AIR EMISSION PERMIT NO. 03700003-002
IS ISSUED TO

NORTHERN STATES POWER COMPANY
A Minnesota Corporation doing business as Xcel Energy

Black Dog Generating Plant
1400 Black Dog Rd
Burnsville, Dakota County, MN 55337

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
PSD Permit/Major Modification	January 27, 2000
Total Facility Operating Permit	November 6, 1995

This permit authorizes the permittee to modify and operate the stationary source at the address listed above unless otherwise noted in Table A. The permittee must comply with all the conditions of the permit. Any changes or modifications to the stationary source must be performed in compliance with Minn. R. 7007.1150 to 7007.1500. Terms used in the permit are defined in the state air pollution control rules unless the term is explicitly defined in the permit.

Permit Type: Federal; PSD, Part 70
Issue Date: January 12, 2001
Expiration: August 13, 2003
All Title I Conditions do not expire.

Richard J. Sandberg, Manager
Major Facilities Section
Metro District

For Karen A. Studders, 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, Major Facilities Section, Metro District, 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. Certain requirements which have been determined not to apply are listed in Table A of this permit.

Subject to the limitations of Minn. R. 7007.1800 and 7017.0100, subp. 2, notwithstanding the conditions of this permit specifying compliance practices for applicable requirements, any person (including the Permittee) may also use other credible evidence to establish compliance or noncompliance with applicable requirements.

FACILITY DESCRIPTION:

The Northern States Power Company's Black Dog facility has four coal-fired boilers. Two of the boilers (No. 1 and 2) will be retired from service after the issuance of this permit. Boilers No. 3 and 4 at the facility are wall-fired dry-bottom coal-fired boilers. All boilers discharge emissions to the atmosphere through a common 600 foot stack. Boiler 3 is rated at 1176 MMBtu/hr and Boiler No. 4 is rated at 1892 MMBtu/hr. In addition to the four boilers, the plant also operates and maintains various coal and ash handling and storage facilities. Emissions of particulate matter from the main boilers are controlled by Electrostatic Precipitators which remove particulates from the stack gases. Gaseous emissions from the main boilers are not effectively controlled by any post combustion control device at this time. Particulate emission from coal handling equipment is controlled through the use of water sprays and baghouses. Fugitive emissions are controlled through the use of water application and operational constraints.

This permit amendment allows for the installation and operation of a new combined cycle gas turbine. Although, the facility is proposing to install the unit in the location of EU 001 (boiler 1) and to use the EU 002 (boiler 2) steam turbine for combined cycle operation, no past actual emissions from EU 001 and EU 002 are being utilized for netting purposes. Therefore, the addition of the new gas turbine (EU 026) and auxiliary duct firing burners (EU 027) is subject to prevention of significant deterioration program review for NO_x, CO, and PM_{10} and VOC.

The modification is based on combustion turbine technology combined with a heat recovery steam generator and steam turbine. Natural gas is the only fuel that will be fired in the combustion turbine and duct burners. The combustion exhaust, after passing through the heat recovery steam generator system, will vent to an exhaust stack approximately 230 feet in height.

The facility has proposed to utilize the following emissions control technology:

1. Firing only natural gas to minimize sulfur dioxide emissions.

2. Dry low-NO_x burners to minimize the formation of oxides of nitrogen in the combustion turbine.

3. Selective catalytic reduction to reduce oxides of nitrogen emissions in the exhaust gas from the combustion turbine and the supplemental duct firing burners.

4. Good combustion practices for control of fine particulate, carbon monoxide and volatile organic compound emissions.

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

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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
A. OPERATIONAL REQUIREMENTS NOTE: As of the date of issuance of this permit (permit action 002), EU001 (unit 1 boiler) and EU002 (unit 2 boiler) are no longer operated. Unit 1 boiler will be completely removed to provide space for the heat recovery steam generator for EU026 (combustion turbine) and Unit 2 boiler will be partially dismantled and retired from service in place. The removal of the unit 1 boiler and retirement of the unit 2 boiler will be complete by May 1, 2001.	hdr
The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16.	Minn. R. 7007.0800, subp. 16
Operating practices: Clean up all coal spilled on roads or access areas as soon as practicable using methods that minimize the amount of dust suspended.	Minn. R. 7011.1105 (I)
Access areas, roads, parking facilities: (1) Install asphalt or concrete surfaces or chemical agents on all active truck haul roads of the coal handling facility when the coal throughput by truck is 200,000 tons or greater. All paved roads and areas shall be cleaned to minimize the discharge to the atmosphere of fugitive particulate emissions. Such cleaning shall be accomplished in a manner which minimizes resuspension of particulate matter. Access areas surrounding coal stockpiles and parking facilities which are located within a coal handling facility shall be treated with water, oils, or chemical agents.	Minn. R. 7011.1105 (A)
Fugitive Emissions: Do not cause or permit the handling, use, transporting, or storage of any material in a manner which may allow avoidable amounts of particulate matter to become airborne. Comply with all other requirements listed in Minn. R. 7011.0150.	Minn. R. 7011.0150
Noise: The Permittee shall comply with the noise standards set forth in Minn. R. 7030.0010 to 7030.0080 at all times during the operation of any emission units. This is a state only requirement and is not federally enforceable.	Minn. R. 7030.0010 - 7030.0080
Comply with Fugitive Emission Control Plan: The Permittee shall follow the actions and record keeping (if applicable) specified in the control plan. The plan may be amended by the Permittee with the Commissioner's approval. If the Commissioner determines the Permittee is out of compliance with Minn. R. 7011.0150 or the fugitive control plan, then the Permittee may be required to amend the control plan and/or to install and operate particulate matter ambient monitors as requested by the Commissioner.	Minn. Stat. Section 116.07, subd. 4a and Minn. R. 7007.0800, subp. 2
Inspections: Upon presentation of credentials and other documents as may be required by law, allow the Agency, or its representative, to enter the Permittee's premises, to have access to and copy any records required by this permit, to inspect at reasonable times (which include any time the source is operating) any facilities, equipment, practices or operations, and to sample or monitor any substances or parameters at any location. The permittee may require MPCA staff to be accompanied by NSP staff during any inspection.	Minn. R. 7007.0800, subp. 9(A)
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
Install: due 180 days after Permit Issuance . Install a fence or other agency approved barrier to limit public access to facility property. The location of barrier shall be determined by latest air dispersion modeling analysis.	Minn. R. 7009.0020
B. POLLUTION CONTROL EQUIPMENT REQUIREMENTS	hdr
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)
C. TESTING REQUIREMENTS	hdr
Performance Test: Conduct all performance tests in accordance with Minn. R. ch. 7017, unless otherwise noted in Tables A, B, or C.	Minn. R. ch. 7017

TABLE A: LIMITS AND OTHER REQUIREMENTS

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Operating and/or production limits will be placed on emission units based on operating conditions during performance testing. Limits set as a result of a performance tests, conducted after permit issuance, apply until new operating/production limits are set following formal review of a performance test as specified by Minn. R. 7017.2025. This requirement does not apply to EU 003 and EU 004. For operating limit requirements applicable to EU 003 and EU 004, see requirements pertaining to Short Term Emergency and Testing (STET) and Boiler Operating Conditions in EU 003 and EU 004.	Minn. R. 7017.2025
D. MONITORING REQUIREMENTS	hdr
Monitoring Activities and Equipment: Where applicable, initialize monitoring activities and install or make needed repairs to monitoring equipment within 60 days of issuance of the permit if monitoring activities are not performed or monitoring equipment is not installed and operational prior to permit issuance.	Minn. R. 7007.0800, subp. 4(D)
Monitoring Activities and Equipment: Unless otherwise noted in Tables A, B, and/or C, monitoring of a process or of control equipment connected to that process, is not required during periods when the process is shutdown, including during system breakdowns, repairs, calibration checks, and zero and span adjustments (as applicable). Where applicable, monitoring records shall reflect any such periods of process shutdown.	Minn. R. 7007.0800, subp. 4(D)
Monitoring Equipment Calibration: Where applicable, annually calibrate all required monitoring equipment other than continous emission monitors (requirements applying to continuous emission monitors are listed separately in this permit), where applicable.	Minn. R. 7007.0800, subp. 4(D)
E. RECORD KEEPING	hdr
Record keeping: 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)
Record keeping: 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)
Operation and Maintenance Plan: Retain at the stationary source an operation and maintenance plan for all air pollution control equipment.	Minn. R. 7007.0800, subp. 14 and Minn. R. 7007.0800, subp. 16(J)
F. REPORTING	hdr
Oral or Written (faxed) Notification of Deviations Endangering Human Health or the Environment: As soon as possible after discovery, notify the Commissioner of any deviation from the permit conditions which could endanger human health or the environment.	Minn. R. 7019.1000, subp. 1
Discovery of Deviations Endangering Human Health or the Environment Report (written): due two working days after discovery of deviation, submit a written description of any deviation endangering human health or the environment to the Commissioner. Include the following information in this written description: cause of the deviation; exact dates of the period of the deviation (if the deviation has not been corrected); whether or not the deviation has been corrected; the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the deviation.	Minn. R. 7019.1000, subp. 1
Breakdowns: Notify the Commissioner within 24 hours of a breakdown of more than one hour duration of any process or control equipment if the breakdown causes any increase in the emissions of any regulated air pollutant. Notification is not required for breakdown of electrostatic precipitator sections in CE 004, CE 005, CE 006, CE 007, CE 008, and CE 009, if the number of remaining operating sections for each electrostatic precipitator is equal to or greater than the number of operating sections during the most recent performance test during which limits for particulate matter and opacity were met, and, the opacity measured by the COM on SV 001 does not exceed the opacity limit in EU 003, and EU 004. At the time of notification or as soon as possible thereafter, the permittee shall inform the Commissioner of the cause of the breakdown and the estimated duration. Notify the Commissioner again when the breakdown is over.	Minn. R. 7019.1000, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

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Shutdowns: Notify the Commissioner at least 24 hours in advance of a planned shutdown of any process or control equipment if the shutdown would cause any increase in the emissions of any regulated air pollutant. At the time of notification, inform the Commissioner of the cause of the shutdown and the estimated duration. 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. Notify the Commissioner again when the shutdown is over.	Minn. R. 7019.1000, subp. 3
Emission Fees: due 60 days after receipt of an MPCA bill.	Minn. R. 7002.0005 through Minn. R. 7002.0095
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)
Emissions Inventory Report: due 91 days after end of each calender year following permit issuance (April 1). To be submitted on a form approved by the Commissioner.	Minn. R. 7019.3000 through Minn. R. 7019.3010

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **GP 001 Emergency Generators**

Associated Items: EU 024 Emergency Engine Generator EEG-61001

EU 025 Emergency Engine Generator EEG-61002

What to do	Why to do it
Operating Hours: less than or equal to 816 hours/year using 12-month Rolling Sum calculated monthly.	Title I Condition: limit to avoid classification as a major modification under 40 CFR Section 52.21
Calculate and record the monthly and the 12-month rolling sum operating hours for GP 001. Complete the calculation and recording by the end of each month, for the previous month and the previous 12-month period.	Title I Condition: recordkeeping to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 5
Nitrogen Oxides: less than or equal to 35.3 tons/year	Title I Condition: limit to avoid classification as a major modification under 40 CFR Section 52.21

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **SV 001**

Associated Items: EU 001 Boiler 1 - retired, to be removed

EU 002 Boiler 2 - retired from service in place

EU 003 Boiler 3

EU 004 Boiler 4

EU 019 Units 3 and 4 Fly Ash Silo Vent

MR 003

MR 004

MR 005

MR 006

MR 007

What to do	Why to do it
A. EMISSION LIMITS	hdr
Sulfur Dioxide: less than or equal to 1.3 lbs/million Btu heat input using 1-Hour Average . This is a state only requirement and is not federally enforceable.	40 CFR Section 50.4; Minn. R. 7009.0020
Sulfur Dioxide: less than or equal to 3988 lbs/hour using 1-Hour Average . This is a state only requirement and is not federally enforceable.	Minn. R. 7009.0020
Particulate Matter < 10 micron: less than or equal to 920 lbs/hour . This is a state only requirement and is not federally enforceable.	Minn. R. 7009.0020
D. MONITORING REQUIREMENTS	hdr
Emissions Monitoring: The owner or operator shall use a CEMS to measure SO2, NOx, and CO2 emissions and flow rate for each affected unit or group of units in accordance with 40 CFR Section 75.10.	40 CFR pt. 75
Emissions Monitoring: The owner or operator shall use a COMS to measure opacity emissions from SV 001.	Minn. R. 7017.1006; 40 CFR Section 75
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 calendar quarter following CEM Certification Test . Conduct a quarterly linearity test on CEMS required by the Acid Rain Program, in accordance with 40 CFR pt. 75, Appendix B.	40 CFR pt. 75, Appendix B, Section 2.2
CEMS Relative Accuracy Test Audit (RATA): due before end of each calendar half-year following CEM Certification Test . Conduct a RATA on all CEMS required by the Acid Rain Program, in accordance with 40 CFR pt. 75, Appendix B. If the RATA results indicate a relative accuracy of 7.5% or less, the next RATA is not required for twelve months.	40 CFR pt. 75, Appendix B, Section 2.3
CEMS QA/QC: The owner or operator of an affected facility shall operate, calibrate, and maintain each CEM according to the QA/QC procedure in 40 CFR pt. 75, Appendix B as amended.	40 CFR Section 75.21
CEMS and COMS Continuous Operation: Except for system breakdowns, repairs, calibration checks, and zero and span adjustments, all CEMS and COMS shall be in continuous operation.	Minn. R. 7017.1090
COMS Daily Calibration Drift (CD) Check: The CD shall be quantified and recorded at zero (low-level) and upscale (high-level) opacity at least once daily. The COMS must be adjusted whenever the calibration drift (CD) exceeds twice the specifications of PS-1 of 40 CFR pt. 60, Appendix B.	Minn. R. 7017.1210; subp. 2
COMS Calibration Error Audit: due before end of each calendar half-year following COMS Certification Test . Conduct audits at least 3 months apart but no greater than 8 months apart.	Minn. R. 7017.1210, subp. 3
COMS Monitoring Data: Owners or operators of all COMS shall reduce all data to six (6) minute averages. Opacity averages shall be calculated from all equally spaced consecutive 10-second (or shorter) data points in the six (6) minute averaging period.	Minn. R. 7017.1200, subp. 1, 2, & 3
E. RECORD KEEPING	hdr
Recordkeeping: The owner or operator must retain records of all CEMS monitoring data and support information for a period of five (5) years from the date of the monitoring sample, measurement or report. Records shall be kept at the source.	Minn. R. 7007.0800, subp. 5
Recordkeeping: The owner or operator must retain records of all COMS monitoring data and support information for a period of five (5) years from the date of the monitoring sample, measurement or report. Records shall be kept at the source.	Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

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Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **SV 015**

Associated Items: EU 020 No. 2 Fly Ash Storage Silo

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 1(B)
Particulate Matter < 10 micron: less than or equal to 2.0 lbs/hour . This is a state only requirement and is not federally enforceable.	Minn. R. 7009.0020; meets requirements of Minn. R. 7011.0715, subp. 1(A)
Check for visible emissions (during daylight hours) from the control equipment (CE 012) once each calendar week during every week of operation.	Minn. R. 7007.0800, subp. 4
Corrective Actions: If visible emissions (VEs) are observed, determine the cause and take corrective actions as soon as possible to eliminate the VEs.	Minn. R. 7007.0800, subp. 2
Recordkeeping: Record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken.	Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

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Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **SV 020**

Associated Items: EU 026 Combustion Turbine

EU 027 Duct Firing Burners

MR 010

MR 011

What to do	Why to do it
EMISSION LIMITS *Averaging times are specified for those emission limits where compliance is demonstrated by a continuous emission monitor. For all other emission limits, compliance will be determined, and averaging time is dictated, by the appropriate test method. ** Startup shall not exceed: 1. 2 hours, if the steam turbine-generator was off-line for less than 12 hours. 2. 4 hours, if the steam turbine-generator was off-line for 12 to 60 hours. 3. 8 hours, if the steam turbine-generator was off-line for more than 60 hours. On-line operations of less than 1-hour duration shall be considered off-line for startup determination purposes. *** Shutdown shall not exceed 1 hour. **** Malfunction means any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.	hdr
Opacity: less than or equal to 20 percent using 6-minute Average except for one 6-minute period per hour of not more than 27 percent. Applies only when EU 027 is operating.	40 CFR Section 60.42a(b)
Nitrogen Oxides: less than or equal to 4.5 parts per million using 3-hour Average at 15% oxygen. This limit applies at all times under all operating conditions, except during startup, shutdown, malfunction and within 60 days after fuel is first fired in EU 026.	40 CFR Section 52.21 BACT Limit Also meets the limit set by 40 CFR Section 60.332 and 60.44a
Nitrogen Oxides: less than or equal to 305 tons/year using 12-month Rolling Sum . This limit applies at all times under all operating conditions.	40 CFR Section 52.21, to limit emissions increase to less than the PSD increment significant impact level
Carbon Monoxide: less than or equal to 25 parts per million using 3-hour Average at 15 % oxygen when EU 026 (combustion turbine) is operating at or above 1,400 MMBtu/hr (higher heating value) heat input over the same three hour block average, with EU 027 in operation.	40 CFR Section 52.21 BACT Limit
Carbon Monoxide: less than or equal to 18 parts per million using 3-hour Average at 15 % oxygen when EU026 (combustion turbine) is operating at or above 1400 million Btu per hour (higher heating value) heat input over the same three-hour block average when EU027 is NOT in operation.	40 CFR Section 52.21 BACT Limit
Operating Hours: less than or equal to 1500 hours/year using 12-month Rolling Sum for EU027 (duct burners)	40 CFR Section 52.21 BACT Limit
Carbon Monoxide: less than or equal to 400 tons/year using 12-month Rolling Sum . This limit applies at all times under all operating conditions, except during startup and shutdown.	40 CFR Section 52.21 BACT Limit
Particulate Matter < 10 micron: less than or equal to 29.4 lbs/hour . This limit applies at all times under all operating conditions, except during startup, shutdown, or malfunction.	40 CFR Section 52.21 BACT Limit
Volatile Organic Compounds: less than or equal to 0.0073 lbs/million Btu heat input when EU 026 (combustion turbine) is operating at or above 1,400 MMBtu/hr (higher heating value) heat input, with or without EU 027 in operation.	40 CFR Section 52.21 BACT Limit
Formaldehyde: less than or equal to 9.9 tons/year using 12-month Rolling Sum . This limit applies at all times under all operating conditions, except during startup and shutdown.	To limit potential single HAP emissions to less than the major source levels defined by 40 CFR Section 63, Subp. B
HAPs - Total: less than or equal to 24.9 tons/year using 12-month Rolling Sum . This limit applies at all times under all operating conditions, except during startup and shutdown.	To limit potential total HAPs emissions to less than the major source levels defined by 40 CFR Section 63, Subp. B
MONITORING REQUIREMENTS	hdr
Measure NOx, CO and CO2 or O2 emissions using in-stack monitors. The CO monitor shall be operated and maintained in accordance with Minn. R. 7017.1002 through 7017.1220 (and those portions of 40 CFR pt. 60, Appendix B and 40 CFR pt. 60, Appendix F referenced therein) unless an alternative is approved by the Agency. The NOx and CO2 or O2 monitor shall be operated and maintained in accordance with 40 CFR pt. 75, Subpart B and Minn. R. ch. 7017.	Minn. R. 7007.0800, subp. 4, Title I Condition: Monitoring of emissions to demonstrate compliance with the NOx and CO BACT limits, 40 CFR section 60.47a

Measure gross electrical output in megawatt-hours and flow of exhaust gases discharged to the atmosphere on a continuous basis in accordance with 40 CFR 60.47a(k)(1) and 60.47a(l), unless alternative monitoring is approved by the USEPA.	40 CFR Section 60.47a
Operating Load and Operating Conditions Monitoring: Continuously monitor, at the same frequency as the CO monitor sampling rate, and record the heat input (MMBtu/hr) for EU 026 and EU 027 by measuring the natural gas flow rate and multiplying by a HHV of 1020 btu/scf. Monitor and record the times and duration of any "off normal" operating condition (startup, shutdown, or malfunction) defined above. Record the start and stop time of all steam turbine-generator on-line and off-line operation.	Minn. R. 7007.0800, subp. 4, Title I Condition: Monitoring of emissions to demonstrate compliance with the NOx and CO BACT limits
Continuous Operation: CEMS must be operated and data recorded during all periods of emission unit operation including periods of emission unit start-up, shutdown, or malfunction except for periods of acceptable monitor downtime. This requirement applies whether or not a numerical emission limit applies during these periods. A CEMS must not be bypassed except in emergencies where failure to bypass would endanger human health, safety, or plant equipment. Acceptable monitor downtime is defined under Minn. R. 7017.1090, subp. 2.	Minn. R. 7017.1090, subp. 1
Monitor the fuel sulfur content in accordance with 40 CFR Section 60.334(b), unless alternative monitoring is approved by the USEPA.	40 CFR Section 60.334
Measure or calculate SO2, NOx, and CO2 emission rates for each affected unit in accordance with 40 CFR Section 75.	40 CFR Section 75.10
Each month, by the 15th of the month, calculate and record monthly nitrogen oxides and carbon monoxide emissions and the annual 12-month rolling sum. The rolling sum shall be calculated by adding the current month's emission totals with those for the previous 11 months.	Minn. R, 7007.0800, subp. 4, Title I Condition: Monitoring of emissions to demonstrate compliance with NOx and CO facility emissions cap.
Each month, by the 15th of the month, calculate and record monthly and annual 12 month rolling sum formaldehyde and total HAPs emissions using emission factors from the latest stack test results. Prior to emissions testing, and for HAPs that are not stack tested, emission factors from the latest AP-42 section addressing emissions from combustion turbines and gas fired boilers shall be used. After establishing emission factors for formaldehyde at four load levels, the factor (lbs/MMBtu) established for the gas turbine (EU 026) operating between one of the three test loads shall be used for all gas turbine operation below the next higher test load range (i.e. factor established at 30-40% load shall be used for all loads under 50% of full load). The combined (EU 026 and EU 027) emission factor established at 90-100% of full load shall be used for all operation, combined or not, greater than or equal to 90% of full load.	Minn. R, 7007.0800, subp. 4, Title I Condition: Monitoring of emissions to demonstrate compliance with formaldehyde and total HAPs emissions caps.
Each month, by the 15th of the month, calculate and record the monthly and 12-month rolling sum of operating hours for EU027.	Minn. R, 7007.0800, subp. 4, Title I Condition: Monitoring of EU027(duct burner) operating hours
The calculation and record keeping requirement listed above shall not apply to SV 020 if the agency approved performance test for formaldehyde emissions proves that the formaldehyde emission rate is less than or equal to 2.0 lbs/hr at all four test ranges.	Minn. R, 7007.0800, subp. 4, Title I Condition: Monitoring of emissions to demonstrate compliance with formaldehyde and total HAPs emissions caps.
REQUIREMENTS FOR CEMS	hdr
CEMS Certification Test: due in accordance with 40 CFR 75.4. Certify all CEMS required by the Acid Rain Program in accordance with 40 CFR 75, Appendix A. AND Not later than 90 days after the units commence commercial operation.	40 CFR Section 75.4(b)
CEMS Certification Test for CO Monitor: due within 90 days after the units commence commercial operation in accordance with 40 CFR 60 Appendix B, Performance Spec. 4 or 4A.	Minn. R. 7017.1050, subp. 1
CEM Certification Test Pretest Meeting: due 7 days before CEM Certification Test.	Minn. R. 7017.1060, subp. 3
Acid Rain CEMS QA/QC: The owner or operator of an affected facility shall operate, calibrate, and maintain each CEMS according to the procedures in 40 CFR pt. 75, Appendix B as amended.	40 CFR Section 75.21
CO CEMS QA Plan: Develop and implement a written quality assurance plan that covers each CEMS. The plan shall be on site and available for inspection within 30 days after monitor certification. The plan shall contain all of the information required by 40 CFR 60, Appendix F, section 3. Owner or operator may make a request, to the MPCA, for an alternative plan format.	Minn. R. 7017.1170, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

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
CEMS Daily Calibration Drift (CD) Test: The CD shall be quantified and recorded at zero (low-level) and upscale (high-level) gas concentration at least once daily. The CEMS shall be adjusted whenever the CD exceeds twice the specification of 40 CFR 60, Appendix B. 40 CFR 60, Appendix F, shall be used to determine out-of-control periods for CEMS. Owner or operator may make a request, to the MPCA, for an alternative test procedure.	Minn. R.7017.1170, subp. 3
Linearity and Leak Check Test (Acid Rain Program): due before end of each calendar quarter following CEM Certification Test. Conduct a quarterly linearity test 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 2.2
CEMS Cylinder Gas Audit (CGA): due before end of each calendar half-year following CEM Certification Test. Conduct CGA for the CO monitor only at least 3 months apart and not greater than 8 months apart. If a RATA is performed during the calendar half-year the CGA is not required. Follow the procedures in 40 CFR 60, Appendix F. Owner or operator may make a request, to the MPCA, for an alternative audit procedure.	Minn. R. 7017.1170, subp. 4
CEMS Relative Accuracy Test Audit (RATA): due before end of each calendar half-year following CEM Certification Test. Conduct a RATA on all CEMS required by the Acid Rain Program, in accordance with 40 CFR pt. 75, Appendix B. If the RATA results indicate a relative accuracy of 7.5% or less, then the next RATA is not required for twelve months.	40 CFR pt. 75, Appendix B, Section 2.3
CEMS Relative Accuracy Test Audit (RATA): due before end of each calendar year following CEM Certification Test. Follow the procedures in 40 CFR 60, Appendix B and Appendix F. Owner or operator may make a request, to the MPCA, for an alternative test procedure.	Minn. R. 7017.1170, subp. 5
PERFORMANCE TESTING	hdr
Initial Performance Test: due 180 days after Initial Startup (fuel first fired), but not to exceed 60 days after achieving the maximum production rate at which the affected facility wil be operated, to measure opacity, PM-10, nitrogen oxides and sulfur dioxide in accordance with the procedures specified in 40 CFR 60, Subp. GG and 40 CFR 60 Subp. Da as appropriate.	Title I Condition: Minn. R. 7017.2020, subp. 1 and Minn. R. 7017.2030, subp. 4, 40 CFR 60.8: To demonstrate compliance with NOx, PM-10 and SO2 emission limits
Initial Performance Test: due 180 days after Initial Startup (fuel first fired), but not to exceed 60 days after achieving the maximum production rate at which the affected facility wil be operated, to measure CO, VOC and formaldehyde emissions and to develop emission factors for formaldehyde emissions from EU 026 and EU 027.	Title I Condition: Monitoring to demonstrate compliance with CO, VOC, single HAP (formaldehyde) and total HAPs emissions limits
Formaldehyde Emission Factor/Rate Testing: Emission factors and rates shall be determined by using Agency approved stack test methods at the following loads and operating conditions: All test shall be performed with the SCR system on line. 1. EU 026 operating at 30 to 40 percent of full load. 2. EU 026 operating at 50 to 60 percent of full load. 3. EU 026 operating at 70 to 80 percent of full load. 4. EU 026 and EU 027 combined operating at 90 to 100 percent of full load.	Minn. R. 7007.0800, subp. 4
Testing Frequency to Update Formaldehyde Emission Factors: Within 60 days of calculating 12-month rolling sum formaldehyde emissions of greater than 8.9 tons, perform a stack test to redevelop emission factors for formaldehyde emissions over the previously tested load ranges.	Minn. R. 7007.0800, subp. 4
RECORD KEEPING	hdr
Recordkeeping: Maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of the facility including malfunction of the air pollution control equipment or any periods during which a continuous monitoring system or monitoring device is inoperative.	Minn. R. 7007.0800, subp. 5
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
SUBMITTALS AND REPORTS	hdr

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Excess emissions and monitoring system performance reports shall include the information required in 40 CFR Section 60.7(c) and (d), Section 60.49a and Section 60.334(c). MPCA supplied forms DRF-1 and DRF-2 may be used to meet this requirement.	Minn. R. 7007.0800, subp. 2 40 CFR Section 60.7, Section 60.49a and Section 60.334(c)
General Performance Test (PT) Requirements: Performance Tests are due as outlined in Tables A of the permit. PT Notifications (written): due 30 days before each Performance Test PT Plan: due 30 days before each Performance Test PT Pre-test Meeting: due 7 days before each Performance Test PT Report: due 45 days after each Performance Test PT Report-Microfiche: due 105 days after each Performance Test.	Minn. R. 7017.2030, subp. 1-4 and Minn. R. 7017.2035, subp. 1-2
Notification of any physical or operational change which may increase emissions, in accordance with 40 CFR 60.7 (a)(4). The notification shall be postmarked 60 days or as soon as practicable before the change is commenced.	40 CFR Section 60.7(a)(4)

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **EU 003 Boiler 3**

Associated Items: CE 006 Electrostatic Precipitator - High Efficiency

CE 007 Electrostatic Precipitator - High Efficiency

SV 001

What to do	Why to do it
A. EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 lbs/million Btu heat input	Minn. R. 7009.0020; meets requirements of Minn. R. 7011.0510, subp. 1
Sulfur Dioxide: less than or equal to 1.3 lbs/million Btu heat input using 1-Hour Average	Minn. R. 7009.0020; meets requirements of Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent opacity using 6-minute Average except that a maximum of 60 percent opacity shall be allowable for one six minute period in any 60-minute period.	Minn. R. 7011.0510, subp. 2
Comply with the applicable Acid Rain emissions limitation of sulfur dioxide.	40 CFR Section 72.9(c)(1)(ii), 40 CFR Section 72.9 (g)(4)
NOx Averaging Plan Beginning January 1, 2000 either: Maintain an annual average NOx emission rate of 0.81 lbs/MMBtu and limit the annual heat input to less than or equal to 2,094,000 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# Allen S. King — 1 Black Dog — 1,3,4 High Bridge — 3,4,5,6 Minnesota Valley — 4 Riverside — 6,7,8 Sherburne County — 1,2,3	40 CFR Section 76.11
B. OPERATIONAL REQUIREMENTS	hdr
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.	40 CFR Section 72.9(c)(1)(i), 40 CFR Section 72.9 (g)(4)
Allowed fuel types: bituminous coal, subbituminous coal, petroleum coke, distillate fuel oil, natural gas, propane, used oil, non-hazardous spill cleanup materials, and non-hazardous boiler cleaning agents.	Minn. R. 7007.0800, subp. 2
Sulfur Content of Fuel: less than or equal to 0.5 percent by weight for distillate fuel oil.	Minn. R. 7007.0800, subp 2; meets SO2 emission limit requirement in Minn. R. 7011.0510, subp. 1
Combust used oil in accordance with used oil regulations in Minn. R. ch. 7045. Limit to 5% of total fuel mass on an hourly basis.	Minn. R. 7007.0800, subp. 2; Minn. R. ch. 7045
Boiler chemical cleaning waste limited to: 8.5 gpm per 100,000 lbs/hr steam flow. Cleaning waste shall be introduced into EU 003 when the boiler is operating at a minimum of 75 percent of rated capacity.	Minn. R. 7007.0800, subp. 2
C. TESTING REQUIREMENTS	hdr
Performance Test: due before end of each 60 months starting 12/31/93 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
Performance Test Pre-test Meeting: due 7 days before end of each 60 months starting 12/31/93 (7 days before each Performance Test)	Minn. R. 7017.2030, subp. 4

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

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. 7007.0800, subp. 2.
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 90% 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 90% 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. 7007.0800, subp. 2.
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 90% 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 90% any applicable emission limit for any tested pollutant, STET operation is defined as operation beyond 100% of the average operating rate achieved during that performance test. In no case will STET operation be higher than allowed by an existing permit condition.	Minn. R. 7007.0800, subp. 2.
The results of a performance test are not final until issuance of a review letter by MPCA, unless specified otherwise by Minn. R. 7017.2001 - 7017.2060.	Minn. R. 7017.2020, subp. 4
D. RECORD KEEPING	hdr
Record keeping of Boiler Cleaning Agent incineration: the permittee shall keep records for all cleaning agent incineration including date of incineration, quantity (gallons), origin of cleaning agent, cleaning agent feed rate (in gallons per hour), and operating capacity of the boiler during incineration in lbs. of steam per hour.	Minn. R. 7007.0800, subp. 5
Keep on site at the source each of the following documents for a period of 5 years from the date of permit issuance: The certificate of representation, all emissions monitoring information, copies of all reports, compliance certifications, and other submissions or records made under the Acid Rain Program, copies of all documents used to complete an acid rain permit application.	40 CFR Section 72.9(f)(1)
E. REPORTING	hdr
Each submission under the Acid Rain Program shall be submitted, signed, and certified by the 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
If the unit has excess emissions, the designated representative shall submit a proposed offset plan in accordance with 40 CFR ' 72.9(e).	40 CFR Section 72.9(e)

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **EU 004 Boiler 4**

Associated Items: CE 008 Electrostatic Precipitator - High Efficiency

CE 009 Electrostatic Precipitator - High Efficiency

SV 001

What to do	Why to do it
A. EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 lbs/million Btu heat input	Minn. R. 7009.0020; meets requirements of Minn. R. 7011.0510, subp. 1
Sulfur Dioxide: less than or equal to 1.3 lbs/million Btu heat input using 1-Hour Average	Minn. R. 7009.0020; meets requirements of Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent opacity using 6-minute Average except that a maximum of 60 percent opacity shall be allowable for one six minute period in any 60-minute period.	Minn. R. 7011.0510, subp. 2
Comply with the applicable Acid Rain emissions limitation of sulfur dioxide.	40 CFR Section 72.9(c)(1)(ii), 40 CFR Section 72.9 (g)(4)
NOx Averaging Plan Beginning January 1, 2000 either: Maintain an annual average NOx emission rate of 0.81 lbs/MMBtu and limit the annual heat input to less than or equal to 2,094,000 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# Allen S. King — 1 Black Dog — 1,3,4 High Bridge — 3,4,5,6 Minnesota Valley — 4 Riverside — 6,7,8 Sherburne County — 1,2,3	40 CFR Section 76.11
B. OPERATIONAL REQUIREMENTS	hdr
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.	40 CFR Section 72.9(c)(1)(i), 40 CFR Section 72.9 (g)(4)
Allowed fuel types: bituminous coal, subbituminous coal, petroleum coke, distillate fuel oil, natural gas, propane, used oil, non-hazardous spill cleanup materials, and non-hazardous boiler cleaning agents.	Minn. R. 7007.0800, subp. 2
Sulfur Content of Fuel: less than or equal to 0.5 percent by weight for distillate fuel oil.	Minn. R. 7007.0800, subp 2; meets SO2 emission limit requirement in Minn. R. 7011.0510, subp. 1
Combust used oil in accordance with used oil regulations in Minn. R. ch. 7045. Limit to 5% of total fuel mass on an hourly basis.	Minn. R. 7007.0800, subp. 2; Minn. R. ch. 7045
Boiler chemical cleaning waste limited to: 8.5 gpm per 100,000 lbs/hr steam flow. Cleaning waste shall be introduced into EU 004 when the boiler is operating at a minimum of 75 percent of rated capacity.	Minn. R. 7007.0800, subp. 2
C. TESTING REQUIREMENTS	hdr
Performance Test: due before end of each 60 months starting 12/31/93 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
Performance Test Pre-test Meeting: due 7 days before end of each 60 months starting 12/31/93 (7 days before each Performance Test)	Minn. R. 7017.2030, subp. 4

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

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. 7007.0800, subp. 2.
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 90% 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 90% 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. 7007.0800, subp. 2.
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 90% 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 90% any applicable emission limit for any tested pollutant, STET operation is defined as operation beyond 100% of the average operating rate achieved during that performance test. In no case will STET operation be higher than allowed by an existing permit condition.	Minn. R. 7007.0800, subp. 2.
The results of a performance test are not final until issuance of a review letter by MPCA, unless specified otherwise by Minn. R. 7017.2001 - 7017.2060.	Minn. R. 7017.2020, subp. 4
D. RECORD KEEPING	hdr
Record keeping of Boiler Cleaning Agent incineration: the permittee shall keep records for all cleaning agent incineration including date of incineration, quantity (gallons), origin of cleaning agent, cleaning agent feed rate (in gallons per hour), and operating capacity of the boiler during incineration in lbs. of steam per hour.	Minn. R. 7007.0800, subp. 5
Keep on site at the source each of the following documents for a period of 5 years from the date of permit issuance: The certificate of representation, all emissions monitoring information, copies of all reports, compliance certifications, and other submissions or records made under the Acid Rain Program, copies of all documents used to complete an acid rain permit application.	40 CFR Section 72.9(f)(1)
E. REPORTING	hdr
Each submission under the Acid Rain Program shall be submitted, signed, and certified by the 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
If the unit has excess emissions, the designated representative shall submit a proposed offset plan in accordance with 40 CFR ' 72.9(e).	40 CFR Section 72.9(e)

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **EU 005 200 Ton Stacking Hopper**

Associated Items: CE 025 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 031 Other

SV 002

What to do	Why to do it
Particulate Matter < 10 micron: less than or equal to 0.6 lbs/hour . This is a state only requirement and is not federally enforceable.	Minn. R. 7009.0020
If exhaust gases from any enclosed coal handling facility exceed 20 percent opacity, then the owner or operator of such facility shall select and implement one of the following further controls: (1) install exhaust air system and control exhaust gases so that particulate emissions in such gases do not exceed 0.020 gr/dscf; (2) control exhaust gases using dust suppression methods so that particulate emissions do not exhibit Opacity: greater than or equal to 20 percent opacity	Minn. R. 7011.1105 (G) and to meet Minn. R. 7009.0020
Check for visible emissions (during daylight hours) from the control equipment (CE 025) once each calendar week during every week of operation.	Minn. R. 7007.0800, subp. 4
Corrective Actions: If visible emissions (VEs) are observed, determine the cause and take corrective actions as soon as possible to eliminate the VEs.	Minn. R. 7007.0800, subp. 2
Recordkeeping: Record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken.	Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **EU 006 Dumper Unloading Bldg**

Associated Items: CE 023 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 024 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

SV 003

What to do	Why to do it
Particulate Matter < 10 micron: less than or equal to 1.0 lbs/hour . This is a state only requirement and is not federally enforceable.	Minn. R. 7009.0020
Operating Hours: less than or equal to 12.5 hours/day . This is a state only requirement and is not federally enforceable.	Minn. R. 7009.0020
Railcar Unloading: When the amount of coal unloaded by rail is 200,000 tons per year or greater, unload railcars only within a permanent building or structure. If exhaust gases from such building or structure exceed 20 percent opacity, then implement one of the following further controls: install an exhaust air system and control exhaust gases so that particulate matter emissions do not exceed 0.020 gr/dscf; or control exhaust gases using dust suppresion methods so that particulate emissions do not exhibit Opacity: greater than or equal to 20 percent opacity	Minn. R. 7011.1105 (H)
Truck and Hauler Unloading Stations: Control fugitive particulate emissions from the unloading of truck or haulers by dust suppression methods so that emissions from such sources are minimized. Control emissions by unloading reclaimed coal within a partial enclosure and with fabric filters.	Minn. R. 7011.1105 (C)
Check for visible emissions (during daylight hours) from SV 003 (for CE 023 and CE 024) once each calendar week during every week of operation.	Minn. R. 7007.0800, subp. 4
Corrective Actions: If visible emissions (VEs) are observed, determine the cause and take corrective actions as soon as possible to eliminate the VEs.	Minn. R. 7007.0800, subp. 2
Recordkeeping: Record the train dumping start and stop times during every day of coal throughput operation.	Minn. R. 7007.0800, subp. 5
Recordkeeping: Record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken.	Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **EU 007 Yard Agglomerator Silo**

Associated Items: CE 021 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

SV 004

What to do	Why to do it
Opacity: less than 20 percent opacity	40 CFR Section 60.252(c)
Particulate Matter < 10 micron: less than or equal to 0.01 grains/actual cubic foot . This is a state only requirement and is not federally enforceable.	Minn. R. 7009.0020 and to meet Minn. R. 7011.1105 (G)
Check for visible emissions (during daylight hours) from the control equipment (CE 021) once each calendar week during every week of operation.	Minn. R. 7007.0800, subp. 4
Corrective Actions: If visible emissions (VEs) are observed, determine the cause and take corrective actions as soon as possible to eliminate the VEs.	Minn. R. 7007.0800, subp. 2
Recordkeeping: Record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken.	Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **EU 008 Breaker Building (Coal Conveying; DC-951**

Associated Items: CE 019 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

SV 005

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.1105 (G)
Particulate Matter < 10 micron: less than or equal to 0.005 grains/dry standard cubic foot . This is a state only requirement and is not federally enforceable.	Minn. R. 7009.0020 and to meet Minn. R. 7011.1105 (G)
Check for visible emissions (during daylight hours) from the control equipment (CE 019) once each calendar week during every week of operation.	Minn. R. 7007.0800, subp. 4
Corrective Actions: If visible emissions (VEs) are observed, determine the cause and take corrective actions as soon as possible to eliminate the VEs.	Minn. R. 7007.0800, subp. 2
Recordkeeping: Record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken.	Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **EU 009 Transfer Tower (DC-952)**

Associated Items: CE 020 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

SV 006

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.1105 (G)
Particulate Matter < 10 micron: less than or equal to 0.005 grains/dry standard cubic foot . This is a state only requirement and is not federally enforceable.	Minn. R. 7009.0020; meets requirements of Minn. R. 7011.1105 (G)
Check for visible emissions (during daylight hours) from the SV 006 control equipment (CE 020) once each calendar week during every week of operation.	Minn. R. 7007.0800, subp. 4
Corrective Actions: If visible emissions (VEs) are observed, determine the cause and take corrective actions as soon as possible to eliminate the VEs.	Minn. R. 7007.0800, subp. 2
Recordkeeping: Record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken.	Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **EU 010 Breakers (Crushing: DC-952)**

Associated Items: CE 020 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

SV 006

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.1105 (G)
Particulate Matter < 10 micron: less than or equal to 0.005 grains/dry standard cubic foot . This is a state only requirement and is not federally enforceable.	Minn. R. 7009.0020; meets requirements of Minn. R. 7011.1105 (G)
Check for visible emissions (during daylight hours) from the SV 006 control equipment (CE 020) once each calendar week during every week of operation.	Minn. R. 7007.0800, subp. 4
Corrective Actions: If visible emissions (VEs) are observed, determine the cause and take corrective actions as soon as possible to eliminate the VEs.	Minn. R. 7007.0800, subp. 2
Recordkeeping: Record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken.	Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **EU 011 Tripper Area (Conveyors D and F; DC-961**

Associated Items: CE 016 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

SV 007

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.1105 (G)
Particulate Matter < 10 micron: less than or equal to 0.005 grains/dry standard cubic foot . This is a state only requirement and is not federally enforceable.	Minn. R. 7009.0020 and to meet Minn. R. 7011.1105 (G)
Check for visible emissions (during daylight hours) from the control equipment (CE 016) once each calendar week during every week of operation.	Minn. R. 7007.0800, subp. 4
Corrective Actions: If visible emissions (VEs) are observed, determine the cause and take corrective actions as soon as possible to eliminate the VEs.	Minn. R. 7007.0800, subp. 2
Recordkeeping: Record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken.	Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **EU 012 Coal Silos DC-962**

Associated Items: CE 017 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

SV 008

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.1105 (G)
Particulate Matter < 10 micron: less than or equal to 0.005 grains/dry standard cubic foot . This is a state only requirement and is not federally enforceable.	Minn. R. 7009.0020 and to meet Minn. R. 7011.1105 (G)
Check for visible emissions (during daylight hours) from the control equipment (CE 017) once each calendar week during every week of operation.	Minn. R. 7007.0800, subp. 4
Corrective Actions: If visible emissions (VEs) are observed, determine the cause and take corrective actions as soon as possible to eliminate the VEs.	Minn. R. 7007.0800, subp. 2
Recordkeeping: Record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken.	Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **EU 013 Unit 4 Coal Silo DC-963**

Associated Items: CE 018 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

SV 009

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.1105 (G)
Particulate Matter < 10 micron: less than or equal to 0.005 grains/dry standard cubic foot . This is a state only requirement and is not federally enforceable.	Minn. R. 7009.0020 and to meet Minn. R. 7011.1105 (G)
Check for visible emissions (during daylight hours) from the control equipment (CE 018) once each calendar week during every week of operation.	Minn. R. 7007.0800, subp. 4
Corrective Actions: If visible emissions (VEs) are observed, determine the cause and take corrective actions as soon as possible to eliminate the VEs.	Minn. R. 7007.0800, subp. 2
Recordkeeping: Record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken.	Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **EU 018 Units 3 and 4 Secondary Precip. Fly Ash Collection System Venting**

Associated Items: CE 011 Centrifugal Collector - High Efficiency

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

SV 014

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 1(B)
Particulate Matter < 10 micron: less than or equal to 0.02 grains/dry standard cubic foot . This is a state only requirement and is not federally enforceable.	Minn. R. 7009.0020 and to meet Minn. R. 7011.0715, subp. 1(A)
Check for visible emissions (during daylight hours) from the control equipment (CE 015) once each calendar week during every week of operation.	Minn. R. 7007.0800, subp. 4
Corrective Actions: If visible emissions (VEs) are observed, determine the cause and take corrective actions as soon as possible to eliminate the VEs.	Minn. R. 7007.0800, subp. 2
Recordkeeping: Record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken.	Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **EU 019 Units 3 and 4 Fly Ash Silo Vent**

Associated Items: CE 004 Electrostatic Precipitator - High Efficiency

CE 005 Electrostatic Precipitator - High Efficiency

CE 006 Electrostatic Precipitator - High Efficiency

CE 007 Electrostatic Precipitator - High Efficiency

CE 008 Electrostatic Precipitator - High Efficiency

CE 009 Electrostatic Precipitator - High Efficiency

SV 001

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 1(B)
Particulate Matter < 10 micron: less than or equal to 0.02 grains/dry standard cubic foot . This is a state only requirement and is not federally enforceable.	Minn. R. 7009.0020 and meets the requirements of Minn. R. 7011.0715, subp. 1(A)
Units 3 and 4 ash silo vent emissions are controlled by CE 004, 005, 006, 007, 008, and 009 and exhaust through SV 001.	Minn. R. 7007.0800, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **EU 021 No. 2 Fly Ash Collection System**

Associated Items: CE 010 Centrifugal Collector - High Efficiency

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

SV 016

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 1(B)
Particulate Matter < 10 micron: less than or equal to 0.02 grains/dry standard cubic foot . This is a state only requirement and is not federally enforceable.	Minn. R. 7009.0020 and to meet Minn. R. 7011.0715, subp. 1(A)
Check for visible emissions (during daylight hours) from the control equipment (CE 013) once each calendar week during every week of operation.	Minn. R. 7007.0800, subp. 4
Corrective Actions: If visible emissions (VEs) are observed, determine the cause and take corrective actions as soon as possible to eliminate the VEs.	Minn. R. 7007.0800, subp. 2
Recordkeeping: Record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken.	Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **EU 023 Temporary Emergency Engine**

Associated Items: SV 017

What to do	Why to do it
Operating Hours: less than or equal to 5000 hours/year using 12-month Rolling Sum calculated monthly. During the first 11 months of operation, the cumulative operating hours are limited as follows: Month 1: 500 hours; Month 2: 1000 hours; Month 3: 1500 hours; Month 4: 2000 hours; Month 5: 2500 hours; Month 6: 3000 hours; Month 7: 3400 hours; Month 8: 3800 hours; Month 9: 4200 hours; Month 10: 4600 hours; Month 11: 4900 hours.	Title I Condition: limit to avoid classification as a major modification under 40 CFR Section 52.21; and meets 7009.0020
Capacity: The rated continuous brake horsepower shall not exceed 300.	Title I Condition: limit to avoid classification as a major modification under 40 CFR Section 52.21; and meets 7009.0020
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 is limited to distillate fuel oil with a maximum sulfur content of 0.5% by weight.	Minn. R. 7007.0800, subp. 2
Calculate and record operating hours for each month and on a 12-month rolling sum basis. Complete the calculation and recording by the end of each month, for the previous month and for the previous 12-month period.	Title I Condition: recordkeeping to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 5
Fuel Supplier Receipts: Keep on site, fuel receipts for each fuel shipment. Each receipt shall specify the type of fuel oil delivered.	Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **EU 024 Emergency Engine Generator EEG-61001**

Associated Items: GP 001 Emergency Generators

SV 018

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 is limited to distillate fuel oil with a maximum Sulfur Content of Fuel: less than or equal to 0.5 percent by weight	Minn. R. 7007.0800, subp. 2
Fuel Supplier Receipts: Keep on site, fuel receipts for each fuel shipment. Each receipt shall specify the type of fuel oil delivered.	Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **EU 025 Emergency Engine Generator EEG-61002**

Associated Items: GP 001 Emergency Generators

SV 019

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 is limited to distillate fuel oil with a maximum sulfur content of 0.5% by weight.	Minn. R. 7007.0800, subp. 2
Fuel Supplier Receipts: Keep on site, fuel receipts for each fuel shipment. Each receipt shall specify the type of fuel oil delivered.	Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **EU 026 Combustion Turbine**

Associated Items: CE 032 Catalytic Reduction

SV 020

What to do	Why to do it
Emission Limits under 40 CFR Section 60.332 *Averaging times are specified for those emission limits where compliance is demonstrated by continuous emission monitors. For all other emission limits, compliance shall be determined, and averaging time is dictated by the appropriate test method. ** Startup for EU 026 shall not exceed 1 hour. *** Shutdown for EU 026 shall not exceed 30 minutes. **** Malfunction means any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.	hdr
Nitrogen Oxides: less than or equal to 110 parts per million using 1-Hour Average at 15% O2 on a dry basis. Applies at all times except during startup, shutdown or malfunction. parts per million is on a volume basis.	40 CFR 60.332(a)(1)
OPERATIONAL REQUIREMENTS	hdr
Sulfur Content of Fuel: less than or equal to 0.004 grains/dry standard cubic foot using 12-month Rolling Average	Title I condition: to limit potential SO2 emissions less than PSD significant net emissions increase as defined in 40 CFR Section 52.21, meets fuel sulfur requirements in 40 CFR 60.333
Fuel usage is limited to pipeline quality natural gas.	Title I condition: to limit potential SO2 emissions less than PSD significant net emissions increase as defined in 40 CFR Section 52.21
MONITORING, TESTING, RECORD KEEPING AND REPORTING REQUIREMENTS (see SV 020)	hdr

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **EU 027 Duct Firing Burners**

Associated Items: CE 032 Catalytic Reduction

SV 020

What to do	Why to do it
Emission Limits *Averaging times are specified for those emission limits where compliance is demonstrated by continuous emission monitors. For all other emission limits, compliance shall be determined, and averaging time is dictated by the appropriate test method.	hdr
Front-half Particulate Matter: less than or equal to 0.03 lbs/million Btu heat input	40 CFR 60.42a
Opacity: less than or equal to 20 percent using 6-minute Average except for one 6-minute period per hour of not more than 27 percent.	40 CFR 60.42a
Sulfur Dioxide: less than or equal to 0.20 lbs/million Btu heat input using 30-day Rolling Average	40 CFR 60.43a
Nitrogen Oxides: less than or equal 1.6 lbs/megawatt- hour (gross energy output) based on a 30-day rolling average.	40 CFR 60.44a
OPERATIONAL REQUIREMENTS	hdr
Sulfur Content of Fuel: less than or equal to 0.004 grains/dry standard cubic foot using 12-month Rolling Average	Title I condition: to limit potential SO2 emissions less than PSD significant net emissions increase as defined in 40 CFR Section 52.21, meets fuel sulfur requirements in 40 CFR 60.333
Fuel usage is limited to pipeline quality natural gas.	Title I condition: to limit potential SO2 emissions less than PSD significant net emissions increase as defined in 40 CFR Section 52.21
MONITORING, TESTING, RECORD KEEPING AND REPORTING REQUIREMENTS (see SV 020)	hdr

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **CE 004 Electrostatic Precipitator - High Efficiency**

Associated Items: EU 002 Boiler 2 - retired from service in place

EU 019 Units 3 and 4 Fly Ash Silo Vent

What to do	Why to do it
Operate control equipment when the associated boiler is operating except while burning only natural gas.	Minn. R. 7007.0800, subp. 2
The ESP must be operated with at least the minimum specific collection area (SCA) in service determined during the most-recent particulate matter emissions test with results equal to or less than the particulate matter emission limit. If the sections in the ESP are physically and electrically equivalent, the Permittee can meet this requirement by operating the ESP with no less than the number of sections that were operating during the most-recent particulate matter emissions test with results equal to or less than the particulate matter emission limit.	Minn. R. 7007.0800, subp. 14
Monitor and record the identity and minimum number of ESP sections (or SCA if sections are not equivalent) in service each day that the associated boiler is operating. Records shall indicate periods of operation on only natural gas.	Minn. R. 7007.0800, subp. 4 and 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **CE 005 Electrostatic Precipitator - High Efficiency**

Associated Items: EU 002 Boiler 2 - retired from service in place

EU 019 Units 3 and 4 Fly Ash Silo Vent

What to do	Why to do it
Operate control equipment when the associated boiler is operating except while burning only natural gas.	Minn. R. 7007.0800, subp. 2
The ESP must be operated with at least the minimum specific collection area (SCA) in service determined during the most-recent particulate matter emissions test with results equal to or less than the particulate matter emission limit. If the sections in the ESP are physically and electrically equivalent, the Permittee can meet this requirement by operating the ESP with no less than the number of sections that were operating during the most-recent particulate matter emissions test with results equal to or less than the particulate matter emission limit.	Minn. R. 7007.0800, subp. 14
Monitor and record the identity and minimum number of ESP sections (or SCA if sections are not equivalent) in service each day that the associated boiler is operating. Records shall indicate periods of operation on only natural gas.	Minn. R. 7007.0800, subp. 4 and 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **CE 006 Electrostatic Precipitator - High Efficiency**

Associated Items: EU 003 Boiler 3

EU 019 Units 3 and 4 Fly Ash Silo Vent

What to do	Why to do it
Operate control equipment when the associated boiler is operating except while burning only natural gas.	Minn. R. 7007.0800, subp. 2
The ESP must be operated with at least the minimum specific collection area (SCA) in service determined during the most-recent particulate matter emissions test with results equal to or less than the particulate matter emission limit. If the sections in the ESP are physically and electrically equivalent, the Permittee can meet this requirement by operating the ESP with no less than the number of sections that were operating during the most-recent particulate matter emissions test with results equal to or less than the particulate matter emission limit.	Minn. R. 7007.0800, subp. 14
Monitor and record the identity and minimum number of ESP sections (or SCA if sections are not equivalent) in service each day that the associated boiler is operating. Records shall indicate periods of operation on only natural gas.	Minn. R. 7007.0800, subp. 4 and 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **CE 007 Electrostatic Precipitator - High Efficiency**

Associated Items: EU 003 Boiler 3

EU 019 Units 3 and 4 Fly Ash Silo Vent

What to do	Why to do it
Operate control equipment when the associated boiler is operating except while burning only natural gas.	Minn. R. 7007.0800, subp. 2
The ESP must be operated with at least the minimum specific collection area (SCA) in service determined during the most-recent particulate matter emissions test with results equal to or less than the particulate matter emission limit. If the sections in the ESP are physically and electrically equivalent, the Permittee can meet this requirement by operating the ESP with no less than the number of sections that were operating during the most-recent particulate matter emissions test with results equal to or less than the particulate matter emission limit.	Minn. R. 7007.0800, subp. 14
Monitor and record the identity and minimum number of ESP sections (or SCA if sections are not equivalent) in service each day that the associated boiler is operating. Records shall indicate periods of operation on only natural gas.	Minn. R. 7007.0800, subp. 4 and 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **CE 008 Electrostatic Precipitator - High Efficiency**

Associated Items: EU 004 Boiler 4

EU 019 Units 3 and 4 Fly Ash Silo Vent

What to do	Why to do it
Operate control equipment when the associated boiler is operating except while burning only natural gas.	Minn. R. 7007.0800, subp. 2
The ESP must be operated with at least the minimum specific collection area (SCA) in service determined during the most-recent particulate matter emissions test with results equal to or less than the particulate matter emission limit. If the sections in the ESP are physically and electrically equivalent, the Permittee can meet this requirement by operating the ESP with no less than the number of sections that were operating during the most-recent particulate matter emissions test with results equal to or less than the particulate matter emission limit.	Minn. R. 7007.0800, subp. 14
Monitor and record the identity and minimum number of ESP sections (or SCA if sections are not equivalent) in service each day that the associated boiler is operating. Records shall indicate periods of operation on only natural gas.	Minn. R. 7007.0800, subp. 4 and 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **CE 009 Electrostatic Precipitator - High Efficiency**

Associated Items: EU 004 Boiler 4

EU 019 Units 3 and 4 Fly Ash Silo Vent

What to do	Why to do it
Operate control equipment when the associated boiler is operating except while burning only natural gas.	Minn. R. 7007.0800, subp. 2
The ESP must be operated with at least the minimum specific collection area (SCA) in service determined during the most-recent particulate matter emissions test with results equal to or less than the particulate matter emission limit. If the sections in the ESP are physically and electrically equivalent, the Permittee can meet this requirement by operating the ESP with no less than the number of sections that were operating during the most-recent particulate matter emissions test with results equal to or less than the particulate matter emission limit.	Minn. R. 7007.0800, subp. 14
Monitor and record the identity and minimum number of ESP sections (or SCA if sections are not equivalent) in service each day that the associated boiler is operating. Records shall indicate periods of operation on only natural gas.	Minn. R. 7007.0800, subp. 4 and 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **FS 002 Coal Conveyors 6 and 7A**

Associated Items: CE 030 Other

What to do	Why to do it
If exhaust gases from any enclosed coal handling facility exceed 20 percent opacity, either install an exhaust air system and control exhaust gases so that particulate emissions do not exceed 0.020 gr/dscf, or control exhaust gases using dust suppression methods so that particulate emissions do not exhibit Opacity: greater than 20 percent opacity	Minn. R. 7011.1105 (G)

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: FS 003 Emergency Reclaim Hopper

What to do	Why to do it
Control fugitive particulate emissions by dust suppression methods on such operations so that fugitive particulate emissions are minimized. In the alternative, use an underground bottom feed (plow) of coal to an underground conveyor system provided the exhaust gases from the enclosed spaces do not contain Total Particulate Matter: less than or equal to 0.02 grains/dry standard cubic foot	Minn. R. 7011.1105 (F)

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **FS 004 All Coal Storage Piles (Erosion)**

Associated Items: CE 029 Dust Suppression by Water Spray

What to do	Why to do it
Stockpiles, Stockpile Construction, and Reclaiming: (1) Control fugitive particulate emissions by dust suppression methods on such operations so that fugitive particulate emissions are minimized. (2) In the alternative, use an underground bottom feed (plow) of coal to an underground conveyor system provided the exhaust gases from the enclosed spaces do not contain Total Particulate Matter: less than or equal to 0.02 grains/dry standard cubic foot	Minn. R. 7011.1105 (F)
Coal Pile Area: The total area of all coal piles shall be less than or equal to 14.5 acres.	Minn. R. 7009.0020

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **FS 008 Coal Outstacking**

Associated Items: CE 029 Dust Suppression by Water Spray

What to do	Why to do it
Coal Loading Stations: Control fugitive particulate emissions from the loading of trucks or haulers by dust suppression methods so that emissions from such sources are minimized.	Minn. R. 7011.1105 (B)

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **FS 009 Coal Reclaim**

Associated Items: CE 029 Dust Suppression by Water Spray

What to do	Why to do it
Stockpiles, Stockpile Construction, and Reclaiming: (1) Control fugitive particulate emissions by dust suppression methods on such operations so that fugitive particulate emissions are minimized. (2) In the alternative, use an underground bottom feed (plow) of coal to an underground conveyor system provided the exhaust gases from the enclosed spaces do not contain Total Particulate Matter: less than or equal to 0.02 grains/dry standard cubic foot	Minn. R. 7011.1105 (F) and Minn. R. 7009.0020

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **FS 010 Petroleum Coke Storage (Erosion)**

Associated Items: CE 029 Dust Suppression by Water Spray

What to do	Why to do it
Coke Pile Area: The total area of all coal piles shall be less than or equal to 1.0 acre.	Minn. R. 7009.0020
Stockpiles, Stockpile Construction, and Reclaiming: (1) Control fugitive particulate emissions by dust suppression methods on such operations so that fugitive particulate emissions are minimized. (2) In the alternative, use an underground bottom feed (plow) of coal to an underground conveyor system provided the exhaust gases from the enclosed spaces do not contain Total Particulate Matter: less than or equal to 0.02 grains/dry standard cubic foot	Minn. R. 7011.1105 (F)

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **FS 013 Ash Hauling Traffic**

Associated Items: CE 029 Dust Suppression by Water Spray

What to do	Why to do it
Control dust by watering, achieving at least 40% efficiency.	Minn. R. 7009.0020

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **FS 014 Coal Yard Traffic**

Associated Items: CE 029 Dust Suppression by Water Spray

What to do	Why to do it
Control dust by watering, achieving at least 40% efficiency.	Minn. R. 7009.0020

TABLE A: LIMITS AND OTHER REQUIREMENTS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: FS 015 Coal Conveyors 7,7B,7C

What to do	Why to do it
If exhaust gases from any enclosed coal handling facility exceed 20 percent opacity, either install an exhaust air system and control exhaust gases so that particulate emissions do not exceed 0.020 gr/dscf, or control exhaust gases using dust suppression methods so that particulate emissions do not exhibit Opacity: greater than 20 percent opacity	Minn. R. 7011.1105 (G)

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: FS 016 Coal Conveyor 8

What to do	Why to do it
If exhaust gases from any enclosed coal handling facility exceed 20 percent opacity, either install an exhaust air system and control exhaust gases so that particulate emissions do not exceed 0.020 gr/dscf, or control exhaust gases using dust suppression methods so that particulate emissions do not exhibit Opacity: greater than 20 percent opacity	Minn. R. 7011.1105 (G)

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Subject Item: **FS 017 Dumper Unloading Bldg (fugitives from unloading railcar/scraper)**

Associated Items: CE 031 Other

What to do	Why to do it
Unload railcars only within a permanent building or structure. If exhaust gases from such building or structure exceed 20 percent opacity, then the owner or operator shall either install an exhaust air system and limit particulate emissions to 0.020 gr/dscf or control exhaust gases using dust suppression methods so that particulate emissions do not exhibit Opacity: greater than 20 percent opacity	Minn. R. 7011.1105 (H)
Truck and Hauler Unloading Stations: Control fugitive particulate emissions from the unloading of truck or haulers by dust suppression methods so that emissions from such sources are minimized. Control emissions by unloading reclaimed coal within a partial enclosure and with fabric filters.	Minn. R. 7011.1105 (C)

TABLE B: SUBMITTALS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

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

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

Send any application for a permit or permit amendment to:

Permit Technical Advisor
Permit Section
Air Quality Division
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

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.

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

Supervisor
Compliance Determination Unit
Air Quality Division
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

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

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

TABLE B: ONE TIME SUBMITTALS OR NOTIFICATIONS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

What to send	When to send	Portion of Facility Affected
Acid Rain Application for Permit Reissuance	due 180 days before expiration of Existing Permit	EU003, EU004
Application for Permit Reissuance	due 180 days before expiration of Existing Permit	Total Facility
CEM Certification Test Plan	due 45 days before CEM Certification Test.	SV020
CEM Certification Test Report - Microfiche Copy	due 105 days after CEM Certification Test.	SV020
CEM Certification Test Report	due 30 days after CEM Certification Test.	SV020
Computer Dispersion Modeling Protocol	due 1,096 days after Permit Issuance for NOx. This protocol will describe the proposed modeling methodology and input data, in accordance with all requirements of 40 CFR pt. 51, Appendix W.	Total Facility
Computer Dispersion Modeling Protocol	due 30 days after Permit Issuance for PM-10. This protocol will describe the proposed modeling methodology and input data, in accordance with all requirements of 40 CFR pt. 51, Appendix W.	Total Facility
Computer Dispersion Modeling Results	due 1,462 days after Permit Issuance and after the MPCA has reviewed and approved the modeling protocol.	Total Facility
Computer Dispersion Modeling Results	due 90 days after Permit Issuance and after the MPCA has reviewed and approved the modeling protocol.	Total Facility
Fugitive Control Plan	due 60 days after 08/13/1998 for review and approval by the Commissioner. The plan shall identify all fugitive emission sources, primary and contingent control measures, and recordkeeping (if applicable). Daily recordkeeping must include, at a minimum, results of fugitive dust emissions observations, relevant meteorological data, control measures taken, and the date and time when the observations or control measures took place.	Total Facility
Notification of the Actual Date of Initial Startup	due 15 days after Initial Startup	SV020
Notification of the Date Construction Began	due 30 days after Start Of Construction	SV020
Relative Accuracy Test Audit (RATA) Notification	due 30 days before CEMS Relative Accuracy Test Audit (RATA)	SV020
Relative Accuracy Test Audit (RATA) Notification	due 30 days before CEMS Relative Accuracy Test Audit (RATA)	SV001
Testing Frequency Plan	due 60 days after Initial Performance Test for PM-10 and VOC emissions. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on one-year (12 month), 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.	SV020

TABLE B: RECURRENT SUBMITTALS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

What to send	When to send	Portion of Facility Affected
Acid Rain Program Electronically Submitted Quarterly Report	due 30 days after end of each calendar quarter starting 01/01/96	SV001
Excess Emissions/Downtime Reports (EER's)	due 30 days after end of each calendar quarter following CEM Certification Test (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.	SV020
Excess Emissions/Downtime Reports (EER's)	due 30 days after end of each calendar quarter following Permit Issuance (Submit Deviations Reporting Form DRF-1 as amended). The EER shall indicate all periods of exceedances of the limit including exceedances allowed by an applicable standard, i.e. during startup, shutdown, and malfunctions.	SV001
Linearity Test Results Summary	due 30 days after end of each calendar quarter following Linearity and Leak Check Test (Acid Rain Program) if performed.	SV001, SV020
Relative Accuracy Test Audit (RATA) Results Summary	due 30 days after end of each calendar quarter following CEMS Relative Accuracy Test Audit (RATA) (in which the CEMS RATA was conducted).	SV001
COMS Calibration Error Audit Results Summary	due 30 days after end of each calendar half-year following COMS Calibration Error Audit .	SV001
Cylinder Gas Audit (CGA) Results Summary	due 30 days after end of each calendar half-year following Cylinder Gas Audit	SV020
Deviations Report	due 30 days after end of each calendar half-year following Permit Issuance (July 30th and January 30th). The first report covers January 1 - June 30. The second report covers July1 - December 31.	Total Facility
Relative Accuracy Test Audit (RATA) Results Summary	due 30 days after end of each calendar half-year following CEMS Relative Accuracy Test Audit (RATA)	SV020
Compliance Certification Report (Acid Rain Program)	due 60 days after end of each calendar year following Initial Startup. The report shall include all information required by 40 CFR Section 72.90(b) and (c).	SV020
Compliance Certification Report (Acid Rain Program)	due 60 days after end of each calendar year starting 01/01/2000. The designated representative shall 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 Section 72.90(b) and (c).	EU003, EU004
Compliance Certification	due 30 days after end of each calendar year following Permit Issuance (January 30th).	Total Facility
Performance Test Notification (written)	due 30 days before end of each 60 months starting 12/31/93 (30 days before each Performance Test)	EU003
Performance Test Notification (written)	due 30 days before end of each 60 months starting 12/31/93 (30 days before each Performance Test)	EU004
Performance Test Plan	due 30 days before end of each 60 months starting 12/31/93 (30 days before each Performance Test)	EU003
Performance Test Plan	due 30 days before end of each 60 months starting 12/31/93 (30 days before each Performance Test)	EU004
Performance Test Report - Microfiche Copy	due 105 days after end of each 60 months starting 12/31/93 (105 days after each Performance Test)	EU003

TABLE B: RECURRENT SUBMITTALS

01/12/01

Facility Name: NSP - Black Dog

Permit Number: 03700003 - 002

Performance Test Report - Microfiche Copy	due 105 days after end of each 60 months starting 12/31/93 (105 days after each Performance Test)	EU004
Performance Test Report	due 45 days after end of each 60 months starting 12/31/93 (45 days after each Performance Test)	EU003
Performance Test Report	due 45 days after end of each 60 months starting 12/31/93 (45 days after each Performance Test)	EU004

APPENDIX MATERIAL

Facility Name: NSP - Black Dog

Permit Number: 03700003-002

Phase II NOx Compliance Plan

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

This submission is: [X] **New** [ ] **Revised**

Step 1 **Indicate plant name, State, and ORIS code from NADB, if applicable**	Black Dog Plant Name	MN State	1904 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 bottom wall-fired, "T" for tangentially fired, "V" for vertically fired, and "WB" for wet bottom. Indicate the compliance option selected for each unit

	ID# 1	ID# 3	ID# 4	ID#	ID#	ID#
	T Type	DBW Type	DBW Type	 Type	 Type	 Type
(a) Standard annual average emission limitation of 0.50 lb/mmBtu (for <u>Phase I</u> dry bottom wall-fired boilers)						
(b) Standard annual average emission limitation of 0.45 lb/mmBtu (for <u>Phase I</u> tangentially fired boilers)						

(c) EPA-approved early election plan under 40 CFR 76.8 through 12/31/07 (also indicate above emission limit specified in plan)						
(d) Standard annual average emission limitation of 0.46 lb/mmBtu (for Phase II dry bottom wall-fired boilers)						
(e) Standard annual average emission limitation of 0.40 lb/mmBtu (for Phase II tangentially fired boilers)						
(f) Standard annual average emission limitation of 0.68 lb/mmBtu (for cell burner boilers)						
(g) Standard annual average emission limitation of 0.86 lb/mmBtu (for cyclone boilers)						
(h) Standard annual average emission limitation of 0.80 lb/mmBtu (for vertically fired boilers)						
(i) Standard annual average emission limitation of 0.84 lb/mmBtu (for wet bottom boilers)						
(j) NOx Averaging Plan (include NOx Averaging form)	X	X	X			
(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)	X	X	X			
(m) EPA-approved common stack apportionment method pursuant to 40 CFR 75.17 (a)(2)(i)(C), (a)(2)(iii)(B), or (b)(2)						
(n) AEL (include Phase II AEL Demonstration Period, Final AEL Petition, or AEL Renewal form as appropriate)						
(o) Petition for AEL demonstration period or final AEL under review by U.S. EPA or demonstration period ongoing						
(p) Repowering extension plan approved or under review						

Standard Requirements

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

Special Provisions for Early Election Units

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

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

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

Phase II NOx Averaging Plan

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

This submission is: **New** [ ] [X] **Revised**

Step 1

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

Plant Name	State	ID#	(a) Emission Limitation	(b) Alt. Contemp. Emission Limitation	(c) Annual Heat Input Limit
Allen S. King	MN	1	0.86	1.05	34,000,000
Black Dog	MN	1	0.40	0.81	2,094,000
Black Dog	MN	3	0.46	0.81	5,685,000
Black Dog	MN	4	0.46	0.81	11,036,000
High Bridge	MN	3	0.50	0.60	1,771,500
High Bridge	MN	4	0.50	0.60	1,771,500
High Bridge	MN	5	0.50	0.60	5,037,000
High Bridge	MN	6	0.50	0.60	10,313,000
Minnesota Valley	MN	4	0.46	0.47	1,189,000
Riverside	MN	6	0.46	0.85	4,324,500
Riverside	MN	7	0.46	0.85	4,324,500
Riverside	MN	8	0.86	0.82	10,821,000
Sherburne County	MN	1	0.45	0.28	42,255,000
Sherburne County	MN	2	0.45	0.28	42,255,000
Sherburne County	MN	3	0.46	0.35	34,912,000

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
0.54	0.54

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

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 _2000_ through calendar year _2004_ 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.

Phase II Permit Application

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

This submission is [X] New [ ] Revised

Black Dog Plant Name	MN State	1904 ORIS Code

Compliance Plan

a Boiler ID#	b Unit Will Hold Allowances in Accordance with 40 CFR 72.9(c)(1)	c Repowering Plan	d New Units Commence Operation Date	e New Units Monitor Certification Deadline
1	Yes	no		
3	Yes	no		
4	Yes	no		
5	Yes	no	May 2002	August 2002
	Yes			
	Yes			
	Yes			
	Yes			
	Yes			
	Yes			
	Yes			

Standard Requirements

Permit Requirements.

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

Monitoring Requirements.

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

Sulfur Dioxide Requirements.

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

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

Excess Emissions Requirements.

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

Recordkeeping and Reporting Requirements.

(1) Unless otherwise provided, the owners and operators of the source and each affected unit at the source shall keep on site at the source each of the following documents for a period of 5 years from the date the document is created. This period may be extended for cause, at any time prior to the end of 5 years, in writing by the Administrator or permitting authority:
(i) The certificate of representation for the designated representative for the source and each affected unit at the source and all documents that demonstrate the truth of the statements in the certificate of representation, in accordance with 40 CFR 72.24; provided that the certificate and documents shall be retained on site at the source beyond such 5-year period until such documents are superseded because of the submission of a new certificate of representation changing the designated representative;
(ii) All emissions monitoring information, in accordance with 40 CFR part 75;
(iii) Copies of all reports, compliance certifications, and other submissions and all records made or required under the Acid Rain Program; and,
(iv) Copies of all documents used to complete an Acid Rain permit application and any other submission under the Acid Rain Program or to demonstrate compliance with the requirements of the Acid Rain Program.
(2) The designated representative of an affected source and each affected unit at the source shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR part 72 subpart I and 40 CFR part 75.

Liability.

(1) Any person who knowingly violates any requirement or prohibition of the Acid Rain Program, a complete Acid Rain permit application, an Acid Rain permit, or a written exemption under 40 CFR 72.7 or 72.8, including any requirement for the payment of any penalty owed to the United States, shall be subject to enforcement pursuant to section 113(c) of the Act.
(2) Any person who knowingly makes a false, material statement in any record, submission, or report under the Acid Rain Program shall be subject to criminal enforcement pursuant to section 113(c) of the Act and 18 U.S.C. 1001.
(3) No permit revision shall excuse any violation of the requirements of the Acid Rain Program that occurs prior to the date that the revision takes effect.
(4) Each affected source and each affected unit shall meet the requirements of the Acid Rain Program.
(5) Any provision of the Acid Rain Program that applies to an affected source (including a provision applicable to the designated representative of an affected source) shall also apply to the owners and operators of such source and of the affected units at the source.
(6) Any provision of the Acid Rain Program that applies to an affected unit (including a provision applicable to the designated representative of an affected unit) shall also apply to the owners and operators of such unit. Except as provided under 40 CFR 72.44 (Phase II repowering extension plans) and 40 CFR 76.11 (NO_x averaging plans), and except with regard to the requirements applicable to units with a common stack under 40 CFR part 75 (including 40 CFR 75.16, 75.17, and 75.18), the owners and operators and the designated representative of one affected unit shall not be liable for any violation by any other affected unit of which they are not owners or operators or the designated representative and that is located at a source of which they are not owners or operators or the designated representative.
(7) Each violation of a provision of 40 CFR parts 72, 73, 74, 75, 76, 77, and 78 by an affected source or affected unit, or by an owner or operator or designated representative of such source or unit, shall be a separate violation of the Act.

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

(1) Except as expressly provided in title IV of the Act, exempting or excluding the owners and operators and, to the extent applicable, the designated representative of an affected source or affected unit from compliance with any other provision of the Act, including the provisions of title I of the Act relating to applicable National Ambient Air Quality Standards or State Implementation Plans;
(2) Limiting the number of allowances a unit can hold; provided, that the number of allowances held by the unit shall not affect the source's obligation to comply with any other provisions of the Act;
(3) Requiring a change of any kind in any State law regulating electric utility rates and charges, affecting any State law regarding such State regulation, or limiting such State regulation, including any prudence review requirements under such State law;
(4) Modifying the Federal Power Act or affecting the authority of the Federal Energy Regulatory Commission under the Federal Power Act; or,
(5) Interfering with or impairing any program for competitive bidding for power supply in a State in which such program is established.

TECHNICAL SUPPORT DOCUMENT
For
DRAFT AIR EMISSION PERMIT NO. 03700003-002

This technical support document is for all the interested parties of the draft permit. The purpose of this document is to set forth the legal and factual basis for the draft permit conditions, including references to the applicable statutory or regulatory provisions.

1. General Information

1.1. Applicant and Stationary Source Location:

Owner/Operator Address and Phone Number (list both if different)	Facility Address (SIC Code: 4911)
Xcel Energy, formerly Northern States Power Company 414 Nicollet Mall Minneapolis, MN 55401	1400 Black Dog Rd Burnsville Dakota County

1.2. Description of the Facility

The facility currently consists of four coal fired boilers that have a combined generating capacity of approximately 500 MW and all supporting coal handling equipment and storage.

1.3. Description of the Activities Allowed By This Permit Action

This permit allows for the installation and operation of a new combined cycle gas turbine. Although, the facility is proposing to install the unit in the location of EU 001 (coal-fired unit) and to use the EU 002 steam turbine for combined cycle operation, no past actual emissions from EU 001 and EU 002 are being utilized for netting purposes. Therefore, the addition of the new gas turbine (EU 026) and auxiliary duct firing burners (EU 027) does trigger Prevention of Significant Deterioration (PSD) review for Nitrogen Oxides (NO_x), Carbon Monoxide (CO), and Particulate Matter less than 10 um in size (PM_{10}) and Volatile Organic Compound (VOC).

The modification is based on combustion turbine technology combined with a heat recovery steam generator and steam turbine. Natural gas is the only fuel that will be fired in the combustion turbine and duct burners. The combustion exhaust, after passing through the heat recovery steam generator system, will vent to an exhaust stack approximately 230 feet in height.

The facility has proposed to utilize the following emissions control technology:

a. Firing only natural gas to minimize sulfur dioxide emissions

b. Dry low-NOx burners to minimize the formation of oxides of nitrogen in the combustion turbine.

c. Selective catalytic reduction to reduce oxides of nitrogen emissions in the exhaust gas from the combustion turbine and the supplemental duct firing burners.

d. Good combustion practices for control of fine particulate, carbon monoxide and volatile organic compound emissions.

1.4. Facility Emissions:

Table 1. Emissions Associated With the Modification

Pollutant	Potential to Emit from the modification (lb/hr)	Potential to Emit from the modification (TPY)	*Emission Increases Authorized with this Permit Action	NSR/ 112(g) Threshold Level (TPY)	BACT/ MACT Review Required (Yes or No)
PM10	28.7	126	NA	15	Yes
SO2	2.83	12.4	NA	40	No
NOx	223.5	979	305**	40	Yes
VOC	17.5	76.7[t]	NA	40	Yes
CO	93	407[t]	400***	100	Yes
Lead	0.0003	0.001	NA	0.6	No
Formaldehyde	1.4[t]	6.12[t]	9.9	10	No
Total HAPs	2.9[t]	12.7[t]	24.9	25	No

*TPY emission increases allowed with the permit action include only permitted caps.
**Modeling limitation (PSD significant impact threshold)
***Value used in PSD BACT cost analysis.
[t]PTE based on full load operation. PTE may be higher at reduced load ranges.

Table 2. Permit Modification Classification

Classification (put x in appropriate box)	Major/Affected Source	*Synthetic Minor	*Minor
PSD (list pollutant)	NOx, CO, PM-10, VOC		SO2
NAAR (list pollutant)			
Part 70 Permit Program (list pollutant)			

* Refers to potential emissions that are less than those specified as major by 40 CFR 52.21, 40 CFR pt. 51 Appendix S, and 40 CFR pt. 70.

2. Regulatory and/or Statutory Basis

Federal New Source Review: Since existing emissions of some criteria pollutants are above 250 tons per year, the source is considered major under the applicable new source review regulation, Prevention of Significant Deterioration, 40 CFR 52.21. A BACT analysis was done for all new pollutants emitted at significant levels; PM_{10}, VOC, NO_x and CO.

Federal New Source Performance Standards: The gas turbine is subject to 40 CFR 60 Subpart GG, Standards of Performance for Gas Turbines. The heat recovery steam generating (HRSG) unit with duct burners is subject to 40 CFR Subpart Da, Standards of Performance for Electric Utility Steam Generating Units.

Minnesota Performance Standards: Since both emission units are subject to new source performance standards the Minnesota Pollution Control Agency (MPCA) will not be enforcing state performance standards for these new units.

Minnesota and National Ambient Air Quality Standards/Ambient Impacts: XCEL has performed dispersion modeling and determined that the predicted impact of the new units' limited operation is below all ambient air quality standards, PSD Increment levels, and PSD significant impact levels.

Below is a summary table of the regulations used to derive the limits and conditions set in the permit:

Regulatory Overview of Units Affected by the Modification

Table 3. Regulatory Overview

EU, GRP, or SV #	Applicable Regulations	Comments
EU026	40 CFR 60 Subp. GG	Standards of Performance for Gas Turbines. BACT limits are more restrictive except for the shorter averaging time (1-hr vs. 3)
EU027	40 CFR 60 Subp. Da	Standards of Performance for Electric Utility Steam Generating Units. BACT limits are more restrictive
SV020	40 CFR 52.21 40 CFR 72, 73, and 75 40 CFR 63.40-.44	• Prevention of Significant Deterioration. BACT Limits set for PM_{10}, NO_x , CO and VOC and PSD significant impact limit for NOx (TPY). • Acid Rain Program • Limits to avoid Statutory Preconstruction Requirements contained in Clean Air Act Section 112(g)

3. Technical Information

3.1. Federal Prevention of Significant Deterioration Summary BACT Analyses:

Summary for EU 026 – EU 027 combined emission limitations (SV 020):

Pollutant	Limit	Control Technology
NO_x	4.5 ppm under all operating conditions except startup, shutdown or malfunction	Dry Low NO_x Burners, Selective Catalytic Reduction (SCR)
CO	18 ppm at greater than or equal to 70% full load (1400 MMBtu/hr HHV heat input to EU 026) when only EU 026 is burning fuel 25 ppm at greater than or equal to 70% full load (1400 MMBtu/hr HHV heat input to EU 026) when EU 027 is also burning fuel 400 TPY under all operating conditions except during startup and shutdown	Combustion Control

Pollutant	Limit	Control Technology
PM_{10}	0.012 lb/mmBtu based on the HHV of the fuel	Combustion Control
VOC	0.0073 lb/mmBtu @ greater than or equal to 70% full load (1400 MMBtu/hr HHV heat input to EU 026)	Combustion Control

The BACT analyses that resulted in the above control technologies and subsequent emission limits are included in the appendices. Summaries and discussion items are presented below:

3.1.1. NO_x BACT Analysis Summary:

The company proposed emission limits of 4.5 ppm combined at the stack (SV 020) at all loads except startup, shutdown and malfunction. The control technology used to achieve this emission limit would be Low NO_x burners, on the gas turbine (EU 026), and Selective Catalytic Reduction with ammonia injection at the stack level. The facility also proposes to burn only natural gas.

Control technologies considered and fully analyzed were dry Low NO_x burners with selective catalytic reduction (SCR), and SCONO$_x^{TM}$. XONON a catalytic combustion system was eliminated due to technical unfeasibility at this time. SCONO$_x^{TM}$, an emerging technology for large utility sized combined cycle combustion turbines, was rejected for economic and potential operational reasons.

EU 026 and EU 027 (SV 020)

Control Technology	Emission Limit	Lb/hour	Tons per year	Tons removed	Annual Costs	Cost, $/ton
SCR with Low NO_x burners	4.5 ppm	39.3	172	Base case	----------	----------
SCONO$_x^{TM}$ with Low NO_x burners	2.0 ppm NO_x and 90% reduction in CO	17.1	75	743 NO_x 270 CO	$7,462,046	$7,366 for NO_x and CO combined

BACT Analysis for $SCONO_x^{TM}$ *with Low* NO_x *Burners*

XCEL originally proposed that $SCONO_x^{TM}$ was not yet commercially available for large combined cycle gas turbines of over 100 MW. Knowing that recent press releases and information from the U.S. Environmental Protection Agency (U.S. EPA) Region 9 office seemed to dispute that fact, the MPCA requested that XCEL provide a complete top-down BACT analysis with $SCONO_x^{TM}$ as the top option. XCEL responded to this request with the attached May 22, 2000, letter and enclosures. Besides the obviously excessive incremental cost per ton of over $75,000, XCEL explored other issues such as the $SCONO_x^{TM}$ system's need for potentially large amounts of additional water resources, increased energy consumption and most notably, the lack of performance and reliability guarantees. XCEL argued that the overall system reliability guarantee was not acceptable at this time for a unit that is going into commercial service.

The MPCA has no other data to dispute these claims and therefore is accepting XCEL's argument that $SCONO_x^{TM}$ is not yet commercially and economically acceptable as BACT for large scale utility units at this time.

NO_x Limits During Periods of Startup

The permit specifies that the combined emissions of the gas turbine EU 026 and duct burners EU 027 are limited to 4.5 ppm at all operating conditions except startup, shutdown and malfunction. Due to the complexities and design limitations of this particular combined cycle gas turbine facility, XCEL has requested a more flexible definition of startup for the BACT emission limit applicability only. The startup period for the NSPS subpart GG NOx emission limit shall be no more than 1-hour. The startup definition for BACT purposes contains three different startup timelines depending on the time between operating periods. These startup timelines and limitations are as follows:

1. 2 hours, if the steam turbine-generator was off-line for less than 12 hours.
2. 4 hours, if the steam turbine-generator was off-line for 12 to 60 hours
3. 8 hours, if the steam turbine-generator was off-line for more than 60 hours.

On-line operations of less than 1 hour duration shall be considered off-line for startup determination purposes.

The variable startup times are necessary to safely bring the heat recovery steam and electric generating system and thus the SCR catalyst up to full operating temperature. However, due to modeled impacts, the total NOx emissions are limited on an annual basis during all operations including startup and shutdown.

Conclusion

The MPCA finds that the limits achievable by the proposed new source with Low NO_x Burners combined Selective Catalytic Reduction (ammonia injection), is consistent with BACT.

3.1.2 Carbon Monoxide BACT Analysis Summary

XCEL proposed limits obtainable by "good combustion practices" in its permit application. XCEL has requested a 25 ppmv @ 15% O2 value for the combined (EU 026 and EU 027) emission limit at SV 020. This limit would apply only when the combustion turbine (EU 026) is at 70% load (1400 MMBtu/hr heat input on a HHV basis) or greater. An annual emission cap of 400 tons per year was also requested in an attempt to cost out additional controls. XCEL has requested that the CO emission cap be an annual block average.

EU 001 and EU 002

Operating Scenario	Emission Limit	Lb/hour	Tons per year	Tons removed	Annual Cost	Cost, $/ton
Combustion Controls	25 ppm	93.0	400 limited	0	Base case	Base case
Oxidation Catalyst	2.5 ppm	9.13	40.0	360	$872,912	2,425

The pound per hour and tons per year emissions and thus the cost per ton removal values are based on base load emissions that are capped at 400 tons per year. CO emission rates for the gas turbine, however, can rise exponentially at sub-base load levels (less than 70% load).

XCEL claims that a short-term emission rate of 25 ppm is consistent within current acceptable BACT ranges for combined cycle gas turbines. The MPCA concurs that 25 ppm is at the upper range but within current BACT determinations.

Since CO can rise exponentially at lower load ranges, the MPCA requested that XCEL reevaluate the BACT analysis by assuming worst case CO emissions. Worst case emissions occur at a gas turbine load of approximately 30 percent. At this load the duct burners would not be in operation. At 30 percent load the potential to emit balloons to approximately 1,650 lbs/hr or 7,227 tons per year. When worst case emissions are used in the cost analysis the cost per ton value for a CO oxidation catalyst drops significantly. XCEL proposes taking a 400 ton per year cap to limit operation in the less than base load operating ranges. The table above summarizes the cost analysis when a 400 TPY CO emissions cap is imposed at the combined stack vent SV 020.

According to the cost analysis above, the annualized cost per ton for the installation of a oxidizing catalyst is $2,425. XCEL argues that this value is much higher than any proposed cost per ton SIP plan for the removal of CO from mobile sources when this geographic area was nonattainment for CO. Further, XCEL points out the San Joaquin Valley Unified Air

Pollution Control District BACT policy dated November 9, 1999, cites a cost effectiveness threshold of $300 per ton of CO.

In addition to the cost analysis, XCEL also argues that installation of a CO catalyst may have negative environmental impacts. The use of an oxidation catalyst may result in higher PM-10 emissions from the further oxidation of SO2 to SO3 and the potential reaction with ammonia in the SCR unit to create ammonia salts that may react with moisture to form H_2SO_4.

The MPCA agrees that PM-10 emissions may increase with the installation of an oxidation catalyst, however, the facility has committed to burn only pipeline quality natural gas and therefore SO2 and all subsequent post control PM-10 will be minimal. Furthermore, XCEL admits that optimum placement of the oxidizing catalyst will greatly limit the oxidation of the already minimal amounts of SO2 in the exhaust stream. Therefore, the potential minimal increase of PM-10 emissions is not, by itself, adequate justification for the omission of an oxidation catalyst which would reduce significant quantities of CO, VOC and HAP emissions.

XCEL's economic analysis shows that the annualized cost per ton for the installation of an oxidizing catalyst is $2,425. This value is below the cost figures of other recently permitted sources in this state and other Region 5 states that have successfully argued out of installing a CO catalyst by estimating costs in excess of $3000 per ton. However, the issue of cost is over shadowed by the fact that there exist a significant number of combined cycle units that are operating in a cost effective manner with oxidation catalysts installed. An almost identical unit also within the Minneapolis/St. Paul metropolitan area is just one example of such a source. In XCEL's defense, that source and most sources that have installed oxidation catalysts have done so to comply with LAER determinations or to synthetic minor out of LAER determinations. An email survey of turbine contact people at all Region 5 states and various EPA Regional offices appears to confirm the point that CO catalysts have not normally been required if the facility is not in or will not significantly impact a CO or Ozone nonattainment area. This is further verified by two recent permits issued by Michigan and Wisconsin where the facility in Michigan, which did not significantly impact a CO or Ozone nonattainment area, was not required to install a CO catalyst. However, the facility in Wisconsin was required to install an oxidation catalyst as LAER for VOCs and thus take credit for that control system as BACT for CO. Based on the MPCA's analysis of general trends in permitting gas turbines, CO catalysts do not appear to be generally required as BACT unless there are underlying nonattainment issue involved.

XCEL acknowledges that the proposed facility will play a significant role in maintaining load demand requirements on the XCEL electrical grid. This means the unit will potentially be operated at variable loads which does not guarantee "good combustion control" for the mitigation of CO emissions. However, the MPCA believes that the annual CO emission cap is adequately stringent to assure that any periods of less than "good combustion control" are kept to a minimum. As an example, operating at 30 percent load will completely use up the emission cap in only 20 days. XCEL will have to minimize the time spent at such loads in order to assure year round availability.

Structure of the CO Emission Limit as contained in the Draft Permit:

The short term (3-hr averaging time) emission limit of 25 ppm applies only at combustion turbine firing rates above 1400 MMBtu/hr (approx. 70% load) with or without the supplemental duct firing. The annual emissions for the facility will be capped at 400 tons per year, again to mitigate excess emissions during lower operating ranges.

Start up and shut down exceptions only apply to the annual cap due to the inability of any control system to effectively control CO emissions during these low temperature operating periods. The short term limit is load limited and therefore does not require further exceptions.

It is important to note that the dispersion modeling was performed at the highest emission rate, and so ambient standards will be protected at that emission rate.

Conclusion:

After reviewing the BACT/LAER Clearinghouse, recent permits in Region 5 and the specific financial information provided for the proposed project in the permit application, the limits proposed by XCEL were found to be consistent with other BACT determinations being made at this time.

Comment from U.S. EPA Region 5 during Public Notice

During the 30-day public notice, U.S. EPA Region 5 commented that the BACT determination for CO should be reviewed. Region 5 believed that based on the precedents of other NSR permits, CO control costs of at least $4000/ton of CO controlled should be considered reasonable for determining BACT for CO. Since the estimated cost of oxidation catalyst for this project was $2000 - $3000/ton of CO controlled, Region 5 requested that oxidation catalyst be reviewed more carefully by MPCA for application here.

Xcel Energy staff met with EPA Region 5 staff in Chicago on October 5, 2000. MPCA staff participated by teleconference. Subsequent to the meeting, Xcel Energy provided additional information to support the original BACT determination for CO by letter dated October 11, 2000. The letter also proposed a slightly more stringent emission limit for CO. MPCA staff and EPA Region 5 staff reviewed the letter. MPCA staff also reviewed the BACT Clearinghouse for BACT determinations for CO for turbines since 1990.

MPCA and EPA Region 5 staff subsequently agreed that the CO limit proposed in the letter of October 11, 2000 was acceptable and the permit could be issued with this revised limit.

Revised Structure of the CO BACT Emission Limit as a result of comments from U.S. EPA Region 5 during the Public Notice:

As a result of the comment received from U.S. EPA Region 5, the CO BACT limit in the issued permit is as follows:

- 18 ppm at 15 % oxygen when only the combustion turbine is burning fuel at a heat input of 1400 million Btu/hr or more (no duct burner firing)

- 25 ppm at 15 % oxygen when both the combustion turbine and duct burner are burning fuel at a heat input to the turbine of 1400 million Btu/hr or more

- 1500 hours per year or less operation of the duct burners

3.1.3. Particulate Matter BACT Analysis Summary

The emission of particulate from gas turbines is a result of incomplete combustion and trace elements in the fuel. Incomplete combustion results in lower overall turbine efficiency (higher fuel costs for a given amount of electricity produced), therefore, it is in the facility's best interests to minimize the particulates resulting from incomplete combustion through combustion controls. (This argument holds true for CO and VOC emissions as well.)

Trace element concentrations (non-combustibles) are much higher in other types of fuels, such as coal and oils. Natural gas is considered an inherently clean fuel.

XCEL has proposed a combined stack vent limit of 29.4 lbs/hr for EU 026 and EU 027. This is equivalent to 0.012 lbs/MMBtu at full load. Generally, natural gas is not considered to be a fuel that causes high emissions of particulate matter and, as such, add on controls are not usually, if ever, required for boilers or turbines that burn natural gas. A review of EPA's BACT/LAER Clearinghouse did not reveal any post-combustion particulate control technologies being used on gas fired combined cycle combustion turbines.

The agency believes that the limits proposed by XCEL are consistent with recent BACT determinations.

3.1.4. Volatile Organic Compounds

Like CO and particulates, VOC emissions are the result of incomplete combustion. EPA's National Emissions Trends Reports attributes most VOC emissions to transportation (41.5%) and industrial processes (49.7%). Non-transportation related fuel combustion accounts for 5.6%.

The BACT analysis provided by XCEL makes many of the same claims that were made for the CO catalyst including the argument that natural gas turbines are inherently very low VOC emitters. XCEL further states that no projects have been required to install an oxidation catalyst solely as BACT for VOCs. However, they do disclose that a CO oxidation catalyst would provide some control for VOCs that are products of incomplete combustion.

The MPCA believes that an oxidation catalyst for the relatively small (<80 TPY, PTE) amount of VOC emissions would not be a cost effective option and therefore does not represent BACT VOC emissions. A combined analysis of CO and VOC control may prove cost effective, but as stated in the CO BACT analysis section above, an oxidation catalyst does not appear to represent BACT at this time.

3.2. Air Quality Analysis

XCEL modeled the proposed Black Dog repowering project's emissions and compared them to the PSD significance levels. The analysis showed that all ambient air impacts were below the thresholds. Nitrogen Oxide (NOx) emissions were capped at 305 tpy in order to stay below the PSD significant impact level of 1 microgram per cubic meter. The 305 tpy is above the projects PTE at full load, however, the NOx emission levels are not consistent across all load settings and thus a limit is necessary.

See the Attachments for a detailed discussion of assumptions and methodology used. The table below summarizes the results:

Maximum Criteria Pollutant Modeled Impacts:

Pollutant	**Run**	**Averaging Period**	**XCEL repowering project Maximum Modeled Concentration, ug/m3**	**Ambient Standard (state or federal) ug/m3**	**PSD, significant impact level ug/m3**
SO2	1	Annual	0.04	60	1
	1	24-hour	0.28	365	5
	1	3-hour	1.14.	1300	25
NO_x *	1	Annual	0.89	100	1
PM_{10}	1	Annual	0.38	50	1
	1	24-hour	2.94	150	5
CO**	1	1-hour	881	35,000	NA
	1	8-hour	461	10,000	NA

*modeled at 305 tpy.
**modeled at 30% (worst case) load.

As can be seen from the above table, all modeled impacts are a fraction of the ambient standard, and are also well below the PSD increment significant impact levels.

3.3. Additional Impact Analysis

The growth analysis, soils and vegetation analysis, and visibility impairment analysis are attached. Significant impacts due to the construction and operation of the plant are not expected.

3.4. Class I Area Impact Analysis

If a proposed source may affect a Class I area, Federal PSD regulations require notification of federal land managers and inclusion of potential impacts on the area in the application. "May affect" is interpreted by EPA policy to include all major sources or major modifications which propose to locate within 100 kilometers of a Class I area. EPA guidance further states that if the facility is within 250 km of a Class I area, a level 1 visual impact screening analysis should be completed.

The Class I areas closest to the proposed plant are the Boundary Waters Canoe Area Wilderness, Voyageurs National Park, and Rainbow Lake in northern Wisconsin. Only Rainbow Lake is within 100 or 250 kilometers of the proposed source (62-155 miles). It is approximately 243 km from the Black Dog plant. A level 1 Visual Effects Screening Analysis was performed. The analysis showed no impacts that exceed the visual screening criteria.

3.5. NESHAPs MACT Analysis

Using available emission factors to calculate potential HAP emissions yields potential emissions of formaldehyde in excess of 10 tons, and total HAP emissions in excess of 25 tons. Agency staff determined that the best factors to use, in the absence of actual test factors and manufacturer's information, were the factors contained in the draft AP42 section for gas turbines made available in May of 1998. A copy is attached to this technical support document. Therefore, without enforceable limits in the permit, the source would be considered a major new source and would be subject to regulations promulgated in accordance with 112(g) of the Clean Air Act. New AP-42 emission factors issued in April 2000 show uncontrolled emission factors that are lower than the previous draft. However, the emission factor for formaldehyde is only applicable for operating loads greater than 80 percent. Therefore, without operating restrictions, the PTE will be based on the draft AP-42 version until acceptable testing at various loads is complete.

XCEL has chosen to accept limitations in the permit of total hazardous air pollutants less than or equal to 24.9 tons per year, and less than or equal to 9.9 tons per year of any single HAP.

The permit requires XCEL to monitor its fuel consumption and, using factors from the draft AP42 section, calculate the past 12 months emissions of total HAPs and single HAPs each month. XCEL may elect to perform stack emission testing for some of the HAPs to develop more representative factors for use in its calculations. The permit allows for the use of factors obtained during testing. However, should the testing show that actual emissions are greater than the AP-42 factors, then XCEL must use the higher factor in its calculations.

3.6. New Source Performance Standards Monitoring Requirements

The turbine is subject to two regulations that require monitoring of emissions: Federal New Source Performance Standards, 40 CFR Part 60 Subp. GG; and Continuous Emission Monitoring, 40 CFR Part 75. Since both of those regulations require monitoring for nitrogen oxides and sulfur dioxide emissions, some of the requirements would be duplicative. For that reason, MPCA staff ask that the facility be required to meet the monitoring requirements of Part 75 only. In a very similar case, U.S. EPA did not grant a waiver to the requirements present in 40 CFR Part 60, Subpart GG, but did approve the monitoring required by 40 CFR Part 75 as an alternative monitoring plan. Attached is the letter dated September 8, 1999, approving the alternative monitoring plan for the very similar Lakefield Junction facility.

EPA did not excuse the facility from meeting the testing and excess emission reporting required by Subpart GG. Those requirements are included in this permit. XCEL will be requesting an alternative testing and monitoring schedule under separate cover.

The supplemental duct firing burners are subject to two regulations that require monitoring of emissions: Federal New Source Performance Standards, 40 CFR Part 60 Subp. Da; and Continuous Emission Monitoring, 40 CFR Part 75. Subpart Da requires, in addition to NOx and SO2 testing and monitoring, particulate matter and opacity testing. In another very similar case, the U.S. EPA allowed for particulate matter and opacity testing from the combined stack as long as the testing showed compliance with the most stringent limit. NOx performance testing and monitoring for Part 75 was deemed sufficient to meet the testing and monitoring requirements of Subpart Da if the BACT limit assured compliance with the Subpart Da limit. However, the source shall meet the recordkeeping and reporting requirements of Subpart Da.

New sources that are subject to the output based NOx emission standard in Subpart Da are required to install a stack flow monitor. This new requirement is not covered under the Part 75 requirements. Therefore, XCEL will be requesting, under separate cover, a waiver from this requirement.

3.7. Emission Limits and Averaging Times:

Below is a discussion of the averaging times set for each of the emission limits:

Emission Limit	Basis	Averaging Time	Discussion
20% Opacity, (SV 020)	40 CFR 60 Subp. Da	6-minute	Except for one six minute period per hour of not more than 27% opacity. Applies only when the duct firing burners (EU 027) are operating.
4.5 ppm NO_x @ 15% O2, (SV 020)	40 CFR 52.21, BACT Limit	3-hour	XCEL has stated that it can meet this limit on a 3-hour average. There is no shorter term ambient standard for NO_x , so this averaging time ensures that the annual ambient standard and significant impact levels will be met
110 ppm NO_x @15% O2, (EU 026)	40 CFR 60, Subp. GG	1-hour	This limit only applies to the combustion turbine (EU 026). Applies at all times except startup, shutdown or malfunction. Startup for this limit is limited to less than 1-hour and shutdown is limited to 30-minutes.
1.6 lbs/MW-hr NO_x (gross energy output), (EU 027)	40 CFR 60, Subp. Da	30-day rolling average	This limit will rarely if ever apply since the 30 day average is 30 boiler operating days. A full boiler operating day, as defined in subp. Da, will rarely occur for EU 027. Compliance with the limit will be assured through compliance with the BACT limit which is equivalent to 0.12 lbs/MW-hr.
305 tons NO_x per year, (SV 020)	40 CFR 52.21 limit to keep ambient impact below PSD significant impact level	Monthly 12-month rolling sum	The averaging time for the limit is inherent in the limit itself, however EPA policy is to require compliance demonstrated on a more frequent basis for annual limits. The permit requires XCEL to calculate its NO_x emissions from the data obtained with the continuous emission monitors monthly, and calculate each month its past annual emissions. Applies at all times due to the fact that it is an ambient impact and not a technology issue.

Emission Limit	Basis	Averaging Time	Discussion
25 ppm CO @ 15% O2 when EU 026 is fired at greater than 1400 MMbtu/hr HHV heat input (SV 020) and EU 027 is also in operation	40 CFR 52.21 BACT Limit	3-hour	XCEL has stated that it can meet this limit on a 3-hour average. There exists a shorter term ambient standard of 1-hour, however the dispersion modeling which was performed at worst case emission levels orders of magnitude higher than the limit, showed a large cushion between the modeled concentration and the significant impact levels. Therefore, this emission limit is found to be protective of impact levels and the much higher ambient standards.
400 tons CO per year, (SV 020)	40 CFR 52.21 BACT Limit, used to cost out the oxidation catalyst control option	Monthly 12-month rolling sum	The averaging time for the limit is inherent in the limit itself, however EPA policy is to require compliance demonstrated on a more frequent basis for annual limits. The permit requires XCEL to calculate its CO emissions from the data obtained with the continuous emission monitors monthly, and calculate each month its past annual emissions. Applies at all times except startup or shutdown when a potential control system would not be fully operational.
29.4 lbs/hr PM_{10} (SV 020)	40 CFR 52.21 BACT Limit	None set	Averaging time will be determined by the appropriate stack test method. The shortest averaging time for particulate ambient standards is 24 hours. The compliance tests generally are performed using methods that consist of three 1-hour runs, effectively demonstrating compliance on a 3-hour average. Since this is less than the averaging time for the ambient standard, the limit is found to be protective.

Emission Limit	Basis	Averaging Time	Discussion
0.03 lbs/MMBtu PM (front-half), (EU 026)	40 CFR 60, Subp. Da	None set	Averaging time will be determined by the appropriate stack test method. The shortest averaging time for particulate ambient standards is 24 hours. The compliance tests generally are performed using methods that consist of three 1-hour runs, effectively demonstrating compliance on a 3-hour average. Compliance shall be determined by determining compliance with the BACT limit which is equivalent to 0.012 lbs/MMBtu.
0.2 lb/mmBtu SO_2 , (EU 027)	40 CFR 60 Subp. Da	30-day rolling average	This limit will rarely if ever apply since the 30 day average is 30 boiler operating days. A full boiler operating day, as defined in subp. Da, will rarely occur for EU 027. Compliance with the limit will be assured through the fuel usage restriction of natural gas only.
150 ppm SO_2 or fuel sulfur content less than 0.8 percent by weight, (EU 026)	40 CFR 60 Subp. GG	None set	Compliance with the limit will be assured through the fuel usage restriction of natural gas only. XCEL is applying for an alternative monitoring schedule.
0.0073 lb/mmbtu VOC when EU 026 is fired at greater than 1400 MMbtu/hr HHV heat input (SV 020)	40 CFR 52.21 BACT Limit	None set	Averaging time will be determined by the appropriate stack test method.

Emission Limit	Basis	Averaging Time	Discussion
Single HAP: 9.5 tons Total HAPs: 24.5 tons	40 CFR 63	12-month rolling sum	The limit is set to restrict emissions to less than major source levels as defined in 40 CFR Pt. 63. A major source is defined as one that has annual potential emissions of greater than 10 tons per year of any single HAP, and 25 tons per year of total HAPs. Therefore, the cap is set on an annual basis, with compliance demonstrated monthly.

4. Conclusion

Based on the information provided by Northern States Power Company, the MPCA has reasonable assurance that the proposed operation of the emission facility, as described in the Air Emission Permit No. 03700003-002 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: Daren Zigich, Jenny L. Reinertsen, Steve Sommer, David Beil

References: Emission Calculations
AP42 factors for HAP emissions from gas turbines
BACT Analyses January 2000
Revised BACT Analyses June 2000
$SCONO_x$ BACT Analysis
Dispersion modeling results
Additional Impacts Analysis
Letter from USEPA Region V dated September 8, 1999.
Letter from USEPA dated July 24, 1995.

Emission Calculations

AP42 HAP emission Factors for Gas Turbines

:

BACT Analyses

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Dispersion Modeling Results and Additional Impacts Analysis

:

Letters from USEPA Region V Approving Alternative Monitoring Plans

: