

AIR EMISSION PERMIT NO. 13700082- 002

IS ISSUED TO

Intermet Corporation

NORTHERN CASTINGS CORPORATION

555 25th Street West
Hibbing, St. Louis County, MN 55746

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	06/15/1995
Major Amendment	02/04/2005

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 as defined in the state air pollution control rules unless the term is explicitly defined in the permit.

Permit Type:	State; Limits to Avoid Pt 70/Limits to Avoid NSR	Major Amendment
Issue Date:	May 7, 2002	June 10, 2005
Expiration:	Permit does not expire All Title I Conditions do not expire.	

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

for Sheryl A. Corrigan
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:

Northern Castings is a ductile iron foundry. The source consists of two electric induction furnaces, a holding furnace, pouring and cooling areas, a shakeout system, casting cleaning equipment, and a sand handling system.

The source's previous permit imposed emission limits which held the facility below 100 tons per year (tpy) for all criteria pollutants. The permit limits the facility to less than 100 tpy for criteria pollutants, and also to less than 25 tpy of total Hazardous Air Pollutants (HAP) and less than 10 tpy of individual HAPs, using a production limit and pollution control requirements. Thus, the facility is a non-major source under Part 70 and under New Source Review.

AMENDMENT DESCRIPTION

This permit action (-001) is a major amendment to a state operating permit. The permit authorizes the following changes:

- Replacement of a molding machine, which is not an emission unit. However, this replacement serves to debottleneck the hourly capacity of the facility, which is offset by the installation of additional controls.
- Installation of a new sand wheel (EU051) in the shakeout area to replace the existing belt conveyor 3 (EU038) and sand screen (EU043). This does not debottleneck the facility further.

- Installation of a new mold cooling line (EU052) to replace the existing cooling line (EU004). The new cooling line is longer than the existing line.
- Installation of a new ladle (EU053), with a larger hourly capacity, to replace the existing ladle (EU003). This does not debottleneck the facility further.
- Installation of a Didion shakeout drum (EU054), to replace the existing shakeout operation (EU009). This does not debottleneck the facility further.
- Installation of a new baghouse (CE009) to replace two of the existing baghouses (CE004 and CE005). This results in a new stack (SV015) to replace the existing stacks (SV003 and SV004).
- Installation of a new baghouse (CE010) to control emissions from the furnaces and ladle operations. This will replace the operation of the two existing baghouses (CE001 and CE002). The associated stack is SV016.
- Ductwork will be reconfigured and CE001 and CE002 will be used to capture emissions that currently escape the facility uncontrolled through roof vents (currently uncaptured emissions from furnaces, ladle, pouring/cooling, shakeout, and internally venting air make up units).
- Increase the existing facility production limit from 39,000 tons per year to 55,000 tons per year.

In order to achieve compliance with ambient PM₁₀ standards, SV002 will be raised to a height of 69 feet above grade, daily operation of the bentonite bin (filling) is being limited to 3 hours per day, and the generator stack will be changed from a horizontal discharge to a vertical discharge. These actions, combined with the installation of the new baghouse CE010, result in an overall decrease in PM₁₀ emissions, even with the increase in production.

TABLE A: LIMITS AND OTHER REQUIREMENTS

06/10/05

Facility Name: Northern Castings Corp

Permit Number: 13700082 - 002

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
Operation and Maintenance Plan: Retain at the stationary source an operation and maintenance plan for all air pollution control equipment. At a minimum, the O & M plan shall identify all air pollution control equipment and 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)
Performance Testing: Conduct all performance tests in accordance with Minn. R. ch. 7017 unless otherwise noted in Tables A, B, and/or C.	Minn. R. ch. 7017
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
Monitoring Equipment Calibration: Annually calibrate all required monitoring equipment (any requirements applying to continuous emission monitors are listed separately in this permit). If it is found that a particular piece of equipment can't be calibrated, the equipment may be replaced rather than calibrated.	Minn. R. 7007.0800, subp. 4(D)
Operation of Monitoring Equipment: Unless otherwise noted in Tables A, B, and/or C, monitoring a process or control equipment connected to that process is not necessary during periods when the process is shutdown, or during checks of the monitoring systems, such as calibration checks and zero and span adjustments. If monitoring records are required, they should reflect any such periods of process shutdown or checks of the monitoring system.	Minn. R. 7007.0800, subp. 4(D)
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
Shutdown Notifications: Notify the Commissioner at least 24 hours in advance of a planned shutdown of any control equipment or process equipment if the shutdown would cause any increase in the emissions of any regulated air pollutant. If the owner or operator does not have advance knowledge of the shutdown, notification shall be made to the Commissioner as soon as possible after the shutdown. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 3. At the time of notification, the owner or operator shall inform the Commissioner of the cause of the shutdown and the estimated duration. The owner or operator shall notify the Commissioner when the shutdown is over.	Minn. R. 7019.1000, subp. 3
Breakdown Notifications: Notify the Commissioner within 24 hours of a breakdown of more than one hour duration of any control equipment or process equipment if the breakdown causes any increase in the emissions of any regulated air pollutant. The 24-hour time period starts when the breakdown was discovered or reasonably should have been discovered by the owner or operator. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 2. At the time of notification or as soon as possible thereafter, the owner or operator shall inform the Commissioner of the cause of the breakdown and the estimated duration. The owner or operator shall notify the Commissioner when the breakdown is over.	Minn. R. 7019.1000, subp. 2
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

TABLE A: LIMITS AND OTHER REQUIREMENTS

06/10/05

Facility Name: Northern Castings Corp

Permit Number: 13700082 - 002

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
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
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)
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
The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16.	Minn. R. 7007.0800, subp. 16
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

TABLE A: LIMITS AND OTHER REQUIREMENTS

06/10/05

Facility Name: Northern Castings Corp

Permit Number: 13700082 - 002

Subject Item: GP 001 Melting Operations

Associated Items: EU 001 Induction Furnace 1
 EU 002 Induction Furnace 2
 EU 003 Ladle (to be replaced by EU053)
 EU 053 Ladle (replaces EU003)

What to do	Why to do it
EMISSION AND OPERATING LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011. 0735. This limit applies to each Associated Item listed above. (Potential emissions of furnaces at design capacity is 0.05 lb/hr each; potential emissions of ladles at design capacity is 0.3 lb/hr each; limits at stacks where emissions occur (SV001, SV010, and SV016) are 9.8 lb/hr, 9.8 lb/hr, and 20.6 lb/hr, respectively.)	Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent opacity . This limit applies to each Associated Item listed above.	Minn. R. 7011.0715, subp. 1(B)
Material Usage: less than or equal to 55000 tons/year using 12-month Rolling Sum of metal melted. This limit applies to the two induction furnaces combined.	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Production Limit: 13241.8 pounds per batch, based on total tons in a heat cycle. This limit applies individually to each furnace. The Permittee may not operate either emission unit at a higher production rate unless a performance test is conducted at a higher rate and MPCA staff determine compliance at that rate for that emission unit.	Minn. R. 7017.2025; Notice of Compliance dated June 29, 1995
CONTROL REQUIREMENTS (see also Subject Items CE001, CE002, CE010 for specific operating requirements)	hdr
Particulate Matter < 10 micron: greater than or equal to 99 percent control efficiency (applies to each Associated Item listed above)	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Total Particulate Matter: greater than or equal to 99 percent control efficiency (applies to each Associated Item listed above)	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000
RECORDKEEPING REQUIREMENTS	hdr
Recordkeeping: DAILY: Each day, record the quantity of metal melted, in tons. MONTHLY: By the 15th day of each month, calculate and record: a. The total quantity of metal melted during the previous month. b. The 12-month rolling sum of metal melted during the previous 12 months, by summing the 12 previous monthly metal melt quantities.	Title I Condition: Recordkeeping of limit used to avoid classification as a major source under 40 CFR Section 52.21 and Minn. R. 7011.3000; and under 40 CFR Section 70.2 and Minn. R. 7007.0200
Recordkeeping: The Permittee shall record the quantity of melted metal produced in each furnace batch.	Minn. R. 7007.0800, subp. 4, 5, and 14

TABLE A: LIMITS AND OTHER REQUIREMENTS

06/10/05

Facility Name: Northern Castings Corp

Permit Number: 13700082 - 002

Subject Item: GP 002 Make-up Air Units**Associated Items:** EU 046 Air Makeup Unit 1

EU 048 Air Makeup Unit 2

EU 049 Air Makeup Unit 3

What to do	Why to do it
EMISSION AND OPERATING LIMITS	hdr
Total Particulate Matter: less than or equal to 0.4 lbs/million Btu heat input . This limit applies individually to each unit listed in this group. [Maximum PTE of each unit based on fuel combustion capacity is approximately 0.0075 lbs/million Btu heat input.]	Minn. R. 7011.0515, subp. 1
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity. This limit applies individually to each unit listed in this group.	Minn. R. 7011.0515, subp. 2
Fuel Types Allowed: Natural gas and propane, by equipment design	Minn. R. 7005.0100, subp. 35a

TABLE A: LIMITS AND OTHER REQUIREMENTS

06/10/05

Facility Name: Northern Castings Corp

Permit Number: 13700082 - 002

Subject Item: GP 003 Pouring and Cooling Operations**Associated Items:** EU 004 Mold Cooling Conveyor (to be replaced by EU052)

EU 047 Auto Pour Vessel

EU 052 Mold Cooling Conveyor (replaces EU004)

What to do	Why to do it
EMISSION AND OPERATING LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011. 0735. This limit applies to each Associated Item listed above. (Combined potential emissions of all units included in group is 0.44 lb/hr; limits at the stacks where emissions occur (SV001, SV010, and SV011) are 9.8 lb/hr, 9.8 lb/hr, and 20.6 lb/hr, respectively.)	Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent opacity . This limit applies to each Associated Item listed above.	Minn. R. 7011.0715, subp. 1(B)
CONTROL REQUIREMENTS (see also Subject Items CE001, CE002, CE008 for specific operating requirements)	hdr
Particulate Matter < 10 micron: greater than or equal to 99 percent control efficiency (applies to each Associated Item listed above)	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Total Particulate Matter: greater than or equal to 99 percent control efficiency (applies to each Associated Item listed above)	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000

TABLE A: LIMITS AND OTHER REQUIREMENTS

06/10/05

Facility Name: Northern Castings Corp

Permit Number: 13700082 - 002

Subject Item: GP 004 Sand Handling Operations

Associated Items: EU 005 Belt Conveyor 2 (used sand)
 EU 006 Batch Hopper
 EU 007 Sand Bin
 EU 008 Sand Mullor
 EU 010 Fluid Bed Cooler (sand)
 EU 011 V Cooler (sand)
 EU 012 Sand Elevator
 EU 013 Belt Conveyor 5 (sand)
 EU 032 Handblast
 EU 038 Belt Conveyor 3 (to be replaced by EU051)
 EU 039 Belt Conveyor 4
 EU 041 Sand Hopper
 EU 042 Mullor Feed Conveyor
 EU 043 Sand screen (to be replaced by EU051)
 EU 044 Surge Bin
 EU 050 Sand Screen
 EU 051 Sand Wheel (replaces EU038 and EU043)
 EU 052 Mold Cooling Conveyor (replaces EU004)

What to do	Why to do it
EMISSION AND OPERATING LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011. 0735. This limit applies to each Associated Item listed above. (Combined potential emissions of all units included in group is 12.0 lb/hr; limits at the stacks where emissions occur (SV002 and SV011) are 13.4 lb/hr and 20.6 lb/hr, respectively.)	Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent opacity . This limit applies to each Associated Item listed above.	Minn. R. 7011.0715, subp. 1(B)
CONTROL REQUIREMENTS (see also Subject Items CE006, CE008 for specific operating requirements)	hdr
Particulate Matter < 10 micron: greater than or equal to 99 percent control efficiency (applies to each Associated Item listed above which is controlled by CE008)	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Total Particulate Matter: greater than or equal to 99 percent control efficiency (applies to each Associated Item listed above which is controlled by CE008)	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000
Particulate Matter < 10 micron: greater than or equal to 80 percent control efficiency (applies to each Associated Item listed above which is controlled by CE006)	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Total Particulate Matter: greater than or equal to 80 percent control efficiency (applies to each Associated Item listed above which is controlled by CE006)	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000

TABLE A: LIMITS AND OTHER REQUIREMENTS

06/10/05

Facility Name: Northern Castings Corp

Permit Number: 13700082 - 002

Subject Item: GP 005 Shakeout Operations**Associated Items:** EU 009 Shakeout (to be replaced by EU054)

EU 031 Conveyor Belt A (product)

EU 040 Didion Feeder

EU 054 Didion Drum (replaces EU009)

What to do	Why to do it
EMISSION AND OPERATING LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011. 0735. This limit applies to each Associated Item listed above. (Combined potential emissions of all units included in group is 0.33 lb/hr; limits at the stacks where emissions occur (SV001, SV002, SV010, and SV011) are 9.8 lb/hr, 13.4 lb/hr, 9.8 lb/hr, and 20.6 lb/hr, respectively.)	Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent opacity . This limit applies to each Associated Item listed above.	Minn. R. 7011.0715, subp. 1(B)
CONTROL REQUIREMENTS (see also Subject Items CE001, CE002, CE006, CE008 for specific operating requirements)	hdr
Particulate Matter < 10 micron: greater than or equal to 99 percent control efficiency (applies to each Associated Item listed above)	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Total Particulate Matter: greater than or equal to 99 percent control efficiency (applies to each Associated Item listed above)	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000

TABLE A: LIMITS AND OTHER REQUIREMENTS

06/10/05

Facility Name: Northern Castings Corp

Permit Number: 13700082 - 002

Subject Item: GP 006 Cleaning and Finishing**Associated Items:** EU 014 Tumblast Shotblast

EU 015 Grinder 1

EU 016 Grinder 2

EU 017 Grinder 3

EU 018 Grinder 4

EU 019 South Tumbler

EU 020 North Tumbler

EU 021 Inspection Grinder 1

EU 022 Inspection Grinder 2

EU 023 Inspection Grinder 3

EU 024 Inspection Grinder 4

EU 025 Inspection Grinder 5

EU 026 Inspection Grinder 6

EU 027 Inspection Grinder 7

EU 028 Inspection Grinder 8

EU 029 Grinder

EU 030 Desprueing Area

EU 037 Conveyor Belt B

What to do	Why to do it
EMISSION AND OPERATING LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011. 0735. This limit applies to each Associated Item listed above. (Combined potential emissions of all units included in group is 1.77 lb/hr; limit at the stack where emissions occur (SV015) is 20.8 lb/hr.)	Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent opacity . This limit applies to each Associated Item listed above.	Minn. R. 7011.0715, subp. 1(B)
CONTROL REQUIREMENTS (see also Subject Item CE009 for specific operating requirements)	hdr
Particulate Matter < 10 micron: greater than or equal to 99 percent control efficiency (applies to each Associated Item listed above)	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Total Particulate Matter: greater than or equal to 99 percent control efficiency (applies to each Associated Item listed above)	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000

TABLE A: LIMITS AND OTHER REQUIREMENTS

06/10/05

Facility Name: Northern Castings Corp

Permit Number: 13700082 - 002

Subject Item: GP 007 HAP Calculations

Associated Items: EU 004 Mold Cooling Conveyor (to be replaced by EU052)
 EU 005 Belt Conveyor 2 (used sand)
 EU 006 Batch Hopper
 EU 007 Sand Bin
 EU 008 Sand Mullor
 EU 009 Shakeout (to be replaced by EU054)
 EU 010 Fluid Bed Cooler (sand)
 EU 011 V Cooler (sand)
 EU 012 Sand Elevator
 EU 013 Belt Conveyor 5 (sand)
 EU 031 Conveyor Belt A (product)
 EU 032 Handblast
 EU 038 Belt Conveyor 3 (to be replaced by EU051)
 EU 039 Belt Conveyor 4
 EU 040 Didion Feeder
 EU 041 Sand Hopper
 EU 042 Mullor Feed Conveyor
 EU 043 Sand screen (to be replaced by EU051)
 EU 044 Surge Bin
 EU 047 Auto Pour Vessel
 EU 050 Sand Screen
 EU 051 Sand Wheel (replaces EU038 and EU043)
 EU 052 Mold Cooling Conveyor (replaces EU004)
 EU 054 Didion Drum (replaces EU009)

What to do	Why to do it
EMISSION LIMITS	hdr
HAP-Single: less than or equal to 7.0 tons/year using 12-month Rolling Sum , to be calculated as described in this permit by the 15th day of each month for the previous 12-month period. Calculations shall include all HAP emissions from the sources listed in GP007.	Title I Condition: To avoid classification as a major source under 40 CFR Section 63.2; to avoid classification as a major source under 40 CFR Section 70.2 and Minn. R. 7007.0200
RECORDKEEPING REQUIREMENTS	hdr
Daily Recordkeeping: Each day, record the quantity and HAP content of each HAP-containing material used.	Title I Condition: To avoid classification as a major source under 40 CFR Section 63.2; to avoid classification as a major source under 40 CFR Section 70.2 and Minn. R. 7007.0200
Monthly Recordkeeping: By the 15th day of each month, determine and record the following: 1. The quantity of each HAP-containing material used during the previous month; 2. The individual HAP emissions for the previous month; and 3. The 12-month rolling sum of individual HAP emissions for the previous month.	Minn. R. 7007.0800, subp. 4 and 5
Calculations: Monthly HAP emissions shall be calculated as follows for each individual HAP: HAP(I) - HAP(MIX) + HAP(PCS) Where: HAP(I) = total emissions of the individual HAP for the previous month, in tons HAP(MIX) =emissions of the individual HAP from mixing the binder resins and catalysts with sand, in tons, calculated as shown below HAP(PCS) = emissions of the individual HAP from pouring, cooling, and shakeout, in tons, calculated as shown below.	Minn. R. 7007.0800, subp. 4 and 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

06/10/05

Facility Name: Northern Castings Corp

Permit Number: 13700082 - 002

<p>Calculations: HAP(MIX)</p> $\text{HAP(MIX)} = (\text{CR1} \times \text{H1} \times \text{ER1} / 2000) + (\text{CR2} \times \text{H2} \times \text{ER2} / 2000) + \dots \text{ etc.}$ <p>Where: HAP(MIX) = the total emissions for the individual HAP generated by mixing sand and binder to make molds or cores during the previous month (tons) CR1, CR2, etc. = the quantity of catalyst and/or resin used in each binder formula (molds and cores) during the previous month (pounds) H1, H2, etc. = the individual HAP content of the catalyst and/or resin in each binder formula used during the previous month (individual HAP, weight percent) ER1, ER2, etc. = the evaporation rate of the individual HAP for the catalyst or resin in each binder formula used during the previous month (percent) (See Note 1).</p>	Minn. R. 7007.0800, subp. 4 and 5
<p>Calculations: HAP(PCS)</p> $\text{HAP(PCS)} = (\text{B1} \times \text{HE1} / 2000) + (\text{B2} \times \text{HE2} / 2000) + \dots \text{ etc.}$ <p>Where: HAP(PCS) = the total emissions of the individual HAP generated by pouring/cooling and shakeout during the previous month (tons) B1, B2, etc. = the quantity of each individual binder used in molds during the previous month (pounds) HE1, HE2, etc. = the emission factor for the individual HAP for each individual binder used in molds during the previous month (pound/pound) (See Note 2).</p>	Minn. R. 7007.0800, subp. 4 and 5
<p>Note 1: Evaporation rates for individual HAPs from resins and catalysts shall be those cited in the May 6, 1996 MPCA document "Iron Foundry Emission Calculations Guidance" (relevant sections reproduced in Appendix C) or from manufacturer's data. If manufacturer's data is used, the Permittee shall keep a record of the data and all supporting documentation. Any changes to the evaporation rate shall be submitted to the MPCA with the annual compliance certification. If no evaporation rate data is available, an evaporation rate of 50% shall be assumed.</p> <p>The Permittee may propose to use a resin or catalyst-specific evaporation rate derived from MPCA approved performance tests. If approved by the MPCA, this resin or catalyst-specific evaporation rate shall be used.</p>	Minn. R. 7007.0800, subp. 4 and 5
<p>Note 2: The emission factor for the particular pollutant shall be the emission factor for the appropriate binder from Appendix B (reproduced from the May 67, 1998 MPCA document "Iron Foundry Emission Calculations Guidance"). The Permittee shall keep records of the binders used, the corresponding emission factors, and all supporting documentation. Any changes to the emission factors used shall be submitted to the MPCA with the annual compliance certification.</p>	Minn. R. 7007.0800, subp. 4 and 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

06/10/05

Facility Name: Northern Castings Corp

Permit Number: 13700082 - 002

Subject Item: EU 003 Ladle (to be replaced by EU053)**Associated Items:** CE 001 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 002 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

CE 010 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

GP 001 Melting Operations

SV 001 Power Vent Baghouse

SV 010 Power Vent Baghouse

SV 016 Furnace and Ladle Baghouse

What to do	Why to do it
Equipment Removal and/or Dismantlement: due 15 days after Initial Startup of EU053.	Minn. R. 7019.0100, subp. 1

TABLE A: LIMITS AND OTHER REQUIREMENTS

06/10/05

Facility Name: Northern Castings Corp

Permit Number: 13700082 - 002

Subject Item: EU 004 Mold Cooling Conveyor (to be replaced by EU052)**Associated Items:** CE 008 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

GP 003 Pouring and Cooling Operations

GP 007 HAP Calculations

SV 011 Molding/Pouring/Cooling Baghouse

What to do	Why to do it
Equipment Removal and/or Dismantlement: due 15 days after Initial Startup of EU052.	Minn. R. 7019.0100, subp. 1

TABLE A: LIMITS AND OTHER REQUIREMENTS

06/10/05

Facility Name: Northern Castings Corp
Permit Number: 13700082 - 002

Subject Item: EU 009 Shakeout (to be replaced by EU054)

Associated Items: CE 001 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
CE 002 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
CE 006 Wet Scrubber - High Efficiency
GP 005 Shakeout Operations
GP 007 HAP Calculations
SV 001 Power Vent Baghouse
SV 002 Sand System Wet Scrubber
SV 010 Power Vent Baghouse

What to do	Why to do it
Equipment Removal and/or Dismantlement: due 15 days after Initial Startup of EU054.	Minn. R. 7019.0100, subp. 1

TABLE A: LIMITS AND OTHER REQUIREMENTS

06/10/05

Facility Name: Northern Castings Corp

Permit Number: 13700082 - 002

Subject Item: EU 035 Generator**Associated Items:** SV 008 Generator

What to do	Why to do it
EMISSION AND OPERATING LIMITS	hdr
Sulfur Dioxide: less than or equal to 0.5 lbs/million Btu heat input	Minn. R. 7011.2300, subp. 2
Opacity: less than or equal to 20 percent opacity once operating temperatures have been attained.	Minn. R. 7011.2300, subp. 1
Fuel Types Allowed: Diesel fuel only, by equipment design	Minn. R. 7005.0100, subp. 35a
STACK HEIGHT REQUIREMENTS	hdr
Stack Direction: The exhaust stack (SV008) shall exhaust vertically.	40 CFR Pt. 50; Minn. Stat. Sec. 116.07, subds. 4a and 9; Minn. R. 7007.0100, subps. 7A, 7L, and 7M; Minn. R. 7007.0800, subps. 1, 2, and 4; Minn. R. 7009.0010-7009.0080
RECORDKEEPING REQUIREMENTS	hdr
Hours of Operation: The Permittee shall maintain documentation on site that the unit is an emergency diesel generator by design that qualifies under the U.S. EPA memorandum entitled "Calculating Potential to Emit (PTE) for Emergency Generators" dated September 6, 1995, limiting operation to 500 hours per year.	Minn. R. 7007.0800, subp. 4 & 5
Fuel Supplier Certification: The Permittee shall obtain and maintain a fuel supplier certification for each shipment of diesel fuel, certifying that the sulfur content does not exceed 0.5% by weight.	Minn. R. 7007.0800, subps. 4 & 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

06/10/05

Facility Name: Northern Castings Corp

Permit Number: 13700082 - 002

Subject Item: EU 036 Bentonite Bin**Associated Items:** CE 007 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

SV 009 Bentonite Bin

What to do	Why to do it
EMISSION AND OPERATING LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011. 0735. (Potential emissions of the unit is less than 0.1 lb/hr; limit at the stack (SV009) is 26.4 lb/hr.)	Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 1(B)
Filling the Bentonite Bin: Not more than 3 hours per calendar day to be spent on filling the bentonite bin.	40 CFR Pt. 50; Minn. Stat. Sec. 116.07, subds. 4a and 9; Minn. R. 7007.0100, subps. 7A, 7L, and 7M; Minn. R. 7007.0800, subps. 1, 2, and 4; Minn. R. 7009.0010-7009.0080
RECORDKEEPING REQUIREMENTS	hdr
Daily Recordkeeping: Each day that EU036 is operated, record and maintain documentation of the number of hours operated.	Minn. R. 7007.0800. subp. 4 and 5
CONTROL REQUIREMENTS (CE007)	hdr
The Permittee shall maintain and operate the control equipment at all times that any emission unit controlled by the equipment (listed above as Associated Items) is in operation. The Permittee shall operate and maintain the control equipment in accordance with the Operation and Maintenance (O & M) Plan.	Minn. R. 7007.0800, subp. 2 and 14
Particulate Matter < 10 micron: greater than or equal to 99 percent control efficiency	Minn. R. 7007.0800, subp. 2 and 14
Total Particulate Matter: greater than or equal to 99 percent control efficiency	Minn. R. 7007.0800, subp. 2 and 14
Visible Emissions: The Permittee shall check the fabric filter stack (SV 009) for any visible emissions each time the bentonite bin is filled during daylight hours.	Minn. R. 7007.0800, subp. 4 and 5
Periodic Inspections: At least once per calendar quarter, or more frequently as required by the manufacturing specifications, the Permittee shall inspect the control equipment components. The Permittee shall maintain a written record of these inspections.	Minn. R. 7007.0800, subp. 4, 5, and 14
Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - visible emissions are observed during operation; or - the fabric filter or any of its components are found during the inspections to need repair. Corrective actions shall eliminate visible emissions and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee shall keep a record of the type and date of any corrective action taken for each filter.	Minn. R. 7007.0800, subp. 4, 5, and 14

TABLE A: LIMITS AND OTHER REQUIREMENTS

06/10/05

Facility Name: Northern Castings Corp

Permit Number: 13700082 - 002

Subject Item: EU 038 Belt Conveyor 3 (to be replaced by EU051)**Associated Items:** CE 008 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

GP 004 Sand Handling Operations

GP 007 HAP Calculations

SV 011 Molding/Pouring/Cooling Baghouse

What to do	Why to do it
Equipment Removal and/or Dismantlement: due 15 days after Initial Startup of EU051	Minn. R. 7019.0100, subp. 1

TABLE A: LIMITS AND OTHER REQUIREMENTS

06/10/05

Facility Name: Northern Castings Corp
Permit Number: 13700082 - 002

Subject Item: EU 043 Sand screen (to be replaced by EU051)
Associated Items: CE 008 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
GP 004 Sand Handling Operations
GP 007 HAP Calculations
SV 011 Molding/Pouring/Cooling Baghouse

What to do	Why to do it
Equipment Removal and/or Dismantlement: due 15 days after Initial Startup of EU051	Minn. R. 7019.0100, subp. 1

TABLE A: LIMITS AND OTHER REQUIREMENTS

06/10/05

Facility Name: Northern Castings Corp

Permit Number: 13700082 - 002

Subject Item: CE 001 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

Associated Items: EU 001 Induction Furnace 1

EU 003 Ladle (to be replaced by EU053)

EU 009 Shakeout (to be replaced by EU054)

EU 031 Conveyor Belt A (product)

EU 040 Didion Feeder

EU 046 Air Makeup Unit 1

EU 047 Auto Pour Vessel

EU 048 Air Makeup Unit 2

EU 049 Air Makeup Unit 3

EU 053 Ladle (replaces EU003)

EU 054 Didion Drum (replaces EU009)

What to do	Why to do it
The Permittee shall maintain and operate the control equipment at all times that any emission unit controlled by the equipment (listed above as Associated Items) is in operation. The Permittee shall operate and maintain the control equipment in accordance with the Operation and Maintenance (O & M) Plan.	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Pressure Drop: greater than or equal to 2 inches of water column and less than or equal to 8 inches of water column . The Permittee shall record the pressure drop once every 24 hours when in operation.	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Recordkeeping of Pressure Drop. The Permittee shall record the time and date of each pressure drop reading and whether or not the recorded pressure drop was within the range specified in this permit.	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Monitoring Equipment: The Permittee shall install and maintain the necessary monitoring equipment for measuring and recording pressure drop as required by this permit. The monitoring equipment must be installed, in use, and properly maintained when the monitored fabric filter is in operation.	Minn. R. 7007.0800, subp. 4
Periodic Inspections: At least once per calendar quarter, or more frequently as required by the manufacturing specifications, the Permittee shall inspect the control equipment components. The Permittee shall maintain a written record of these inspections.	Minn. R. 7007.0800, subp. 4, 5, and 14
Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - the recorded pressure drop is outside the required operating range; or - the fabric filter or any of its components are found during the inspections to need repair. Corrective actions shall return the pressure drop to within the permitted range and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee shall keep a record of the type and date of any corrective action taken for each filter.	Minn. R. 7007.0800, subp. 4, 5, and 14

TABLE A: LIMITS AND OTHER REQUIREMENTS

06/10/05

Facility Name: Northern Castings Corp

Permit Number: 13700082 - 002

Subject Item: CE 002 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

Associated Items: EU 002 Induction Furnace 2
 EU 003 Ladle (to be replaced by EU053)
 EU 009 Shakeout (to be replaced by EU054)
 EU 031 Conveyor Belt A (product)
 EU 040 Didion Feeder
 EU 046 Air Makeup Unit 1
 EU 047 Auto Pour Vessel
 EU 048 Air Makeup Unit 2
 EU 049 Air Makeup Unit 3
 EU 053 Ladle (replaces EU003)
 EU 054 Didion Drum (replaces EU009)

What to do	Why to do it
The Permittee shall maintain and operate the control equipment at all times that any emission unit controlled by the equipment (listed above as Associated Items) is in operation. The Permittee shall operate and maintain the control equipment in accordance with the Operation and Maintenance (O & M) Plan.	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Pressure Drop: greater than or equal to 2 inches of water column and less than or equal to 8 inches of water column . The Permittee shall record the pressure drop once every 24 hours when in operation.	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Recordkeeping of Pressure Drop. The Permittee shall record the time and date of each pressure drop reading and whether or not the recorded pressure drop was within the range specified in this permit.	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Monitoring Equipment: The Permittee shall install and maintain the necessary monitoring equipment for measuring and recording pressure drop as required by this permit. The monitoring equipment must be installed, in use, and properly maintained when the monitored fabric filter is in operation.	Minn. R. 7007.0800, subp. 4
Periodic Inspections: At least once per calendar quarter, or more frequently as required by the manufacturing specifications, the Permittee shall inspect the control equipment components. The Permittee shall maintain a written record of these inspections.	Minn. R. 7007.0800, subp. 4, 5, and 14
Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - the recorded pressure drop is outside the required operating range; or - the fabric filter or any of its components are found during the inspections to need repair. Corrective actions shall return the pressure drop to within the permitted range and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee shall keep a record of the type and date of any corrective action taken for each filter.	Minn. R. 7007.0800, subp. 4, 5, and 14

TABLE A: LIMITS AND OTHER REQUIREMENTS

06/10/05

Facility Name: Northern Castings Corp

Permit Number: 13700082 - 002

Subject Item: CE 006 Wet Scrubber - High Efficiency**Associated Items:** EU 006 Batch Hopper

EU 008 Sand Mullor

EU 009 Shakeout (to be replaced by EU054)

EU 010 Fluid Bed Cooler (sand)

EU 011 V Cooler (sand)

EU 039 Belt Conveyor 4

EU 040 Didion Feeder

EU 041 Sand Hopper

EU 054 Didion Drum (replaces EU009)

What to do	Why to do it
The Permittee shall maintain and operate the control equipment at all times that any emission unit controlled by the equipment (listed above as Associated Items) is in operation. The Permittee shall operate and maintain the control equipment in accordance with the Operation and Maintenance (O & M) Plan.	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Pressure Drop: greater than or equal to 4 inches of water column . The Permittee shall record the pressure drop once every 24 hours when in operation.	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Water flow rate: greater than or equal to 60 gallons/minute . The Permittee shall record the water flow rate once every 24 hours when in operation..	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Recordkeeping of Pressure Drop and Water Flow Rate. The Permittee shall record the time and date of each pressure drop reading and each water flow rate reading and whether or not the reading was within the range specified in this permit.	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Monitoring Equipment: The Permittee shall install and maintain the necessary monitoring equipment for measuring and recording pressure drop as required by this permit. The monitoring equipment must be installed, in use, and properly maintained when the monitored scrubber is in operation.	Minn. R. 7007.0800, subp. 4
Periodic Inspections: At least once per calendar quarter, or more frequently as required by the manufacturing specifications, the Permittee shall inspect the control equipment components. The Permittee shall maintain a written record of these inspections.	Minn. R. 7007.0800, subp. 4, 5, and 14
Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - the recorded pressure drop is outside the required operating range; or - the recorded water flow rate is outside the required operating range; or - the scrubber or any of its components are found during the inspections to need repair. Corrective actions shall return the pressure drop to within the permitted range and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the scrubber. The Permittee shall keep a record of the type and date of any corrective action taken.	Minn. R. 7007.0800, subp. 4, 5, and 14
STACK HEIGHT REQUIREMENTS	hdr
Stack Height: The minimum exhaust stack height for SV002 shall be 69.0 feet above grade.	40 CFR Pt. 50; Minn. Stat. Sec. 116.07, subds. 4a and 9; Minn. R. 7007.0100, subps. 7A, 7L, and 7M; Minn. R. 7007.0800, subps. 1, 2, and 4; Minn. R. 7009.0010-7009.0080
TESTING REQUIREMENTS	hdr
Performance Test: due before end of each 60 months starting 09/30/2002 to measure total particulate matter from SV002. The limit against which the measured amount is compared will be determined from Minn. R. 7011.0715, subp. 1(A), based upon actual operating conditions of CE006 and all emission units controlled by CE006 at the time of the test. The next test is due 9/30/07, and every 60 months thereafter.	Minn. R. 7017.2020, subp. 1

TABLE A: LIMITS AND OTHER REQUIREMENTS

06/10/05

Facility Name: Northern Castings Corp

Permit Number: 13700082 - 002

Performance Test Notifications and Submittals: Performance Test Notification (written): due 30 days before each Performance Test Performance Test Plan: due 30 days before each Performance Test Performance Test Pre-test Meeting: due 7 days before each Performance Test Performance Test Report: due 45 days after each Performance Test Performance Test Report - Microfiche Copy: due 105 days after each Performance Test	Minn. R. 7017.2030, subp. 1-4 and Minn. R. 7017.2035, subp. 1-2
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TABLE A: LIMITS AND OTHER REQUIREMENTS

06/10/05

Facility Name: Northern Castings Corp

Permit Number: 13700082 - 002

Subject Item: CE 008 Fabric Filter - Low Temperature, i.e., T<180 Degrees F**Associated Items:** EU 004 Mold Cooling Conveyor (to be replaced by EU052)

EU 005 Belt Conveyor 2 (used sand)

EU 007 Sand Bin

EU 012 Sand Elevator

EU 013 Belt Conveyor 5 (sand)

EU 031 Conveyor Belt A (product)

EU 032 Handblast

EU 038 Belt Conveyor 3 (to be replaced by EU051)

EU 042 Mullor Feed Conveyor

EU 043 Sand screen (to be replaced by EU051)

EU 044 Surge Bin

EU 047 Auto Pour Vessel

EU 050 Sand Screen

EU 051 Sand Wheel (replaces EU038 and EU043)

EU 052 Mold Cooling Conveyor (replaces EU004)

What to do	Why to do it
The Permittee shall maintain and operate the control equipment at all times that any emission unit controlled by the equipment (listed above as Associated Items) is in operation. The Permittee shall operate and maintain the control equipment in accordance with the Operation and Maintenance (O & M) Plan.	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Pressure Drop: greater than or equal to 2 inches of water column and less than or equal to 8 inches of water column. The Permittee shall record the pressure drop once every 24 hours when in operation.	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Recordkeeping of Pressure Drop. The Permittee shall record the time and date of each pressure drop reading and whether or not the recorded pressure drop was within the range specified in this permit.	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Monitoring Equipment: The Permittee shall install and maintain the necessary monitoring equipment for measuring and recording pressure drop as required by this permit. The monitoring equipment must be installed, in use, and properly maintained when the monitored fabric filter is in operation.	Minn. R. 7007.0800, subp. 4
Periodic Inspections: At least once per calendar quarter, or more frequently as required by the manufacturing specifications, the Permittee shall inspect the control equipment components. The Permittee shall maintain a written record of these inspections.	Minn. R. 7007.0800, subp. 4, 5, and 14
Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - the recorded pressure drop is outside the required operating range; or - the fabric filter or any of its components are found during the inspections to need repair. Corrective actions shall return the pressure drop to within the permitted range and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee shall keep a record of the type and date of any corrective action taken for each filter.	Minn. R. 7007.0800, subp. 4, 5, and 14

TABLE A: LIMITS AND OTHER REQUIREMENTS

06/10/05

Facility Name: Northern Castings Corp

Permit Number: 13700082 - 002

Subject Item: CE 009 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

Associated Items: EU 014 Tumblast Shotblast

EU 015 Grinder 1

EU 016 Grinder 2

EU 017 Grinder 3

EU 018 Grinder 4

EU 019 South Tumbler

EU 020 North Tumbler

EU 021 Inspection Grinder 1

EU 022 Inspection Grinder 2

EU 023 Inspection Grinder 3

EU 024 Inspection Grinder 4

EU 025 Inspection Grinder 5

EU 026 Inspection Grinder 6

EU 027 Inspection Grinder 7

EU 028 Inspection Grinder 8

EU 029 Grinder

EU 030 Desprueing Area

EU 037 Conveyor Belt B

What to do	Why to do it
The Permittee shall maintain and operate the control equipment at all times that any emission unit controlled by the equipment (listed above as Associated Items) is in operation. The Permittee shall operate and maintain the control equipment in accordance with the Operation and Maintenance (O & M) Plan.	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Pressure Drop: greater than or equal to 1 inches of water column and less than or equal to 8 inches of water column . The Permittee shall record the pressure drop once every 24 hours when in operation.	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Recordkeeping of Pressure Drop. The Permittee shall record the time and date of each pressure drop reading and whether or not the recorded pressure drop was within the range specified in this permit.	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Monitoring Equipment: The Permittee shall install and maintain the necessary monitoring equipment for measuring and recording pressure drop as required by this permit. The monitoring equipment must be installed, in use, and properly maintained when the monitored fabric filter is in operation.	Minn. R. 7007.0800, subp. 4
Periodic Inspections: At least once per calendar quarter, or more frequently as required by the manufacturing specifications, the Permittee shall inspect the control equipment components. The Permittee shall maintain a written record of these inspections.	Minn. R. 7007.0800, subp. 4, 5, and 14
Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - the recorded pressure drop is outside the required operating range; or - the fabric filter or any of its components are found during the inspections to need repair. Corrective actions shall return the pressure drop to within the permitted range and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee shall keep a record of the type and date of any corrective action taken for each filter.	Minn. R. 7007.0800, subp. 4, 5, and 14

TABLE A: LIMITS AND OTHER REQUIREMENTS

06/10/05

Facility Name: Northern Castings Corp

Permit Number: 13700082 - 002

Subject Item: CE 010 Fabric Filter - Low Temperature, i.e., T<180 Degrees F**Associated Items:** EU 001 Induction Furnace 1

EU 002 Induction Furnace 2

EU 003 Ladle (to be replaced by EU053)

EU 053 Ladle (replaces EU003)

What to do	Why to do it
The Permittee shall maintain and operate the control equipment at all times that any emission unit controlled by the equipment (listed above as Associated Items) is in operation. The Permittee shall operate and maintain the control equipment in accordance with the Operation and Maintenance (O & M) Plan.	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Pressure Drop: greater than or equal to 1 inches of water column and less than or equal to 8 inches of water column. The Permittee shall record the pressure drop once every 24 hours when in operation.	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Recordkeeping of Pressure Drop. The Permittee shall record the time and date of each pressure drop reading and whether or not the recorded pressure drop was within the range specified in this permit.	Title I Condition: To avoid major source classification under 40 CFR Section 52.21 and Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200
Monitoring Equipment: The Permittee shall install and maintain the necessary monitoring equipment for measuring and recording pressure drop as required by this permit. The monitoring equipment must be installed, in use, and properly maintained when the monitored fabric filter is in operation.	Minn. R. 7007.0800, subp. 4
Periodic Inspections: At least once per calendar quarter, or more frequently as required by the manufacturing specifications, the Permittee shall inspect the control equipment components. The Permittee shall maintain a written record of these inspections.	Minn. R. 7007.0800, subp. 4, 5, and 14
Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - the recorded pressure drop is outside the required operating range; or - the fabric filter or any of its components are found during the inspections to need repair. Corrective actions shall return the pressure drop to within the permitted range and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee shall keep a record of the type and date of any corrective action taken for each filter.	Minn. R. 7007.0800, subp. 4, 5, and 14

TABLE B: SUBMITTALS

06/10/05

Facility Name: Northern Castings Corp
Permit Number: 13700082 - 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

06/10/05

Facility Name: Northern Castings Corp

Permit Number: 13700082 - 002

What to send	When to send	Portion of Facility Affected
Application for Permit Reissuance	due 180 days before expiration of Existing Permit	Total Facility
Notification of the Actual Date of Initial Startup	due 15 days after Initial Startup	EU051, EU052, EU053, EU054
Notification of the date of Equipment Removal/Dismantlement	due 15 days after Equipment Removal and/or Dismantlement	EU003, EU004
Notification of the date of Equipment Removal/Dismantlement	due 15 days after Equipment Removal and/or Dismantlement	EU009
Notification of the date of Equipment Removal/Dismantlement	due 15 days after Equipment Removal and/or Dismantlement	EU038
Notification of the date of Equipment Removal/Dismantlement	due 15 days after Equipment Removal and/or Dismantlement	EU043
Notification	due 15 days after Equipment Installation (higher stack) is complete.	SV002

TABLE B: RECURRENT SUBMITTALS

06/10/05

Facility Name: Northern Castings Corp

Permit Number: 13700082 - 002

What to send	When to send	Portion of Facility Affected
Semiannual Deviations Report	due 30 days after end of each calendar half-year starting 05/07/2002 . 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
Compliance Certification	due 31 days after end of each calendar year starting 05/07/2002 (for the previous calendar year). To be submitted on a form approved by the Commissioner. This report covers all deviations experienced during the calendar year.	Total Facility

APPENDIX B: VOC and HAP Emission Factors for Pouring/Cooling/Shakeout
Facility Name: Northern Castings Corporation
Permit Number: 13700082-002

Tables B.1 through B.11 were taken from “Calculating Emission Factors for Pouring, Cooling and Shakeout.” This article was published in the October 1994 edition of Modern Casting which is a monthly publication of the American Foundrymen’s Society.

Table B.1. Phenolic Nobake Binder

Binder System	Pounds of Chemical
Phenolic Nobake	Released to Air per
Index: Resin	Pound of Index
Ammonia	0.000039
Hydrogen Sulfide	0.001462
Nitrogen Oxides	0.000029
Sulfur Dioxide	0.015107
Total Hydrocarbons	0.012159
Acrolein	0.000005
Benzene	0.011209
Formaldehyde	0.000010
Hydrogen Cyanide	0.000029
M-Xylene	0.000097
Naphthalene	0.000049
O-Xylene	0.000049
Phenol	0.000975
Toluene	0.000634
Total Aromatic Amines	0.000049
Total C ₂ to C ₅ Aldehydes	0.003070
Total HAPs ^[5]	0.016174

Table B.2. Phenolic Urethane Binder

Binder System	Pounds of Chemical
Phenolic Urethane	Released to Air per
Index: Resin	Pound of Index
Ammonia	0.000083
Hydrogen Sulfide	0.000057
Nitrogen Oxides	0.000044
Sulfur Dioxide	0.000061
Total Hydrocarbons	0.023377
Acrolein	0.000031
Benzene	0.005351
Formaldehyde	0.000022
Hydrogen Cyanide	0.001053
M-Xylene	0.000439
Naphthalene	0.000022
O-Xylene	0.000132
Phenol	0.003904
Toluene	0.000833
Total Aromatic Amines	0.000351
Total C ₂ to C ₅ Aldehydes	0.000219
Total HAPs	0.012355

Table B.3. Medium Nitrogen Furan TSA Catalyst Binder

Binder System	Pounds of Chemical
Medium Nitrogen Furan TSA Catalyst	Released to Air per
Index: Resin	Pound of Index
Ammonia	0.000202
Hydrogen Sulfide	0.000486
Nitrogen Oxides	0.000312
Sulfur Dioxide	0.004858
Total Hydrocarbons	0.017178
Acrolein	0.000016
Benzene	0.004534
Formaldehyde	0.000065
Hydrogen Cyanide	0.000607
M-Xylene	0.000243
Naphthalene	0.000040
O-Xylene	0.000040
Phenol	0.000101
Toluene	0.008826
Total Aromatic Amines	0.000364
Total C ₂ to C ₅ Aldehydes	0.017004
Total HAPs	0.031842

Table B.4. Phenolic Hotbox Binder

Binder System Phenolic Hotbox Index: Resin	Pounds of Chemical Released to Air per Pound of Index
Ammonia	0.010931
Hydrogen Sulfide	0.000009
Nitrogen Oxides	0.000638
Sulfur Dioxide	0.000036
Total Hydrocarbons	0.005165
Acrolein	0.000009
Benzene	0.001002
Formaldehyde	0.000006
Hydrogen Cyanide	0.001184
M-Xylene	0.000121
Naphthalene	0.000030
O-Xylene	0.000030
Phenol	0.000203
Toluene	0.000182
Total Aromatic Amines	0.001275
Total C ₂ to C ₅ Aldehydes	0.000273
Total HAPs	0.004318

Table B.5. Green Sand Binder

Binder System Green Sand Index: Seacoal	Pounds of Chemical Released to Air per Pound of Index
Ammonia	0.000065
Hydrogen Sulfide	0.000832
Nitrogen Oxides	0.000562
Sulfur Dioxide	0.000253
Total Hydrocarbons	0.011941
Acrolein	0.000002
Benzene	0.000611
Formaldehyde	0.000004
Hydrogen Cyanide	0.000118
M-Xylene	0.000021
Naphthalene	0.000021
O-Xylene	0.000021
Phenol	0.000131
Toluene	0.000063
Total Aromatic Amine	0.000021
Total C ₂ to C ₅ Aldehydes	0.000063
Total HAPs	0.001076

Table B.6. Core Oil Binder

Binder System Core Oil Index: Core Oil	Pounds of Chemical Released to Air per Pound of Index
Ammonia	0.000038
Hydrogen Sulfide	0.000057
Nitrogen Oxides	0.000081
Sulfur Dioxide	0.000115
Total Hydrocarbons	0.028737
Acrolein	0.000077
Benzene	0.002344
Formaldehyde	0.000096
Hydrogen Cyanide	0.000086
M-Xylene	0.000239
Naphthalene	0.000048
O-Xylene	0.000287
Phenol	0.000057
Toluene	0.000478
Total Aromatic Amines	0.000096
Total C ₂ to C ₅ Aldehydes	0.000766
Total HAPs	0.004574

Table B.7. Shell Binder

Binder System Shell Index: Resin	Pounds of Chemical Released to Air per Pound of Index
Ammonia	0.003860
Hydrogen Sulfide	0.000094
Nitrogen Oxides	0.000994
Sulfur Dioxide	0.003509
Total Hydrocarbons	0.022421
Acrolein	0.000047
Benzene	0.006667
Formaldehyde	0.000035
Hydrogen Cyanide	0.010526
M-Xylene	0.000585
Naphthalene	0.000058
O-Xylene	0.000117
Phenol	0.002456
Toluene	0.002807
Total Aromatic Amines	0.002339
Total C ₂ to C ₅ Aldehydes	0.000585
Total HAPs	0.026222

Table B.8. Low Nitrogen Furan Binder

Binder System	Pounds of Chemical
Low Nitrogen Furan	Released to Air per
Index: Resin	Pound of Index
Ammonia	0.000040
Hydrogen Sulfide	0.000405
Nitrogen Oxides	0.000012
Sulfur Dioxide	0.000607
Total Hydrocarbons	0.007814
Acrolein	0.000028
Benzene	0.000648
Formaldehyde	0.000267
Hydrogen Cyanide	0.000368
M-Xylene	0.002227
Naphthalene	0.000040
O-Xylene	0.000729
Phenol	0.000024
Toluene	0.000121
Total Aromatic Amines	0.000081
Total C ₂ to C ₅ Aldehydes	0.000243
Total HAPs	0.004777

Table B.9. Sodium Silicate-Ester Binder

Binder System	Pounds of Chemical
Sodium Silicate-Ester	Released to Air per
Index: Sugar + Ester	Pound of Index
Ammonia	0.000038
Hydrogen Sulfide	0.000197
Nitrogen Oxides	0.000028
Sulfur Dioxide	0.000244
Total Hydrocarbons	0.022782
Acrolein	0.000028
Benzene	0.001410
Formaldehyde	0.000169
Hydrogen Cyanide	0.000179
M-Xylene	0.000094
Naphthalene	0.000005
O-Xylene	0.000094
Phenol	0.000273
Toluene	0.000282
Total Aromatic Amines	0.000094
Total C ₂ to C ₅ Aldehydes	0.001316
Total HAPs	0.003943

Table B.10. Furan Hotbox Binder

Binder System	Pounds of Chemical
Furan Hotbox	Released to Air per
Index: Resin	Pound of Index
Ammonia	0.019579
Hydrogen Sulfide	0.000060
Nitrogen Oxides	0.000411
Sulfur Dioxide	0.000088
Total Hydrocarbons	0.006259
Acrolein	0.000013
Benzene	0.000537
Formaldehyde	0.000009
Hydrogen Cyanide	0.003474
M-Xylene	0.000032
Naphthalene	0.000032
O-Xylene	0.000032
Phenol	0.000016
Toluene	0.000032
Total Aromatic Amines	0.003032
Total C ₂ to C ₅ Aldehydes	0.000158
Total HAPs	0.007364

Table B.11. Alkyd Isocyanate Binder

Binder System	Pounds of Chemical
Alkyd Isocyanate	Released to Air per
Index: Resin + Isocyanate	Pound of Index
Ammonia	0.000037
Hydrogen Sulfide	0.000007
Nitrogen Oxides	0.000355
Sulfur Dioxide	0.000040
Total Hydrocarbons	0.035567
Acrolein	0.000088
Benzene	0.005336
Formaldehyde	0.000106
Hydrogen Cyanide	0.000175
M-Xylene	0.002522
Naphthalene	0.000037
O-Xylene	0.003838
Phenol	0.000110
Toluene	0.001535
Total Aromatic Amines	0.000037
Total C ₂ to C ₅ Aldehydes	0.002156
Total HAPs	0.015939

APPENDIX C: VOC and HAP Evaporation Rates for Sand/Resin/Catalyst Mixing
Facility Name: Northern Castings Corporation
Permit Number: 13700082-002

The following tables were taken from: “Form R Reporting of Binder Chemicals Used in Foundries,” Second Edition (1998), published by the American Foundrymen’s Society, Inc. and the Casting Industry Suppliers Association.

The information found for different types of binder systems can be used to calculate the amount of individual HAP’s and total VOC’s that are emitted when sand is mixed with binder, but before the mold or core is exposed to molten metal. In order to do this, the HAP content and VOC contents of each part of the binder system must be known, either from the material safety data sheet (MSDS), or the manufacturer.

Table C.1 Alkyd Oil Binder

	% Reacted	% Evaporated	% Remaining Mold/Core
Resin			
Lead (7439-92-1)	0	0	100
Cobalt (7440-48-4)	0	0	100
Coreactant			
Methylene Phenylene Isocyanate (101-68-8) ⁽¹⁾	99.99	<0.01	0.01
Polymeric diphenylmethane Diisocyanate (9016-87-9)	99.99	<0.01	0.01

⁽¹⁾ Listed as CAS #101-68-8, MBI, Methylenebis (phenyl, isocyanate) on 313 chemical list

Table C.2 Acrylic/Epoxy/SO₂ Binder

	% Reacted	% Evaporated	% Remaining in Mold/Core
Part I			
Cumene Hydroperoxide (80-15-9)	97	0	3
Cumene (98-82-8)	0	1.5	98.5

Table C.3 Furan Hotbox Binder

	% Reacted	% Evaporated	% Remaining in Mold/Core
Resin			
Formaldehyde (50-00-0)	95	5	0

Table C.4 Furan Nobake Binder

	% Reacted	% Evaporated	% Remaining in Mold/Core
Resin			
Phenol (108-95-2)	98+	0	2
Formaldehyde (50-00-0)	98	2	0
Methyl Alcohol (67-56-1)	0	50	50
Catalyst			
Methyl Alcohol (67-56-1)	0	50	50
Sulfuric Acid (8774-93-9)	100	0	0

Table C.5 Furan/SO₂ Binder

	% Reacted	% Evaporated	% Remaining in Mold/Core
Resin			
Formaldehyde (50-00-0)	98	2	0
Methyl Alcohol (65-56-1)	0	50	50
Oxidizer			
Dimethyl Phthalate (131-11-3)	0	50	50
Methyl Ethyl Ketone (78-93-3)	0	50	50

Table C.6 Furan Warmbox Binder

	% Reacted	% Evaporated	% Remaining in Mold/Core
Resin			
Formaldehyde(50-00-0)	95	5	0
Catalyst			
Methyl Alcohol(67-56-1)	0	100	0

Table C.7 Phenolic Baking Binder

	% Reacted	% Evaporated	% Remaining in Mold/Core
Part I			
Phenol (108-95-2)	95	0	5
Formaldehyde(50-00-0)	95	5	0

Table C.8 Phenolic Ester Nobake Binder

	% Reacted	% Evaporated	% Remaining in Mold/Core
Resin			
Formaldehyde (50-00-0)	98	2	0
Phenol (108-95-2)	98	0	2

Table C.9 Phenolic Ester Coldbox Binder

	% Reacted	% Evaporated	% Remaining in Mold/Core
Resin			
Formaldehyde (50-00-0)	98	2	0
Phenol (108-95-2)	98	0	2
Glycol Ethers ⁽¹⁾	0	50	50
Catalyst			
Methanol (67-56-1)	0	50	50

⁽¹⁾ Listed as Certain Glycol Ethers under (c) Chemical categories on the SARA 313 chemical list.

Table C.10 Phenolic Hotbox Binder

	% Reacted	% Evaporated	% Remaining in Mold/Core
Resin			
Formaldehyde (50-00-0)	95	5	0
Phenol (108-95-2)	95	0	5

Table C.11 Phenolic Nobake - Acid Catalyzed Binder

	% Reacted	% Evaporated	% Remaining in Mold/Core
Resin			
Phenol (108-95-2)	98	0	2
Formaldehyde (50-00-0)	98	2	0
Methyl Alcohol (67-56-1)	0	50	50
Acid			
Methyl Alcohol (67-56-1)	0	50	50
Sulfuric Acid (7664-93-9)	100	0	0

Table C.12 Phenolic Novolac Flake Binder - Coating Operations

	% Reacted	% Evaporated	% Remaining in Mold/Core
Part I			
Phenol (108-95-2)	95	0	5
Part II			
Ammonia ⁽¹⁾ (7664-41-7)	0	100	0

⁽¹⁾ Ammonia is generated as a breakdown product from the hexamethylenetetramine (hexa). As the hexa breaks down 40% is converted to ammonia. The percentages listed here are for the ammonia generated from the hexa.

Table C.13 Phenolic Novolac Liquid Binder - Coating Operations

	% Reacted	% Evaporated	% Remaining in Mold/Core
Part I			
Phenol (108-95-2)	95	0	5
Formaldehyde (50-00-0)	95	5	0
Methanol (67-56-1)	0	100	0

Table C.14 Phenolic Urethane Nobake Binder

	% Reacted	% Evaporated	% Remaining in Mold/Core
Part I			
Phenol (108-95-2)	98	0	2
Formaldehyde (50-00-0)	98	2	0
Naphthalene (91-20-3)	0	5.85	94.15
1,2,4 Trimethyl Benzene (95-63-6)	0	5.85	94.15
Cumene (98-82-8)	0	5.85	94.15
Xylene (1330-20-7)	0	5.85	94.15
Part II			
Methylene Phenylene Isocyanate ⁽¹⁾ (101-68-8)	99.99	0	0.01
Polymeric diphenylmethane Diisocyanate (9016-87-9)	99.99	0	0.01
Naphthalene (91-20-3)	0	5.85	94.15
1,2,4 Trimethylbenzene (95-63-6)	0	5.85	94.15
Cumene (98-82-8)	0	5.85	94.15
Xylene (1330-20-7)	0	5.85	94.15

⁽¹⁾ Listed as CAS #101-68-8, Methylenebis (phenylisocyanate)(MDI) under (c) Chemical categories on the SARA 313 chemical list.

Table C.15 Phenolic Urethane Coldbox Binder

	% Reacted	% Evaporated	% Remaining in Mold/Core
Part I			
Formaldehyde (50-00-0)	98	2	0
Phenol (108-95-2)	98	0	2
Xylene (1330-20-7)	0	3.25	96.75
Cumene (98-82-8)	0	3.25	96.75
Naphthalene (91-20-3)	0	3.25	96.75
1,2,4 Trimethylbenzene (95-63-6)	0	3.25	96.75
Part II			
Methylene Phenylene Isocyanate (101-68-8) ⁽¹⁾	99.99	0	0.01
Polymeric diphenylmethane Diisocyanate (9016-87-9)	99.99	0	0.01
Naphthalene (91-20-3)	0	3.25	96.75
Xylene (1330-20-7)	0	3.25	96.75
Biphenyl (95-52-4)	0	3.25	96.75

⁽¹⁾ Listed as CAS #101-68-8, Methylenebis (phenylisocyanate)(MDI) under (c) Chemical categories on the SARA 313 chemical list.

Table C.16 Urea Formaldehyde Binder

	% Reacted	% Evaporated	% Remaining in Mold/Core
Part I			
Formaldehyde (50-00-0)	98	2	0

APPENDIX D – Insignificant Activities**Facility Name:** Northern Castings Corporation**Permit Number:** 13700082-002**Insignificant Activities and Applicable Requirements**

Minn. R. 7007.1300, subpart	Rule Description of the Activity	Applicable Requirement
3(A)	Fuel use: space heaters fueled by, kerosene, natural gas, or propane. <ul style="list-style-type: none">• Ten space heaters fired with natural gas/propane,	Minn. R. 7011.0510/0515
3(G)	Emissions from a laboratory, as defined in the subpart. <ul style="list-style-type: none">• Metal testing laboratory	Minn. R. 7011.0710/0715
3(I)	Individual emissions units at a stationary source, each of which have a potential to emit the following pollutants in amounts less than: 1. 4,000 lbs/year of carbon monoxide; and 2. 2,000 lbs/year each of nitrogen oxide, sulfur dioxide, particulate matter, particulate matter less than ten microns, volatile organic compounds (including hazardous air pollutant-containing VOC), and ozone. <ul style="list-style-type: none">• Air Makeup Unit• Holding Furnace	<ul style="list-style-type: none">• Minn. R. 7011.0510/0515• Minn. R. 7011.0710/0715
3(K)	Infrequent use of spray paint equipment for routine housekeeping or plant upkeep activities not associated with primary production processes at the stationary source, such as spray painting of buildings, machinery, vehicles, and other supporting equipment. <ul style="list-style-type: none">• Miscellaneous spray painting is done for plant maintenance purposes	Minn. R. 7011.0710/0715

TECHNICAL SUPPORT DOCUMENT
For
AIR EMISSION PERMIT NO. 13700082-002

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

1. General Information

1.1. Applicant and Stationary Source Location:

Applicant/Address	Stationary Source/Address (SIC Code: 3321)
Intermet Corporation 5445 Corporate Drive Troy, MI 48098	Northern Castings Corporation 555 25th Street West Hibbing, St. Louis County 55746
Contact: Michael Lekatz Phone: (218) 263-8871 ext. 17	

1.2. Description of the Permitted Facility

Northern Castings is a ductile iron foundry. The source consists of two electric induction furnaces, a holding furnace, pouring and cooling areas, a shakeout system, casting cleaning equipment, and a sand handling system.

1.3 Description of the Activities Allowed by this Permit Action

This permit action is a major amendment to a state operating permit. The permit authorizes the following changes:

- Replacement of a molding machine, which is not an emission unit. However, this replacement serves to debottleneck the hourly capacity of the facility, which is offset by the installation of additional controls.
- Installation of a new sand wheel (EU051) in the shakeout area to replace the existing belt conveyor 3 (EU038) and sand screen (EU043). This does not debottleneck the facility further.
- Installation of a new mold cooling line (EU052) to replace the existing cooling line (EU004). The new cooling line is longer than the existing line, but does not debottleneck the facility further.
- Installation of a new ladle (EU053), with a larger hourly capacity, to replace the existing ladle (EU003). This does not debottleneck the facility further.
- Installation of a Didion shakeout drum (EU054), to replace the existing shakeout operation (EU009). This does not debottleneck the facility further.
- Installation of a new baghouse (CE009) to replace two of the existing baghouses (CE004 and CE005). This results in a new stack (SV015) to replace the existing stacks (SV003 and SV004).
- Installation of a new baghouse (CE010) to control emissions from the furnaces and ladle operations. This will replace the operation of the two existing baghouses (CE001 and CE002). The associated stack is SV016.

- Ductwork will be reconfigured and CE001 and CE002 will be used to capture emissions that currently escape the facility uncontrolled through roof vents (currently uncaptured emissions from furnaces, ladle, pouring/cooling, shakeout, and internally venting air make up units).
- Increase the existing facility production limit from 39,000 tons per year to 55,000 tons per year.

In order to achieve compliance with ambient PM₁₀ standards, SV002 will be raised to a height of 69 feet above grade, daily operation of the bentonite bin (filling) is being limited to 3 hours per day, and the generator stack will be changed from a horizontal discharge to a vertical discharge. These actions, combined with the installation of the new baghouse CE010, result in an overall decrease in PM₁₀ emissions, even with the increase in production.

1.4. Facility Emissions:

Table 1. Total Facility Potential to Emit Summary

	PM tpy	PM ₁₀ tpy	SO ₂ tpy	NO _x tpy	CO tpy	VOC tpy	Lead tpy	Single HAP tpy	All HAPs tpy
Total Facility Limited Potential Emissions After Modification	39.3	35.3	1.5	16.0	6.1	80.7	0.5	9.5	13.9
Change From Previously Permitted Total Emissions	-35.2	-18.9	0.4	3.2	0.5	13.0	-0.8	-0.4	4.0
Total Facility Actual Emissions (2003)	52.15	20.62	0.31	0.50	0.29	21.16	0.57	HAPS not reported in E. I.	

Table 2. Facility Classification

Classification	Major/Affected Source	Synthetic Minor	Minor
PSD		X	
Part 70 Permit Program		X	
Part 63 NESHAP		X	

2. Regulatory and/or Statutory Basis

New Source Review

The permit currently includes federally enforceable conditions such that the facility is a non-major source under New Source Review. The proposed modification does not result in emissions greater than the NSR significant increase thresholds.

Part 70 Permit Program

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

New Source Performance Standards (NSPS)

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

National Emission Standards for Hazardous Air Pollutants (NESHAP)

The facility has accepted limits on HAP usage such that it is a non-major source under 40 CFR pt. 63. Thus, no NESHAPs apply.

Minnesota State Rules

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

- Minn. R. 7011.0515 Standards of Performance for New Indirect Heating Equipment
- Minn. R. 7011.0715 Standards of Performance for Post-1969 Industrial Process Equipment
- Minn. R. 7011.2300 Standards of Performance for Stationary Internal Combustion Engines

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

EU, GP, or SV	Applicable Regulations	Comments:
GP 001	Title I limit to avoid NSR	Production limit set to limit criteria pollutant emissions (facility-wide) to less than NSR major source thresholds. This is an increase from the existing limit.
EU051, EU052, EU053, EU054	Minn. R. 7011.0715	Standards of Performance for Post-1969 Industrial Process Equipment
SV002	Minn. R. 7009.0020	Ambient Air Quality Standards. Minimum stack height required in order to model compliance with PM ₁₀ NAAQS. Limit was derived by consultant from CAPS spreadsheet modeling.
SV008	Minn. R. 7009.0020	Ambient Air Quality Standards. Stack must be reconfigured to exhaust vertically rather than horizontally, in order to model compliance with PM ₁₀ NAAQS. Requirement was derived by consultant from CAPS spreadsheet modeling.
EU036	Minn. R. 7009.0020	Ambient Air Quality Standards. Bentonite bin may only be operated 3 hours per day, in order to model compliance with PM ₁₀ NAAQS. Requirement was derived by consultant from CAPS spreadsheet modeling.
GP007	Title I limit to avoid Part 70	Limit on individual HAP from the mixing, pouring, cooling, and shakeout operations. Total HAP for the entire facility is estimated at 13.9 tpy, so no limit on total HAPS is required.

3. Technical Information

3.1 Calculations of Potential to Emit

Attachment 1 to this TSD contains a summary of the PTE of the Facility, including calculations and supporting documentation prepared by the MPCA and the Permittee.

Criteria Pollutant Calculations

Calculations of criteria pollutants were done by the Permittee's consultant. Emissions for foundry operations are based on emission factors from AP-42 Chapter 12, the control efficiency for particulate matter, the maximum capacity of the equipment (for hourly emissions), and the proposed production limit

(for annual emissions). Emissions for combustion units (make up air units) are based on emission factors from AP-42 Chapter 1, maximum capacity of the equipment, 8760 hours per year.

PM and PM₁₀ Controls

All PM and PM₁₀ emissions are considered controlled. The existing configuration of the facility is that ductwork leading to several of the baghouses captures only a portion of the PM and PM₁₀ generated. Uncaptured PM and PM₁₀ are potentially emitted through two roof vents. While realistically a portion of the PM and PM₁₀ settles within the building, for permitting purposes it is assumed to be emitted. As a result of this configuration, a screening level dispersion model of the facility predicted non-compliance with the National Ambient Air Quality Standards (NAAQS) for PM₁₀. To correct this predicted problem, the Permittee plans to replace two existing baghouses with a single larger one, and install a new baghouse capturing emissions at the locations of the two roof vents. In addition, the stack for the wet scrubber must be raised 40 feet, to a final height of 69 feet, and the exhaust stack from the emergency generator must be reconfigured to exhaust upward rather than horizontally. These improvements allow the Permittee to accept a higher production limit while still decreasing overall particulate emissions.

HAP Emissions

HAP emissions for the previous permit (-001) were calculated by the Permittee, based on the "Total HAP Emission Factors for Preliminary Screening Analysis – Iron Foundries," compiled by the American Foundrymen's Society Air Quality Committee and MACT Task Force (10/08/01). The same calculation method was used to estimate the total HAP emissions for the facility for this permit, and is included with Attachment 1 of this technical support document.

Emissions of Total HAPs can be calculated using this method, but not individual HAPs and not on a per-unit basis. Since none of the sources are subject to an applicable requirement for HAPs, the emissions need not be reported on a per-unit basis. However, the rules do require that potential emissions of each individual HAP be reported. Previous information (Modern Castings, October 1994, sometimes used as a source of emissions data for foundries) shows that the expected HAPs from a foundry using green sand binder are acrolein, benzene, formaldehyde, cyanide compounds, naphthalene, xylene, phenol, and toluene. As a worst case, one could assume that the 13.9 tons per year of total HAPs estimated for the facility is comprised of any one of these pollutants, and the facility would then be a major source under Part 70. However, the reality is that a combination of these pollutants will comprise the 13.9 tons per year of total HAPs. Nonetheless, the permit includes a requirement that the Permittee track emissions of individual HAPs for pouring, cooling, shakeout, and mixing sand with binder, using the emission factors in Appendices B and C of the permit, which were derived from "Form R Reporting of Binder Chemicals Used in Foundries," Second Edition (1998), published by the American Foundrymen's Society, Inc. and the Casting Industry Suppliers Association, and "Calculating Emission Factors for Pouring, Cooling and Shakeout," published in the October 1994 edition of Modern Casting which is a monthly publication of the American Foundrymen's Society. The individual HAPs from these activities is limited to 7 tons per year, and the potential individual HAPs from the melting operation is 2.5 tons per year each, for a total permitted rate of 9.5 tons per year of any individual HAP. Thus, the facility is not a major source of HAPs.

3.2 Periodic Monitoring

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

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

- The likelihood of violating the applicable requirements;

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

Table 4 summarizes the periodic monitoring requirements for those emission units affected by the proposed modification, for which the monitoring required by the applicable requirement is nonexistent or inadequate.

Table 4. Periodic Monitoring

Emission Unit or Group	Requirement (basis)	Additional Monitoring	Discussion
GP 001 (melting operations)	Production limit of 55,000 tons of metal melted per year (Title I condition to avoid NSR)	Recordkeeping: Daily records of metal melted; Monthly calculations of 12-month rolling sum	
GP007 (sand/binder mixing operations, pouring, cooling, shakeout)	Individual HAPs: 7 tpy using 12-month rolling sum (Title I condition to avoid Part 63 NESHAPs)	Recordkeeping: Daily records of HAP containing materials used, including HAP content; Monthly records of HAP emissions, 12-month rolling sum	In the previous permit, the facility wide Total HAPs were <10 tpy, so it could be assumed that individual HAPs were also <10 tpy. As a result of the increased production limit allowed by this permit, the Total HAPs are now 13.9 tpy, so the individual HAPs can no longer be assumed to be <10 tpy. Potential HAPs from melting are 2.5 tpy, which could be any one or a combination of several HAPs. Assuming all 2.5 tpy could be a single HAP, individual HAPs from the GP007 activities are limited to 7.0 tpy each, so that no individual HAP may exceed 9.5 tpy.
EU036 (bentonite bin)	Operating hours: limited to 3 hours per day (modeling requirement)	Recordkeeping of hours of operation; Observation of visible emissions	This unit is controlled by a filter, but since there is no induced airflow, there is no pressure drop to monitor. Instead, observation for visible emissions is to occur at each use (filling of the bin).

3.3 Insignificant Activities

Northern Castings has several operations which are classified as insignificant activities. These are listed in Appendix D to the permit. Two activities previously classified as insignificant activities (EU035 and EU036) are now included in Table A of the permit, because they were included in the modeling for PM₁₀

NAAQS, and now have specific conditions applied to them in order to comply with the NAAQS. The remaining insignificant activities require no periodic monitoring, for the following reasons:

- Natural gas fired space heaters and air makeup unit– potential emissions from natural gas combustion are significantly lower than the emissions allowed by the applicable rule
- Metal testing laboratory, holding furnace, painting for miscellaneous housekeeping activities – these all occur within the building, and any particulate emissions that do not fall on the floor will be captured by the baghouse (CE010).

3.4 Permit Organization

In general, the permit meets the MPCA Delta Guidance for ordering and grouping of requirements. One area where this permit deviates slightly from Delta guidance is in the use of appendices. While appendices are fully enforceable parts of the permit, in general, any requirement that the MPCA thinks should be tracked (e.g., limits, submittals, etc.), should be in Table A or B. The main reason is that the appendices are word processing sections and are not part of the tracking system. Violation of the appendices can be enforced, but the computer system will not automatically generate the necessary enforcement notices or documents. Staff must generate these.

3.5 Comments Received

Public Notice Period: 5/11/05 – 6/9/05

Comments were not received from the public or EPA during the public notice period. One letter was received from the Mille Lacs Band of Ojibwe, stating that they had no comments on the permit. No changes were made to the permit following public notice.

4. Conclusion

Based on the information provided by Northern Castings Corporation, the MPCA has reasonable assurance that the proposed operation of the emission facility, as described in the Air Emission Permit No. 13700082-002 and this technical support document, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules.

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 Bob Beresford (enforcement)
 Dan Sullivan (peer reviewer)

Attachments: 1. PTE Summary and Calculation Spreadsheets
 2. Facility Description and CD-01 Forms