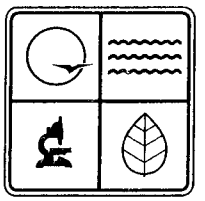
STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION



PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: 102004-001 Project Number: 2003-11-053

Owner: Noranda, Inc.

Owner's Address: 1 Brentwood Commons, Suite 175 - 250 Old Hickory Road, Brentwood, TN 37027

Installation Name: Noranda Aluminum, Inc.

Installation Address: #1 Robbins Road, St. Jude Industrial Park, P.O. Box 70, New Madrid, MO 63869

Location Information: New Madrid County, S32, T22N, R14E

Application for Authority to Construct was made for:

Increase aluminum production at an existing primary aluminum plant. This review was conducted in accordance with Section (8), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required.*

☐ Standard Conditions (on reverse) are applicable to this permit.

☑ Standard Conditions (on reverse) and Special Conditions (listed as attachments starting on page 2) are applicable to this permit.

OCT -4 2004

EFFECTIVE DATE

Leanne Tippett Mosby

DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available not more than 60 days but at least 30 days in advance of this date. Also, you must notify the Department of Natural Resources Regional Office responsible for the area within which you are located within 15 days after the actual start up of this (these) air contaminant source(s).

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed Special Conditions as provided in RSMo 643.075. If you choose to appeal, the Air Pollution Control Program must receive your written declaration within 30 days of receipt of this permit.

If you choose not to appeal, this certificate, the project review, your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Department of Natural Resources has established the Outreach and Assistance Center to help in completing future applications or fielding complaints about the permitting process. You are invited to contact them at 1-800-361-4827 or (573) 526-6627, or in writing addressed to Outreach and Assistance Center, P.O. Box 176, Jefferson City, MO 65102-0176.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention Construction Permit Unit.

2003-11-053

Noranda, Inc.

1 Brentwood Commons, Suite 175 - 250 Old Hickory Road, Brentwood, TN 37027

Noranda Aluminum, Inc.

#1 Robbins Road, St. Jude Industrial Park, P.O. Box 70,
New Madrid, MO 63869

New Madrid County, S32, T22N, R14E

Increase aluminum production at an existing primary aluminum plant. This review was conducted in accordance with Section (8), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

Noranda Aluminum, Inc.
New Madrid County, S29, T22N, R14E

1. Annual Emission Limitation
   A. Noranda Aluminum, Inc. shall emit less than 5,243 tons of Sulfur Oxides (SO_X) from Potlines 1, 2, and 3 (Emission Point ID, EP-59 through EP-64) in any consecutive 12-month period.

   B. Noranda Aluminum, Inc. shall maintain a record of the sulfur content of the petroleum coke used in anode production. The sulfur content must be tested by Noranda Aluminum Inc. or verified by supplier certification. The sulfur content must be used in determining SO_X emissions from Potlines 1, 2, and 3 (Emission Point ID, EP-59 through EP-64).

   C. Attachment A or equivalent forms approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Conditions 1(A) and 1(B). A copy of any sulfur content verification documentation shall be kept with Attachment A. Noranda Aluminum, Inc. shall maintain all records required by this permit for not less than five (5) years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request.

   D. Noranda Aluminum, Inc. shall report to the Air Pollution Control Program's Enforcement Section, P.O. Box 176, Jefferson City, Missouri 65102, no later than ten (10) days after the end of the month during which the records from Special Condition Number 1(C) indicate that the source exceeds the limitation of Special Condition Number 1(A).

2. Emission Limitation for Raw Material Handling
   Noranda Aluminum, Inc. shall not discharge Particulate Matter less than ten microns in diameter (PM_{10}) into the atmosphere from the stacks listed in Attachment B of this permit in excess of the amounts listed in Attachment B of this permit. These emission rates shall be verified through compliance testing, as detailed in Special Condition 6.

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

3. Emission Limitation for Potline 1
   A. Noranda Aluminum, Inc. shall achieve the Best Available Control Technology (BACT) limitation for PM_{10} of 50.28 pounds per hour from Potline 1 Monitor (EP59, BLP-1a & BLP-1b).

   B. Noranda Aluminum, Inc. shall achieve the BACT limitation for PM_{10} of 29.00 pounds per hour from Potline 1 & 2 Stack (EP61).

   C. Noranda Aluminum, Inc. shall achieve the BACT limitation for Carbon Monoxide (CO) of 2,391 pounds per hour from Potline 1 & 2 Stack (EP61).

   D. Noranda Aluminum, Inc. shall achieve the BACT limitation for combined fluorides of 1.9 pounds per ton of aluminum produced from Potline 1 Monitor (EP59, BLP-1a & BLP-1b) and Potline 1 & 2 Stack (EP61).

4. Emission Limitation for Potline 2
   A. Noranda Aluminum, Inc. shall achieve the BACT limitation for PM_{10} of 31.14 pounds per hour from Potline 2 Monitor (EP60, BLP-2c & BLP-2d).

   B. Noranda Aluminum, Inc. shall achieve the BACT limitation for combined fluorides of 1.9 pounds per ton of aluminum produced from Potline 2 Monitor (EP60, BLP-2c & BLP-2d).

5. Emission Limitation for Potline 3 East and West
   A. Noranda Aluminum, Inc. shall achieve the BACT limitation for PM_{10} of 22.27 pounds per hour from Potline 3 Monitor (EP64, BLP-3e & BLP-3f).

   B. Noranda Aluminum, Inc. shall achieve the BACT limitation for PM_{10} of 7.25 pounds per hour from Potline 3 East Stack (EP62) and 7.25 pounds per hour from Potline 3 West Stack (EP63).

   C. Noranda Aluminum, Inc. shall achieve the BACT limitation for CO of 1,469 pounds per hour from Potline 3 East Stack (EP62) and 1,469 pounds per hour from Potline 3 West Stack (EP63).

   D. Noranda Aluminum, Inc. shall achieve the BACT limitation for combined fluorides of 1.9 pounds per ton of aluminum produced from Potline 3 East Stack (EP62), Potline 3 West Stack (EP63), and Potline 3 Monitor (EP64, BLP-3e & BLP-3f).

6. Compliance Testing Requirements

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

A. Initial stack tests shall be performed to verify that the emission limitations set in Special Conditions 3, 4, and 5 are not exceeded. These tests shall be performed as specified in the Stack Test Procedures outlined in Special Condition 7.

B. Noranda Aluminum, Inc. shall conduct performance testing on the equipment listed in Attachment B sufficient to quantify the emission rates of PM_{10} from these sources as specified in Special Condition 2. This testing may be limited to conducting tests on a representative piece(s) of each type of equipment upon approval by the Director. In addition, an alternate method(s) of quantifying the emission rates of PM_{10} from these sources may be used in place of the above testing requirement if requested by Noranda Aluminum, Inc. and approved by the Director.

C. Performance tests shall be performed within sixty (60) days after achieving the maximum production rate of the installation, but not later than 180 days after initial start-up of each aluminum potline. These tests shall be performed according to the requirements found at 40 CFR Part 63 Subpart LL and Subpart RR and 40 CFR Part 60 Subpart S, as applicable. These performance testing will be supplemented with the appropriate PM_{10}, CO, and fluoride test methods to demonstrate compliance with Special Conditions 3, 4, and 5. These performance tests shall comply with Special Condition 8.

7. Proposed Test Plan

A. The date on which the initial performance tests are conducted must be pre-arranged with the Air Pollution Control Program (APCP) a minimum of 30-days prior to the proposed test date so that this Program may arrange a pretest meeting, if necessary, and assure that the test date is acceptable for an observer to be present. A completed Proposed Test Plan form (copy enclosed) may serve the purpose of notification and must be approved by the APCP prior to conducting the required emission testing.

B. Two copies of a written report of the performance test results shall be submitted to the Director of the APCP within 30-days of completion of any required testing. The report must include legible copies of the raw data sheets, analytical instrument laboratory data and complete sample calculations from the required EPA Method for at least one sample run.

C. The test report is to fully account for all operational and emission parameters addressed both in the permit conditions as well as in any other

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

applicable state or federal rules or regulations.

D. If the performance testing required by Special Conditions 6 of this permit indicate that any of the emission rates or control efficiencies specified in Special Conditions 3, 4, and 5 are being exceeded, Noranda Aluminum, Inc. must propose a plan to the APCP within thirty (30) days of submitting the performance test results. This plan must demonstrate how Noranda Aluminum, Inc. will reduce the emission rates below those stated in Special Condition 3, 4, and 5. Noranda Aluminum, Inc. shall implement any such plan immediately upon its approval by the Director.

E. In accordance with the PSD permit application, and historical PM_{10} emission calculations at the facility, PM_{10} emissions can be calculated using reference test Method 5 multiplied by the industry specific Source Classification Code (SCC) factor which states that 58% of all PM is PM_{10}.

8. Capture and Control Equipment Requirements – PM_{10} Emissions

A. Noranda Aluminum, Inc. shall capture emissions from the Potlines 1, 2 & 3 using capture hoods as specified in the permit application for a capture efficiency of at least 95 percent to achieve the BACT.

B. Noranda Aluminum, Inc. shall control emissions from the Potlines 1, 2 & 3 using a dry alumina scrubber connected to baghouses as specified in the permit application for a control efficiency of at least 97 percent to achieve the BACT.

C. The capture hoods and dry alumina scrubber with baghouses must be in use at all times when the aluminum potlines are in operation. The dry alumina scrubber with baghouse shall be operated and maintained in accordance with the manufacturer's specifications.

D. The dry alumina scrubber with baghouses shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. These gauges or meters shall be located such that the DNR employees may easily observe them. Replacement filters for the baghouses shall be kept on hand at all times. The bags shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).

E. Noranda Aluminum, Inc. shall monitor and record the operating pressure drop across the dry alumina scrubber with baghouses at least once every

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

24 hours. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.

F. Noranda Aluminum, Inc. shall develop and maintain a monitoring plan that:
   1) Identifies the operating parameter(s) to be monitored to assure capture efficiency,
   2) Explains why this parameter is appropriate for demonstrating ongoing compliance,
   3) Identifies the specific monitoring procedures,
   4) Specifies the operating parameter value or range of values (or the procedures for establishing the values) that shall be maintained to demonstrate capture efficiency is being maintained, and
   5) Complies with all operating and maintenance requirements established in all consent agreements.

G. The capture efficiency operating parameter(s) identified in Special Condition 8(F) shall be monitored when the aluminum potlines are in operation. The frequency of the monitoring shall be performed sufficiently to ensure compliance with the efficiencies stated in Special Conditions 8.A and 8.B. The most recent sixty (60) months of records shall be maintained on-site and shall be made immediately available to Missouri Department of Natural Resources' personnel upon request.

H. Noranda Aluminum, Inc. shall maintain an operating and maintenance log for the capture and control systems (enclosures and scrubber with baghouse) for a period of (60) sixty months which shall include the following:
   1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
   2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
   3) A written record of regular inspection schedule, the date and results of all inspections including any actions or maintenance activities that result from that inspection.

9. Restriction of Public Access
Noranda Aluminum, Inc. shall preclude all public access to Noranda Aluminum, Inc.'s declared property boundary. Noranda Aluminum, Inc. shall submit documentation to demonstrate preclusion to the Air Pollution Control Program for review and approval.

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

10. Fluoride Modeling and Monitoring Requirements
Noranda Aluminum, Inc. shall install, operate and maintain a system of ambient air monitoring stations for fluoride. Noranda Aluminum, Inc. shall install, operate and maintain this ambient fluoride monitoring network according to the following specifications:

A. A modeling protocol shall be submitted to the Air Quality Modeling Unit not later than 90 days after the issuance of the permit outlining the methodology that will be used to evaluate the ambient impact of fluorides.

B. The initial fluoride monitoring network approved under this permit shall consist of at least three (3) ambient monitors.

C. Noranda Aluminum, Inc. will conduct meteorological monitoring in conjunction with the fluoride monitoring plan. This meteorological monitoring will occur at a minimum of one (1) site as described by an approved Quality Assurance Project Plan (QAPP) for meteorological data and continue for the duration of the fluoride monitoring.

D. Noranda Aluminum, Inc. shall locate all fluoride monitors such that the monitors will measure *ambient* air quality, as approved by the department.

E. Noranda Aluminum, Inc. shall report the data collected in accordance with this special condition to the department on a quarterly basis.

F. If concentrations are monitored that exceed the Risk Assessment Level (RAL), Noranda Aluminum, Inc. shall report the monitored information (the beginning and ending date and time, and the value for the applicable standard time period) within seven (7) days of receiving quality assured monitor results from the lab responsible for measuring the filter concentrations.

G. Concentrations resulting from this monitoring greater than the RAL and attributed to operations permitted herein represent cause for reopening this permit. Noranda Aluminum, Inc. shall:
   1) conduct a comprehensive review of the results and develop a correction plan;
   2) submit the corrective action plan to the permitting authority for approval; and,
   3) implement the corrective action plan immediately upon department approval.

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

H. Noranda Aluminum, Inc. shall submit a QAPP for fluoride to the MDNR for approval no more than 90 days from the completion of the AAQIA for fluoride. This submission shall include a reasonable schedule for program implementation.

I. The QAPP will contain the specifications of the monitoring program noted above and include:
   1) the conditions under which the monitoring may be discontinued;
   2) the date the sampling will commence. Sampling will begin no later than 90 days after the submittal of the QAPP; and,
   3) the nature of the information to be reported (e.g. daily concentrations).

J. In conjunction with the fluoride monitoring program above, Noranda Aluminum, Inc. shall perform a risk assessment study. Noranda Aluminum, Inc. should contact the Air Pollution Control Program to establish the minimum criteria that must be met for collection and reporting purposes. If the risk assessment indicates that adverse health impact are likely, Noranda Aluminum Inc. shall:
   1) conduct a comprehensive review of the results and develop a correction plan;
   2) submit the corrective action plan to the permitting authority for approval; and,
   3) implement the corrective action plan immediately upon department approval.

11. Post–Construction Sulfur Dioxides and PM_{10} Modeling Requirement

A. Noranda Aluminum, Inc. shall submit a full impact analysis for SO_2 and PM_{10} that considers the impact of the entire installation itself, in addition to other interactive sources within the region. All SO_2 and PM_{10} sources at the installation should be included in the analyses. The analyses shall be used to verify compliance with the National Ambient Air Quality Standards (NAAQS) of SO_2 and PM_{10}.

B. A modeling protocol shall be submitted to the Air Quality Modeling Unit not later than 90 days after the issuance of the permit outlining the methodology that will be used to evaluate the ambient impact of SO_2 and PM_{10}.

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

C. If results from the full impact analysis show that the SO_2 and/or PM_{10} emissions contribute to or cause the NAAQS to be exceeded, Noranda Aluminum, Inc. shall submit a corrective action plan to the Missouri Department of Natural Resources, Air Pollution Control Program. This corrective action plan shall be submitted within 90 days of completion of the full impact analysis and shall include post-construction monitoring as well as details on how the installation will decrease SO_2 and/or PM_{10} emissions in order to comply with the NAAQS.

D. Upon the Air Pollution Control Program's approval of the corrective action plan, Noranda Aluminum, Inc. shall implement the plan within 90 days of the receipt of the full impact analysis.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (8) REVIEW
Project Number: 2003-11-053
Installation ID Number: 143-0008
Permit Number:

Noranda Aluminum, Inc.
#1 Robbins Road
St. Jude Industrial Park, P.O. Box 70
New Madrid, MO 63869

Complete: April 6, 2004
Reviewed: June 4, 2004

Parent Company:
Noranda, Inc.
1 Brentwood Commons
Suite 175 - 250 Old Hickory Road
Brentwood, TN 37027

New Madrid County, S32, T22N, R14E

REVIEW SUMMARY

- Noranda Aluminum, Inc. has applied for authority to increase aluminum production.

- Hazardous Air Pollutants (HAP) emissions are expected from the proposed equipment. The HAP of concern for this review is hydrogen fluoride (HF).

- Subpart S of the New Source Performance Standards (NSPS) applies to the potroom groups and anode bake plants at this primary aluminum reduction plant.

- The Maximum Achievable Control Technology (MACT) standard, 40 CFR Part 63, Subpart LL, National Emission Standards for Primary Aluminum Reduction Plants, and Subpart RRR, National Emission Standards for Secondary Aluminum Production, applies to the proposed equipment.

- Applicable control equipment following BACT is being used for the aluminum potlines.

- The increase in the potential emissions of CO, PM_{10} and fluoride are above de minimis levels, and the existing installation is considered a major source. Therefore, this review was conducted in accordance with Section (8) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

- This installation is located in New Madrid County, an attainment area for all criteria air pollutants.

- This installation is on the List of Named Installations [10 CSR 10-6.020(3)(B), Table 2, Number 6 *Primary Aluminum Ore Reduction Plants*].

- Ambient air quality modeling was performed to determine the ambient impact of CO, PM_{10} and fluoride.

- Emissions testing is required for the source to demonstrate compliance with NSPS and MACT Standards and emissions limitations set forth in this construction permit.

- Revision to the Part 70 Operating Permit application is required for this installation within 1 year of equipment startup.

- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Noranda Aluminum, Inc. operates a primary aluminum refining operation in New Madrid County. The company is an existing primary aluminum reduction installation but is also involved in secondary aluminum production. Alumina (Al_2O_3) is received at the plant and undergoes electrolytic reduction, known as the Hall-Heroult process, to obtain aluminum. The electrolytic reduction takes place in shallow carbon-lined steel shells called pots. The anodes are carbon electrodes extending into the pot, and the cathode is the carbon lining within the pot.

In the reduction of alumina, carbon, in the form of an anode, is negatively charged to react with the alumina. The carbon anode, also called green anode, is continuously depleted until a remnant or "butt" remains. These anodes are prepared with petroleum coke mixed with pitch binder to make a paste. The coke is crushed, ground, and screened before being mixed with the pitch binder. The paste is added directly to the anode casings and baked in a pre-bake furnace. This type of aluminum reduction cell is most common because it is more efficient electrically and it emits fewer organic compounds than other forms of reduction cells.

The electrolyte is molten cryolite (Na_3AlF_6) which also serves as the solvent for alumina. The electrolytic reduction of alumina by the carbon from the electrode forms elemental aluminum and carbon dioxide (CO_2). The aluminum is deposited around the carbon-lined steel shell, where it remains as a molten metal below the surface of the cryolitic bath. Using a vacuum siphon, the aluminum is removed from the pots every 24 to 48 hours and transferred to a reverberatory holding furnace. From there, it is either cast or transported to the holding facilities.

Noranda Aluminum, Inc. is considered a major source under construction and operating permits. Four separate Part 70 Operating Permits were issued to Noranda Aluminum, Inc. for the entire installation. The following permits have been issued to Noranda Aluminum, Inc. from the Air Pollution Control Program.

Table 1: Air permits issued

Permit Number	Description
0679-008	Potline I
0679-009	Alumina handling facilities associated with potline III
0679-010	Potline III
0679-011	Carbon baking furnace for potline III
1282-007A	Dross cooling system
1288-003A	Dross cooling system
0990-013	Additional melting furnace
0194-008	Reverberatory melting furnace
0894-022	Filtered exhaust system
OP2001-066	Part 70 Operating Permit Primary Aluminum Reduction Facility
OP2001-032	Part 70 Operating Permit Primary Aluminum Reduction Facility
OP2001-062	Part 70 Operating Permit Primary Aluminum Reduction Facility
OP2001-033	Part 70 Operating Permit Primary Aluminum Reduction Facility
0298-001	Replacement of existing batch mixers for anode paste with continuous mixer and the replacement of the existing hydraulic press anode mold with a turntable vibratory anode former to produce a larger single piece anode
0799-017	Addition of a downdraft welding table
082001-005	Installation of two 80,000 pound holding furnaces, 20 MMBTU per hour each

PROJECT DESCRIPTION

Noranda Aluminum, Inc. has applied for authority to increase aluminum production at their existing installation by twelve percent. The maximum hourly design rate (MHDR) set forth in Permit Number 0679-008 through 011 was 8 tons of aluminum per hour and 9.7 tons of aluminum per hour for potline 1-2 and potline 3, repectively. Noranda Aluminum, Inc. now proposes an MHDR of 10.4 tons of aluminum per hour and 12.8 tons of aluminum per hour for potline 1-2 and potline 3, repectively. This amounts to facility design rate of 33.6 tons of aluminum per hour. Production can be redistributed to among the three potlines provided that none of the emission limits included in the special conditions of this permit are exceeded.

To increase production, Noranda Aluminum, Inc. plans to increase the usage of the green anode in the production of aluminum. This will involve an increased usage of the coke and pitch necessary for the production of green anode. However, emissions from the increased handling of coke and pitch are not considered in this evaluation. Noranda Aluminum, Inc. has proposed to limit PM_{10} emissions from all coke and pitch handling operations to a value equivalent to the average actual emission rate demonstrated in the past two years.

Similarly, although ore usage will also increase with increased aluminum production, emissions from the increased usage of ore will not be considered in this evaluation. Noranda Aluminum, Inc. has proposed to limit PM_{10} emissions from all ore handling operations also to a value equivalent to the average actual emission rate demonstrated in the past two years.

These material handling emissions points are all currently controlled via baghouses to reduce PM_{10} emissions. Noranda Aluminum, Inc. contends that the hourly emission

rate of PM_{10} from sources with a baghouse is constant and dependent only on the grain loading and airflow to the baghouse. To demonstrate this claim, Noranda Aluminum, Inc. submitted a review of site specific source test data collected from baghouses for Potline 3. The results showed that particle concentration remained constant compared against a varying daily production rate. It was also noted that the baghouses and associated fans could operate only in an on/off manner, and the air flow rates remain constant.

Since this information was relied upon to estimate the potential emissions for the project, Special Condition 2 has been included which sets an emissions limitation on all material handling operations. Noranda Aluminum, Inc. is required to demonstrate compliance with the limitations by testing as required by Special Condition 6.B. As such, no emissions increase is expected from these emissions points.

Since carbon anode usage will remain the same, the increase in aluminum production will only increase the amount of each carbon anode consumed. The non-consumed portion of the anode is cooled and ground for recycling into new anodes. The number of green anodes produced will remain the same. Subsequently, associated equipment used in anode production such as the carbon bake furnaces, boilers for the hot oil system, anode repair operations, and roof vents and fans in these arease will not experience a production increase.

Lastly, secondary aluminum production will not experience a production increase. Therefore, equipment related to secondary aluminum production such as the equipment associated with pig melters, holders, homogenizing furnaces, and roof vents and fans in the area, will not experience a production increase.

The increase in aluminum production will be accomplished by increasing the electric current sent to the aluminum pots, which will include modification to the existing electrical rectifier. Although the rectifier itself is not considered an emission point (i.e. does not emit pollutants), the installation of the rectifier is considered a modification since it is a physical change and a change in the method of operation. In this case, the applicant cannot increase the rate of production without the rectifier modification. In addition, since the proposed production rate is greater than the permitted production rate in Permit Number 0679-008 through 011, pre-construction review is necessary. Therefore, any emissions increase at the potlines due to the increase in production has been considered in the evaluation of this permit. Equipment associated with the increase in aluminum production are listed in Table 2.

Table 2: Emission Points Experiencing an Emissions Increase

Emission Point	Description	Maximum Hourly Design Rate Proposed in Application
EP-59	Monitor – Potline 1	10.4 tons of molten Al Produced
EP-60	Monitor – Potline 2	10.4 tons of molten Al Produced
EP-61	Stack for Potline 1 & 2	20.8 tons of molten Al Produced
EP-62	Stack for Potline 3 East	6.4 tons of molten Al Produced
EP-63	Stack for Potline 3West	6.4 tons of molten Al Produced
EP-64	Monitor – Potline 3	12.8 tons of molten Al Produced

EMISSIONS/CONTROLS EVALUATION

The emission factors used in this analysis were obtained from the Environmental Protection Agency (EPA) database Factor Information Retrieval (FIRE) Data System Version 6.23 using the Source Classification Codes identified in the application for each emissions point. On-site monitoring data stack performance data was also used to in the evaluation of potential emissions.

Emissions from the aluminum reduction process are primarily gaseous fluorides and particulate fluorides, alumina, carbon monoxide (CO), carbon dioxide (CO_2), VOC and SO_2 from the redution cells. Gaseous fluorides are emitted in the form of hydrogen fluorides. The source of fluoride emissions from reduction cells is the fluoride electrolyte, which contains cryolite, aluminum fluoride (AlF_3), and fluorspar (CaF_2). The dissociation of the molten cryolite is the source of the perfluorinated carbon compounds tetrafluoromethane (CF_4) and hexafluoroethane (C_2F_6), which are produced as a result of an anode effect. Particulate emissions occur from the reduction cells and include alumina and carbon from anode dusting, cryolite, aluminum fluoride, calcium fluoride, and ferric oxide. The primary source of the CO and CO_2 emissions is the carbon in the anodes from the petroleum coke.

Currently, to control gaseous and partuculate fluorides and particulate emissions, Noranda uses dry alumina scrubbers with baghouses. Gaseous and particulate emissions from the pots are captured by enclosed hoods and drawn through a dry alumina scrubber followed by a baghouse.

Emission rates of PM_{10}, CO and fluorides from the potlines were based on a detailed BACT analysis for minimizing these pollutants. This is discussed further in the BACT analysis section of this permit. Table 3 provides a summary of control technologies used to control potline emissions.

Table 3: Potline Emissions Control Technologies

Pollutant	Control Technology
PM_{10}	Capture Hoods and Dry Alumina Scrubber with Baghouse
CO	Good Design and Operation
fluorides	Capture Hoods and Dry Alumina Scrubber with Baghouse

Sulfur oxides (SO_X) in the potlines originate from the sulfur in the anode petroleum coke. Noranda Aluminum Inc. has requested a de minimis limitation on the increase in sulfur emissions from the entire installation. The increase is based on the two-year past actual emissions as reported in the Emissions Inventory Questionnaire (EIQ). An outline of the emissions increase for sulfur can be seen in Table 4.

Table 4: Summary of Emissions Increase for SO_x

Actual SO_x emissions from the year 2002	5,066 tons
Actual SO_x emissions from the year 2003	5,342 tons
Two year average actual SO_x emissions	5,204 tons
De minimis increase	39 tons
New SO_x emissions limitation	5,243 tons

During the review of this project, it was determined that Noranda Aluminum, Inc. had under reported actual emissions of SO_X since 1998. Details regarding the SO_X emissions discrepancy is contained in the Comments and Responses Section of this permit. Table 5 displays the difference in emission for the last six years.

Table 5: Reported and Actual SO_X Emissions Comparison

Year	Potrooms SO_X Emissions Reported in EIQ (tons)	Actual Potrooms SO_X Emissions (tons)	Difference (tons)
1998	3,915	4,598	683
1999	3,649	4,480	831
2000	3,396	4,150	754
2001	3,386	4,464	1,078
2002	3,740	5,066	1,326
2003	2,987	5,342	2,355

Column #2 contains data calculated by use of sulfur in anode based on an incorrect calibration standard. Column #3 contains data calculated by use of vendor's Certificate of Analysis reports for sulfur content in coke consumed in anodes.

Since Noranda requested a de minimis increase of SO_x emissions, a Prevention of Significant Deterioration (PSD) review (i.e. BACT review, dispersion modeling, etc) was not performed. However, the initial PSD's done in 1980 (construction permits 0679-008 through 0679-011) demonstrated that the modeled SO_2 emissions of the installation were 96% of the NAAQS. Due to increased emission rates, the initial PSD modeling performed in 1980 and the recently discovered SO_X reporting error, Special Condition 11 was placed in this permit to verify current compliance with the NAAQS.

HAPs in the form of gaseous fluorides, including hydrogen fluoride, and polycyclic organic matter, is emitted from the aluminum potlines. These emissions are limited under the MACT standard Subpart LL and are not subject to the requirements of 10 CSR 10-6.060(9).

Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8760 hours per year). Existing potential emissions were determined using information on each emission point submitted with the current application. Existing actual emissions were taken from the 2003 EIQ. The following table provides an emissions summary for this project.

Table 6: Emissions Summary (tons per year)

Pollutant	Regulatory *De Minimis* Levels	Existing Potential Emissions	Existing Actual Emissions (2003 EIQ)	Potential Emissions of the Application	Potlines 1, 2, & 3 Conditioned Potential
PM_{10}	15.0	1,275	620.9	191	N/A
SOx	40.0	3,992	5,706**	>40***	5,243***
NOx	40.0	170	38.27	0.04	N/A
VOC	40.0	78	226.53	1.5	N/A
CO	100.0	34,587	20,256.92	3,355	N/A
Fluorides	3.0	335	N/D	59	N/A
HAPs	10.0/25.0	N/D	135.21	N/D	N/A

*N/A = Not Applicable; N/D = Not Determined

** Emissions of SO_x have been underestimated and were not accurately reported in the recent EIQ. This number has been determined to be the most accurate account of SO_x emissions at Noranda.

*** Since potential SO_x emissions for the project were greater than de minimis, Noranda has taken a de minimis limitation of SO_x based on the two-year past actual emissions as reported in the EIQ.

BACT ANALYSIS

Any source subject to Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, Section (8) must conduct a Best Available Control Technology (BACT) analysis on any pollutant emitted in greater than de minimis levels. The BACT requirement is detailed in Section 165(a)(4) of the Clean Air Act, at 40 CFR 52.21 and 10 CSR 10-0.60(8)(B).

A BACT analysis is done on a case by case basis and is performed using a "top down" method. The following steps detail the top-down approach:

1. Identify all potential control technologies – must be a comprehensive list, it may include technology employed outside the United States and must include the Lowest Achievable Emission Rate (LAER) determinations.
2. Eliminate technically infeasible options – must be well documented and must preclude the successful use of the control option.
3. Rank remaining control technologies – based on control effectiveness, expected emission rate, expected emission reduction, energy impacts, environmental impacts, and economic impacts.
4. Evaluate the most effective controls – based on case by case consideration of energy, environmental, and economic impacts.
5. Select BACT.

The proposed phased construction is subject to the PSD regulations, which mandate that case-by-case BACT analyses be performed. As a consequence, BACT demonstrations are presented for PM_{10}, CO, and fluorides. Emission sources considered in the analysis include the potlines 1, 2 and 3. The BACT analysis was based on the U.S. EPA RACT/BACT/LAER Clearinghouse (RBLC) database, vendor information and guarantees, and previous permits for primary aluminum plants issued in the State of Missouri and elsewhere. Since the potlines are subject to 40 CFR 63 Subpart LL and 40 CFR 60 Subpart S, the BACT determination will be at least as

stringent as these standards.

Control of PM_{10} and Fluoride Emissions

The net emissions increase of PM_{10} and fluoride due to the proposed modification are significant and trigger major review for each pollutant. The fluorides emitted form the potlines are emitted as gaseous and particulate fluorides. For the BACT analysis, PM_{10} and fluoride emissions would be controlled using the same technology. Therefore, PM is being used to account for PM_{10} and fluorides for this BACT analysis. Table 7 lists all control technologies identified in the RBLC database for the potlines with control efficiencies. All the technologies listed are technically feasible.

Table 7: PM control technologies

Control Technology	Control Efficiency
Capture Hood and Dry Alumina Scrubber with Baghouse	85-95% Capture 97% Control
Dry Alumina Scrubber with Baghouse	97%
Wet Scrubber	90%

Rank and Evaluation of Control Options for PM_{10} and Fluoride Emissions

Capture Hood and Dry Alumina Scrubber with Baghouse

Potline emissions are captured by a hood and vented through the control device, to the atmosphere through a stack. Uncaptured fugitive emissions are released from the roof vents. Capture hoods have a capture efficiency of 85-95%. The applicant has proposed 95% capture efficiency that will be maintained through an inspection and maintenance program to repair or replace damaged hoods and seals.

The potline emissions consist of gaseous fluorides and particulates that react with alumina to form a stable compound. The injection type scrubber consists of a simple vertical venturi reactor to promote the contact between the gravity injected alumina and the upflow process gases. The reactor is followed by a fabric filter, which collects the alumina and the particulate fluorides. The overall control efficiency of this system is 97%.

Wet Scrubber

The applicant has chosen the top control alternative. Therefore, no further analysis was evaluated for the remaining control options.

Selection PM_{10} and Fluoride Control Technology

In conclusion, for the aluminum potlines, BACT for the control of PM_{10} and fluoride is the use of capture hoods, with a capture efficiency of 95%, vented to dry alumina scrubbers connected to a baghouse for an overall control efficiency of 97%.

The tables provided below are a summary of the PM_{10} and fluoride emission rates and emission factors Noranda are required to meet for Potlines 1 & 2 and Potline 3.

Table 8: Potlines 1 & 2 Emission Rate/Factor Compliance Summary.

Emission Point	Description	Pollutant	Emission Rate (lbs/hr)
EP-61	Potline 1 & 2 Stack	PM_{10}	29.00
EP-59 (BLP-1a & BLP-1b)	Potline 1 Monitors	PM_{10}	50.28
EP-60 (BLP-2c)/(BLP-2d)	Potline 2 Monitors	PM_{10}	31.14
EP-61	Potline 1 & 2 Stack	Fluorides	1.9*
EP-59 (BLP-1a)/(BLP-1b)	Potline 1 Monitors	Fluorides	1.9*
EP-60 (BLP-2c)/(BLP-2d)	Potline 2 Monitors	Fluorides	1.9*

** Units are in pounds per ton of aluminum produced.*

Table 9: Potline 3 Emission Rate/Factor Compliance Summary.

Emission Point(s)	Description	Pollutant	Emission Rate (lbs/hr)
EP-62	Potline 3 East Stack	PM_{10}	7.25
EP-63	Potline 3 West Stack	PM_{10}	7.25
EP-64 (BLP-3e)/(BLP-3f)	Potline 3 Monitors	PM_{10}	22.27
EP-62	Potline 3 East Stack	Fluorides	1.9*
EP-63	Potline 3 West Stack	Fluorides	1.9*
EP-64 (BLP-3e)/(BLP-3f)	Potline 3 Monitors	Fluorides	1.9*

** Units are in pounds per ton of aluminum produced.*

Control of CO Emissions

The net emissions increase of CO due to the proposed modification is significant and trigger major review. Table 10 lists the control technologies identified in the RBLC database for the potlines.

Table 10: CO control technologies

Control Technology
Catalytic Oxidation
Thermal Oxidation
Regenerative Thermal Oxidation
Good Design/Operation

Technically Infeasible Control Options for CO Emissions

Catalytic Oxidation

In catalytic oxidation, the exhaust stream is passed over a bed of catalyst to convert CO emissions to carbon dioxide. In this case, catalytic oxidation is not considered technically feasible due to exhaust temperature and catalyst poisoning.

Typically, the exhaust stream is delivered to the catalyst at a minimum temperature of 450-500 degrees Fahrenheit. The current temperature from the primary and secondary exhaust streams for the potlines is 95-200 degrees Fahrenheit, which is too low for proper catalytic oxidation.

In addition, catalysts used for oxidation are subject to poisoning, particularly from the materials found in the potline exhaust stream, which consists of particulate matter, SO_2, fluoride and metals. Due to the high concentration of these materials, chances of poisoning increases, and the feasibility of this control technology is reduced.

According to the Air Pollution Control Technology Fact Sheet for Regenerative Oxidation, Document number EPA-452/F-03-021 (see attached), it lists that "catalyst poisoning exists" and "may cause catalyst deactivation". In addition, the FRTR – Remediation Technologies Screening Matrix and Reference Guide, Version 4.0 - 4.57 Oxidation (see attached), lists factors that may limit applicability and effectiveness, one such factor is;

"If sulfur or halogenated compounds or high particulate loadings are in the emissions stream, the catalyst can be poisoned/deactivated and require replacement."

Due to the high concentrations of catalyst fouling material in the exhaust stream and oxidation catalysts have not been used to control CO emissions from a potline for the primary aluminum production industry, oxidation catalysis technology is not technically feasible and is not considered further as a viable CO control technology. In addition, the incompatible exhaust stream temperature creates economics and environmental impacts.

Regenerative Thermal Oxidation

RTO units are distinguished from other thermal incinerators by their ability to recover heat at high efficiency. RTOs employ a multitude of chambers that store and recycle heat energy. Typically, this technology uses high temperatures to convert VOCs and other odor causing emissions into carbon dioxide and water vapor using a cycling heat recovery process. Heat recovery chambers, outfitted with ceramic beds, are used to absorb most of the heat energy from the combustion chamber and are used to preheat the exhaust stream before it enters the combustion chamber.

Ceramic beds, typically used in an RTO, are comprised primarily of alumina and silica, which are susceptible to corrosion by hydrogen fluoride emissions present in the potline exhaust. Since no suitable alternative material has been found for usage in an RTO, it

is considered technically infeasible.

Rank and Evaluation of Control Options for CO Emissions

Thermal Oxidation

The objective of thermal oxidation is to transform oxidizable pollutants, especially hydrocarbons, into other hydrogen compounds and carbon monoxide. To further oxidize CO to carbon dioxide would require temperatures of approximately 1,500 degrees Fahrenheit to achieve 90 to 95 percent conversion. To increase the temperature of the potline exhaust stream, afterburner controls would be required.

For a process of this type, burning additional fuel is considered counterproductive for emission control. The conditions promoted in CO thermal oxidation are favorable for additional NO_x, SO_x and CO production. Any reduction in CO emissions would increase NO_x, SO_x and CO emissions due to fuel combustion. In fact, the amount of fuel needed to combust CO emissions would produce over 1,000 tons of NO_x. Therefore, thermal oxidization is considered environmentally infeasible.

Good Design and Operation

According to the RBLC database, no other primary aluminum facility has employed add-on controls for the reduction of CO emissions. For potlines at Noranda Aluminum Inc., good design and operation would result in emissions of 2,391 pounds per hour from Potline 1 & 2 Stack (EP-61) and 1,469 pounds per hour each from Potline 3 East Stack (EP-62) and Potline 3 West Stack (EP-63). Since the alternative control methods previously mentioned are considered technically or environmentally infeasible, good design and operation is considered BACT.

Selection CO Control Technology

In conclusion, BACT for the control of CO from the aluminum potlines is the use of good design and operation and Noranda is therefore required to meet the following emission rates:

Table 11: CO Emission Rate Summary.

Emission Point	Description	Emission Rate (lbs/hr)
EP-61	Potline 1 & 2 Stack	2,391
EP-62	Potline 3 East Stack	1,469
EP-63	Potline 3 West Stack	1,469

*N/A = Not Applicable; N/D = Not Determined

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (8) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of PM_{10}, CO and fluorides are above de minimis levels.

APPLICABLE REQUIREMENTS

Noranda Aluminum, Inc. shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information,* 10 CSR 10-6.110
  The emission fee is the amount established by the Missouri Air Conservation Commission annually under Missouri Air Law 643.079(1). Submission of an Emissions Inventory Questionnaire (EIQ) is required April 1 for the previous year's emissions.

- *Operating Permits*, 10 CSR 10-6.065

- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170

- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220

- *Restriction of Emission of Odors*, 10 CSR 10-3.090

SPECIFIC REQUIREMENTS

- *Restriction of Emission of Particulate Matter From Industrial Processes*, 10 CSR 10-6.400

- *New Source Performance Regulations*, 10 CSR 10-6.070 – *New Source Performance Standards (NSPS) for Primary Aluminum Reduction Plants*, 40 CFR Part 60, Subpart S

- *Maximum Achievable Control Technology (MACT) Regulations*, 10 CSR 10-6.075, *National Emission Standards for Secondary Aluminum Production,* 40 CFR Part 63, Subpart RRR

- *Maximum Achievable Control Technology (MACT) Regulations*, 10 CSR 10-6.075, *National Emission Standards for Primary Aluminum Reduction Plants,* 40 CFR Part 63, Subpart LL

- *Restriction of Emission of Sulfur Compounds*, 10 CSR 10-6.260

AMBIENT AIR QUALITY IMPACT ANALYSIS

The ambient air quality impact analysis (AAQIA) must be completed for any air contaminant that exceeds the *de minimis* emission levels outlined in 10 CSR 10-6.020 subsection (3)(A) Table 1. The following table lists the air contaminants, rates of emission and their associated *de minimis* levels:

Table 12: Air Quality Analysis Summary.

Air Contaminant	De Minimis Level	Noranda's Emission Rate in Application	AAQIA Necessary
Carbon monoxide (CO)	100.0	4,865	Yes
Particulate Matter (PM_{10})	15.0	245	Yes
Fluoride	3.0	50.0	Yes

Note: All number values in table have the units of measure of tons per year.

Based upon emission estimates provided by Noranda Aluminum, Inc., PM_{10}, CO, and Fluoride exceed the *de minimis* levels, thereby triggering the requirement to perform a comprehensive air quality analysis.

The AAQIA was performed to determine the impact of PM_{10}, CO, and fluoride emissions at or beyond the property boundary of the proposed Noranda Aluminum's facility. Additional impacts on visibility, growth, soils, plants and animals were also evaluated within the Class II area surrounding the facility. Please refer to the August 31, 2004 memorandum from the Air Quality Analysis Section, entitled, "Revised Ambient Air Quality Impact Analysis (AAQIA) for Noranda Aluminum, Inc."

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (8), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

Jon K. Molloy
Environmental Engineer

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated November 21, 2003, received November 24, 2003, designating Noranda, Inc. as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- *Revised Ambient Air Quality Impact Analysis (AAQIA)* Memorandum from the Air Quality Analysis Section, dated August 31, 2004
- Southeast Regional Office Site Survey, dated March 19, 2004.

Attachment A - SOx Compliance Worksheet

Noranda Aluminum, Inc.
New Madrid County, S29, T22N, R14E
Project Number: 2003-11-053
Installation ID Number: 143-0008
Permit Number:

This sheet covers the period from _____ to _____.
(month, year) (month, year)

Copy as needed.

Month	Equipment Description (Note 1)	Amount of Coke Processed (Note 2)	Emission Factor or Sulfur Content (Note 3)	Monthly Emissions of Pollutant (Note 4)	12-Month Emissions (Note 5)

Note 1: Description of equipment including emission point identification. This log shall include all equipment with potential emissions of SO_x.
Note 2: Amount of material processed for combustion sources is the amount of natural gas/propane combusted. Units should be specified in the chart.
Note 3: The units for the emission factor used should correspond with the units used for amount of material processed. For combustion sources, the emission factor should be obtained from the EPA document AP-42. For petroleum coke, a certified sulfur content must be used.
Note 4: Amount of Material Processed x Emission Factor x 0.0005.
Note 5: Sum of last 12-months of Monthly Emissions. A 12-Month Total pollutant emissions not in excess of 5,243 tons per year from the potlines indicates compliance.

Attachment B – PM_{10} Emissions Limitations

Noranda Aluminum, Inc.
New Madrid County, S29, T22N, R14E
Project Number: 2003-11-053
Installation ID Number: 143-0008
Permit Number:

Emission Point	Description	Emission Limitation	units
1	River Unloading	0.3643	lb/hr
2	River Unloading	0.3643	lb/hr
3	River Unloading	0.3433	lb/hr
4	Railcar Unloading	2.0571	lb/hr
5	Fresh Ore Material Handling	0.5143	lb/hr
6	Fresh Ore Material Handling	0.2057	lb/hr
7	Fresh Ore Material Handling	0.4936	lb/hr
8	Fresh Ore Material Handling	0.8057	lb/hr
9	Reacted Ore Material Handling	0.2571	lb/hr
10	Reacted Ore Material Handling	0.3857	lb/hr
11	Fresh Ore Material Handling	0.2207	lb/hr
12	Reacted Ore Material Handling	0.5314	lb/hr
13	Reacted Ore Material Handling	0.8113	lb/hr
14	Fresh Ore Material Handling	0.9129	lb/hr
15	Fresh Ore Material Handling	0.4071	lb/hr
16	Fresh Ore Material Handling	0.1029	lb/hr
17	Fresh Ore Material Handling	0.1029	lb/hr
18	Fresh Ore Material Handling	0.1029	lb/hr
19	Fresh Ore Material Handling	0.1029	lb/hr
20	Fresh Ore Material Handling	0.1029	lb/hr
21	Fresh Ore Material Handling	0.4071	lb/hr
22	Fresh Ore Material Handling	0.3	lb/hr
23	Fresh Ore Material Handling	0.3	lb/hr
24	Fresh Ore Material Handling	0.6	lb/hr
25	Fresh Ore Material Handling	0.3429	lb/hr
26	Reacted Ore Material Handling	0.3429	lb/hr
27	Reacted Ore Material Handling	0.0686	lb/hr
28	Reacted Ore Material Handling	0.0686	lb/hr
29	Reacted Ore Material Handling	0.0686	lb/hr
30	Reacted Ore Material Handling	0.0686	lb/hr
31	Reacted Ore Material Handling	0.0686	lb/hr
32	Reacted Ore Material Handling	0.0686	lb/hr
33	Reacted Ore Material Handling	0.0686	lb/hr
34	Reacted Ore Material Handling	0.0686	lb/hr
35	Reacted Ore Material Handling	0.1457	lb/hr
36	Reacted Ore Material Handling	0.3429	lb/hr
37	Reacted Ore Material Handling	0.0686	lb/hr
38	Reacted Ore Material Handling	0.0686	lb/hr
39	Reacted Ore Material Handling	0.0686	lb/hr
40	Reacted Ore Material Handling	0.0686	lb/hr
41	Reacted Ore Material Handling	0.0686	lb/hr

42	Reacted Ore Material Handling	0.0686	lb/hr
43	Reacted Ore Material Handling	0.0686	lb/hr
44	Reacted Ore Material Handling	0.0686	lb/hr
45	Reacted Ore Material Handling	0.1457	lb/hr
46	Electrolyte Recovery	2.6143	lb/hr
47	Electrolyte Recovery	12.8571	lb/hr
48	Electrolyte Recovery	6.1286	lb/hr
49	Electrolyte Recovery	0.24	lb/hr
50	Electrolyte Recovery	1.9714	lb/hr
55	Electrolyte Recovery	0.24	lb/hr
56	Electrolyte Recovery	0.24	lb/hr
57	Fresh Ore Material Handling	0.5143	lb/hr
58	Electrolyte Recovery	1.0286	lb/hr
65	Petroleum Coke Handling	0.3429	lb/hr
66	Petroleum Coke Handling	0.3429	lb/hr
67	Petroleum Coke Handling	0.1286	lb/hr
68	Primary Crusher (North)	0.8571	lb/hr
69	Primary Crusher (South)	1.3714	lb/hr
70	Tertiary Crusher	1.1957	lb/hr
71	Anode Paste Production	0.1286	lb/hr
72	Anode Paste Production	0.3429	lb/hr
73	Anode Paste Production	1.5103	lb/hr
74	Anode Paste Production	0.2229	lb/hr
75	Anode Paste Mixer Exhaust	0.9857	lb/hr
79	Anode Cleaning Station	0.4286	lb/hr
80	Fresh Ore Handling	0.2057	lb/hr
81	Fresh Ore Handling	0.0279	lb/hr
82	Anode Stem Cleaning (Phase I)	0.768	lb/hr
83	Cathode Casting Station	0.5186	lb/hr
84	Anode Stem Cleaning	0.462	lb/hr
DW	Potline Crushing	3.7543	lb/hr

Mr. Dave Hart
Technical Services Manager
Noranda Aluminum, Inc.
#1 Robbins Road
St. Jude Industrial Park, P.O. Box 70
New Madrid, MO 63869

RE: New Source Review Permit - Project Number: 2003-11-053

Dear Mr. Hart:

Enclosed with this letter is your permit to construct. Please study it carefully. Also, note the special conditions, if any, on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files.

Operation in accordance with these conditions, your new source review permit application and with your amended operating permit is necessary for continued compliance.

The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you have any questions regarding this permit, please do not hesitate to contact me at (573) 751-4817, or you may write to me at the Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102. Thank you.

AIR POLLUTION CONTROL PROGRAM

Kyra L. Moore
Interim New Source Review Unit Chief

KLM:jml

Enclosures

c: Southeast Regional Office
PAMS File 2003-11-053

Permit Number:

Comments and Responses on Noranda's
Prevention of Significant Deterioration New Source Review Permit Application

This document responds to comments made to the PSD permit application. Comments have been summarized or paraphrased for the sake of clarity. The numbers of Special Conditions in the comments may have changed. The numbers referenced in the response reflect the final Special Condition numbering.

The following comments were submitted to the Air Pollution Control Program by Noranda Aluminum, Incorporated:

Comment:

Special Conditions

1. Annual Emission Limitation
   A. "Noranda Aluminum, Inc. shall emit less than 3,878 tons of Sulfur Oxides (SO_X) from entire installation in any consecutive 12-month period."

   Noranda proposes the following change to Special Condition 1.A:

   Noranda Aluminum, Inc. shall emit less than 5,243 tons of sulfur oxides (SO_X) total from potlines 1, 2, and 3 in any consecutive 12- month period.

   Justification:
   Noranda's net emission increase (NEI) of SO_2 (assuming all SO_X to be SO_2) from this project is less than the Prevention of Significant Deterioration (PSD) significance level (40 tons per year). Consequently, Noranda did not trigger PSD review for SO_2. SO_2 emissions are calculated using a relatively straightforward mass balance approach, as all sulfur brought on-site in the raw material (coke) is emitted as SO_2. (Note that coke is in this case is not used as a fuel, it is used as a base material for anodes which are consumed in the aluminum production process). Noranda has been re-evaluating all current testing and monitoring procedures as applicable to the draft permit.

   History
   Noranda has determined sulfur emissions by use of a mass balance calculation based on an in-house determination of the sulfur content of anodes used in the potrooms. This in-process determination was used in the early years of the plant because it was one of the few numbers available to Noranda personnel. This determination was used as one of

several measures of potential anode performance. At that time, Noranda had no restrictions on the sulfur content of raw materials.

With the construction of Potline 3, sulfur in the coke used to make anodes was restricted to 3% or less. Vendors were required to provide Certificates of Analysis, which were kept on file. Following the construction and operation of Potline 3, the "sulfur in anodes" calculation continued to serve as the basis for determining sulfur emissions for the potlines.

Noranda continues to receive Certificates of Analysis from the coke supplier. Work began in 1998 to obtain ISO9000/QS9000 certification for the Noranda process. As a result of the quality programs requirements, Noranda now receives Certificates of Analysis in advance of receipt of the material to insure off spec material is not received.

When the emissions inventory questionnaire (EIQ) requirements were developed by the State, Noranda continued to use the "sulfur in anodes" in-process mass balance as the procedure for reporting sulfur emissions. Reliance on this method continued through the 2003 reporting year.

Explanation of Corrections

As a consequence of this application, a detailed review of the sulfur emission determination method was undertaken. Two issues were discovered during the review. The calibration standard use in determining the sulfur in anodes was found to have been out of specification. In addition, sampling techniques for obtaining the anode sample were found to have changed.

The following explanation is from our lab supervisor that details the calibration error:

"*In July 2003 the standard used as the set-up for the SRS200 x-ray fluorescence unit for the COKE matrix was damaged and needed to be replaced. Upon examining the data, it was observed that the %S value for the check standard had been running around 0.3% low since 1998. When the new type standard was set-up the problem was corrected."*

In years past, samples for sulfur in anodes consisted of a collection of pieces taken for a number of anodes headed for the potlines. These samples were sized and prepared in our lab for analysis by X-ray fluorescence. Beginning in 2001, samples for sulfur in anode were based on cores that were taken from anodes, sized and prepared in our lab for analysis by X-ray fluorescence.

Neither of these changes as described above were shared with the environmental personnel calculating the mass balance for the % sulfur in anode.

The table below contains a summary comparison of Noranda's mass balance calculations for sulfur emissions for 1998 – 2003. This is the range of data available to us today. The data is presented to provide the details to the explanations above.

Column #3 contains data calculated by use of sulfur in anode based on an incorrect calibration standard. Column #4 contains the corrected data for sulfur in anode following recalibration. Column #5 contains data calculated by use of vendor's Certificate of Analysis reports for sulfur content in coke consumed in anodes.

When the recalibrated values for sulfur were used, the 1998 – 2000 mass balance based on sulfur in anodes agreed well with the mass balance calculations based on the sulfur content in coke used. With the change in sampling procedure in 2001, the two mass balance techniques were not in agreement.

SO2 Emission Summary

Year	Total SO2 Reported in EIQ >4000 tons	SO2 Reported in EIQ for Potrooms (tons)	SO2 from S in Baked Anodes (Following Std Recalibration) (tons)	SO2 from %S in Coke Used (tons)	Vendor %Sulfur in Coke (limit = 3%)
1998	Yes	3915	4564	4598	2.40
1999	No	3649	4412	4480	2.26
2000	No	3396	4058	4150	2.13
2001	No	3386	4078	4464	2.33
2002	Yes	3740	4515	5066	2.42
2003	No	2987	4463	5342	2.46

Summary

The above explanation provides details on recent changes to Noranda's sulfur emission data. The 1998 – 2000 comparison of the two mass balance techniques demonstrates that pre-1998 EIQ determinations were valid. With this new information, Noranda will submit update EIQ reports for the above years. For all the years that emission fees are due, payment will be made. The sulfur in coke didn't exceed the 3% level at anytime.

Noranda believes the Sulfur in Coke mass balance number is more representative of actual emissions. Since this method relies on the vendor certification for the % sulfur in coke, it is an independent and EPA approved method to determine sulfur compliance. This calculation will be recorded in Attachment A for documenting compliance with Special Condition #1.

Noranda is requesting a 39 ton per year increase above this two year average resulting in an allowable of 5,243 tons per year. Tables B-4.1and 4.2 of the application have been revised and attached.

As PSD is not triggered for SO_2, no dispersion modeling or BACT analysis is required for SO_2. Consequently, this revision to the SO_2 emission rate does not require a significant change to the PSD permit.

Response:
Changes have been made to the permit to reflect the comments mentioned above.

Comment:
1. Annual Emission Limitation
   B. "Noranda Aluminum, Inc. shall maintain a record of the sulfur content … used in determining SO_X emissions from all processes where petroleum coke is used."

   Noranda proposes the following change to Special Condition 1B:
   Noranda Aluminum, Inc. shall maintain a record of the sulfur content, and the sulfur content will be determined by supplier certification of analysis. The sulfur content must be used in determining SO_x emissions from potlines 1, 2, and 3.

   Justification:
   As a matter of clarification, all SO_2 emissions from coke usage are from potlines 1, 2, and 3. The coke handling process includes unloading from a barge, storage in an enclosed silo, being mixed into green anode paste, formation into a green anode, baked and rodded, then sent to the potlines where the anode is "used." As the anode is used, the sulfur in the coke is evolved as SO_2.

Response:
Changes have been made to the permit to reflect the comments mentioned above.

Comment:

2. Emission Limitation for Raw Material Handling
   "Noranda Aluminum, Inc. shall not discharge Particulate Matter less than ten microns in diameter (PM_{10}) into the atmosphere from the stacks listed in Attachment B of this permit in excess of the amounts listed in Attachment B of this permit. These emission rates

shall be verified through compliance testing, as detailed in Special Condition 7."

Noranda proposes the following change to Special Condition 2:

Noranda Aluminum, Inc. shall not discharge particulate matter less than ten microns in diameter (PM_{10}) into the atmosphere from the stacks listed in Attachment B of this permit in excess of the amounts listed in Attachment B of this permit. These emission rates shall be verified through provisions detailed in Special Condition 7B.

Justification:

See Special Condition 7B.

Response:

Compliance testing is required for the equipment listed in Attachment B to ensure that the actual emission rates are less than or equal to the emission rates listed in Noranda's permit application. Therefore, this condition was not been changed.

Comment:

3. Emission Limitation for Potline 1

   A. "Noranda Aluminum, Inc. shall achieve the Best Available Control Technology (BACT) limitation for PM_{10} of 55.08 pounds per hour from Potline 1 Monitor (EP59)."

Noranda proposes the following change to Special Condition 3A:

Noranda Aluminum, Inc. shall achieve the BACT limitation for PM_{10} of 86.22 pounds per hour from Potline 1 Monitor (EP59) and Potline 2 Monitor (EP60) combined.

Justification:

The permit currently proposes a limit for EP59 of 55.08 lb/hr PM_{10} and for EP60 of 31.14 lb/hr PM_{10}. Modeling of the project with each of the sources emitting at the proposed NEI results in impacts less than the PM_{10} 24-hour and annual modeling significance levels (MSLs). Noranda has conducted additional dispersion modeling to demonstrate that the ambient impact from these sources is approximately equal. That is, if the emissions from the two sources are bubbled, or grouped, the maximum modeled ambient impact is approximately equal in magnitude and location. In other words, it does not matter whether the emissions exhaust out the Potline 1 monitor or the Potline 2 monitor, the ambient impacts are the same. This additional dispersion modeling is being provided to the MDNR for consideration. A limit of this type is consistent with the current limit in the operating permit for EP62 and EP63, which provides a combined limit of 25 lb/hr PM.

Response:
Noranda has requested to not proceed with the "grouping" of emission rates. The changes have therefore not been made to the permit.

Comment:

4. Emission Limitation for Potline 2

   A. "Noranda Aluminum, Inc. shall achieve the BACT limitation for PM_{10} of 31.14 pounds per hour from Potline 2 Monitor (EP60)."

   Noranda proposes the following change to Special Condition 4A:

   Noranda Aluminum, Inc. shall achieve the BACT limitation for PM_{10} of 86.22 pounds per hour from Potline 1 Monitor (EP59) and Potline 2 Monitor (EP60) combined.

   Justification:
   The permit currently proposes a limit for EP59 of 55.08 lb/hr PM_{10} and for EP60 of 31.14 lb/hr PM_{10}. Modeling of the project with each of the sources emitting at the proposed NEI results in impacts less than the PM_{10} 24-hour and annual modeling significance levels (MSLs). Noranda has conducted additional dispersion modeling to demonstrate that the ambient impact from these sources is approximately equal. That is, if the emissions from the two sources are bubbled, or grouped, the maximum modeled ambient impact is approximately equal in magnitude and location. In other words, it does not matter whether the emissions exhaust out the Potline 1 monitor or the Potline 2 monitor, the ambient impacts are the same. This additional dispersion modeling is being provided to the MDNR for consideration. A limit of this type is consistent with the current limit in the operating permit for EP62 and EP63 which provides a combined limit of 25 lb/hr PM.

Response:
Noranda has requested to not proceed with the "grouping" of emission rates. The changes have therefore not been made to the permit.

Comment:

5. Emission Limitation for Potline 3 East and West

   B. "Noranda Aluminum, Inc. shall achieve the BACT limitation for PM_{10} of 7.25 pounds per hour from Potline 3 East Stack (EP62) and 7.25 pounds per hour from Potline 3 West Stack (EP63)."

Noranda proposes the following change to Special Condition 5B:

Noranda Aluminum, Inc. shall achieve the BACT limitation for PM_{10} of 14.50 pounds per hour from Potline 3 East Stack (EP62) and Potline 3 West Stack (EP63) combined.

Justification:

The permit currently proposes a limit for EP62 of 7.25 lb/hr PM_{10} and for EP63 of 7.25 lb/hr PM_{10}. Modeling of the project with each of the sources emitting at the proposed NEI results in impacts less than the PM_{10} 24-hour and annual modeling significance levels (MSLs). Noranda has conducted additional dispersion modeling to demonstrate that the ambient impact from these sources is approximately equal. That is, if the emissions from the two sources are bubbled, or grouped, the maximum modeled ambient impact is approximately equal in magnitude and location. In other words, it does not matter whether the emissions exhaust out the Potline 3 East stack or the Potline 3 West stack, the ambient impacts are the same. This additional dispersion modeling is being provided to the MDNR for consideration. A limit of this type is consistent with the current limit in the operating permit for EP62 and EP63 which provides a combined limit of 25 lb/hr PM.

Response:

Noranda has requested to not proceed with the "grouping" of emission rates. The changes have therefore not been made to the permit.

Comment:

6. Monitoring Requirements

"Noranda Aluminum Inc. shall install, calibrate, maintain and operate continuous emissions monitoring systems (CEMS) and record the output of the systems for Potlines 1, 2 & 3. These monitors shall measure the emission rates of PM_{10}, CO, and fluorides to demonstrate compliance with the emission limitations from Special Conditions 3, 4, and 5. Emission data shall be collected by the CEMS in accordance with 40 CFR Part 75."

Noranda proposes the following change in Special Condition 6:

Noranda Aluminum Inc. requests that this section be removed from the draft permit.

Justification:

For Fluoride CEMs

There are neither fluoride CEMs used in the primary aluminum industry, nor are there specifications to maintain and operate such units. This is

supported by the following comment by USEPA in the Primary Aluminum NESHAP Preamble (Federal Register September 26, 1996):

"…The EPA decided not to require the use of an HF CEM, but is including provisions for its use in the rule. However, the new HF monitors do not operate on the same principles as other CEMs for which EPA has developed performance specifications and quality assurance/quality control provisions. Until these specifications are developed, EPA does not *believe the new monitors should be required. "*

For PM_{10} and PM CEMS
Per a telephone discussion on June 18, 2004 with Mr. Peter Yronwode with the Missouri Department of Natural Resources (MDNR), there are no PM or PM_{10} CEMs in use in Missouri and he was not aware of any PM_{10} CEMs being available.

For CO CEMS
Lastly, the potlines are not a combustion source of CO emissions. CO is emitted at a steady rate based on anode consumption. Noranda suggests that CO emissions be calculated using an emission factor and annual production. A 90-day verification of steady state emission will be conducted on a representative potroom stack using the portable monitor techniques approved by the Oklahoma DEQ procedure "Guidance for Portable Electrochemical Analyzer Testing Used for Compliance Monitoring." The unit draws a sample from the stack via a stainless steel probe, through a water and particulate trap to the chemical cell. Following successful demonstration of emission stability, month samples will be taken at each of the potline emission stack utilizing existing stack sample locations. An average of the monthly determinations will be used to insure annual compliance with the emissions standard.

Response:
Changes have been made to the permit to reflect the comments mentioned above.

Comment:

7. Compliance Testing Requirements
   A. "Initial stack tests shall be performed to verify that the emission limitations set in Special Conditions 3, 4, and 5 are not exceeded. These tests shall be performed as specified in the Stack Test Procedures outlined in Special Condition 8."

Noranda proposes the following change to Special Condition 7A:

Stack tests shall be performed to verify that the emission limitations set in Special Conditions 3, 4, and 5 are not exceeded. These tests shall be performed as specified in the Stack Test Procedures outlined in Special Condition 8. All sources listed in the table below will be tested as defined in the current operating permit. See table below.

Source	Pollutant	Method	Frequency
PL1,2,3 Monitor	**Fluorides**	**Method 13 and 14**	**Monthly**
	PM/PM10	**Method 5**	**Annual**
PL1,2,3 Stacks	**Fluorides**	**Method 13 and 14**	**Annual**
	PM/PM10	**Method 5**	**Annual**

Justification:
These sources are already subject to frequent testing as defined in Noranda's Operating Permit #OP2001032.

Response:

There are four Operating Permits for this installation. The permit for the potlines is OP2001-062. The potlines are subject to MACT subpart LL, which requires the monthly fluoride performance testing mentioned in the table above and NSPS subpart S. The Operating Permit does not specifically mention test methods, however it refers to parts of the rule that require a site-specific test plan, which incorporates the test methods in the table.

The annual PM/PM_{10} testing referred to in the table comes from Construction Permits 0679-008 through 011. The permit does not mention Method 5, but it is assumed as the standard test method for PM.

The Operating Permit requires annual PM testing for Potline 1 & 2 stack (EP61) and Potline 3 East and West Stack (EP-62 and EP-63). The OP does not require annual PM testing for Potline 1 secondary emissions (EP59) and Potline 2 secondary emissions (EP60).

Because these requirements are primarily due to federal on-going compliance protocol, the Air Pollution Control Program feels that initial stack tests are required to ensure expeditious compliance with the emission limitation set forth in this permit.

Comment:

B. *"Noranda Aluminum, Inc. shall conduct performance testing on the equipment listed in Attachment B … quantifying the emission rates of PM_{10} from these sources may be used in place of the above testing requirement if requested by Noranda Aluminum, Inc. and approved by the Director."*

Noranda proposes the following change to Special Condition 7B:

Noranda Aluminum, Inc. shall demonstrate compliance with baghouse emissions per the provisions found in Noranda's Operating Permit # OP2001032. This provision addresses the operation and maintenance of the baghouse, and requires both Method 22 and Method 9 performance tests. The testing, monitoring, and recordkeeping requirements are provided below.

Testing/Monitoring:

- **Check and document the baghouse pressure drop weekly. If the pressure drop is out of normal operating range, corrective action shall be taken within eight (8) hours to return the pressure drop to normal.**
- **Check the cleaning sequence of the baghouse every six (6) months.**
- **Thoroughly inspect bags for leaks and wear every six (6) months.**
- **Inspect structural components, housing, ductwork, and hoods (if applicable) associated with the control system every six (6) months.**
- **If leaks or abnormal conditions are detected, the appropriate measures for remediation shall be implemented within eight (8) hours.**
- **The baghouse and associated equipment shall be maintained and operated according to the manufacturer's specifications.**
- **The permittee shall monitor the monthly throughput of material for these emission units.**
- **The permittee shall conduct opacity measurements on these emission units using USEPA Test Method 22. Opacity measurements must be performed on individual emission units, or, for a group of emission units that discharge to a common control device, a measurement at the control device is sufficient for the entire group of emission units. Readings are only required when the emission unit is operating and when the weather**

conditions allow. If no visible or other significant emissions are observed by a Method 22 reading, then no further observations would be required. For emission units with visible emissions perceived or believed to exceed the applicable opacity standard, the source representative would then conduct a Method 9 observation.

- **The following monitoring schedule must be maintained:**
  - **Weekly observations shall be conducted for a minimum of eight (8) consecutive weeks after permit issuance. Should no violation of this regulation be observed during this period then-**
  - **Observations must be made once every two weeks for a period of eight (8) weeks. If a violation is noted, monitoring reverts to weekly. Should no violation of this regulation be observed during this period then-**
  - **Observations must be made once per month. If a violation is noted, monitoring reverts to weekly.**
  - **If the source reverts to weekly monitoring at any time, monitoring frequency will progress in an identical manner from the initial monitoring frequency.**
  - **The permittee shall conduct an annual opacity measurement on the emission unit by USEPA Test Method 9 with a certified Method 9 observer.**

Record keeping*:*

- **A written record of weekly baghouse pressure drop readings, all inspections, and any action resulting from inspections shall be maintained. Bag replacement shall also be documented.**
- **The permittee shall maintain an accurate record of throughput, emission factors, and actual emissions of particulate matter emitted into the atmosphere from these emission units. These records shall be made available immediately for inspection to the Department of Natural Resources personnel upon request.**
- **Attachment B contains a log including these record keeping requirements. This log, or an equivalent created by the permittee, must be used to certify compliance with this requirement.**

Justification:
Conducting a stack test on the raw material handling baghouse exhaust stacks is difficult and time consuming. In most cases the existing exhaust stacks were not designed to accommodate access needed for modern day stack testing. Some locations pose a safety concern related to positioning of the required sampling equipment. Rather that conducting a single Method 5 test, Noranda suggests conducting frequent Method 22 and Method 9 inspections.

Response:
OP2001-032 does contain the baghouse monitoring requirements quoted above, however the names and EIQ references of the equipment in the OP do not match the names and EIQ references in Attachment B. It does not appear that OP2001-032 requires baghouse monitoring for all of the equipment listed in Attachment B.
Baghouse up-keep and maintenance and Method 9 and 22 tests are used primarily for on-going compliance with pre-established emission rates. The purpose of the above conditions are for maintenance for the control devices, not for emission rate verification. Therefore, the Air Pollution Control Program feels that initial stack tests are required to ensure expeditious compliance with the emission limitation set forth in this permit.

Comment:

C. "Noranda Aluminum, Inc. shall conduct performance testing on the equipment listed in Attachment B once every 5 years to ensure compliance with Special Condition 2."

Noranda proposes the following change to Special Condition 7C:

Noranda Aluminum Inc. requests that this section be removed from the draft permit.

Justification:
The testing (weekly Method 22 and Annual Method 9s), monitoring and record keeping proposed in Special condition 7B will provide a continuous demonstration of compliance.

Response:
Changes have been made to the permit to reflect the comments mentioned above.

Comment:

8. Proposed Test Plan

A. "The date on which performance tests are conducted must be pre-arranged with the Air Pollution Control Program (APCP) a minimum of 30-days prior to the proposed test date so that this Program may arrange a pretest meeting, if necessary, and assure that the test date is acceptable for an observer to be present. A completed Proposed Test Plan form (copy enclosed) may serve the purpose of notification and must be approved by the APCP prior to conducting the required emission testing."

Noranda proposes the following change to Special Condition 8A:

Since Noranda currently conducts a significant number of performance tests each month as outlined in Special Condition 7A, a one-time test plan will be submitted for the PM and Fluoride testing at the facility.

Justification:
Noranda routinely conducts testing of emission sources following USEPA Methods 1-5, 13, and 14 as required in the current operating permit. Rather than sending a monthly tests plan, Noranda suggests submitting an annual testing schedule.

Response:
The tests required by this permit are for verification of emission rates in this project. Therefore, any testing required by MACT Subpart LL or NSPS Subpart S will follow the protocols and guidelines listed in the federal regulations. The wording of this condition has been changed to refer only to the initial performance testing, not testing to satisfy federal requirements.

Comment:

B. Noranda proposes an additional requirement to this section:

In accordance with the PSD permit application, and historical PM_{10} emission calculations at the facility, PM_{10} emissions can be calculated using reference test Method 5 multiplied by the industry specific SCC factor which states that 58% of all PM is PM_{10}.

Response:
Changes have been made to the permit to reflect the comments mentioned above.

Comment:

9. Capture and Control Equipment Requirements – PM_{10} Emissions

A. "Noranda Aluminum, Inc. shall capture emissions from the Potlines 1, 2 & 3 using capture hoods as specified in the permit application for a capture efficiency of at least 95 percent to achieve the BACT."

Noranda proposes the following change to Special Condition 9A:

Noranda Aluminum Inc. requests that this section be removed

from the draft permit.

Justification:
The emission limits themselves are sufficient to define BACT for the sources. The PM_{10} emission limits are based on stack test data from both the monitor and stack for each potline. The stack test data from both the monitors and stacks represent actual emissions. The emissions exhausting from the potline stacks are known as the primary emissions. Those emissions that do not exhaust through the stack are known as the fugitive or the secondary emissions. All the fugitive or secondary emissions from the potlines exhaust through the potline monitors. Thus 100% of the all the potline emissions exhaust through the stacks and monitors which are reported annually in the EIQ. Please note that the capture efficiency is not used to determine the actual total PM_{10} emissions from potlines. Compliance with the emission limit is assurance of BACT.

Response:
The BACT analysis was based upon a 95 percent capture efficiency. In order to ensure that the BACT limit is being met by use of the capture hoods rather than simply decreasing the amount of PM10 captured, the capture efficiency requirement is necessary. Therefore, this condition was not changed.

Comment:

B. "Noranda Aluminum, Inc. shall control emissions from the Potlines 1, 2 & 3 using a dry alumina scrubber connected to baghouses as specified in the permit application for a control efficiency of at least 97 percent to achieve the BACT."

Noranda proposes the following change to Special Condition 9B:

Noranda Aluminum Inc. requests that this section be removed from the draft permit.

Justification:
The emission limits themselves are sufficient to define BACT for the sources. Compliance with the emission limits is assurance of BACT.

Response:
Since this condition states how the installation plan on meeting the BACT limit. The condition is necessary to ensure the control equipment is installed for which the BACT analysis was based upon. Therefore, this condition was not changed.

Comment:

D. "The baghouse shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. These gauges or meters shall be located such that the DNR employees may easily observe them. Replacement filters for the baghouses shall be kept on hand at all times. The bags shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance)."

Noranda proposes the following change to Special Condition 9D:

The alumina dry scrubber with baghouse shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. These gauges or meters shall be located such that the DNR employees may easily observe them. Replacement filters for the alumina dry scrubber with baghouses shall be kept on hand at all times. The bags shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).

Justification:
To clarify that this section refers to the alumna dry scrubber with baghouses.

Response:
Changes have been made to the permit to reflect the comments mentioned above.

Comment:

E. "Noranda Aluminum, Inc. shall monitor and record the operating pressure drop across the baghouses at least once every 24 hours. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty."

Noranda proposes the following change to Special Condition 9E:

Noranda Aluminum, Inc. shall monitor and record the operating pressure drop across the alumina dry scrubber with baghouses at least once every 24 hours. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.

Justification:

To clarify that this section refers to the alumna dry scrubber with baghouses.

Response:

Changes have been made to the permit to reflect the comments mentioned above.

Comment:

F. "Noranda Aluminum, Inc. shall develop and maintain a monitoring plan that:

1) Identifies the operating parameter(s) to be monitored to assure capture efficiency,

2) Explains why this parameter is appropriate for demonstrating ongoing compliance,

3) Identifies the specific monitoring procedures, and

4) *Specifies the operating parameter value or range of values (or the procedures for establishing the values) that shall be maintained to demonstrate capture efficiency is being maintained."*

Noranda proposes to eliminate Special Condition 9F:

Noranda Aluminum, Inc. shall monitor and record the operating parameters per the currently established operating and maintenance program for the potlines as copied below

Reduction Cell Hooding Monitoring Plan

	Acceptable Criteria	Corrective Action	Responsible Party
Daily, documented inspection of all cell hooding	**Daily inspection of all operating cells**	**Corrective action taken during the shift**	**Production Supervisor Potroom Employee**
Minimize Number of cell side shields removed	**Two cells per anode set section; Six shields max**	**Immediate closure of any additional shields**	**Production Supervisor Potroom Employee**
Maintain Inventory of side shields	**5 pots sets for each potline**	**Re-order or repair to maintain inventory**	**Potroom General Foremen**
Repair damage side shields; maintain log	**As needed to maintain inventory**	**Ensure manpower and equipment is available**	**Potroom General Foreman**
Minimize cell end door removal/opening	**5 end doors open per work section**	**Immediate closure of any additional cell doors**	**Production Supervisor Potroom Employee**
Annual documented training review with potroom employees	**All employees trained annually; New employee trained on entry to department**	**Trained as soon as they are assigned to the area; documented**	**Potroom General Foreman**

Justification:
An operating and maintenance program has been developed as part of a consent agreement between Noranda and the MDNR.

Response:

The APCP has modified the condition to read:

Noranda Aluminum, Inc. shall develop and maintain a monitoring plan that:

1) Identifies the operating parameter(s) to be monitored to assure capture efficiency,
2) Explains why this parameter is appropriate for demonstrating ongoing compliance,
3) Identifies the specific monitoring procedures,
4) Specifies the operating parameter value or range of values (or the procedures for establishing the values) that shall be maintained to demonstrate capture efficiency is being maintained, and

5) Complies with all operating and maintenance requirements established in all consent agreements.

Comment:

G. "The capture efficiency operating parameter(s) identified in Special Condition 9(F) shall be continuously monitored when the aluminum potlines are in operation. The most recent sixty (60) months of records shall be maintained on-site and shall be made immediately available to Missouri Department of Natural Resources' personnel upon request."

Noranda proposes the following change to Special Condition 9G:

The capture efficiency related operating parameter(s) identified in Special Condition 9F shall be frequently monitored when the aluminum potlines are in operation. The most recent sixty (60) months of records shall be maintained on-site and shall be made immediately available to Missouri Department of Natural Resources' personnel upon request.

Justification:
Production personnel are in the potlines and alumina dry scrubber areas 24 hours a day. However, each potline is over one-third of a mile long. The shields remain on a pot, unless an employee is performing work on the pot. Alumina dry scrubbers with baghouses operate constantly to provide airflow.

Response:
The APCP has modified the condition to read:

"The capture efficiency operating parameter(s) identified in Special Condition 8(F) shall be monitored when the aluminum potlines are in operation. The frequency of the monitoring shall be performed sufficiently to ensure compliance with the efficiencies stated in Special Conditions 8.A and 8.B. The most recent sixty (60) months of records shall be maintained on-site and shall be made immediately available to Missouri Department of Natural Resources' personnel upon request."

Comment:

11. Conditions Resulting from Ambient Air Quality Analyses

A. "The initial fluoride monitoring network approved under this permit shall consist of at least three (3) ambient monitors."

Noranda proposes the following change to Special Condition 11A:

The initial fluoride-monitoring network approved under this permit shall be developed in accordance with current ambient monitoring guidelines.

Justification:
Noranda Aluminum, Inc. has agreed with the MDNR to modify its on-going ambient fluoride monitoring to meet the specifications defined by a mutually agreed to Quality Assurance Project Plan (QAPP). This ambient air fluoride monitoring was agreed to as “post construction” or as a condition of on-going operation. A reasonable implementation schedule was understood.

The fluoride monitors will be placed at a location of highest impact as predicted by the modeling results. This may involve two locations, with one location having collocated samplers for a total of 2 or 3 samplers. If the potential to emit (PTE) and MSL modeling results are at the same location, then only one fluoride monitoring location will be required.

Response:
The document entitled "Ambient Monitoring Guidelines for Prevention of Significant Deterioration" states that "Monitors should then be placed at (a) the expected area of maximum concentration from the new source or modification, and (b) the maximum impact area(s), i.e., where the maximum pollutant concentration will occur based on the combined effect of existing sources and the new source or modification." Typically, one to two monitor sites may be sufficient to determine the ambient impact of pollutants if no uncertainty exists regarding the emission rates or release parameters of the pollutant in question. If the data input into the modeling system is uncertain additional monitor locations may be necessary to validate the model results. Of particular concern with the ambient fluoride emissions is the uncertainty surrounding the transformation of the fluoride particles to other chemical species. Currently, the CALPUFF modeling system is not capable of handling complex chemical transformations for all pollutants and assumes that all of the fluoride emissions remain fluoride. Given this uncertainty, the Department's Air Pollution Control Program feels that at a minimum, three monitor sites are necessary to determine the ambient impact from the Noranda Aluminum, Inc. facility. Therefore no changes were made to above conditions.

Comment:

D. ” Noranda Aluminum, Inc. shall report the data collected in accordance with this special condition to the department on a quarterly basis.”

Noranda proposes the following change to Special Condition 11D:

Noranda Aluminum Inc. requests that this section be removed from the draft permit.

Justification:
Based on similar reasons for Special Condition 11A.

Response:
The condition referenced above follows standard wording consistent with internal guidance, therefore this condition was not removed.

Comment:

E. "If concentrations are monitored that exceed the Risk Assessment Level (RAL), Noranda Aluminum, Inc. shall report the monitored information (the beginning and ending date and time, and the value for the applicable standard time period) within seven (7) days of the event."

Noranda proposes the following change to Special Condition 11E:

If concentrations are … within seven (7) days of having knowledge of the event.

Justification:
Analysis of the fluoride samples may take several days to complete.

Response:
Per the Modeling Unit's request the condition has been modified to read:

"If concentrations are monitored that exceed the Risk Assessment Level (RAL), Noranda Aluminum, Inc. shall report the monitored information…within seven (7) days of receiving quality assured monitor results from the lab responsible for measuring the filter concentrations."

Comment:

F. "*Concentrations .., Inc. shall:*

1) Conduct a … develop a correction plan;
2) Submit … permitting authority for approval; and,
3) Implement … upon department approval."

Noranda proposes the following change to Special Condition 11F:
Noranda proposes to eliminate Special Condition 11F and address these requirement in the QAPP development.

Justification:
Currently, there is no NAAQS, PSD Increment, or MSL for fluorides. The data collected during the post construction period will be used to establish the RAL for fluorides in Missouri.

Response:
The condition referenced above follows standard wording consistent with internal guidance, therefore this condition was not removed.

Comment:

G. "Noranda Aluminum, Inc. shall submit a QAPP for fluoride for department approval no more than three (7) months before commencing operation."

Noranda proposes the following change to Special Condition 11G:
Noranda Aluminum, Inc. shall submit a QAPP for fluoride to the MDNR for approval no more than three (3) months from issuance of permit. This submission shall include a reasonable schedule for program implementation.

Justification:
Development of a final QAPP and selection of a representative RAL will require a cooperative effort between Noranda and the MDNR. A realistic timeframe is needed if the modeling indicates different monitoring locations than the existing monitoring sites. Noranda will need time to remove and relocate the building(s) that house the monitoring equipment.

Response:
Changes have been made to the permit to reflect the comments mentioned above.

Comment:

H. "*The QAPP will contain … noted above and include:*
1) The conditions … may be discontinued;
2) *Date sampling … commencing of operation; and,*
3) The nature of … reported (e.g. hourly concentrations).

Noranda proposes the following change to Special Condition 11H(2):

Date sampling will commence as soon as possible based on a reasonable implementation schedule.

Justification:
A realistic timeframe is needed.

Response:
This condition was not removed per the Modeling Unit's request.

Comment:

Installation Description
Page 10, paragraph 2, line 2

"The anode, also called green anode, is continuously depleted until it is a stub."

Noranda proposes the following change to 11H(2):

The carbon anode is continuously depleted until a remanent or "butt" remains.

Justification:
Clarification of the process description.

Response:
Changes have been made to the permit to reflect the comments mentioned above.

Comment:

Project Description
Page 11, paragraph 1

"Noranda Aluminum, Inc. has applied for authority to increase aluminum production at their existing … for potline 1-2 and potline 3, repectively."

Noranda proposes the following change to this paragraph:

Noranda Aluminum, Inc. has applied for authority to increase aluminum production at their existing installation to an maximum hourly design rate (MHDR) of 10.4 tons of aluminum per hour and 12.8 tons of aluminum per hour for potline 1-2 and potline 3, respectively. This amounts to a facility design rate of 33.6 tons of aluminum per hour. Production can be redistrubuted to among the three potlines provided that none

of the emission limits included in the Special Conditions of this permit are exceeded.

Justification:
Allow operational flexibility provided the emission limitations in this permit are not exceeded.

Response:
Changes have been made to the permit to reflect the comments mentioned above.

Comment:

Page 11, paragraph 2

"To increase production, Noranda Aluminum, Inc. plans to increase the usage of green anode … in the past two years."

Noranda proposes the following change to this paragraph:

Noranda requests that this section be removed from the draft permit.

Justification:
This is general information that is unnecessary.

Response:
This paragraph was not removed because it contained information relative to the process.

Comment:

Page 11, paragraph 3

"Similarly, although ore usage will also increase with increased aluminum production, emissions … demonstrated in the past two years."

Noranda proposes the following change:

Noranda Aluminum, Inc. proposed to limit PM_{10} emissions from all ore handling operations to a value equivalent to the average actual emission rate demonstrated in the past two years.

Justification:
Rewording is suggested following the deletion of paragraph 2.

Response:
This paragraph was not removed because it contained information relative to the process.

Comment:

Page 12, paragraph 1

"Since this information was relied upon to estimate the potential emissions … is expected from these emissions points."

Noranda proposes the following change in this paragraph:

Since this information was relied upon to estimate the potential emissions for the project, Special Condition 2 has been included which sets an emissions limitation on all material handling operations. Noranda Aluminum, Inc. is required to demonstrate compliance with the limitations by means of conditions included in Special Condition 7B. As such, no emissions increase is expected from these emissions points.

Justification:

Special condition #2 should be corrected to read as #3. Additonal rewording is suggested based on Noranda' proposed alternative to testing of the raw material baghouses in Special Condition 7B.

Response:
Special Condition #2 has been changed to read a Special Condition #3. However, due to similar explanation for Special Condition 7B, this paragraph was not changed.

Comment:

Page 12, paragraph 2

"Although green anode utilization will increase, the production … will not increase. The increase in aluminum production will only …that consumed."

Noranda proposes the following change to the first two lines of this paragraph:

Since carbon anode usage will remain the same, the increase in aluminum production will only increase the amount of each carbon anode consumed.

Justification:
Noranda is providing clarification to the description of this process.

Response:
Changes have been made to the permit to reflect the comments mentioned above.

Comment:

Emissions Control Evaluation
Page 13, paragraph 2

> *"Currently, to control gaseous and particulate fluorides … drawn through a dry alumina scrubber followed by a baghouse."*

Noranda proposes the following change to the first two lines of this paragraph:

> **Currently, to control gaseous and particulate fluorides and particulate emissions, Noranda uses dry alumina scrubbers with baghouses. Gaseous and particulate emissions from the pots are captured by enclosed hoods and drawn through a dry alumina scrubber followed by a baghouse.**

Justification:
This information seems to refer to the primary aluminum industry as a whole. It is not specifically correct for describing Noranda Aluminum's emission control.

Response:
Changes have been made to the permit to reflect the comments mentioned above.

Comment:

Page 13, paragraph 4

> *"Sulfur oxides (SO_X) originate from the sulfur in the anode petroleum coke and pitch and … for sulfur can be seen in Table 4."*

Noranda proposes the following change to this paragraph:

> **Sulfur oxides (SO_X) in the potlines originate from the sulfur in the anode petroleum coke. Noranda Aluminum Inc. has requested a de minimis limitation on the increase in sulfur emissions from the potlines. Special Condition #1 addresses annual sulfur emissions from the potlines. The increase is based on the two-year past actual emissions as reported in the Emissions Inventory Questionnaire (EIQ). An outline of the emissions increase for sulfur can be seen in Table 4.**

Justification:
The sulfur emission covered by this permit are those emission from the coke consumed in the anode used in the potlines.

Response:
Changes have been made to the permit to reflect the comments mentioned above.

Comment:

Page 13, Table 4

"*Actual SO_X emissions from the year 2001*	*3,669.7 tons*
Actual SO_X emissions from the year 2002	*4,009.9 tons*
Two year average actual SO_X emissions	*3,839.8 tons*
De minimus increase	*39 tons*
New SO_X emissions limitation	*3,878.8 tons"*

Noranda proposes the following change to Table 4:

Actual SO_X emissions from the year 2002	**5,066 tons**
Actual SO_X emissions from the year 2003	**5,342 tons**
Two year average actual SO_X emissions	**5,204 tons**
De minimus increase	**39 tons**
New SO_X emissions limitation	**5,243 tons**

Justification:
Refer to the justification reference in Special Condition 1.

Response:
Changes have been made to the permit to reflect the comments mentioned above.

Comment:

Page 14, Table 5

Pollutant	*Potential Emissions of the Application*	*New Installation Conditioned Potential*
PM10	*245*	*N/A*
SOx	*>40*	*3,878.8*
NOx	*0.07*	*N/A*
VOC	*2.0*	*N/A*
CO	*4,865*	*N/A*
Fluorides	*50*	*N/A*
HAPs	*N/D*	*N/A*

Noranda proposes the following change to Table 5:

Pollutant	**Potential Emissions of the Application**	**New Installation Conditioned Potential**
PM10	**212**	**N/A**
SOx	**>40**	**5,243**
NOx	**0.04**	**N/A**
VOC	**1.5**	**N/A**
CO	**3,356**	**N/A**
Fluorides	**59**	**N/A**
HAPs	**N/D**	**N/A**

Response:
Changes have been made to the permit to reflect the comments mentioned above.

Comment:

BACT Analysis

Capture Hood and Dry Alumina Scrubber with Baghouse.
Page 15, paragraph 1

> *"Potline emissions are captured by a hood and vented through the control … repair or replace damaged hoods and seals."*

Noranda proposes the following change to this paragraph:

> **Potline emissions are captured by a hood and vented through the control device, to the atmosphere through a stack. Uncaptured or fugitive emissions are released from the roof vents (monitors). Thus 100% of the all the potline emissions exhaust through the stacks and monitors. The capture efficiency is not used in the calculation to determine the PM10 and Fluoride emissions from either the stack or monitor emission points. Capture hoods will be maintained through an inspection and maintenance program to repair or replace damaged hoods and seals as outlined in Special Condition 9F. Compliance with the emission limit is assurance of BACT.**

Justification:
Emission limits stated in the draft permit have been established as BACT.

Response:
This paragraph was not changed. Refer to the explanation for Special Condition 9.A.

Comment:

Selection PM10 and Fluoride Control Technology
Page 16, paragraph 1

> *"In conclusion, for the aluminum potlines, BACT for the control … overall control efficiency of 97%."*

Noranda proposes the following change to this paragraph:

> **In conclusion, for the aluminum potlines, BACT for the control of PM_{10} and fluoride consists of the use of capture hoods vented to dry alumina scrubber with baghouses.**

Justification:
Emission limits stated in the draft permit have been established as BACT.

Response:
This paragraph was not changed. Refer to the explanation for Special Condition 9.A.

Comment:

Page 16, paragraph 2

> *"The Potline 1 &2 Stack (EP61) must meet a PM_{10} emission rate of 29.0 pounds per hour (1.4 pound per tons Al produced). The Potline 1 Monitor (EP59) must meet a PM_{10} emission rate of 64.8 pounds per hour (6.2 pound per tons Al produced). The Potline 2 Monitor (EP60) must meet a PM_{10} emission rate of 34.6 pounds per hour (3.3 pound per tons Al produced). The Potline 1 Monitor and Stack (EP59 and EP61) must meet a fluoride emission rate of 1.9 pound per ton of aluminum produced. The Potline 2 Monitor and Stack (EP60 and EP61) must meet a fluoride emission rate of 1.9 pound per ton of aluminum produced."*

Noranda proposes the following change to this paragraph:

> **The Potline 1 & 2 Stack (EP61) must meet a PM_{10} emission rate of 29.0 pounds per hour. The Potline 1 Monitor (EP59) and Potline 2 Monitor (EP60) must meet a combined PM_{10} emission rate of 86.22 pounds per hour. The Potline 1 Monitor and Stack (EP59 and EP61) must meet a fluoride emission rate of 1.9 pound per ton of aluminum produced. The Potline 2 Monitor and Stack (EP60 and EP61) must also meet a fluoride emission rate of 1.9 pound per ton of aluminum produced.**

Justification:

> The proposed changes noted above are to reflect the changes per the discussions in Special Conditions 3 & 4.

Response:
Noranda has requested to not proceed with the "grouping" of emission rates. The changes have therefore not been made to the permit. The revised emission rates from the August 27, 2004 memorandum from the Air Quality Analysis Unit have been incorporated in to the permit

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Comment:

Page 16, paragraph 3

> *"The Potline 3 East and West Stacks (EP62 and EP63) must meet a PM_{10} emission rate … rate of 24.4 pounds per hour … The*

Potline 3 Monitor and East and West Stacks (EP62, EP63 and EP64) must meet a fluoride emission rate of 1.9 pound per ton of aluminum produced."

Noranda proposes the following change to this paragraph:

The Potline 3 East and West Stacks (EP62 and EP63) combined must meet a PM_{10} emission rate of 14.5 pounds per hour. The Potline 3 Monitor (EP64) must meet a PM_{10} emission rate of 22.27 pounds per hour). The Potline 3 West Monitor (EP64 West) and Potline 3 West Stack (EP63) must meet a fluoride emission rate of 1.9 pounds per ton of aluminum produced. The Potline 3 East Monitor (EP64 East) and Potline 3 East Stack (EP62) must meet a fluoride emission rate of 1.9 pounds per ton of aluminum produced.

Justification:
Clarification of the emission rates.

Response:
Noranda has requested to not proceed with the "grouping" of emission rates. The changes have therefore not been made to the permit. The revised emission rates from the August 27, 2004 memorandum from the Air Quality Analysis Section have been incorporated in to the permit

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Comment:

Rank and Evaluation of Control Options for CO Emissions

Good Design and Operation
Page 17, paragraph 1

"According to the RLBC database, no other … operation would result in emissions of 2,391 pounds per hour from Potline 1 & 2 Stack (EP-61) and 1,469 pounds per hour from Potline 3 East Stack (EP62) and Potline 3 West Stack ((EP63). Since … is considered BACT."

Noranda proposes the following change to this paragraph:

According to the RLBC database, no other … operation would result in emissions of 2,391 pounds per hour from Potline 1 Stack (EP-59), 2,391 pounds per hour from Potline 2 Stack (EP-61), 1,469 pounds per hour from Potline 3 East Stack (EP62), and 1,469 pounds per hour from Potline 3 West Stack ((EP63). Since … is considered BACT."

Justification:
Clarification of the emission rates.

Response:
The revised emission rates from the August 27, 2004 memorandum from the Air Quality Analysis Section have been incorporated in to the permit.

Comment:

Selection CO Control Technology
Page 18, paragraph 2

> *"In conclusion, BACT for the control … meet a CO emission rate of 2,391 pounds per hour from Potline 1 & 2 Stack … and 1,469 pounds per hour from Potline 3 East Stack (EP62) and Potline 3 West Stack (EP63)."*

Noranda proposes the following change to this paragraph:

> **In conclusion, BACT for the control … meet a CO emission rate of 2,391 pounds per hour from Potline 1 Stack (EP-59), 2,391 pounds per hour from Potline 2 Stack, 1,469 pounds per hour from Potline 3 East Stack (EP62), and 1,469 pounds per hour from Potline 3 West Stack (EP63).**

Justification:
Clarification of the emission rates.

Response:
The revised emission rates from the August 27, 2004 memorandum from the Air Quality Analysis Section have been incorporated in to the permit.

Comment:

Attachment A

Changed "Material" in heading of column 3 to "Coke", and updated Note 5 to remove the limit of 3,878 tons.

See modified Attachment A

Attachment A - SOx Compliance Worksheet

Noranda Aluminum, Inc.
New Madrid County, S29, T22N, R14E
Project Number: 2003-11-053
Installation ID Number: 143-0008
Permit Number:

This sheet covers the period from _____ to _____.
(month, year) (month, year)

Copy as needed.

Month	EP Description (Note 1)	Amount of Coke Processed (Note 2)	Emission Factor or Sulfur Content (Note 3)	Monthly Emissions of Pollutant (Note 4)	12-Month Emissions (Note 5)

Note 1: Description of equipment such as Potline 1, 2 & 3.
Note 2: Amount of coke consumed. Units should be specified in the chart.
Note 3: For petroleum coke, a certified sulfur content must be used.
Note 4: Column #3 X Column #4 / 100 x 1.998
Note 5: Sum of last 12-months of Monthly Emissions.

Response:
The emission limitation of 3,878 tons has changed to 5,243 and has not been removed from the attachment. Since this limit is in the special conditions of the permit it is left in the attachment for reference. The rest of the changes have been made to the permit to reflect the comments mentioned above.
