

AIR EMISSION PERMIT NO. 13700039- 001

IS ISSUED TO

University of Minnesota

UNIVERSITY OF MINNESOTA - DULUTH

223 College Street
Duluth, St. Louis County, MN 55812

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
Total Facility Operating Permit	February 13, 1996
Minor Modification	June 10, 1999
Minor Modification	April 20, 2001 (amended June 22, 2001)
Major Modification	February 6, 2002

This permit authorizes the permittee to operate and modify 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: State; Syn Min PSD/NSR

Issue Date: August 12, 2002

Expiration: Permit does not expire
All Title I Conditions do not expire.

Ann M. Foss
Major Facilities Section Manager
Majors and Remediation Division

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, 520 Lafayette Road North, St. Paul, Minnesota 55155-4194.

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

PERMIT SHIELD:

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

FACILITY DESCRIPTION:

The facility is the Duluth campus of the University of Minnesota, which currently operates ten boilers, six emergency generators and a number of small combustion units that can be classified as "insignificant activities". This permit action authorizes the addition of a seventh emergency generator and defines conditions under which pre-authorized installation of additional emergency generators may occur. The primary and backup fuel for the larger boilers are natural gas and distillate fuel oil, with only Boiler #4 being authorized to burn residual fuel oil. Some of the emergency generators are fueled by natural gas, others by distillate fuel oil, and are limited to a maximum of 300 operating hours per year each.

This permit action establishes more stringent fuel use restrictions in order to keep the facility below major source thresholds following the installation of the new emergency generator.

TABLE A: LIMITS AND OTHER REQUIREMENTS

08/12/02

Facility Name: University of Minnesota - Duluth

Permit Number: 13700039 - 001

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
Sulfur Dioxide: less than or equal to 90 tons/year based upon the fuel use restrictions, calculation procedures and other applicable requirements of this permit. The permittee may implement the pre-authorized changes for GP003 provided that total facility emissions do not exceed the annual sulfur dioxide limit or any other limitations and provided that total facility potential to emit (including the contribution from insignificant activities) after assessment of the modification does not exceed 100 tons per year.	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200
Nitrogen Oxides: less than or equal to 90 tons/year based upon the fuel use restrictions, calculation procedures and other applicable requirements of this permit. The permittee may implement the pre-authorized changes for GP003 provided that total facility emissions do not exceed the nitrogen oxides limit or any other limitations and provided that total facility potential to emit (including the contribution from insignificant activities) after assessment of the modification does not exceed 100 tons per year.	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200
Operation and Maintenance Plan: Retain at the stationary source an operation and maintenance plan for all installed air pollution control equipment. If applicable, the O & M plan shall identify all air pollution control equipment and shall include a preventative maintenance program for that equipment, a description of (the minimum but not necessarily the only) corrective actions to be taken to restore the equipment to proper operation to meet applicable permit conditions, a description of the employee training program for proper operation and maintenance of the control equipment, and the records kept to demonstrate plan implementation.	Minn. R. 7007.0800, subp. 14 and Minn. R. 7007.0800, subp. 16(J)
Air Pollution Control Equipment: Operate all installed pollution control equipment whenever the corresponding process equipment and emission units are operated, unless otherwise noted in Table A.	Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subp. 16(J)
Operation of Monitoring Equipment: Unless otherwise noted in Tables A and/or B, monitoring a process or control equipment connected to that process is not necessary during periods when the process is shutdown, or during checks of the monitoring systems, such as calibration checks and zero and span adjustments. If monitoring records are required, they should reflect any such periods of process shutdown or checks of the monitoring system.	Minn. R. 7007.0800, subp. 4(D)
Monitoring Equipment Calibration: Annually calibrate all required monitoring equipment (any requirements applying to continuous emission monitors are listed separately in this permit).	Minn. R. 7007.0800, subp. 4(D)
The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16.	Minn. R. 7007.0800, subp. 16
Performance Testing: Conduct all performance tests in accordance with Minn. R. ch. 7017 unless otherwise noted in Tables A and/or B.	Minn. R. ch. 7017
Limits set as a result of a performance test (conducted before or after permit issuance) apply until superseded as specified by Minn. R. 7017.2025 following formal review of a subsequent performance test on the same unit.	Minn. R. 7017.2025
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
Notification of Deviations Endangering Human Health or the Environment: As soon as possible after discovery, notify the Commissioner or the state duty officer, either orally or by facsimile, of any deviation from permit conditions which could endanger human health or the environment.	Minn. R. 7019.1000, subp. 1
Notification of Deviations Endangering Human Health or the Environment Report: Within 2 working days of discovery, notify the Commissioner in writing of any deviation from permit conditions which could endanger human health or the environment. Include the following information in this written description: 1. the cause of the deviation; 2. the exact dates of the period of the deviation, if the deviation has been corrected; 3. whether or not the deviation has been corrected; 4. the anticipated time by which the deviation is expected to be corrected, if not yet corrected; and 5. steps taken or planned to reduce, eliminate, and prevent reoccurrence of the deviation.	Minn. R. 7019.1000, subp. 1

TABLE A: LIMITS AND OTHER REQUIREMENTS

08/12/02

Facility Name: University of Minnesota - Duluth

Permit Number: 13700039 - 001

Breakdown Notifications: Notify the Commissioner within 24 hours of a breakdown of more than one hour duration of any control equipment or process equipment if the breakdown causes any increase in the emissions of any regulated air pollutant. The 24-hour time period starts when the breakdown was discovered or reasonably should have been discovered by the owner or operator. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 2. At the time of notification or as soon as possible thereafter, the owner or operator shall inform the Commissioner of the cause of the breakdown and the estimated duration. The owner or operator shall notify the Commissioner when the breakdown is over.	Minn. R. 7019.1000, subp. 2
Shutdown Notifications: Notify the Commissioner at least 24 hours in advance of a planned shutdown of any control equipment or process equipment if the shutdown would cause any increase in the emissions of any regulated air pollutant. If the owner or operator does not have advance knowledge of the shutdown, notification shall be made to the Commissioner as soon as possible after the shutdown. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 3. At the time of notification, the owner or operator shall inform the Commissioner of the cause of the shutdown and the estimated duration. The owner or operator shall notify the Commissioner when the shutdown is over.	Minn. R. 7019.1000, subp. 3
Operation Changes: In any shutdown, breakdown, or deviation the Permittee shall immediately take all practical steps to modify operations to reduce the emission of any regulated air pollutant. The Commissioner may require feasible and practical modifications in the operation to reduce emissions of air pollutants. No emissions units that have an unreasonable shutdown or breakdown frequency of process or control equipment shall be permitted to operate.	Minn. R. 7019.1000, subp. 4
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
Application for Permit Amendment: If a permit amendment is needed, submit an 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)
Recordkeeping: Maintain records describing any insignificant modifications (as required by Minn. R. 7007.1250, subp. 3) or changes contravening permit terms (as required by Minn. R. 7007.1350 subp. 2), including records of the emissions resulting from those changes.	Minn. R. 7007.0800, subp. 5(B)
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 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)
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 enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7030.0010 - 7030.0080
Inspections: The Permittee shall comply with the inspection procedures and requirements as found in Minn. R. 7007.0800, subp. 9(A).	Minn. R. 7007.0800, subp. 9(A)
Emission Inventory Report: due 91 days after end of each calendar 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
Emission Fees: due 60 days after receipt of an MPCA bill.	Minn. R. 7002.0005 through Minn. R. 7002.0095
The facility currently uses ozone-depleting substances as defined in 40 CFR pt. 82. Sections 601-618 of the 1990 Clean Air Act Amendments and 40 CFR pt. 82 may apply to your facility. Read Sections 601-618 and 40 CFR Section 82 to determine all the requirements that apply to your facility.	40 CFR Section 82

TABLE A: LIMITS AND OTHER REQUIREMENTS

08/12/02

Facility Name: University of Minnesota - Duluth

Permit Number: 13700039 - 001

Subject Item: GP 001 Heating Plant Boilers**Associated Items:** EU 001 Boiler No. 4 (SV003)

EU 010 Boiler No. 2 (SV001)

EU 011 Boiler No. 3 (SV002)

What to do	Why to do it
Sulfur Dioxide: less than or equal to 22.2 grams/second using 1-Hour Average from any individual stack or from an aggregate combination of SV001, SV002 and SV003. Recordkeeping requirements apply for each hour that fuel oil is burned and will be used to compare calculated emissions against the emission limit. (See Sulfur Dioxide Emissions Calculation)	Minn. R. 7009.0080 (State ambient air quality standards as demonstrated by modeling)
Sulfur Dioxide Emissions Calculation: If the permittee uses both Residual and Distillate Fuel Oil in any combination of boilers in GP001 for a given hour, the permittee shall calculate sulfur dioxide emissions for that hour in accordance with Appendix B of this permit. However, if the permittee uses only Distillate Fuel Oil for a given hour, then no calculation is necessary. Similarly, if the permittee uses only residual oil less than 660 gallons for a given hour, then no calculation is necessary. As applicable, the emissions calculations shall be submitted in accordance with Table B of this Permit.	Minn. R. 7007.0800, subp. 2
Fuel Usage: less than or equal to 660 gallons/hour using 1-Hour Average of Residual Fuel Oil. The permittee shall maintain fuel use records for each hour that Residual Fuel Oil is used in Boiler 4.	Minn. R. 7007.0800, subp. 2
Fuel Usage: less than or equal to 870000 million cubic feet/year using 12-month Rolling Average (72500 million cubic feet/month) of natural gas. The permittee shall maintain fuel use records and calculate the 12-month rolling average to compare against the 72500 million cubic feet/month limit once each month.	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200
Fuel Usage: less than or equal to 75000 gallons/month using 12-month Rolling Average of Distillate Fuel Oil. The permittee shall maintain fuel use records and calculate the 12-month rolling average once each month.	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200
Fuel Usage: less than or equal to 8333 gallons/month using 12-month Rolling Average of Residual Fuel Oil. The permittee shall maintain fuel use records and calculate the 12-month rolling average once each month. Residual fuel oil may be used in Boiler 4 only.	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200
Sulfur Content of Fuel: less than or equal to 0.35 percent by weight for Distillate Fuel Oil. The permittee shall maintain a file of fuel supplier certifications for each shipment of this fuel type received, including the name of the vendor. This requirement is more stringent than 40 CFR Section 60 subp. Dc, which applies to Boilers 2 and 3.	Title I Condition: Minn. R. 7009.0080 (modeling) and to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200
Sulfur Content of Fuel: less than or equal to 1.50 percent by weight for Residual Oil. The permittee shall perform fuel sampling as specified by this permit.	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200
Residual Oil Certification: Once each day during which fuel is combusted in any boiler and if fuel oil has been added to the storage tank since the last time a sample was taken, the permittee shall draw a representative fuel sample for determination of sulfur content by weight, specific gravity, and high heating value in accordance with ASTM D-396-80 (as amended).	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200
Fuel Oil Analysis: due 30 days after end of each calendar half-year following Permit Issuance for residual oil. For each required analysis include the date, the sulfur content by weight, specific gravity, and high heating value. To be submitted within 30 days of the calendar quarter if there are deviations greater than 5% of applicable limit.	Minn. R. 7007.0800, subps. 4 - 6
Record keeping: Maintain records of fuel usage in accordance with Appendix B of this permit.	Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

08/12/02

Facility Name: University of Minnesota - Duluth

Permit Number: 13700039 - 001

Subject Item: GP 002 Stadium Apartment Boilers**Associated Items:** EU 004 Boiler - Stadium Apartment 1310 (SV006)

EU 005 Boiler - Stadium Apartment 1320 (SV007)

EU 006 Boiler - Stadium Apartment 1330 (SV008)

EU 012 Boiler - Stadium Apartment 1310 (Backup) (SV006)

EU 013 Boiler - Stadium Apartment 1320 (Backup) (SV007)

EU 014 Boiler - Stadium Apartment 1330 (Backup) (SV008)

What to do	Why to do it
Total Particulate Matter: less than or equal to 0.40 lbs/million Btu heat input . This emission limit applies individually to each emission unit in GP002. The calculated potential emission rate for total particulate matter, based on equipment capacity and allowable fuel, is 0.01 lb/hr (0.0055 lb/mmBtu) for each boiler in GP002.	Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent using 6-minute Average except for one 6-minute period per hour of not more than 60 percent opacity. This standard shall apply at all times except during periods of startup, shutdown or malfunction. This emission limit applies individually to each emission unit in GP002.	Minn. R. 7011.0510, subp. 2
Allowable Fuels: The permittee shall operate the Stadium Apartment Boilers on Natural Gas only.	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200

TABLE A: LIMITS AND OTHER REQUIREMENTS

08/12/02

Facility Name: University of Minnesota - Duluth

Permit Number: 13700039 - 001

Subject Item: GP 003 Emergency Generators

Associated Items: EU 002 Emergency Generator - Heating Plant (SV004)
 EU 007 Emergency Generator - Campus Center (SV009)
 EU 008 Emergency Generator - Residence Hall Dining (SV010)
 EU 009 Emergency Generator - School of Medicine (SV011)
 EU 015 Emergency Generator - Library (SV012)
 EU 016 Emergency Generator - Griggs Hall (SV013)
 EU 017 Emergency Generator - Science Building (SV014)

What to do	Why to do it
Opacity: less than or equal to 20 percent using 6-minute Average once operating temperatures have been attained. This emission limit applies individually to each emission unit in GP003.	Minn. R. 7011.2300, subp. 1
Operating Hours: less than or equal to 300 hours/year using 12-month Rolling Average for each individual emergency generator in GP003.	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200
Recordkeeping: Except as described below, maintain a record of the hours of operation of each unit in GP003 and calculate a 12-month rolling average once each month. For new units, the first year of operation shall be based on a 12-month rolling sum. Upon demonstration through recordkeeping that an emission unit in GP003 operated for 75 hours or less in the previous calendar year, the permittee may start to record hours of operation on a calendar year basis for that unit. The sum for each calendar year must be calculated by April 1 of the following calendar year. If the sum for any calendar year exceeds 75 hours for an emission unit, the permittee shall commence monthly recordkeeping for that unit until two consecutive calendar years at or below 75 hours of operation have been documented.	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200
Allowable Fuels: The permittee shall operate EU007, EU008 and EU016 on Natural Gas only.	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200
Allowable Fuels: The permittee shall operate EU002, EU009, EU015 and EU017 on Distillate Fuel Oil only.	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200
The permittee may modify, add, remove or replace emergency generators within GP003 provided that total facility emissions of sulfur dioxide and nitrogen oxides do not exceed the annual limits and provided that the change to GP003 does not cause noncompliance with any other permit term or applicable requirement.	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200
Recordkeeping: The permittee shall maintain a contemporaneous record of all pre-authorized changes within GP003, including the date of the change, the location of the new, modified or replaced emergency generator, and calculations showing that the sulfur dioxide and nitrogen oxides limits for the facility have not been exceeded. The calculations shall include the contribution of insignificant activities at the facility. This information shall be submitted to the MPCA with the annual compliance certification that is required by Table B of this permit.	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200

TABLE A: LIMITS AND OTHER REQUIREMENTS

08/12/02

Facility Name: University of Minnesota - Duluth

Permit Number: 13700039 - 001

Subject Item: SV 001**Associated Items:** EU 010 Boiler No. 2 (SV001)

What to do	Why to do it
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 opacity. This standard shall apply at all times except during periods of startup, shutdown or malfunction.	40 CFR Section 60.43c
Allowable Fuels: The permittee shall operate Boiler No. 2 on Natural Gas or Distillate Fuel Oil up to the amounts limited under GP001. The permittee shall submit quarterly reports as detailed in Part B of this permit, in accordance with 40 CFR Section 60.48c(d)-(f).	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200

TABLE A: LIMITS AND OTHER REQUIREMENTS

08/12/02

Facility Name: University of Minnesota - Duluth

Permit Number: 13700039 - 001

Subject Item: SV 002**Associated Items:** EU 011 Boiler No. 3 (SV002)

What to do	Why to do it
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 opacity. This standard shall apply at all times except during periods of startup, shutdown or malfunction.	40 CFR Section 60.43c
Allowable Fuels: The permittee shall operate Boiler No. 3 on Natural Gas or Distillate Fuel Oil up to the amounts limited under GP001. The permittee shall submit quarterly reports as detailed in Part B of this permit, in accordance with 40 CFR Section 60.48c(d)-(f).	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200

TABLE A: LIMITS AND OTHER REQUIREMENTS

08/12/02

Facility Name: University of Minnesota - Duluth

Permit Number: 13700039 - 001

Subject Item: SV 003**Associated Items:** EU 001 Boiler No. 4 (SV003)

What to do	Why to do it
Total Particulate Matter: less than or equal to 0.40 lbs/million Btu heat input . The calculated potential emission rate of total particulate matter, based on equipment capacity and allowable fuels, is 11.29 lb/hr (0.114 lb/mmBtu) for this emission unit.	Minn. R. 7011.0515, subp. 1
Opacity: less than or equal to 20 percent using 6-minute Average except for one 6-minute period per hour of not more than 60 percent opacity. This standard shall apply at all times except during periods of startup, shutdown or malfunction.	Minn. R. 7011.0515, subp. 2
Allowable Fuels: The permittee shall operate Boiler No. 4 on Natural Gas, Distillate Fuel Oil or Residual Fuel Oil up to the amounts limited under GP001.	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200

TABLE A: LIMITS AND OTHER REQUIREMENTS

08/12/02

Facility Name: University of Minnesota - Duluth
Permit Number: 13700039 - 001

Subject Item: SV 005

Associated Items: EU 003 Boiler - Research Laboratory Building (SV005)

What to do	Why to do it
Allowable Fuels: The permittee shall operate the Research Laboratory Building (EU003) on Natural Gas or Distillate Fuel Oil only.	Title I Condition: to avoid major source classification under 40 CFR Section 52.21; 40 CFR Section 70.2 and Minn. R 7007.0200

TABLE B: SUBMITTALS

08/12/02

Facility Name: University of Minnesota - Duluth
Permit Number: 13700039 - 001

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: RECURRENT SUBMITTALS

08/12/02

Facility Name: University of Minnesota - Duluth

Permit Number: 13700039 - 001

What to send	When to send	Portion of Facility Affected
Report	due 30 days after end of each calendar quarter following Permit Issuance. The permittee shall submit a quarterly fuel usage report which includes the calendar dates covered in the reporting period and a certified statement that the records of fuel supplier certifications represent all of the fuel combusted during the quarter. This report shall meet the content requirements of 40 CFR Section 60.48c(d)-(f).	SV001, SV002
Fuel Supplier Certification	due 30 days after end of each calendar half-year following Permit Issuance for distillate oil shipments. For each shipment include the date, vendor name, and sulfur content on a weight basis. To be submitted within 30 days of the calendar quarter if there are deviations greater than 5% of applicable limit.	GP001
Fuel Usage Report	due 30 days after end of each calendar half-year following Permit Issuance to report the quantities of natural gas, distillate oil and residual oil combusted in each of Boilers 2, 3 and 4. To be submitted within 30 days of the calendar quarter if there are deviations greater than 5% of an applicable use limit.	GP001
Semiannual Deviations Report	due 30 days after end of each calendar half-year following Permit Issuance. The first semiannual report submitted by the Permittee shall cover the calendar half-year in which the permit is issued. The first report of each calendar year covers January 1 - June 30. The second report of each calendar year covers July 1 - December 31. If no deviations have occurred, the Permittee shall submit the report stating no deviations.	Total Facility
SO2 Emission Rate Average Report	due 30 days after end of each calendar half-year following Permit Issuance for each hour that both residual oil and distillate oil are used. To be submitted within 30 days of the calendar quarter if there are deviations greater than 5% of applicable limit.	GP001
Compliance Certification	due 30 days after end of each calendar year following Permit Issuance (for the previous calendar year). To be submitted to the Commissioner on a form approved by the Commissioner. This report covers all deviations experienced during the calendar year.	Total Facility
Report	due 30 days after end of each calendar year following Permit Issuance (for the previous calendar year). The permittee shall submit a list of contemporaneous changes, if any, and supporting calculations related to the pre-approved changes for GP003.	Total Facility
Submittal	due before end of each 60 months following Permit Issuance. If the permittee has completed or commenced any of the pre-authorized construction under GP003 the permittee shall submit the appropriate permit modification application to incorporate any new or modified equipment changes into this permit.	Total Facility

APPENDIX MATERIAL**Facility Name: University of Minnesota - Duluth****Permit Number: 13700039-001****APPENDIX A****Insignificant Activities (Required to be Listed)**

Activity	Criteria for Insignificant Status
Auto shop gasoline storage tank (2000 gallon)	Minn. R. 7007.1300, subp. 3(E)(1)
Mill workshop, Lund Building. Vented inside building and filtered through air cleaning system	Minn. R. 7007.1300, subp. 3(D)(2)
VOC Use – Less than 200 gallons per year combined	Minn. R. 7007.1300, subp. 3(H)(1)
Portable welding units, arc welders and acetylene torches for maintenance and repair	Minn. R. 7007.1300, subp. 3(H)(4)
Four natural gas kilns, each with PTE less than 2000 lb/year of NOx, SO2, PM, PM10, VOC and ozone	Minn. R. 7007.1300, subp. 3(I)
Space heating units with PTE less than 2000 lb/year	Minn. R. 7007.1300, subp. 3(I)
Emergency generators with PTE less than 2000 lb/year	Minn. R. 7007.1300, subp. 3(I)
Theater Arts - Woodworking equipment with PTE less than 2000 lb/year	Minn. R. 7007.1300, subp. 3(I)
Fleet and ground maintenance 30kW natural gas generator with PTE less than 2000 lb/year	Minn. R. 7007.1300, subp. 3(I)
Spray paint guns – infrequent use	Minn. R. 7007.1300, subp. 3(K)
Fume hoods - laboratories: New Science Building Life Science Heller Hall Marshall W Alworth School of Medicine Chemistry Engineering Voss Kovach Research Lab	Minn. R. 7007.1300, subp. 3(G)

APPENDIX B
Compliance Demonstration
Fuel Use Limits and Specific Averaging Times

B1. Natural Gas Use. To the extent that record keeping will be used to demonstrate compliance with permitted emission limits, the permittee shall maintain records of natural gas use which include at least the following:

- A. Calendar dates of the compliance demonstration period; and
- B. Actual amount of fuel used since last compliance determination period and the value calculated per the limitation.

B2. Distillate Oil Use. To the extent that record keeping will be used to demonstrate compliance with permitted emission limits, the permittee shall maintain records of distillate oil use which include at least the following:

- A. Calendar dates of the compliance demonstration period.
- B. Actual amount of fuel used since last compliance determination period and the value calculated per the limitation.
- C. A certification, signed by the owner or operator, that the records of the fuel supplier certifications represent all of the fuel combusted during the period; and
- D. Fuel supplier certifications.

B3. Residual Oil Use. To the extent that record keeping will be used to demonstrate compliance with permitted emission limits, the permittee shall maintain records of residual oil use which include at least the following:

- A. Calendar dates of the compliance demonstration period.
- B. Actual amount of fuel used since last compliance determination period and the value calculated per the limitation.
- C. Records of fuel delivery; and
- D. Results of each fuel analysis.

B4. Limitations Based on a 12-month rolling sum. To determine compliance with limitations using a 12-month rolling sum, the permittee shall calculate the total annual sum on a monthly basis. For the first 12 months of operation compliance shall be based on the permittee's actual operating history prior to issuance of this permit.

B5. Hourly Sulfur Dioxide Limits. When required to calculate sulfur dioxide emissions on an hourly basis in grams per second, once each hour that fuel oil is combusted, the permittee shall:

- A. Establish the average aggregate fuel oil combustion rate expressed in gallons per minute, by measurements with instruments having an error of no greater than 1 percent.
- B. Establish the mass emission rate of sulfur dioxide using one of the following:

- a. AP-42 emission factors and fuel flow:

Emission factors: distillate fuel oil = $143.6 \times \%S$ lbSO₂ per thousand gallons

residual fuel oil = $158.6 \times \%S$ lbSO₂ per thousand gallons

Where %S = percent sulfur content by weight

Calculation:

$$\text{SO}_2 \text{ g/s} = 0.00756 \times (\text{emission factor}) \times \text{fuel flow}$$

where: emission factors are in lb SO₂ per thousand gallons

fuel flow is in units of gallons per minute

- b. Fuel specific gravity, fuel flow and sulfur content:

Calculation:

$$\text{SO}_2 \text{ g/s} = 63.09 \times (\text{fuel flow}) \times (0.02 \times \%S) \times (\text{specific gravity})$$

where: fuel flow is in units of gallons per minute

sulfur content is in percent by weight

TECHNICAL SUPPORT DOCUMENT
For
AIR EMISSION PERMIT NO. 13700039-001

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 and Operator Address and Phone Number	Facility Address (SIC Code: 8221)
Gregory R. Fox Vice Chancellor of Finance and Operations University of Minnesota – Duluth 241 Darland Administrative Building 10 University Drive Duluth, Minnesota 55812 Phone: (218)726-7105	241 Darland Administrative Building 10 University Drive Duluth, Minnesota 55812 St. Louis County

1.2. Description of the facility

The facility is the Duluth campus of the University of Minnesota, which currently operates ten boilers and six emergency generators. This permit action authorizes the addition of a seventh emergency generator and defines conditions under which pre-authorized installation of additional emergency generators may occur. The primary and backup fuel for the boilers are natural gas and distillate (No. 2, or diesel) fuel oil, with only Boiler #4 being authorized to burn residual (No. 6) fuel oil. Each emergency generator is fueled by either natural gas or distillate fuel oil, and is limited to a maximum of 300 operating hours per year.

The pollutants of concern are primarily sulfur dioxide, nitrogen oxides and carbon monoxide, which are limited in this permit mainly through fuel use restrictions and hours of operation limits. These emission units also emit relatively small quantities of particulate matter and volatile organic compounds, and trace amounts of hazardous air pollutants.

This permit action imposes more stringent fuel use restrictions than in the previous total facility permit in order to keep the facility below all major source thresholds following the installation of a new emergency generator.

1.3 Description of any changes allowed with this permit issuance

This permit is issued based on the application for a total facility operating permit received by the MPCA in February 1996 and upon the previous total facility operating permit issued by the MPCA in March 1995. Since submitting the February 1996 application, the permittee has submitted two applications for minor amendments and one application for a major amendment. These three applications were all for installation of emergency generators. The major amendment included changes to certain fuel usage restrictions and emission limits in order that the facility would remain below major source thresholds for nitrogen oxides and sulfur dioxide. All three amendments are incorporated into this permit action.

1.4 Description of all amendments issued since the issuance of the last total facility permit and to be included in the Part 70 Permit.

Permit Number and Issuance Date	Action Authorized
13700039-010 (86D-91-I/O-1) - 3/28/95	Re-issue of total facility operating permit. Also authorized replacement of three of the existing boilers with two new gas/oil boilers.
Minor Amendment Application received – June 10, 1999	Installation of 150 kW emergency generator
Minor Amendment Application received - April 20, 2001 (amended June 22, 2001)	Installation of 100 kW emergency generator
Major Amendment Application received – February 6, 2002	Installation of 500 kW emergency generator and change in fuel use and emission limits to maintain non-major source status

1.5. Facility Emissions:

Table 1. Emissions Associated With the Major Modification

	PM tpy	PM ₁₀ tpy	SO ₂ tpy	NO _x tpy	CO tpy	VOC tpy	Lead tpy	HAPs tpy
Currently Permitted Facility-Wide Limited PTE, including units added in minor modifications	9.3	8.4	79.0	82.4	48.3	3.7	0.00	4.0
Change in Limited PTE from Major Modification (addition of EU017)	0.1	0.1	0.5	2.8	0.6	0.1	0.00	0.0
Change in Limited PTE from fuel and operating hours restrictions	-3.4	-3.2	-37.9	-14.4	-3.2	-0.5	0.00	-3.0
Additional change in Limited PTE from pre-authorized activities in GP003	ND ⁽¹⁾	ND ⁽¹⁾	+48.4	+19.2	ND ⁽¹⁾	ND ⁽¹⁾	ND ⁽¹⁾	ND ⁽¹⁾

¹ Not determined. While the pre-authorized activities under GP003 would increase emissions of pollutants in addition to NO_x and SO₂, the MPCA has determined that a total facility cap on these emissions is not necessary as the PTE is significantly lower for those pollutants. Therefore the facility limited PTE values are based on current emission unit configuration for all pollutants other than NO_x and SO₂.

Table 2. Total Facility Potential to Emit (PTE) Summary

Item#	Emission Unit Description	PM Tpy	PM ₁₀ tpy	SO ₂ Tpy	NO _x tpy	CO tpy	VOC tpy	Pb tpy	All HAPs Tpy
FC	Total Facility (Excluding IA's)	59.8	48.2	931.5	274.0	94.8	19.9	0.00	4.08
Of which....									
GP001	Heating Plant Blrs.	58.6	47.2	924.3	252.2	86.9	5.7		
GP002	Stadium Apt. Blrs.	0.4	0.4	0.00	4.6	3.8	0.2		
GP003	Emergency Gen.	0.6	0.6	1.2	15.5	2.9	0.8		
SV005	Research Lab. Blr.	0.17	0.09	6.0	1.7	0.9	0.06		
IA-C	Insignificant Activities (Combustion)	0.19	0.19	0.04	6.0	2.6	0.24		
		PM tpy	PM ₁₀ tpy	SO ₂ Tpy ⁽¹⁾	NO _x tpy ⁽²⁾	CO tpy	VOC Tpy	Pb tpy	All HAPs tpy
Total Facility Limited PTE		6.0	5.3	90.0	90.0	45.7	3.3	0.00	1.0
Total Facility Actual Emissions ³		1.7	1.6	8.4	15.8	7.9	0.8	0.00	-

(1) Total Facility Cap, allowing for pre-authorized changes. As currently configured, PTE would be 41.6 tpy

(2) Total Facility Cap, allowing for pre-authorized changes. As currently configured, PTE would be 70.8 tpy

(3) Based on 2000 Emission Inventory

Table 3. Facility and Permit Classification

Classification (put x in appropriate box)	Major/Affected Source	*Synthetic Minor	*Minor
PSD (list pollutant)	-	SO ₂ , NO _x , CO	PM, PM10, VOC, Pb
NAAR (list pollutant)	NA	NA	NA
Part 70 Permit Program (list pollutant)	-	SO ₂ , NO _x , CO	PM10, VOC, Pb, HAPs

- 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

Summary Regulatory and/or Statutory Basis of the Emission or operational Limit

Regulatory Overview of Facility

EU, GP, or SV #	Applicable Regulations	Comments:
SV001, SV002	40 CFR pt. 60 Subp. Dc	Standards of Performance for Small and Industrial Commercial and Institutional Steam Generating Units
SV003	Minn. R. 7007.0510	Standards of Performance for Existing Indirect Heating Equipment
GP003	Minn. R. 7011.2300	Standards of Performance for Stationary Internal Combustion Engines
FC	40 CFR § 52.21; 40 CFR § 70.2 and Minn. R. 7007.0200	Recordkeeping, reporting, fuel use and other Title I conditions to maintain non-major source status
FC	40 CFR § 52.21; 40 CFR § 70.2 and Minn. R. 7007.0200	Total facility emissions cap for SO ₂ and NO _x in accordance with MPCA guidelines. Certain modifications are pre-authorized under GP003.
GP001	Minn. R. 7009.0080	State Ambient Air Quality Standards. Limits for NO _x and SO ₂ were derived from computer dispersion modeling within an earlier total facility permit. The NO _x limit is not included in this permit as GP001, due to earlier boiler replacements, now has a NO _x PTE that is lower than that limit.
GP001	Minn. R. 7007.0800, subp. 2	Short term (gallons per hour) limit established for residual fuel oil use and alternate compliance process for SO ₂ defined. Permittee no longer needs to calculate all hourly SO ₂ emissions provided short term fuel limits are met, as PTE for SO ₂ under these conditions is less than the SO ₂ emission limit for GP001.

3. Other Discussion Items and Technical Information

The total facility emissions cap for SO₂ and NO_x was drafted in accordance with MPCA guidelines. Certain modifications are pre-authorized under GP003 provided that all emission limits are met and provided that annual emissions, including the contribution of insignificant activities, do not exceed 100 tons per year. Past emission inventory data shows that the facility consistently operates well below its PTE. The contribution of combustion related insignificant activities (i.e. contributors of SO₂ and NO_x) was considered in order to ensure that the pre-authorized changes associated with the total facility caps, when combined with those insignificant activities, would not result in a limited PTE greater than 100 tpy for either pollutant. At the 90 tpy facility cap, there is an adequate buffer as it would take an almost doubling of insignificant activities to reach the 100 tpy level. As the permit requires that the facility submit an appropriate permit application every five years if any of the pre-authorized construction has started by that time, the permittee and the MPCA will need to review the impact of insignificant activities again at that time. The required application submittal is a means of keeping the permit current and, given that the facility does not anticipate frequent changes, is a reasonable means of keeping this as a non-expiring State permit.

The record keeping requirement for hours of operation of GP003 units can be relaxed when the facility can demonstrate that the unit has actual operating hours of less than 75 hours for the previous calendar year. This is based on the record keeping options for Option C registration permits. For emission units that have already been in place for a full calendar year, this provision may be applied retroactively upon permit issuance.

Periodic monitoring for this facility comprises regular fuel analyses and certifications, recordkeeping and reporting. As the facility does not operate air pollution control equipment to meet emission limits, calculations based on fuel usage are sufficient so the MPCA has elected not to impose performance testing requirements or continuous emissions monitors within this permit.

The GP001 emission limit for nitrogen oxides has been removed from the permit. The modeling from which this limit was derived, was based on pre-1990 units that were all capable of burning residual oil. As currently configured, GP001 has a short term potential to emit of nitrogen oxides that is lower than the emission limit. As the PTE would be the baseline for future modeling, this limit is no longer needed.

$$252.2 \text{ ton/year} \times 2000 \text{ lb/ton} \times 1/8760 \text{ years/hour} \times 453.6 \text{ grams/lb} \times 1/3600 \text{ hours/sec} \\ = 7.25 \text{ grams/second}$$

The maximum, unlimited hourly PTE for GP001 is 7.25 grams/second compared to the existing limit of 8.5 grams/second.

The permit conditions under GP001 also recognize that in practice the sulfur dioxide limit is unlikely to be exceeded using the calculation method, based on historical steam demand. The permit establishes a short term limit on residual fuel oil use, at the reported capacity of Boiler 4 (660 gallons per hour). At this level the use of residual fuel oil alone cannot cause an

exceedence of the emission limit for sulfur dioxide using the calculation procedure in Appendix B.

$$\text{SO}_2 \text{ grams/second} = 0.00756 \times 158.6 \times 1.5 \%S \times 660 \text{ gallons/hour} \times 1/60 \text{ minutes/hour} = 19.8$$

In order to reach the emission limit of 22.2 grams/second, approximately 350 gallons per hour (5.83 gallons per minute) of distillate fuel oil would have to be combusted in GP001 boilers.

$$\text{SO}_2 \text{ grams/second} = 0.00756 \times 143.6 \times 0.35 \times 5.83 = 2.2$$

Therefore the permit needs only to require calculation of hourly sulfur dioxide emission rates if both residual and distillate fuels oils are used in any given hour, or in the event that the 660 gallon per hour limit is exceeded. The emission limit cannot be exceeded if distillate fuel oil is used but residual fuel oil is not, based on the calculation methods and usage limits in place.

The numbering system for the groups, units and stacks has been organized to retain consistency with existing data in the Emission Inventory database. The numbering does not match the numbers used in the permit application for the emission units but stack numbers have been made to match as far as possible and the use of groups helps to cross reference the various documents.

4. Conclusion

Based on the information provided by the University of Minnesota, the MPCA has reasonable assurance that the proposed operation of the emission facility, as described in the Air Emission Permit No. 13700039-001 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: Stuart Arkley, Bob Beresford
Peer Review: Peggy Bartz

Attachments: PTE information from MPCA's Delta database
Facility PTE calculations and EC forms