AIR EMISSION PERMIT NO. 03100001-006

IS ISSUED TO

Minnesota Power Division of ALLETE, Inc.
Cliffs Erie LLC (Co-Permittee)
Minnesota Power - Taconite Harbor Energy Center
8124 Highway 61 West
Schroeder, Cook County, MN 55613

The emission units, control equipment and emission stacks at the stationary source authorized in this permit are as described in the following permit application(s):

Permit Type	Application Date	Issue Date	Action Number
Total Facility Operating Permit	06/14/1995	05/19/1997	001
Major Amendment	11/30/1998	04/07/1999	002
Administrative Amendment	10/01/2001	10/30/2001	003
Administrative Amendment	03/20/2002	04/17/2002	004
Administrative Amendment	01/21/2003	02/19/2003	005
Major Amendment	03/23/2006	See below	006

This permit authorizes the Permittee to operate and construct 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.

Permit Type: Federal; Part 70/Requirements To Avoid New Source Review
Authorization to Construct and Operate (40 CFR § 52.21) Issuance Date: December 11, 2006
Authorization to Construct and Operate (40 CFR § 52.21) Effective Date: December 11, 2006
Final Permit Issuance Date: January 8, 2007
Expiration: Upon re-issuance of Part 70 permit (Existing Part 70 permit expired 04/07/2004 and re-issuance application was timely)
Title I Conditions do not expire.

Richard J. Sandberg, Manager
Air Quality Permits Section
Industrial Division

for Brad Moore
Commissioner
Minnesota Pollution Control Agency

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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:

Minnesota Power (Permittee) operates a coal-fired steam-electric generating station known as the Taconite Harbor Energy Center (facility) at Taconite Harbor near Schroeder, Cook County, Minnesota. Three tangentially fired coal boilers at the facility produce steam that power turbines to generate electricity. Coal is delivered by boat and ash is disposed of in a nearby ash landfill.

ACTION 002

Action 002 allowed the Permittee to discontinue ambient air monitoring for total suspended particulate matter.

ACTION 003

Action 003 was an administrative amendment reflecting a change of facility ownership.

ACTION 004

Action 004 was an administrative amendment to extend a SV 003 stack test deadline.

ACTION 005

Action 005 was an administrative amendment reflecting a change of facility ownership.

ACTION 006

Action 006 is a major amendment permit that authorizes installation of additional pollution controls on boiler #2 for NO_X, SO_2, and mercury. The project is one of the Permittee's Arrowhead Regional Emissions Abatement (AREA) emission reduction projects.

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Minnesota Power - Tac Harbor Energy Ctr

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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
These requirements apply where there is a reasonable possibility that a proposed project, analyzed using the actual-to-projected-actual (ATPA) test and found to not be part of a major modification, may result in a significant emissions increase. If the ATPA test is not used for a particular project, or if there is not a reasonable possibility that the proposed project could result in a significant emissions increase, then these requirements do not apply to that project. Even though a particular modification is not subject to New Source Review, a permit amendment, recordkeeping, or notification may still be required under Minn. R. 7007.1150 - 7007.1500.	Title I Condition: 40 CFR Section 52.21(r)(6) and Minn. R. 7007.3000
Preconstruction Documentation -- Before beginning actual construction on a project, the Permittee shall document the following information: 1. A description of the project 2. Identification of the emission unit(s) whose emissions of an NSR pollutant could be affected 3. 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 potential emissions, the projected actual emissions, the amount of emissions excluded due to increases not associated with the modification and that the unit(s) 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. The Permittee shall maintain records of this documentation.	Title I Condition: 40 CFR Section 52.21(r)(6) and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4 & 5
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. The Permittee shall calculate and maintain a record of the sum of the actual and potential (if 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.	Title I Condition: 40 CFR Section 52.21(r)(6) and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4 & 5
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 1-3 under Preconstruction Documentation, above) to the Agency.	Title I Condition: 40 CFR Section 52.21(r)(6) and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4 & 5
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: 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 and analyzed using potential emissions 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

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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, if applicable) 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: a. The name and ID number of the facility, and the name and telephone number of the facility contact person b. The annual emissions (actual plus potential, if any part of the project was analyzed using potential emissions) for each pollutant for which the preconstruction projection and significant emissions rate is exceeded. c. Any other information, such as an explanation as to why the summed emissions differ from the preconstruction projection.	Title I Condition: 40 CFR Section 52.21(r)(6) and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4 & 5
OPERATING 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. Section 116.07, subds. 4a & 9; Minn. R. 7007.0100, subps. 7A, 7L & 7M; Minn. R. 7007.0800, subps. 1, 2 & 4; Minn. R. 7009.0010-7009.0080
The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16.	Minn. R. 7007.0800, subp. 16
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
Comply with Fugitive Emissions Control Plan: Follow the actions and recordkeeping 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. The Commissioner may also require re-installation and operation of particulate matter ambient air monitors.	Minn. R. 7007.0800, subp. 2
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. The Plan shall be revised within 180 days after initial startup following completion of EU 002 modifications. The revisions the additional EU 002 control equipment (CE 010 selective noncatalystic reduction with urea injection, CE 011 SO2 reagent injection, and CE 012 mercury reagent injection).	Minn. R. 7007.0800, subp. 14 and Minn. R. 7007.0800, subp. 16(J)
Noise: The Permittee shall comply with noise standards set forth in Minn. R. 7030.0010 to 7030.0080 at all times during operation of any emission units. This is a state requirement only and is not federally enforceable.	Minn. R. 7030.0010-7030.0080
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, such as for system breakdowns, repairs, calibration checks, and zero and span adjustments (as applicable). Monitoring records should reflect any such periods of process shutdown.	Minn. R. 7007.0800, subp. 4(D)
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)
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
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.	Minn. R. 7007.0800, subp. 9(A)
PERFORMANCE TESTING	hdr

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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
Performance Test Notifications and Submittals: Performance Tests are due as outlined in Tables A and B of the permit. See Table B for additional testing requirements. 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 The Notification, Test Plan, and Test Report may be submitted in alternative format as allowed by Minn. R. 7017.2018.	Minn. R. 7017.2030, subps. 1-4, Minn. R. 7017.2035, subps. 1-2, and Minn. R. 7017.2018
Limits set as a result of a performance test (conducted before or after permit issuance) apply until superseded as stated in the MPCA's Notice of Compliance letter granting preliminary approval. Preliminary approval is based on formal review of a subsequent performance test on the same unit as specified by Minn. R. 7017.2025, subp. 3. The limit is final upon issuance of a permit amendment incorporating the change.	Minn. R. 7017.2025, subp. 3
RECORDKEEPING	hdr
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)
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)
NOTIFICATIONS AND SUBMITTALS	hdr
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
Notification of Deviations Endangering Human Health or the Environment Report: 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: 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
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

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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
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)
Emission Fees: due 60 days after receipt of an MPCA bill	Minn. R. 7002.0005 through Minn. R. 7002.0095
Emissions Inventory Report: due 91 days after each calendar year.	Minn. R. 7019.3000 through Minn. R. 7019.3010

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Minnesota Power - Tac Harbor Energy Ctr

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Subject Item: **GP 001 Three 745 MMBtu/hr coal-fired boilers**

Associated Items: EU 001 Boiler No. 1

EU 002 Boiler No. 2

EU 003 Boiler No. 3

What to do	Why to do it
Total GP 001 Sulfur Dioxide: less than or equal to 1743 lbs/hour using 3-hour Average	Minn. R. 7009.0020 to avoid causing or contributing to a violation of the SO2 ambienty air quality standards in Minn. R. 7009.0080
Mercury content of coal: Less than or equal to 0.20 parts per million on an annual average basis. The agency will refrain from enforcement action for exceedance of this mercury limit if the Permittee is able to demonstrate, to the satisfaction of the agency, that the Permittee has used best efforts to comply with the mercury limit.	Minn. R. 7007.0800, subp. 2
Coal sampling for mercury content: Collect a daily coal sample, and analyze a composite sample of the coal at least once a week according to the most current ASTM method (currently ASTM Method D-6722). The Permittee shall maintain a record of all analyses for at least 5 years from the date of analysis. Results of the analyses shall be reported semiannually with the Semiannual Deviations Report.	Minn. R. 7007.0800, subp. 2
Boiler Cleaning Agents: The Permittee is authorized to incinerate boiler cleaning agents in any of the three boilers. Boiler cleaning agents are limited to EDTA type and Ammonium bromate, must be generated on-site, can not exceed 5% of total fuel mass input, and oxygen must be 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

Facility Name: Minnesota Power - Tac Harbor Energy Ctr

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Subject Item: **GP 002 Reagent Handling and Storage**

Associated Items: CE 013 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 014 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 015 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

EU 008 Alkaline Reagent Silo (SV 008/CE 013)

EU 009 Mercury Reagent Silo (SV 009/CE 014)

EU 010 Trona Silo (SV 010/CE 015)

What to do	Why to do it
Total Particulate Matter: less than or equal to 0.01 grains/dry standard cubic foot for each GP 002 emission unit.	Title I Condition: To avoid major modification under 40 CFR Section 52.21(b) and Minn. R. 7007.3000; meets requirements of Minn. R. 70011.0735
Particulate Matter < 10 micron: less than or equal to 0.01 grains/dry standard cubic foot for each GP 002 emission unit.	Title I Condition: To avoid major modification under 40 CFR Section 52.21(b) and Minn. R. 7007.3000
Opacity: less than or equal to 20 percent opacity for each GP 002 emission unit.	Minn. R. 7011.0715, subp. 1.B
The Permittee shall operate and maintain each fabric filter so that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 99 percent control efficiency	Title I Condition: To avoid major modification under 40 CFR Section 52.21(b) and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2 and 14
The Permittee shall operate and maintain each fabric filter so that it achieves an overall control efficiency for Particulate Matter < 10 micron: greater than or equal to 99 percent control efficiency	Title I Condition: To avoid major modification under 40 CFR Section 52.21(b) and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2 and 14
The Permittee shall operate and maintain each fabric filter at all times that any emission unit controlled by the fabric filter is in operation.	Title I Condition: To avoid major modification under 40 CFR Section 52.21(b) and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2 and 14
Visible Emissions: The Permittee shall check the CE 013, CE 014, and CE 015 stack/vent for any visible emissions during each delivery to the emission unit storage silo controlled by the fabric filter, but not more frequently than once each calendar week for a specific storage silo. A calendar week starts each Sunday. All observations shall be made during daylight hours.	Title I Condition: To avoid major modification under 40 CFR Section 52.21(b) and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4 and 5
Recordkeeping of Visible Emissions: The Permittee shall record the time and date of each visible emission inspection and whether or not any visible emissions were observed.	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4 and 5
Periodic Inspections: The Permittee shall inspect the fabric filter components once per calendar quarter or as required by the manufacturer. The Permittee shall maintain a written record of these inspections.	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: 1. visible emissions are observed; 2. during an inspection the fabric filter or any of its components are found 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

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Subject Item: **GP 003 Hauling on Paved Roads**

Associated Items: CE 016 Paved Road Sweeping

FS 009 Mercury Reagent Truck Hauling - Paved Road

FS 010 Alkaline (or Trona) Reagent Truck Hauling - Paved Road

FS 011 Molten Sulfur Truck Hauling - Paved Road

FS 012 Ammonia Truck Hauling - Paved Road

FS 013 Urea Truck Hauling - Paved Road

What to do	Why to do it
Paved Haul Road Fugitive Emissions Control: The Permittee shall follow the practices described in the revised fugitive emissions control plan, for control of fugitive emissions from GP 003 fugitive emission sources. The practices at a minimum shall include sweeping of paved road surfaces at the frequency specified in the revised plan.	Title I Condition: To avoid major modification under 40 CFR Section 52.21(b) and Minn. R. 7007.3000

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Subject Item: **GP 004 Pellet and Material Handling**

Associated Items: FS 001 Pellet Drop From Railcars into Dock Storage Bins

FS 005 Ship Loading of Taconite Pellets

FS 006 Railcar Material Loading

What to do	Why to do it
The Permittee shall follow the practices described in the revised fugitive emissions control plan for control of fugitive emissions from GP 004 fugitive emission sources, if these sources become active.	Minn. R. 7007.0800, subp. 2

Facility Name: Minnesota Power - Tac Harbor Energy Ctr

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Subject Item: **SV 001 Boiler 1 stack**

Associated Items: EU 001 Boiler No. 1

MR 004 COMS

MR 016 Primary SO2 Monitor

MR 017 Primary NOx Monitor

MR 018 O2 Monitor

MR 019 Flow Monitor

What to do	Why to do it
COMS REQUIREMENTS	hdr
Emissions Monitoring: The owner or operator shall measure the opacity of the emission unit using a COMS.	Minn. R. 7017.1006; 40 CFR Section 75.10
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
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
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 span value shall be between 60% and 80%. The optical surfaces exposed to the effluent gases shall be cleaned prior to performing the zero and span drift adjustments. 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
COMS Calibration Error Audit: due before end of each calendar half-year following Permit Issuance. 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
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 40 CFR 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 available on-site for inspection.	Minn. R. 7017.1210, subp. 4
COMS Calibration Error Audit Results Summary: due 30 days after end of each calendar quarter in which the COMS calibration error audit was completed.	Minn. R. 7017.1220
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
PART 75 CEMS REQUIREMENTS	hdr
Emissions Monitoring: The owner or operator shall measure opacity, SO2, NOx, and CO2 emissions and flow rate for each affected unit in accordance with 40 CFR Section 75.10.	40 CFR Section 75.10
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
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
Linearity Test Results Summary: due 30 days after end of each calendar quarter following Linearity and Leak Check Test if performed.	Minn. R. 7017.1180, subp. 4

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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
Relative Accuracy Test Audit (RATA) Notification: due 30 days before CEMS Relative Accuracy Test Audit (RATA)).	Minn. R. 7017.1180, subp. 2
Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calender quarter in which the CEMS RATA was conducted.	Minn. R. 7017.1180, subp. 3
CEMS QA/QC: The owner or operator of an affected facility shall operate, calibrate, and maintain each CEMS according to the QA/QC procedure in 40 CFR pt. 75, Appendix B as amended.	40 CFR Section 75.21
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; 40 CFR Section 75.50

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Subject Item: **SV 002 Boiler 2 stack**

Associated Items: EU 002 Boiler No. 2

MR 006 Backup SO2 Monitor

MR 007 Backup NOx Monitor

MR 009 COMS

MR 020 Primary SO2 Monitor

MR 021 Primary NOx Monitor

MR 022 O2 Monitor

MR 023 Flow Monitor

What to do	Why to do it
COMS REQUIREMENTS	hdr
Emissions Monitoring: The owner or operator shall measure the opacity of the emission unit using a COMS.	Minn. R. 7017.1006; 40 CFR Section 75.10
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
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
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 span value shall be between 60% and 80%. The optical surfaces exposed to the effluent gases shall be cleaned prior to performing the zero and span drift adjustments. 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
COMS Calibration Error Audit: due before end of each calendar half-year following Permit Issuance. 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
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 40 CFR 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 available on-site for inspection.	Minn. R. 7017.1210, subp. 4
COMS Calibration Error Audit Results Summary: due 30 days after end of each calendar quarter in which the COMS calibration error audit was completed.	Minn. R. 7017.1220
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
PART 75 CEMS REQUIREMENTS	hdr
Emissions Monitoring: The owner or operator shall measure opacity, SO2, NOx, and CO2 emissions and flow rate for each affected unit in accordance with 40 CFR Section 75.10.	40 CFR Section 75.10
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

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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
Linearity Test Results Summary: due 30 days after end of each calendar quarter following Linearity and Leak Check Test if performed.	Minn. R. 7017.1180, subp. 4
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
Relative Accuracy Test Audit (RATA) Notification: due 30 days before CEMS Relative Accuracy Test Audit (RATA)).	Minn. R. 7017.1180, subp. 2
Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calender quarter in which the CEMS RATA was conducted.	Minn. R. 7017.1180, subp. 3
CEMS QA/QC: The owner or operator of an affected facility shall operate, calibrate, and maintain each CEMS according to the QA/QC procedure in 40 CFR pt. 75, Appendix B as amended.	40 CFR Section 75.21
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; 40 CFR Section 75.50

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Permit Number: 03100001 - 006

Subject Item: **SV 003 Boiler 3 stack**

Associated Items: EU 003 Boiler No. 3

MR 014 COMS

MR 024 Primary SO2 Monitor

MR 025 Primary NOx Monitor

MR 026 O2 Monitor

MR 027 Flow Monitor

What to do	Why to do it
COMS REQUIREMENTS	hdr
Emissions Monitoring: The owner or operator shall measure the opacity of the emission unit using a COMS.	Minn. R. 7017.1006; 40 CFR Section 75.10
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
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
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 span value shall be between 60% and 80%. The optical surfaces exposed to the effluent gases shall be cleaned prior to performing the zero and span drift adjustments. 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
COMS Calibration Error Audit: due before end of each calendar half-year following Permit Issuance. 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
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 40 CFR 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 available on-site for inspection.	Minn. R. 7017.1210, subp. 4
COMS Calibration Error Audit Results Summary: due 30 days after end of each calendar quarter in which the COMS calibration error audit was completed.	Minn. R. 7017.1220
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
PART 75 CEMS REQUIREMENTS	hdr
Emissions Monitoring: The owner or operator shall measure opacity, SO2, NOx, and CO2 emissions and flow rate for each affected unit in accordance with 40 CFR Section 75.10.	40 CFR Section 75.10
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
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
Linearity Test Results Summary: due 30 days after end of each calendar quarter following Linearity and Leak Check Test if performed.	Minn. R. 7017.1180, subp. 4

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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
Relative Accuracy Test Audit (RATA) Notification: due 30 days before CEMS Relative Accuracy Test Audit (RATA)).	Minn. R. 7017.1180, subp. 2
Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calender quarter in which the CEMS RATA was conducted.	Minn. R. 7017.1180, subp. 3
CEMS QA/QC: The owner or operator of an affected facility shall operate, calibrate, and maintain each CEMS according to the QA/QC procedure in 40 CFR pt. 75, Appendix B as amended.	40 CFR Section 75.21
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; 40 CFR Section 75.50

Facility Name: Minnesota Power - Tac Harbor Energy Ctr

Permit Number: 03100001 - 006

Subject Item: **EU 001 Boiler No. 1**

Associated Items: CE 001 Electrostatic Precipitator - High Efficiency

GP 001 Three 745 MMBtu/hr coal-fired boilers

SV 001 Boiler 1 stack

What to do	Why to do it
Refer To Subject Item SV 001 for NOx and SO2 CEMS Requirements and COMS Requirements.	hdr
Total Particulate Matter: less than or equal to 0.3 lbs/million Btu heat input (excluding condensible particulate matter).	Minn. R. 7007.0800, subp. 2; meets requirements of Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity.	Minn. R. 7011.0510, subp. 2
Sulfur Dioxide: less than or equal to 0.78 lbs/million Btu heat input using 3-hour Average	Minn. R. 7009.0020 to not cause or contribute to a violation of the SO2 ambient air standard in Minn. R. 7009.0080; meets the requirements of Minn. R. 7011.0510, subp. 1
Fuels allowed: bituminous coal, sub-bituminous coal, No. 2 fuel oil, used oil, used oil sorbents, and boiler cleaning agents.	Minn. R. 7007.0800, subp. 2
Performance Test: due before end of each 60 months starting 05/25/2005 to measure particulate matter emissions. The tests shall be conducted at an interval not to exceed 60 months between test dates.	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 emissions are measured, 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 emissions are measured, 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. Documentation of all STET operation shall be maintained. 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 measure emissions 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 measure emissions at greater than 80% any applicable emision 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

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ACID RAIN PROGRAM REQUIREMENTS	hdr
Comply with the applicable Acid Rain emissions limitation for sulfur dioxide.	40 CFR Sections 72.9(c)(1)(ii) & 72.9(g)(4)
NOx Averaging Plan: Beginning January 1, 2002, either: Maintain an annual average NOx emission rate of 0.40 lbs/mmBtu and limit the annual heat input to less than or equal to 5,600,000 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 76.11
Recordkeeping: Keep on site at the source each of the following documents for a period of 5 years from the date the document is created: 1. The certificate of representation; 2. All emissions monitoring information; 3. Copies of all reports, compliance certifications, and other submissions or records made under the Acid Rain Program; 4. Copies of all documents used to complete an acid rain permit application.	40 CFR Section 72.9(f)(l)
Apply for Acid Rain Program Permit reissuance: The designated representative shall submit a complete Acid Rain permit application for each source with an affected unit at least 6 months prior to the expiration of an existing Acid Rain Permit in accordance with 40 CFR Section 72.30(c).	40 CFR Section 72.30(c)
Certify Acid Rain Program Submittals. Each submission under the Acid Rain Program shall be submitted, signed, and certified by the designated representative or the alternate designated representative for all sources on behalf of which the submission is made in accordance with 40 CFR Section 72.21.	40 CFR Section 72.21
Hold allowances as of the allowance transfer deadline, in the unit's compliance subaccount not less than the total annual emissions of sulfur dioxide for the previous calendar year. Takes effect for years beginning January 1, 2002. Allowances shall be held in, deducted from, or transferred among Allowance Tracking System accounts in accordance with the Acid Rain Program.	40 CFR Sections 72.9(c)(1)(i) and 72.9(g)(4)
The owner or operator shall measure opacity, and all SO2, NOx, and CO2 emissions for each affected unit in accordance with 40 CFR Section 75.10.	40 CFR Section 75.10

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Subject Item: **EU 002 Boiler No. 2**

Associated Items: CE 002 Electrostatic Precipitator - High Efficiency

CE 010 Selective Noncatalytic Reduction for NOX

CE 011 Dry Sorbent Injection

CE 012 Dry Sorbent Injection

CE 017 Ammonia Injection

CE 018 SO3 Injection

GP 001 Three 745 MMBtu/hr coal-fired boilers

SV 002 Boiler 2 stack

What to do	Why to do it
Refer To Subject Item SV 002 for NOx and SO2 CEMS Requirements and COMS Requirements. EU 002 control equipment: CE 010 is EU 002 furnace overfire air and SNCR with ammonia/urea/other reagent injection CE 011 is EU 002 furnace alkaline/sodic/other reagent injection for SO2 control CE 012 is EU 002 furnace sorbent/reagent injection for mercury control CE 017 is ammonia injection upstream of CE 002 for particulate agglomeration CE 018 is SO3 injection upstream of CE 002 to reduce particulate resistivity	hdr
LIMITS AND OPERATING REQUIREMENTS	hdr
Nitrogen Oxides: less than or equal to 0.14 lbs/million Btu heat input using 365-day Rolling Average commencing 270 days after EU 002 initial startup. For the purposes of subject item EU 002, 'Initial Startup' is the initial firing of fuel following completion of modifications (installation of CE 010, CE 011, CE 012, CE 017, and CE 018, and modification of CE 002). Each daily value used in calculating the 365-day rolling average is determined by averaging all lb/mmBtu measurements made by the SV 002 NOx CEMS during the calendar day. This is a state-only requirement and is not enforceable under the Clean Air Act by citizens or the EPA administrator.	Minn. R. 7007.0800, subp. 2
Sulfur Dioxide: less than or equal to 0.24 lbs/million Btu heat input using 365-day Rolling Average commencing 270 days after EU 002 initial startup. Each daily value used in calculating the 365-day rolling average is determined by averaging all lb/mmBtu measurements made by the SV 002 SO2 CEMS during the calendar day. This is a state-only requirement and is not enforceable under the Clean Air Act by citizens or the EPA administrator.	Minn. R. 7007.0800, subp. 2
Sulfur Dioxide: less than or equal to 0.78 lbs/million Btu heat input using 3-hour Average	Minn. R. 7009.0020 to not cause or contribute to a violation of the SO2 ambient air standard in Minn. R. 7009.0080; meets requirements of Minn. R. 7011.0510, subp. 1
Post-Modification Particulate Matter < 10 micron (PM10) and Front-half Particulate Matter (PM) Emission Limits and Compliance Options: The Permittee shall follow option 1 or option 2 described below for each pollutant after completion of modifications. If only one pollutant qualifies for option 1, the Permittee may implement option 1 for the qualifying pollutant while following option 2 for the other pollutant.	Title I Condition: To avoid major modification under 40 CFR Section 52.21(b) and Minn. R. 7007.3000; 40 CFR Section 52.21(r)(6)

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Post-Modification Particulate Matter < 10 micron Compliance Options: After completion of modifications and initial startup, the Permittee shall meet either option 1 or option 2: Option 1 1.a. Stack test to validate EU 002 PM10 emissions are less than or equal to the EU 002 0.120 lb/mmBtu PM10 emission factor, and 1.b. Monitor, record, and report EU 002 PM10 emissions as required by 40 CFR Section 52.21(r)(6); or Option 2 2. Meet the EU 002 327 ton per year (12-month rolling sum basis) PM10 limit and all associated monitoring, recordkeeping, and reporting requirements in table A of this permit. If EU 002 PM10 emission factor testing results in a factor greater than 0.120 lb/mmBtu, the Permittee shall follow option 2 for PM10.	Title I Condition: To avoid major modification under 40 CFR Section 52.21(b) and Minn. R. 7007.3000; 40 CFR Section 52.21(r)(6)
Particulate Matter < 10 micron: less than or equal to 0.120 lbs/million Btu heat input (this is an emission factor and not a limit). The Permittee shall validate this factor through required performance testing after initial startup. If performance testing shows a factor greater than 0.120 lb/mmBtu, the Permittee shall meet the 327 tpy limit and related requirements for option 2.	Title I Condition: To avoid major modification under 40 CFR Section 52.21(b) and Minn. R. 7007.3000; 40 CFR Section 52.21(r)(6)
Particulate Matter < 10 micron: less than or equal to 327 tons/year starting at the end of the 12th month following initial startup if the Permittee is subject to option 2.	Title I Condition: To avoid major modification under 40 CFR Section 52.21(b) and Minn. R. 7007.3000;
PM10: If the Permittee elects to or is required to meet the option 2 PM10 limit, the following cumulative limit as of month 'n' where n = 1, 2, 3, etc. applies upon initial startup of EU 002: Month 1: 70 tons Month 2: 140 tons Month 3: 190 tons Month 4: 225 tons Month 5: 245 tons Month 6: 265 tons Month 7: 280 tons Month 8: 295 tons Month 9: 305 tons Month 10: 315 tons Month 11: 325 tons Month 1 includes the month of initial startup of EU 002. This requirement terminates at the end of the twelfth month following initial startup of EU 002.	Title I Condition: To avoid major modification under 40 CFR Section 52.21(b) and Minn. R. 7007.3000;
Post-Modification Front-half Particulate Matter Compliance Options: After completion of modifications and initial startup, the Permittee shall meet either option 1 or option 2: Option 1 1.a. Stack test to validate EU 002 PM emissions are less than or equal to the EU 002 0.039 lb/mmBtu PM emission factor, and 1.b. Monitor, record, and report EU 002 PM emissions as required by 40 CFR Section 52.21(r)(6); or Option 2 2. Meet the EU 002 106 ton per year (12-month rolling sum basis) PM limit and all associated monitoring, recordkeeping, and reporting requirements in table A of this permit. If EU 002 PM emission factor testing results in a factor greater than 0.039 lb/mmBtu, the Permittee shall follow option 2 for PM.	Title I Condition: To avoid major modification under 40 CFR Section 52.21(b) and Minn. R. 7007.3000; 40 CFR Section 52.21(r)(6)
Front-half Particulate Matter: less than or equal to 0.039 lbs/million Btu heat input (this is an emission factor and not a limit). The Permittee shall validate this factor through required performance testing after initial startup. If performance testing shows a factor greater than 0.039 lb/mmBtu, the Permittee shall meet the 106 tpy limit and related requirements for option 2.	Title I Condition: To avoid major modification under 40 CFR Section 52.21(b) and Minn. R. 7007.3000; 40 CFR Section 52.21(r)(6)
Front-half Particulate Matter: less than or equal to 106 tons/year using 12-month Rolling Sum starting at the end of the 12th month following completion of modifications.	Title I Condition: To avoid major modification under 40 CFR Section 52.21(b) and Minn. R. 7007.3000;

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Front-half Particulate Matter: If the Permittee elects to or is required to meet the option 2 PM limit, the following cumulative limit as of month 'n' where n = 1, 2, 3, etc. applies upon initial startup of EU 002 after completion of modifications: Month 1: 25 tons Month 2: 50 tons Month 3: 60 tons Month 4: 70 tons Month 5: 75 tons Month 6: 80 tons Month 7: 85 tons Month 8: 90 tons Month 9: 95 tons Month 10: 100 tons Month 11: 103 tons Month 1 includes the month of initial startup of EU 002. This requirement terminates at the end of the twelfth month following initial startup of EU 002 after modification.	Title I Condition: To avoid major modification under 40 CFR Section 52.21(b) and Minn. R. 7007.3000;
Total Particulate Matter: less than or equal to 0.3 lbs/million Btu heat input (excluding condensible particulate matter).	Minn. R. 7007.0800, subp. 2; meets requirements of Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity.	Minn. R. 7011.0510, subp. 2
Fuels allowed: bituminous coal, sub-bituminous coal, No. 2 fuel oil, used oil, used oil sorbents, and boiler cleaning agents.	Minn. R. 7007.0800, subp. 2
Control Equipment Operation During Startup and Shutdown: The Permittee is not required to operate CE 010, CE 011, CE 012, CE 017, and CE 018 during startup and shutdown as follows: 1. CE 010, CE 011, and CE 012 operation is not required if flue gas temperature in the injection zone is less than approximately 2000 degrees F; 2. CE 017 and CE 018 operation is not required during startup or shutdown when fuel oil is combusted.	Minn. R. 7007.0800, subp. 2
MONITORING AND RECORDKEEPING	hdr
EU 002 Monthly Fuel Usage Monitoring and Recordkeeping: If the Permittee elects or is required to meet option 2 PM and/or PM10 limits, by the last day of each month commencing with the month of initial startup after completion of modifications, the Permittee shall calculate and record EU 002 monthly fuel usage of sub-bituminous coal and bituminous coal.	Title I Condition: To avoid major modification under 40 CFR Section 52.21(b) and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4 and 5
EU 002 PM Emissions Monitoring and Recordkeeping: If the Permittee elects or is required to meet the option 2 PM limit, no later than 45 days after then end of each month commencing with the month of initial startup after completion of modifications, the Permittee shall: 1. calculate and record EU 002 monthly PM emissions as follows: EU 002 PM = (FC * HC * EF)/2000 where: EU 002 PM = monthly EU 002 PM emissions for each coal type (tons) FC = EU 002 monthly fuel consumption for each coal type (tons) HC = fuel heat content for each coal type (mmBtu/ton) determined by ASTM D1989 EF = current EU 002 PM emission factor for each coal type (lb/mmBtu) 2. calculate and record the total EU 002 12-month rolling sum PM emissions for all coal combusted by summing the 12 most-recent monthly PM emissions calculations for each coal type. Prior to initial performance testing the PM emission factor shall be 0.039 lb/mmBtu.	Minn. R. 7007.0800, subp. 4 and 5

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EU 002 PM10 Emissions Monitoring and Recordkeeping: If the Permittee elects or is required to meet the option 2 PM10 limit, no later than 45 days after then end of each month commencing with the month of initial startup after completion of modifications, the Permittee shall: 1. calculate and record EU 002 monthly PM10 emissions as follows: EU 002 PM10 = (FC * HC * EF)/2000 where: EU 002 PM10 = monthly EU 002 PM10 emissions for each coal type (tons) FC = EU 002 monthly fuel consumption for each coal type (tons) HC = fuel heat content for each coal type (mmBtu/ton) determined by ASTM D1989 EF = current EU 002 PM10 emission factor for each coal type (lb/mmBtu) 2. calculate and record the total EU 002 12-month rolling sum PM10 emissions for all coal combusted by summing the 12 most-recent monthly PM10 emissions calculations for each coal type. Prior to initial performance testing the PM10 emission factor shall be 0.120 lb/mmBtu.	Minn. R. 7007.0800, subp. 4 and 5
PM10 Periodic Monitoring: The PM CAM plan requirements shall fulfill periodic monitoring for PM10 emissions, unless PM and PM10 performance testing demonstrates no consistent relationship between PM and PM10 emission rates (for example, on a lb/mmBtu basis and the same coal type, PM test results from an agency-approved test are less than those for PM10, but in another agency-approved performance test PM results exceed those for PM10).	Minn. R. 7007.0800, subps. 4.B and 5.A
COMPLIANCE ASSURANCE MONITORING	hdr
Compliance Assurance Monitoring: Continuously monitor and record ESP total secondary power, molten sulfur feed rate (surrogate for SO3 injection rate), and ammonia flow rate (surrogate for ammonia injection rate) whenever EU 002 is operating.	40 CFR Sections 64.6(c), 64.7(c), and 64.9(b)
ESP Total Power: Maintain at a minimum the ESP total secondary power determined during the initial PM performance test, determined on a 3-hour rolling average basis. ESP total power is the sum of the input power measured for each ESP electrical field. Field input power is measured in kilowatts and is the product of the secondary voltage and secondary current for each field. Secondary voltage and secondary current are measured using digital metering onboard the power supplies for each electrical field.	40 CFR Section 64.6(c)
Molten Sulfur Pump Feed Rate: Maintain molten sulfur feed rate (measured as an electrical output signal in milliamps from the pump variable frequency drive (VFD)) at or above the value measured during the initial PM performance test, determined on a 3-hour rolling average basis.	40 CFR Section 64.6(c)
Ammonia Flow Rate: Maintain ammonia flow rate (measured as an electrical output signal in milliamps from the ammonia flowmeter) at or above the value measured during the initial PM performance test, determined on a 3-hour rolling average basis.	40 CFR Section 64.6(c)
Excursions: An excursion is defined as any of the following: 1. ESP total power (3-hour rolling average) less than the kilowatts value determined during initial PM performance testing; 2. Molten sulfur feed rate (3-hour rolling average) measured as pump signal milliamps less than the pump milliamps signal value determined during initial PM performance testing; 3. Ammonia flow rate (3-hour rolling average) less than the flow meter milliamps signal value determined during initial PM performance testing. Respond to excursions as required by section 64.7(d) including inspection, evaluation, and corrective action.	40 CFR Sections 64.6(c) and 64.7(d)

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ESP Total Power CAM Performance Criteria: 1. ESP secondary voltage and current are measured using the instrumentation provided by the ESP power supply manufacturer. 2. Integrate voltage and current signals will be integrated into the plant digital control system. 3. Confirm meter zero readings when the ESP power supplies are not operating. 4. Voltage and current are measured continuously and used to calculate the power output every 15 minutes. 5. Hourly average power input is calculated and recorded based on the four 15-minute readings. 6. Hourly averages are used to determine the 3-hour rolling average total power input.	40 CFR Section 64.6(c)
Molten Sulfur Feed Rate CAM Performance Criteria: 1. The molten sulfur pump analog signal will be measured using the instrumentation and control system provided by the flue gas conditioning system supplier. 2. In the event that the molten sulfur pump motor fails, the SO3 production controls will alarm based on loss of ignition. 3. Confirm the analog feedback from the VFD reads 4 mA during standby mode for the flue gas conditioning system, or when EU 002 is not operating. 4. The pump speed feedback is measured continuously. 5. The analog pump speed signal is recorded in a data logger. 6. The averaging period is a 3-hour rolling average.	40 CFR Section 64.6(c)
Ammonia Flow Rate CAM Performance Criteria: 1. Measure the analog signal using the instrumentation and control system provided by the flue gas conditioning system supplier. 2. If ammonia flow is interrupted, the SO3 production controls will alarm based on NH3 flow failure. 3. Confirm ammonia flowmeter feedback reads 4 mA during standby mode for the flue gas conditioning system, or when EU 002 is not operating. 4. The ammonia flowmeter feedback is measured continuously. 5. The analog ammonia flowmeter signal is recorded in a data logger. 6. The averaging period is a 3-hour rolling average.	40 CFR Section 64.6(c)
CAM Excursions Reporting: The Permittee shall report all ESP total power, molten sulfur feed rate, and ammonia flow rate excursions in the semiannual deviations report required by this permit.	40 CFR Section 64.9(a)
Documentation For Need Of Improved Monitoring: As required by Section 64.8(e), promptly notify the agency and submit a permit application to address necessary monitoring changes if the Permittee identifies noncompliance with the total particulate matter limit (the 0.3 lb/mmBtu limit that meets Minn. R. 7011.0510, subp. 1) .	40 CFR Section 64.7(e)
PARTICULATE MATTER CONTROL EQUIPMENT REQUIREMENTS (CE 002, CE 017, AND CE 018)	hdr
The permittee is authorized to modify the existing CE 002 electrostatic precipitator (ESP) from a hot-side ESP to a cold-side ESP. The Permittee is also authorized to install ammonia and sulfur trioxide injection systems (CE 017 and CE 018, respectively) upstream of the ESP to agglomerate fine particulate matter and increase ESP collection efficiency.	Minn. R. 7007.0800, subp. 2
CE 017 Ammonia Injection: The Permittee may test PM and PM10 stack emissions to determine if the ammonia injection is necessary for PM and PM10 control (the required initial PM and PM10 performance tests may be used in this determination). If the Permittee determines by testing that ammonia injection is not necessary to meet applicable EU 002 Option 1 or Option 2 PM and PM10 requirements, the Permittee may discontinue operation of the ammonia injection system. If the Permittee suspends ammonia injection, all compliance assurance monitoring (CAM) requirements pertaining to the ammonia injection system no longer apply.	Minn. R. 7007.0800, subp. 2
Notification Of Discontinuation Of Use Of Ammonia Injection: If the Permittee discontinues use of the ammonia injection system, the Permittee shall submit written notification of such to the agency, no later than 15 days after discontinuation.	Minn. R. 7007.0800, subp. 2
MERCURY CONTROL EQUIPMENT (CE 012) REQUIREMENTS	hdr

Mercury Reagent: This permit authorizes the installation of a furnace mercury sorbent injection system for the injection of MinPlus (a propriety sorbent developed by Mobotec). The Permittee may use a furnace mercury sorbent other than MinPlus providing a mercury emissions performance test is conducted no later than 60 days after a change of sorbent, and the measured mercury emissions rate is less than or equal to that measured by the most recent MPCA-approved performance test when MinPlus sorbent was used. If the Permittee changes the mercury sorbent, the Permittee shall submit written notification of such to the agency no later than 15 days after making the change.	Minn. R. 7007.0800, subp. 2
Mercury Reagent Feed Rate: Maintain mercury reagent feed rate at or above the value measured during the most-recent mercury emissions performance test.	Minn. R. 7007.0800, subp. 2
Mercury Reagent Injection: Immediately upon discovery of a drop of mercury reagent injection rate below the value measured during the most recent mercury performance test, initiate corrective actions to restore the mercury reagent injection rate as soon as possible.	Minn. R. 7007.0800, subp. 2
Mercury Reagent Injection Monitoring: The Permittee shall install, maintain, and operate at all times that EU 002 is operating, a system for monitoring and recording the mercury reagent feed rate. Record the time periods, reasons, and corrective actions taken for all EU 002 operating periods when mercury reagent flow rate is below the required minimum.	Minn. R. 7007.0800, subp. 2
Mercury Control Efficiency: The Permittee shall determine the mercury control efficiency percentage based on uncontrolled emissions calculated from coal mercury content sampling results, and controlled emissions determined by mercury performance testing, no later than 45 days after completion of initial mercury performance testing. The control efficiency calculation shall be included in the mercury performance test report.	Minn. R. 7007.0800, subp. 2
PERFORMANCE TESTING	hdr
Initial Performance Test: due 270 days after Initial Startup of EU 002 after completion of modifications, to determine the (front-half) PM and PM10 emission factors on a lb/mmBtu basis. Separate tests shall be conducted for sub-bituminous coal and bituminous coal. The Permittee may avoid EU 002 bituminous coal testing if the Permittee does not burn any bituminous coal in EU 002 after completion of modifications. ESP total secondary power, molten sulfur feed rate, and ammonia flow rate shall be measured during PM testing and subsequently incorporated in the PM CAM plan requirements. The Permittee may also conduct additional PM and PM10 testing without operating CE 017 to determine if CE 017 is necessary to meet option 1 or option 2 for PM and PM10 emissions.	Title I Condition: To avoid major modification under 40 CFR Section 52.21(b) and Minn. R. 7007.3000; Minn. R. 7017.2020, subp. 1; meet requirements of 40 CFR Section 64.4(d)(1) for PM CAM plan
Initial Performance Test: due 270 days after Initial Startup of EU 002 after completion of modifications, to measure mercury emissions. Separate tests shall be conducted for sub-bituminous coal and bituminous coal. The Permittee may avoid EU 002 bituminous coal testing if the Permittee does not burn any bituminous coal in EU 002 after completion of modifications. Testing shall be conducted according to 40 CFR Section 75.81(c) and results submitted no later than 45 days after testing. The Permittee shall calculate mercury control efficiency based on initial performance test results and uncontrolled mercury emissions determined by concurrent fuel sampling, and submit the calculation in the mercury initial performance test report.	Minn. R. 7017.2020, subp. 1
Initial Performance Test: due 270 days after Initial Startup of EU 002 after completion of modifications, to measure ammonia slip.	Minn. R. 7017.2020, subp. 1
Performance Test: due before end of each year following Initial Performance Test to measure mercury emissions if results of the initial performance test demonstrate EU 002 emits no more than 9.0 lbs of mercury per year. A year is 4 QA operating quarters (a QA operating quarter is a calendar quarter in which there are at least 168 unit operating hours; a unit operating hour is a clock hour during which a unit combusts any fuel, either for part of the hour or for the entire hour). If results of the initial performance test demonstrate EU 002 emissions exceed 9.0 but are no more than 29.0 lbs of mercury per year, testing shall be conducted by the end of the second QA operating quarter. Thereafter, testing shall be every 2 or 4 QA operating quarters depending on the results of the previous test. The Permittee shall calculate mercury control efficiency based on results of each performance test and uncontrolled mercury emissions determined by concurrent fuel sampling, and submit the calculation in the report for each performance test.	Minn. R. 7017.2020, subp. 1

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Performance Test: due before end of each 60 months starting 05/25/2005 to measure particulate matter emissions. The tests shall be conducted at an interval not to exceed 60 months between test dates. This requirement is no longer effective upon completion of initial performance testing of EU 002 following completion of modifications.	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 emissions are measured, 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 emissions are measured, 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. Documentation of all STET operation shall be maintained. 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 measure emissions 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 measure emissions at greater than 80% any applicable emision 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
ACID RAIN PROGRAM REQUIREMENTS	hdr
Comply with the applicable Acid Rain emissions limitation for sulfur dioxide.	40 CFR Sections 72.9(c)(1)(ii) & 72.9(g)(4)

Facility Name: Minnesota Power - Tac Harbor Energy Ctr

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NOx Averaging Plan: Beginning January 1, 2002, either: Maintain an annual average NOx emission rate of 0.40 lbs/mmBtu and limit the annual heat input to less than or equal to 5,600,000 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 76.11
Recordkeeping: Keep on site at the source each of the following documents for a period of 5 years from the date the document is created: 1. The certificate of representation; 2. All emissions monitoring information; 3. Copies of all reports, compliance certifications, and other submissions or records made under the Acid Rain Program; 4. Copies of all documents used to complete an acid rain permit application.	40 CFR Section 72.9(f)(l)
Apply for Acid Rain Program Permit reissuance: The designated representative shall submit a complete Acid Rain permit application for each source with an affected unit at least 6 months prior to the expiration of an existing Acid Rain Permit in accordance with 40 CFR Section 72.30(c).	40 CFR Section 72.30(c)
Certify Acid Rain Program Submittals. Each submission under the Acid Rain Program shall be submitted, signed, and certified by the designated representative or the alternate designated representative for all sources on behalf of which the submission is made in accordance with 40 CFR Section 72.21.	40 CFR Section 72.21
Hold allowances as of the allowance transfer deadline, in the unit's compliance subaccount not less than the total annual emissions of sulfur dioxide for the previous calendar year. Takes effect for years beginning January 1, 2002. Allowances shall be held in, deducted from, or transferred among Allowance Tracking System accounts in accordance with the Acid Rain Program.	40 CFR Sections 72.9(c)(1)(i) and 72.9(g)(4)
The owner or operator shall measure opacity, and all SO2, NOx, and CO2 emissions for each affected unit in accordance with 40 CFR Section 75.10.	40 CFR Section 75.10

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Permit Number: 03100001 - 006

Subject Item: **EU 003 Boiler No. 3**

Associated Items: CE 003 Electrostatic Precipitator - High Efficiency

GP 001 Three 745 MMBtu/hr coal-fired boilers

SV 003 Boiler 3 stack

What to do	Why to do it
Refer To Subject Item SV 003 for NOx and SO2 CEMS Requirements and COMS Requirements.	hdr
Total Particulate Matter: less than or equal to 0.3 lbs/million Btu heat input (excluding condensible particulate matter).	Minn. R. 7007.0800, subp. 2; meets requirements of Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity.	Minn. R. 7011.0510, subp. 2;
Sulfur Dioxide: less than or equal to 0.78 lbs/million Btu heat input using 3-hour Average	Minn. R. 7009.0020 to not cause or contribute to a violation of the ambient SO2 standards in Minn. R. 7009.0080; meets the requirements of Minn. R. 7011.0510, subp. 1
Fuels allowed: bituminous coal, sub-bituminous coal, No. 2 fuel oil, used oil, used oil sorbents, and boiler cleaning agents.	Minn. R. 7007.0800, subp. 2
Performance Test: due before end of each 60 months starting 05/25/2005 to measure particulate matter emissions. The tests shall be conducted at an interval not to exceed 60 months between test dates.	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 emissions are measured, 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 emissions are measured, 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. Documentation of all STET operation shall be maintained. 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 measure emissions 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 measure emissions at greater than 80% any applicable emision 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

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ACID RAIN PROGRAM REQUIREMENTS	hdr
Comply with the applicable Acid Rain emissions limitation for sulfur dioxide.	40 CFR Sections 72.9(c)(1)(ii) & 72.9(g)(4)
NOx Averaging Plan: Beginning January 1, 2002, either: Maintain an annual average NOx emission rate of 0.40 lbs/mmBtu and limit the annual heat input to less than or equal to 5,600,000 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 76.11
Recordkeeping: Keep on site at the source each of the following documents for a period of 5 years from the date the document is created: 1. The certificate of representation; 2. All emissions monitoring information; 3. Copies of all reports, compliance certifications, and other submissions or records made under the Acid Rain Program; 4. Copies of all documents used to complete an acid rain permit application.	40 CFR Section 72.9(f)(l)
Apply for Acid Rain Program Permit reissuance: The designated representative shall submit a complete Acid Rain permit application for each source with an affected unit at least 6 months prior to the expiration of an existing Acid Rain Permit in accordance with 40 CFR Section 72.30(c).	40 CFR Section 72.30(c)
Certify Acid Rain Program Submittals. Each submission under the Acid Rain Program shall be submitted, signed, and certified by the designated representative or the alternate designated representative for all sources on behalf of which the submission is made in accordance with 40 CFR Section 72.21.	40 CFR Section 72.21
Hold allowances as of the allowance transfer deadline, in the unit's compliance subaccount not less than the total annual emissions of sulfur dioxide for the previous calendar year. Takes effect for years beginning January 1, 2002. Allowances shall be held in, deducted from, or transferred among Allowance Tracking System accounts in accordance with the Acid Rain Program.	40 CFR Sections 72.9(c)(1)(i) and 72.9(g)(4)
The owner or operator shall measure opacity, and all SO2, NOx, and CO2 emissions for each affected unit in accordance with 40 CFR Section 75.10.	40 CFR Section 75.10

Facility Name: Minnesota Power - Tac Harbor Energy Ctr

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Subject Item: **EU 004 Heating Boiler - 34 mmBtu/hr**

Associated Items: SV 004 Heating Boiler stack

What to do	Why to do it
Heat Input: less than or equal to 29,784 million Btu/year using 12-month Rolling Sum	Title I Condition: Limit to restrict annual capacity factor to qualify as a limited use boiler under 40 CFR Section 63.7575
Total Particulate Matter: less than or equal to 0.6 lbs/million Btu heat input	Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent opacity except that a maximum of 60 percent opacity shall be permissible for four minutes in any 60-minute period and that a maximum of 40 percent opacity shall be permissible for four additional minutes in any 60-minutes period.	Minn. R. 7011.0510, subp. 2
Fuel type limited to distillate fuel oil.	Minn. R. 7007.0800, subp. 2
Heat Input Monitoring and Recordkeeping: By the last day of each month calculate and record: 1. EU 004 monthly fuel usage and (convert to) monthly heat input for the previous calendar month; 2. EU 004 heat input for the previous 12-month period by summing the monthly heat inputs for the previous 12 months.	Title I Condition: Recordkeeping for annual capacity factor to qualify as a limited use boiler under 40 CFR Section 63.7575; Minn. R. 7007.0800, subp. 4 and 5

Facility Name: Minnesota Power - Tac Harbor Energy Ctr

Permit Number: 03100001 - 006

Subject Item: **EU 005 Cold Start Generator**

Associated Items: SV 005 Cold Start Generator stack

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 limited to distillate fuel oil.	Minn. R. 7007.0800, subp. 2

Facility Name: Minnesota Power - Tac Harbor Energy Ctr

Permit Number: 03100001 - 006

Subject Item: **EU 006 Ash Collection Baghouse**

Associated Items: CE 004 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

SV 006 Ash Collection Baghouse stack

What to do	Why to do it
Total Particulate Matter: less than or equal to 0.30 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. 7011.0710, subp. 1.A.
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity.	Minn. R. 7011.0710, subp. 1.B.
The Permittee shall operate and maintain CE 004 so that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 99 percent control efficiency	Title I Condition: To avoid major modification under 40 CFR Section 52.21(b) and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2 and 14
The Permittee shall operate and maintain CE 004 so that it achieves an overall control efficiency for Particulate Matter < 10 micron: greater than or equal to 99 percent control efficiency	Title I Condition: To avoid major modification under 40 CFR Section 52.21(b) and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2 and 14
The Permittee shall operate and maintain CE 004 at all times that any emission unit controlled by the fabric filter is in operation.	Title I Condition: To avoid major modification under 40 CFR Section 52.21(b) and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2 and 14
Visible Emissions: The Permittee shall check the stack/vent for CE 004 for any visible emissions once each week of operation. All observations shall be made during daylight hours.	Title I Condition: To avoid major modification under 40 CFR Section 52.21(b) and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4 and 5
Recordkeeping of Visible Emissions: The Permittee shall record the time and date of each visible emission inspection and whether or not any visible emissions were observed.	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4 and 5
Periodic Inspections: The Permittee shall inspect the fabric filter components once per calendar quarter or as required by the manufacturer. The Permittee shall maintain a written record of these inspections.	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: 1. visible emissions are observed; 2. during an inspection the fabric filter or any of its components are found 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

TABLE B: SUBMITTALS

Facility Name: Minnesota Power - Tac Harbor Energy Ctr

Permit Number: 03100001 - 006

Also, where required by an applicable rule or permit condition, send to the Permit Technical Advisor 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

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.

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 Technical Advisor
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.

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

TABLE B: ONE TIME SUBMITTALS OR NOTIFICATIONS

Facility Name: Minnesota Power - Tac Harbor Energy Ctr

Permit Number: 03100001 - 006

What to send	When to send	Portion of Facility Affected
Application for Permit Reissuance	due 180 days before expiration of Existing Permit	Total Facility
Fugitive Control Plan	due 60 days after Permit Issuance. The plan shall be a revised plan that includes new fugitive emission sources authorized by permit No. 03100001-006. New fugitive emission sources are FS 009 (Mercury Reagent Truck Hauling), FS 010 (Alkaline/Trona Reagent Truck Hauling), FS 011 (Molten Sulfur Truck Hauling), FS 012 (Ammonia Truck Hauling), and FS 013 (Urea Truck Hauling).	Total Facility
Notification of the Actual Date of Initial Startup	due 15 days after Initial Startup of EU 002 after completion of modifications (installation of CE 010, CE 011, CE 012, CE 017, and CE 018, and modification of CE 002). Initial startup is the initial firing of fuel in EU 002 after completion of modifications.	EU002
Report	due 60 days after Initial Performance Test to measure EU 002 mercury emissions. The report shall be comprised of data and calculations for mercury control efficiency percentage based on uncontrolled emissions calculated from coal mercury content sampling results and controlled emissions determined by mercury performance testing.	EU002
Submittal of Permit Application	due 90 days after Initial Performance Test for EU 002 mercury emissions. The application shall contain the appropriate forms for a major amendment to this permit to add an EU 002 mercury emission limit and/or control efficiency, mercury control equipment monitoring parameter ranges, and minimum parameter values for the parameters identified in the EU 002 PM CAM plan.	Total Facility
Testing Frequency Plan	due 60 days after Initial Performance Test for PM and PM10 emission factor determination. The plan shall specify a testing frequency based on the test results and MPCA guidance. Future performance tests based on 12-month, 36-month, 60-month intervals, or as applicable, shall be required upon written approval of the plan by the MPCA.	EU002

TABLE B: RECURRENT SUBMITTALS

Facility Name: Minnesota Power - Tac Harbor Energy Ctr

Permit Number: 03100001 - 006

What to send	When to send	Portion of Facility Affected
Excess Emissions/Downtime Reports (EER's)	due 30 days after end of each calendar quarter starting 05/19/1997 (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.	SV001
Excess Emissions/Downtime Reports (EER's)	due 30 days after end of each calendar quarter starting 05/19/1997 (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.	SV002
Excess Emissions/Downtime Reports (EER's)	due 30 days after end of each calendar quarter starting 05/19/1997 (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.	SV003
Semiannual Deviations Report	due 30 days after end of each calendar half-year starting 05/19/1997. 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 occured, the Permittee shall submit the report stating no deviations.	Total Facility
Compliance Certification Report (Acid Rain Program)	due 60 days after end of each calendar year starting 01/01/2002. Submit an annual compliance certification report for the unit in accordance with 40 CFR Section 72.90(a). The report shall include all information required by 40 CFR Sections 72.90(b) and (c).	EU001
Compliance Certification Report (Acid Rain Program)	due 60 days after end of each calendar year starting 01/01/2002. Submit an annual compliance certification report for the unit in accordance with 40 CFR Section 72.90(a). The report shall include all information required by 40 CFR Sections 72.90(b) and (c).	EU002
Compliance Certification Report (Acid Rain Program)	due 60 days after end of each calendar year starting 01/01/2002. Submit an annual compliance certification report for the unit in accordance with 40 CFR Section 72.90(a). The report shall include all information required by 40 CFR Sections 72.90(b) and (c).	EU003
Compliance Certification	due 30 days after end of each calendar year starting 05/19/1997 (for the previous calendar year). Submit the certification on a form approved by the Commissioner, both to the Commissioner and to the US EPA regional office in Chicago. This certification covers all deviations experienced during the calendar year.	Total Facility

APPENDIX MATERIAL
Facility Name: Minnesota Power - Taconite Harbor Energy
Permit Number: 03100001-006

Phase II NOx Compliance Plan

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

This submission is: ☐ **New** ☒ **Revised**

Step 1
Indicate plant name, State, and ORIS code from NADB, if applicable

Taconite Harbor Energy Center	MN	10075
Plant Name	State	ORIS Code

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 botton wall-fired, "T" for tangetially 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#	ID#	ID#
Type T	Type T	Type T	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)						
(d) Standard annual average emission limitation of 0.46 lb/mmBtu (for <u>Phase II</u> dry bottom wall-fired boilers)						
(e) Standard annual average emission limitation of 0.40 lb/mmBtu (for <u>Phase II</u> 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			
(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						
(l) Common stack pursuant to 40 CFR 75.17(a)(2)(i)(B) with NOx Averaging (check the NOx Averaging Plan box and include NOx Averaging form)						
(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						

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.

Phase II NOx Averaging Plan

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

This submission is: **New** ☐ ☒ **Revised**

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

$$\frac{\sum_{i=1}^{n} (R_{Li} \times HI_i)}{\sum_{i=1}^{n} HI_i} \leq \frac{\sum_{i=1}^{n} [R_{li} \times HI_i]}{\sum_{i=1}^{n} HI_i}$$

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

[X] This plan is effective for calendar year 2004 through calendar year 2007 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.

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.

Acid Rain Permit Application

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

This submission is ☐ New ☒ Revised

Taconite Harbor Energy Center Plant Name	MN State	10075 ORIS Code

a	b	c	d
Boiler ID#	Unit Will Hold Allowances in Accordance with 40 CFR 72.9(c)(1)	New Units Commence Operation Date	New Units Monitor Certification Deadline
1	X Yes		
2	X Yes		
3	X Yes		
	Yes		
	Yes		
	Yes		
	Yes		
	Yes		
	Yes		
	Yes		
	Yes		

Permit Requirements.

(1) The designated representative of each affected source and each affected unit at the source shall:
(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 part 75.
(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 part 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)), or in the compliance subaccount of another affected unit at the same source to the extent provided in 40 CFR 73.35(b)(3), 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, provided that to the extent that 40 CFR part 75 provids for a 3-year period for recordkeeping, the 3-year period shall apply;

(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
AIR EMISSION PERMIT NO. 03100001-006

This technical support document (TSD) is for all parties interested in the permit meets the requirements of 40 CFR § 70.7(a)(5) and Minn. R. 7007.0850, subp. 1. This document provides the legal and factual justification for each applicable requirement or policy decision considered in the preliminary determination to issue the permit.

1. General Information

1.1. Applicant and Stationary Source Location:

Applicant/Address	Stationary Source/Address (SIC Code: 4911)
Minnesota Power An ALLETE Company 30 West Superior Street Duluth, MN 55802-2093 Cliffs-Erie LLC (Co-Permittee) PO Box 900 Hoyt Lakes, MN 55750-0900	8124 Highway 61 W Schroeder Cook County
Contact: Brandon Krogh (Minnesota Power) Phone: 218-723-3954	

1.2. Facility Description

Minnesota Power (Permittee) operates a coal-fired steam-electric generating station known as the Taconite Harbor Energy Center (facility) at Taconite Harbor near Schroeder, Cook County, Minnesota. The facility and associated dock were built in the mid-1950s by Erie Mining Company to generate electricity as part of their taconite processing plant project in Hoyt Lakes. The dock received coal for the facility and shipped taconite pellets downlakes. Many years later, all Erie Mining facilities were sold to LTV Steel Mining Company who hired Cleveland Cliffs as the operating agent. In the 1980s, the power plant was shut down for economic reasons and electricity needed for the Hoyt Lakes and dock operations was purchased from Minnesota Power. Then, once again due to changes in economics, in 1991 LTV decided to restart the power plant to resume production of electricity.

In early 2001, LTV went into bankruptcy and shut down all of its Minnesota facilities. Through the bankruptcy process, Minnesota Power purchased the facility in late 2001. In addition, a new company, Cliffs-Erie, LLC was formed who took ownership from LTV of the Taconite Harbor dock as well as the taconite processing facility in Hoyt Lakes. Minnesota Power returned the facility to service in 2002 and the dock is used to receive coal by ship for the facility. The Hoyt Lakes facility as well as the taconite dock loadout operations have remained idle.

Because the facility and dock are located on contiguous property, the entire Taconite Harbor power plant and dock is considered a single source and the air permit lists Minnesota Power & Cliffs-Erie, LLC as co-permittees.

A 1999 major amendment (permit No. 03100001-002) was issued to allow discontinuation of TSP ambient air monitoring. This permit amendment incorrectly reset the part 70 operating permit expiration date from the original May 19, 2002, expiration date to five years after issuance of the major amendment

which was April 7, 2004. When the error was discovered in 2002, the agency decided to retain the new April 7, 2004, expiration date.

The three tangentially fired coal boilers (75 MW net each) at the facility produce steam that power turbines to generate electricity. The boilers were originally designed to operate on bituminous coal, but were changed over to subbituminous coal in the early 1990s (although they are permitted to burn either coal type).

Coal delivered by boat is unloaded and conveyed to a coal surge pile via a series of conveyors or transferred to a coal stockpile for long term storage for use during the nonshipping season. Coal is transferred directly from the coal surge pile by scraper or dozer to the boiler house building, pulverized, and fed into the boilers. Ash is pneumatically conveyed to the ash collection silo and then disposed of in a nearby ash landfill constructed by the Permittee in 2002. The boilers are equipped with distillate oil-fired ignitors to facilitate coal combustion during boiler startup. The facility also contains a heating boiler, a cold start generator, and an emergency fire pump.

1.3 Description of the Activities Allowed by this Permit Action

This permit authorizes installation of additional pollution controls on boiler #2. The project is one of the Permittee's Arrowhead Regional Emissions Abatement (AREA) emission reduction projects and will result in voluntary emission reductions not required by rule or statute. The Permittee has received approval from the Minnesota Public Utilities Commission to recapture costs from its customer base that are associated with the project.

The Permittee proposes to install NO_X, SO_2, and mercury controls on boiler #2 as a pilot test to ensure efficacy of the control technology. The control technology known as 'Mobotec' is a multi-pollutant control technology. The Mobotec mercury control system is a developing technology than has not been previously installed on subbituminous coal-fired boilers.

Mobotec is comprised of Rotating Opposed Fired Air ('ROFA') and ROTAMIX selective non-catalytic reduction (SNCR) with furnace urea injection for NO_X control. In addition, the system includes a Furnace Sorbent Injection ('FSI') system for injection of a calcium alkaline reagent (limestone) for SO_2 control, and a system to inject a clay-based sorbent (MinPlus) to adsorb and chemically bind vaporized elemental mercury. The 'spent' materials (limestone and clay) will be particulate matter emissions captured by the existing electrostatic precipitator (ESP). Adsorbed mercury will be strongly bound to the sorbent and not leach from the ash when it is placed in the facility's dry ash storage cells. The limestone reagent used for SO_2 control is not related to the existing outdoor limestone storage (FS 003). The Permittee is authorized to use alternate reagents for NO_X and SO_2 (such as Trona which is a sodic reagent), and an alternative sorbent for mercury control. If an alternative mercury sorbent is used, the Permittee is required to conduct a mercury emissions performance test no later than 60 days after changing the sorbent. No additional requirements apply if alternative SO_2 or NOx reagents are used because these pollutants are subject to permit limits and are monitored by CEMS.

Expected control efficiencies are 62% for NO_X, 65% for SO_2, and up to 90% for mercury. Ammonia slip is expected to be less than 5 ppm. The Permittee states that these NO_X and SO_2 controls would satisfy BART under the Regional Haze Rule (although boiler #2 is too old to be subject to BART).

An increase in PM and PM_{10} emissions may accompany the NO_X, SO_2, and mercury reductions due to greater particulate loading to the ESP. As a result, the Permittee proposes to convert the existing hot-side ESP to a cold-side ESP (emissions will be ducted to the ESP after the air pre-heater instead of the current setup of before the air pre-heater), and will adjust the alkaline reagent injection rate as necessary to limit the PM and PM_{10} emissions increase to levels below the Prevention of Significant Determination (PSD)

significant emission increase thresholds. Also, SO_3 (to reduce particle resistivity) and anhydrous ammonia (to agglomerate smaller particles) will be injected into the flue gas upstream of the ESP to increase ESP control efficiency. SO_3 will be created by burning molten (liquid) sulfur to form SO_2 in a burner chamber, and then passing the SO_2 over a catalyst to form SO_3. The SO_3 injection rate is matched to boiler load. The burner chamber is self-contained and does not create any emissions other than minimal SO_3 slip that results from SO_3 injection and a modest increase in H_2SO_4 stack emissions (all SO_3 is converted to H_2SO_4 due to reaction with flue gas moisture). Anhydrous ammonia injection may be eliminated if PM and PM_{10} stack testing indicates it is not necessary because handling and storage of anhydrous ammonia is a safety hazard.

Operation of the urea, limestone, MinPlus, SO_3 and ammonia injection systems is not required during startup and shutdown. A flue gas temperature in the furnace of approximately 2000 F is necessary for the reagents and sorbent to control NO_X, SO_2, and mercury emissions.

During startup, fuel oil is fired until a fire is established that is strong enough to support coal combustion. SO_3 or NH_3 is not needed during oil firing for particulate matter control due to very low particulate matter loading. The change to coal combustion occurs gradually by starting one of the coal feeders, then a second and then a third and if necessary a fourth coal feeder. Fuel oil is eliminated after the third feeder is operating. During shutdown fuel oil combustion is reintroduced and coal feeders are shut down one at a time. According to the ESP retrofit vendor, for lower flue gas flows, the ESP by itself will be adequate to meet the PM emission limit because there is less flue gas entering the ESP meaning more treatment time in the ESP. For low flue gas flows, the ammonia and SO3 cannot be sufficiently dispersed in the flue gas leading to poor mixing of the flue gas and the chemicals.

Boiler #2 was constructed in 1957. As a result it is not subject to Best Available Retrofit Technology (BART) requirements that apply to units constructed between 1962 and 1977 with potential emissions of visibility impairing pollutants of at least 250 tpy. However, boiler #3 is subject to BART and the Permittee anticipates the controls for boiler #2 when applied to boiler #3, will meet the requirements of BART for NO_X and SO_2 control.

The sorbent, reagent, urea, anhydrous ammonia, and molten sulfur will be delivered by truck on paved facility roads. Sorbent and reagent will be pneumatically conveyed from truck to storage silos and each silo will vent to a baghouse for dust control of displaced silo air during material delivery. The Permittee has indicated that there will be accommodations for only one truck delivery at a time for all three silos. Urea, anhydrous ammonia, and molten sulfur will be stored in individual storage tanks.

1.4. Facility Emissions:

Table 1. Title I Emissions Increase Summary

Pollutant	Emissions Increase from the Modification (tpy)*	Limited Emissions Increase from the Modification (tpy)**	PSD/112(g) Significant Thresholds for major sources (tpy)	NSR/112(g) Review Required?
PM	25.99	23.15	25	NO
PM_{10}	12.61	11.98	15	NO
NO_X	-1161.53	-1161.53	40	NO
SO_2	-728.32	-728.32	40	NO
CO	0.00	0.00	100	NO
Ozone (VOC)	0.00	0.00	40	NO
Lead	0.00	0.00	0.6	NO
H_2SO_4	0.04	0.04	7.0	NO

*Emissions increase is the sum of the potential uncontrolled emissions from new emission sources (reagent, molten sulfur, ammonia hauling, and urea hauling), controlled potential emissions from reagent handling (using Minn. R. 7011.0060 - 7011.0080 as allowed by Minn. R. 7007.1200, subp. 2), and projected future actual emissions for existing emission units (boiler #2, ash handling, ash hauling, and ash storage)

**Limited emissions increases include controls (sweeping) for fugitives from reagent hauling on paved roads, and PM and PM_{10} 12-month rolling sum emission limits (106 tpy and 327 tpy, respectively)

Table 2. Emissions Summary

	PM tpy	PM_{10} tpy	SO_2 tpy	NO_X tpy	CO tpy	VOC tpy	H_2SO_4 tpy	Mercury lb/yr
Permitted Emission Changes[1]	23.2	12.0	-1162	-728	0	0	0.04	-23
Total Facility Actual Emissions (2004)	265	292	5573	3373	220	26.4	4.75	75

[1]Assumes 65% SO_2 control, 62% NOx control, and 90% mercury control

Table 3. Facility Classification

Classification	Major/Affected Source	Synthetic Minor	Minor
PSD	PM, PM_{10}, SO_2, NO_X		VOC, CO, Pb, H_2SO_4
Part 70 Permit Program	PM_{10}, SO_2, NO_X		VOC, CO
Part 63 NESHAP	Single and Total HAP		

2. Regulatory and/or Statutory Basis

New Source Review

The facility is an existing major source under New Source Review regulations.

Part 70 Permit Program

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

New Source Performance Standards (NSPS)

There are no New Source Performance Standards applicable to the operations at this facility.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

The utility boilers EU 001, EU 002, and EU 003 are not subject to any MACT standards. The heating boiler is subject to the 'industrial boiler MACT' (part 63, subpart DDDDD). An operating limit to restrict the annual capacity factor to 10% allows the boiler to be classified as an existing limited use liquid fuel boiler, for which no requirements apply.

Minnesota State Rules

Portions of the facility are subject to the following Minnesota Standards of Performance:

- Minn. R. 7011.0510 Standards of Performance for Existing Indirect Heating Equipment
- Minn. R. 7011.0710 and 7011.0715 Standards of Performance for Industrial Process Equipment
- Minn. R. 7011.2300 Standards of Performance for Stationary Internal Combustion Engines

Table 4. Regulatory Overview of Units Affected by the Modification/Permit Amendment

EU, GP, or SV	Applicable Regulations	Comments:
EU 002	Title I Condition: To avoid major modification under 40 CFR Section 52.21(b) and Minn. R. 7007.3000; 40 CFR Section 52.21(r)(6) Part 64 CAM Minn. R. 7007.0800, subp. 2 and 7017.2020, subp. 1	PM (front-half) and PM_{10} limits, monitoring, recordkeeping, and testing. (PM is measured according to EPA method 5 which does not include emissions that condense below 250°F according to Minn. R. 7011.0535, subp. 3. Therefore, the regulated particulate matter pollutant under Minn. R. 7011.0510 is front-half particulate matter.) PM compliance assurance monitoring requirements Mercury emissions monitoring, recordkeeping, and testing, with subsequent inclusion of a mercury limit and/or control efficiency
EU 004	Title I Condition: Operating hours limit to qualify for limited use classification	The heating boiler is distillate oil-fired and was constructed in 1957. It is used only to heat the facility when all three utility boilers are not operating. The permittee has added an annual operating limit to the permit for the boiler, equal to the 10% annual capacity factor, in order to be classified as an existing large limited-use liquid fuel boiler. There are no applicable requirements for this boiler classification.
GP 002 & EU	Title I Condition: To avoid major modification under 40	PM and PM_{10} emission limits; Fabric Filter operating and monitoring requirements to restrict PM and PM_{10} emission

006	CFR Section 52.21(b) & Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2 & 14	increases to less than PSD significant levels.
GP 003	Title I Condition: To avoid major modification under 40 CFR Section 52.21(b) & Minn. R. 7007.3000	Title I Condition for fugitive emission control requirement for new PM/PM_{10} fugitive emission sources (truck hauling on paved roads). Requirement needed to receive credit for 50% control efficiency for sweeping, and the credit for control is necessary to keep the modification PM and PM_{10} emissions increase less than significant.

3. Technical Information

Changes not in the scope of this permit action: SV 001, SV 002, and SV 003 CEMS and COMS requirements were updated. Updates include the addition of the part 75 monitoring requirements (the part 75 monitoring became applicable when the Permittee purchased the facility in 2001 and the boilers became affected units under the acid rain program; however the requirements were never added to the permit). Initial PM stack test requirements were removed from SV 001, SV 002, and SV 003 due to completion of these requirements. All limits and stack testing requirements were moved from SV 001, SV 002, and SV 003, to EU 001, EU 002, and EU 003, respectively. The 0.3 lb/mmBtu PM limit for EU 001, EU 002, and EU 003 was revised to state that it excludes condensibles; previously it stated that it didn't include organic condensibles. This is appropriate because the compliance determination method is an EPA method 5 stack test which does not include any condensibles.

The GP 001 SO_2 limit was changed from a title I condition to a state limit because the basis of the limit was state-only modeling. EU 005 opacity limit was updated to reflect current rule language. Miscellaneous boilerplate updates were made in the Total Facility section of Table A.

A permit requirement authorizing incineration of boiler cleaning agents has been added to GP 001, and boiler cleaning agents has been added as a permitted fuel type for each boiler. This allowance is included in the other Minnesota Power facility permits, as well as numerous other Minnesota title V permits for electric utility steam generating facilities. However, the prior permittee (LTV) never requested inclusion of this allowance. The Permittee has requested to include this requirement at this time and not wait until title V permit reissuance.

The following information was provided by the Permittee. It is a worst case estimate of stack emissions from incineration of cleaning wastes from a single boiler cleaning and is based on previously performed cleanings. The Permittee assumes that all metals become PM_{10} and are adsorbed to flyash entering the ESP. The Permittee also assumes the ESP removes 98% of the metals (the design efficiency of the ESP).

Chemical	Emissions Per Cleaning	Chemical	Emissions Per Cleaning (lbs)
NO_X	5,931.5	Lead	0.07
SO_2	10.1	Copper	3.38
Sodium	27.1	Iron	27.0
Bromine	27.0	Manganese	0.7
Chromium	0.07	Nickel	3.4

The Permittee also furnished the following information about boiler cleaning:

Electric utility boiler chemical cleanings are periodic events occurring once roughly every 6-10 years. The purpose of the chemical cleaning is to remove boiler water/steam side metal deposits with the use of solvents. These deposits reduce heat transfer leading to loss of boiler efficiency and also cause under-deposit corrosion. Metals removed include iron, copper, chromium, lead, nickel and manganese. Minnesota Power has performed periodic chemical cleaning at all our facilities since the 1960s, and for those facilities, incineration/evaporation is allowed under their air permits. For Taconite Harbor however, the previous owner did not include the ability to evaporate chemical cleaning wastes in the facility's air permit.

Specific to the three unit Taconite Harbor Energy Center facility, cleanings are typically comprised of five stages. There are three solvent wash stages where the deposits are removed followed by three distilled water rinse stages. The wash stages consist of ammonium bromate which targets copper removal, and ammoniated ethylene diamine tetra-acidic acid which targets removal of the remaining metals (mostly iron). All wastes are collected in portable storage tanks. Once the chemical cleaning is complete, the waste - which includes a significant amount of water - is slowly evaporated/incinerated in the cleaned or other boilers over a two week period. The metals either fall to the bottom of the boiler or are mostly captured by the particulate collection device.

All requirements in SV 002 were moved to EU 002, except those pertaining to CEMS and COMS.

Acid Rain Program requirements were added to EU 001, EU 002, EU 003, SV 001, SV 002, and SV 003. The boilers at the facility became affected units in 2002 after they were purchased from LTV in 2001 and put into electric utility service by the Permittee in 2002.

Environmental Review

Environmental review is not required because boiler #2 power output capacity will not change and the permitted and potential emission increases are less than the 100 ton-per-year trigger (note: rulemaking to change the emission increase trigger to 250 tons per year is scheduled for promulgation in October 2005).

New Source Review Permit Requirements:

The Permittee has two options for demonstrating the PM and PM_{10} emission increases are not significant under §52.21. Two options are available because the first option has reduced recordkeeping compared to the second option. PM and PM_{10} emission factor performance tests are required regardless of the option selected.

Option 1 requires the Permittee to conduct the monitoring, recordkeeping and reporting requirements described at § 52.21(r)(6), if the PM and PM_{10} performance tests demonstrate that PM and PM_{10} emissions do not exceed the Title I 0.039 lb/mmBtu and 0.120 lb/mmBtu emission factors in the permit for PM and PM_{10}, respectively. The Title I emission factors are based on guarantees by the contractor that will convert the ESP from hot-side to cold-side.

If the Permittee can demonstrate that the PM and PM_{10} do not exceed these emission factors, the Permittee will not be subject to a 12-month rolling sum limit necessary to avoid significant emissions increases for PM and PM_{10}. Instead, the Permittee will be subject to the annual emissions monitoring requirements at § 52.21(r)(6)(c)(iii) for a ten year period, and annual reporting (due within 60 days after the end of the calendar year) of the unit's annual emissions for the previous calendar year as required by § 52.21(r)(6)(c)(iv).

Option 2 applies if the Permittee can not demonstrate that the PM and PM_{10} emission factors do not exceed 0.039 lb/mmBtu and 0.120 lb/mmBtu for PM and PM_{10}, respectively, or if the Permittee desires to be subject to the 12-month rolling sum limit regardless. The factors are based on guarantees from the With this option, the Permittee will be subject to Title I 106 tpy and 327 tpy (12-month rolling sum basis)

PM and PM_{10} limits, respectively, to restrict the emissions increase from the modification to less than the 25 tpy and 15 tpy significant levels for PM and PM_{10}, respectively. In addition, the Permittee will be subject to on-going monitoring, recordkeeping, and reporting requirements.

If the Permittee is only able to meet option 1 requirements for one pollutant, the Permittee may follow option 1 for that pollutant while following option 2 for the other pollutant.

The Permittee requested and was granted a 270-day shakedown period from initial startup (after completion of modifications) to the effective date for the AREA SO_2 and NO_X emission limits, and PM, PM_{10}, and mercury performance testing. This request was justified due to the potential for un-anticipated problems and unknowns involved with the Mobotec controls.

The Permittee initially proposed a permit condition stating the Permittee may conduct a PSD analysis if it could not meet the option 1 PM and/or PM_{10} emissions factor requirement(s) to avoid concerns about potential sham permitting if the post-modification future actual annual PM and/or PM_{10} increase exceeds the PSD significant level(s). However, based on discussions with EPA Region V staff in St. Paul on May 18, 2006, EPA indicated sham permitting would not be an issue if the future PM and/or PM_{10} emissions increase is significant (providing the facility post-modification PM and/or PM_{10} emissions increase doesn't exceed the significant level until the Permittee obtains a PSD major modification permit authorizing the increase). This is because the Permittee has attempted to the best of its ability to accurately determine future actual emissions, the non-major permit amendment limits the increases to less than significant levels, and there is inherent uncertainty in the PM and PM_{10} emission changes that will occur when retrofitting old boilers with new emissions control technology.

Tribal Contacts

This facility is in Cook County where the following Native American tribes are also located or expressed interest in air permitting of sources located in Cook County:

Fond du Lac -- Joy Wiecks joywiecks@fdlrez.com (218) 878-8008

Bios Forte -- Darin Steen: dsteen@boisforte-nsn.gov (218) 757-3543

Grand Portage Band of Ojibwe -- Shannon Judd: sjudd@boreal.org (218) 475-2415 ext 35

Mille Lacs Band of Ojibwe -- Charlie Lippert: charliel@millelacsojibwe.nsn.us (320) 532-4704

Information regarding this permit action was sent by electronic mail to these parties on October 3, 2006.

Compliance Assurance Monitoring

The Permittee uses control devices to reduce Boiler #2 emissions of PM and SO_2 and is subject to PM and SO_2 emission limits. Boiler #2 is a large pollutant-specific emission unit for PM and SO_2.

CAM for SO_2 is met by the use of CEMS. This permit action is a significant permit amendment as defined in §70.7(e)(4) and pertains to PM emissions. Therefore, pollutant-specific PM CAM requirements must be included in the permit application and the permit amendment as stated in 40 CFR §64.5(c).

The Permittee proposes to monitor ESP total secondary power, sulfur flow rate (to the sulfur burn chamber), and ammonia injection rate for PM CAM. The Permittee will determine minimum parameter values during post-modification PM performance testing.

3.1 Emission Changes

Boiler #2 is able to combust bituminous and subbituminous coal. Heat input capacity is rated at 745 mmBtu/hr. Subbituminous coal is and will continue to be used as the primary fuel. The Permittee's customer base is primarily industrial and for the purposes of determining future actual emissions, assumes there will be no demand growth. As a result, the future projected actual boiler #2 emissions are based on the same operating level as the level during the baseline period. However, there are several large mining projects currently seeking permits which if built will increase demand on the Permittee's entire generation system including Taconite Harbor Energy Center.

Future emissions from new sources (storage silos and truck delivery of reagents, molten sulfur, ammonia, and sorbent on paved roads) are potential emissions whereas future emissions from existing sources whose operations will be affected by the modification (boiler #2, ash handling, and ash hauling) are projected actual emissions.

Baseline actual emissions and future emissions are attached in the emission calculations spreadsheet. Calendar years 2003-2004 is the 24-month baseline period from which the baseline actual emissions were determined. For PM and PM_{10}, baseline emissions were calculated using stack test data for these pollutants from May 2005.

Boiler #2 future actual emissions are based on the average operating rate of 2003-2004. Existing and future boiler #2 emissions are calculated with the factors shown in Table 5.

Table 5. Boiler #2 Emission Factors Used In Actual and Potential Emissions Calculations

<table>
<tr><td></td><td colspan="8">Emission Factors and Factor Sources</td></tr>
<tr><td rowspan="2">Pollutant</td><td colspan="4">Subbituminous Coal</td><td colspan="4">Subbituminous and Bituminous Coal</td></tr>
<tr><td>Past Actual lb/mmBtu except as noted</td><td>factor source</td><td>Future Actual lb/mmBtu except as noted</td><td>factor source</td><td>Existing Potential lb/mmBtu except as noted</td><td>factor source</td><td>Future Potential lb/mmBtu</td><td>factor source</td></tr>
<tr><td>PM</td><td>0.032 (controlled)</td><td>05/05 test</td><td>0.039 (controlled)</td><td>proposed factor</td><td>0.30 lb/mmBtu</td><td>Existing Permit</td><td>0.039 (controlled)</td><td>proposed factor</td></tr>
<tr><td>PM_{10}</td><td>0.116 (controlled)</td><td>05/05 test</td><td>0.120 (controlled)</td><td>proposed factor</td><td>0.116 (controlled)</td><td>05/05 test</td><td>0.120 (controlled)</td><td>proposed factor</td></tr>
<tr><td>SO_2</td><td colspan="2">CEMS</td><td>0.24 (controlled)</td><td>proposed factor</td><td colspan="4" rowspan="9">Emission factors for determining potential emissions of these pollutants are not needed because future potential emissions will either decrease or stay the same as existing potential emissions.</td></tr>
<tr><td>NO_X</td><td colspan="2">CEMS</td><td>0.14 (controlled)</td><td>proposed factor</td></tr>
<tr><td>CO</td><td>5.00E-04</td><td>12/05 test</td><td>5.00E-04</td><td>12/05 test</td></tr>
<tr><td>VOC</td><td>0.06 lb/ton</td><td>AP-42</td><td>0.06 lb/ton</td><td>AP-42</td></tr>
<tr><td>lead</td><td>0.0093 lb/ton</td><td>AP-42</td><td>0.0093 lb/ton</td><td>AP-42</td></tr>
<tr><td>H_2SO_4</td><td colspan="4">Southern Company Method</td></tr>
<tr><td>Flourides</td><td>0.15 lb/ton</td><td>AP-42</td><td>0.15 lb/ton</td><td>AP-42</td></tr>
<tr><td>mercury</td><td colspan="4">25.54 lb/yr (1/3 of total facility emissions from 2003-2004) based on coal mercury content determined by ASTM method and average annual fuel consumption for 2003-2004</td></tr>
</table>

Boiler #2 emissions from startup, shutdown, and malfunction were not addressed in the ATPA test because the predicted utilization, dispatch order, and capacity of boiler #2 will not change as a result of the modifications. Therefore emissions from startup, shutdown, and malfunction should not change.

It is not necessary to track PM and PM_{10} emissions from combustion of fuel oil, used oil, or boiler cleaning agents because they are so small. Total emissions from combusting these fuels and materials is under 100 lbs per year for each pollutant if boiler cleaning were conducted annually and all agents were incinerated in boiler #2. Because cleaning occurs less frequently and agents will be incinerated in any of the three boilers, actual emissions will be considerably less.

3.2 Periodic Monitoring

In accordance with the Clean Air Act, it is the responsibility of the owner or operator of a facility to have sufficient knowledge of the facility to certify that the facility is in compliance with all applicable requirements.

In evaluating the monitoring included in the permit, the MPCA considers the following:

- The likelihood of violating the applicable requirements;
- Whether add-on controls are necessary to meet the emission limits;
- The variability of emissions over time;
- The type of monitoring, process, maintenance, or control equipment data already available for the emission unit;
- The technical and economic feasibility of possible periodic monitoring methods; and
- The kind of monitoring found on similar units elsewhere.

Table 6 summarizes the periodic monitoring requirements for those emission units for which the monitoring required by the applicable requirement is nonexistent or inadequate.

Table 6. Periodic Monitoring

Emission Unit or Group	Requirement (basis)	Additional Monitoring	Discussion
EU 002	Title I Conditions: §52.21(r)(6), §52.21(b), and Minn. R. 7007.3000 PM and PM_{10} emission factors $\leq$0.039 lb/mmBtu and $\leq$0.120 lb/mmBtu, respectively OR PM $\leq$106 tpy and PM_{10} $\leq$327 tpy on a	PM & PM_{10} testing to verify emission factors & annual emissions calculation and reporting, or monthly calculation of 12-month PM and PM_{10} emissions if factor >0.039 lb/mmBtu and/or >0.120	Two options for demonstrating PM and PM_{10} emissions increase is not significant. First option requiring verification of the PM and PM_{10} factors has less recordkeeping than the second option of meeting 12-month rolling sum PM and PM_{10} limits. Both options restrict PM and PM_{10} increases to less than significant levels. Regardless of the option, testing will need to be repeated to re-verify PM and PM_{10} emission factors. Monthly emissions calculation deadline is 45 days after end of the month due to length of lab turnaround for coal heat content analysis. CAM required for PM. PM CAM plan will be used for PM_{10} periodic monitoring. (If CAM

Emission Unit or Group	Requirement (basis)	Additional Monitoring	Discussion
	12-month rolling sum basis	lb/mmBtu, respectively	indicates CE 002 PM emissions are in compliance, then CE 002 PM_{10} emissions are also in compliance).
GP 002 (EU 008 through EU 010) and EU 006	Title I Conditions to avoid major modification under 40 CFR Section 52.21(b) and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2 and 14	Visible emission checks	Sources are insignificant activities controlled by baghouses. Permittee is avoiding significant emissions increase levels for PM and PM_{10} and these are new or modified PM and PM_{10} sources using baghouses to restrict emissions. Weekly checks for EU 006 are reasonable because the sources are insignificant, and periodic checks while operating for EU 008 - EU 010 are reasonable because these sources are insignificant and not consistently operated.
EU 004	Title I Condition: Annual capacity factor to qualify as a limited use boiler under 40 CFR § 63.7575	Monthly calculation of fuel usage, and monthly and 12-month rolling sum heat input	Boiler is operated sporadically as needed for facility heat when all three electric utility boilers are not operating. Therefore monthly records are appropriate.

3.3 Comments Received

Public Notice Period: November 8, 2006 - December 7, 2006
EPA 45-day Review Period: November 8, 2006 - December 22, 2006

Comments were not received from the public during the public notice period or from EPA during their review period.

4. Conclusion

Based on the information provided by Minnesota Power, the MPCA has reasonable assurance that the operation of the emission facility, as described in the Air Emission Permit No. 03100001-006 and this technical support document, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules.

Staff Members on Permit Team: Marshall Cole (permit engineer)
Bob Beresford (enforcement)
Andy Place (stack testing)
Jenny Reinertsen (peer reviewer)

Attachment: Emissions Calculation Spreadsheets