permit Application

For more information, see instructions and refer to 40 CFR 72.30 and 72.31

This submission is ☒ New ☐ Revised

Clay Boswell	MN	1893
Plant Name	State	ORIS Code

Compliance
Plan

a Boiler ID#	b Unit Will Hold Allowances in Accordance with 40 CFR 72.9(c)(1)	c Repowering Plan	d New Units Commence Operation Date	e New Units Monitor Certification Deadline
1	Yes	no		
2	Yes	no		
3	Yes	no		
4	Yes	no		
	Yes			
	Yes			
	Yes			
	Yes			
	Yes			
	Yes			
	Yes			

Standard Requirements

Permit Requirements.

(1) The designated representative of each affected source and each affected unit at the source shall:

APPENDIX C

Acid Rain Program Forms and Requirements

Minnesota Power - Boswell Energy Center

Permit Number: 06100004-006

- (i) Submit a complete Acid Rain permit application (including a compliance plan) under 40 CFR part 72 in accordance with the deadlines specified in 40 CFR 72.30; and
 - (ii) Submit in a timely manner any supplemental information that the permitting authority determines is necessary in order to review an Acid Rain permit application and issue or deny an Acid Rain permit;
- (2) The owners and operators of each affected source and each affected unit at the source shall:
 - (i) Operate the unit in compliance with a complete Acid Rain permit application or a superseding Acid Rain permit issued by the permitting authority; and
 - (ii) Have an Acid Rain Permit.

Monitoring Requirements.

- (1) The owners and operators and, to the extent applicable, designated representative of each affected source and each affected unit at the source shall comply with the monitoring requirements as provided in 40 CFR parts 74, 75, and 76.
- (2) The emissions measurements recorded and reported in accordance with 40 CFR part 75 shall be used to determine compliance by the unit with the Acid Rain emissions limitations and emissions reduction requirements for sulfur dioxide and nitrogen oxides under the Acid Rain Program.
- (3) The requirements of 40 CFR parts 74 and 75 shall not affect the responsibility of the owners and operators to monitor emissions of other pollutants or other emissions characteristics at the unit under other applicable requirements of the Act and other provisions of the operating permit for the source.

Sulfur Dioxide Requirements.

- (1) The owners and operators of each source and each affected unit at the source shall:
 - (i) Hold allowances, as of the allowance transfer deadline, in the unit's compliance subaccount (after deductions under 40 CFR 73.34(c)) not less than the total annual emissions of sulfur dioxide for the previous calendar year from the unit; and
 - (ii) Comply with the applicable Acid Rain emissions limitations for sulfur dioxide.
- (2) Each ton of sulfur dioxide emitted in excess of the Acid Rain emissions limitations for sulfur dioxide shall constitute a separate violation of the Act.
- (3) An affected unit shall be subject to the requirements under paragraph (1) of the sulfur dioxide requirements as follows:
 - (i) Starting January 1, 2000, an affected unit under 40 CFR 72.6(a)(2); or
 - (ii) Starting on the later of January 1, 2000 or the deadline for monitor certification under 40 CFR part 75, an affected unit under 40 CFR 72.6(a)(3).
- (4) Allowances shall be held in, deducted from, or transferred among Allowance Tracking System accounts in accordance with the Acid Rain Program.
- (5) An allowance shall not be deducted in order to comply with the requirements under paragraph (1)(i) of the sulfur dioxide requirements prior to the calendar year for which the allowance was allocated.
- (6) An allowance allocated by the Administrator under the Acid Rain Program is a limited authorization to emit sulfur dioxide in accordance with the Acid Rain Program. No provision of the Acid Rain Program, the Acid Rain permit application, the Acid Rain permit, or the written exemption under 40 CFR 72.7 and 72.8 and no provision of law shall be construed to limit the authority of the United States to terminate or limit such authorization.
- (7) An allowance allocated by the Administrator under the Acid Rain Program does not constitute a property right.

Nitrogen Oxides Requirements. The owners and operators of the source and each affected unit at the source shall comply with the applicable Acid Rain emissions limitation for nitrogen oxides.

Excess Emissions Requirements.

- (1) The designated representative of an affected unit that has excess emissions in any calendar year shall submit a proposed offset plan, as required under 40 CFR part 77.
- (2) The owners and operators of an affected unit that has excess emissions in any calendar year shall:
 - (i) Pay without demand the penalty required, and pay upon demand the interest on that penalty, as required by 40 CFR part 77; and
 - (ii) Comply with the terms of an approved offset plan, as required by 40 CFR part 77.

Recordkeeping and Reporting Requirements.

- (1) Unless otherwise provided, the owners and operators of the source and each affected unit at the source shall keep on site at the source each of the following documents for a period of 5 years from the date the document is created. This period may be extended for cause, at any time prior to the end of 5 years, in writing by the Administrator or permitting authority:
 - (i) The certificate of representation for the designated representative for the source and each affected unit at the source and all documents that demonstrate the truth of the statements in the certificate of representation, in accordance with 40 CFR 72.24; provided that the certificate and documents shall be retained on site at the source beyond such 5-year period until such documents are superseded because of the submission of a new certificate of representation changing the designated representative;
 - (ii) All emissions monitoring information, in accordance with 40 CFR part 75;

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(iii) Copies of all reports, compliance certifications, and other submissions and all records made or required under the Acid Rain Program; and,

(iv) Copies of all documents used to complete an Acid Rain permit application and any other submission under the Acid Rain Program or to demonstrate compliance with the requirements of the Acid Rain Program.

(2) The designated representative of an affected source and each affected unit at the source shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR part 72 subpart I and 40 CFR part 75.

Liability.

(1) Any person who knowingly violates any requirement or prohibition of the Acid Rain Program, a complete Acid Rain permit application, an Acid Rain permit, or a written exemption under 40 CFR 72.7 or 72.8, including any requirement for the payment of any penalty owed to the United States, shall be subject to enforcement pursuant to section 113(c) of the Act.

(2) Any person who knowingly makes a false, material statement in any record, submission, or report under the Acid Rain Program shall be subject to criminal enforcement pursuant to section 113(c) of the Act and 18 U.S.C. 1001.

(3) No permit revision shall excuse any violation of the requirements of the Acid Rain Program that occurs prior to the date that the revision takes effect.

(4) Each affected source and each affected unit shall meet the requirements of the Acid Rain Program.

(5) Any provision of the Acid Rain Program that applies to an affected source (including a provision applicable to the designated representative of an affected source) shall also apply to the owners and operators of such source and of the affected units at the source.

(6) Any provision of the Acid Rain Program that applies to an affected unit (including a provision applicable to the designated representative of an affected unit) shall also apply to the owners and operators of such unit. Except as provided under 40 CFR 72.44 (Phase II repowering extension plans) and 40 CFR 76.11 (NO_x averaging plans), and except with regard to the requirements applicable to units with a common stack under 40 CFR part 75 (including 40 CFR 75.16, 75.17, and 75.18), the owners and operators and the designated representative of one affected unit shall not be liable for any violation by any other affected unit of which they are not owners or operators or the designated representative and that is located at a source of which they are not owners or operators or the designated representative.

(7) Each violation of a provision of 40 CFR parts 72, 73, 74, 75, 76, 77, and 78 by an affected source or affected unit, or by an owner or operator or designated representative of such source or unit, shall be a separate violation of the Act.

Effect on Other Authorities. No provision of the Acid Rain Program, an Acid Rain permit application, an Acid Rain permit, or a written exemption under 40 CFR 72.7 or 72.8 shall be construed as:

(1) Except as expressly provided in title IV of the Act, exempting or excluding the owners and operators and, to the extent applicable, the designated representative of an affected source or affected unit from compliance with any other provision of the Act, including the provisions of title I of the Act relating to applicable National Ambient Air Quality Standards or State Implementation Plans;

(2) Limiting the number of allowances a unit can hold; provided, that the number of allowances held by the unit shall not affect the source's obligation to comply with any other provisions of the Act;

(3) Requiring a change of any kind in any State law regulating electric utility rates and charges, affecting any State law regarding such State regulation, or limiting such State regulation, including any prudence review requirements under such State law;

(4) Modifying the Federal Power Act or affecting the authority of the Federal Energy Regulatory Commission under the Federal Power Act; or,

(5) Interfering with or impairing any program for competitive bidding for power supply in a State in which such program is established.

TECHNICAL SUPPORT DOCUMENT
For
DRAFT/PROPOSED AIR EMISSION PERMIT NO. 06100004-006

This technical support document (TSD) is intended for all parties interested in the draft/proposed permit and to meet the requirements that have been set forth by the federal and state regulations (40 CFR § 70.7(a)(5) and Minn. R. 7007.0850, subp. 1). The purpose of this document is to provide the legal and factual justification for each applicable requirement or policy decision considered in the preliminary determination to issue the draft/proposed permit.

1. General Information

1.1 Applicant and Stationary Source Location:

Table 1. Applicant and Source Address

Applicant/Address	Stationary Source/Address (SIC Code: 4911)
Minnesota Power Division of Allete, Inc. 30 West Superior Street Duluth MN, 55802	Minnesota Power - Boswell Energy Center 1210 Northwest 3rd Street P.O. Box 128 Cohasset, Itasca County, MN 55721
Contact: Melissa Weglarz Phone: (218) 355-3321 FAX: (218) 723-3916	

1.2 Facility Description

The Boswell Energy Center (facility) is a coal-fired electric utility steam generating plant. Emission units at the facility include four power boilers, emergency engine generators, and fuel, additive and ash handling equipment. The main fuel for all boilers is sub-bituminous coal. They may also burn pipeline natural gas, distillate oil, limited amounts of boiler cleaning agents, used oil, oily coal, oily paper-based floor dry, wastewater treatment plant sludge, and oily materials (earth substrate with petroleum product). Boilers 1 and 2 emissions are controlled by baghouses, over-fire air, and selective non-catalytic reduction. Boiler 3 emissions are controlled by low nitrogen oxide (NO_x) burners (LNB), over-fire air, selective catalytic reduction, a baghouse filter, and a flue gas desulfurization system. Boiler 4 (also referred to as Unit #4 or Power Boiler #4) emissions are controlled by a wet venturi scrubber/electrostatic precipitator, selective non-catalytic reduction, a sulfur dioxide spray tower, separated over-fire air, and LNB. The facility operates year-round.

1.3 Description of the Activities Allowed by this Permit Action

This is a major amendment to incorporate the revised PM/PM₁₀ compliance assurance monitoring (CAM) plan for Boiler #3 (EU 003); add deadlines for future EU 003 PM, PM₁₀, lead, and hydrogen fluoride emissions testing; clarify the purpose of the continuous opacity monitor (COM) in the existing particulate matter CAM plans for Boilers #1, #2, and #4 (listed under CE 001, CE 002, CE 004, and CE 005; changed the purpose of the COM to clarify that COMs are used for PM CAM, and not 'opacity CAM'); and remove completed requirements

triggered by recent permit actions (Boiler #3 PM/PM₁₀ CAM plan submittal and Boiler #4 startup notification requirement after completion of modifications authorized by permit No. 06100004-005).

Facility Emissions:

No emission changes are allowed by or associated with this permit action.

Table 2. Facility Classification

Classification	Major/Affected Source	Synthetic Minor	Minor
PSD	PM, PM ₁₀ , PM _{2.5} , SO ₂ , NO _x , CO, VOC, GHG		Pb
Part 70 Permit Program	PM ₁₀ , PM _{2.5} , SO ₂ , NO _x , CO, VOC, GHG		Pb
Part 63 NESHAP	Single HAP, Total HAPs		

2. Regulatory and/or Statutory Basis

New Source Review

The facility is an existing major source under New Source Review regulations. This permit action does not change this status nor are any changes to the facility authorized by this permit.

Part 70 Permit Program

The facility is a major source under the Part 70 permit program.

New Source Performance Standards (NSPS)

Boiler #4 is a fossil fuel-fired steam generator subject to 40 CFR pt. 60, subp. D because construction of the unit commenced after August 17, 1971 and before September 18, 1978. Emergency generator EU 023 is subject to part 60 subp. IIII. No other units at the facility are subject to New Source Performance Standards. This permit action does not change NSPS applicability for any emission unit at the facility.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

The facility is a major source of hazardous air pollutants. The boilers are not subject to any promulgated NESHAPs. EU 023 is an emergency engine generator (smaller than 500 hp) that is exempt from the requirements of the standard, other than initial notification requirements in 40 CFR § 63.6600.

Compliance Assurance Monitoring (CAM)

CAM applies to each utility boiler at the facility. This permit action incorporates requirements of a 2010 CAM plan submitted for EU 003 originally required by permit No. 06100004-003. This plan was required due to a change of EU 003 control equipment authorized by permit No. 06100004-003 (issued March 27, 2007).

Environmental Review & AERA

Environmental review does not apply to this action because there is no emissions increase authorized by this permit action.

Minnesota State Rules

This permit action does not change the applicability of Minnesota Rules to the facility.

Table 3. Regulatory Overview of Units Affected by the Permit Amendment

Subject Item*	Applicable Regulations	Comments:
EU 003, CE 021	40 CFR part 64	Compliance Assurance Monitoring for PM and PM ₁₀
EU 003	Minn. R. 7017.2020, subp. 1	Removed the test frequency plan requirement because this has been completed.

*Location of requirement in the permit (e.g., EU, SV, GP, etc.).

3. Technical Information

3.1 Compliance Assurance Monitoring

The Permittee submitted a CAM proposal as required by 40 CFR § 64.3 for EU 003. The plan is attached to this TSD. Basic concepts of the plan are described in Table 4.

Table 4. Compliance Assurance Monitoring

Subject Item*	Requirement	Additional Monitoring	Discussion
CE 001 CE 002 CE 004 & CE 005	40 CFR Sections 64.3 and 64.6	Use COM as a partial indicator of PM emissions compliance.	Revised existing requirement by clarifying that the COM is used as an indicator of PM emissions compliance (instead of stating that the COM is used to measure opacity as part of the approved monitoring for opacity, because opacity is not subject to CAM).
CE 021	40 CFR Sections 64.3 and 64.6	Use opacity and pressure differential as indicators of PM and PM ₁₀ emissions compliance.	The COM and pressure differential are indicators of PM and PM ₁₀ emissions compliance. 14% opacity 11.0 inches w.c. pressure differential are trigger values. The opacity trigger value is limiting relative to PM and PM ₁₀ emissions (opacity will surpass the 14% trigger level before PM or PM ₁₀ emissions will exceed the respective limit). The differential pressure is used as an indicator of proper CE 021 (fabric filter) operation. Exceedance of either value prompts investigative and corrective action.

*Where the requirement appears in the permit (e.g., EU, SV, GP)

3.2 Insignificant Activities

Minnesota Power Boswell Energy Center has numerous processes classified as insignificant activities. These are listed in the Appendix to the permit. No changes to insignificant activities are associated with this permit amendment.

3.3 Comments Received (completed after start of public comment period)

Public Notice Period: April 28, 2011 - May 27, 2011

EPA 45-day Review Period: April 28, 2011 – June 13, 2011

No comments were received. However during the public notice period (on May 26, 2011) the Permittee requested updating of the Unit #4 mercury control plan deadline. The deadline was revised in 2010 by the Minnesota Legislature from July 1, 2011, to July 1, 2015. This request could not be accommodated because this change requires a major amendment. However, an additional requirement pertaining to the submittal of annual mercury control plans by July 1 of each year (until submittal of the plan due July 1, 2015), was added to the permit. This requirement (from Minn. Stat. Section 216B.6581, subd. 5(b)), was added to Table B of the permit for EU 004 without re-public noticing because this change can be made as an administrative amendment (see Minn. R. 7007.1400, subp. 1.C) and administrative amendments do not require public noticing or EPA review.

4. Permit Fee Assessment

TSD attachment 2 contains the MPCA assessment of Application and Additional Points used to determine the permit application fee for this permit action as required by Minn. R. 7002.0019. The permit action is for a major amendment (for revising the unit 3 CAM plan) received after the effective date of the rule (July 1, 2009) and a re-opening for revision of unit 3 stack test frequency based on 2010 stack testing.

5. Conclusion

Based on the information provided by Minnesota Power Division of Allete, Inc., the MPCA has reasonable assurance that the proposed operation of the emission facility, as described in the Air Emission Permit No. 06100004-006 and this TSD, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules.

Staff Members on Permit Team: Marshall Cole (permit writer/engineer)
Steve Palzkill (enforcement)
Andy Place (stack testing)
Steve Gorg (peer reviewer)

AQ File No. 73B;

DQ #3286 (primary), #3190 (boiler #3 07/09/2010 NOC and test frequency plan approval)

Attachments: 1. Facility Description and CD-01 Forms
2. Points Calculator
3. Boiler #3 PM/PM₁₀ CAM plan

Attachment 1 To Technical Support Document For Air Emissions Permit No. 06100004-006:

CD-01 Revisions (Note: No revisions were made to the Facility Description)



COMPLIANCE PLAN **CD-01**

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: EU 003 Power Boiler 3

Associated Items: CE 019 Low NOx Burners/Over-Fire Air
CE 020 SCR (Selective Catalytic Reduction)
CE 021 Fabric Filter - High Temperature, i.e., T>250 Degrees F
CE 022 Wet Flue Gas Desulfurization
CE 029 Carbon Injection
GP 004 Boilers 1-4 Sulfur Dioxide Limits
MR 024 Blr 3 CO
MR 025 Blr 3 Mercury
MR 027 Blr 3 Opacity
MR 036 Blr 3 SO2
MR 037 Blr 3 NOx
MR 038 Blr 3 CO2
MR 039 Blr 3 Air Flow
SV 003

	NC/ CA	Type	Citation	Requirement								
1.0		CD	hdr	EMISSION LIMITS								
2.0		LIMIT	Minn. R. 7011.0510, subp. 1	Total Particulate Matter: less than or equal to 0.60 lbs/million Btu heat input								
3.0		LIMIT	Minn. R. 7007.0800, subp. 2	Total Particulate Matter: less than or equal to 0.014 lbs/million Btu heat input for filterable PM.								
4.0		LIMIT	Minn. R. 7007.0800, subp. 2	PM < 10 micron: less than or equal to 0.035 lbs/million Btu heat input filterable plus organic and inorganic condensables.								
5.0		LIMIT	Minn. R. 7011.0510, subp. 2	Opacity: less than or equal to 20 percent opacity using 6-minute Average except for one six-minute period per hour of not more than 60 percent opacity.								
6.0		CD	40 CFR Section 76.8 Early election for Group 1, Phase II boilers and 40 CFR Section 76.5(a)(1) Minn. R. 7011.0553	NOx Averaging Plan Maintain an annual average NOx emission rate of 0.40 lbs/MMBtu and limit the annual heat input to less than or equal to 19,000,000 mmBtu per year. OR Maintain a Btu-weighted annual average emission rate in lbs/mmBtu, averaged over the units specified in the NOx averaging plan, that is less than or equal to the Btu-weighted annual average emission rate averaged over the same units had they each been operated during the same period of time in compliance with the applicable emission limitations in 40 CFR Sections 76.5, 76.6, or 76.7. Units covered in the plan are: <table><tr><td>Plant</td><td>Boiler ID#</td></tr><tr><td>Clay Boswell</td><td>1, 2, 3, 4</td></tr><tr><td>Syl Laskin</td><td>1, 2</td></tr><tr><td>Taconite Harbor</td><td>1, 2, 3</td></tr></table>	Plant	Boiler ID#	Clay Boswell	1, 2, 3, 4	Syl Laskin	1, 2	Taconite Harbor	1, 2, 3
Plant	Boiler ID#											
Clay Boswell	1, 2, 3, 4											
Syl Laskin	1, 2											
Taconite Harbor	1, 2, 3											
7.0		LIMIT	Minn. R. 7007.0800, subp. 2	Nitrogen Oxides: less than or equal to 0.07 lbs/million Btu heat input based on a 30-day rolling average. This limit does not apply during times of startup, shutdown or malfunction.								
8.0		CD	hdr	See GP004 for sulfur dioxide limits.								
9.0		LIMIT	Title I Condition: to avoid major modification classification under 40 CFR Section 52.21 and Minn. R. 7007.3000	Hydrogen fluoride: less than or equal to 0.0018 lbs/million Btu heat input .								
10.0		LIMIT	Title I Condition: 40 CFR Section 52.21 BACT limit	Carbon Monoxide: less than or equal to 0.15 lbs/million Btu heat input on a 24-hour rolling average. This limit does not apply during periods of startup, shutdown, or malfunction.								



COMPLIANCE PLAN **CD-01**

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

11.0		LIMIT	Title I Condition: to avoid major modification classification under 40 CFR Section 52.21 and Minn. R. 7007.3000	Lead: less than or equal to 0.00004 lbs/million Btu heat input .
12.0		CD	hdr	OPERATING REQUIREMENTS
13.0		CD	Minn. R. 7007.0800, subp. 2	Fuel use: limited to sub-bituminous coal, boiler cleaning agents, distillate oil, oily coal, used oil, wastewater treatment plant sludge, oily paper-based floor dry, pipeline natural gas, propane, and oily materials (includes mixtures of earth substrate (soil, rocks, sod, etc.) or man-made petroleum adsorption material and various petroleum derived fuels (hydraulic, transformer (less than 50 ppm PCB), crankcase or lubricating oils, diesel fuel, and crude oil)). Note: the Permittee is prohibited from using oily materials or wastewater treatment plant sludge as fuel until the Permittee satisfactorily completes the performance testing requirements for these fuels under EU003.
14.0		CD	Minn. R. 7007.0800, subp. 2	Boiler cleaning agents limited to: EDTA type and Ammonium Bromate, are generated on-site, 5% of total mass input, oxygen limited to 3% or greater, agents may only be burned while the boiler is operating at 75 percent of rated capacity or greater.
15.0		CD	Minn. R. 7007.0800, subp. 2	Burn off-specification and on-specification used oil in accordance with Minn. R. ch. 7045, and not to exceed 2,456 gallons per hour.
16.0		CD	Minn. R. 7007.0800, subp. 2	Vent all emissions to a selective catalytic reduction system (CE 020), a fabric filter (CE 021), and a wet flue gas desulfurization system (CE 022).
17.0		CD	hdr	CONTINUOUS MONITORING
18.0		CD	40 CFR Section 75.10; Minn. R. 7017.1020; 40 CFR pt. 64	Measure all opacity, SO ₂ , NO _x , and CO ₂ emissions from affected units in accordance with 40 CFR Section 75.10. See GP 002 for requirements regarding opacity monitoring, and GP 003 for requirements regarding SO ₂ and NO _x monitoring. The SO ₂ and NO _x monitors shall be capable of producing emission rates in units of lb/mmBtu on a one-hour average, a three-hour average and on a 30-day rolling average. The opacity monitor required by this permit shall be located after the fabric filter and prior to the flue gas desulfurization unit.
19.0		CD	Title I Condition: monitoring for BACT limit; Minn. R. 7007.0800, subp. 4	Operate a continuous emission monitor to measure all EU 003 CO emissions. The monitor shall be capable of producing emission rates in units of lb/mmBtu on a 24-hour rolling average. See MR 024 for requirements regarding CO monitoring.
20.0		CD	40 CFR pt. 64	Operate and maintain the continuous opacity monitor as a partial indicator of compliance with the PM and PM ₁₀ limits.
21.0		CD	Minn. Stat. Section 216B.681	Mercury Emissions Monitoring: Use a Hg CEMS to measure Hg emissions from EU 003. Additional Hg monitoring requirements are located under subject item MR 025.
22.0		CD	Minn. Stat. Section 216B.681	Establish Baseline Mercury Emission Rate: Use mercury monitors to establish the baseline mercury emission rate for EU 003. This is a state only requirement and is not enforceable by the EPA administrator and citizens under the Clean Air Act.
23.0		CD	hdr	PERFORMANCE TESTING
24.0		S/A	Minn. R. 7017.2020, subp. 1 40 CFR pt. 64	Performance Test: due before end of each calendar 60 months starting 04/01/2010 for PM ₁₀ emissions.
25.0		S/A	Minn. R. 7017.2020, subp. 1 40 CFR pt. 64	Performance Test: due before end of each calendar 60 months starting 03/31/2010 for (front-half) particulate matter emissions.
26.0		S/A	Title I Condition: to avoid major modification classification under 40 CFR Section 52.21 and Minn. R. 7007.3000	Performance Test: due before end of each calendar 60 months starting 03/31/2010 for hydrogen fluoride emissions.
27.0		S/A	Title I Condition: to avoid major modification classification under 40 CFR Section 52.21 and Minn. R. 7007.3000	Performance Test: due before end of each calendar 60 months starting 03/30/2010 lead emissions.



COMPLIANCE PLAN CD-01

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

28.0		CD	Minn. R. 7017.2025, subp. 2(A) and 3(B)	<p>Boiler Alternative Operating Conditions for Performance Testing:</p> <p>Alternative Operating Conditions during testing are defined as 90% to 100% of the boiler's maximum normal (continuous) operating load or the maximum permitted operating rate, whichever is lower. The basis for this number must be included in the test plan. If testing is conducted at the alternative operating condition established, an operating limit will not be established as a result of performance testing.</p> <p>In no case will the new operating rate limit be higher than allowed by an existing permit condition.</p>
29.0		CD	Minn. R. 7017.2025, subp. 3(B)	<p>Boiler Operating Conditions Not Meeting the Alternative Operating Conditions During Performance Testing:</p> <p>If performance testing is not conducted at or above the established alternative operating condition, then the boiler operating rate will be limited on an 8-hour block average based on the following:</p> <p>(1) If the results of the performance test are greater than 80% of any applicable emission limit for which compliance is demonstrated, then boiler operation will be limited to the tested operating rate.</p> <p>(2) If results are less than or equal to 80% of all applicable emission limits for which compliance is demonstrated, boiler operation will be limited to 110% of the tested operating rate.</p> <p>In no case will the new operating rate limit be higher than allowed by an existing permit condition.</p>
30.0		CD	Minn. R. 7007.0800, subp. 2	<p>STET (Short Term Emergency and Testing) Operating hours limit:</p> <p>The boiler may operate up to 40 hours per year to demonstrate the Uniform Rating of Generating Equipment (URGE) capacity and to meet emergency energy supply needs. Maintain documentation of all STET operation to demonstrate compliance with this limit. The boiler must meet emission limits during STET operation.</p>
31.0		CD	Minn. R. 7007.0800, subp. 2	<p>STET Operation Definition that applies to Boilers that Meet or do Not Meet the Alternative Operating Condition for Performance Testing:</p> <p>If performance test results demonstrate compliance at 80% or less of any applicable emission limits for any tested pollutant, STET operation is defined as operation beyond 110% of the average operating rate achieved during that performance test.</p> <p>If performance test results demonstrate compliance at greater than 80% any applicable emission limit for any tested pollutant, STET operation is defined as operation beyond 100% of the average operating rate achieved during that performance test.</p> <p>In no case will STET operation be higher than allowed by an existing permit condition.</p>
32.0		CD	Minn. R. 7017.2020, subp. 4	<p>The results of a performance test are not final until issuance of a review letter by MPCA, unless specified otherwise by Minn. R. 7017.2001 - 7017.2060.</p>
33.0		S/A	Minn. R. 7017.2020, subp. 1	<p>Performance Test: due 30 days after Performance Test Notification (written) of intent to conduct a performance test while burning waste water sludge. The test shall be for determining compliance with the particulate matter emission limit in Minn. R. 7011.0510, subp. 1. The Permittee shall also concurrently measure CO emissions. Except for the purpose of conducting this performance test, the Permittee shall not use this material as a fuel until the Permittee receives notification from the agency that compliance was demonstrated during the Waste Water Sludge Performance Test.</p>
34.0		S/A	Minn. R. 7017.2020, subp. 1.	<p>Performance Test: due 30 days after Performance Test Notification (written) of intent to conduct a performance test while burning oily materials. The test shall be for determining compliance with the particulate matter emission limit in Minn. R. 7011.0510, subp. 1. The Permittee shall also concurrently measure CO emissions. Except for the purpose of conducting this performance test, the Permittee shall not use this material as a fuel until the Permittee receives notification from the agency that compliance was demonstrated during the Oily Materials Performance Test.</p>



COMPLIANCE PLAN **CD-01**

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: EU 004 Power Boiler 4

Associated Items: CE 004 Venturi Scrubber

CE 005 Electrostatic Precipitator - High Efficiency

CE 006 Spray Tower

CE 027 LNB/SOFA

CE 028 ROTA-Mix SNCR

GP 004 Boilers 1-4 Sulfur Dioxide Limits

MR 026 Blr 4 Mercury

MR 040 Blr 4 Opacity

MR 041 Blr 4 Air Flow

MR 042 Blr 4 SO₂

MR 043 Blr 4 NO_x

MR 044 Blr 4 CO₂

MR 045 Blr 4 CO

SV 004

	NC/ CA	Type	Citation	Requirement								
1.0		CD	hdr	EMISSION LIMITS								
2.0		LIMIT	Title I Condition: 40 CFR Section 52.21(j) PSD BACT limit and ambient impacts analysis; 40 CFR Section 60.42(a)(1)	Total Particulate Matter: less than or equal to 0.10 lbs/million Btu heat input								
3.0		LIMIT	40 CFR Section 60.42(a)(2); Minn. R. 7011.0555	Opacity: less than or equal to 20 percent opacity based on a six-minute average, except for one six-minute average per hour not to exceed 27%.								
4.0		CD	hdr	See GP 004 for sulfur dioxide limits.								
5.0		CD	40 CFR Section 72.9(c)(1)(ii), 40 CFR Section 72.9(g)(4)	Comply with the applicable Acid Rain emissions limitation for sulfur dioxide. Takes effect for years beginning January 1, 2000.								
6.0		LIMIT	Title I Condition: 40 CFR Section 52.21(j) PSD BACT limit and ambient impacts analysis; 40 CFR Section 60.44	Nitrogen Oxides: less than or equal to 0.7 lbs/million Btu heat input using 3-hour Average for solid fossil fuels, less than 0.3 lb/mmBtu from liquid fossil fuels, and less then 0.2 lb/mmBtu for gaseous fossil fuels. When fossil fuels are burned simultaneously in any combination, the applicable standard shall be determined by proration using the following formula: PS = [0.2x + 0.3y + 0.7z]/(x+y+z) where PS is the prorated NOx standard, x is the % heat input from gaseous fossil fuels, y is the % heat input from liquid fossil fuels, and z is the % heat input from solid fossil fuels.								
7.0		CD	40 CFR Section 76.11; Minn. R. 7011.0553	<p>NOx Averaging Plan</p> <p>Maintain an annual average NOx emission rate of 0.40 lbs/MMBtu and limit the annual heat input to less than or equal to 33,000,000 mmBtu per year.</p> <p>OR</p> <p>Maintain a Btu-weighted annual average emission rate in lbs/mmBtu, averaged over the units specified in the NOx averaging plan, that is less than or equal to the Btu-weighted annual average emission rate averaged over the same units had they each been operated during the same period of time in compliance with the applicable emission limitations in 40 CFR Sections 76.5, 76.6, or 76.7. Units covered in the plan are:</p> <table><tr><td>Plant</td><td>Boiler ID#</td></tr><tr><td>Clay Boswell</td><td>1, 2, 3, 4</td></tr><tr><td>Syl Laskin</td><td>1, 2</td></tr><tr><td>Taconite Harbor</td><td>1, 2, 3</td></tr></table>	Plant	Boiler ID#	Clay Boswell	1, 2, 3, 4	Syl Laskin	1, 2	Taconite Harbor	1, 2, 3
Plant	Boiler ID#											
Clay Boswell	1, 2, 3, 4											
Syl Laskin	1, 2											
Taconite Harbor	1, 2, 3											



COMPLIANCE PLAN **CD-01**

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

8.0		LIMIT	Title I Condition: 40 CFR Section 52.21(j) PSD BACT limit	Carbon Monoxide: less than or equal to 0.15 lbs/million Btu heat input using 30-day Rolling Average . This limit does not apply during periods of startup, shutdown, or malfunction. This limit applies upon return of EU 004 to regular operation (as defined in this permit) following modification of the boiler as authorized by permit No. 06100004-005.
9.0		LIMIT	Title I Condition: 40 CFR Section 52.21(j) PSD BACT limit	Carbon Monoxide: less than or equal to 28,826 lbs/hour using 1-Hour Average . This limit applies only during startup and shutdown upon return of EU 004 to regular operation (as defined in this permit) following modification of the boiler as authorized by permit No. 06100004-005.
10.0		CD	hdr	OPERATING REQUIREMENTS
11.0		CD	Minn. R. 7007.0800, subp. 2	Fuel use: limited to sub-bituminous coal, boiler cleaning agents, distillate oil, oily coal, oily paper-based floor dry, used oil, pipeline natural gas, and propane.
12.0		CD	Minn. R. 7007.0800, subp. 2	Boiler cleaning agents limited to: EDTA type and Ammonium Bromate, are generated on-site, 5% of total mass input, oxygen limited to 3% or greater, agents may only be burned while the boiler is operating at 75 percent of rated capacity or greater.
13.0		CD	Minn. R. 7007.0800, subp. 2	Burn off-specification and on-specification used oil in accordance with Minn. R. ch. 7045, not to exceed 3824 gallons/hour (approximately 10 percent of rated capacity of 5,109 mmBtu/hour) on an hourly basis.
14.0		CD	Minn. R. ch. 7009	Maintain SV 004 exit flue gas temperature at a minimum of 135 degrees F.
15.0		CD	Title I Condition: control of particulate matter and sulfur dioxide	Vent all emissions to a venturi scrubber, electrostatic precipitator and spray tower.
16.0		CD	Minn. R. 7007.0800, subp. 2	Regular Operation for Unit 4 is defined as operation at more than 320 gross MW of load for more than 14 consecutive days after start-up of the unit is completed after installation of LNB/OFA equipment.
17.0		CD	Title I Condition: 40 CFR Section 52.21(j) PSD BACT limit	Startup and Shutdown Operations: EU 004 startup and shutdown operation is defined as all EU 004 operation during which the gross MW electric production is less than or equal to 320 MW.
18.0		CD	hdr	PERFORMANCE TESTING
19.0		S/A	Title I Condition: monitoring for the particulate emission limit set under 40 CFR Section 52.21; Minn. R. 7017.2020, subp. 1	Performance Test: due before end of each 60 months starting 09/27/1997 to determine compliance with the Title I condition particulate matter emission limit. The tests shall be conducted at an interval not to exceed 60 months between test dates.
20.0		CD	Minn. R. 7017.2025, subp. 2(A) and 3(B)	Boiler Alternative Operating Conditions for Performance Testing: Alternative Operating Conditions during testing are defined as 90% to 100% of the boiler's maximum normal (continuous) operating load or the maximum permitted operating rate, whichever is lower. The basis for this number must be included in the test plan. If testing is conducted at the alternative operating condition established, an operating limit will not be established as a result of performance testing. In no case will the new operating rate limit be higher than allowed by an existing permit condition.
21.0		CD	Minn. R. 7017.2025, subp. 3(B)	Boiler Operating Conditions Not Meeting the Alternative Operating Conditions During Performance Testing: If performance testing is not conducted at or above the established alternative operating condition, then the boiler operating rate will be limited on an 8-hour block average based on the following: (1) If the results of the performance test are greater than 80% of any applicable emission limit for which compliance is demonstrated, then boiler operation will be limited to the tested operating rate. (2) If results are less than or equal to 80% of all applicable emission limits for which compliance is demonstrated, boiler operation will be limited to 110% of the tested operating rate. In no case will the new operating rate limit be higher than allowed by an existing permit condition.



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22.0		CD	Minn. R. 7007.0800, subp. 2.	<p>STET (Short Term Emergency and Testing) Operating hours limit:</p> <p>The boiler may operate up to 40 hours per year to demonstrate the Uniform Rating of Generating Equipment (URGE) capacity and to meet emergency energy supply needs. Maintain documentation of all STET operation to demonstrate compliance with this limit. The boiler must meet emission limits during STET operation.</p>
23.0		CD	Minn. R. 7007.0800, subp. 2.	<p>STET Operation Definition that applies to Boilers that Meet or do Not Meet the Alternative Operating Condition for Performance Testing:</p> <p>If performance test results demonstrate compliance at 80% or less of any applicable emission limits for any tested pollutant, STET operation is defined as operation beyond 110% of the average operating rate achieved during that performance test.</p> <p>If performance test results demonstrate compliance at greater than 80% any applicable emission limit for any tested pollutant, STET operation is defined as operation beyond 100% of the average operating rate achieved during that performance test.</p> <p>In no case will STET operation be higher than allowed by an existing permit condition.</p>
24.0		CD	Minn. R. 7017.2020, subp. 4.	The results of a performance test are not final until issuance of a review letter by MPCA, unless specified otherwise by Minn. R. 7017.2001 - 7017.2060.
25.0		CD	hdr	CONTINUOUS MONITORING REQUIREMENTS
26.0		CD	40 CFR Section 75.10 and Minn. R. ch. 7017	<p>Measure all Opacity, SO₂, NO_x, and CO₂ emissions from affected units in accordance with 40 CFR Section 75.10. See GP 002 for requirements regarding opacity monitoring, and GP 003 for requirements regarding SO₂ and NO_x monitoring. The SO₂ and NO_x monitors shall be capable of producing emission rates in units of lb/mmBtu on a one-hour average, a three hour average and on a 30-day rolling average.</p> <p>Using the 30-day averages for SO₂, calculate and submit the annual SO₂ emission rate along with the annual compliance certification.</p>
27.0		CD	40 CFR pt. 64	Operate and maintain the continuous opacity monitor as a partial indicator of compliance with the PM limit.
28.0		CD	Minn. R. ch. 7009	Measure stack gas exit temperature.
29.0		CD	Minn. Stat. Section 216B.681	Mercury Emissions Monitoring: Use a Hg CEMS to measure Hg emissions from EU 004 by July 1, 2007. Additional Hg monitoring requirements are located under subject item MR 026.
30.0		CD	Minn. Stat. Section 216B.681	<p>Establish Baseline Mercury Emission Rate: Use mercury monitors to establish the baseline mercury emission rate for EU 004.</p> <p>This is a state only requirement and is not enforceable by the EPA administrator and citizens under the Clean Air Act.</p>
31.0		S/A	Minn. Stat. Section 216B.6851	Plans and Specifications: due before 07/01/2011 for mercury removal as prescribed by Minn. Stat. Section 216B.6851, subd. 5. The plan shall contain the information specified in Minn. Stat. 216B.682, subd. 3.
32.0		CD	Title I Condition: 40 CFR Section 52.21 monitoring for BACT limit; 40 CFR pt. 60, Appendix B; Minn. R. 7017.1006; Minn. R. 7017.1160, subp. 3	<p>Install and operate a CO continuous emission monitor (CEMS) according to 40 CFR pt. 60, Appendix B, Performance Standard 4 to measure all CO emissions. The monitor shall produce emission rates in units of lb/mmBtu on a 30-day rolling average and lb/hr on a 1-hour average.</p> <p>The CO CEMS shall be installed upon Unit #4 startup following the modifications authorized by this permit (No. 06100004-005). See subject item MR 045 for requirements regarding CO monitoring.</p>



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33.0		CD	Minn. R. 7007.0800, subp. 4.B	<p>Determination of CO lb/mmBtu and lb/hr Emission Rates:</p> <p>The Permittee shall determine CO lb/mmBtu 30-day rolling emission rates by first determining the one-minute CO emissions on a lb/mmBtu basis using the following equation:</p> $\text{CO lb/mmBtu} = [(\text{CO ppmv}) * (\text{CO mol wt}) * (2.59\text{E-}09) * (\text{Fc-factor})] * [100/(\text{CO}_2\%)]$ <p>where:</p> <p>CO ppmv = CO measured by MR 045 (ppmv) CO mol wt = CO molecular weight (28) 2.59E-09 = combustion calculation formula constant (lb/dscf) Fc-Factor = subbituminous coal CO₂-based Fc-factor, dscf CO₂/mmBtu established by EPA (1840 as of 02/2009) 100 = percent correction factor CO₂ % = CO₂ % (by volume) measured by EU 004 CO₂ CEMS (MR 044)</p> <p>One-minute lb/mmBtu CO emissions are used to calculate the hourly block average CO lb/mmBtu emission rate. Hourly average emission rates are averaged over each 30-day period to determine the 30-day rolling average CO lb/mmBtu emission rate.</p> <p>(continued)</p>
34.0		CD	Minn. R. 7007.0800, subp. 4.B	<p>Determination of CO lb/mmBtu and lb/hr Emission Rates (continued):</p> <p>Hourly CO lb/hr emission rates are determined once each hour using the following equation:</p> $\text{CO lb/hr} = [\text{CO lb/mmBtu (hourly)}] * [\text{Heat Input (hourly)}]$ <p>where:</p> <p>CO lb/hr = hourly CO emissions in pounds per hour CO lb/mmBtu (hourly) = lb/mmBtu CO hourly emission rate determined with CO CEMS (MR 045) Heat Input (hourly) = heat input during the hour corresponding to the lb/mmBtu CO emission rate determined with the Data Acquisition Handling and System</p>
35.0		CD	hdr	REPORTING - refer to Table B for additional EU 004 reporting requirements
36.0		CD	Minn. R. 7021.0050	Submit the calculations and annual average emission rate of sulfur dioxide along with the annual compliance certification.
37.0		S/A	Minn. R. 7007.0800, subp. 2	<p>Annual Report: due 60 days after end of each calendar year following Initial Startup of EU 004 after the completion of EU 004 modifications allowed by permit No. 06100004-005. This requirement terminates upon submittal of the fifth required calendar year report following resumption of EU 004 normal operation.</p> <p>The Permittee shall submit an annual report stating the EU 004 SO₂ emissions tons for the previous calendar year. The report shall be generated using the same EU 004 SO₂ CEMS-based data that is reported to the EPA Clean Air Markets program.</p> <p>If calendar year SO₂ emissions exceed 3145 tons (future projected actual emissions plus excludable emissions determined for permit No. 06100004-005, plus 50 percent of the 40 ton per year SO₂ significant emission rate), the Permittee shall also submit with the report an explanation of why the calendar year SO₂ emissions exceeded 3145 tons.</p>



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38.0		S/A	<p>Minn. Stat. Section 216B.6851, subd. 5(b)</p>	<p>Annual Report: due 182 days after 01/01/2011 (due 7/1 commencing 7/1/11) until the Permittee files its plan for EU 004 mercury emissions reduction. The Permittee must submit the report to the MPCA containing the following information:</p> <p>(1) Mercury control plans for EU 004, including how elements of the plans may affect the performance and cost-effectiveness of emission controls for air pollutants other than mercury;</p> <p>(2) an assessment of the impacts of federal laws regulating various air pollutants emitted by coal-fired power plants that can reasonably be expected to be enacted by 2018 on the Permittee's units subject to this section, and potential Permittee responses to those laws, including, but not limited to:</p> <p>(i) installing pollution control equipment;</p> <p>(ii) using pollution allowances to achieve regulatory compliance; and,</p> <p>(iii) retiring or repowering the plant that is the subject of the filing with cleaner fuels considering the costs of complying with state and federal environmental regulations.</p>
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COMPLIANCE PLAN **CD-01**

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: CE 001 Fabric Filter - High Temperature, i.e., T>250 Degrees F

Associated Items: EU 001 Power Boiler 1

	NC/ CA	Type	Citation	Requirement
1.0		LIMIT	Title I Condition: operating requirement for PM limit set under 40 CFR Section 52.21(k); Minn. R. 7007.0800, subp. 2 and 14	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 99 percent collection efficiency
2.0		CD	Minn. R. 7007.0800, subp. 14	The Permittee shall operate and maintain the fabric filter in accordance with the Operation and Maintenance (O & M) Plan. The Permittee shall keep copies of the O & M Plan available onsite for use by staff and MPCA staff.
3.0		CD	Minn. R. 7007.0800, subp. 4, 5, and 14	Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - the recorded opacity exceeds the permitted limit; or - the fabric filter or any of its components are found during the inspections to need repair. Corrective actions shall return the opacity to within the permitted range, and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee shall keep a record of the type and date of any corrective action taken for each filter.
4.0		CD	hdr	COMPLIANCE ASSURANCE MONITORING
5.0		CD	40 CFR Section 64.3(b) or (d) 40 CFR Section 64.6(c)(1)(i) 40 CFR Section 64.6(c)(1)(ii) Minn. R. 7017.0200	The owner or operator shall comply with the approved monitoring for particulate matter. The owner or operator shall use opacity as a surrogate for monitoring particulate matter, and shall measure the opacity by means of a COM. Parameter range indicating normal operation is opacity as a six-minute average less than or equal to 20 percent opacity.
6.0		CD	40 CFR Section 64.7(a) Minn. R. 7017.0200	The owner or operator shall conduct the monitoring required under this part upon permit issuance.
7.0		CD	40 CFR Section 64.7(b) Minn. R. 7017.0200	The owner or operator shall maintain the monitoring instruments and recorders, including but not limited to maintaining necessary parts for routine repairs of the monitoring equipment.
8.0		CD	40 CFR Section 64.7(c) Minn. R. 7017.0200	Continuous Operation: Except for, as applicable, monitoring malfunctions, associated repairs, and required quality assurance or control activities, the owner or operator shall conduct all monitoring in continuous operation at all times the pollutant-specific emissions unit is operating.
9.0		CD	40 CFR Section 64.7(d)(1) Minn. R. 7017.0200	Response to excursions or exceedances: Upon detecting an excursion or exceedance, the owner or operator shall restore operation of the pollutant-specific emissions unit to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions.
10.0		CD	40 CFR Section 64.7(e) Minn. R. 7017.0200	Documentation of need for improved monitoring: After approval of monitoring under this part, if the owner or operator identifies a failure to achieve compliance with an emission limitation or standard for which the approved monitoring did not provide an indication of an excursion or exceedance while providing valid data, or the results of compliance or performance testing document a need to modify the existing indicator ranges or designated conditions, the owner or operator shall promptly notify the permitting authority and, if necessary, submit a proposed modification to the part 70 permit to address the necessary monitoring changes.
11.0		CD	40 CFR Section 64.9(b) Minn. R. 7017.0200	The owner or operator shall maintain records of monitoring data, monitor performance data, corrective actions taken, any written quality improvement plan required pursuant to 64.8 and any activities undertaken to implement a quality improvement plan, and other supporting information required to be maintained. The owner or operator may maintain records on alternative media, such as microfilm, computer files, magnetic tape disks, or microfiche, provided that the use of such alternative media allows for expeditious inspection and review, and does not conflict with other applicable recordkeeping requirements.
12.0		CD	40 CFR Section 64.9(a)(2)(i) Minn. R. 7017.0200	The owner or operator shall report exceedances or excursions under Section 64.7 and Section 64.8 when the exceedance or excursion are greater than the limit and averaging period with the Semiannual Deviations Report.



COMPLIANCE PLAN **CD-01**

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: CE 002 Fabric Filter - High Temperature, i.e., T>250 Degrees F

Associated Items: EU 002 Power Boiler 2

	NC/ CA	Type	Citation	Requirement
1.0		LIMIT	Title I Condition: operating requirement for PM limit set under 40 CFR Section 52.21(k); Minn. R. 7007.0800, subp. 2 and 14	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 99 percent collection efficiency
2.0		CD	Minn. R. 7007.0800, subp. 14	The Permittee shall operate and maintain the fabric filter in accordance with the Operation and Maintenance (O & M) Plan. The Permittee shall keep copies of the O & M Plan available onsite for use by staff and MPCA staff.
3.0		CD	Minn. R. 7007.0800, subp. 4, 5, and 14	Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - the recorded opacity exceeds the permitted limit; or - the fabric filter or any of its components are found during the inspections to need repair. Corrective actions shall return the opacity to within the permitted range, and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee shall keep a record of the type and date of any corrective action taken for each filter.
4.0		CD	hdr	COMPLIANCE ASSURANCE MONITORING
5.0		CD	40 CFR Section 64.3(b) or (d) 40 CFR Section 64.6(c)(1)(i) 40 CFR Section 64.6(c)(1)(ii) Minn. R. 7017.0200	The owner or operator shall comply with the approved monitoring for particulate matter. The owner or operator shall use opacity as a surrogate for monitoring particulate matter, and shall measure the opacity by means of a COM. Parameter range indicating normal operation is opacity as a six-minute average less than or equal to 20 percent opacity.
6.0		CD	40 CFR Section 64.7(a) Minn. R. 7017.0200	The owner or operator shall conduct the monitoring required under this part upon permit issuance.
7.0		CD	40 CFR Section 64.7(b) Minn. R. 7017.0200	The owner or operator shall maintain the monitoring instruments and recorders, including but not limited to maintaining necessary parts for routine repairs of the monitoring equipment.
8.0		CD	40 CFR Section 64.7(c) Minn. R. 7017.0200	Continuous Operation: Except for, as applicable, monitoring malfunctions, associated repairs, and required quality assurance or control activities, the owner or operator shall conduct all monitoring in continuous operation at all times the pollutant-specific emissions unit is operating.
9.0		CD	40 CFR Section 64.7(d)(1) Minn. R. 7017.0200	Response to excursions or exceedances: Upon detecting an excursion or exceedance, the owner or operator shall restore operation of the pollutant-specific emissions unit to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions.
10.0		CD	40 CFR Section 64.7(e) Minn. R. 7017.0200	Documentation of need for improved monitoring: After approval of monitoring under this part, if the owner or operator identifies a failure to achieve compliance with an emission limitation or standard for which the approved monitoring did not provide an indication of an excursion or exceedance while providing valid data, or the results of compliance or performance testing document a need to modify the existing indicator ranges or designated conditions, the owner or operator shall promptly notify the permitting authority and, if necessary, submit a proposed modification to the part 70 permit to address the necessary monitoring changes.
11.0		CD	40 CFR Section 64.9(b) Minn. R. 7017.0200	The owner or operator shall maintain records of monitoring data, monitor performance data, corrective actions taken, any written quality improvement plan required pursuant to 64.8 and any activities undertaken to implement a quality improvement plan, and other supporting information required to be maintained. The owner or operator may maintain records on alternative media, such as microfilm, computer files, magnetic tape disks, or microfiche, provided that the use of such alternative media allows for expeditious inspection and review, and does not conflict with other applicable recordkeeping requirements.
12.0		CD	40 CFR Section 64.9(a)(2)(i) Minn. R. 7017.0200	The owner or operator shall report exceedances or excursions under Section 64.7 and Section 64.8 when the exceedance or excursion are greater than the limit and averaging period with the Semiannual Deviations Report.



COMPLIANCE PLAN **CD-01**

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: CE 004 Venturi Scrubber

Associated Items: EU 004 Power Boiler 4

	NC/ CA	Type	Citation	Requirement
1.0		CD	Title I Condition: operating requirement for PM limit set under 40 CFR Section 52.21(k)	A minimum of one venturi slurry pump for each particulate scrubber module in service shall be operated at all times during the operation of EU004.
2.0		CD	hdr	COMPLIANCE ASSURANCE MONITORING
3.0		CD	40 CFR Section 64.3(b) or (d) 40 CFR Section 64.6(c)(1)(i) 40 CFR Section 64.6(c)(1)(ii) Minn. R. 7017.0200	The owner or operator shall comply with the approved monitoring for PM. The owner or operator shall use opacity as a surrogate for monitoring PM, and shall measure the opacity by means of a COM. Parameter range indicating normal operation is opacity as a six-minute average less than or equal to 20 percent opacity.
4.0		CD	40 CFR Section 64.7(a) Minn. R. 7017.0200	The owner or operator shall conduct the monitoring required under this part upon permit issuance.
5.0		CD	40 CFR Section 64.7(b) Minn. R. 7017.0200	The owner or operator shall maintain the monitoring instruments and recorders, including but not limited to maintaining necessary parts for routine repairs of the monitoring equipment.
6.0		CD	40 CFR Section 64.7(c) Minn. R. 7017.0200	Continuous Operation: Except for, as applicable, monitoring malfunctions, associated repairs, and required quality assurance or control activities, the owner or operator shall conduct all monitoring in continuous operation at all times the pollutant-specific emissions unit is operating.
7.0		CD	40 CFR Section 64.7(d)(1) Minn. R. 7017.0200	Response to excursions or exceedances: Upon detecting an excursion or exceedance, the owner or operator shall restore operation of the pollutant-specific emissions unit to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions.
8.0		CD	40 CFR Section 64.7(e) Minn. R. 7017.0200	Documentation of need for improved monitoring: After approval of monitoring under this part, if the owner or operator identifies a failure to achieve compliance with an emission limitation or standard for which the approved monitoring did not provide an indication of an excursion or exceedance while providing valid data, or the results of compliance or performance testing document a need to modify the existing indicator ranges or designated conditions, the owner or operator shall promptly notify the permitting authority and, if necessary, submit a proposed modification to the part 70 permit to address the necessary monitoring changes.
9.0		CD	40 CFR Section 64.9(b) Minn. R. 7017.0200	The owner or operator shall maintain records of monitoring data, monitor performance data, corrective actions taken, any written quality improvement plan required pursuant to 64.8 and any activities undertaken to implement a quality improvement plan, and other supporting information required to be maintained. The owner or operator may maintain records on alternative media, such as microfilm, computer files, magnetic tape disks, or microfiche, provided that the use of such alternative media allows for expeditious inspection and review, and does not conflict with other applicable recordkeeping requirements.
10.0		CD	40 CFR Section 64.9(a)(2)(i) Minn. R. 7017.0200	The owner or operator shall report exceedances or excursions under Section 64.7 and Section 64.8 when the exceedance or excursion are greater than the limit and averaging period with the Semiannual Deviations Report.



COMPLIANCE PLAN **CD-01**

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: CE 005 Electrostatic Precipitator - High Efficiency

Associated Items: EU 004 Power Boiler 4

	NC/ CA	Type	Citation	Requirement
1.0		CD	Title I Condition: operating requirement for PM limit set under 40 CFR Section 52.21(k); Minn. R. 7007.0800, subp. 2 and 14	When bypass reheat is required to maintain compliance with the minimum flue gas exit temperature specified under SV004 in this permit, a portion of the total flue gas from EU004 may bypass the particulate matter emissions scrubber (CE004) and sulfur dioxide absorber (CE006), and be treated by a minimum of one unit of CE005 (electrostatic precipitator). When required to operate, CE005 shall not be operated with more than three of the bus-sections de-energized. When bypass reheat is not required to maintain compliance with the minimum flue gas exit temperature, all of the EU004 flue gas shall be treated by the particulate matter emissions scrubber (CE004) and sulfur dioxide absorber (CE006). After closing the inlet and outlet dampers to CE005, the Permittee may de-energize CE005.
2.0		CD	hdr	COMPLIANCE ASSURANCE MONITORING
3.0		CD	40 CFR Section 64.3(b) or (d) 40 CFR Section 64.6(c)(1)(i) 40 CFR Section 64.6(c)(1)(ii) Minn. R. 7017.0200	The owner or operator shall comply with the approved monitoring for PM. The owner or operator shall use opacity as a surrogate for monitoring PM, and shall measure the opacity by means of a COM. Parameter range indicating normal operation is opacity as a six-minute average less than or equal to 20 percent opacity.
4.0		CD	40 CFR Section 64.7(a) Minn. R. 7017.0200	The owner or operator shall conduct the monitoring required under this part upon permit issuance.
5.0		CD	40 CFR Section 64.7(b) Minn. R. 7017.0200	The owner or operator shall maintain the monitoring instruments and recorders, including but not limited to maintaining necessary parts for routine repairs of the monitoring equipment.
6.0		CD	40 CFR Section 64.7(c) Minn. R. 7017.0200	Continuous Operation: Except for, as applicable, monitoring malfunctions, associated repairs, and required quality assurance or control activities, the owner or operator shall conduct all monitoring in continuous operation at all times the pollutant-specific emissions unit is operating.
7.0		CD	40 CFR Section 64.7(d)(1) Minn. R. 7017.0200	Response to excursions or exceedances: Upon detecting an excursion or exceedance, the owner or operator shall restore operation of the pollutant-specific emissions unit to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions.
8.0		CD	40 CFR Section 64.7(e) Minn. R. 7017.0200	Documentation of need for improved monitoring: After approval of monitoring under this part, if the owner or operator identifies a failure to achieve compliance with an emission limitation or standard for which the approved monitoring did not provide an indication of an excursion or exceedance while providing valid data, or the results of compliance or performance testing document a need to modify the existing indicator ranges or designated conditions, the owner or operator shall promptly notify the permitting authority and, if necessary, submit a proposed modification to the part 70 permit to address the necessary monitoring changes.
9.0		CD	40 CFR Section 64.9(b) Minn. R. 7017.0200	The owner or operator shall maintain records of monitoring data, monitor performance data, corrective actions taken, any written quality improvement plan required pursuant to 64.8 and any activities undertaken to implement a quality improvement plan, and other supporting information required to be maintained. The owner or operator may maintain records on alternative media, such as microfilm, computer files, magnetic tape disks, or microfiche, provided that the use of such alternative media allows for expeditious inspection and review, and does not conflict with other applicable recordkeeping requirements.
10.0		CD	40 CFR Section 64.9(a)(2)(i) Minn. R. 7017.0200	The owner or operator shall report exceedances or excursions under Section 64.7 and Section 64.8 when the exceedance or excursion are greater than the limit and averaging period with the Semiannual Deviations Report.



COMPLIANCE PLAN **CD-01**

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

Subject Item: CE 021 Fabric Filter - High Temperature, i.e., T>250 Degrees F

Associated Items: EU 003 Power Boiler 3

	NC/ CA	Type	Citation	Requirement
1.0		LIMIT	Minn. R. 7007.0800, subp. 2 and 14	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 99 percent collection efficiency
2.0		CD	Minn. R. 7007.0800, subp. 14	The Permittee shall operate and maintain the fabric filter in accordance with the Operation and Maintenance (O & M) Plan. The Permittee shall keep copies of the O & M Plan available onsite for use by staff and MPCA staff.
3.0		CD	Minn. R. 7007.0800, subp. 4, 5, and 14	Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - the recorded opacity exceeds the permitted limit; or - the fabric filter or any of its components are found during the inspections to need repair. Corrective actions shall return the opacity to within the permitted range, and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee shall keep a record of the type and date of any corrective action taken for each filter.
4.0		CD	hdr	COMPLIANCE ASSURANCE MONITORING
5.0		CD	40 CFR Section 64.3(b) or (d) 40 CFR Section 64.6(c)(1)(i) 40 CFR Section 64.6(c)(1)(ii) Minn. R. 7017.0200	The owner or operator shall comply with the approved monitoring for PM and PM10. The owner or operator shall use opacity and pressure differential as surrogates for monitoring PM and PM10. Opacity shall be measured opacity by means of a COM and differential pressure shall be measured by a differential pressure gauge. Parameter range indicating normal operation is opacity (3-hour rolling average) less than or equal to 14 percent opacity, and differential pressure (1 minute average) less than or equal to 11.0 inches water column. The 14% opacity value is a trigger value that prompts response to the excursion and is not an enforceable opacity limit.
6.0		CD	40 CFR Section 64.6(c)(2)	An excursion or exceedance from the specified parameter range occurs when: 1. the measured pressure drop deviates from the specified minimum or maximum by 0.1 inch WC or more on a 1-minute average basis, or 2. the measured opacity exceeds 14% on a 3-hour rolling average.
7.0		CD	40 CFR Section 64.7(a) Minn. R. 7017.0200	The owner or operator shall conduct the monitoring required under this part upon permit issuance.
8.0		CD	40 CFR Section 64.7(b) Minn. R. 7017.0200	The owner or operator shall maintain the monitoring instruments and recorders, including but not limited to maintaining necessary parts for routine repairs of the monitoring equipment.
9.0		CD	40 CFR Section 64.7(c) Minn. R. 7017.0200	Continuous Operation: Except for, as applicable, monitoring malfunctions, associated repairs, and required quality assurance or control activities, the owner or operator shall conduct all monitoring in continuous operation at all times the pollutant-specific emissions unit is operating.
10.0		CD	40 CFR Section 64.7(d)(1) Minn. R. 7017.0200	Response to excursions or exceedances: Upon detecting an excursion or exceedance, the owner or operator shall restore operation of the pollutant-specific emissions unit to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions.
11.0		CD	40 CFR Section 64.7(e) Minn. R. 7017.0200	Documentation of need for improved monitoring: After approval of monitoring under this part, if the owner or operator identifies a failure to achieve compliance with an emission limitation or standard for which the approved monitoring did not provide an indication of an excursion or exceedance while providing valid data, or the results of compliance or performance testing document a need to modify the existing indicator ranges or designated conditions, the owner or operator shall promptly notify the permitting authority and, if necessary, submit a proposed modification to the part 70 permit to address the necessary monitoring changes.



COMPLIANCE PLAN **CD-01**

Facility Name: Minnesota Power Inc - Boswell Energy Ctr

Permit Number: 06100004 - 006

12.0		CD	40 CFR Section 64.9(b) Minn. R. 7017.0200	The owner or operator shall maintain records of monitoring data, monitor performance data, corrective actions taken, any written quality improvement plan required pursuant to 64.8 and any activities undertaken to implement a quality improvement plan, and other supporting information required to be maintained. The owner or operator may maintain records on alternative media, such as microfilm, computer files, magnetic tape disks, or microfiche, provided that the use of such alternative media allows for expeditious inspection and review, and does not conflict with other applicable recordkeeping requirements.
13.0		CD	40 CFR Section 64.9(a)(2)(i) Minn. R. 7017.0200	The owner or operator shall report exceedances or excursions under 64.7 and 64.8 when the exceedance or excursion are greater than the limit and averaging period with the Semiannual Deviations Report.

Points Calculator

1) AQ Facility ID No.:	06100004
2) Facility Name:	Minnesota Power Inc - Boswell Energy Ctr
3) Small business? y/n?	N
4) DQ Numbers (including all rolled) :	3286, 3190
5) Date of each Application Received:	10/15/2010
6) Final Permit No.	06100004-006
7) Permit Staff	M Cole
8) "Work completed" in which .xls file (i.e. unit 2b, unit 1a, biofuels)?	NA

Total Points	0
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<u>Application Type</u>	<u>DQ No.</u>	<u>Qty.</u>	<u>Points</u>	<u>Total Points</u>	<u>Details</u>
Administrative Amendment			1	0	
Minor Amendment			4	0	
Applicability Request			10	0	
Moderate Amendment			15	0	
Major Amendment	3286		25	0	
Individual State Permit (not reissuance)			50	0	
Individual Part 70 Permit (not reissuance)			75	0	

Additional Points

Modeling Review			15	0
BACT Review			15	0
LAER Review			15	0
CAIR/Part 75 CEM analysis			10	0
NSPS Review			10	0
NESHAP Review			10	0
Case-by-case MACT Review			20	0
Netting			10	0
Limits to remain below threshold			10	0
Plantwide Applicability Limit (PAL)			20	0
AERA review			15	0
Variance request under 7000.7000			35	0
Confidentiality request under 7000.1300			2	0

EAW review

Part 4410.4300, subparts 18, item A; and 29			15	0
Part 4410.4300, subparts 8, items A & B; 10, items A to C; 16, items A & D; 17, items A to C & E to G; and 18, items B & C			35	0
Part 4410.4300, subparts 4; 5 items A & B; 13; 15; 16, items B & C; and 17 item D			70	0

Add'l Points 0

NOTES:

DQ 3190 re-opening includes boiler #3 test frequency plan approval

**Boswell Energy Center EU003
Baghouse for PM /PM 10 Control
Compliance Assurance Monitoring Plan**

Plan Date: February 23, 2011

Part 1. Background

1.1 Facility and Emission Units

The Boswell Energy Center is located on Old Highway 6 about 1 mile west of Hwy. 2 in Cohasset, Minnesota. The mailing address is: Boswell Energy Center, 1210 NW 3rd Street, Cohasset, MN 55721.

The Boswell facility consists of four Part 75 Phase II affected units combusting western sub bituminous coal, natural gas, and No.2 distillate oil including on and off specification used transformer oils.

Boswell Unit 3 is a Combustion Engineering tangential fired boiler with an expected URGE rating of 385 GMW when combusting western sub bituminous coal. Unit 3 is equipped with Alstom Low Nox burners w/SOFA, Hitachi Selective Catalytic Reduction Unit w/ammonia injection for Nox removal, Hamon Fabric Filter (FF) for particulate removal w/ carbon injection for Hg reductions, and a Hitachi Wet Flue Gas Desulfurization (WFGD) w/forced oxidation, wet limestone process for SO₂ removal.

1.2 Applicable Regulation, Emission Limit and Monitoring Requirements

BEC Unit 3 is subject to the Acid Rain Program. Sulfur dioxide and nitrogen oxides are continually monitored for compliance by CEMS. Consequently, it is exempt from the Compliance Assurance Monitoring rule for these parameters. The unit is also required to monitor for opacity using a COMS. Normally, opacity ranges from 2-6%. The facility's Title V Air Permit requires a maximum filterable particulate emission rate 0.014 lbs/mmBtu; and particulate emissions <10 microns with an emission rate of 0.035 lbs/mmBtu. Limitation Basis Minn.R.7011.0800, subp. 2.

Based on the most recent EPA Method 5 stack performance test on March 31, 2010, PM emissions rates were at a 0.0007 lbs/mmBtu (100% coal), and PM 10 emission rates were 0.0059lbs/mmBtu (100% coal). The CAM Plan is needed to ensure ongoing particulate matter (PM, PM₁₀) compliance and to provide an adequate level of boiler operator flexibility. In addition, because the facility is required to have a Part 70 permit and does not qualify for an exemption (for PM / PM₁₀ emissions), a CAM Plan under 40 CFR 64.2 is required.

1.3 Control Technology

The Hamon FF on BEC Unit 3 was engineered and designed to remove fly ash from the particulate laden flue gas, using a Low pressure/High Volume Pulse Jet FF and provides continuous cleaning and state-of-the-art BACT level control. Scrubber flue gases continue through a Wet Flue Gas Desulfurization System, after which they are emitted to the atmosphere via a 700 foot common stack. BEC Unit 3 dry ash is collected in Hoppers below the FF and is then pneumatically conveyed to a silo where it is loaded into trucks, and transferred to dry ash ponds.

Part 2. Monitoring Approach

To assure compliance with the permitted PM/PM10 emission limits, scrubber FF differential pressure (DP) and opacity will be monitored. The FF DP is monitored and recorded on a continuous basis by the Distribution Control System (DCS) located in the facility's control room. The facility currently uses a TML Light Hawk 560 continuous opacity monitor system (COMS) to monitor and record opacity. The monitoring system is located in the FF outlet duct and before the WFGD. Opacity monitoring is recorded by the CEMS DAS. Both parameters are available for monitoring by the control room operator. The key elements of the monitoring approach are presented in Table 1.

If the differential pressure were to increase to -11.0 in. wc, this would be the order of corrective actions taken

- Verify the operation of the Cleaning air system and the Fabric Filter.
- Verify the mechanical operation of
 - Inlet / Outlet dampers
 - Cleaning air drives
- Have Technicians verify the instrumentation
- Decrease the time between pulses for the cleaning air apparatus
 - This will increase the cleaning frequency
- Have Technician increase the cleaning air pressure
- Reduce Unit Load

Table 1 – Fabric Filter Monitoring Approach

	Indicator No. 1	Indicator No. 2
I. Indicator Measurement Approach	Differential pressure Fabric Filter differential pressure is monitored by pressure sensing lines at the inlet and outlet ducts. A PLC communicates this information to the plant DCS.	Opacity Opacity is directly monitored by a COMS.
II. Indicator Range Reportable deviation	A reportable excursion is defined when the measured pressure drop deviates from the specified maximum of 11 by 0.1 in. wc. Excursions trigger an inspection, corrective action, and a reporting requirement.	Parameter range indicating normal operation is opacity less than or equal to 14 percent opacity. Any 3 hour rolling average $\geq 14\%$ opacity would be considered an excursion. Excursions trigger an inspection, corrective action, and a reporting requirement
III. Performance Criteria		
A. Data Representativeness	The differential pressure transmitters are redundant and compared daily.	Opacity is directly monitored by COMS with an accuracy of $\pm 2\%$.
B. Verification of Operational Status	Plant control room operators monitor FF DP. High level alarms initiate corrective actions.	Plant control room operators monitor opacity High level alarms initiate corrective actions.
C. QA/QC Practices & Criteria	Calibrations are performed on the differential pressure indicator on a quarterly basis.	Opacity is calibrated on a daily basis and an opacity audit using certified attenuators is performed biannually.
D. Monitoring Frequency	FF DP are measured on a continuous basis.	The opacity is measured continuously on the common stack.
E. Data Collection Procedures	FF DP is recorded in the DCS and can be readily provided.	Opacity is recorded by the CEMS DAS. Reports can be readily provided.
F. Averaging Period	1 minute avg	3 hour rolling average

2.1 Rational for Selection of Performance Indicator

Opacity was selected as one of the CAM Plans monitoring indicators because, as a surrogate for PM/PM10 monitoring, an increase would be indicative of particulate increase. Under normal circumstances filter bags will fail over time due to the forces created by bag cleaning. After hundreds of thousands of cleaning cycles the filter bag material will wear causing holes to form which allows dust to carry over and will lead to an increase in opacity. So I would say increasing opacity would be your best indicator to denote widespread bag failure.

Differential Pressure increases across the FF can be an indication that the cleaning cycle is not frequent enough, cleaning equipment is damaged, or of other operational deficiencies with the pollution control device. Ash laden flue gas goes through an SCR prior to entering the air heater section of the boiler at a temperature of between 600 and 800 °F depending on units load conditions. After the particulate laden flue gas leaves the Air heater, Carbon is then injected into the flue gas stream for assisting in Hg removal prior to entry into the FF. The FF consists of 12 compartments including a pulse jet system for cleaning of each compartment. If the differential pressure exceeds the high limit, an alarm will annunciate in the Control room indicating a High D/P. Following the FF outlet is where opacity is monitored, prior to the WFGD.

2.2 Rationale for Selection of Indicator Range

An indicator range of $\geq 14\%$ on a 3 hour rolling avg. was chosen for the opacity indicator. The range selection is based on a comparison to the most recent PM /PM 10 performance testing conducted the week of March 31, 2010. PM and opacity were below the allowable limits during testing as noted in the Notice of Compliance Letter. PM emissions measured during 2010 testing were 5% of the limit, whereas opacity was 12.9% of the 20% opacity limit. The measured PM10 emission rate was 0.0059 lb/mmBtu which is 16.9% of the 0.035 lb/mmBtu limit and the corresponding opacity was 12.2% of the opacity limit. An action level of $\geq 14\%$ opacity (on a 3 hour rolling average) would enable the use of opacity as an indicator of PM10 compliance because $2.44(\text{opacity during test})/14(\text{indicator})$ is 17.4% which exceeds the PM10 16.9% percentage. This shows opacity to be a 'limiting' factor, and provides assurance that we are within the all particulate matter limits.

The selected indicator normal range for the FF D/Ps is less than 11 inches wc. Manufacturer specifications indicate an expected operation of 7-8 inches of wc. An initial alarm comes down at 9, 11, then critical @ 15 inches of wc. Since placing the FF in service we have seen alarms at 9 in. of wc for regular maintenance items. Choosing 11 in. wc. provides an indication the FF is not functioning normally as specified by the manufacturer, and corrective actions should be initiated. All excursions will be documented and reported in the facility's semi-annual deviations report. No low indicating value for either parameter is necessary for this CAM Plan.

Table 2- Opacity and Particulate Matter Comparison

PM Test: April, 2010	Measured Opacity *highest 6-minute average	Differential Pressure *highest avg. during test	Tested PM lb/mmBtu
100% Subbituminous Coal	2.58%	5.4	0.0007
PM 10 Test: April 1, 2010	Opacity **highest 6 min average	Differential Pressure *highest avg. during test	Tested PM lb/mmBtu
100% Subbituminous Coal	2.44%	5.5	0.0059

* based on PM test data

**based on Notice of Compliance Letters