INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
We make Indiana a cleaner, healthier place to live.

Mitchell E. Daniels, Jr.
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-8603
(800) 451-6027
www.IN.gov/idem

TO: Interested Parties / Applicant

DATE: August 05, 2005

RE: AK Steel - Rockport Works / 147-19502-00041

FROM: Paul Dubenetzky
Chief, Permits Branch
Office of Air Quality

Notice of Decision: Approval - Effective Immediately

Please be advised that on behalf of the Commissioner of the Department of Environmental Management, I have issued a decision regarding the enclosed matter. Pursuant to IC 13-15-5-3, this permit is effective immediately, unless a petition for stay of effectiveness is filed and granted according to IC 13-15-6-3, and may be revoked or modified in accordance with the provisions of IC 13-15-7-1.

If you wish to challenge this decision, IC 4-21.5-3 and IC 13-15-6-1 require that you file a petition for administrative review. This petition may include a request for stay of effectiveness and must be submitted to the Office of Environmental Adjudication, 100 North Senate Avenue, Government Center North, Room 1049, Indianapolis, IN 46204, **within eighteen (18) calendar days of the mailing of this notice**. The filing of a petition for administrative review is complete on the earliest of the following dates that apply to the filing:

(1) the date the document is delivered to the Office of Environmental Adjudication (OEA);
(2) the date of the postmark on the envelope containing the document, if the document is mailed to OEA by U.S. mail; or
(3) The date on which the document is deposited with a private carrier, as shown by receipt issued by the carrier, if the document is sent to the OEA by private carrier.

The petition must include facts demonstrating that you are either the applicant, a person aggrieved or adversely affected by the decision or otherwise entitled to review by law. Please identify the permit, decision, or other order for which you seek review by permit number, name of the applicant, location, date of this notice and all of the following:

(1) the name and address of the person making the request;
(2) the interest of the person making the request;
(3) identification of any persons represented by the person making the request;
(4) the reasons, with particularity, for the request;
(5) the issues, with particularity, proposed for considerations at any hearing; and
(6) identification of the terms and conditions which, in the judgment of the person making the request, would be appropriate in the case in question to satisfy the requirements of the law governing documents of the type issued by the Commissioner.

If you have technical questions regarding the enclosed documents, please contact the Office of Air Quality, Permits Branch at (317) 233-0178. Callers from within Indiana may call toll-free at 1-800-451-6027, ext. 3-0178.

Enclosures
FNPER.dot 1/10/05

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CONSTRUCTION PERMIT
OFFICE OF AIR QUALITY

AK Steel Corporation
Rockport Works
Rockport, Indiana 47635

is hereby authorized to construct and operate

the equipment listed on Page 2 and 3 of this permit.

This permit is issued to the above mentioned company (herein known as the Permittee) under the provisions of 326 IAC 2-1.1, 326 IAC 2-2, 40 CFR 52.780 and 40 CFR 52.124 (Prevention of Significant Deterioration), with conditions listed on the attached pages.

Construction Permit No.: CP 147-6713-00041	
Issued by: Original Signed by Paul Dubenetzky, Branch Chief Office of Air Quality	Issuance Date: February 13, 1997

First Construction Permit Amendment 147-9557-00041, Issued May 6, 1998
Second Construction Permit Amendment 147-9818-00041, Issued June 24, 1998
Third Construction Permit Amendment 147-10571-00041, Issued March 4, 1999
Fourth Administrative Amendment 147-11471-00041, Issued April 18, 2002

Construction Permit Modification No.: CP 147-19502-00041 Pages Affected: 3, 6, 13 and 23	
Issued by: Paul Dubenetzky, Branch Chief Office of Air Quality	Issuance Date: August 05, 2005

Continuous Anneal and Pickling Line (APL) with a maximum normal capacity of 130 tons per hour consisting of:

(a) one (1) flattener,
(b) one (1) shear,
(c) one (1) laser welder,
(d) one (1) leveller shear,
(e) one (1) alkaline cleaner section exhausting through a wet scrubber system to Stack S06,
(f) one (1) 110 million (MM)Btu per hour natural gas-fired annealing furnace section equipped with low-NOx burners with integral exhaust gas recirculation (or equivalent) exhausting to Stack S07A,
(g) one (1) 55 MMBtu per hour natural gas-fired annealing furnace section equipped with low-NOx burners with integral exhaust gas recirculation (or equivalent) exhausting to Stack S07B,
(h) one (1) air quench station consisting of 11 sections exhausting through a baghouse to Stack S08,
(i) two (2) water quench sections,
(j) one (1) enclosed shot blasting chamber exhausting through a baghouse to Stack S05,
(k) electrolytic pickle and rinse tanks exhausting through a wet scrubber system to Stack S09A,
(l) mixed acids pickle and rinse tanks exhausting through a multi-stage oxidation/reduction and acid neutralization scrubbing system to Stack S09B,
(m) one (1) steam heated strip dryer,
(n) skin pass temper mill exhausting through a baghouse to Stack S09C, and
(o) one (1) tension/leveller and side trimmer;

Continuous Pickling Line (CPL) with a maximum normal capacity of 476 tons per hour consisting of:

(a) one (1) strip leveller and (1) mechanical scale breaker exhausting to a baghouse to Stack S01,
(b) one (1) laser welder and one (1) tension leveller,
(c) three (3) HCl acid pickle and rinse tanks exhausting through a wet scrubber system to Stack S02,
(d) one (1) steam heated pickle dryer,
(e) one (1) shear/trimmer, and
(f) one (1) electrostatic oiler;

Continuous Cold Mill (CCM) with a maximum normal capacity of 660 tons per hour consisting of:

(a) one (1) strip leveller and one (1) shear,
(b) one (1) laser welder,
(c) five (5) cold reduction mills exhausting to one (1) mist elimination system to Stack S11, and
(d) one (1) cold mill rotary shear and tension reels;

Temper Mill with a maximum normal capacity of 300 tons per hour consisting of:

(a) one (1) temper mill exhausting to one (1) oil mist elimination system to Stack S16;

Continuous Galvanizing Line (CGL) with a maximum normal capacity of 183.6 tons per hour consisting of:

(a) one (1) flattener,
(b) one (1) mash seam welder,
(c) alkaline cleaning system exhausting through a wet scrubber system to Stack S17,
(d) one (1) 4.1 MMBtu/hour natural gas-fired cleaning section dryer,
(e) one (1) 205.7 MMBtu/hr annealing furnace exhausting through a selective catalytic reduction (SCR) control system to Stack S18,
(f) one (1) 7.0 MMBtu per hour natural gas-fired back-up galvanneal soak section burner,

(g) one (1) 2.05 MMBtu per hour natural gas-fired preheater for the zinc pot equipment,
(h) one (1) induction zinc premelt pot,
(i) one (1) induction heated zinc coating pot,
(j) one (1) 0.82 MMBtu per hour natural gas-fired edge burner,
(k) one (1) water quench cooling section with a closed loop, recirculating water spray,
(l) one (1) 4.1 MMBtu/hour natural gas-fired dryer,
(m) one (1) skin pass temper mill and one (1) tension leveller,
(n) one (1) chromate application system with one (1) roll coater,
(o) one (1) 6.0 MMBtu/hour natural gas-fired dryer,
(p) one (1) phosphate application system with one (1) roll coater,
(q) one (1) 5.68 MMBtu/hour natural gas-fired dryer,
(r) one (1) electrostatic oiler, and
(s) one (1) rotary shear; and

Ancillary Equipment consisting of:

(a) hydrogen batch annealing with fifteen (15) natural gas-fired furnaces with low-NOx burners rated at 6.75 MMBtu per hour exhausting through the roof monitor system in Building 500,
(b) roll repair shop with two (2) chrome dip tanks exhausting through a mist eliminator system to Stack S15,
(c) roll repair shop with two (2) electrodischarge texturing machines exhausting through a baghouse that vents to the building,
(d) two (2) natural gas-fired 76.0 MMBtu per hour boilers with ultra low-NOx burners in boiler house No. 1 exhausting to Stack S03,
(e) two (2) natural gas-fired 76.0 MMBtu per hour boilers with ultra low-NOx burners in boiler house No. 2 exhausting to Stack S20,
(f) space heaters and air make-up units with each unit limited to no more than 5.2 MMBtu per hour and a combined rating limited to no more than 251 MMBtu per hour,
(g) two (2) non-contact cooling towers with mist drift eliminator exhausting to the atmosphere,
(h) storage tanks for HCl, nitric acid, and HF exhausting through a fume scrubber to Stack S04,
(i) miscellaneous storage tanks for the continuous cold mill operation not to exceed an overall capacity of 353,000 gallons,
(j) miscellaneous storage tanks for the temper mill and cold mill operation not to exceed an overall capacity of 131,000 gallons,
(k) miscellaneous oil storage tanks for the continuous galvanizing line not to exceed an overall capacity of 16,250 gallons, and
(l) miscellaneous oil storage tanks for the continuous pickling line not to exceed an overall capacity of 15,000 gallons.

Construction Conditions

General Construction Conditions

1. That the data and information supplied with the application shall be considered part of this permit. Prior to any proposed change in construction which may affect allowable emissions, the change must be approved by the Office of Air Quality (OAQ).

2. That this permit to construct does not relieve the permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.

Effective Date of the Permit

3. Pursuant to IC 13-15-5-3, this permit becomes effective upon issuance.

Source Obligation

4. That pursuant to 326 IAC 2-2-8 (Source Obligation), the Commissioner may revoke this permit if construction is not commenced within eighteen (18) months or if the construction is not completed within a reasonable time. The time may be extended eighteen months upon satisfactorily showing that an extension is justified.

5. That notwithstanding Construction Condition No. 6, all requirements and conditions of this construction permit shall remain in effect unless modified in a manner consistent with procedures established for modifications of construction permits pursuant to 326 IAC 2 (Permit Review Rules).

First Time Operation Permit

6. That this document shall also become a first-time operation permit pursuant to 326 IAC 2-1-4 (Operating Permits) when, prior to start of operation, the following requirements are met:

   (a) The attached affidavit of construction shall be submitted to the Office of Air Quality (OAQ), Permit Administration & Development Section, verifying that the facilities were constructed as proposed in the application. The facilities covered in the Construction Permit may begin operating on the date the Affidavit of Construction is postmarked or hand delivered to IDEM.

   (b) If construction is completed in phases; i.e., the entire construction is not done continuously, a separate affidavit must be submitted for each phase of construction. Any permit conditions associated with operation start up dates such as stack testing for New Source Performance Standards (NSPS) shall be applicable to each individual phase.

   (c) Permittee shall receive an Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section and attach it to this document.

   (d) The operation permit will be subject to annual operating permit fees pursuant to 326 IAC 2-1-7.1(Fees).

   (e) Pursuant to 326 IAC 2-7-4, the permittee shall apply for a Title V operating permit within twelve (12) months after the source becomes subject to Title V. This 12-month period starts at the postmarked submission date of the Affidavit of Construction. If the construction is completed in phases, the 12-month period starts at the postmarked submission date of the Affidavit of Construction that triggers the Title V applicability. The operation permit issued shall contain as a minimum the conditions in the Operation Conditions section of this permit.

NSPS Reporting Requirement

7. That pursuant to the New Source Performance Standards (NSPS), Part 60.7, the source owner/operator is hereby advised of the requirement to report the following at the appropriate times:

   (a) Commencement of construction date (no later than 30 days after such date);

   (b) Anticipated start-up date (not more than 60 days or less than 30 days prior to such date);

   (c) Actual start-up date (within 15 days after such date); and

   (d) Date of performance testing (at least 30 days prior to such date), when required by a condition elsewhere in this permit.

Reports are to be sent to:

Compliance Data Section, Office of Air Quality
100 North Senate Avenue
Indianapolis, IN 46204

The application and enforcement of these standards have been delegated to the IDEM-OAQ. The requirements of 40 CFR Part 60 are also federally enforceable.

8. That when the facility is constructed and placed into operation the following operation conditions shall be met:

Operation Conditions

General Operation Conditions

1. That the data and information supplied in the application shall be considered part of this permit. Prior to any change in the operation which may result in an increase in allowable emissions exceeding those specified in 326 IAC 2-1-1 (Construction and Operating Permit Requirements), the change must be approved by the Office of Air Quality (OAQ).

2. That the permittee shall comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder.

Preventive Maintenance Plan

3. That pursuant to 326 IAC 1-6-3 (Preventive Maintenance Plans), AK Steel Corporation shall prepare and maintain a preventive maintenance plan, including the following information:

   (a) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices.

   (b) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions.

   (c) Identification of the replacement parts which will be maintained in inventory for quick replacement.

   The preventive maintenance plan shall be submitted to IDEM, OAQ upon request and shall be subject to review and approval.

Transfer of Permit

4. That pursuant to 326 IAC 2-1-6 (Transfer of Permits):

   (a) In the event that ownership of this steel coil finishing plant is changed, AK Steel Corporation shall notify OAQ, Permit Branch, within thirty (30) days of the change. Notification shall include the date or proposed date of said change.

   (b) The written notification shall be sufficient to transfer the permit from AK Steel Corporation to the new owner.

(c) The OAQ shall reserve the right to issue a new permit.

Permit Revocation

5. That pursuant to 326 IAC 2-1-9(a)(Revocation of Permits), this permit to construct and operate may be revoked for any of the following causes:

(a) Violation of any conditions of this permit.

(b) Failure to disclose all the relevant facts, or misrepresentation in obtaining this permit.

(c) Changes in regulatory requirements that mandate either a temporary or permanent reduction of discharge of contaminants. However, the amendment of appropriate sections of this permit shall not require revocation of this permit.

(d) Noncompliance with orders issued pursuant to 326 IAC 1-5 (Episode Alert Levels) to reduce emissions during an air pollution episode.

(e) For any cause which establishes in the judgment of IDEM, the fact that continuance of this permit is not consistent with purposes of 326 IAC 2-1 (Permit Review Rules).

Availability of Permit

6. That a copy of this permit shall be available on the premises of the source.

Annual Emission Reporting

7. That pursuant to 326 IAC 2-6 (Emission Reporting), the owner/operator of AK Steel Corporation must annually submit an emission statement for the facility. This statement must be received by July 1 of each year and must comply with the minimum requirements specified in 326 IAC 2-6-4. A copy of this rule is enclosed. The annual statement must be submitted to:

Technical Support and Modeling, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204

The annual emission statement covers the twelve (12) consecutive month time period starting January 1 and ending December 31.

Performance Testing

8. That pursuant to 326 IAC 2-1.1-11(Compliance Requirements) compliance stack tests shall be performed for the following facilities:

(a) Required Compliance Stack Tests for NOx Emissions:

(1) Stack S03 from the two (2) 76.0 MMBtu per hour package boilers,
(2) Stack S20 from the two (2) 76.0 MMBtu per hour package boilers,
(3) Stacks S07A and S07B from the APL annealing furnace sections to be tested concurrently
(4) Stack S18 from the 205.7 MMBtu per hour CGL annealing furnace SCR system, and
(5) Stack S09B from the APL mixed acids pickling and final rinse multi-stage scrubber system.

(b) Required Compliance Stack Tests for PM/PM_{10} Emissions:

(1) Stack S06 from the APL alkaline cleaning bath wet scrubber system,
(2) Stack S08 from the APL air quench station baghouse,
(3) Stack S09A from the APL electrolytic pickling scrubber,
(4) Stack S09B from the APL mixed acid pickling and rinse multi-stage scrubber system,
(5) Stack S09C from the APL skin pass temper mill baghouse,
(6) Stack S01 from the CPL scale breaker baghouse,
(7) Stack S02 from the three (3) CPL HCl pickle and rinse wet scrubber system,
(8) Stack S17 from the CGL alkaline cleaner wet scrubber system,
(9) Stack S15 from the electrolytic chrome dip tank mist eliminator system,
(10) Stack S16 from the temper mill mist eliminator system, and
(11) Stack S11 from the continuous cold mill mist eliminator system.

Reference to particulate matter in the operation conditions of this permit, with the exception of fugitive particulate matter, shall mean total particulate matter consisting of PM and PM_{10}, as measured as the sum of filterable and condensible emissions using methods approved by the department.

(c) Required Compliance Stack Tests for Total Chromium Emissions:

(1) Stack S15 from the electrolytic chrome dip tank mist eliminator system.

(d) The OAQ reserves the right to test any emissions unit for any pollutant in the future, if warranted.

Each stack test shall be performed within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up. These tests shall be performed according to 326 IAC 3-2.1 (Source Sampling Procedures) using the methods specified in the rule or as approved by the Commissioner. The following procedures shall be met:

(a) A test protocol shall be submitted to the OAQ, Compliance Data Section, 35 days in advance of the test.

(b) The Compliance Data Section shall be notified of the actual test date at least two (2) weeks prior to the date.

(c) All test reports must be received by the Compliance Data Section within 45 days of completion of the testing.

(d) Whenever the results of the stack test performed exceed the level specified in this permit, appropriate corrective actions shall be implemented within thirty (30) days of receipt of the test results. These corrective actions shall be implemented immediately unless notified by OAQ that they are not acceptable. The Permittee shall minimize emissions while the corrective actions are being implemented. OAQ reserves the right to utilize enforcement activities to resolve the noncompliant stack test(s).

(e) A second test to demonstrate compliance shall be performed within 120 days. Failure of the second test to demonstrate compliance may be grounds for immediate revocation of this permit to operate the affected facility.

Malfunction Condition

9. That pursuant to 326 IAC 1-6-2 (Records; Notice of Malfunction):

(a) A record of all malfunctions, including startups or shutdowns of any facility or emission control equipment, which result in violations of applicable air pollution control regulations or applicable emission limitations shall be kept and retained for a period of three (3) years and shall be made available to the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ) or appointed representative upon request.

(b) When a malfunction of any facility or emission control equipment occurs which lasts more than one (1) hour, said condition shall be reported to OAQ, using the Malfunction Report Forms (2 pages). Notification shall be made by telephone or facsimile, as soon as practicable, but in no event later than four (4) daytime business hours after the beginning of said occurrence.

(c) Failure to report a malfunction of any emission control equipment shall constitute a violation of 326 IAC 1-6, and any other applicable rules. Information of the scope and expected duration of the malfunction shall be provided, including the items specified in 326 IAC 1-6-2(a)(1) through (6).

(d) Malfunction is defined as any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. [326 IAC 1-2-39]

Baghouse Operating Condition

10. That upon startup, each baghouse shall be operated at all times when its associated facility is in operation as identified below:

APL air quench station,
APL shot blasting chamber,
APL skin pass temper mill operation,
CPL strip leveller and mechanical scale breaker, and
Electrodischarge texturing machines.

(a) The permittee shall record the total static pressure drop across the baghouses, at least once per day. Unless operated under conditions for which the Preventive Maintenance Plan specifies otherwise, the pressure drop across the baghouses shall be maintained within the range of 1.5 and 5.0 inches of water. The Preventive Maintenance Plan for these baghouses shall contain troubleshooting contingency and corrective actions for when the pressure reading is outside of this range for any one reading.

(b) The instrument used for determining the pressure shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.

(c) The gauge employed to take the pressure drop across the baghouses or any part of the facility shall have a scale such that the expected normal reading shall be no less than 20 percent of full scale and be accurate within $\pm$ 2% of full scale reading. The instrument shall be quality assured and maintained as specified by the vendor.

(d) An inspection shall be performed each calendar quarter for all baghouses. Defective bags shall be replaced. A record shall be kept of the results of the inspection and the number of bags replaced.

(e) In the event that a bag's failure has been observed:

(1) The process associated with the affected compartments will be shut down immediately until the failed units have been repaired or replaced.

(2) Based upon the findings of the inspection, any additional corrective actions will be devised within eight (8) hours of discovery and will include a timetable for completion.

(f) These records shall be kept for at least the past 36 month period and made available upon request to the Office of Air Quality (OAQ).

Scrubber Operating Condition

11. That upon startup, each scrubber shall be operated at all times when its associated facility is in operation as identified below:

APL alkaline cleaner section,
APL electrolytic pickle and rinse tanks,
APL mixed acids pickle and rinse tanks,
CPL HCl pickle and rinse tanks,
CGL alkaline cleaning system, and
HCl, nitric acid and HF storage tanks.

(a) The permittee shall record the pH of the scrubbing liquid (if applicable), pressure drop and scrubbing liquid flow rate of the scrubber at least once per day. The Preventive Maintenance Plan for the scrubber shall contain troubleshooting contingency and corrective actions for when the pH, pressure drop, and scrubbing liquid flow rate are outside of the normal range for any one reading.

(b) The instruments used for determining the pH of the scrubbing liquid (if applicable), pressure drop, and scrubbing liquid flow rate at the inlet of the control device shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.

(c) The gauge employed to take the pressure drop across the scrubber or any part of the facility shall have a scale such that the expected normal reading shall be no less than 20 percent of full scale and be accurate within $\pm$ 2% of full scale reading. The instrument shall be quality assured and maintained as specified by the vendor.

(d) An inspection shall be performed each calendar quarter of the scrubber. Defective scrubber components shall be replaced. A record shall be kept of the results of the inspection and the number of scrubber components replaced.

(e) In the event that a scrubber's failure has been observed:

(1) The process associated with the affected unit will be shut down immediately until the failed unit has been repaired or replaced.

(2) Based upon the findings of the inspection, any additional corrective actions will be devised within eight (8) hours of discovery and will include a timetable for completion.

(f) The permittee shall submit vendor specifications for each scrubber and shall include operating parameters for pH of the scrubbing liquid (if applicable), pressure drop and scrubbing liquid flow rate. The permittee may use another method approved by the Commissioner to establish the operating parameters in lieu of vendor specifications. The operating parameters for the electrolytic chrome dip tank scrubber shall be determined in accordance with the provisions of 40 CFR 63, Subpart N. This information shall be submitted to the:

Compliance Data Section, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204

at least 35 days prior to performance testing. Once the operating parameters are established, they shall become part of the Preventive Maintenance Plan.

(g) These records shall be kept for at least the past 36 month period and made available upon request to the Office of Air Quality (OAQ).

Mist Eliminator Operating Condition

12. That upon startup, each mist elimination system shall be operated at all times when its associated facility is in operation as identified below:

Electrolytic chrome dip tank,
CCM cold reduction mill, and
Temper mill operation.

(a) The permittee shall record the pressure drop of the mist eliminator at least once per day. The Preventive Maintenance Plan for the mist eliminator shall contain troubleshooting contingency and corrective actions for when the pressure drop readings are outside of the normal range for any one reading.

(b) The instruments used for determining the pressure drop shall be subject to approval by IDEM, OAQ and shall be calibrated at least once every six (6) months.

(c) The gauge employed to take the pressure drop across the mist eliminator or any part of the facility shall have a scale such that the expected normal reading shall be no less than 20 percent of full scale and be accurate within $\pm$ 2% of full scale reading. The instrument shall be quality assured and maintained as specified by the vendor.

(d) An inspection shall be performed each calendar quarter of the mist eliminator. Defective mist eliminator components shall be replaced. A record shall be kept of the results of the inspection and the number of mist eliminator components replaced.

(e) In the event that a mist eliminator's failure has been observed:

(1) The affected unit will be shut down immediately until the failed unit has been repaired or replaced.

(2) Based upon the findings of the inspection, any additional corrective actions will be devised within eight (8) hours of discovery and will include a timetable for completion.

(f) The permittee shall submit vendor specifications for each mist eliminator and shall include operating parameters for pressure drop. The permittee may use another method approved by the Commissioner to establish the operating parameters in lieu of vendor specifications. This information shall be submitted to the:

Compliance Data Section, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204

at least 35 days prior to performance testing. Once the operating parameters are established, they shall become part of the Preventive Maintenance Plan.

(g) These records shall be kept for at least the past 36 month period and made available upon request to the Office of Air Management (OAQ).

Visible Emission Notations

13. That visible emission notations of all exhaust to the atmosphere from:

Stack S06 from the wet scrubber system,
Stack S08 from the baghouse,
Stack S09A from the scrubber system,
Stack S09B from the multi-stage scrubber system,
Stack S09C from the baghouse,
Stack S01 from the baghouse,
Stack S02 from the wet scrubber system,
Stack S17 from the wet scrubber system, and
Stack S15 from the mist eliminator system,

shall be performed once per working shift (during daylight hours). A trained employee will record whether emissions are normal or abnormal.

(a) For processes operated continuously, “normal” visible emission notations mean those conditions prevailing, or expected to prevail, 80% of the time the process is in operation, not counting start up or shut down time.

(b) In the case of batch or discontinuous operation, notations shall be taken during that part of the operation specified in the facility’s specific condition prescribing visible emissions.

(c) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal and abnormal visible emissions for that specific process.

(d) The Preventive Maintenance Plan for these facilities shall contain troubleshooting contingencies and corrective actions for when an abnormal emission is observed.

(e) These records shall be kept for at least a 12 month period and made available upon request to the Office of Air Quality (OAQ).

BACT Condition

14. That pursuant to 326 IAC 2-2-3 (Control Technology Review; Requirements), visible emissions from the source shall not exceed an average of five (5) percent opacity in 24 consecutive readings.

A certified visible emissions reader shall conduct and record observations in accordance with 40 CFR 60, Appendix A, Method 9, once per working shift (during daylight hours) for 12 minutes during each observation period for the following stacks:

Stack S11 from the continuous cold mill mist eliminator system, and
Stack S16 from the temper mill mist eliminator system.

These records shall be kept for at least the past 36 month period and made available upon request to the Office of Air Quality (OAQ). A Preventive Maintenance Plan for these facilities shall contain troubleshooting contingencies and corrective actions for when the opacity exceeds an average of five (5) percent opacity in 24 consecutive readings.

Fugitive Dust Emissions

15. That pursuant to 326 IAC 6-4 (Fugitive Dust Emissions), if fugitive dust is visible crossing the boundary or property line of the source, the source is in violation of this fugitive dust rule. Observations of visible emissions crossing the property line of the source at or near ground level must be made by a qualified representative of IDEM. [326 IAC 6-4-5(c)].

Fugitive Particulate Matter Emissions

16. (a) That pursuant to 326 IAC 6-5 (Fugitive Particulate Matter Emissions Limitations), fugitive particulate matter emissions shall be controlled according to the plan attached. AK Steel Corporation shall meet each of the following conditions:

(1) all roads associated with routine plant operations and parking lots located on the AK Steel property shall be paved,

(2) all paved road segments and parking lots shall be cleaned with a vehicular vacuum sweeper every 14 days to control PM10 emissions to no more than 3 tons per year and PM emissions to no more than 15 tons per year, and

(3) silt surface loading shall not exceed 16.8 pounds of silt per mile.

(b) The cleaning activities of the paved road segments and parking lots may be delayed by one day when:

(1) 0.1 or more inches of rain has accumulated during the 24-hour period prior to the scheduled cleaning,

(2) the road segment is closed or abandoned. Abandoned roads will be barricaded to prevent vehicle access,

(3) it is raining at the time of the scheduled cleaning, or

(4) road surface temperature is below 35 degrees Fahrenheit.

(c) Upon request of the Assistant Commissioner, AK Steel Corporation shall sample surface material silt content and surface dust loadings at paved segments specified by IDEM in accordance with field and laboratory procedures set by IDEM within 15 days of the request. The sample results shall be submitted to IDEM within 30 days of the sample date. Supplemental cleaning parameters of the paved roads and/or parking lots found to exceed the controlled silt surface loading of 16.8 pounds of silt per mile shall also be submitted to the IDEM within 30 days of the sample date.

17. That the permittee shall not burn any material except as provided in 326 IAC 4-1-3, 326 IAC 4-1-4 or 326 IAC 4-1-6.

18. That pursuant to 326 IAC 2-2 and 40 CFR 52.21, the emissions of sulfur dioxide, asbestos, lead, beryllium, mercury, vinyl chloride, fluorides, hydrogen sulfide, sulfuric acid mist and total reduced sulfur compounds (including hydrogen sulfide) shall not exceed the annual significant levels established in this rule.

19. That pursuant to 326 IAC 20 and 40 CFR 63, Subpart A, the emissions of hazardous air pollutants (HAP) from the entire source shall be less than 10 tons per 365 day period for any individual HAP or 25 tons per 365 day period of any combination of HAPs.

BACT Condition

20. That pursuant to 326 IAC 2-2-3 (Control Technology Review; Requirements), the volatile organic compound (VOC) emissions of the various oils shall meet the following:

(a) the VOC content of any rolling oil employed shall not exceed 6.9 pounds of VOC per gallon of oil, excluding water and exempt solvents.

(b) The VOC content of any rust Preventive oil employed shall not exceed 3.3 pounds of VOC per gallon of oil, excluding water and exempt solvents.

(c) The VOC content of any prelube oil employed shall not exceed 0.8 pounds of VOC per gallon of oil, excluding water and exempt solvents.

(d) The oils used at the facility shall contain no hazardous air pollutants (HAPs) as defined in 326 IAC 14-1-2 and 40 CFR 61.02 and 61.03.

BACT Condition

21. That pursuant to 326 IAC 2-2-3 (Control Technology Review; Requirements), the processes of the continuous annealing and pickling line (APL) shall be limited as follows:

(a) The alkaline cleaner shall be enclosed and maintained under negative pressure. The filterable particulate matter (PM/PM_{10}) generated from this process shall be controlled by a wet scrubber system. Total particulate matter (including condensible PM_{10}) shall not exceed 0.0044 grains per dscf and 0.377 pounds per hour. The OAQ may revise this permit to adjust the total PM/PM_{10} limitation based upon the results of stack test required in Condition 8(b). The Department will provide an opportunity for public notice and comment prior to finalizing any permit revision. IC 13-15-7-3 (Revocation or Modification of a permit: Appeal to Board) shall apply to this permit condition.

(b) The 110 MMBtu per hour annealing furnace section No. 1 and the 55.0 MMBtu per hour annealing furnace section No. 2 shall each use only natural gas and shall be controlled by ultra low-NOx burners with integral exhaust gas recirculation (or equivalent). The nitrogen oxide emissions from the furnaces shall not exceed the following limits:

Stainless Steel Type	Furnace MMBtu/hr	New Limit lb/MMBtu	New Limit lb/hr
400 Cold Roll	110	0.08	8.0
400 Cold Roll	55	0.14	7.7
300 Cold Roll	110	0.087	9.6
300 Cold Roll	55	0.11	6.1
300 Hot Roll	110	0.04	4.4
300 Hot Roll	55	0.04	2.2

(c) The permittee shall employ an operational practice called "smoke and anneal" for certain grades of stainless steel in the 110.0 MMBtu per hour annealing furnace section No. 1 and the 55.0 MMBtu per hour annealing furnace section No. 2. This operational practice shall be limited to no more than 48 days or 1152 hours per year. The outlet nitrogen oxide loading shall not exceed 0.080 pounds per MMBtu during this operation. The combined nitrogen oxide emissions from the two sections of the annealing furnace shall not exceed 13.2 pounds per hour and 7.60 tons per year for this operation.

(d) The filterable particulate matter (PM/PM_{10}) generated from the air quench station shall be controlled by a baghouse. Total particulate matter (including condensible PM_{10}) shall not exceed 0.005 grains per dscf and 1.41 pounds per hour. The OAQ may revise this permit to adjust the total PM/PM_{10} limitation based upon the results of stack test required in Condition 8(b). The Department will provide an opportunity for public notice and comment prior to finalizing any permit revision. IC 13-15-7-3 (Revocation or Modification of a permit: Appeal to Board) shall apply to this permit condition.

(e) The shot blaster chamber shall be enclosed and maintained under negative pressure. The particulate matter generated from the operation shall be exhausted to a baghouse with an outlet grain loading not to exceed 0.000009 grains per dscf. The particulate matter emissions shall not exceed 0.006 pounds per hour.

(f) The filterable particulate emissions (PM/PM_{10}) generated from the electrolytic pickling section shall be controlled by a wet scrubber system. The outlet grain loading from the scrubber for filterable particulate matter shall not exceed 0.0022 grains per dscf and 0.349 pounds per hour. Total particulate matter (including condensible PM_{10}) shall not exceed 0.0093 grains per dscf and 0.77 pounds per hour. The OAQ may revise this permit to adjust the total PM/PM_{10} limitation based upon the results of stack test required in Condition 8(b). The Department will provide an opportunity for public notice and comment prior to finalizing any permit revision. IC 13-15-7-3 (Revocation or Modification of a permit: Appeal to Board) shall apply to this permit condition.

(g) The mixed acid pickle and rinse tanks shall be enclosed and maintained under negative pressure. The filterable particulate matter (PM/PM_{10}) and the nitrogen oxide generated from this process shall be controlled by a wet scrubber system.

(1) The outlet nitrogen oxide loading shall not exceed 175 ppmvd and the nitrogen oxide emissions shall not exceed 9.66 pounds per hour.

(2) The outlet grain loading for filterable particulate matter shall not exceed 0.003 grains per dscf and 0.153 pounds per hour. Total particulate matter (including condensible PM_{10}) shall not exceed

0.0060 grains per dscf and 0.28 pounds per hour. The OAQ may revise this permit to adjust the total PM/PM_{10} limitation based upon the results of stack test required in Condition 8(b). The Department will provide an opportunity for public notice and comment prior to finalizing any permit revision. IC 13-15-7-3 (Revocation or Modification of a permit: Appeal to Board) shall apply to this permit condition.

(h) The strip dryer shall only use steam heat.

(i) The filterable particulate matter (PM/PM_{10}) generated from the skin pass temper mill shall be controlled by a baghouse. Total particulate matter (including condensible PM_{10}) shall not exceed 0.0066 grains per dscf and 0.459 pounds per hour. The OAQ may revise this permit to adjust the total PM/PM_{10} limitation based upon the results of stack test required in Condition 8(b). The Department will provide an opportunity for public notice and comment prior to finalizing any permit revision. IC 13-15-7-3 (Revocation or Modification of a permit: Appeal to Board) shall apply to this permit condition.

BACT Condition

22. That pursuant to 326 IAC 2-2-3 (Control Technology Review; Requirements), the processes of the continuous pickling line (CPL) shall be limited as follows:

(a) The filterable particulate matter (PM/PM_{10}) generated from the strip leveller and mechanical scale breaker shall be controlled by a baghouse. The outlet grain loading of the baghouse for filterable particulate matter shall not exceed 0.0044 grains per dscf and 1.52 pounds per hour. Total particulate matter (including condensible PM_{10}) shall not exceed 0.0076 grains per dscf and 3.69 pounds per hour. The OAQ may revise this permit to adjust the total PM/PM_{10} limitation based upon the results of stack test required in Condition 8(b). The Department will provide an opportunity for public notice and comment prior to finalizing any permit revision. IC 13-15-7-3 (Revocation or Modification of a permit: Appeal to Board) shall apply to this permit condition.

(b) The HCl pickling baths and rinse tanks shall be enclosed and maintained under negative pressure. The filterable particulate matter (PM/PM_{10} HCl acid mist) generated from this process shall be controlled by a wet scrubber system. The outlet grain loading from the scrubber for filterable particulate matter shall not exceed 0.0020 grains per dscf and 0.206 pounds per hour. Total particulate matter (including condensable PM_{10}) shall not exceed 0.0091 grains per dscf and 0.61 pounds per hour. The OAQ may revise this permit to adjust the total PM/PM_{10} limitation based upon the results of stack test required in Condition 8(b). The Department will provide an opportunity for public notice and comment prior to finalizing any permit revision. IC 13-15-7-3 (Revocation or Modification of a permit: Appeal to Board) shall apply to this permit condition.

(c) The pickling line dryer shall only use steam heat.

(d) The rust Preventive oils shall be applied to the metal strips electrostatically.

BACT Condition

23. That pursuant to 326 IAC 2-2-3 (Control Technology Review; Requirements), the five-stand continuous cold reduction mill shall be enclosed and maintained under negative pressure. The filterable particulate matter (PM/PM_{10}) generated from this process shall be controlled by a mist elimination system. Total particulate matter (including condensible PM_{10}) shall not exceed 0.0087 grains per dscf and 16.1 pounds per hour. The OAQ may revise this permit to adjust the total PM/PM_{10} limitation based upon the results of stack test required in Condition

8(b). The Department will provide an opportunity for public notice and comment prior to finalizing any permit revision. IC 13-15-7-3 (Revocation or Modification of a permit: Appeal to Board) shall apply to this permit condition.

BACT Condition

24. That pursuant to 326 IAC 2-2-3 (Control Technology Review; Requirements), the processes of the continuous galvanizing line (CGL) shall be limited as follows:

(a) The alkaline cleaning baths and rinse tanks shall be enclosed and maintained under negative pressure. The filterable particulate matter (PM/PM_{10}) generated from this process shall be controlled by a wet scrubber system. The outlet grain loading from the scrubber for filterable particulate matter shall not exceed 0.0022 grains per dscf and 0.125 pounds per hour. Total particulate matter (including condensible PM_{10}) shall not exceed 0.0065 grains per dscf and 0.382 pounds per hour. The OAQ may revise this permit to adjust the total PM/PM_{10} limitation based upon the results of stack test required in Condition 8(b). The Department will provide an opportunity for public notice and comment prior to finalizing any permit revision. IC 13-15-7-3 (Revocation or Modification of a permit: Appeal to Board) shall apply to this permit condition.

(b) The 4.10 MMBtu per hour cleaning section dryer shall only use natural gas.

(c) The 205.7 MMBtu/hr annealing and induction heating galvannealing furnace shall be controlled by a selective catalytic reduction control (SCR). The outlet nitrogen oxide loading shall not exceed 0.06 pounds per MMBtu. The nitrogen oxide emissions shall not exceed 12.3 pounds per hour.

(d) The 7.0 MMBtu per hour galvanized soak section backup burner shall only use natural gas.

(e) The 2.05 MMBtu per hour preheater for the zinc pot equipment shall only use natural gas.

(f) The induction zinc premelt pot and induction zinc coating pot shall be heated by electricity.

(g) The 0.82 MMBtu per hour edge burners shall only use natural gas.

(h) The 4.1 MMBtu per hour galvanizing line dryer shall only use natural gas.

(i) The 6.0 MMBtu per hour chromate application system dryer shall only use natural gas.

(j) The 5.68 MMBtu per hour phosphate application with roll coaters dryer shall only use natural gas.

(k) The rust Preventive oils shall be applied to the metal strips electrostatically.

BACT Condition

25. That pursuant to 326 IAC 2-2-3 (Control Technology Review; Requirements), the filterable particulate matter (PM/PM_{10}) generated from the temper mill shall be controlled by a mist eliminator. Total particulate matter (including condensible PM_{10}) shall not exceed 0.010 grains per dscf and 5.71 pounds per hour. The OAQ may revise this permit to adjust the total PM/PM_{10} limitation based upon the results of stack test required in Condition 8(b). The Department will provide an opportunity for public notice and comment prior to finalizing any permit

revision. IC 13-15-7-3 (Revocation or Modification of a permit: Appeal to Board) shall apply to this permit condition.

BACT Condition

26. That pursuant to 326 IAC 2-2-3 (Control Technology Review; Requirements), the fifteen (15) 6.75 MMBtu per hour hydrogen batch annealing furnaces shall use only natural gas and shall be equipped with low- NOX burners. The outlet nitrogen oxide loading shall not exceed 0.1 pounds per MMBtu. The nitrogen oxide emissions shall not exceed 9.45 pounds per hour.

BACT Condition

27. That pursuant to 326 IAC 2-2-3 (Control Technology Review; Requirements), the particulate matter generated, measured as chromium, from the electrolytic chrome dip tank located in the roll repair shop shall be controlled by a mist eliminator system. The outlet grain loading shall not exceed 6.6×10^{-6} grains per dscf.

Chromium NESHAP

28. (a) That pursuant to 326 IAC 20 and 40 CFR 63, Subpart N (National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks), the two (2) electrolytic chrome dip tanks located in the roll repair shop are subject to the hard chromium standards stated in this rule. The total chromium emissions from Stack S15 of the electrolytic chrome dip tanks shall not exceed 0.0000066 grains per dscf pursuant to 40 CFR 63.342(c)(1)(i).

(b) The provisions of 40 CFR Part 63, Subpart A - General Provisions, which are incorporated by reference as 326 IAC 20-1-1, apply to the electrolytic chrome dip tanks except when otherwise specified in 40 CFR Part 63, Subpart N. The Permittee shall comply with the requirements of this condition on and after the compliance date for the tanks.

(c) The Permittee shall prepare an Operation and Maintenance Plan (OMP) to be implemented no later than the startup date of the electrolytic chrome dip tanks. The OMP shall specify the operation and maintenance criteria for the tanks, the composite mesh-pad, the mesh pad mist elimination system and monitoring equipment and shall include the following elements:

(1) For the composite mesh-pad system (CMP):

(i) Quarterly visual inspections of the device to ensure there is proper drainage, no chromic acid buildup on the pads, and no evidence of chemical attack on the structural integrity of the device.

(ii) Quarterly visual inspection of the back portion of the mesh pad closest to the fan to ensure there is no breakthrough of chromic acid mist.

(iii) Quarterly visual inspections of the ductwork from the tank to the control device to ensure there are no leaks.

(iv) Perform washdown of the composite mesh-pads in accordance with manufacturers recommendations.

(2) A standardized checklist to document the operation and maintenance criteria for the electrolytic chrome dip tank, the air pollution control device, the add-on air pollution control device and the monitoring equipment.

(3) Procedures to be followed to ensure that equipment or process malfunctions due to poor maintenance or other preventable conditions or periods of excess emissions as indicated by monitoring data do not occur.

(4) A systematic procedure for identifying malfunctions and periods of excess emissions of the electrolytic chrome dip tanks, the air pollution control device, the add-on air pollution control device and monitoring equipment; and for implementing corrective actions to address such malfunctions and periods of excess emissions.

(5) The Permittee may use applicable standard operating procedures (SOP) manuals, Occupational Safety and Health Administration (OSHA) plans, or other existing plans such as the PMP, as the OMP, provided the alternative plans meet the above listed criteria.

(6) If the OMP fails to address or inadequately addresses an event that meets the characteristics of a malfunction or period of excess emissions at the time the plan is initially developed, the Permittee shall revise the OMP within forty-five (45) days after such an event occurs. The revised plan shall include procedures for operating and maintaining the electrolytic chrome dip tanks, the air pollution control device, the add-on air pollution control device and the monitoring equipment, during similar malfunction or period of excess emissions events, and a program for corrective action for such events.

(7) If actions taken by the Permittee during periods of malfunction or periods of excess emissions are inconsistent with the procedures specified in the OMP, the Permittee shall record the actions taken for that event and shall report by phone such actions within two (2) working days after commencing actions inconsistent with the plan. This report shall be followed by a letter within seven (7) working days after the end of the event, unless the Permittee makes alternative reporting arrangements, in advance, with IDEM, OAQ.

(8) The Permittee shall keep the written OMP on record after it is developed to be made available, upon request, by IDEM, OAQ for the life of the electrolytic chrome dip tanks or until the tanks are no longer subject to the provisions of 40 CFR 63.340. In addition, if the OMP is revised, the Permittee shall keep previous versions of the OMPs on record to be made available for inspection, upon request by IDEM, OAQ for a period of five (5) years after each revision to the plan.

(d) The following work practice standards apply to the electrolytic chrome dip tanks:

(1) At all times, including periods of startup, shutdown, malfunction and excess emissions, the Permittee shall operate and maintain the tanks, composite mesh-pad, the mesh pad mist elimination system (S15) and monitoring equipment, in a manner consistent with good air pollution control practices, consistent with the Operation and Maintenance Plan (OMP) required in Operation Condition 28(c).

(2) Malfunctions and excess emissions shall be corrected as soon as practicable after their occurrence in accordance with the OMP required above.

(3) These operation and maintenance requirements are enforceable independent of emissions limitations or other requirements in this section.

(4) Determination of whether acceptable operation and maintenance procedures are being used will be based on information available to IDEM, OAQ, which may include, but is not limited to, monitoring results; review of the OMP, procedures, and records; and inspection of the source.

(5) Based on the results of a determination made under Operation Condition 28(d)(4), IDEM, OAQ may require that the Permittee make changes to the OMP. Revisions may be required if IDEM, OAQ finds that the plan:

(i) Does not address a malfunction or period of excess emissions that has occurred;

(ii) Fails to provide for the operation of the electrolytic chrome dip tanks, the composite mesh-pad, or the mesh pad mist elimination system and process monitoring equipment during a malfunction or period of excess emissions in a manner consistent with good air pollution control practices; or

(iii) Does not provide adequate procedures for correcting malfunctioning process equipment, composite mesh-pad, monitoring equipment or other causes of excess emissions as quickly as practicably

For the electrolytic chrome dip tanks, the Permittee shall comply with the requirements of this condition on and after the start-up date of each tank.

The work practice standards that address operation and maintenance must be followed during malfunctions and periods of excess emissions.

(e) A performance test demonstrating initial compliance for the electrolytic chrome dip tanks was performed on January 20, 1999.

(1) During the initial performance test conducted on January 20, 1999, it was determined that the average pressure drop across the composite mesh pad system was 4.0 inches of water and the average outlet chromium concentration is 0.00336 mg/dscm.

(2) The Permittee is not required to further test the electrolytic chrome dip tanks by this permit. However, the IDEM may require testing when necessary to determine if the electrolytic chrome dip tanks are in compliance. If testing is required by the IDEM, compliance with the limit specified in this operation condition and Operation Condition 27 shall be determined by a performance test conducted in accordance with 40 CFR 63.344 and Operation Condition 8.

(3) Any change, modification, or reconstruction of the electrolytic chrome dip tanks, the composite mesh-pad, the mesh pad mist elimination system or monitoring equipment may require additional performance testing conducted in accordance with 40 CFR 63.344 and Operation Condition 8.

(f) Pursuant to 40 CFR 63.343(c)(1)(ii), when using a composite mesh-pad system to comply with the limit specified in Operation Condition 28(a), the Permittee shall monitor and record the pressure drop

across the composite mesh-pad system during tank operation once each day that the hard chromium electroplating tank is operating. To be in compliance with the standards, the composite mesh-pad system shall be operated within " 1 inch of water column of the pressure drop value established during the initial performance test, or within the range of compliant values for pressure drop established during multiple performance tests.

Tank operation or operating time is defined as that time when a part is in the tank and the rectifier is turned on. If the amount of time that no part is in the tank is fifteen minutes or longer, that time is not considered operating time. Likewise, if the amount of time between placing parts in the tank (i.e., when no part is in the tank) is less than fifteen minutes, that time between plating the two parts is considered operating time.

(g) The Permittee shall maintain records to document compliance with Operation Condition 27, Operation Condition 28(a) and Operation Condition 28(b). These records shall include a minimum of the following:

(1) Inspection records for the composite mesh-pad system, the mesh pad mist elimination system and monitoring equipment to document that the inspection and maintenance required by Operation Condition 28(c) and Operation Condition 28(f) have taken place. The record can take the form of a checklist and should identify the following:

(i) The device inspected;

(ii) The date of inspection;

(iii) A brief description of the working condition of the device during the inspection, including any deficiencies found; and

(iv) Any actions taken to correct deficiencies found during the inspection, including the date(s) such actions were taken.

(2) Records of all maintenance performed on the electrolytic chrome dip tank, the mist eliminator and monitoring equipment.

(3) Records of the occurrence, duration, and cause (if known) of each malfunction of the electrolytic chrome dip tank, the composite mesh-pad system and monitoring equipment.

(4) Records of the occurrence, duration, and cause (if known) of each period of excess emissions of the electrolytic chrome dip tank, the composite mesh-pad system and monitoring equipment as indicated by monitoring data collected in accordance with this condition.

(5) Records of actions taken during periods of malfunction or excess emissions when such actions are inconsistent with the OMP.

(6) Other records, which may take the form of checklists, necessary to demonstrate consistency with the provisions of the OMP.

(7) Test reports documenting results of all performance tests.

(8) All measurements as may be necessary to determine the conditions of performance tests, including measurements necessary to determine compliance.

(9) Records of monitoring data required by 40 CFR 63.343(c) that are used to demonstrate compliance with the standard including the date and time the data are collected.

(10) The total process operating time, as defined in Operation Condition 28(f), of each tank, during the reporting period.

(11) Records of the actual cumulative rectifier capacity of each hard chromium electroplating tank expended during each month of the reporting period, and the total capacity expended to date for a reporting period.

(12) All documentation supporting the notifications and reports required by 40 CFR 63.9 and 63.10 (Subpart A, General Provisions) and by Operation Condition 28(h).

(h) The notifications and reports required in this section shall be submitted to IDEM, OAQ using the following address:

Compliance Data Section, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204

(1) Notification of Compliance Status (NCS):

(i) A Notification of Compliance Status (NCS) is required each time that the facility becomes subject to the requirements of 40 CFR Part 63 Subpart N.

The NCS shall be submitted to IDEM, OAQ, and shall list, for each tank, the information identified in 40 CFR 63.347(e)(2).

(ii) The NCS for each tank shall be submitted to IDEM, OAQ no later than forty-five (45) days following completion of the compliance demonstration.

(2) Notification of Construction or Reconstruction

(i) Pursuant to 40 CFR 63.345(b)(1), the Permittee may not construct a new tank subject to 40 CFR 63, Subpart N (including non-affected tanks defined in 40 CFR 63.344(e)) without submitting a Notification of Construction or Reconstruction (NCR) to IDEM, OAQ. In addition, the Permittee may not change, modify, or reconstruct the electrolytic chrome dip tank without submitting a Notification of Construction or Reconstruction (NCR) to IDEM, OAQ.

(ii) The NCR shall contain the information identified in 40 CFR 63.345(b) (2) and (3).

(iii) A change, modification, or reconstruction of this facility includes any change in the air pollution control techniques, the addition of add-on control devices, or the construction of ductwork for the purpose of controlling both existing tanks and non-affected facilities by a common control technique or device [i.e., the addition of duct work to the CMP system].

(iv) A complete application to construct new chromium electroplating or chromium anodizing tanks serves as this notification. Likewise, the complete application to modify or reconstruct the electrolytic chrome dip tank serves as this notification.

(v) Pursuant to 326 IAC 2-1.1-2(a), permission must be received from IDEM, OAQ before construction, modification, or reconstruction may commence.

(3) Performance Test Results

(i) The Permittee shall document results from any future performance tests in a complete test report that contains the information required in 40 CFR 344(a).

(ii) The Permittee shall submit reports of performance test results as part of the Notification of Compliance Status, described in 40 CFR 63.347(e), no later than forty-five (45) days following the completion of the performance test.

(4) Ongoing Compliance Status Report

(i) The Permittee shall prepare summary reports to document the ongoing compliance status of the electrolytic chrome dip tank using the Ongoing Compliance Status Report form provided with this permit. This report shall contain the information specified in 40 CFR 63.347(g)(3).

(ii) Because the electrolytic chrome dip tanks are located at site that is an area source of hazardous air pollutants (HAPs), the Ongoing Compliance Status Report shall be retained on site and made available to IDEM, OAQ upon request.

(iv) The Ongoing Compliance Status Report shall be completed according to the following schedule except as provided in Operation Condition 28(h)(5).

(A) The first report shall cover the period from the issuance date of this permit to December 31 of the year in which the permit is issued.

(B) Following the first year of reporting, the report shall be completed on a calendar year basis with the reporting period covering from January 1 to December 31.

(5) If both of the following conditions are met, semiannual reports shall be prepared and submitted to IDEM, OAQ:

(i) The total duration of excess emissions as indicated by the monitoring data collected by the Permittee in accordance with 40 CFR 63.343(c)] is one percent (1%) or greater of the total operating time as defined in Operation Condition 28(f) for the reporting period; and

(ii) The total duration of malfunctions of the add-on air pollution control device and monitoring equipment is five percent (5%) or greater of the total operating time as defined in Operation Condition 28(f).

Once the Permittee reports an exceedance as defined above, Ongoing Compliance Status Reports shall be submitted semiannually until a request to reduce reporting frequency in accordance with 40 CFR 63.347(g)(2) is approved.

(6) IDEM, OAQ may determine on a case-by-case basis that the summary report shall be completed more frequently and submitted, or that the annual report shall be submitted instead of being retained on site, if these measures are necessary to accurately assess the compliance status of the source.

BACT Condition

29. That pursuant to 326 IAC 2-2-3 (Control Technology Review; Requirements), the particulate matter generated from the electrodischarge texturing machines located in the roll repair shop shall be controlled by a baghouse. The outlet grain loading shall not exceed 0.002 grains per dscf. The particulate matter emissions from the baghouse exhaust shall not exceed 0.012 pounds per hour.

30. BACT Condition

Pursuant to 326 IAC 2-2-3 (Control Technology Review; Requirements), the two (2) 76.0 MMBtu per hour package boilers located in Boiler House No. 1 shall use only natural gas and shall be equipped with ultra low NOx burners. The total outlet nitrogen oxide loading from the boilers shall not exceed 0.04 pounds per MMBtu. The nitrogen oxide emissions from Stack S03 shall not exceed 3.04 pounds per hour from each individual boiler.

31. BACT Condition

That pursuant to 326 IAC 2-2-3 (Control Technology review; Requirements), the two (2) 76.0 MMBtu per hour package boilers located in Boiler House No. 2 shall use only natural gas and shall be equipped with ultra low NOx burners. The outlet nitrogen oxide loading from the boiler shall not exceed 0.04 pounds per MMBtu. The nitrogen oxide emissions from Stack S20 shall not exceed 3.04 pounds per hour from each individual boiler.

32. NSPS Condition

That pursuant to 326 IAC 12 and 40 CFR Part 60.40c, Subpart Dc (Standard of Performance for Small Industrial-Commercial-Institutional Steam Generating units), the natural gas usage of the five (5) 76.0 MMBtu per hour package boilers shall be recorded and maintained as required in NSPS 60.48c(g)a. A copy of this rule is enclosed.

33. That pursuant to 326 IAC 2-1-3 (State Construction and Operating Permit: Construction Permit), the space heaters and air make-up units shall be limited as follows:

(a) each unit shall burn only natural gas,

(b) each unit may vary in size up to a maximum of 5.2 MMBtu per hour and shall not exceed a total combined capacity of 251 MMBtu per hour, and

(c) space heater operations utilizing natural gas shall be restricted to the months of October through April.

BACT Condition

34. That pursuant to 326 IAC 2-2-3 (Control Technology Review; Requirements), the mist from the two (2) non-contact cooling towers shall be controlled by drift eliminators and exhausted to the atmosphere. The outlet grain loading from the drift eliminators shall not exceed 0.005 percent drift.

BACT Condition

35. That pursuant to 326 IAC 2-2-3 (Control Technology Review; Requirements), the storage tanks for HCl, nitric acid, and HF shall be controlled by a fume scrubber system. The outlet grain loading from the scrubber shall not exceed 0.0066 grains per dscf. The particulate matter emissions from Stack S04 shall not exceed 0.0967 pounds per hour.

NSPS Condition

36. That pursuant to 326 IAC 12 and 40 CFR Part 60.110b, Subpart Kb (Standards of Performance for Storage Vessels for Petroleum Liquids), the owner or operator of all storage vessels shall keep readily accessible records of the tank dimensions and tank capacity. A copy of this rule is enclosed.

Selective Catalytic Reduction System Operating Condition

37. That upon startup, the selective catalytic reduction (SCR) system shall be operated at all times when the 205.7 MMBtu per hour annealing furnace is in operation.

(a) The permittee shall record the ammonia flow rate and inlet duct temperature of the SCR at least once per day. The Preventive Maintenance Plan for the SCR shall contain troubleshooting contingency and corrective actions for when the ammonia flow rate and inlet duct temperature are outside of the normal range for any one reading.

(b) The instruments used for determining the ammonia flow rate and inlet duct temperature of the control device shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.

(c) An inspection shall be performed each calendar quarter of the SCR. Defective SCR components shall be replaced. A record shall be kept of the results of the inspection and the number of SCR components replaced.

(d) In the event that the SCR's failure has been observed:

(1) The affected unit will be shut down immediately until the failed unit has been repaired or replaced.

(2) Based upon the findings of the inspection, any additional corrective actions will be devised within eight (8) hours of discovery and will include a timetable for completion.

(e) The permittee shall submit vendor specifications for the SCR and shall include operating parameters for ammonia flow rate and inlet duct temperature. The permittee may use another method approved by the Commissioner to establish the operating parameters in lieu of vendor specifications. This information shall be submitted to the:

Compliance Data Section, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204

at least 35 days prior to performance testing. Once the operating parameters are established, they shall become part of the Preventive Maintenance Plan.

(f) These records shall be kept for at least the past 36 month period and made available upon request to the Office of Air Quality (OAQ).

Continuous Emissions Monitoring

38. That AK Steel shall continuously monitor and record NOx emissions from the SCR control unit in accordance with 326 IAC 3-1.1.

(d) The continuous monitoring system shall be installed and operational prior to conducting the performance test for the 205.7 MMBtu/hr annealing furnace controlled by an SCR unit. The permittee shall submit a monitoring protocol to the:

Compliance Data Section, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204

within 60 days after achieving the maximum production rate at which the affected facility will be operated, but no later than 180 days after initial startup of the 205.7 MMBtu/hr annealing furnace. Verification of operational status shall, as a minimum, include completion of the manufacturer's written requirements or recommendations for installation, operation, and calibration of the device.

(b) A written report of excess emissions from the continuous monitoring system shall be submitted each calendar quarter to the:

Compliance Data Section, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204

within 30 days following the end of each calendar quarter. Pursuant to 326 IAC 3-1.1-3, the averaging periods used to determine excess emissions shall be three hour block periods ending at 03:00, 06:00, 09:00, 12:00, 15:00, 18:00, 21:00, and 24:00. The excess emissions report shall consist of the following:

(1) A description of the nature and cause of the excess emissions, if known.

(2) The date and time identifying each period during which the continuous monitoring system was inoperative or malfunctioning, except for zero and span checks, and the nature of the system repair or adjustments.

(3) When no excess emissions have occurred and the continuous monitoring system has not been inoperative, repaired, or adjusted.

MALFUNCTION REPORT

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
FAX NUMBER - 317 233-5967

This form should only be used to report malfunctions applicable to Rule 326 IAC 1-6 and to qualify for the exemption under 326 IAC 1-6-4.

THIS FACILITY MEETS THE APPLICABILITY REQUIREMENTS BECAUSE IT HAS POTENTIAL TO EMIT 25 lbs/hr PM_____, VOC_____, SO2_____, CO_____, NOx____, OR ANY OTHER POLLUTANT _____ EMISSIONS FROM MALFUNCTIONING CONTROL EQUIPMENT OR PROCESS EQUIPMENT CAUSED EMISSIONS IN EXCES OF APPLICABLE LIMITATION _____.

THIS MALFUNCTION RESULTED IN A VIOLATION OF: 326 IAC _____ OR, PERMIT CONDITION # _____ AND/OR PERMI LIMIT OF _____

THIS INCIDENT MEETS THE DEFINITION OF >MALFUNCTION= AS LISTED ON REVERSE SIDE ? Y N

THIS MALFUNCTION IS OR WILL BE LONGER THAN THE ONE (1) HOUR REPORTING REQUIREMENT ? Y N

COMPANY:_____PHONE NO. ( )_____
LOCATION: (CITY AND COUNTY)_____
PERMIT NO. _____ AFS PLANT ID: _____ AFS POINT ID: _____ INSP:_____
CONTROL/PROCESS DEVICE WHICH MALFUNCTIONED AND REASON:_____
_____

DATE/TIME MALFUNCTION STARTED: _____/_____/ 20____ _____ AM / PM

ESTIMATED HOURS OF OPERATION WITH MALFUNCTION CONDITION:
_____

DATE/TIME CONTROL EQUIPMENT BACK-IN SERVICE_____/_____/ 19____ _____ AM/PM

TYPE OF POLLUTANTS EMITTED: TSP, PM-10, SO2, VOC, OTHER:_____

ESTIMATED AMOUNT OF POLLUTANT EMITTED DURING MALFUNCTION: _____

_____

MEASURES TAKEN TO MINIMIZE EMISSIONS:_____

_____

REASONS WHY FACILITY CANNOT BE SHUTDOWN DURING REPAIRS:

CONTINUED OPERATION REQUIRED TO PROVIDE ESSENTIAL* SERVICES:_____
CONTINUED OPERATION NECESSARY TO PREVENT INJURY TO PERSONS:_____
CONTINUED OPERATION NECESSARY TO PREVENT SEVERE DAMAGE TO EQUIPMENT:_____
INTERIM CONTROL MEASURES: (IF APPLICABLE)_____
_____
_____

MALFUNCTION REPORTED BY:_____TITLE:_____
(SIGNATURE IF FAXED)

MALFUNCTION RECORDED BY:_____DATE:_____TIME:_____
*SEE PAGE 2

PAGE 1 OF 2

Please note – This form should only be used to report malfunctions appapplicable to Rule 326 IAC 1-6 and to qualify for the exemption under 326 IAC 1-6-4.

326 IAC 1-6-1 Applicability of rule

Sec. 1.The requirements of this rule (326 IAC 1-6) shall apply to the owner or operator of any facility which has the potential to emit twenty-five (25) pounds per hour, or to the owner or operator of any facility with emission control equipment which suffers a malfunction that causes emissions in excess of the applicable limitation.

326 IAC 1-2-39 "Malfunction" definition

Sec. 39.Any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. (Air Pollution Control Board; 326 IAC 1-2-39; filed Mar 10, 1988, 1:20 p.m. : 11 IR 2373)

326 IAC 1-6-2 Records: notice of malfunction

When a malfunction occurs that lasts over one (1) hours, said condition shall be reported shall be reported to the commissioner or appointed representative. Notification shall be mad , as soon a as possible, but in event later than four (4) business hours after the beginning of said occupance. The malfunctions reported shall be submitted to the commissioner and a copy report shall be maintained for a period of three (3) year.

Essential services are interpreted to mean those operations, such as, the providing of electricity by power plants. Continued operation solely for the economic benefit of the owner or operator shall not be sufficient reason why a facility cannot be shutdown during a control equipment shutdown.

If this item is checked on the front, please explain rationale:

Indiana Department of Environmental Management
Office of Air Quality

Technical Support Document (TSD) for a Significant Modification to a Major Source Construction and Operation Permit

Source Background and Description

Source Name:	**AK Steel Corporation (Rockport Works)**
Source Location:	**6500 North U. S. 231, Rockport, Indiana 47635**
County:	**Spencer**
SIC Code:	**3312**
Construction Permit No.:	**CP 147-6713-00041**
Modification No.:	**PSD147-19502-00041**
Permit Reviewer:	**Walter Habeeb**

The Office of Air Quality (OAQ) has reviewed a significant modification application from AK Steel Corporation relating to the operation of Anneal and Pickle Line furnaces of their stainless steel process.

History

On June 24, 2004, AK Steel Corporation, Rockport, Indiana submitted an application to the OAQ proposing to modify their process in the following manner.

AK Steel has two (2) annealing furnaces in their Anneal and Pickle Line (APL). No.1 furnace is a 110 MMBtu/hr natural gas furnace and No. 2 is a 55 MMBtu/hr natural gas furnace. The furnaces are in line with each other and can be fired separately or combined.

AK Steel is requesting that both furnaces be combined as one source requiring both furnaces be tested simultaneously. AK Steel is also requesting different NOx emission limits from the furnace source based on the product mix. In order to achieve quality standards, the annealing furnaces are operated in two distinctly different manners based on product mix. Because 300 stainless steel has different annealing needs than 400 stainless steel, AK Steel is requesting different NOx emission limits for each of these products.

AK Steel APL annealing furnaces currently have NOx limitations of 0.04 lb/MMBtu and 4.4 lbs/hr on the 110 MMBtu furnace and 0.04 lb/MMBtu and 2.2 lbs/hr on the 55 MMBtu furnace. These limits (established in construction permit No.147-6713-00041 issued February 13, 1997) were based on information supplied by their furnace supplier Surface Combustion.

AK Steel states that Surface Combustion now concedes that those limits were too low and can not be met on the 300 nor the 400 series stainless steel at all firing rates.

AK Steel is requesting a change to the NOx limitations on the Anneal and Pickle Line (APL) furnaces. For cold roll and hot roll stainless steel, AK Steel proposes a combined limit of 0.04 lbs/MMBtu and 6.6 lbs/hr for NOx on both furnaces while processing 300 hot roll stainless steel, a combined limit of 0.10 lbs/MMBtu and 15.7 lbs/hr for NOx on both furnaces while processing 300

cold roll stainless steel and a combined limit of 0.12 lbs/MMBtu and 15.7 lbs/hr for NOx on both furnaces while processing 400 cold roll stainless steel. The different limits are needed because 400 stainless steel and 300 cold roll require a significantly higher furnace oxygen concentration when compared to 300 hot roll stainless in order to properly anneal. 300 stainless hot roll can achieve a chrome-oxide protective layer with oxygen levels of approximately 3.1 to 3.5 % while 400 stainless and 300 cold roll require 7-8 % oxygen to protect the surface and achieve proper quality standards.

In November 2004, IDEM requested AK Steel perform NOx emission compliance tests on the APL furnaces to verify NOx emission levels from the furnaces under all production conditions.

In January of 2005, AK Steel retained ACS Environmental Services to perform compliance tests for NOx emissions on the APL furnaces. These tests were witnessed and verified by the IDEM. Based on the results of these tests, in a letter submitted to IDEM on April 18, 2005, AK Steel proposed the following adjusted new limits for the APL furnaces.

Stainless Steel Type	110 MMBtu Furnace (lb/MMBtu)	110 MMBtu Furnace (lb/hr)	55 MMBtu Furnace (lb/MMBtu)	55 MMBtu Furnace (lb/hr)	Combo (lb/MMBtu)	Combo (lb/hr)
400 CR	0.10	8.0	0.16	7.7	0.12	15.7
300 CR	0.10	9.6	0.12	6.1	0.10	15.7
300 HR	0.04	4.4	0.04	2.2	0.04	6.6

A combined NOx limit for the two furnaces will not be approved because the two furnaces can be fired individually as well as together and compliance for each individual furnace must be verified. Therefore, individual limits will be set for each furnace.

Based on the tests results of January 2005, IDEM is proposing the following new NOx values for the two annealing furnaces (see BACT analysis - Appendix B for detailed explanation).

Under these new limits, the combined NOx Potential to Emit (PTE) for the furnaces will be raised from 28.91 TPY to 68.77 TPY (an increase of 39.86 TPY) under a maximum operation scenario where 400 grade stainless steels are annealed 365 days per year.

Stainless Steel Type	**Furnace MMBtu/hr**	**New Limit lb/MMBtu**	**New Limit lb/hr**
400 Cold Roll	110	0.08	8.0
400 Cold Roll	55	0.14	7.7
300 Cold Roll	110	0.087	9.6
300 Cold Roll	55	0.11	6.1
300 Hot Roll	110	0.04	4.4
300 Hot Roll	55	0.04	2.2

Enforcement Issue

(a) IDEM is aware that the APL anneal furnaces # 1 and # 2 are not in compliance with the following emission limitation:

(1) AK Steel APL annealing furnaces current NOx limitations are 0.04 lb/MMBtu and

4.4 lbs/hr on the 110 MMBtu furnace and 0.04 lb/MMBtu and 2.2 lbs/hr on the 55 MMBtu furnace. These limits were established in operating permit No.147-6713-00041.

(b) IDEM is reviewing this matter and will take appropriate action.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (^{0}F)
SO7A (110 MMBtu fce.)	Anneal/Pickling Line	122	7.5	144,830	550
SO7B (55 MMBtu fce)	Anneal/Pickling Line	110	5.2	70,264	520

Recommendation

The staff recommends to the Commissioner that the Significant Modification to the PSD construction permit be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on June 24, 2004. Additional information was received on July 20, 2004, February 23, 2005 and April 18, 2005.

Emission Calculations

See appendix A for emissions calculations.

Potential To Emit of Modification

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA.”

This table reflects the PTE before controls. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit.

The new NOx limits for the APL annealing furnaces will result in an increase in NOx PTE as shown below.

Pollutant	Potential To Emit (tons/year)
PM	-
PM-10	-
SO_2	-
VOC	-
CO	-
NO_x	39.86

Justification for Modification

The PSD construction permit is being modified through a Significant Modification. This modification is being performed pursuant to IC13-15-7-1(1), because it is subject to the requirements of 326 IAC 2-2.

County Attainment Status

The source is located in Spencer County.

Pollutant	Status
PM-2.5	attainment
PM-10	attainment
SO_2	attainment
NO_2	attainment
one (1) hour ozone	attainment
eight (8) hour ozone	attainment
CO	attainment
Lead	attainment

(a) Volatile organic compounds (VOC) are precursors for the formation of ozone. Therefore, VOC emissions are considered when evaluating the rule applicability relating to the ozone standards. Spencer County has been designated as attainment or unclassifiable for ozone. Therefore, VOC emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

(b) Spencer County has been classified as attainment or unclassifiable for all other criteria pollutants. The source is not located in that portion of Spencer County considered or designated as nonattainment for PM 2.5. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

(c) Fugitive Emissions
Since this type of operation is one of the 28 listed source categories under 326 IAC 2-2 and since there are applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive PM emissions are counted toward determination of PSD and Emission Offset applicability.

Source Status

Existing Source PSD or Emission Offset Definition (emissions after controls, based upon 8760 hours of operation per year at rated capacity and/or as otherwise limited):

Pollutant	Emissions (tons/year)
PM	greater than 100
PM-10	greater than 100
SO_2	3.20
VOC	63.73
CO	greater than 100
NOx	greater than 100

This existing source is a major stationary source because an attainment regulated pollutant is emitted at a rate of 100 tons per year or more, and it is one of the 28 listed source categories.

Potential to Emit of Modification After Issuance

The table below summarizes the potential to emit, reflecting all limits, of the significant emission units after controls. The control equipment is considered federally enforceable only after issuance of this significant modification.

	Potential to Emit (tons/year)						
Process/facility	PM	PM-10	SO_2	VOC	CO	NO_X	HAPs
Increase Limit from APL Furnaces	-	-	-	-	-	39.86	-
PSD Significant Level						40.0	

This modification to an existing major stationary source is not major because the emissions increase is less than the PSD significant levels. However, because a previously determined PSD limit has been relaxed, pursuant to 326 IAC 2-2 PSD requirements apply.

Federal Rule Applicability

(a) There are no New Source Performance Standards (NSPS)(326 IAC 12 and 40 CFR Part 60) applicable to this proposed modification.

(b) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs)(326 IAC14 and 20 and 40 CFR Part 61 and Part 63) applicable to this proposed modification.

State Rule Applicability - Individual Facilities

326 IAC 2-2 (Prevention of Significant Deterioration (PSD))

The APL furnaces are subject to the requirements of 326 IAC 2-2 (PSD). The PSD provisions require that this major source be reviewed to ensure compliance with the National Ambient Air Quality Standard (NAAQS), the applicable PSD air quality increments, and the requirements to apply Best Available Control Technology (PSD - Control Technology Review; Requirements) for the affected pollutants.

BACT for the APL furnaces was determined on a case by case basis by reviewing similar process controls and new available technologies. In addition, economic, energy, and environmental impacts are considered in IDEM's final decision. Control technology summaries of the facilities covered in this modification are included in Appendix B of this TSD.

A modeling analysis was conducted to show that the emissions from the source do not violate the NAAQS and do not exceed the incremental consumption above eighty percent (80%) of the PSD increment for any affected pollutant. A description and the results of this analysis are found in Appendix C of this TSD.

Compliance Requirements

Permits issued under 326 IAC 2-7 are required to ensure that sources can demonstrate compliance with applicable state and federal rules on a more or less continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill the requirement for a more or less continuous demonstration. When this occurs IDEM, OAQ, in conjunction with the source, must develop specific conditions to satisfy 326 IAC 2-7-5. As a result, compliance requirements are divided into two sections: Compliance Determination

Requirements and Compliance Monitoring Requirements.

Compliance Determination Requirements in Section D of the permit are those conditions that are found more or less directly within state and federal rules and the violation of which serves as grounds for enforcement action. If these conditions are not sufficient to demonstrate continuous compliance, they will be supplemented with Compliance Monitoring Requirements, also Section D of the permit. Unlike Compliance Determination Requirements, failure to meet Compliance Monitoring conditions would serve as a trigger for corrective actions and not grounds for enforcement action. However, a violation in relation to a compliance monitoring condition will arise through a source's failure to take the appropriate corrective actions within a specific time period.

The compliance testing requirements applicable to this modification are as follows:

1. Not later than 180 days after issuance of this permit, a stack test shall be performed on the APL furnace stacks to measure NOx emissions using methods as approved by the Commissioner.

This testing condition is necessary because the source must demonstrate compliance with 326 IAC 2-2 (PSD).

Proposed Changes:

On June 24, 2004, AK Steel Corporation, Rockport, Indiana submitted an application to the OAQ proposing to modify their process as described in the following (bold as been added and strikeout as been omitted):

Ancillary Equipment consisting of (under the construction permit AK Steel was allowed to construct three (3) boilers, item (d) below, however they only installed two (2) :

(a) hydrogen batch annealing with fifteen (15) natural gas-fired furnaces with low-NOx burners rated at 6.75 MMBtu per hour exhausting through the roof monitor system in building B3,
(b) roll repair shop with chrome dip tank exhausting through a wet scrubber system to Stack S15A,
(c) roll repair shop with two (2) electrodischarge texturing machines exhausting through a baghouse to Stack S15B,
(d) ~~three (3)~~ **two (2)** natural gas-fired 76.0 MMBtu per hour boilers with ultra low-NOx burners in boiler house No. 1 exhausting to Stack S03,
(e) two (2) natural gas-fired 76.0 MMBtu per hour boilers with ultra low-NOx burners in boiler house No. 2 exhausting to Stack S20,
(f) space heaters and air make-up units with each unit limited to no more than 2.68 MMBtu per hour and a combined rating limited to no more than 251 MMBtu per hour,
(g) two (2) non-contact cooling towers with mist drift eliminator exhausting to the atmosphere,
(h) storage tanks for CPL HCl, nitric acid, and HF exhausting through a fume scrubber to Stack S04,
(i) miscellaneous storage tanks for the continuous cold mill operation not to exceed an overall capacity of 353,000 gallons,
(j) miscellaneous storage tanks for the temper mill and cold mill operation not to exceed an overall capacity of 131,000 gallons,
(k) miscellaneous oil storage tanks for the continuous galvanizing line not to exceed an overall capacity of 10,000 gallons, and
(l) miscellaneous oil storage tanks for the continuous pickling line not to exceed an overall capacity of 10,000 gallons.

Performance Testing

8. That pursuant to 326 IAC 2-1.1-11(Compliance Requirements) compliance stack tests shall be performed for the following facilities:

(a) Required Compliance Stack Tests for NOx Emissions:

(1) Stack S03 from the ~~three (3)~~ **two (2**) 76.0 MMBtu per hour package boilers,

(2) Stack S20 from the two (2) 76.0 MMBtu per hour package boilers,
(3) Stacks S07A, S07B, and S07C from the 193.2 MMBtu per hour APL annealing furnace,
(4) Stack S18 from the 205.7 MMBtu per hour CGL annealing furnace SCR system, and
(5) Stack S09B from the APL mixed acids pickling and final rinse multi-stage scrubber system.

BACT Condition

21. That pursuant to 326 IAC 2-2-3 (Control Technology Review; Requirements), the processes of the continuous annealing and pickling line (APL) shall be limited as follows:

(b) The 110 MMBtu per hour annealing furnace section No. 1and the 55.0 MMBtu per hour annealing furnace section No. 2 shall each use only natural gas and shall be controlled by ultra low-NOx burners with integral exhaust gas recirculation (or equivalent). ~~The outlet nitrogen oxide loading for each section shall not exceed 0.040 pounds per MMBtu. The nitrogen oxide emissions from the two sections of the annealing furnace shall not exceed 4.4 and 2.2 pounds per hour respectively.~~ **The nitrogen oxide emissions from the furnaces shall not exceed the following limits:**

Stainless Steel Type	Furnace MMBtu/hr	New Limit lb/MMBtu	New Limit lb/hr
400 Cold Roll	**110**	**0.08**	**8.0**
400 Cold Roll	**55**	**0.14**	**7.7**
300 Cold Roll	**110**	**0.087**	**9.6**
300 Cold Roll	**55**	**0.11**	**6.1**
300 Hot Roll	**110**	**0.04**	**4.4**
300 Hot Roll	**55**	**0.04**	**2.2**

BACT Condition

30. That pursuant to 326 IAC 2-2-3 (Control Technology Review; Requirements), the ~~three (3)~~ **two (2)** 76.0 MMBtu per hour package boilers located in Boiler House No. 1 shall use only natural gas and shall be equipped with ultra low NOx burners. The total outlet nitrogen oxide loading **from each individual** ~~the~~ boiler~~s~~ shall not exceed 0.04 pounds per MMBtu. The nitrogen oxide emissions from Stack S03 shall not exceed ~~9.12~~ **3.04 pounds per hour from each individual boiler.**

BACT Condition

31. That pursuant to 326 IAC 2-2-3 (Control Technology Review; Requirements), the two (2) 76.0 MMBtu per hour package boilers located in Boiler House No. 2 shall use only natural gas and shall be equipped with ultra low NOx burners. The total outlet nitrogen oxide loading **from each individual** ~~the~~ boiler~~s~~ shall not exceed 0.04 pounds per MMBtu. The nitrogen oxide emissions from Stack S20 shall not exceed ~~6.08~~ **3.04** pounds per hour **from each individual boiler.**

Conclusion

The construction of this proposed modification shall be subject to the conditions of the attached proposed Significant Modification to the PSD construction permit No.147-19502-00041.

Appendix A

Emissions Calculations

Company:	AK Steel
Address:	6500 North U.S. 231, Rockport, IN 47635
Permit No.:	147-19502
Plant No.:	141-00041
Permit Reviewer:	Walter Habeeb
Date:	October 8, 2004

Net Overall NOx Increase from the Two Annealing Furnaces

Current NOx Emissions Limits

110 MMBtu/hr Furnace
(4.4 lb/hr) x (8760 hr/yr) x (1 ton/2000lb) = 19.27 TPY

55 MMBtu/hr Furnace
(2.2 lb/hr) x (8760 hr/yr) x (1 ton/2000lb) = 9.64 TPY

Total Current NOx Emissions = 28.91 TPY

New NOx Emissions Limits

110 MMBtu/hr Furnace
(9.6 lb/hr) x (8760 hr/yr) x (1 ton/2000lb) = 42.05 TPY

55 MMBtu/hr Furnace
(6.1 lb/hr) x (8760 hr/yr) x (1 ton/2000lb) = 26.72TPY

Total Current NOx Emissions = 80.60 TPY

Net overall NOx increase = 68.77 – 28.91 = 39.86 TPY

Indiana Department of Environmental Management
Office of Air Quality

Addendum to the Technical Support Document (TSD) for the Significant Modification to a Major Source Construction and Operation Permit

Source Name:	AK Steel Corporation (Rockport Works)
Source Location:	6500 North U.S. 231, Rockport, Indiana 47635
County:	Spencer
Permit No.:	PSD 147-19502-00041
SIC Code:	3312
Permit Reviewer:	Walter Habeeb

On June 17, 2005, the Office of Air Quality (OAQ) had a notice published in The Spencer County Democrat Journal, in Rockport, Indiana, regarding AK Steels' plan relating to the operation of the Anneal and Pickle Line furnaces of their stainless steel process.

The notice also stated that the OAQ proposed to issue this permit and provided information on how the public could review the draft permit and other documentation. Finally, the noticed informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this permit should be issued.

During the Public Notice period, IDEM received three comments from concerned citizens. These three comments requested a public hearing. The comments and IDEM's responses are summarized below:

Comment 1: I strongly object to granting the request by AK Steel to increase their NOx emissions by 39.86 tons per year. All of the counties in southwestern Indiana already have grave air quality problems. To allow an increase in air pollution from any source demonstrates a reckless disregard for the well being of the people of southern Indiana. We must stop putting the economic benefits of well connected corporations above our own health and safety.

Comment 2: We feel corporations should be striving to reduce emissions and any increase would be completely unacceptable. Factories that describe themselves as state of the art should use modern technology to reduce NOx and become more environmentally friendly.

Comment 3: There are of course some very serious concerns which I have concerning increased air pollution attendant to the changes in operation of AK Steel's production.
Several parts of the reference findings were of particular concern to me. I feel that an explanation of those parts would be in the best interest of the county community.
There is reference to the height of the exhaust stacks for the furnaces which are utilized for the surface-finishing of the stainless steel. That height apparently is not optimal for proper discharge of gases from the furnaces used in this operation. Why can't this be remedied?
The methods for reducing the emissions of nitrogen oxide from this type of operation are mentioned, and one of them was found to be feasible. It was dismissed because it would remove approximately 10% of the estimated nitrogen oxide produced. Since this area ranks high in the amounts of pollutants produced why not utilize an available technology to reduce a pollutant.
A letter in the Spencer County Library from the Manager of Environmental Affairs at AK Steel indicated the potential nitrogen oxide emissions from Rockport Works would increase from 32.7 TPY to 86.7 TPY when the production of stainless steel was being accomplished. This is an increase of 265%. The data that are indicated in the reference findings is nitrogen oxide increase from 28.91 TPY to 39.86, or about 137%.
There are technical aspects regarding the equipment and procedures used at the AK Steel plant, such as the furnaces used annealing the sheet steel and the chemicals

(acids) used in the pickling of the steel, which could be discussed and explained at a public hearing.

Response: The permit modification revises the Best Available Control Technology requirements for NOx emissions at two annealing furnaces. If approved, the allowable NOx emissions will increase by less than 40 tons per year. Actual emissions will not change.

The original limits were based on the recommendations of the furnace manufacturer and IDEM's confirmation that the proposed limits were considerably lower than emissions from similar sources when the original permit was issued in 1997. AK Steel has provided information that the furnaces cannot meet the existing limit while producing different series of hot and cold rolled stainless steel. They have also provided information to show that meeting the existing limits by adding different types of air pollution control equipment is either technologically or economically infeasible. There is no underlying change in the operation of the plant, just a revision of existing limits to reflect actual operating conditions at the plant.

AK Steel's annealing stacks comply with the provisions of 326 IAC 1-7 (stack height provisions). An air quality analysis (Appendix C of the permit), including air dispersion modeling, was performed to determine the maximum concentrations of the source emissions on receptors outside of the facility property lines. OAQ modeling utilized receptor grids out to 20 kilometers for all pollutants. A program generated polar grid starting at 550 meters away from APL Annealing furnace Stack #2 was used. The results of this additional impact analysis conclude that AK Steel's proposed modification will have no adverse impact on economic growth, soils, vegetation, endangered or threatened species or visibility on any Class 1 area.

The U.S. EPA has established the National Ambient Air Quality Standards (NAAQS) to protect public health and the environment. EPA has established NAAQs for six principle air pollutants, often referred to as criteria pollutants. These criteria pollutants are regulated by the health-based standards.

Permits require sources to comply with all health- and technology-based standards established by the U.S. EPA and the Indiana Air Pollution Control Board. If an applicant demonstrates that they will be able to comply with all Federal and State laws regarding air pollution, IDEM is required by law to issue an air permit. IDEM has evaluated the air quality impact of the emissions from this source and has determined that no health-based standards established by the Clean Air Act will be violated.

A public hearing is a formal proceeding where OAQ staff further describe the permit process and specific applicable rules and laws that apply to this permit. Citizens have the opportunity to comment and ask questions, and OAQ staff will respond to those questions. All comments, including those received at the hearing, are considered by IDEM when we make a decision to issue or deny a permit. Comments that are most likely to affect final permit decisions are those based on the rules and laws governing this permitting process (326 IAC 2), air quality issues, and technical issues. However, unless someone can demonstrate that OAQ has made a substantive technical error in the permit, such as incorrectly identifying an applicable state or federal rule, or calculating emissions incorrectly, the permit in question is generally issued with few if any changes. In this case IDEM does not believe that a formal public hearing would have provided citizens with an outcome that was satisfactory.

Indiana Department of Environmental Management
Office of Air Quality

Appendix B - - PSD BACT Evaluation - - for a Significant Modification to a Prevention of Significant Deterioration (PSD) permit

Source Background and Description

Source Name:	AK Steel Corporation (Rockport Works)
Source Location:	6500 North U.S. 231, Rockport, IN 47635
Mailing Address:	6500 North U.S. 231, Rockport, IN 47635
General Telephone Number:	812-362-6144
Responsible Official:	Eric S. Petersen
County:	Spencer
SIC Code:	3312
Source Categories:	1 of 28 Listed Source Categories Major PSD Source Major Source under Section 112 of the CAA
Significant Modification No.:	147-19502-00041
Construction Permit No.:	CP147-6713-00041

History

On June 24, 2004, AK Steel Corporation, Rockport, Indiana submitted an application to the OAQ proposing to modify their process in the following manner.

AK Steel has two (2) annealing furnaces in their Annealing and Pickle Line (APL). No.1 furnace is a 110 MMBtu/hr natural gas furnace and No. 2 is a 55 MMBtu/hr natural gas furnace. The furnaces are in line with each other and can be fired separately or combined.

AK Steel is requesting that both furnaces be combined as one source requiring both furnaces be tested simultaneously. AK Steel is also requesting different and higher NOx emission limits for the APL furnaces based on the product mix. In order to achieve quality standards, the annealing furnaces are operated in two distinctly different manners based on product mix. Because 300 stainless steel has different annealing needs than 400 stainless steel AK Steel is requesting different NOx emission limits for each of these products.

AK Steel APL annealing furnaces currently have NOx limitations of 0.04 lb/MMBtu and 4.4 lbs/hr on the 110 MMBtu/hr furnace and 0.04 lb/MMBtu and 2.2 lbs/hr on the 55 MMBtu/hr furnace. These limits (established in construction permit No. 147-6713-00041) were based on information supplied by their furnace supplier Surface Combustion.

Test results from Compliance Tests witnessed by IDEM in November 1999, February and November of 2000 demonstrated the NOx limits in permit 147-6713-00041 were exceeded in two of the three tests. AK Steel requested guidance from Surface Combustion on methods they could employ in operating the furnaces that would reduce the NOx emissions and meet the agreed limits. At that time Surface Combustion acknowledged the furnaces would not be able to meet the present limits under all operating conditions – conditions which were guaranteed by them and on which the construction permit was based. In December 2003 AK Steel conducted emissions tests at various production operation levels to determine the lowest emissions achievable consistent with acceptable product quality. Based on this information AK Steel requested the revised emission levels listed in the following paragraph.

AK Steel is requesting a change to the NOx limitations on the Anneal and Pickle Line (APL) furnaces. For cold roll and hot roll stainless steel, AK Steel proposes a combined limit of 0.04 lbs/MMBtu and 6.6 lbs/hr for NOx on both furnaces while processing 300 hot roll stainless steel, a combined limit of 0.10 lbs/MMBtu and 15.7 lbs/hr for NOx on both furnaces while processing 300 cold roll stainless steel and a combined limit of 0.12 lbs/MMBtu and 15.7 lbs/hr for NOx on both furnaces while processing 400 cold roll stainless steel. The different limits are needed because 400 stainless steel and 300 cold roll require a significantly higher furnace oxygen concentration when compared to 300 hot roll stainless in order to properly anneal. 300 stainless hot roll can achieve a chrome-oxide protective layer with oxygen levels of approximately 3.1 to 3.5 % while 400 stainless and 300 cold roll require 7-8 % oxygen to protect the surface and achieve proper quality standards.

In November 2004, IDEM requested AK Steel perform NOx emission compliance tests on the APL furnaces to verify NOx emission levels from the furnaces under all production conditions.

In January of 2005, AK Steel retained ACS Environmental Services to perform compliance tests for NOx emissions on the APL furnaces. These tests were witnessed and verified by the IDEM. The results are discussed later in this BACT analysis.

The request by AK Steel for higher NOx limits for the APL furnaces requires a BACT review under the PSD program. Under the increased NOx emission limits that IDEM is considering the NOx Potential to Emit (PTE) for the furnaces will be raised from 28.91 TPY to 68.77 TPY, an increase of 39.86 TPY, under a maximum operation scenario where 400 grade stainless steels are annealed 365 days per year.

PSD BACT Overview

Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ), has performed the following federal BACT review for the Anneal and Pickle Line operations which are owned and operated by AK Steel Corporation. The source is located in Spencer County which is designated as attainment for all criteria pollutants. The PSD Program requires a BACT review and an air quality analysis. BACT is an emission limitation based on the maximum degree of reduction of each pollutant subject to the PSD requirements. IDEM conducts BACT analyses in accordance with the "Top-Down" Best Available Control Technology Guidance Document outlined in the 1990 draft USEPA New Source Review Workshop Manual, which outlines the steps for conducting a top-down BACT analysis. Those steps are listed below.

(1) Identify all potentially available control options;
(2) Eliminate technically infeasible control options;
(3) Rank remaining control technologies by control effectiveness;
(4) Evaluate the most effective controls and document the results; and
(5) Select BACT.

Also in accordance with the "Top-Down" Best Available Control Technology Guidance Document outlined in the 1990 draft USEPA New Source Review Workshop Manual, BACT analyses take into account the energy, environmental, and economic impacts on the source. These reductions may be determined through the application of available control techniques, process design, and/or operational limitations. Such reductions are necessary to demonstrate that the emissions remaining after application of BACT will not cause or contribute to air pollution thereby protecting public health and the environment.

BACT determinations are based on the following information:

(1) The BACT analysis submitted by AK Steel Corporation, on June 24, 2004;
(2) The BACT analysis submitted by AK Steel Corporation, on February 23, 2005
(3) The EPA RACT/BACT/LAER (RBLC) Clearinghouse: and
(4) Other IDEM permits and permits from other regulatory agencies

BACT Analysis for NOx

AK Steel presently uses ultra low-NOx burners with integral exhaust gas re-circulation to control NOx emissions. They have proposed the continued use of this system as BACT. A search was conducted of the RBLC Clearinghouse to obtain the best available technologies for control of NOx from stainless steel anneal and pickle line furnace operations. The following discussion details BACT review of proposed methods of NOx control for the anneal and pickle line furnace operations.

Step 1 - Identify Control Options

Six (6) available technologies were evaluated to control NOx emissions from the stainless steel annealing line furnace operations. They are:

(1) Selective Catalytic Reduction (SCR)
(2) Selective Non- Catalytic reduction (SNCR)
(3) Ultra low-NOx burner
(4) Exhaust gas re-circulation
(5) Furnace Inlet Air Curtain
(6) Ultra low-NOx burner with Exhaust gas re-circulation

Industry Wide Emission Limits
The EPA (RBLC) Clearinghouse is a database system that provides emission limit data for industrial processes throughout the United States. The RBLC has a limited list of entries for stainless steel operations with controls for NOx emissions. The following table summarizes the previous BACT determinations for NOx emissions for stainless steel and non stainless steel annealing operations. All emission limit data listed below are from RBLC except as noted.

Table 1 - BACT Determinations for NOx from Steel Annealing Operations

Facility	Process	NOx Emission Limits	Control
Timken Co., Faircrest Plant, OH	Non Stainless Steel Annealing	0.14 lb/MMBtu	Low NOx Burners
Charter Steel, Fce. # P39, WI	Non Stainless Steel Annealing	0.175 lb/MMBtu	Low NOx Burners
Charter Steel, Fce. # P40, WI	Non Stainless Steel Annealing	0.175 lb/MMBtu	Low NOx Burners
U.S.S. Posco Indust.,CA *	Non Stainless Steel Annealing	0.022 lb/MMBtu	SCR
North American Stainless, KY, (114 MMBtu/hr) **	300 Stainless Steel	0.08 lb/MMBtu	Low NOx Burners with FGR
North American Stainless, KY, (40 MMBtu/hr) **	300 Stainless Steel	0.075 lb/MMBtu	Low NOx Burners with EGR

AK Steel, Rockport, IN Fce. No.1 *** Fce. No.2	300 & 400 Stainless Steel, Annealing	0.04 lb/MMBtu 0.04 lb/MMBtu	Ultra Low NOx Burners & EGR
AK Steel, Rockport, IN Fce. No.1 & No.2 **** Proposed BACT	300 Stainless Steel 400 Stainless Steel Annealing	0.10 lb/MMBtu 0.12 lb/MMBtu	Ultra Low NOx Burners & EGR

* source - AK Steel PSD application of June 22, 2004
** source - Kentucky Division for Air Quality
*** current emission limits established in permit 147-6713-00041
**** emission limits proposed by AK Steel, combined for both furnaces

Step 2 - Evaluate options and eliminate technically infeasible control options.

AK Steel commissioned an outside consultant SNC-Lavalin America Inc. (SNC) to conduct feasibility analyses on the use of Selective Catalytic Reduction (SCR), Selective Non-Catalytic Reduction (SNCR) and Furnace Inlet Air Curtains with EGR to lower NOx emissions from the APL furnaces.

Selective Catalytic Reduction (SCR)
SCR uses a catalyst to react with injected ammonia to chemically reduce NOx. It can achieve up to a 94 % Destruction or Removal Efficiency (DRE) and is one of the most effective NOx abatement techniques.

The key to SCR is a chemical reduction reaction between ammonia and nitrogen oxides under certain conditions. The reaction between NOx and ammonia can occur without the use of a catalyst but only at temperatures in excess of 1,500 F. To achieve NOx reduction at lower temperature, the reaction must be assisted by the use of catalysts such as titanium or vanadium plated onto a honeycomb or plate type module placed in the exhaust gas path. This assembly is called the SCR reactor. When ammonia is mixed with NOx in the exhaust gases and passed through the reactor, NOx is converted to nitrogen and water vapor.

The successful application of SCR requires the availability of a temperature “window” which is stable and suitable for the SCR reaction and sufficient static pressure to accommodate the added pressure drop across the SCR catalyst. The ideal temperature range for SCR application is between 600 to 800 F.

The SCR also requires the availability of space within the gas path for both an ammonia injection system and the SCR reactor. The space requirements or pressure drop caused by the injection system are usually not a problem. The SCR reactor however requires the most space and entails considerable pressure loss.

For the AK Steel APL furnaces, the furnace and exhaust system gas temperatures upstream of the stack are too high to effectively use an SCR. There is also not enough pressure in the furnace duct system upstream of the ejector stack to operate a SCR system. Gas temperatures could be reduced through the use of dilution air but this would be very costly and pressure would still be a problem. The only location where temperature would be close to suitable for the SCR are within the ejector stacks immediately downstream of the ejection point. At this point ambient temperature ejector air is mixed with the exhaust gases and cause exhaust temperatures of approximately 550 F (for Furnace No.1) to 520 F (for Furnace No 2). At these temperatures minimal, if any, NOx reduction would occur using SCR.

The ejection air rate is not constant but is varied constantly as it is used to control the

total air flow rate and hence the pressure and temperature in the furnaces. At minimal ejector air flow the exhaust gas temperature would be too high (above 900F) for effective SCR application. At normal full flow, the exhaust gas temperatures would be below 600 F, below the range where any NOx reduction would occur through a SCR. Normal furnace operation would yield exhaust gases in the 500 to 600 F temperature range.

The current variable exhaust gas pressure and air flow is designed to protect the product in the event of a line stoppage or slowdown. Redesigning the furnace for a constant exhaust gas temperature (within the effective range for SCR) and pressure would result in an increase in the potential for failure in terms of a strip break during a slowdown or line stop.

Even if the ejector fan could be operated at a constant flow, a SCR reactor designed to fit within the existing furnace stack would have a pressure drop of 20 inches of water column, far more than can be handled by the existing ejector fan. To reduce the pressure to an acceptable level of less than 2 inches of water column would require a reactor of approximately 13 feet diameter and a complete stack replacement to accommodate the new reactor.

Of the steel annealing furnace operations in Table 1 from the EPA (RBLC) data base only one U.S.S. Posco Industries, Pittsburg, California uses SCR control for NOx removal. Pittsburg is in the San Francisco Bay area in Contra Costa County. At the time the source was permitted the county was designated as serious nonattainment with a one (1) hour ozone standard. Additionally, U.S.S. Posco Industries processes regular carbon steel as opposed to stainless steel produced by AK Steel. This allows U.S.S. Posco to operate in the 600 -800 F temperature range in which SCR is feasible vs the higher furnace temperature range needed in the AK Steel furnaces to produce an acceptable product.

In summary, SCR is not technically feasible for the APL furnaces without completely reconfiguring the “back end” of both furnace systems. Under the existing configuration, stack temperatures are normally below the ideal range for SCR effectiveness. Also, the ejector fan arrangement is designed for making finely tuned adjustments to furnace pressure but not for maintaining pressure within the stack. The existing ejector fan arrangement would have to be replaced with an entirely new induced draft fan with sufficient static pressure to accommodate an SCR catalyst. The new fan would also require inlet damper controls to enable furnace pressure adjustments and a new inlet heat exchanger to protect the fan from temperature excursions. Even after these modifications to the furnaces, the SCR system would still not be ideal because of the low temperatures and variable air flows of the APL furnaces.

Selective Non-Catalytic Reduction (SNCR)

As noted in the SCR section, the reaction of ammonia with NOx to form nitrogen and water vapor is the same for both SCR and SNCR. SNCR differs from SCR because it requires higher temperatures and does not require the use of a catalyst. The ideal temperature range for SNCR is 1600 to 2000 F. Both ammonia and urea based SNCR systems are available and they are similar in their effectiveness and technical feasibility for this application.

A major advantage of SNCR is that it requires no specific new reactor and hence imposes minimal space requirements and pressure drops compared with SCR. SNCR simply requires ammonia (or urea) injection into the exhaust gases at a location that provides adequate temperature, gas mixing and residence time.

Within the APL furnace systems, there are two reqions where SNCR could theoretically

be applied. First is within the Radiant Work Pre- Heat (RWP) section of each furnace. The second region is immediately downstream of the exhaust gas take-off point from the furnace. For the RWP region, available data suggest that temperatures are almost always in an acceptable range for the use of SNCR. Residence time in the No.2 furnace would be ideal and though residence time in No.1 furnace would be less than ideal it would still be sufficient for a NOx reduction of 40-50%. The disadvantage of using SNCR within the RWP region is that the ammonia injection would be within the operation section of the furnace. There would be contact between the gaseous ammonia and the steel strip. Gaseous ammonia is a reducing agent which will completely inhibit the development of the thin oxide protective coating that is crucial to an acceptable stainless steel annealed product. The end result would be a commercially unacceptable product. Therefore, SNCR is not technologically feasible within the RWP sections of the furnaces.

The region immediately downstream of the exhaust gas take-off point is potentially useful for SNCR. This region has the advantage of being outside of the annealing furnace itself and therefore avoids any product quality concerns. However, in this region temperatures are below requirements for effective SNCR. This is partially due to air intrusion at the furnace doors which drops the air temperature by as much as 400 F. If, through the use of air curtains, air intrusion could be considerably reduced then the temperature within the take-off duct would be sufficiently high (above 1500F) to enable SNCR to be technologically feasible. Assuming air intrusion through the doors can be reduced sufficiently, there would be sufficient residence time for SNCR to work. To evaluate the effectiveness of using air curtains to minimize air intrusion, an air curtain trial was conducted. An air curtain was installed on furnace No.1 and a series of temperature measurements were made under varying operating conditions.

The conclusion of the air curtain trials was that, although the air curtain was partially effective in reducing some of the air intrusion, the temperatures within the take-off duct remained consistently below 1500F. Consequently, SNCR cannot be successfully applied and is infeasible even with air curtains installed.

The conclusion is that the use of SNCR to reduce NOx in APL furnaces is technically infeasible.

Ultra Low-NOx Burner
A Ultra Low NOx Burner (ULNB) provides a stable flame that has several different zones. For example, the first zone is the primary combustion zone. The second zone is the fuel re-burning zone with fuel added to chemically reduce NOx. The third zone is the final combustion zone with low excess air to limit the flame temperature. There are many variations on the ULNB theme of reducing NOx. ULNB reduces NOx by spreading the flame out and lowering flame temperature. The ULNB has produced up to 80% DRE. This can be one of the least expensive pollution prevention technologies with high DRE and is technically feasible.

Exhaust Gas Re-circulation
Exhaust Gas Re-circulation (EGR) reduces NOx emissions by cooling the combustion process without introducing additional nitrogen or oxygen into the process. This process is technically feasible and the APL furnaces are equipped with EGR systems that effectively reduce NOx levels from the furnaces.

Furnace Inlet Air Curtain
One restraint on the EGR system is attributable to air intrusion at the furnace doors noted in the discussion of SNCR. This air intrusion adds oxygen to the exhaust gas, which defeats the purpose of EGR. This can be reduced, to some extent, by adding air curtains at the furnace doors which will reduce but not eliminate air intrusion into the

exhaust gas. Therefore, air curtains along with EGR will be considered to be a technologically feasible option for the reduction of NOx for the APL furnaces.

Ultra Low NOx Burner Plus Exhaust Gas Re-circulation

By combining exhaust gas re-circulation with ultra low NOx burners NOx control can be enhanced more than by using either one of these technologies separately. It reduces NOx formation by two mechanisms. The recycled exhaust gas contains combustion products that act as inerts during combustion and lower the peak flame temperature, reducing thermal NOx formation. To a lesser extent, EGR also reduces thermal NOx formation by lowering the oxygen concentration in the primary flame zone. As explained above, the ULNB also reduces NOx by reducing flame temperature. The use of the two technologies together is technically feasible.

Step 3 - Rank the remaining control technologies by control effectiveness.

Adding air curtains at the furnace doors is technically feasible and will increase the effectiveness of EGR system by decreasing air intrusion into the furnace.

Exhaust gas re-circulation (EGR) has the potential for high NOx reduction, is more effective than air curtains, and can be effectively used in AK Steel's annealing furnaces. It has already been installed and is in operation in the APL furnaces.

Ultra low NOx burners can produce up to 60% DRE and can be one of the least expensive NOx prevention technologies to operate. With a 60% DRE this technology is probably more effective then EGR technology. This technology has also been installed in the APL furnaces.

Combining exhaust gas re-circulation with ultra low NOx burners and air curtains is the most effective technology to use on AK Steel's annealing furnaces to reduce NOx emissions.

NOx Control Technology	Efficiency Rank % (least to most)	Control Effectiveness (least to most)
Air Curtain	5% or less *	4
Exhaust Gas Recirculation	20-50 % **	3
Ultra Low NOx Burner	50 -60 % **	2
U. Low NOx Burner with EGR	70-80% **	1

* Based on SNC – Lavalin BACT analysis for AK Steel PSD permit (19502).

** Based on ENCR BACT analysis for AK Steel PSD permit (6713).

Step 4 - Evaluate the most effective controls and document the results.

Cost Analysis for Addition of Air Curtain

As discussed, improvement in NOx control can be realized by adding air curtains at the furnace entrances which will reduce air intrusion and add to the effectiveness of the EGR system. By SNC's estimate, air intrusion into each furnace, can be reduced to approximately 1550 scfm by installing air curtains. This would yield a 20% reduction of air intrusion into the furnace. The result of this would be a decrease in overall NOx emissions of approximately 5% or 3.44 tons per year.

To evaluate the cost effectiveness of adding air curtains to the APL furnaces, the total costs of adding the curtains was determined as shown in Table 2.

TABLE 2

Cost Analysis – Addition of Air Curtains to Furnaces No.1 & No.2					
Capital Costs					
Item	Equipment $	Materials $	Construction $	Total $	Source
Air Curtain	52,000	23,000	50,000	125,000	Equip. Quote
Elect. Control		15,000	50,000	65,000	Quote
Subtotal	52,000	38,000	100,000	190,000	
Engr./Const. Mgt				28,500	15% of above
Contingency				43,700	20% of above
Total Cost				262,200	
Operating Cost $/yr					
Electric Power				24,000	0.4 MM KWH/hr/.06/kwh
Misc. /Maint.				3,600	15% of above
Total				27,600	$/yr
Annual Cost $/yr					
Capital (7%, 10yrs)*				30,200	
Operating				27,600	
Total				**57,800**	**$/yr**

- Capital recovery factor (0.11393) from Table A-2(Sect.1, Chapt.2) of EPA Air Poll. Cost Control Manual.

Cost Effectiveness

NOx Reduction Potential

Annual Maximum NOx Emissions Before Air Curtain
Furnace No.1 NOx = 8.0 lb/hr, Furnace No.2 NOx = 7.7 lb/hr
Total NOx = 15.7 lb/hr
Annual Maximum NOx = (8760 hr/yr) / (2000 lb/ton) x (15.7 lb/hr) = 68.77 TPY
SNC assumed a NOx reduction rate of 5% with air curtains
NOx Reduction = (68.77 TPY) x (0.05) = 3.44 TPY

Costs Per Ton of NOx Removed

($57,800/yr) / (3.44 ton/yr) = $ 16,802 / ton of NOx removed

Air curtains are technologically feasible to use on the APL furnaces and would improve the efficiency of the EGR system. However, at a total initial cost of $262,200 and annual cost of $57,800 to remove 3.44 tons per year of NOx the cost effectiveness of this control can not be economically justified.

Ultra low NOx burners are the most effective control option to use in this application and are the least expensive technology to operate.

Exhaust gas re-circulation is also a very effective technology to use in this application.

The most effective control is the use of both Ultra Low- NOx Burner and Exhaust Gas Re-circulation. Both are the most technically feasible options for use in reducing NOx emissions from AK Steels APL furnace operations when considering furnace exhaust

temperatures. AK Steel is already using both of these technologies for NOx emission control from the APL furnaces and plans to continue their use.

Step 5 - Select BACT

BACT for AK Steels stainless steel annealing furnaces will be the use of Ultra low - NOx Burners with Exhaust Gas Re-circulation as presently installed on the furnaces.

Limits

AK Steel APL annealing furnaces currently have NOx limitations of 0.04 lb/MMBtu and 4.4 lbs/hr on the 110 MMBtu furnace and 0.04 lb/MMBtu and 2.2 lbs/hr on the 55 MMBtu furnace. These limits (established in permit No.147-6713-00041 issued February 13, 1997) were based on information supplied by their furnace supplier Surface Combustion.

Surface Combustion now concedes that those limits were too low and can not be met on the 300 or the 400 series stainless steel at all firing rates. In a July 2, 2002 letter to AK Steel, Surface Combustion and Bloom Engineering, Inc. (the furnace burner supplier) provided new predicted NOx values for the two furnaces when annealing 300 and 400 stainless steels (Table 3). Depending on the steel strip parameters (gauge, production speed, furnace operating level, etc.), they predicted the NOx values shown in Table 3.

Table 3

Stainless Steel	Production Rate (tph)	Predicted NOx (lb/MMBtu) 110 MMBtu/hr Furnace	Predicted NOx (lb/MMBtu) 55 MMBtu/hr Furnace
304	62.2	0.06	0.07
304	118.1	0.07	0.04
304	45.8	0.10	0.16
304	58.5	0.06	0.06
304	134.0	0.08	0.04
409	35.2	0.19	0.11

These values show a range of 0.06 to 0.10 lb/MMbtu of NOx emission from the 110 MMBtu furnace and a range of 0.04 to 0.16 lb/MMBtu of NOx from the 55 MMBtu furnace when annealing 304 stainless steel. When annealing 409 stainless the predicted values of NOx emissions are 0.19 lb/MMBtu from the 110 MMBtu furnace and 0.11 lb/MMBtu from the 55 MMBtu furnace. These values are much higher than the presently set limits.

Independent operating tests run by AK Steel in December 2003 (not certified by IDEM) show NOx values for annealing 300 stainless ranging from 0.039 to 0.05 for the 110 MMBtu furnace and values from 0.039 to 0.06 lb/MMBtu for the 55 MMBtu furnace. NOx values for annealing 400 stainless were 0.06 to 0.10 lb/MMBtu from the 110 MMBtu furnace and 0.11 to 0.155 lb/MMBtu from the 55 MMBtu furnace.

Table 4 - Compliance Test Results

Test Date	NOx (lb/MMBtu) 110 MMBtu Fce.	NOx (lb/MMBtu) 55 MMBtu Fce.	Result	Fce. Load at test (TPH)-110 fce/55fce
11/99	0.043 *	0.067 *	Out of compliance	72 / 80
11/00	0.033 **	0.022 **	In Compliance	101/36
2/00	0.065 *	0.066 *	Out of Compliance	103/ 99

* test of 300 Cold Roll
** test of 300 Hot Roll

Test results from Compliance Testing in November 1999, February and November of 2000 show the NOx lb/hr limits were exceeded in two of the three tests.

ACS Environmental Services (ACS) was retained by AK Steel to perform a compliance oxide of nitrogen (NOx) emissions evaluation on their No.1 and No.2 APL furnaces. The tests were performed January 24-28, 2005 in accordance with United States Environmental Protection Agency (USEPA) Reference Test Methods 3A and 7E. These tests were witnessed by IDEM. The average (from three test runs) of the emission test results are listed in Table 5.

TABLE 5

Stainless Steel Type	Fce. No.1 (110 MMBtu/hr) Emission Rate (lb/MMBtu)	Fce. No.2 (55 MMBtu/hr) Emission Rate (lb/MMBtu)	Combined Fce. Emission Rate (lb/MMBtu)
400 Series Cold Roll	0.08	0.14	0.11
300 Series Cold Roll	0.08	0.10	0.09
300 Series Hot Roll	0.03	0.04	0.035

Based on the above documentation AK Steel feels it can not meet the existing limits for 300 or 400 stainless steel and is asking for higher NOx limits for the annealing furnace line.

Based on compliance test information, ACS Environmental Services tests, limits from other sources shown in Table 1 and other data provided, IDEM has set new limits for the APL annealing furnaces. The limits will be:

Stainless Steel Type	Furnace MMBtu/hr	New Limit lb/MMBtu	New Limit lb/hr
400 Cold Roll	# 1 110	0.08	8.0
400 Cold Roll	# 2 55	0.14	7.7
300 Cold Roll	# 1 110	0.087	9.6
300 Cold Roll	# 2 55	0.11	6.1
300 Hot Roll	# 1 110	0.04	4.4
300 Hot Roll	# 2 55	0.04	2.2

A combined NOx limit for the two furnaces will not be approved because the two furnaces can be fired individually as well as together and compliance for each individual furnace must be tested. Therefore, individual limits have been set for each furnace.

As a result of these new limits the combined NOx Potential to Emit (PTE) for the furnaces will be raised from 28.91 TPY to 68.77 TPY under a maximum operation scenario where 400 grade stainless steels are annealed 365 days per year.

Appendix C
Air Quality Analysis

Introduction

AK Steel Corporation (Rockport Works) has applied for a modification permit for a stainless steel production facility near Rockport in Spencer County, Indiana. The site is located at Universal Transverse Mercator (UTM) coordinates 497259.7 East and 4204121.1 North. The proposed modification would consist of changing emissions limitations for the Anneal and Pickle Lines(APL). Spencer County is designated as attainment for the National Ambient Air Quality Standards. These standards for Nitrogen Dioxide (NO_2), Sulfur Dioxide (SO_2), Carbon Monoxide (CO) and Particulate Matter less than 10 microns (PM_{10}) are set by the United States Environmental Protection Agency (U.S. EPA) to protect the public health and welfare.

AK Steel prepared the PSD permit application. The permit application was received by the Office of Air Quality (OAQ) on June 24, 2004. This document provides OAQ's Air Quality Modeling Section's review of the modification application including an air quality analysis performed by the OAQ.

Air Quality Analysis Objectives

The OAQ review of the air quality impact analysis portion of the permit application will accomplish the following objectives:

A. Establish which pollutants require an air quality analysis based on source emissions.
B. Demonstrate that the source will not cause or contribute to a violation of the National Ambient Air Quality Standard (NAAQS) or Prevention of Significant Deterioration (PSD) increment.
C. Perform a brief qualitative analysis of the source's impact on general growth, soils, vegetation, endangered species and visibility in the impact area with emphasis on any Class I areas. The nearest Class I area is Kentucky's Mammoth Cave National Park which is 110 kilometers from the AK Steel site in Spencer County, Indiana.

Summary

AK Steel has applied for a modification permit to operate a stainless steel production facility, in Rockport in Spencer County, Indiana. Spencer County is currently designated as attainment for all criteria pollutants. Emission rates of one pollutant (Nitrogen Dioxide (NO_2),) associated with the facility did not exceed significant emission rates established in state and federal law, however an air quality modeling analysis was requested. Modeling results taken from the Industrial Source Complex Short Term (ISCST3) model showed all pollutant impacts were predicted to be less than the significant impact levels and significant monitoring de minimis levels for purposes of a National Ambient Air Quality Standards analysis

Part A - Pollutants Analyzed for Air Quality Impact

Indiana Administrative Code (326 IAC 2-2) PSD requirements apply in attainment and unclassifiable areas and require an air quality impact analysis of each regulated pollutant emitted in significant amounts by a new major stationary source or modification. Significant emission levels for each pollutant are defined in 326 IAC 2-2-1. NO_x will be emitted from AK Steel and an air quality analysis is requested for NO_x, which did not exceed the significant emission rates as shown in Table 1. It should be noted that all emissions are based on the Best Available Control Technology (BACT) determination and other limitations resulting from the OAQ review of the application.

TABLE 1 – AK Steel Significant Emission Rates (tons/yr)		
Pollutant	**Maximum Allowable Emissions**	**Significant Emission Rate**
NO_X	26.9	40.0

Significant emission rates are established to determine whether a source is required to conduct an air quality analysis. If a source exceeds the significant emission rate for a pollutant, air dispersion modeling is required for that specific pollutant. A modeling analysis for each pollutant is conducted to determine whether the source modeled concentrations would exceed significant impact levels. Modeled concentrations below significant impact levels are not required to conduct further air quality modeling. Modeled concentrations exceeding the significant impact level would be required to conduct more refined modeling which would include source inventories and background data. These procedures are defined in Guidelines for Air Quality Maintenance Planning and Analysis, Volume 10, Procedures for Evaluating Air Quality Impacts of New Stationary Sources October 1977, U.S. EPA Office of Air Quality Planning and Standards (OAQPS).

Part B - Significant Impact Analysis

An air quality analysis, including air dispersion modeling, was performed to determine the maximum concentrations of the source emissions on receptors outside of the facility property lines. A worst-case approach for emission estimates has been taken due to the nature of the operational capability of the facility.

Model Description

The Office of Air Quality review used the Industrial Source Complex Short Term (ISCST3) model, Version 3, dated July 13, 2004 to determine maximum concentrations or impacts for each pollutant. All regulatory default options were utilized in the United States Environmental Protection Agency (U.S. EPA) approved model, as listed in the 40 Code of Federal Register Part 51, Appendix W Guideline on Air Quality Models. The Auer Land Use Classification scheme was referred to determine the land use in a 3 kilometer (1.9 miles) radius from the source. The area is considered primarily agricultural, therefore a rural classification was used. The model also utilized the Schulman-Scire algorithm to account for building downwash effects. Stacks associated with the stainless steel production facility are below the Good Engineering Practice (GEP) formula for stack heights. This indicates wind flow over and around surrounding buildings can influence the dispersion of concentrations coming from the stacks. 326 IAC 1-7-3 requires a study to demonstrate that excessive modeled concentrations will not result from stacks with heights less than the GEP stack height formula. These aerodynamic downwash parameters were calculated using U.S. EPA's Building Profile Input Program (BPIP).

Meteorological Data

The meteorological data used in the ISCST3 model consisted of the latest five years of available surface data from the Evansville, IN National Weather Service station merged with the mixing heights from Peoria, IL Airport National Weather Service station. The 1990-1994 meteorological data was purchased through the National Oceanic and Atmospheric Administration (NOAA) and National Climatic Data Center (NCDC) and preprocessed into ISCST3-ready format with a version of U.S. EPA's PCRAMMET.

Receptor Grid

Ground-level points (receptors) surrounding the source are input into the model to determine the maximum modeled concentrations that would occur at each point. OAQ modeling utilized receptor grids out to 20 kilometers (12.4 miles) for all pollutants. A program generated polar grid starting at 550 meters away from APL Annealing furnace Stack #2 was used.

Modeled Emissions Data

The modeling used the emission rates listed in GSD-07 of the application and was reviewed and revised by OAQ. The modeling results reflect these emissions and are considered the controlling results for this air quality analysis.

Modeled Results

Maximum modeled concentrations for each pollutant over its significant emission rate are listed below in Table 3 and are compared to each pollutant's significant impact increment for Class II areas, as specified by U.S. EPA in the Federal Register, Volume 43, No. 118, pg 26398 (Monday, June 19, 1978).

TABLE 3 - Summary of OAQ Significant Impact Analysis (ug/m3)

Pollutant	Year	Time-Averaging Period	AK Steel Maximum Modeled Impacts	Significant Impact Increments	Significant Monitoring Levels
NO_2	1993	Annual - 8760 hrs/yr	0.498	**1.0**	14.0

Part C - Additional Impact Analysis

PSD regulations require additional impact analysis be conducted to show that impacts associated with the facility would not adversely affect the surrounding area. The AK Steel permit application did not provided an additional impact analysis.

Soils Analysis

Secondary NAAQS limits were established to protect general welfare, which includes soils, vegetation, animals and crops. Soil types in Spencer County are of the Zanesville, Berks, Wellston, and Muskingum Association of which is predominately Discontinuous loess over weathered sandstone and shale (Soil Survey of Spencer County, U.S. Department of Agriculture). The general landscape consists of Tipton Till Plain or flat to gently rolling terrain (1816-1966 Natural Features of Indiana - Indiana Academy of Science). According to the insignificant modeled concentrations NO_2, the soils will not be adversely affected by the facility.

Vegetation Analysis

Due to the agricultural nature of the land, crops in the Spencer County area consist mainly of corn, wheat, tobacco, soybeans and hay (2002 Agricultural Census for Spencer County). The maximum modeled concentrations of AK Steel for NO_2 are well below the threshold limits necessary to have adverse impacts on surrounding vegetation such as autumn bent, nimblewill, barnyard grass, bishopscap and horsetail milkweed (Flora of Indiana - Charles Deam). Livestock in the county consist mainly of hogs, beef and milk cows, and sheep (2002 Agricultural Census for Spencer County) and will not be adversely impacted from the modification. Trees in the area are mainly Beech, Maple, Oak and Hickory. These are hardy trees and due to the insignificant modeled concentrations, no significant adverse impacts are expected.

Federal and State Endangered Species Analysis

Federally endangered or threatened species as listed in the U.S. Fish and Wildlife Service , Division of Endangered Species for Indiana include 12 species of mussels, 4 species of birds, 2 species of bat and butterflies and 1 species of snake. The mussels and birds listed are commonly found along major rivers and lakes while the bats are found near caves. The agricultural nature of the land overall has disturbed the habitats of the butterflies and snake and the proposed facility is not expected to impact the

area.

Federally endangered or threatened plants as listed in the U.S. Fish and Wildlife Service, Division of Endangered Species for Indiana list two threatened and one endangered species of plants. The endangered plant is found along the sand dunes in northern Indiana while the two threatened species do not thrive on cultivated or grazing land. The proposed facility is not expected to impact the area.

The state of Indiana's list of endangered, special concern and extirpated nongame species, as listed in the Department of Natural Resources, Division of Fish and Wildlife, contains species of birds, amphibians, fish, mammals, mollusks and reptiles which may be found in the area of AK Steel. However, the impacts are not expected to have any additional adverse effects on the habitats of the species than what has already occurred from the agricultural activity in the area.

Additional Analysis Conclusions

The nearest Class I area to the stainless steel production facility is the Mammoth Cave National Park located approximately 110 km southeast in Kentucky. Operation of the proposed facility will not adversely affect the visibility at this Class I area. AK Steel is located beyond 100 kilometers (61 miles) from Mammoth Cave National Park and will not have significant impact on the Class I area. The results of the additional impact analysis conclude the AK Steel's proposed modification will have no adverse impact on economic growth, soils, vegetation, endangered or threatened species or visibility on any Class I area.