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

Frank O'Bannon
Governor

Lori F. Kaplan
Commissioner

100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015
(317) 232-8603
(800) 451-6027
www.in.gov/idem

August 29, 2003

TO: Interested Parties / Applicant

RE: Steel Dynamics, Inc. (SDI) - Bar Products Division/063-16628-00037

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, ISTA Building, 150 W. Market Street, Suite 618, 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 8/11/03

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TO: Interested Parties

DATE: August 29, 2003

RE: Air permit for Steel Dynamics International – Bar Products Division

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

Please be advised that I have approved a request from Steel Dynamics Inc. – Bar Products Division (SDI) to make certain changes and restart operations at the existing steel mill, located at 800 County Road 225 East, Pittsboro, IN. This facility was previously owned and operated by Qualitech Steel Corporation.

The draft permit was on public notice from June 26, 2003 – July 26, 2003, and a public hearing was held on July 7, 2003. We received a large number of comments from the general public, the U.S. Environmental Protection Agency, and SDI. We have evaluated and responded to each comment in the enclosed Addendum to the Technical Support Document (ATSD). In response to these comments, we have revised the permit to provide additional protection to the environment. Several emission limits have been made more strict at the melt shop, boiler, and reheat furnace. No emission limits have been made less strict. Additional monitoring provisions are specified in the permit to ensure compliance to better ensure continuous compliance. The post construction monitoring required by the permit has been revised to lengthen the minimum time that the monitor site at the Pittsboro Elementary School is operated.

The table on the reverse side of this memo provides a more detailed summary of the most significant revisions. Again, the ATSD contains a comprehensive discussion of each condition that changed, or did not change, in response to comments.

Summary of significant changes to the draft permit for SDI, Hendricks County in the final permit issued on August 29, 2003

	Draft Permit	***Final Permit***
Emissions from the Electric Arc Furnace	0.13 pounds of Volatile Organic Compounds (VOC) emitted per ton of metal produced	0.09 pounds of Volatile Organic Compounds (VOC) emitted per ton of metal produced
Emissions from the Electric Arc Furnace	Sulfur scrap monitoring	Continuous Emissions Monitoring System (CEMS) required for Sulfur Dioxide (SO_2) Authority to reopen and re-evaluate the required Best Available Control Technology
Monitoring Systems – entire source	3 Monitors for a minimum of 3 years	2 monitors for a minimum of 3 years Elementary School monitor for minimum of 5 years
Baghouse in Electric Arc Furnace	Pressure drop readings and inspections	Bag Leak Detection System
Reheat Furnace	0.04 lbs of NOx emitted per million Btu 0.08 lbs of Carbon Monoxide (CO) emitted per million Btu	0.035 lbs of NOx emitted per million Btu 0.061 lbs of Carbon Monoxide (CO) emitted per million Btu
VDT Boiler	0.04 lbs of NOx emitted per million Btu	0.0035 lbs of NOx emitted per million Btu
Scrap Management Plan and Fugitive Dust Plan	Part of application	Attached as part of final permit
Preventative Maintenance Plan and Compliance Response Plan	To be implemented within 90 days of start up	To be implemented upon start up
Slag Production	Annual limit of 2,628,000 tons per year based on maximum capacity slag processing equipment	Annual limit of 876,000 tons per year based on more realistic estimate slag generated by the furnaces No off-site slag to be processed by SDI or their contractor

Prevention of Significant Deterioration
Part 70 Significant Source Modification

OFFICE OF AIR QUALITY

Steel Dynamics, Inc. (SDI) - Bar Products Division
8000 North County Road 225 East
Pittsboro, IN 46167

(herein known as the Permittee) is hereby authorized to construct and operate subject to the conditions contained herein, the emission units described in Section A (Source Summary) of this approval.

This approval is issued in accordance with 326 IAC 2 and 40 CFR Part 70 Appendix A and contains the conditions and provisions specified in 326 IAC 2-7 as required by 42 U.S.C. 7401, et. seq. (Clean Air Act as amended by the 1990 Clean Air Act Amendments), 40 CFR Part 70.6, IC 13-15 and IC 13-17.

This permit is also issued under the provisions of 326 IAC 2-2 (Prevention of Significant Deterioration).

PSD Source Modification No.: 063-16628-00037	
Issued by: Original signed by Paul Dubenetzky Paul Dubenetzky, Branch Chief Office of Air Quality	Issuance Date: August 29, 2003

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None
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None

D.5 FACILITY OPERATION CONDITIONS

Emission Limitations and Standards [326 IAC 2-7-5(1)]
D.5.1 PSD BACT Limit [326 IAC 2-2]

SECTION A SOURCE SUMMARY

This approval is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ). The information describing the emission units contained in conditions A.1 through A.2 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permitted to obtain additional permits or seek modification of this approval pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

A.1 General Information [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)] [326 IAC 2-7-1(22)]

The Permitted owns and operates a stationary steel mini-mill that manufactures different types of bars.

Source Name:	Steel Dynamics, Inc. (SDI) - Bar Products Division
Source Location:	8000 North County Road 225 East, Pittsboro, IN 46167
Mailing Address:	8000 North County Road 225 East, Pittsboro, IN 46167
General Telephone Number:	317/892-7000
Responsible Official:	Plant Manager
County:	Hendricks
SIC Code:	3312 (Steel Mill)
NAICS Code:	331211
Source Categories:	1 of 28 Listed Source Categories Major PSD Source Minor Source under Section 112 of the Clean Air Act

A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-7-4(c)(3)]

[326 IAC 2-7-5(15)] [326 IAC 2-7-5(15)]
This stationary source is approved to construct and operate the following emission units and pollution control devices:

(1) One (1) batch mode EAF, with a nominal capacity of 125 tons of steel per hour, utilizing capture system on a fourth hole duct or direct shell evacuation (DSE) system venting to a baghouse (EAF Baghouse) and a canopy hood for overhead roof exhaust. The EAF is equipped with natural gas fired oxy-fuel burners and uses low sulfur charge carbon. The EAF Baghouse has a flow rate of 675,000 acf/min.

The EAF is separated by a wall from the LMS and Caster and does not have a roof monitor (vent).

(2) One (1) Ladle Metallurgy station (LMS), rated at 125 tons/hour, and exhausting to its own baghouse (LMS Baghouse). The LMS Baghouse has a flow rate of 85,000 acf/min.

Both the EAF Baghouse and LMS Baghouse exhaust to the same common stack. The meltshop does not have roof monitor.

(3) The EAF dust is conveyed to a dust storage silo, identified as EAF Dust Handling System.

(4) One (1) continuous Caster with a nominal casting rate of 125 tons/hour. This Caster is located in a separate room from the EAF and LMS and the tundish is covered with a lid. The fugitive emissions exhaust to a roof monitor. The continuous Caster vents to a roof

monitor (vent).

(5) One (1) Reheat Furnace, with nominal capacity of 185 MMBTU/hour and equipped with natural gas fueled low NO_x burners.

(6) Two (2) natural gas fueled low NO_x Tundish Preheaters, each with nominal capacity of 9 MMBTU/hour.

(7) Five (5) natural gas fueled low NO_x LMS Ladle Preheaters/Dryers, each with nominal capacity of 7.5 MMBTU/hour.

(8) Two (2) natural gas fueled low NO_x Tundish Dryers, each with nominal capacity of 9 MMBTU/hour.

(9) Three (3) natural gas fueled low NO_x Tundish Nozzle Preheaters, with nominal total capacity of 6 MMBTU/hour.

(10) One (1) vacuum tank degasser (VTD), rated at 125 tons/hour, equipped with a 38.4 MMBTU/hour flare; and one (1) VTD Boiler, rated at a nominal capacity of 48.4 MMBTU/hr and equipped with natural gas fueled low NO_x burners.

(11) Supporting operations consisting of:
- - Caster cutting torches with nominal total capacity of 6.3 MMBTU/hour and use natural gas as fuel,
- - Bar cutting operation venting to a particulate control at a flow rate of 0.0052 gr/dscf and 30,000 dscf/min,
- - Scarfer venting to a baghouse at a flow rate of 48,200 dscf/min,
- - Bloom billet caster,
- - Water descaler,
- - Roughing mill,
- - Finishing mill,
- - Cooling bed,
- - Shipping and
- - Storage.

(12) Nine (9) silos to store lime, carbon, flux additives and EAF dust. Each silo is equipped with a bin vent filter, with a grain loading of 0.01 gr/dscf at a flow rate of 1,200 dscf/min.

(13) Scrap material handling, lime handling, carbon handling

(14) Slag handling, slag dumping, slag pots, slag crushing, slag screening, drop ball breaking, conveyors, and storage piles. The slag processing and handling has a nominal rate of 300 tons/hour.

(15) Transportation on paved roadways, paved parking lots, unpaved roadways, and other unpaved areas around slag piles and steel scrap piles.

(16) Contact and Non-Contact Cooling towers, with nominal capacity of 44,000 gal/min and with drift eliminators as control:

Tower 1 -- Meltshop Non-Contact Cooling Tower - - 26,700 gal/min,
Tower 2 -- VTD Contact Cooling Tower - - 2,000 gal/min,
Tower 3 -- Bar Mill Contact Cooling Tower - - 9,700 gal/min, and
Tower 4 -- Bar Mill Non-Contact Cooling Tower - - 5,600 gal/min.

(17) Diesel fueled Emergency Generator(s), with total nominal capacity of 485 HP.

A.3 Part 70 Permit Applicability [326 IAC 2-7-2]

This stationary source is required to have a Part 70 permit by 326 IAC 2-7-2 (Applicability) because:

(a) It is a major source, as defined in 326 IAC 2-7-1(22);

(b) It is a source in a source category designated by the United States Environmental Protection Agency (U.S. EPA) under 40 CFR 70.3 (Part 70 - Applicability).

SECTION B GENERAL CONSTRUCTION CONDITIONS

B.1 Definitions [326 IAC 2-7-1]

Terms in this permit shall have the definition assigned to such terms in the referenced regulation. In the absence of definitions in the referenced regulation, the applicable definitions found in the statutes or regulations (IC 13-11, 326 IAC 1-2 and 326 IAC 2-7) shall prevail.

B.2 Effective Date of the Permit [IC13-15-5-3]

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

B.3 Revocation of Permits [326 IAC 2-2-8]

Pursuant to 326 IAC 2-2-8, this permit to construct shall expire if construction is not commenced within eighteen (18) months after receipt of this approval, if construction is discontinued for a period of eighteen (18) months or more, or if construction is not completed within a reasonable time.

The IDEM may extend the eighteen (18) month period upon satisfactory showing that an extension is justified.

B.4 Significant Source Modification [326 IAC 2-7-10.5(h)]

This document shall also become the approval to operate pursuant to 326 IAC 2-7-10.5(h) when, prior to start of operation, the following requirements are met:

(a) The attached affidavit of construction or its equivalent shall be submitted to the:

Indiana Department of Environmental Management
Office of Air Quality, Permit Branch
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

verifying that the emission units were constructed as proposed in the application or the permit.

The emissions units covered in the Significant Source Modification approval may begin operating on the date the affidavit of construction is postmarked or hand delivered to IDEM if constructed as proposed.

(b) If actual construction of the emissions units differs from the construction proposed in the application or the permit in a manner that is regulated under the provisions of 326 IAC 2-2, the source may not begin operation until the source modification has been revised pursuant to the provisions of that rule and the provisions of 326 IAC 2-1.1-6 and an Operation Permit Validation Letter is issued.

(c) If actual construction of the emissions units differs from the construction proposed in the application or the permit in a manner that is not regulated under the provisions of 326 IAC 2-2, the source may not begin operation until the source modification has been revised pursuant to the provisions of that rule and the provisions of 326 IAC 2-7-11 or 326 IAC 2-7-12 and an Operation Permit Validation Letter is issued.

(d) The Permittee shall attach the Operation Permit Validation Letter to this permit.

(e) The changes covered by this Significant Source Modification will be included in the Part 70 application.

(f) In the event that the Part 70 application is being processed at the same time as this application, the following additional procedures shall be followed for obtaining the right to operate:

(1) If the Part 70 draft permit has not gone on public notice, then the change/addition covered by the Significant Source Modification will be included in the Part 70 draft.

(2) If the Part 70 permit has gone through final EPA proposal and would be issued ahead of the Significant Source Modification, the Significant Source Modification will go through a concurrent 45 day EPA review. Then the Significant Source Modification will be incorporated into the final Part 70 permit at the time of issuance.

(3) If the Part 70 permit has gone through public notice, but has not gone through final EPA review and would be issued after the Significant Source Modification is issued, then the Modification would be added to the proposed Part 70 permit, and the Title V permit will issued after EPA review.

B.5 General Provisions Relating to NSPS [326 IAC 12-1][40 CFR Part 60, Subpart A]

The provisions of 40 CFR Part 60, Subpart A (General Provisions), which are incorporated by reference in 326 IAC 12-1, apply to the EAF, Dust Handling System and VTD Boiler, except when otherwise specified in 40 CFR Part 60, Subpart AAa and Subpart Dc.

B.6 NSPS Reporting Requirement [40 CFR Part 60]

Pursuant to the New Source Performance Standards (NSPS), 40 CFR Part 60, Subpart AAa, Subpart Dc and 40 CFR 60.7a, the Permittee shall report the following at the appropriate times:

(a) Commencement of construction date (no later than 30 days after such date) [40 CFR 60.7a(1)];

(b) Actual start-up date (no later than 15 days after such date)[40 CFR 60.7a(3)];

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

(d) Commencement date of CEMS (no later than 15 days after such date) [40 CFR 7a(5)];

(e) Anticipated date for conducting opacity observations (no later than 15 days after such date) [40 CFR 60.7a(6)]; and

(f) Date that COM data results will be used to determine compliance with the applicable opacity standard observations (no later than 15 days after such date) [40 CFR 60.7a(7)].

Reports are to be sent to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue, P. O. Box 6015

Indianapolis, IN 46206-6015

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.

SECTION C GENERAL OPERATION CONDITIONS

C.1 Certification [326 IAC 2-7-4(f)][326 IAC 2-7-6(1)][326 IAC 2-7-5(3)(C)]

(a) Where specifically designated by this permit or required by an applicable requirement, any application form, report, or compliance certification submitted shall contain certification by a responsible official of truth, accuracy, and completeness. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

(b) One (1) certification shall be included, using the attached Certification Form or equivalent, with each submittal requiring certification.

(c) A responsible official is defined at 326 IAC 2-7-1(34).

C.2 Preventive Maintenance Plan (PMP) [326 IAC 2-7-5(1),(3) and (13)] [326 IAC 2-7-6(1) and (6)] [326 IAC 1-6-3] [326 IAC 1-6-3]

(a) If required by specific condition(s) in Section D of this permit, the Permittee shall prepare and implement Preventive Maintenance Plans (PMPs) upon initial start up, including the following information on each facility:

(1) Identification by jobs or titles of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices;

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

(3) Identification and quantification of the replacement parts that will be maintained in inventory for quick replacement.

The submittal of the PMP extension notification does not require the certification by the Aresponsible official@ as defined by 326 IAC 2-7-1(34).

(b) The Permittee shall implement the PMPs, including any required record keeping, as necessary to ensure that failure to implement a PMP does not cause or contribute to an exceedance of any limitation on emissions or potential to emit.

(c) A copy of the PMPs shall be submitted to IDEM, OAQ, upon request and within a reasonable time, and shall be subject to review and approval by IDEM, OAQ.

(d) The IDEM, OAQ may require the Permittee to revise its PMPs whenever lack of proper maintenance causes or is the primary contributor to an exceedance of any limitation on emissions or potential to emit.

(e) To the extent the Permittee is required by 40 CFR Part 60/63 to have an Operation, Maintenance, and Monitoring (OMM) Plan for a unit, such Plan is deemed to satisfy the PMP requirements of 326 IAC 1-6-3 for that unit.

C.3 Deviations from Permit Requirements and Conditions [326 IAC 2-7-5(3)(C)(ii)]

(a) Deviations from any permit requirements (for emergencies see Section C - Emergency Provisions), the probable cause of such deviations, and any response steps or preventive measures taken shall be reported to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015

using the attached Quarterly Deviation and Compliance Monitoring Report, or its equivalent.

A deviation required to be reported pursuant to an applicable requirement that exists independent of this permit, shall be reported according to the schedule stated in the applicable requirement and does not need to be included in this report.

The Quarterly Deviation and Compliance Monitoring Report does require the certification by the Aresponsible official@ as defined by 326 IAC 2-7-1(34).

(b) A deviation is an exceedance of a permit limitation or a failure to comply with a requirement of the permit.

C.4 Permit Amendment or Modification [326 IAC 2-7-11] [326 IAC 2-7-12] [326 IAC 2-7-5(6)(C)] [326 IAC 2-7-8(a)] [326 IAC 2-7-9]

(a) Permit amendments and modifications are governed by the requirements of 326 IAC 2-7-11 or 326 IAC 2-7-12 whenever the Permittee seeks to amend or modify this permit.

(b) Any application requesting an amendment or modification of this permit shall be submitted to:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015

Any such application shall be certified by the Aresponsible official@ as defined by 326 IAC 2-7-1(34).

(c) The Permittee may implement administrative amendment changes addressed in the request for an administrative amendment immediately upon submittal of the request. [326 IAC 2-7-11(c)(3)]

(d) No permit amendment or modification is required for the addition, operation or removal of a nonroad engine, as defined in 40 CFR 89.2.

C.5 Opacity [326 IAC 5-1]

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

(a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

(b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

C.6 Fugitive Dust Emissions [326 IAC 6-4]

The Permittee shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4 (Fugitive Dust Emissions).

326 IAC 6-4-2(4) is not federally enforceable.

C.7 Operation of Equipment [326 IAC 2-7-6(6)]

Except as otherwise provided by statute or rule, or in this permit, all air pollution control equipment listed in this permit and used to comply with an applicable requirement shall be operated at all times that the emission units vented to the control equipment are in operation.

C.8 Stack Height [326 IAC 1-7]

The Permittee shall comply with the applicable provisions of 326 IAC 1-7 (Stack Height Provisions), for all exhaust stacks through which a potential before controls of twenty-five (25) tons per year or more of particulate matter or sulfur dioxide is emitted.

The provisions of 326 IAC 1-7-2, 326 IAC 1-7-3(c) and (d), 326 IAC 1-7-4(d), (e), and (f), and 326 IAC 1-7-5(d) are not federally enforceable.

C.9 Asbestos Abatement Projects [326 IAC 14-10] [326 IAC 18] [40 CFR 61, Subpart M]

The Permittee shall comply with the applicable requirements of 326 IAC 14-10, 326 IAC 18, and 40 CFR 61.140.

Testing Requirements [326 IAC 2-7-6(1)]

C.10 Performance Testing [326 IAC 3-6][326 IAC 2-1.1-11]

(a) All testing shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures), except as provided elsewhere in this permit, utilizing any applicable procedures and analysis methods specified in 40 CFR 51, 40 CFR 60, 40 CFR 61, 40 CFR 63, 40 CFR 75, or other procedures approved by IDEM, OAQ.

A test protocol, except as provided elsewhere in this permit, shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

no later than thirty-five (35) days prior to the intended test date.

The protocol submitted by the Permittee does not require certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

(b) The Permittee shall notify IDEM, OAQ of the actual test date at least fourteen (14) days prior to the actual test date.

The notification submitted by the Permittee does not require certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

(c) Pursuant to 326 IAC 3-6-4(b), all test reports must be received by IDEM, OAQ not later than forty-five (45) days after the completion of the testing.

(d) An extension may be granted by IDEM, OAQ, if the source submits to IDEM, OAQ, a reasonable written explanation not later than five (5) days prior to the end of the initial forty-five (45) day period.

Compliance Requirements [326 IAC 2-1.1-11]

C.11 Compliance Requirements [326 IAC 2-1.1-11]

(a) The Commissioner may require stack testing, monitoring, or reporting at any time to assure compliance with all applicable requirements by issuing an order under 326 IAC 2-1.1-11.

(b) Any monitoring or testing shall be performed in accordance with 326 IAC 3 or other methods approved by the Commissioner or the U. S. EPA.

Compliance Monitoring Requirements [326 IAC 2-7-5(1)] [326 IAC 2-7-6(1)]

C.12 Compliance Monitoring [326 IAC 2-7-5(3)] [326 IAC 2-7-6(1)]

(a) If required by Section D of this permit, all monitoring and record keeping requirements shall be implemented when operation begins.

(b) If required by Section D of this permit, the Permittee shall be responsible for installing any necessary equipment and initiating any required monitoring related to that equipment.

C.13 Monitoring Methods [326 IAC 3] [40 CFR 60] [40 CFR 63]

Any monitoring or testing required by Section D of this permit shall be performed according to the provisions of 326 IAC 3, 40 CFR 60, Appendix A, 40 CFR 60 Appendix B, 40 CFR 63, or other approved methods as specified in this permit.

C.14 Pressure Gauge and Other Instrument Specifications [326 IAC 2-1.1-11] [326 IAC 2-7-5(3)] [326 IAC 2-7-6(1)]

(a) Whenever a condition in this permit requires the measurement of pressure drop across any part of the unit or its control device, the gauge employed shall have a scale such that the expected normal reading shall be no less than twenty percent (20%) of full scale and be accurate within plus or minus two percent ("2%) of full scale reading.

(b) Whenever a condition in this permit requires the measurement of a (temperature, or flow rate), the instrument employed shall have a scale such that the expected normal reading shall be no less than twenty percent (20%) of full scale and be accurate within plus or minus two percent ("2%) of full scale reading.

(c) The Permittee may request the IDEM, OAQ approve the use of a pressure gauge or other instrument that does not meet the above specifications provided the Permittee can

demonstrate an alternative pressure gauge or other instrument specification will adequately ensure compliance with permit conditions requiring the measurement of pressure drop or other parameters.

C.15 Post Construction Ambient Monitoring [326 IAC 2-2]

Pursuant to 326 IAC 2-2-4(c)(5), the Permittee shall comply with the following:

(a) The Permittee shall establish three (3) ambient monitoring sites at locations approved by IDEM. One of the 3 sites shall be located on or near the school property of Pittsboro Elementary School.

(b) All monitors shall meet the operating and maintenance criteria outlined in the IDEM, OAQ Quality Assurance Manual.

(i) Each monitoring site shall monitor PM10, SO2, NOx and CO.

(ii) Based on the prevailing winds, one of the 3 sites shall also monitor the following meteorological parameters:
- - wind speed,
- - wind directions, and
- - outdoor temperature.

(c) The Permittee shall conduct a minimum of 60 months of post-construction monitoring at the Pittsboro Elementary School site and 36 months of post-construction monitoring at each of the other two (2) sites.

(d) The monitoring must be performed using US EPA approved methods, procedures, and quality assurance programs and be in accordance with plan and protocol approved by IDEM, OAQ.

(e) A monitoring and quality assurance plan shall be submitted to the:
Indiana Department of Environmental Management
Office of Air Quality, Ambient Monitoring Section
2525 North Shadeland Avenue, Indianapolis, IN

no later than 90 calendar days in advance of the start of the monitoring. The plan must be approved by OAQ prior to commencement of monitoring.

(f) Ambient data along with precision and accuracy data from the monitors shall be submitted on a quarterly basis in a format approved by IDEM, OAQ, no later than 60 days after the end of the quarter being reported.

(g) The quarterly summary of monitoring shall be submitted to IDEM, OAQ, Ambient Monitoring Section, in the same address mentioned above.

(h) No sooner than 6 months prior to the end of the minimum monitoring period, the Permittee may submit an application to modify the permit to discontinue one or more of the monitoring sites.

The application shall include the air quality and meteorological monitoring data collected, actual emissions of PM10, SO2, NOx and CO, actual steel production information, and any addition information that would support a request to discontinue the monitoring

site(s).

(i) The commissioner shall review the information submitted by the Permittee and other available information to determine whether the proper operation of the source could potentially cause or contribute to a violation of any National Ambient Air Quality Standard or maximum allowable increase under 326 IAC 1-3-4 or 326 IAC 2-2-6.

(j) Any decision regarding the application shall proceed in accordance with the significant permit modifications provisions of 326 IAC 2-7-12(d).

Corrective Actions and Response Steps [326 IAC 2-7-5] [326 IAC 2-7-6]

C.16 Compliance Response Plan - Preparation, Implementation, Records, and Reports [326 IAC 2-7-5] [326 IAC 2-7-6]

(a) The Permittee is required to prepare a Compliance Response Plan (CRP) for each compliance monitoring condition of this permit.

A CRP shall be submitted to IDEM, OAQ upon request.

The CRP shall be prepared upon initial start up, by the Permittee, supplemented from time to time by the Permittee, maintained on site, and comprised of:

(1) Reasonable response steps that may be implemented in the event that a response step is needed pursuant to the requirements of Section D of this permit; and an expected timeframe for taking reasonable response steps.

(2) If, at any time, the Permittee takes reasonable response steps that are not set forth in the Permittee=s current Compliance Response Plan or Operation, Maintenance and Monitoring (OMM) Plan and the Permittee documents such response in accordance with subsection (e) below, the Permittee shall amend its Compliance Response Plan or Operation, Maintenance and Monitoring (OMM) Plan to include such response steps taken.

If the Permittee is required to have an Operation, Maintenance and Monitoring (OMM) Plan under 40 CFR 60 or 40 CFR 63 , such plan shall be deemed to satisfy the requirements for a CRP for those compliance monitoring conditions.

The OMM Plan shall be submitted within the time frames specified by the applicable 40 CFR 60 or 40 CFR 63 requirement.

(b) For each compliance monitoring condition of this permit, reasonable response steps shall be taken when indicated by the provisions of that compliance monitoring condition as follows:

(1) Reasonable response steps shall be taken as set forth in the Permittee=s current Compliance Response Plan or Operation, Maintenance and Monitoring (OMM) Plan; or

(2) If none of the reasonable response steps listed in the Compliance Response Plan or Operation, Maintenance and Monitoring (OMM) Plan is applicable or responsive to the excursion, the Permittee shall devise and implement additional

response steps as expeditiously as practical. Taking such additional response steps shall not be considered a deviation from this permit so long as the Permittee documents such response steps in accordance with this condition.

(3) If the Permittee determines that additional response steps would necessitate that the emissions unit or control device be shut down, the IDEM, OAQ shall be promptly notified of the expected date of the shut down, the status of the applicable compliance monitoring parameter with respect to normal, and the results of the actions taken up to the time of notification.

(4) Failure to take reasonable response steps shall be considered deviation from the permit.

(c) The Permittee is not required to take any further response steps for any of the following reasons:

(1) A false reading occurs due to the malfunction of the monitoring equipment and prompt action was taken to correct the monitoring equipment.

(2) The Permittee has determined that the compliance monitoring parameters established in the permit conditions are technically inappropriate, has previously submitted a request for a minor permit modification to the permit, and such request has not been denied.

(3) An automatic measurement was taken when the process was not operating.

(4) The process has already returned or is returning to operating within Anormal@ parameters and no response steps are required.

(d) When implementing reasonable steps in response to a compliance monitoring condition, if the Permittee determines that an exceedance of an emission limitation has occurred, the Permittee shall report such deviations pursuant to Section C-Deviations from Permit Requirements and Conditions.

(e) The Permittee shall record all instances when response steps, in accordance with Section D of this permit, are taken.

In the event of an emergency, the provisions of 326 IAC 2-7-16 (Emergency Provisions) requiring prompt corrective action to mitigate emissions shall prevail.

(f) Except as otherwise provided by a rule or provided specifically in Section D of this permit, all monitoring as required in Section D of this permit shall be performed when the emission unit is operating, except for time necessary to perform quality assurance and maintenance activities.

C.17 Emergency Provisions [326 IAC 2-7-16]

(a) An emergency, as defined in 326 IAC 2-7-1(12), is not an affirmative defense for an action brought for noncompliance with a federal or state health-based emission limitation.

(b) An emergency, as defined in 326 IAC 2-7-1(12), constitutes an affirmative defense to an action brought for noncompliance with a technology-based emission limitation if the

affirmative defense of an emergency is demonstrated through properly signed, contemporaneous operating logs or other relevant evidence that describe the following:

(1) An emergency occurred and the Permittee can, to the extent possible, identify the causes of the emergency;

(2) The permitted facility was at the time being properly operated;

(3) During the period of an emergency, the Permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards or other requirements in this permit;

(4) For each emergency lasting one (1) hour or more, the Permittee notified IDEM, OAQ, no later than four (4) daytime business hours after the beginning of the emergency, or after the emergency was discovered or reasonably should have been discovered;

Telephone Number: 1-800-451-6027 (ask for Office of Air Quality, Compliance Section),
or
Telephone Number: 317-233-5674 (ask for Compliance Section)
Facsimile Number: 317-233-5967

(5) For each emergency lasting one (1) hour or more, the Permittee submitted the attached Emergency Occurrence Report Form or its equivalent, either by mail or facsimile to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

no later than two (2) working days of the time when emission limitations were exceeded due to the emergency.

The notice fulfills the requirement of 326 IAC 2-7-5(3)(C)(ii) and must contain the following:

(A) A description of the emergency;

(B) Any steps taken to mitigate the emissions; and

(C) Corrective actions taken.

The notification which shall be submitted by the Permittee does not require the certification by the Aresponsible official@ as defined by 326 IAC 2-7-1(34).

(6) The Permittee immediately took all reasonable steps to correct the emergency.

(c) In any enforcement proceeding, the Permittee seeking to establish the occurrence of an emergency has the burden of proof.

(d) This emergency provision supersedes 326 IAC 1-6 (Malfunctions). This permit condition is in addition to any emergency or upset provision contained in any applicable requirement.

(e) IDEM, OAQ may require that the Preventive Maintenance Plans required under 326 IAC 2-7-4-(c)(9) be revised in response to an emergency.

(f) Failure to notify IDEM, OAQ, by telephone or facsimile of an emergency lasting more than one (1) hour in accordance with (b)(4) and (5) of this condition shall constitute a violation of 326 IAC 2-7 and any other applicable rules.

(g) If the emergency situation causes a deviation from a technology-based limit, the Permittee may continue to operate the affected emitting facilities during the emergency provided the Permittee immediately takes all reasonable steps to correct the emergency and minimize emissions.

(h) Permittee shall include all emergencies in the Quarterly Deviation and Compliance Monitoring Report or its equivalent.

C.18 Risk Management Plan (RMP) [326 IAC 2-7-5(12)] [40 CFR 68.215]

If a regulated substance, as defined in 40 CFR 68, is present at a source in more than a threshold quantity, the source must comply with the applicable requirements of 40 CFR 68.

C.19 Actions Related to Noncompliance Demonstrated by a Stack Test [326 IAC 2-7-5] [326 IAC 2-7-6]

(a) When the results of a stack test performed in conformance with Section C - Performance Testing, of this permit exceed the level specified in any condition of this permit, the Permittee shall take appropriate response actions.

The Permittee shall submit a description of these response actions to IDEM, OAQ, no later than thirty (30) days of receipt of the test results.

The Permittee shall take appropriate action to minimize excess emissions from the affected facility while the response actions are being implemented.

(b) A retest to demonstrate compliance shall be performed no later than one hundred twenty (120) days of receipt of the original test results.

Should the Permittee demonstrate to IDEM, OAQ that retesting in one-hundred and twenty (120) days is not practicable, IDEM, OAQ may extend the retesting deadline.

(c) IDEM, OAQ reserves the authority to take any actions allowed under law in response to noncompliant stack tests.

The response action documents submitted pursuant to this condition do require the certification by the Aresponsible official@ as defined by 326 IAC 2-7-1(34).

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

C.20 Emission Statement [326 IAC 2-7-5(3)(C)(iii)][326 IAC 2-7-5(7)][326 IAC 2-7-19(c)] [326 IAC 2-6]

(a) The Permittee shall submit an annual emission statement certified pursuant to the requirements of 326 IAC 2-6, that must be received by July 1 of each year and must comply with the minimum requirements specified in 326 IAC 2-6-4.

The annual emission statement shall indicate the estimated actual emissions of criteria pollutants from the source, in compliance with 326 IAC 2-6 (Emission Reporting);

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

The annual emission statement must be submitted to:

Indiana Department of Environmental Management
Technical Support and Modeling Section, Office of Air Quality
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

C.21 General Record Keeping Requirements [326 IAC 2-7-5(3)][326 IAC 2-7-6]

(a) Records of all required monitoring data, reports and support information required by this Permit shall be retained for a period of at least five (5) years from the date of monitoring sample, measurement, report, or application.

These records shall be physically present or electronically accessible at the source location for a minimum of three (3) years.

The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request.

If the Commissioner makes a request for records to the Permittee, the Permittee shall furnish the records to the Commissioner within a reasonable time.

(b) Unless otherwise specified in this permit, all record keeping requirements not already legally required shall be implemented upon initial start up.

C.22 General Reporting Requirements [326 IAC 2-7-5(3)(C)]

(a) The source shall submit the attached Quarterly Deviation and Compliance Monitoring Report or its equivalent.

Any deviation from permit requirements, the date(s) of each deviation, the cause of the deviation, and the response steps taken must be reported.

This report shall be submitted no later than thirty (30) days of the end of the reporting period.

The Quarterly Deviation and Compliance Monitoring Report or its equivalent shall include the certification by the Aresponsible official@ as defined by 326 IAC 2-7-1(34).

(b) The report required in (a) of this condition and reports required by conditions in Section D of this permit shall be submitted to:

Indiana Department of Environmental Management

Compliance Data Section, Office of Air Quality
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

(c) Unless otherwise specified in this permit, any notice, report, or other submission required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due.

If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ, on or before the date it is due.

(d) Unless otherwise specified in this permit, all reports required in Section D of this permit shall be submitted no later than thirty (30) days of the end of the reporting period.

All reports, except as specified otherwise, do require the certification by the Aresponsible official@ as defined by 326 IAC 2-7-1(34).

(e) The first report shall cover the period commencing on the date after initial start up and ending on the last day of the reporting period.

Reporting periods are based on calendar years.

SECTION D.1 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

(1) One (1) batch mode EAF, with a nominal capacity of 125 tons of steel per hour, utilizing capture system on a fourth hole duct or direct shell evacuation (DSE) system venting to a baghouse (EAF Baghouse) and a canopy hood for overhead roof exhaust. The EAF is equipped with natural gas fired oxy-fuel burners and uses low sulfur charge carbon. The EAF Baghouse has a flow rate of 675,000 acf/min.

(2) One (1) Ladle Metallurgy station (LMS), rated at 125 tons/hour, and exhausting to its own baghouse (LMS Baghouse). The LMS Baghouse has a flow rate of 85,000 acf/min.

Both the EAF Baghouse and LMS Baghouse exhaust to the same common stack. The meltshop does not have roof monitor.

(3) The EAF dust is conveyed to a dust storage silo, identified as EAF Dust Handling System.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-7-5(1)] [326 IAC 2-2-3(a)(3)]

D.1.1 EAF and LMS PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2, the Permittee shall comply with the following BACT requirements:

(a) Steel production shall not exceed a maximum production rate of 1,095,000 tons per 12-consecutive month period with compliance demonstrated at the end of each month.

(b) Sulfur dioxide (SO_2) emissions from the EAF Baghouse/LMS Baghouse stack shall not exceed the following rates with compliance demonstrated at the end of each month:

Table 1

Series	Production (tons/year)
Low Sulfur Grade Bar	no limitation*
1100 SBQ	219,000
1200 SBQ	164,250

* Low Sulfur Grade Bar has no production restriction because it can be manufactured at any rate as long as the aggregate of the 3 different product series does not exceed the maximum annual steel production specified in Condition D.1.1(a).

(c) The EAF Baghouse and LMS Baghouse shall exhaust to a common stack.

(d) Sulfur dioxide (SO_2) emissions from the EAF Baghouse/LMS Baghouse stack shall not exceed the following rates:

Table 2		
Series	SO_2 BACT Limit (lb/ton)	SO_2 BACT Limit (lb/24-hour period)
Low Sulfur Grade Bar	0.25	31.25
1100 SBQ	1.5	187.5
1200 SBQ	1.8	225.0 1

(i) If the stack test required under Condition D.1.9 and the SO2 CEMS show that the SO_2 actual emission rates are lower than the SO_2 limits specified for the 1100 SBQ and 1200 SBQ indicated in Table 2, the IDEM may reopen and modify the permit to re-evaluate and adjust the SO_2 limits.

IDEM will use the authority under IC 13-15-7-2 and 326 IAC 2-7-9 to re-open and revise the SO2 limits to more closely reflect the actual stack test results and CEMS data.

(ii) If the stack test required under Condition D.1.9 and the SO2 CEMS show that the SO_2 actual emission rates are higher than the SO_2 limits specified for the 1100 SBQ and 1200 SBQ indicated in Table 2, the Permittee may apply for a permit modification to modify the permit to re-evaluate and adjust the SO_2 limits.

(iii) IDEM will provide an opportunity for public notice and comment prior to finalizing any permit modification, under the significant permit modification provisions of 326 IAC 2-7-12(d).

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

(e) Nitrogen oxide (NO_x) emissions from the EAF Baghouse/LMS Baghouse stack shall not exceed 0.35 pounds per ton of steel produced and 43.75 pounds of NO_x per hour.

(f) Carbon monoxide (CO) emissions from the EAF Baghouse/LMS Baghouse stack shall not exceed 2 pounds per ton of steel produced and 250 pounds of CO per hour, based on a 3-hour block average.

(g) Volatile organic compound (VOC) emissions from the EAF Baghouse/LMS Baghouse stack shall not exceed 0.09 pounds per ton of steel produced and 11.5 pounds of VOC per hour. This VOC limit also satisfies the requirements under 326 IAC 8-1-6.

(h) Filterable particulate matter (PM) emissions from the EAF Baghouse/LMS Baghouse stack shall not exceed 0.0018 grains per dry standard cubic foot (gr/dscf).

(i) Filterable and condensible PM_{10} emissions from the EAF Baghouse shall not exceed 0.0052 gr/dscf.

(j) Visible emissions from the EAF Baghouse/LMS Baghouse stack shall not exceed 3% opacity, based on a 6-minute average (24 readings taken in accordance with 40 CFR Part 60, Appendix A, Method 9).

(k) Visible emissions from the EAF Dust Handling system shall not exceed 3% opacity, based on a 6-minute average as determined in 326 IAC 5-1-4.

(l) Fugitive emissions generated at each EAF during each complete cycle from tap to tap shall not exceed 3% opacity when emitted from any roof monitor or building opening, based on a 6-minute average as determined in 326 IAC 5-1-4.

D.1.2 General Provisions Relating to NSPS [326 IAC 12-1][40 CFR Part 60, Subpart A]

The provisions of 40 CFR Part 60, Subpart A (General Provisions), which are incorporated by reference in 326 IAC 12-1, apply to the EAF and dust handling system, except when otherwise specified in 40 CFR Part 60, Subpart AAa.

D.1.3 PM and Opacity [40 CFR 60.272a]

(a) Pursuant to 40 CFR 60.272a(a)(1), the particulate matter (PM) emissions from the EAF Baghouse/LMS Baghouse stack shall not exceed 0.0052 gr/dscf.

(b) Pursuant to 40 CFR 60.272a(a)(2), the visible emissions from the EAF Baghouse/LMS Baghouse stack shall not exceed 3% opacity, based on a 6-minute average.

(c) Pursuant to 40 CFR 60.272a(a)(3), the visible emissions from the Meltshop operations shall not exceed 6% opacity, based on a 6-minute average.

(d) Pursuant to 40 CFR 60.272a(b), the visible emissions from the EAF Dust Handling System shall not exceed 10% opacity, based on a 6-minute average.

D.1.4 PSD Minor Pollutants [326 IAC 2-2]

The Permittee shall emit less than the following emission rates from the EAF Baghouse:

Table 3

Pollutant	Emission Rate (lb/hr)	PSD Significant Level (tons/year)
Lead	0.134	0.6
Beryllium	5.75×10^{-5}	0.0004
Fluorides	0.68	3.0
Mercury	0.023	0.1

Compliance by the Permittee with these limitations makes the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration) not applicable.

D.1.5 Hazardous Air Pollutants (HAPs) [326 IAC 2-4.1-1]

The Permittee shall emit less than 10 tons/year of any single HAP and 25 tons/year of any combination of HAPs. Compliance with these limits makes 326 IAC 2-4.1-1 and Section 112(j) of the CAA not applicable.

D.1.6 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan (PMP), in accordance with Section C - Preventive Maintenance Plan, of this permit, is required for these units and control devices.

Compliance Determination Requirements [326 IAC 2-1.1-11]

D.1.7 Particulate Matter Control [326 IAC 2-2]

(a) Pursuant to 326 IAC 2-2, the EAF Baghouse for particulate control shall be in operation and control emissions at all times that the EAF is in operation.

(b) Pursuant to 326 IAC 2-2, the LMS Baghouse for particulate control shall be in operation and control emissions at all times that the LMS is in operation.

(c) Pursuant to 326 IAC 2-2, fugitive emissions generated during EAF operations shall be captured by the roof canopies or contained and collected within the EAF building.

(d) There shall be no roof monitor in the Meltshop.

D.1.8 PSD BACT Control and Work Practices [326 IAC 2-2]

Pursuant to 326 IAC 2-2, the Permittee shall comply with the following:

(a) The EAF shall be equipped and operated with oxy fuel burners.

(b) The EAF shall be controlled by a direct shell evacuation (DSE) system and canopy hood.

(c) VOC emissions shall be controlled through an extensive scrap management program. All grades of scrap shall contain no observable non-ferrous metals, or non-metallics, and shall be free of excessive dirt, oil, grease, and tin plate. Heavily oiled scrap shall not be used.

The Permittee shall implement the scrap management plan (SMP) attached to this permit (Attachment A - SMP).

(d) Good working practices shall be observed.

D.1.9 Testing Requirements [326 IAC 2-7-6(1),(6)] [326 IAC 2-1.1-11] [326 IAC 2-2][40 CFR 60.275a]

(a) Pursuant to 326 IAC 2-2, and 40 CFR 60.270a (Subpart AAa), within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up of the modified EAF, the Permittee shall perform testing on the common EAF Baghouse/LMS Baghouse stack for the following:

(i) Filterable PM,
(ii) Filterable and condensible PM_{10},
(iii) SO_2,
(iv) NO_x,
(v) Lead and
(vi) VOC

(b) Within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up of the modified EAF, the Permittee shall perform opacity testing on the EAF dust handling system.

(c) The baghouse EAF dust shall be sampled and analyzed for Lead content on a monthly basis according to the procedures specified in the EPA publication SW-846-6010B, entitled Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

(d) With the submission of the test protocol, at a minimum, the Permittee shall include the information of sulfur content of injection carbon, charge carbon and sulfurizing agent to be used in testing.

(e) The PM and PM_{10} testings shall utilized 40 CFR Part 60, Appendix A, Method 5, Method 201 or 201A, Method 202 or other methods as approved by the Commissioner.

(f) Any stack which has multiple processes which exhaust to the same stack shall operate all of the processes simultaneously in accordance with 326 IAC 3-6 (Source Sampling Procedures) and 40 CFR 60.274a(b).

(g) These tests shall be performed using methods as approved by the Commissioner.

(h) The PM, PM_{10}, SO_2, NO_x and Lead tests shall be repeated at least once every 2.5 years from the date of a valid compliance demonstration.

(i) Testing shall be conducted in accordance with Section C - Performance Testing.

D.1.10 CO and SO_2 Continuous Emission Rate Monitoring Requirement [326 IAC 2-2] [326 IAC 3-5]

(a) Pursuant to 326 IAC 2-2 and 326 IAC 3-5-1(d), the Permittee shall install, calibrate, certify, operate, and maintain continuous emission monitoring system(s) (CEMS) and related equipment for measuring CO and SO_2 emissions rates in pounds per hour from the common EAF Baghouse/LMS Baghouse stack in accordance with 326 IAC 3-5-2 and 326 IAC 3-5-3.

(b) The Permittee shall submit to IDEM, OAQ, upon initial start up, a complete written continuous monitoring standard operating procedure (CMSOP), in accordance with the requirements of 326 IAC 3-5-4.

(c) The Permittee shall record the output of the continuous monitoring system(s) and shall perform the required record keeping and reporting, pursuant to 326 IAC 3-5-6 and 326 IAC 3-5-7.

D.1.11 Continuous Opacity Monitoring (COM) [326 IAC 2-2] [326 IAC 3-5] [40 CFR 60.273a]

(a) Pursuant to 326 IAC 2-2, 326 IAC 3-5, and 40 CFR 60.273a, the Permittee shall install, calibrate, certify, operate, and maintain a continuous monitoring system and related equipment to measure opacity from the common EAF Baghouse/LMS Baghouse stack in accordance with 326 IAC 3-5-2 and 326 IAC 3-5-3.

(b) The Permittee shall submit to IDEM, OAQ, upon initial start up, a complete written continuous monitoring standard operating procedure (CMSOP), in accordance with the requirements of 326 IAC 3-5-4.

(c) The Permittee shall record the output of the continuous monitoring system(s) and shall perform the required record keeping and reporting, pursuant to 326 IAC 3-5-6 and 326 IAC 3-5-7.

Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

D.1.12 Total Hydrocarbon Continuous Emission Rate Monitoring Requirement

(a) Pursuant to 326 IAC 2-2 (PSD, 326 IAC 2-7-5(3), and 326 IAC 3-5-1(d), the Permittee shall install, calibrate, certify, operate, and maintain a continuous emissions monitoring system (CEMS) for measuring total hydrocarbons emissions rates in pounds per hour from the EAF Baghouse/LMS Baghouse stack, in accordance with 326 IAC 3-5-2 and 326 IAC 3-5-3.

(b) The Permittee shall submit to IDEM, OAQ, within ninety (90) days after monitor installation, a complete written continuous monitoring standard operating procedure (CMSOP), in accordance with the requirements of 326 IAC 3-5-4.

(c) The Permittee shall record the output of the system and shall perform the required record keeping and reporting, pursuant to 326 IAC 3-5-6 and 326 IAC 3-5-7.

(d) Unless operated under conditions for which the Compliance Response Plan specifies otherwise, the pound per hour rate of the total hydrocarbons, based on a 3-hour block shall be maintained at or below the maximum concentration established during the latest stack test. The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when the ppm reading is outside of the above mentioned range for any one reading. Failure to take response steps in accordance with Section C - Compliance Response Plan - Preparation, Implementation, Records and Reports, shall be considered a violation of this permit.

D.1.13 Maintenance of CEMS [326 IAC 2-7-5(3)(A)(iii)]

(a) In the event that a breakdown of the CO or SO_2 continuous emission monitoring system (CEMS) occurs, a record shall be made of the times and reasons of the breakdown and efforts made to correct the problem.

(b) Whenever the CO CEMS is malfunctioning or will be down for calibration, maintenance, or repairs for a period of four (4) hours or more, the Permittee shall perform once per shift operational status inspections of the equipment that is important to the performance of the DSE, canopy hood and total capture system (i.e., pressure sensors, dampers, and damper switches). This inspection shall include observations of the physical appearance of the equipment (e.g., presence of holes in ductwork or hoods, flow constrictions caused by dents or accumulated dust in ductwork, and fan erosion). Any deficiencies shall be noted and proper maintenance performed. This requirement does not replace the routine monthly inspections of the same equipment.

(c) Whenever the SO_2 CEMS is malfunctioning or will be down for calibration, maintenance, or repairs for a period of four (4) hours or more, the Permittee shall monitor the sulfur content of the scrap, charge carbon and injection carbon added to the EAF. Vendor certifications or analyses shall verify the sulfur content of raw materials.

(d) A calibrated backup CO or SO_2 CEMS shall be brought online no later than seventy-two (72) hours of shutdown of the primary CEMS, and shall be operated until such time as the primary CEMS is back in operation.

(e) Nothing in this permit shall excuse the Permittee from complying with the requirements to operate a continuous emission monitoring system pursuant to 326 IAC 2-2 and 40 CFR 60, Subpart AAa.

D.1.14 Maintenance of COM [326 IAC 2-7-5(3)(A)(iii)]

(a) All COM systems shall meet the performance specifications of 40 CFR 60, Appendix B, Performance Specification No. 1, and are subject to monitor system certification requirements pursuant to 326 IAC 3-5.

(b) In the event that a breakdown of a COM system occurs, a record shall be made of the time and reason of the breakdown and efforts made to correct the problem.

(c) Whenever a COM is malfunctioning or will be down for calibration, maintenance, or repairs for a period of one (1) hour or more during EAF operation, compliance with the applicable opacity limits shall be demonstrated by the following:

(i) Visible emission (VE) notations shall be performed once per hour during daylight operations following the shutdown or malfunction of the primary COM. A trained employee shall record whether emissions are normal or abnormal for the state of operation of the EAF at the time of the reading.

(A) 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 visible emissions for that specific process.

(B) If abnormal emissions are noted during two consecutive emission notations, the Permittee shall begin Method 9 opacity observations within daylight four (4) hours of the second abnormal notation.

(C) VE notations may be discontinued once a COM is online or formal Method 9 readings have been implemented.

(ii) If a COM is not online within twenty-four (24) hours of shutdown or malfunction of the primary COM, the Permittee shall provide certified opacity reader(s), who may be employees of the Permittee or independent contractors, to self-monitor the emissions from the EAF stack.

(A) Visible emission readings shall be performed in accordance with 40 CFR 60, Appendix A, Method 9, for a minimum of five (5) consecutive six (6) minute averaging periods beginning not more than twenty-four (24) hours after the start of the malfunction or down time.

(B) Method 9 opacity readings shall be repeated for a minimum of five (5) consecutive six (6) minute averaging periods at least once every four (4) hours during daylight operations, until such time that a COM is in operation.

(C) Method 9 readings may be discontinued once a COM is online.

(iii) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with Section C - Compliance Response Plan - Preparation, Implementation, Records, and Reports. Observation of abnormal emissions that do not violate an applicable opacity limit is not a deviation from this permit. Failure to take response steps in accordance with Section C - Compliance Response Plan - Preparation, Implementation, Records, and Reports, shall be considered a violation of this permit.

(iv) All of the opacity readings during this period shall be reported with the Quarterly Opacity Exceedances Reports.

(d) Nothing in this permit shall excuse the Permittee from complying with the requirements to operate a COM system pursuant to 326 IAC 2-2, 326 IAC 3-5, and 40 CFR 60.273a.

D.1.15 Bag Leak Detection System (BLDS)

(a) The Permittee shall install and operate a continuous bag leak detection system (BLDS).

(b) The BLDS shall meet the following requirements:

(i) The bag leak detection system must be certified by the manufacturer to be capable of detecting particulate matter emissions at concentrations of 0.0018 grains per actual cubic foot or less.

(ii) The bag leak detection system sensor must provide output of relative particulate matter loading.

(iii) The bag leak detection system must be equipped with an alarm system that will alarm when an increase in relative particulate loading is detected over a preset level established or verified during a stack test.

(iv) The bag leak detection system shall be installed and operated in a manner consistent with available written guidance from the U.S. Environmental Protection Agency or, in the absence of such written guidance, the manufacturer's written specifications and recommendations for installation, operation, and adjustment of the system.

(v) The initial adjustment of the system shall, at a minimum, consist of establishing the baseline output by adjusting the sensitivity (range) and the averaging period of the device, and establishing the alarm set points and the alarm delay time.

(vi) In no event shall the sensitivity be increased by more than 100 percent or decreased by more than 50 percent over a 365 day period unless such adjustment follows a complete baghouse inspection, which demonstrates the baghouse, is in good operating condition.

(vii) The bag detector must be installed downstream of the baghouse.

(c) In the event that bag failure has been observed:

(i) For multi-compartment units, the affected compartments will be shut down immediately until the failed units have been repaired or replaced. No later than six (6) business hours of the determination of failure, response steps according to the timetable described in the Compliance Response Plan shall be initiated. For any failure with corresponding response steps and timetable not described in the Compliance Response Plan, response steps shall be devised no later than six (6) business hours of discovery of the failure and shall include a timetable for completion. Failure to take response steps in accordance with Section C - Compliance Response Plan - Preparation, Implementation, Records and Reports, shall be considered a violation of this permit.

(ii) For single compartment baghouses, failed units and the associated process will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section C - Emergency Provisions).

D.1.16 Monitoring of Operations [40 CFR 60.274a]

Pursuant to 40 CFR 60.274a, the Permittee shall comply with the following monitoring requirements:

(a) Pursuant to 40 CFR 60.274a(b), the Permittee shall check and record on a once-per-shift basis the furnace static pressure and either:

(i) Check and record the control system fan motor amperes and damper positions on a once-per-shift basis; or

(ii) Install, calibrate, and maintain a monitoring device that continuously records the volumetric flow rate through each separately ducted hood; or

(iii) Install, calibrate, and maintain a monitoring device that continuously records the volumetric flow rate at the control device inlet and records damper positions on a once-per-shift basis.

The monitoring device(s) may be installed in any appropriate location in the exhaust duct such that reproducible flow rate monitoring will result. The flow rate monitoring device(s) shall have an accuracy of " 10 percent over its normal operating range and shall be calibrated according to the manufacturer's instructions. The IDEM, OAQ, or the US EPA may require the Permittee to demonstrate the accuracy of the monitoring device(s) relative to Methods 1 and 2 of 40 CFR Part 60, Appendix A.

(b) Pursuant to 40 CFR 60.274a(c), when the Permittee is required to demonstrate compliance with the opacity standard and at any other time IDEM, OAQ, or the US EPA may require, that either the control system fan motor amperes and all damper positions or the volumetric flow rate through each separately ducted hood shall be determined during all periods in which a hood is operated for the purpose of capturing emissions from the EAF.

(c) Pursuant to 40 CFR 60.274a(d), the Permittee shall perform monthly operational status inspections of the equipment that is important to the performance of the total capture system (i.e., pressure sensors, dampers, and damper switches). This inspection shall include observations of the physical appearance of the equipment (e.g., presence of holes in ductwork or hoods, flow constrictions caused by dents or accumulated dust in ductwork, and fan erosion). Any deficiencies shall be noted and proper maintenance performed.

D.1.17 EAF Baghouse

The Permittee shall convey the collected materials from the EAF Baghouse in an enclosed loading area.

Record Keeping and Reporting Requirement [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

D.1.18 Record Keeping Requirements

(a) The Permittee shall maintain records required under 326 IAC 3-5-6 at the source in a manner that they may be inspected by the IDEM, OAQ, or the US EPA, if so requested or required.

(b) The Permittee shall maintain records of the amount and percentage of steel produced.

(c) The Permittee shall maintain records of the readings of the CO, SO_2 and total hydrocarbons CEMS.

(d) The Permittee shall maintain records of the readings of the COM.

(e) The Permittee shall maintain records of the verification of sulfur content of charge carbon, and injection carbon added into the EAF and make available upon request to IDEM, OAQ, and the US EPA.

(f) The Permittee shall maintain records of the following:

(i) Records of the once-per-shift furnace static pressure and either:

(ii) Records of the once-per-shift control system fan motor amperes and records of the once per shift damper positions, or

(iii) Records of the volumetric flow rate through each separately ducted hood, or

(iv) Records the volumetric flow rate at the control device inlet and records of the once per shift damper positions.

(g) The Permittee shall maintain records of the monthly operational status inspections of the equipment that is important to the performance of the total capture system under 40 CFR 60.274a(d) and make available upon request to IDEM, OAQ, and the US EPA.

(h) The Permittee shall maintain records of any additional inspections prescribed by the Preventive Maintenance Plan and make available upon request to IDEM, OAQ, and the US EPA.

(i) Pursuant to 40 CFR 60.276a, records of the measurements required in 40 CFR 60.274a, must be retained for at least 5 years following the date of the measurement.

(j) All records shall be maintained in accordance with Section C - General Record Keeping Requirements of this permit.

(k) Records necessary to demonstrate compliance shall be available within 30 days of the end of each compliance period.

D.1.19 Reporting Requirements [326 IAC 2-1.1-11] [40 CFR 60.276a]

(a) The Permittee shall submit a quarterly report of the actual amount of steel produced and the specific allocations of the bars, using the Quarterly Production Report, or equivalent.

(b) The Permittee shall submit a quarterly report of excess emissions, using the Quarterly Deviation and Compliance Monitoring Report or equivalent, of the following:

(i) CO, SO_2 and total hydrocarbons readings from the CEMS,

(ii) Opacity readings from the COM,

(iii) Furnace static pressure and either:

(iv) Values of control system fan motor amperes that exceed 15 percent of the value established under 40 CFR 60.274a(c), and position of the damper during the exceedance or

(v) Values of volumetric flow rates through each separate ducted hood or

(vi) Values of volumetric flow rates at the control device inlet, lower than those established under 40 CFR 60.274a(c) and the position of the damper during this flow rate.

(c) These reports shall be submitted no later than thirty (30) calendar days following the end of each calendar quarter and in accordance with Section C - General Reporting Requirements of this permit.

(d) These reports do require the certification by the responsible official, as defined by 326 IAC 2-7-1(34).

(e) Pursuant to 40 CFR 60.276a, the Permittee shall furnish to IDEM, OAQ, a written report of the results of the compliance emission tests. This report shall include, at a minimum, the following information:

(1) Facility name and address;

(2) Plant representative;

(3) Make and model of process, control device, and continuous monitoring equipment;

(4) Flow diagram of process and emissions capture equipment including other equipment or process(es) ducted to the same control device;

(5) Rated (design) capacity of process equipment;

(6) The following operating conditions:
(i) List of charge and tap weights and materials;
(ii) Heat times and process log;
(iii) Control device operation log; and
(iv) Continuous monitor or Reference Method 9 data.

(7) Test dates and test times;

(8) Test company;

(9) Test company representative;

(10) Test observers from outside agency;

(11) Description of test methodology used, including any deviation from standard reference methods;

(12) Schematic of sampling location;

(13) Number of sampling points;

(14) Description of sampling equipment;

(15) Listing of sampling equipment calibrations and procedures;

(16) Field and Laboratory data sheets;

(17) Description of sample recovery procedures;

(18) Sampling equipment leak check results;

(19) Description of quality assurance procedures;

(20) Description of analytical procedures;

(21) Notation of sample blank corrections; and

(22) Sample emission calculations.

SECTION D.2 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

One (1) continuous Caster with a nominal casting rate of 125 tons/hour.
This Caster is located in a separate room from the EAF and LMS and the tundish is covered with a lid. The fugitive emissions exhaust to a roof monitor. The continuous Caster vents to a roof monitor (vent).

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-7-5(1)] [326 IAC 2-2-3(a)(3)]

D.2.1 Caster PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2, the Permittee shall comply with the following requirements:

(a) The PM and PM_{10} emissions before control from the Caster shall not exceed 0.07 pound per ton of steel produced.

(b) The tundish shall be covered by lid to control fugitive emissions.

(c) The visible emissions from the Caster roof monitor shall not exceed 3% opacity, based on a 6-minute average as determined in 326 IAC 5-1-4.

D.2.2 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan (PMP), in accordance with Section C - Preventive Maintenance Plan, of this permit, is required for this unit and its control device.

Compliance Determination Requirements [326 IAC 2-1.1-11]

D.2.3 Fugitive Emissions Control [326 IAC 2-2]

Pursuant to 326 IAC 2-2, the tundish shall be covered by a lid to minimize fugitive emissions exhausting to the roof monitor.

Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

None

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

None

SECTION D.3 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

One (1) Reheat Furnace, with nominal capacity of 185 MMBTU/hour and equipped with natural gas fueled low NO_x burners.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-7-5(1)] [326 IAC 2-2-3(a)(3)]

D.3.1 Reheat Furnace PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2 (PSD), the Permittee shall comply with the following:

(a) The NO_x emissions from the Reheat Furnace shall not exceed 0.08 lb/MMBTU.

(b) The SO_2 emissions from the Reheat Furnace shall not exceed 0.0006 lb/MMBTU.

(c) The CO emissions from the Reheat Furnace shall not exceed 0.084 lb/MMBTU.

(d) The VOC emissions from the Reheat Furnace shall not exceed 0.0055 lb/MMBTU.

(e) The $PM_{(filterable)}$ emissions from the Reheat Furnace shall not exceed 0.0019 lb/MMBTU.

(f) The $PM_{10\ (filterable\ and\ condensible)}$ emissions from the Reheat Furnace shall not exceed 0.0076 lb/MMBTU.

(g) The visible emission from the Reheat Furnace shall not exceed 3% opacity, based on a 6-minute average as determined in 326 IAC 5-1-4.

D.3.2 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan, in accordance with Section C - Preventive Maintenance Plan, of this permit, is required for this unit.

Compliance Determination Requirements [326 IAC 2-1.1-11]

D.3.3 Low NO_x Burners [326 IAC 2-2]

Pursuant to 326 IAC 2-2 (PSD), the Permittee shall comply with the following:

(a) The Reheat Furnace shall be equipped and operated with natural gas fueled low NO_x burners.

(b) Proper combustion operation shall be followed.

D.3.4 Natural Gas Fuel [326 IAC 2-2]

The Permittee shall use pipeline natural gas that is naturally occurring fluid mixture of hydrocarbons (e.g., methane, ethane, or propane) produced in geological formations beneath the Earth's surface that maintains a gaseous state at standard atmospheric temperature and

pressure under ordinary conditions, and which is provided by supplier through a pipeline. Pipeline natural gas contains 0.5 grains or less of total sulfur per 100 standard cubic feet. Additionally, pipeline natural gas must either be composed of at least 70 percent methane by volume or have a gross calorific value between 950 and 1100 BTU per standard cubic foot.

Natural gas does not include the following gaseous fuels: landfill gas, digester gas, refinery gas, sour gas, blast furnace gas, coal-derived gas, producer gas, coke oven gas, or any gaseous fuel produced in a process which might result in highly variable sulfur content or heating value.

D.3.5 Testing Requirements [326 IAC 2-7-6(1),(6)]

(a) Within 60 days after achieving maximum production but no later than 180 days after startup, the Permittee shall perform NO_x testing on the Reheat Furnace.

(b) These tests shall be performed using methods as approved by the Commissioner.

(c) These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration.

(d) Testing shall be conducted in accordance with Section C - Performance Testing.

Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

None

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

None

SECTION D.4 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

(1) Two (2) natural gas fueled low NO_x Tundish Preheaters, each with nominal capacity of 9 MMBTU/hour.

(2) Five (5) natural gas fueled low NO_x LMS Ladle Preheaters/Dryers, each with nominal capacity of 7.5 MMBTU/hour.

(3) Two (2) natural gas fueled low NO_x Tundish Dryers, each with nominal capacity of 9 MMBTU/hour.

(4) Three (3) natural gas fueled low NO_x Tundish Nozzle Preheaters, with nominal total capacity of 6 MMBTU/hour.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-7-5(1)] [326 IAC 2-2-3(a)(3)]

D.4.1 PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2, the Permittee shall comply with the following:

(a) The NO_x emissions from each preheater and dryer shall not exceed 0.050 lb/MMBTU.

(b) The CO emissions from each preheater and dryer shall not exceed 0.084 lb/MMBTU.

(c) The VOC emissions from each preheater and dryer shall not exceed 0.0055 lb/MMBTU.

(d) The SO_2 emissions from each preheater and dryer shall not exceed 0.0006 lb/MMBTU.

(e) The $PM_{(filterable)}$ emissions from each preheater and dryer shall not exceed 0.0019 lb/MMBTU.

(f) The $PM_{10\ (filterable\ and\ condensible)}$ emissions from each preheater and dryer shall not exceed 0.0076 lb/MMBTU.

Compliance Determination Requirements [326 IAC 2-1.1-11]

D.4.2 Low NO_x Burners [326 IAC 2-2]

Pursuant to 326 IAC 2-2, the Permittee shall comply with the following:

(a) The Permittee shall equip and operate each preheater and dryer with natural gas fueled low NO_x burners.

(b) Good combustion shall be practiced.

D.4.3 Natural Gas Fuel [326 IAC 2-2]

The Permittee shall use pipeline natural gas that is naturally occurring fluid mixture of hydrocarbons (e.g., methane, ethane, or propane) produced in geological formations beneath the Earth's surface that maintains a gaseous state at standard atmospheric temperature and pressure under ordinary conditions, and which is provided by supplier through a pipeline. Pipeline natural gas contains 0.5 grains or less of total sulfur per 100 standard cubic feet.

Additionally, pipeline natural gas must either be composed of at least 70 percent methane by volume or have a gross calorific value between 950 and 1100 BTU per standard cubic foot.

Natural gas does not include the following gaseous fuels: landfill gas, digester gas, refinery gas, sour gas, blast furnace gas, coal-derived gas, producer gas, coke oven gas, or any gaseous fuel produced in a process which might result in highly variable sulfur content or heating value.

Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

None

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

None

SECTION D.5 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

One (1) vacuum tank degasser (VTD), rated at 125 tons/hour, equipped with a 38.4 MMBTU/hour flare; and one (1) VTD Boiler, rated at a nominal capacity of 48.4 MMBTU/hr and equipped with natural gas fueled ultra low NO_x burners.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-7-5(1)] [326 IAC 2-2-3(a)(3)]

D.5.1 PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2, the Permittee shall comply with the following:

(a) The NO_x emissions from the VTD Boiler shall not exceed 0.035 lb/MMBTU.

(b) The CO emissions from the VTD Boiler shall not exceed 0.061 lb/MMBTU.

(c) The VOC emissions from the VTD Boiler shall not exceed 0.0026 lb/MMBTU.

(d) The SO_2 emissions from the VTD Boiler shall not exceed 0.0006 lb/MMBTU.

(e) The $PM_{(filterable)}$ emissions from the VTD Boiler shall not exceed 0.0019 lb/MMBTU.

(f) The $PM_{10\ (filterable\ and\ condensible)}$ emissions from the VTD Boiler shall not exceed 0.0076 lb/MMBTU.

D.5.2 General Provisions Relating to NSPS [326 IAC 12-1][40 CFR Part 60, Subpart A]

The provisions of 40 CFR Part 60, Subpart A (General Provisions), which are incorporated by reference in 326 IAC 12-1, apply to the VTD boiler, except when otherwise specified in 40 CFR Part 60, Subpart Dc.

D.5.3 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan, in accordance with Section C - Preventive Maintenance Plan, of this permit, is required for the VTD Flare.

Compliance Determination Requirements [326 IAC 2-1.1-11]

D.5.4 Low NO_x Burners [326 IAC 2-2]

Pursuant to 326 IAC 2-2, the Permittee shall comply with the following:

(a) The Permittee shall equip and operate the VTD boiler with natural gas fueled ultra low NO_x burners.

(b) Good combustion shall be practiced.

D.5.5 Natural Gas Fuel [326 IAC 2-2]

The Permittee shall use pipeline natural gas that is naturally occurring fluid mixture of hydrocarbons (e.g., methane, ethane, or propane) produced in geological formations beneath the Earth's surface that maintains a gaseous state at standard atmospheric temperature and pressure under ordinary conditions, and which is provided by supplier through a pipeline. Pipeline natural gas contains 0.5 grains or less of total sulfur per 100 standard cubic feet.

Additionally, pipeline natural gas must either be composed of at least 70 percent methane by volume or have a gross calorific value between 950 and 1100 BTU per standard cubic foot.

Natural gas does not include the following gaseous fuels: landfill gas, digester gas, refinery gas, sour gas, blast furnace gas, coal-derived gas, producer gas, coke oven gas, or any gaseous fuel produced in a process which might result in highly variable sulfur content or heating value.

Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

D.5.6 VTD Flare [326 IAC 2-2]

The Permittee shall operate the VTD flare, with the temperature not less than $1,100^{0}$F, except during start up and shutdown, to control CO emissions at all times that the VTD is in operation.

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

D.5.7 Record Keeping Requirements

(a) The Permittee shall maintain records of the temperature of the VTD flare and make available upon request to IDEM, OAQ and the US EPA.

(b) The Permittee shall maintain the natural gas fuel usage of the VTD boiler and make available upon request to IDEM, OAQ and the US EPA.

(c) The Permittee shall maintain records of any additional inspections prescribed by the Preventive Maintenance Plan and make available upon request to IDEM, OAQ, and the US EPA.

(d) Records necessary to demonstrate compliance shall be available within 30 days of the end of each compliance period.

(e) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

SECTION D.6 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

Supporting operations consisting of:
- - Caster cutting torches with nominal total capacity of 6.3 MMBTU/hour and use natural gas as fuel,
- - Bar cutting operation venting to a particulate control at a flow rate of 0.0052 gr/dscf and 30,000 dscf/min,
- - Scarfer venting to a baghouse at a flow rate of 48,200 dscf/min,
- - Bloom billet caster,
- - Water descaler,
- - Roughing mill
- - Finishing mill,
- - Cooling bed,
- - Shipping and
- - Storage.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-7-5(1)] [326 IAC 2-2-3(a)(3)]

D.6.1 PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2, the Permittee shall comply with the following:

(a) The $PM_{(filterable)}$ emissions from the Scarfer shall be controlled by a baghouse and shall not exceed 0.0052 gr/dscf.

(b) The $PM_{10\ (filterable\ and\ condensible)}$ emissions from the Scarfer shall be controlled by a baghouse and shall not exceed 0.0052 gr/dscf.

(c) The $PM_{(filterable)}$ emissions from the Bar Cutting operation shall be controlled by a baghouse and shall not exceed 0.0052 gr/dscf.

(d) The visible emissions from each baghouse shall not exceed 3% opacity, based on a 6-minute average as determined in 326 IAC 5-1-4.

D.6.2 Preventive Maintenance Plan [326 IAC 1-6-3]

A Preventive Maintenance Plan, in accordance with Section C - Preventive Maintenance Plan, of this permit, is required for these baghouses.

Compliance Determination Requirements [326 IAC 2-1.1-11]

D.6.3 Particulate Matter (PM) Control [326 IAC 2-2]

Pursuant to 326 IAC 2-2, the baghouses for particulates shall be in operation and control emissions at all times that the Scarfer and Bar Cutting operations are in operation.

D.6.4 Natural Gas Fuel [326 IAC 2-2]

The Permittee shall use pipeline natural gas that is naturally occurring fluid mixture of hydrocarbons (e.g., methane, ethane, or propane) produced in geological formations beneath the Earth's surface that maintains a gaseous state at standard atmospheric temperature and pressure under ordinary conditions, and which is provided by supplier through a pipeline. Pipeline natural gas contains 0.5 grains or less of total sulfur per 100 standard cubic feet.

Additionally, pipeline natural gas must either be composed of at least 70 percent methane by volume or have a gross calorific value between 950 and 1100 BTU per standard cubic foot.

Natural gas does not include the following gaseous fuels: landfill gas, digester gas, refinery gas, sour gas, blast furnace gas, coal-derived gas, producer gas, coke oven gas, or any gaseous fuel produced in a process which might result in highly variable sulfur content or heating value.

Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

None

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

None

SECTION D.7 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

Nine (9) silos to store lime, carbon, flux additives and EAF dust. Each silo is equipped with a bin vent filter, with a grain loading of 0.01 gr/dscf at a flow rate of 1,200 dscf/min.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-7-5(1)] [326 IAC 2-2-3(a)(3)]

D.7.1 PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2, the Permittee shall comply with the following:

(a) The $PM_{(filterable)}$ emissions from each storage silo shall be each controlled by bin vent filter at an outlet grain loading of 0.010 grains per dry standard cubic feet.

(b) The visible emissions from each storage silo bin vent shall not exceed 3% opacity, based on a 6-minute average as determined in 326 IAC 5-1-4.

D.7.2 Preventive Maintenance Plan [326 IAC 1-6-3]

A Preventive Maintenance Plan, in accordance with Section C - Preventive Maintenance Plan, of this permit, is required for the bin vent filters.

Compliance Determination Requirements [326 IAC 2-1.1-11]

D.7.3 Particulate Matter (PM) [326 IAC 2-2]

Pursuant to 326 IAC 2-2, the bin vents filters for particulate control shall be in operation and control emissions at all times that the storage silos are in operation.

Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

None

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

None

SECTION D.8 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

(1) Scrap material handling, lime handling, carbon handling

(2) Slag handling, slag dumping, slag pots, slag crushing, slag screening, drop ball breaking, conveyors, storage piles.

The slag processing and handling has a nominal rate of 300 tons/hour.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-7-5(1)] [326 IAC 2-2-3(a)(3)]

D.8.1 PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2, the Permittee shall comply with the following:

(a) The Permittee shall not process more than 876,000 tons of slag per 12-consecutive month period with compliance demonstrated at the end of each month.

The Permittee shall not accept or process slag from other mills or outside sources.

(b) The visible emission limitations from fugitive emissions from each process shall not exceed the specified opacity limit, based on a 6-minute average as determined in 326 IAC 5-1-4:

Table 4

Slag Handling/Processing Operation	Opacity (%)
Transferring of skull slag to slag pot	10
Pouring of liquid slag from EAF or LMS to slag pots	3
Dumping of liquid slag from slag pot to slag pit and cooling	3
Transferring of skull slag from slag pot to skull pit	5
Digging skull slag pits	5
Digging slag pits	3
Stockpiling of slag adjacent to the grizzly feeder	3
Wind erosion of stockpiles	3
Crushing	3
Screening	3
Conveyor transfer points	3
Continuous stacking of processed slag to stockpiles	3
Loadout of processed slag from stockpiles to haul trucks for shipment	3
Inplant hauling of slag pots (filled) and processed slag	3

Compliance Determination Requirements [326 IAC 2-1.1-11]

D.8.2 Testing Requirement [326 IAC 2-2]

Pursuant to 326 IAC 2-2, the Permittee shall perform initial compliance tests for opacity on the above mentioned slag processing and handling within 60 days after achieving maximum capacity, but no later than 180 days after initial start up, utilizing 40 CFR Part 60, Appendix A, Method 9, or other methods as approved by the Commissioner.

D.8.3 Slag Dumping Fugitive PM [326 IAC 2-2]

Pursuant to 326 IAC 2-2, the Permittee shall dump slag in a partially enclosed roof structure. The roof shall extend over the entire slag pit area and past the dump stations. The sides of the structure shall extend downward from the roof taking into account:

(a) Reduction of PM emissions during dumping and partial shielding of prevailing winds; and

(b) Dissipation of heat and consideration of safety concerns within the structure.

D.8.4 Scrap Handling and Processing

Pursuant to 326 IAC 2-2 (PSD), the Permittee shall comply with the following BACT requirements:

(a) Scrap cutting is not allowed outdoors.

(b) Good working practices shall be observed.

Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

D.8.5 Fugitive PM Control [326 IAC 2-2]

Pursuant to 326 IAC 2-2, the Permittee shall comply with the following:

(a) The particulate emissions from the slag processing final transfer points and slag piles shall be controlled by the application of water or chemical suppressant.

(b) The Permittee shall minimize drop heights, except during ball dropping.

(c) Good working practices shall be performed.

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

D.8.6 Record Keeping Requirements

(a) The Permittee shall maintain records of the amount of slag handled and processed and make available upon request to IDEM, OAQ and the US EPA.

(b) Records necessary to demonstrate compliance shall be available within 30 days of the end of each compliance period.

(c) All records shall be maintained in accordance with Section C - General Record Keeping Requirements of this permit.

SECTION D.9 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

Transportation on paved roadways, paved parking lots, unpaved roadways, and other unpaved areas around slag piles and steel scrap piles.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-7-5(1)] [326 IAC 2-2-3(a)(3)]

D.9.1 PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2, the Permittee shall comply with the following:

(a) The visible emissions from paved roadways and paved parking lots shall not exceed 10% opacity.

(b) The visible emissions from unpaved roadways and unpaved areas around slag storage piles and steel scrap piles shall not exceed 10% opacity.

Compliance Determination Requirements [326 IAC 2-1.1-11]

D.9.2 Fugitive Dust Plan [326 IAC 2-2]

Pursuant to 326 IAC 2-2, the Permittee shall maintain, update, comply, and implement its Fugitive Dust Plan.

(a) At a minimum, the fugitive dust plan shall address any fugitive emissions from paved roads, parking lots, unpaved roads, traveled open areas and storage piles.

(b) The job title and telephone number on site of the person responsible in implementing the fugitive dust plan shall be provided to IDEM, OAQ.

(c) Paved roads and paved parking lots silt shall be controlled by the use of vehicular vacuum sweeper or water flushing and shall be performed every 14 days, unless it is raining.

(d) Upon request by IDEM, OAQ, the Permittee shall sample surface material silt content and surface dust loadings in accordance with filed and laboratory procedure set by IDEM, OAQ. Road segments to be sampled shall be approved by IDEM, OAQ.

(e) The Permittee shall provide supplemental cleaning of paved roads found to exceed allowable silt loadings.

Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

D.9.3 Paved Roadways and Paved Parking lots [326 IAC 2-2]

(a) The opacity from paved roadways and parking shall be the average of twelve (12) instantaneous opacity readings, taken for four (4) vehicle passes, consisting of three (3) opacity readings for each vehicle pass.

(b) The three (3) opacity readings for each vehicle pass shall be taken as follows:
(i) The first will be taken at the time of emission generation.

(ii) The second will be taken five (5) seconds later.

(iii) The third will be taken five (5) seconds later or ten (10) seconds after the first.

(c) The three (3) readings shall be taken at the point of maximum opacity.

(d) The readings shall be taken at least fifteen (15) feet, but no more than one-fourth (1/4) mile, from the plume and at approximately right angles to the plume.

(e) Each reading shall be taken approximately four (4) feet above the surface of the paved roadway.

D.9.4 Unpaved Roadways and Unpaved Areas [326 IAC 2-2]

(a) The opacity from unpaved roadways and unpaved areas around slag storage piles and steel scrap piles shall be the average of twelve (12) instantaneous opacity readings, taken for four (4) vehicle passes, consisting of three (3) opacity readings for each vehicle pass.

(b) The three (3) opacity readings for each vehicle pass shall be taken as follows:
(i) The first will be taken at the time of emission generation.

(ii) The second will be taken five (5) seconds later.

(iii) The third will be taken five (5) seconds later or ten (10) seconds after the first.

(c) The three (3) readings shall be taken at the point of maximum opacity.

(d) The readings shall be taken at least fifteen (15) feet, but no more than one-fourth (1/4) mile, from the plume and at approximately right angles to the plume.

(e) Each reading shall be taken approximately four (4) feet above the surface of the unpaved roadway.

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

D.9.5 Record Keeping Requirements

(a) The Permittee shall maintain records of the activities required by the fugitive dust control plan and make available upon request to IDEM, OAQ and the US EPA.

(b) Records necessary to demonstrate compliance shall be available within 30 days of the end of each compliance period.

(c) All records shall be maintained in accordance with Section C - General Record Keeping Requirements of this permit.

SECTION D.10 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

Contact and Non-Contact Cooling towers, with nominal capacity of 44,000 gal/min and with drift eliminators as control:

Tower 1 -- Meltshop Non-Contact Cooling Tower - - 26,700 gal/min,
Tower 2 -- VTD Contact Cooling Tower - - 2,000 gal/min,
Tower 3 -- Bar Mill Contact Cooling Tower - - 9,700 gal/min, and
Tower 4 -- Bar Mill Non-Contact Cooling Tower - - 5,600 gal/min.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-7-5(1)] [326 IAC 2-2-3(a)(3)]

D.10.1 PSD BACT [326 IAC 2-2]

(a) Pursuant to 326 IAC 2-2, the visible emissions from each cooling tower shall not exceed 20% opacity, based on a 6-minute average as determined in 326 IAC 5-1-4.

(b) Pursuant to 326 IAC 2-2, the drift rate from each cooling tower shall not exceed 0.0005%.

(c) The Permittee shall submit the drift design specification of the cooling towers upon initial start up of the cooling towers.

D.10.2 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan, in accordance with Section C - Preventive Maintenance Plan, of this permit, is required for the drift eliminators.

Compliance Determination Requirements [326 IAC 2-1.1-11]

D.10.3 Drift Eliminators [326 IAC 2-2]

Pursuant to 326 IAC 2-2, the drift eliminators for particulate control shall be in operation and control emissions at all times that one or more of the cooling towers are in operation.

Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

None

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

None

SECTION D.11 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

Diesel fueled Emergency Generator(s), with total nominal capacity of 485 HP.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-7-5(1)] [326 IAC 2-2-3(a)(3)]

D.11.1 PSD BACT Limit [326 IAC 2-2]

Pursuant to 326 IAC 2-2, the Permittee shall comply with the following:

(a) Each emergency generator shall solely provide back up power when electric power is interrupted.

(b) Each emergency generator shall not operate more than 500 hours per 12-consecutive month period, with compliance determined at the end of each month.

(c) The sulfur content of the diesel fuel used shall not exceed 0.05 percent by weight.

(d) Good combustion practices shall be performed.

Compliance Determination Requirements [326 IAC 2-1.1-11]

None

Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

None

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

D.11.2 Record Keeping Requirements

(a) The Permittee shall maintain records of the hours of operation of the emergency generator(s) and make available upon request to IDEM, OAQ and the US EPA.

(b) Records necessary to demonstrate compliance shall be available within 30 days of the end of each compliance period.

(c) All records shall be maintained in accordance with Section C - General Record Keeping Requirements of this permit.

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY

CERTIFICATION

Source Name:	Steel Dynamics, Inc. (SDI) - Bar Products Division
Source Location:	8000 North County Road 225 East, Pittsboro, IN 46167
Mailing Address:	8000 North County Road 225 East, Pittsboro, IN 46167
PSD/SSM Permit:	063-16628-00037

This certification shall be included when submitting monitoring, testing reports/results or other documents as required by this approval.

Please check what document is being certified:

9 Test Result (specify) _____

9 Report (specify) _____

9 Notification (specify) _____

9 Affidavit (specify) _____

9 Other (specify) _____

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

Signature:

Printed Name:

Title/Position:

Date:

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE DATA SECTION

QUARTERLY DEVIATION AND COMPLIANCE MONITORING REPORT

Source Name: Steel Dynamics, Inc. (SDI) - Bar Products Division
Source Location: 8000 North County Road 225 East, Pittsboro, IN 46167
Mailing Address: 8000 North County Road 225 East, Pittsboro, IN 46167
PSD/SSM Permit: 063-16628-00037

Months: _____ to _____ Year: _____

This report shall be submitted quarterly based on a calendar year. Any deviation from the requirements, the date(s) of each deviation, the probable cause of the deviation, and the response steps taken must be reported. Deviations that are required to be reported by an applicable requirement shall be reported according to the schedule stated in the applicable requirement and do not need to be included in this report. If no deviations occurred, please specify in the box marked ANo deviations occurred this reporting period@. Additional pages may be attached if necessary.
9 NO DEVIATIONS OCCURRED THIS REPORTING PERIOD.
9 THE FOLLOWING DEVIATIONS OCCURRED THIS REPORTING PERIOD
Permit Requirement (specify permit condition #)
Date of Deviation:
Duration of Deviation:
Number of Deviations:
Probable Cause of Deviation:
Response Steps Taken:
Permit Requirement (specify permit condition #)
Date of Deviation:
Duration of Deviation:
Number of Deviations:
Probable Cause of Deviation:
Response Steps Taken:

Form Completed By: _____
Title/Position: _____
Date: _____
Telephone: _____

A certification by the responsible official as defined by 326 IAC 2-7-1(34) is required for this report.

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE BRANCH

EMERGENCY OCCURRENCE REPORT

Source Name:	Steel Dynamics, Inc. (SDI) - Bar Products Division
Source Location:	8000 North County Road 225 East, Pittsboro, IN 46167
Mailing Address:	8000 North County Road 225 East, Pittsboro, IN 46167
PSD/SSM Permit:	063-16628-00037

9 This is an emergency as defined in 326 IAC 2-7-1(12)

C The Permittee must notify the Office of Air Quality (OAQ), no later than four (4) daytime business hours (1-800-451-6027 or 317-233-5674, ask for Compliance Section); and

C The Permittee must submit notice in writing or by facsimile no later than two (2) working days (Facsimile Number: 317-233-5967), and follow the other requirements of 326 IAC 2-7-16. Address: 100 North Senate Avenue P.O. Box 6015, Indianapolis, Indiana 46206-6015

If any of the following are not applicable, mark N/A

Facility/Equipment/Operation:
Control Equipment:
Permit Condition or Operation Limitation in Permit:
Description of the Emergency:
Describe the cause of the Emergency: Date/Time Emergency started:
Date/Time Emergency was corrected:
Was the facility being properly operated at the time of the emergency? Y N Describe: Type of Pollutants Emitted: TSP, PM_{10}, SO_2, VOC, NO_x, CO, Pb, other:
Estimated amount of pollutant(s) emitted during emergency:
Describe the steps taken to mitigate the problem:
Describe the corrective actions/response steps taken:
Describe the measures taken to minimize emissions:
If applicable, describe the reasons why continued operation of the facilities are necessary to prevent imminent injury to persons, severe damage to equipment, substantial loss of capital investment, or loss of product or raw materials of substantial economic value:

Form Completed By: _____
Title/Position: _____
Date: _____
Telephone: _____

A certification by the responsible official as defined by 326 IAC 2-7-1(34) is NOT required for this report.

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE DATA SECTION

STEEL PRODUCTION QUARTERLY REPORT

Source Name: Steel Dynamics, Inc. (SDI) - Bar Products Division
Source Location: 8000 North County Road 225 East, Pittsboro, IN 46167
Mailing Address: 8000 North County Road 225 East, Pittsboro, IN 46167
PSD/SSM Permit: 063-16628-00037

Series	Production (tons/year)	Maximum Production (tons of steel/12-consecutive month)
Low Sulfur Grade Bar	- -	1,095,000
1100 SBQ	219,000	
1200 SBQ	164,250	

Reporting Year:

Month	Steel Production		
	This month (tons/month)	Previous 11 Months	12 Month Total (tons/year)

Form Completed By: _____

Title/Position: _____

Date: _____

Telephone: _____

A certification by the responsible official as defined by 326 IAC 2-7-1(34) is required for this report.

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE DATA SECTION

STEEL PRODUCTION QUARTERLY REPORT

Source Name: Steel Dynamics, Inc. (SDI) - Bar Products Division
Source Location: 8000 North County Road 225 East, Pittsboro, IN 46167
Mailing Address: 8000 North County Road 225 East, Pittsboro, IN 46167
PSD/SSM Permit: 063-16628-00037

Series	Production (tons/year)	Maximum Production (tons of steel/12-consecutive month)
Low Sulfur Grade Bar	- -	1,095,000
1100 SBQ	219,000	
1200 SBQ	164,250	

Reporting Year:

Month	Bar Products Percentage			
	Series	This month (%)	Previous 11 Months	12 Month Total
	Low Sulfur Grade Bar			
	1100 SBQ			
	1200 SBQ			
	Low Sulfur Grade Bar			
	1100 SBQ			
	1200 SBQ			
	Low Sulfur Grade Bar			
	1100 SBQ			
	1200 SBQ			

Form Completed By: _____

Title/Position: _____

Date: _____

Telephone: _____

A certification by the responsible official as defined by 326 IAC 2-7-1(34) is required for this report.

Indiana Department of Environmental Management
Office of Air Quality

Attachment A
Prevention of Significant Deterioration (PSD) and
Part 70 Significant Source Modification (SSM)

Scrap Management Plan (SMP)

Source Background and Description

Source Name:	Steel Dynamics, Inc. (SDI) - Bar Products Division
Source Location:	8000 North County Road 225 East, Pittsboro, IN 46167
Mailing Address:	8000 North County Road 225 East, Pittsboro, IN 46167
General Telephone Number:	317/892-7000
Responsible Official:	Plant Manager
County:	Hendricks
SIC Code:	3312 (Steel Mill)
NAICS Code:	331211
Source Categories:	1 of 28 Listed Source Categories Major PSD Source Minor Source under Section 112 of the CAA
Significant Source Modification:	PSD 063-16628-00037

Specifications

(1) GENERAL

(a) Unless specifically allowed, all grades of scrap shall be free of material that contains excessive amounts of**:**

- Non-ferrous materials;
- Oils or grease;
- Hazardous materials (e.g., asbestos, chemicals containers);
- Fuels and other liquid or gaseous chemicals; or
- Lead or tin.

These materials and those specifically specified in the following sections are hereby referred to as contaminated scrap.

(b) All scrap material shall meet the specifications in this Scrap Management Program (SMP) and be acceptable to SDI or its scrap-processing agent.

(c) Any material that deviates from the following specifications must be noted on the purchase order and agreed to prior to shipment.

(d) Rejection of scrap material because it does not conform to the following specifications is

a judgment decision on the part of those inspecting the scrap material. If they feel that the distribution of contaminants may be found elsewhere in the load because of positioning of the material or frequency of occurrence, the entire scrap load may be rejected.

(2) HAZARDOUS MATERIAL

Scrap received with evidence of hazardous material, or potentially hazardous material including, but not limited to, asbestos-containing materials, materials with heavy oils or grease, or chemical containers shall be rejected.

(3) LEAD AND TIN

Scrap containing excessive amounts of lead (e.g., babbit, solder, or balancing weights) or tin (e.g., tin cans, solder, or other tin coated material) shall be rejected.

(4) NON-FERROUS MATERIAL

Non-ferrous scrap is generally nonmagnetic and also may contain elevated levels of undesirable contaminants.

(5) RADIOACTIVE MATERIAL

All grades of scrap must be free of radioactive materials or radiation sources. If any such material or sources are present, the load shall be rejected.

(6) TANKS AND CYLINDERS

(a) Tanks, cylinders, or sealed units may be included in shipments if the ends are cut open and prepared in a manner to insure that they are not sealed and will not retain contaminating fluids.

(b) These shall include, but are not limited to, torque converters, transmissions, rear ends, hydraulic cylinders, gas tanks, closed pipe compressors, capacitors, shock absorbers, and gear boxes.

(c) Visual presence of any of these items shall be cause for the material to be removed from the scrap or the load shall be rejected. However, coated gas tanks shall be rejected regardless of its condition or even if cut open.

Scrap Inspection Procedure

At any point in the inspection process, SDI personnel or agents working on behalf of SDI have the option to issue warnings and accept loads with minor deficiencies or to reject loads that contain contaminated scrap.

(1) SCRAP INSPECTORS

The persons responsible for inspecting the loads for contaminated scrap are the SDI employees operating the railcar or truck scales, the scrap bay and unloading operators, and yard personnel (crane operators, sorters, supervisors, etc.), Environmental Department, the scrap broker, and

other agents working on behalf of SDI.

(2) ENTRY

(a) All scrap shall pass through the radiation detector when entering the scales. The inspection of scrap for radioactive materials or radiation sources will be conducted pursuant to requirements established by the Nuclear Regulatory Commission.

(b) The scale operator shall verify that the paperwork accompanying the load matches the load. If not, then the correct paper work shall be obtained before acceptance of the load or the load shall be rejected.

(c) The scale operator shall verify that the paperwork does not indicate the load contains contaminated scrap.

(3) SCRAP INSPECTION

(a) The scrap bay and unloading operators, or yard personnel shall inspect the top of the load to insure it complies with the specifications.

(b) Yard personnel or scrap bay operators shall observe the load being dumped to make sure the load is consistent and contains no contaminated scrap.

(c) If the scrap bay and unloading operator suspect top-dressing of the load, they may direct the load to be magged-off to inspect for load consistency.

(d) Yard operators shall inspect the scrap during loading from stockpiles into railcars slated for delivery the scrap bay.

(e) Scrap bay operators shall inspect the scrap during loading into the charge bucket.

(f) Contaminated scrap found in the stockpile or scrap bay shall be removed and discarded in accordance with applicable rules and regulations.

(4) LOAD ACCEPTANCE

Loads that meet the scrap specifications in this SMP may be directed for unloading and melting.

(5) REJECTED LOADS

(a) Loads that do not meet the specifications within this SMP shall be returned to the vendor or the contaminated scrap removed from the load.

(b) Contaminated scrap that is removed from the load shall be returned to the vendor or disposed in accordance with applicable rules and regulations.

Indiana Department of Environmental Management
Office of Air Quality

Attachment B
Prevention of Significant Deterioration (PSD) and
Part 70 Significant Source Modification (SSM)

FUGITIVE DUST CONTROL PLAN

Source Background and Description

Source Name:	Steel Dynamics, Inc. (SDI) - Bar Products Division
Source Location:	8000 North County Road 225 East, Pittsboro, IN 46167
Mailing Address:	8000 North County Road 225 East, Pittsboro, IN 46167
General Telephone Number:	317/892-7000
Responsible Official:	Plant Manager
County:	Hendricks
SIC Code:	3312 (Steel Mill)
NAICS Code:	331211
Source Categories:	1 of 28 Listed Source Categories Major PSD Source Minor Source under Section 112 of the CAA

Introduction

The following control plan, when implemented, is designed to reduce fugitive dust, based on a PM10 mass emission basis from:

(a) Paved roadways and parking lots - - down to 9.7 grams per square meter,

(b) Unpaved areas within the slag processing area - - by 90 percent, and

(c) The slag processing operations - - by 95 percent,

such that the silt loading limitation and visible emissions limitations specified in the permit are met.

The plan shall be implemented on a year-round basis until such time as another plan is approved or ordered by the Indiana Department of Environmental Management (IDEM).

The name, title, and telephone number of the person who is responsible for implementing the plan will be supplied to the OAQ Compliance Section.

Paved Roadways and Parking Lots

Paved roads and parking lots shall be controlled by the use of a vehicular vacuum sweeper, wet sweeping, or water flushing and shall be performed at least once every 14 days.

Upon request of the OAQ Assistant Commissioner, SDI shall sample and provide to IDEM surface material silt content and surface dust loading in accordance with C. Cowherd, Jr., et al., Iron and Steel Plant Open Dust Source Fugitive Emission Evaluation, EPA-600/2-79-103, U.S. Environmental Protection Agency, Cincinnati, OH, May 1979.

IDEM will have the right to specify road segments to be sampled. SDI shall provide supplemental cleaning of paved road sections found to exceed the controlled silt surface loading of 9.7 grams per square meter.

Cleaning of paved road segments and parking lots may be delayed by one day when:

(a) 0.1 or more inches of rain have accumulated during the 24-hour period prior to the scheduled cleaning.

(b) The road segment is closed or abandoned. Abandoned roads will be barricaded to prevent vehicle access.

(c) It is raining at the time of the scheduled cleaning.

(d) Ambient air temperature is below 32 ^{o}F.

The above dust control measures shall be performed such that the visible emission limitations of the permit are met. Visible emissions shall be determined in accordance with the procedures specified in the permit.

Unpaved Areas within the Slag Processing Area and Scrap Yard

Unpaved areas traveled about slag storage piles and steel scrap piles shall be treated with an IDEM-approved dust suppressant at the rate of 0.16 gallons per square yard, or another rate approved by the IDEM in order to meet compliance with the associated visible emissions limitations. Fugitive dust emissions shall be reduced by at least 90 percent instantaneous control on a PM10 mass emission basis.

Treating of unpaved areas may be delayed by one day when:

(a) 0.1 or more inches of rain has accumulated during the 24-hour period prior to the scheduled treatment.

(b) Unpaved areas are saturated with water such that chemical dust suppressants cannot be accepted by the surface.

(c) Unpaved areas are frozen or covered by ice, snow, or standing water.

(d) The area is closed or abandoned.

(e) It is raining at the time of the scheduled treatment.

The above dust control measures shall be performed such that the visible emission limitations of the permit are met. Visible emissions shall be determined in accordance with the procedures specified in the permit.

Wind Erosion from Open Slag Piles

Slag piles shall be sprayed with water, on an Aas-needed@ basis to eliminate wind erosion and not exceed the visible emission limitations in the permit. Water added to the product during processing provides added control. Visible emissions shall be determined in accordance with the procedures specified in the permit.

Slag Handling and Processing

During transferring of the skull slag to the slag pot, the drop height shall be minimized and the transferring shall be done slowly such that the visible emission limitations in the permit are not exceeded.

Pouring of liquid slag from the EAF or LMS to the slag pot shall be conducted inside the melt shop and emissions shall be captured by the melt shop roof canopy and ducted to the EAF or LMF baghouse.

Emissions during the dumping of liquid slag from the slag pot to the slag pit shall be controlled by the use of skull slag such that the visible emission limitations in the permit are not exceeded.

Emissions from slag processing operations shall be controlled through the application of water and by limiting stacker to pile drop height to less than 48 inches and front-end loader batch drop height into trucks to less than 48 inches. Water application rate and frequency shall be sufficient to meet permit limitations. Water shall be applied on crushing, screening and conveyor transfer points using spray bars.

Vehicle Speed Control

Speed limits on paved roads shall be posted to be 20 mph.

Speed limits on unpaved areas shall be 10 mph.

Upon violation, employees shall receive a written warning, followed by a one day suspension if a second violation occurs. Visitors to the plant shall be denied access if repeated violations occur.

Material Spill Control

Incidents of material spillage on the plant property that may create fugitive dust shall be investigated and properly cleaned up.

Monitoring and Recording Keeping

Records shall be of the vacuum sweeping, wet sweeping, or water flushing and spill control activities, and dust suppressant application frequency and amount. Also, records shall contain the amount of water sprayed on the aggregate piles, the amount of water sprayed at the slag quench station, and the amount of water sprayed at the slag processing spray bars. The records shall be kept at the designated plant location for a minimum of five years and shall be available for inspection or copying upon request.

Compliance Schedule

This plan shall be fully implemented when the plant commences operation.

Indiana Department of Environmental Management
Office of Air Quality

Technical Support Document Addendum (TSDA) for a Prevention of Significant Deterioration (PSD) and Part 70 Significant Source Modification (SSM)

Source Background and Description

Source Name:	Steel Dynamics, Inc. (SDI) - Bar Products Division
Source Location:	8000 North County Road 225 East, Pittsboro, IN 46167
Mailing Address:	8000 North County Road 225 East, Pittsboro, IN 46167
General Telephone Number:	317/892-7000
Responsible Official:	Plant Manager
County:	Hendricks
SIC Code:	3312 (Steel Mill)
NAICS Code:	331211
Source Categories:	1 of 28 Listed Source Categories Major PSD Source Minor Source under Section 112 of the CAA
Significant Source Modification:	PSD 063-16628-00037
Permit Reviewer:	Iryn Calilung
Air Impact Modeler:	Michael Mosier
Response to Comments Reviewer:	Paul Dubenetzky

Public Notification

On June 23, 2003, the Office of Air Quality (OAQ) had a notice published in the Indianapolis Star, stating that SDI-Bar Products Division had applied for an air approval to re-start the operation of a steel mill previously owned by Qualitech. The same notice was published in the Hendricks County Flyer on June 26, 2003. A public hearing was held on July 7, 2003, at 7:00 PM in the Pittsboro Park Scout Building, Pittsboro, IN. The public comment period ended on July 26, 2003.

Public Hearing Participants and Commentators

The following people attended the public hearing and provided oral or written comments:

(1) Lois E. Hoffman, 7750 North County Road 75 East, Lizton, IN 46149

(2) SDI, 8000 North County Road 225 East, Pittsboro, IN 46167

(3) Susan Ebershoff-Coles, 4124 W Road 350 N, Danville, IN 46122

(4) Harold Gutzwiller , Hendricks County Economic Development Partnership, 5201 East Highway 36, Avon, IN 46123

(5) Jim Murphy, 10726 North State Road 267, Brownsburg, IN 46112

(6) Terry Mitchell, President of the Pittsboro Town Council, 90 North Maple, Box 304, Pittsboro, IN 46167

(7) Larry Herring, 550 Karen Drive, Pittsboro, IN 46167

(8) Myron Mitchell, 530 North Meridian St. Pittsboro, IN 46167

(9) Clark Davis, Davis Too and Gauge Company, 5125 East 450 North, Brownsburg, IN 46112

(10) Robert Barnette, 135 East Wall St., Pittsboro, IN 46167

(11) Robert Lake, 8138 North County Road 150 East, Pittsboro, IN 46167

(12) Elizabeth Ammons, 2485 East 900 North, Pittsboro, IN 46167

(13) Daryl Hoffman, 7750 North County Road 75 East, Lizton, IN 46149

(14) Fred Davis, 5125 East 450 North, Brownsburg, IN 46112

(15) SDI

The following people did not attend the public hearing, but provided written comments:

(1) Ethan Chatfield, U.S. Environmental Protection Agency, Air and Radiation Division, 77 West Jackson Blvd., Chicago, IL 60604-3507, (312) 886-5112 (T), (312) 886-5824 (F)

(2) David W. Hoggatt, 6185 Brookshire Drive, Pittsboro, IN 46167

(3) Stephen A. Loeschner, 2421 Dellwood Drive, Fort Wayne, IN 46803

(4) Bill Bollman

The following people inquired of the status of the permit:

(1) Robert L. Meeks, Chairman Senate Budget Subcommittee. Senator Meeks resides in LaGrange and represents Dekalb, Kosciusko, LaGrange, Noble and Stueben Counties. He has been a member of the Indiana State Senate continuously since 1988.

(2) Jeff Thompson, Elections, Ways and Means. He resides in Lizton, IN and represents county seats of Danville and Lebanon and portions of Boone, Hendricks, and Montgomery Counties. He has been a member of the Indiana House of Representatives since 1998.

(3) Miriam Dant and David Hatchett, Baker and Daniels, 300 North Meridian Street, Indianapolis, IN 46204

(4) Hendricks County Flyer

The comments are re-stated in the following pages with the IDEM responses. The commentator is identified at the end of each comment. The comments have been complied into similar subject matter. Any changes to the draft permit are shown in strikeout or bold fonts to show the difference.

The IDEM does not amend the TSD and its Appendices, but instead uses this TSD addendum to clarify or correct and in order to keep historical records of changes that are made from the time the permit is drafted until a final decision is made.

Comments regarding this permit in no way demonstrates that the draft permit failed to meet the requirements for a PSD permit. The purpose of the 30-day public comment period is to allow anyone the opportunity to review and comment if they believe there is a problem with the permit. The public has taken the opportunity to request or advise changes just as others are afforded the opportunity. This TSD addendum will address those concerns, and if necessary, amend or deny the drafted permit. In many instances, the IDEM has amended the permit and believes that has satisfied both State and Federal regulations.

Comments on Section A of the Draft Permit

(1) Low Sulfur Charge Carbon

The description " and uses low sulfur charge carbon" does not seem to be consistent with the request to make 1100 SBQ and 1200 SBQ stock. If the sulfur is added by a separate means other than the carbon charge, please indicate the form of the sulfur charge and the methods of handling. [David Hoggatt]

IDEM Response

SDI Hendricks, IN mini mill's main product is the Low Sulfur Bar (LSB). Only a portion of the maximum annual production (up to 35%) is devoted to specialty bars where sulfur is added. Charge carbon is added before the heat and injected carbon is added during the heat. Bags of sulfur are added during tapping. Sulfur is added first to the EAF, then the metal on top of it. Doing it this way maximizes the amount of sulfur that is retained in the metal and conserves raw materials. A small amount of sulfur is added at the LMS to meet the final specifications of the steel products. The bulk of the SO2 is emitted, captured and exhausted through the canopy hood that controls tapping.

(2) Meltshop Roof Monitor and Free Space

(a) Please disregard the following statement from my initial comments. I have since learned that a roof monitor is not an instrument to control and/or record emissions, but an uncontrolled roof opening - - [Why isn't SDI required to have a meltshop roof monitor? Are there no permitted emissions coming from this area?] [David Hoggatt]

(b) The Meltshop does not have a roof monitor, and I was wondering why would it not have a roof monitor? [Lois Hoffman]

(c) How important is it to have the EAF free space monitored? [Lois Hoffman]

IDEM Response

A roof monitor is a heat exhaust vent that can also vent emissions that do not exhaust through the meltshop stack. The free space is important to be monitored if the meltshop is designed to have a roof monitor. Monitoring the free space is required to make sure it is at correct pressure such that emissions coming out uncontrolled are minimized.

In the case of SDI, there is no roof monitor in the meltshop, thus there is no need to monitor the free space. No roof monitor means that all emissions exhaust to control, then to the stack. There is no change in the draft permit due to these comments.

(3) Grain Loading Description

We propose that "0.0052 gr/dscf and" be removed in Section A.2(11):
Bar cutting operation venting to a particulate control at a flow rate of 0.0052 gr/dscf and 30,000 dscf/min. [SDI]

IDEM Response
The IDEM has evaluated this comment, and determines that the specifications of the particulate control are important to be indicated because even though the Bar Cutting Operation is not the main operation of the mill, it is still a vital part of the PSD source.

In addition, a comment was received pointing out that a concern that it is not specific yet what is the particulate control that will be used. Having the specifications specified will eliminate this concern.

Comments on Section B of the Draft Permit

(1) B.4 (f) - - Significant Source Modification
Of the 3 options provided, specifically which is the case for this permit? [David Hoggatt]

IDEM Response
The Part 70 permit for the mill (under the previous owner, Qualitech) has not been reviewed and finalized. Thus, at this time, option B.4(f)(1) is the applicable scenario for the mill (under the new owner, SDI). The updating of the Part 70 application will be done by the Permit Branch, OAQ.

However, since the mill is being re-permitted in its entirety, SDI has the option to apply for its own Part 70 application to supersede the original Part 70 application. The application must be submitted within 12 months of operation of being authorized as a major source.

There is no change in the draft permit due to this comment.
The requirement is re-stated below and the applicable scenario is bolded for emphasis.

B.4.(f) In the event that the Part 70 application is being processed at the same time as this application, the following additional procedures shall be followed for obtaining the right to operate:

(1) If the Part 70 draft permit has not gone on public notice, then the change/addition covered by the Significant Source Modification will be included in the Part 70 draft.

(2) If the Part 70 permit has gone through final EPA proposal and would be issued ahead of the Significant Source Modification, the Significant Source Modification will go through a concurrent 45 day EPA review. Then the Significant Source Modification will be incorporated into the final Part 70 permit at the time of issuance.

(3) If the Part 70 permit has gone through public notice, but has not gone through final EPA review and would be issued after the Significant Source Modification is issued, then the Modification would be added to the proposed Part 70 permit, and the Title V permit will issued after EPA review.

(2) B.6 - - NSPS Reporting Requirement
Upon further evaluation of the 40 CFR 60.7 (Notification Requirements), the following notification milestones were added and their corresponding citations:

B.6 Pursuant to the New Source Performance Standards (NSPS), 40 CFR Part 60, Subpart AAa, ~~and~~ Subpart Dc **and** 40 CFR 60.7a, the Permittee shall report the following at the appropriate times:

(a) Commencement of construction date (no later than 30 days after such date) **[40 CFR 60.7a(1)];**

(b) Actual start-up date (no later than 15 days after such date) **[40 CFR 60.7a(3)];** ~~and~~

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

(d) Commencement date of CEMS (no later than 15 days after such date) [40 CFR 7a(5)];

(e) Anticipated date for conducting opacity observations (no later than 15 days after such date) [40 CFR 60.7a(6)]; and

(f) Date that COM data results will be used to determine compliance with the applicable opacity standard observations (no later than 15 days after such date) [40 CFR 60.7a(7)].

There is no 40 CFR 60.7a(2) - reserved.

Comments on Section C of the Draft Permit

(1) C.2 - - PMP Availability

A draft of the PMP should be available and subject to public review prior to the approval of this permit. This should be a minimal expectation since the long term upkeep of the emission control systems will depend on this critical maintenance plan/system. However, the PMP should be developed and available upon start up. [Lois Hoffman]

IDEM Response

The PMP is a requirement that is required once the plant starts operating. The PMP will depend on the actual units and controls that will be constructed. At this time, there might be still uncertainties on the exact model and specifications on some units or control. IDEM has the authority to examine and evaluate or ask for a copy of the PMP once the mill is in operation.

Based on this comment, ConditionC.2.(a) has been revised as follows:

C.2(a) If required by specific condition(s) in Section D of this permit, the Permittee shall prepare and ~~maintain~~ **implement** Preventive Maintenance Plans (PMPs) ~~no later than ninety (90) days after~~ **upon** the initial start up, including the following information on each facility:

(2) PMP for Boilers

Will improperly tuned boilers operating at off design levels be covered in the PMP? [Lois Hoffman]

IDEM Response

Yes. As part of good operating practices, it is beneficial for SDI to properly maintain and tune boilers such that they operate at full design capacity for it is easier to comply with applicable requirements.

(3) C.6 - - Fugitive Dust Emissions

The terms " is not federally enforceable" are used in this C.6 condition and other area (C.8) of the permit. Please confirm that IDEM OAQ will enforce these regulations to the fullest extent of the law in IN. [David Hoggatt]

IDEM Response

The Part 70 program requires IDEM to identify requirements if they are federally or state enforceable only. "Not federally enforceable" means that the state rules that specify the condition have not been approved by the US EPA.

The IDEM has the full intention of enforcing not only this specific condition, but all the requirements specified in the permit. The permit includes very detailed monitoring requirements to ensure that control devices are maintained and operated properly at all times when the facility is in operation. The permit requires a continuous opacity monitor (COM) and a bag leak detection system (BLDS) to ensure that particulate emissions from the stack do not exceed the limits in the permit. The permit also requires stack testing, which is a direct measurement of the amount of pollutants being emitted from the stack. SDI will be responsible for completing the

monitoring and stack testing. IDEM will be responsible for reviewing the records of their monitoring, and reviewing the results of the stack testing. Stack testing is required to be conducted according to EPA approved methodologies. IDEM has staff that is expert in these methodologies. IDEM staff are responsible for reviewing SDI's testing protocols, observing the actual stack tests, and reviewing the results of the stack tests. If IDEM staff do not agree that the testing has been conducted properly, IDEM will require SDI to conduct another test. Additionally, IDEM staff will be required to review SDI's monitoring records to ensure that monitoring is being done as required and to ensure that there are not excursions/deviations from permit requirements. IDEM staff also perform inspections of the plant and other types of surveillance to ensure compliance with the permit limits. Inspections are unannounced. IDEM is also responsible for resolving any noncompliance issues that may arise. There is no change in the draft permit due to this comment.

(4) C.8 - - Stack Height

(a) Does the SDI plant meet the Stack Heights Requirements? If not what are the implications to emissions dispersement and other factors? IDEM needs to provide a summary of the impact and/or potential impact that exist since the stack does not meet GEP. [David Hoggatt]

(b) Since the heights of the mill exhaust stacks will be less than GEP stack heights, and taking into consideration that the dispersion modeling might not accurately address the aerodynamics downwash impact the Commissioner should require stack testing, monitoring, and reporting on a regular specified schedule. [Lois Hoffman]

IDEM Response

This issue has been addressed in the air quality impact analysis portion (Appendix C) of the original TSD. It was stated in the TSD that aerodynamic downwash was accounted for in the AQ analysis.

GEP stack height defined at its most basic level by a formula that defines the height in terms of nearby building dimensions. The wind blowing across buildings can cause a downwash effect that pulls the emissions from the stack to the ground sooner that they would otherwise. GEP stack height is intended to minimize this effect and the increase in ground level pollutant concentrations that it can cause. The Clean Air Act acknowledges that this is a legitimate approach, but places limitations on the use of dispersion techniques as a means to comply with air quality standards. The stack height requirements of 326 IAC 1-7 address both of these issues.

326 IAC 1-7-3 requires that stacks conform to GEP to limit excessive concentrations of air pollutants. This section allows for shorter stacks if a more sophisticated analysis demonstrates that excessive concentrations of air pollutants will not result. There are also several exemptions provided from this section including an exemption for stacks that actually emit less than 25 tons per year.

326 IAC 1-7-4 restricts the stack height that can be used in air quality models. Erecting a very tall stack can be considered a dispersion technique that is not allowed under the Clean Air Act. Actual stack heights up to 65 meters can always be used. Heights in excess of 65 meters can be used only to the extent that results from the GEP formula. So while a stack may actually be greater in height, the GEP formula limits the height will be used in the model.

SDI proposed a stack with 160 feet (49.6 meters) high. The air quality analysis (Appendix C of the original TSD) confirms that excessive concentrations will not occur regardless of stack height. The permit condition helps to ensure that any future changes in stack height will be subject to review. The permit also has sufficient compliance monitoring, testing and reporting requirements.

(5) C.9 - - Asbestos Abatement Projects

Why was specific language contained in the previous drafts concerning Asbestos Abatement removed from this version? Does this indicate any shift in requirement(s) for SDI and from Qualitech previously? [David Hoggatt]

IDEM Response

The first draft that Mr. Hoggatt was referring to had the longer version of the Asbestos Abatement requirement. The draft version that was officially provided for public comment has the shorter version of the same requirement. The 2 versions cite the same rules and regulations. The shorter version of the condition does not shift/change/remove the requirement to comply. There is no change in the draft permit due to this comment.

(6) C.10 - - Performance Testing

Request that OAQ require SDI to submit all test reports within 25 days with no extension granted. If SDI utilizes the applicable procedures and analysis methods specified in 40 CFR 51, 40 CFR 60, 40 CFR 63, 40 CFR 75,or the provisions of 326 IAC 3-6 (Source Sampling Procedures) they should be able and required to submit test reports before 45 days with no extension granted. [Lois Hoffman]

IDEM Response

This time frame is based on 326 IAC 3-6-4(b). It has been IDEM's experience with companies that allowing 45 days to submit test results is a reasonable time frame. The test results reports are extensive and detailed documents that an appropriate time be allowed to accomplish. However, most cases, IDEM knows after the test if the company passed or failed the test. IDEM also believes that an extension provision has to be clearly made to the company if it in case it is necessary to be done. IDEM will evaluate if such extension request is valid or not.

There is no change in the draft condition due to this comment.

C.10(c) Pursuant to 326 IAC 3-6-4(b), all test reports must be received by IDEM, OAQ not later than forty-five (45) days after the completion of the testing.

C.10(d) An extension may be granted by IDEM OAQ, if the source submits to IDEM, OAQ, a reasonable written explanation not later than five (5) days prior to the end of the initial forty-five (45) day period.

(7) C.11 - - Compliance Requirements

Generally, I find the testing and monitoring program grossly insufficient for a source of this magnitude. [David Hoggatt]

IDEM Response

The appropriate compliance monitoring and testing have been specified in the permit and these are sufficient to assure compliance with state and federal regulations. Significant emission units are monitored once per shift; COM and CEMS for CO, VOC, SO2 have been specified for the meltshop monitoring.

The IDEM, in addition to following internal guidance of how and when to require testing/monitoring, also followed the federal requirements 40 CFR Part 64 (Compliance Assurance Monitoring). Monitoring and testing requirements are evaluated based on the specific pollutant, if there is a control device, the PTE before and after control, attainment status of the source location and compliance history.

(8) C.12 - - Compliance Monitoring When Operation Begins

Section D of this permit does not require all monitoring and record keeping to be implemented when operation begins. Section D refers the monitoring and record keeping requirements back to Section C. This is unclear. Monitoring and record keeping requirements should be implemented when operation begins. This should be included in Section D. [Lois Hoffman]

IDEM Response

Requirements in Section C of the permit apply to the entire source, thus, Condition C.12 applies to each specific requirements in Section D, unless otherwise specified. It is not necessary to indicate the same condition on each Section D for it will make the permit longer than necessary.

There is no change in the draft permit due to this comment.

C.12(a) If required by Section D of this permit, all monitoring and record keeping requirements shall be implemented when operation begins.

(9) Maintenance of CEMS

Language that was included in previous drafts pertaining to maintenance of the emissions monitoring equipment was removed in this version. Please explain the rational and indicate any impact the change has on the requirements of the permit holder. [David Hoggatt]

IDEM Response

The language pertaining to the CEMS and COM maintenance was not removed from the draft permit. The conditions were moved from Section C to the specific Section D.1 where the conditions specifically pertained. It will be easier to refer to the requirements specifically pertaining to the monitors if the specific requirements are all in one Section D. Conditions D.1.13 and D.1.14 deal with the maintenance of CEMS and COM, respectively.

(10) C.14 - - Pressure Gauge and Other Instrument Specifications

I would suggest the addition of the following language at the end of Condition C.14(c) - - " if the alternative method can be verified/validated by in independent means". [David Hoggatt]

IDEM Response

If "independent means" means that the request is to be evaluated by a non-IDEM staff, the IDEM believes that it is not necessary to add the suggested language because IDEM can and will evaluate the request before making a decision (approval or denial). The IDEM staff has the expertise and resources to verify and validate such alternative method(s) to make a professional judgement.

If "independent means" means that the request be evaluated such that the requested alternative method is sufficient and adequate substitution, then IDEM agrees. However, the alternative method evaluation process is an internal IDEM process and does not need to be indicated in

details in the permit. The Permittee may choose to provide verification/ validation from independent means in order for IDEM to consider approving the use of a different instrument.

There is no change in the draft permit due to this comment.

D.1.14(c) The Permittee may request the IDEM, OAQ approve the use of a pressure gauge or other instrument that does not meet the above specifications provided the Permittee can demonstrate an alternative pressure gauge or other instrument specification will adequately ensure compliance with permit conditions requiring the measurement of pressure drop or other parameters.

(11) OMM

Is OMM required for this permit? Who determines such requirements? When will this be determined? [David Hoggatt]

IDEM Response

There is no OMM Plan required, at this time, in this permit. OMM Plans are usually required under certain federal regulations 40 CFR 60 (NSPS) and 40 CFR 63 (NESHAP). If the US EPA will promulgates such NSPS or NESHAP applicable to SDI, the applicable requirements will be incorporated in SDI's Part 70 permit. The condition was specified this way such that when an applicable NSPS or NESHAP requires an OMM Plan, it is already covered even though the Part 70 permit might not have been revised in time.

There is no change to the draft permit due to this comment.

C.16(a)(2) If, at any time, the Permittee takes reasonable response steps that are not set forth in the Permittee's current Compliance Response Plan or Operation, Maintenance and Monitoring (OMM) Plan and the Permittee documents such response in accordance with subsection (e) below, the Permittee shall amend its Compliance Response Plan or Operation, Maintenance and Monitoring (OMM) Plan to include such response steps taken.
If the Permittee is required to have an Operation, Maintenance and Monitoring (OMM) Plan under 40 CFR 60 or 40 CFR 63 , such plan shall be deemed to satisfy the requirements for a CRP for those compliance monitoring conditions. The OMM Plan shall be submitted within the time frames specified by the applicable 40 CFR 60 or 40 CFR 63 requirement.

(12) C.16- - CRP - No Permit Exceedance

The following should be added to the opening statement of C.16 (b) - - " as follows.... as long as all limits and conditions set forth in this permit are not exceeded and/or violated:" [David Hoggatt]

IDEM Response

It is not necessary to include this language in C.16(b), because the Permittee must comply with all terms and conditions of the permit at all times when operating. The Permittee is required to report any deviation from any permit requirements.

There is no change in the draft permit due to this comment.

C.16(b) For each compliance monitoring condition of this permit, reasonable response steps shall be taken when indicated by the provisions of that compliance monitoring condition as follows:

(13) C.16- - CRP - - Shutdown Notification

This requirement in Condition C.16 (b)(3) should be removed since it is impractical and counterintuitive to the basis for the requirement of the Compliance Response Plan itself. We believe that it is more important to identify and implement necessary response steps as expeditiously as practical rather than being concerned about notifying IDEM that our process will be shut down. As a batch process, it is important to note, that our process will be shut down frequently. Further, any deviations in compliance monitoring will be identified in our quarterly reports to IDEM. [SDI]

IDEM Response

This portion of Condition C.16 is necessary because it requires the Permittee to implement the CRP. The IDEM does not disagree with SDI intention to expeditiously implement the necessary response steps. However, this portion of the condition provides SDI a step to follow if in rare case that an additional response step is necessary that a shut down prior to the end of a batch is necessary. The notification is not burdensome since there are several effective methods to use, such as phone call, voice mail, e-mail, facsimile and other technological means communications.

While compliance monitoring parameters are a useful indication of compliance, an out of range parameter does not necessarily demonstrate noncompliance. This condition recognizes that operations may continue while compliance monitoring parameters are outside the range identified in the permit. The reporting requirement provides that IDEM the opportunity to investigate the compliance status of the emission unit while operating out of range. Due to the batch nature of nearly all the significant operations at SDI, it is unlikely that operations would continue for longer than 24 hours under this situation. The permit has been modified to require reporting only if the parameters remain out of range for 24 operating hours. This does not affect the permit's requirements to keep records of out range situations and the steps taken in response.

After various discussions with SDI, the requirement is revised such that reporting of shutdown is more accurate, representative and practical for this type of operation.

C.16(b) For each compliance monitoring condition of this permit, reasonable response steps shall be taken when indicated by the provisions of that compliance monitoring condition as follows:

(3) If the Permittee determines that additional response steps would necessitate that the emissions unit or control device be shut down, the IDEM, OAQ shall be ~~promptly~~ notified **no later than 24 operating hours of shutdown of such unit,** of the expected date of the shut down, the status of the applicable compliance monitoring parameter with respect to normal, and the results of the actions taken up to the time of notification.

(14) CRP - No Further Response Steps

IDEM OAQ should be required to specifically approve all permit conditions that are deemed technically inappropriate and should provide written acceptance of any such changes. How is this

mechanism controlled such that the public is notified of changes that could have impact on the overall emissions levels and/or potential to emit? [David Hoggatt]

IDEM Response
326 IAC 2-7-16 (Emergency provision) provides an affirmative defense, under certain conditions, if an emissions limit is violated. An emergency means any situation, including acts of God, arising from sudden and reasonably unforeseeable events beyond the reasonable control of the source, which:
(a) requires immediate corrective action to restore operation; and
(b) causes the source to exceed an emission limit due to unavoidable increases in emissions attributable to the emergency.
An emergency shall not include non compliance to the extent caused by improperly designed equipment, failure to implement an adequate preventive maintenance plan, careless or improper operation, or operator error.

In addition to the event qualifying as an emergency, the rule and the permit require that the Permittee to take all reasonable steps to minimize levels of emissions and to immediately take all reasonable steps to correct the emergency. In most cases, because of the batch nature of the operations at SDI, orderly shut down of an affected unit within a matter of an hour or two would be considered a reasonable step to both minimize emissions and to correct the emergency. Failure to do so would not only remove the affirmative defense, but would also increase the severity of the violation.

No further response steps are required if compliance monitoring has been requested by the Permittee to be revised by submitting a permit modification application. The key item in this condition is that the Permittee has submitted a permit modification application, it is being processed and has not been denied. All permit modifications are processed with public participation and the public will be given the same opportunity as in this review process, to provide comments. If the Permittee has not submitted an application, then this exemption is not applicable.

There is no change in the draft permit due to this comment.
C.16(c) The Permittee is not required to take any further response steps for any of the following reasons:
(2) The Permittee has determined that the compliance monitoring parameters established in the permit conditions are technically inappropriate, has previously submitted a request for a minor permit modification to the permit, and such request has not been denied.

(15) Emergency Records of Other SDI Plants
Please provide data reported for other SDI plants in IN and other US locations as may be available. This will provide the public with an indication of the frequency and magnitude of emergency(s) managed by the same company. [David Hoggatt]

IDEM Response

As requested, the files of the 2 existing SDI plants in Indiana (Dekalb and Whitley Counties) have been searched to look for malfunction reports and deviations. IDEM is not aware of any other SDI mills.

(a) SDI Dekalb, IN permit file contains the following malfunctions or violations. It has to be noted that some of these are malfunctions happened to the Iron Dynamics plant.

- - EAF Baghouse malfunctions were reported once in 2002, once in 2001, four times in 1999, five times in 1998, once in 1997. US EPA issued a consent order in 2002 for the 1998 and 1999 opacity violations.
- - Thermal oxygen leak causing explosion in 2001.
- - Off gas taken off line in 2001.
- - Over pressure in the submerged arc furnace in 2000 - - IDI
- - Smoke from the submerged arc furnace in 1999 - - IDI
- - A welding fire in 1998
- - Tap molten iron not plugged off in 1998 - - IDI
- - COM was struck by lightning in 1997
- - COM downtime: 15.9 hours in 2002, 147.8 hours in 2001, 18.4 hours in 2000, 88.6 hours in 1999, and 465.1 hours in 1998.

IDEM has taken appropriate action to correct all noncompliance issues that have been identified at the SDI, Dekalb, IN plant. An agreed order was signed on March 24, 2000 to resolve noncompliance stack tests that occurred over the course of approximately three years from 1996 to 1998. This order did include a $41,000.00 fine as well as a requirement to complete a supplemental environmental project (SEP). Completion of the SEP allows the fine to be reduced to approximately $8000.00, Another agreed order was signed on April 30, 2001 for the 1999 third quarter COM downtime, and SDI was fined $5000.00. A notice of violation was issued to IDI on May 14, 2001 for visible emissions exceedance, fugitive dust and missing the stack test deadline for the submerged arc furnace. IDEM is not aware of any other violations regarding this plant at this time.

(b) The SDI Whitley IN permit file does not contain any reported malfunction reports. In February, 2001, the US EPA issued a notice of violation to SDI for this plant based on the US EPA inspection findings. The inspections were made in September, 2000 and February, 2001. SDI was cited for commencing construction prior to the issuance of the permit. Activities that were cited are excavation of fresh water lagoon, retention ponds, ditches, area for basement, and rail road tracks foundation. US EPA claims that these are permanent in nature and integral to the overall project and such activities are not allowed to be constructed prior to the issuance of a permit. This violation has been resolved.

For more details of these, IDEM public files can be viewed from Monday to Friday, at 8:30 AM to 4:00 PM, in the IGCN, 12th Floor or by contacting the Office of Air Quality, Permit Branch for a public records request.

(16) C.17 - - Emergency Provisions - - Prevent Reoccurrence
Add the following - - " and action to prevent reoccurrence." to Condition C.17 (b)(5)(C).
[David Hoggatt]

IDEM Response

Under Condition C.17(e) of the Emergency Provision, the IDEM already specified that the PMP may be revised in response to an emergency; therefore, it is not necessary to include the suggested language in Condition C.17(b)(5)(C) requiring the an action to prevent re-occurrence.

There is no change to the draft permit due to this comment.

C.17(b)(5) For each emergency lasting one (1) hour or more, the Permittee submitted the attached Emergency Occurrence Report Form or its equivalent, either by mail or facsimile to:
Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015
no later than two (2) working days of the time when emission limitations were exceeded due to the emergency.
The notice fulfills the requirement of 326 IAC 2-7-5(3)(C)(ii) and must contain the following:
(A) A description of the emergency;
(B) Any steps taken to mitigate the emissions; and
(C) Corrective actions taken.
The notification which shall be submitted by the Permittee does not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

C.17(e) IDEM, OAQ may require that the Preventive Maintenance Plans required under 326 IAC 2-7-4-(c)(9) be revised in response to an emergency.

(17) Emergency Provisions - - Potential Impact

(c) Add a new statement to Condition C.17 (b)(5) - - " include an estimate of the potential impact of the emergency on the compliance/non compliance of the permit and an estimate of the specific emission levels that would be impacted by the emergency."
[David Hoggatt]

IDEM Response
IDEM agrees with the comment made, however, it is not necessary to add the language in the condition because this information is already required in the Emergency Occurrence Report Form. This form includes such details as the permit condition or operation limitation in the permit that is affected, the cause of the emergency, the type of pollutants emitted, a estimation of the amount of pollutants emitted, and the steps taken to mitigate the problem.

(18) Shutdown due to Uncontrolled Emergency
Under what conditions is the plant required to conduct an orderly shutdown due to an uncontrolled emergency situation? [David Hoggatt]

IDEM Response
If it is determined that SDI is not in compliance with their permit, then IDEM will take appropriate enforcement action Any enforcement action taken is determined based on the violation that occurred. IDEM considers many factors when determining what action is appropriate, including but not limited to the duration of the violation, the environmental impacts resulting from the violation, and the actions taken by the source to correct the violations prior to being required to do so by IDEM.

IDEM can not predict when an emergency is going to occur. However, SDI knows the instances that can be considered as emergencies.

SDI will shutdown periodically for routine maintenance and repairs. These types of shutdown are routine for all mills. These shutdowns may be as short as one shift or as long as a week.

(19) C.19 - - Stack Test Non Compliance - Shorter Time
A re test to demonstrate compliance should be performed sooner than 120 days without extending the re-testing deadline. It is environmentally necessary to have the stack in compliance. SDI is a major source of pollutants. If a strict PMP and SMP is followed and recorded, the stack test should always be in compliance. [Lois Hoffman]

IDEM Response
IDEM acknowledges that following the PMP and SMP and approved methods minimize committing errors in performing tests. However, there are a variety of factors, such as staff, environment or climate that can affect test results. A 120-day extension is provided to SDI to perform a retest to provide sufficient time for SDI and IDEM personnel to evaluate what went wrong during the test and to finalize details of the schedule. This time frame is also what is provided by the state air rules. There is no change in the draft permit due to this comment.

(20) Stack Test Noncompliance - - Continue to Operate
Does Condition C.19 (b) imply that the company would be allowed to continue to operate the plant for 90-120 additional days beyond the date indicated that they are out of compliance with this permit? I can accept the retesting may not be practical within 120 days of the original testing but can not accept that the plant would continue to operate during this period. If production is granted outside the permitted level for this period of time, it should be done only after a public hearing on the suspension of the permit conditions. [David Hoggatt]

IDEM Response
Condition C.19(b) does not require the company to shut down during this period. However, a non-compliance test result will be referred to IDEM Office of Enforcement. Even though a maximum of 120 days is provided for SDI to perform a re-test, it is in their benefit to re-test as soon as possible. There is no change in the draft permit due to this comment.

(21) C.20 - - Emission Statement - - Annual Period
Will this Condition C.20(b) be the same period that SDI uses to comply with the product mix specifically the maximums on 1100 SBQ and 1200 SBQ production. [David Hoggatt]

IDEM Response
Yes. It is the same time frame.

The annual production limit is also any 12-consecutive month period.

There is no change in the draft permit due to this comment.
C.20(b) The annual emission statement covers the twelve (12) consecutive month time period starting January 1 and ending December 31.

(22) Emission Statement - - HAPs Reporting

This requirement in Condition C.20 (a)(2) should be removed because it is not consistent with the requirements specified in 326 IAC 2-6-4. There is no legal basis for requiring sources to report hazardous air pollutants. [SDI]

IDEM Response
It is correct that 326 IAC 2-6 is limited to criteria pollutants to be reported for emission data inventory and fee assessment. Thus IDEM is deleting the requirement.

~~C.20(a)(2) Indicate estimated actual emissions of regulated pollutants as defined by 326 IAC 2-7-1 (Regulated pollutant which is used only for purposes of Section 19 of this rule) from the source, for purposes of Part 70 fee assessment.~~

In 2002, Senate Enrolled Act (SEA) 259 was passed by the Indiana General Assembly. One goal of the legislation was to ensure that new hazardous air pollutant (HAP) emissions reporting, which had been proposed in amendments to the state's emission reporting rule, would be tied to the Indiana Department of Environmental Management (IDEM) and Indiana State Department of Health (ISDH) strategic goals for reducing HAP risks and relevant data needs. The law tasks the IDEM and ISDH with developing a five-year HAP strategy.

The IDEM and ISDH have published a report that can be found at:
http://www.in.gov/idem/air/SEA259

The five-year HAP strategy is to include the following elements:
- - an inventory of HAP emissions in Indiana
- - an assessment of the quality and usefulness of existing emissions, monitoring and health data
- - a description of data gaps, alternatives to fill those gaps, and identification of the preferred approach among those alternatives
- - identification of the top ten (10) priorities to address significant risks posed by HAP releases and the basis for each priority
- - an inventory of sources, source categories and HAP that require additional study to determine human health impacts identification of additional HAP data needs, including the intended uses of processes to be used to collect; and resources necessary to collect and assess the additional data

In response to the SEA 259, IDEM and ISDH have identified the following priorities for efforts to reduce the health risk from HAP in Indiana:

(a) The departments should continue to implement the HAP program in the Clean Air Act, including adoption and implementation of the maximum achievable control standards for HAP sources and permitting review of HAP sources.

(b) The departments should continue to address identified state- or community-specific HAP risk issues not addressed by the Clean Air Act, or that should be addressed sooner, such as the pursuit of innovative voluntary mobile source emission reduction programs to address diesel emissions. The report identifies EAF as a potential area of focus for this priority.

(c) The departments should continue to assess suspected state- or community-specific HAP risk issues, including conducting detailed local assessments. One tool discussed extensively to date is expanding the existing authority to collect HAP emission information as relevant to local/state assessments.

(d) The departments should continue to work on preventing pollution.

(e) The departments should maintain an on-going process with stakeholder involvement to continuously review and revise Indiana's HAP program as more information becomes available.

One goal of the legislation was to ensure that new HAP emissions reporting, which had been proposed by IDEM in amendments to the state's emission reporting rule, would be tied to IDEM and ISDH strategic goals for reducing HAP risks and relevant data needs.

Revisions to the existing rule have been proposed will be revised to provide IDEM the authority to collect needed information for specific local or statewide assessments based on available information. The pending rule is going to be presented for final adoption to the Air Pollution Control Board on December 3, 2003. Discussions will continue with the Air Pollution Control Board and interested persons to determine the specific content of a HAP emission reporting rule.

If additional requirements are adopted, the IDEM will revise operating permits as appropriate.

(23) C.21 - - General Record Keeping Requirements - Start Time
If SDI is ready to start up the plant, they need to insure compliance from day 1. This section C.21(b) should require that all record keeping capabilities needed to support this permit be ready prior to the start of manufacturing and the emission generation. [David Hoggatt]

IDEM Response
This was an oversight. The intention is to implement record keeping and other requirements upon start up.

C.21(b) Unless otherwise specified in this permit, all record keeping requirements ~~not already legally required~~ shall be implemented ~~no later than ninety (90) days after~~ **upon** initial start up.

(24) Plans and Practices
A major the concern that is laced throughout the permit is the reliance on different "Plans" or "Practices" to insure compliance. IDEM has allowed for many of these plans to be implemented after start up, while there has been no specific timeframe attached to others. Given the seminal role that these plans/practices play in the achievement of the emission limits in this permit, I would request that the actual plans/practices including training and verification of skills be included in as a part of this document that includes public review and comment prior to an issuance decision.

At the very minimum, key detailed elements that would be required in each plan/practice should be part of this review with the requirement that the initial version of each plan/practice be pre-approved by IDEM prior to the operation of the mill.
Below is a partial list of those plans/ practices specifically cited in this permit:

Preventative Maintenance Plan (PMP) (90 days after start up) -- C.2
Compliance Response Plan (CRP) 90 days after start up) -- C.16
Scrap management plan (SMP) - - D.1.1
Operation, Maintenance and Monitoring (OMM) Plan (no timeframe specified) - - C.16(a)
Continuous Monitoring Operating Procedure(CMSOP) (90 days after start up) -- (D.1.10 and D.1.11)
Compliance Monitoring Plan-Section C (are there other requirements?)
Fugitive dust plan (FDP) - - D.9.2

Good combustion practices
Good operating practices
Proper combustion operations - - D.3.3(b)
Good production practices - - D.4.2(b),
Good design and operation (VTD Boiler)
Good Practices (Slag Handling BACT)

The above list may not be complete but should provide a clear demonstration on the significant number of plans/practices referenced in this permit and the importance of these plans. For example, I would speculate that the Scrap management plan would be responsible for control conditions such that the SO2, VOC and radioactive limits are maintained. [David Hoggatt}

IDEM Response

PMP

The PMP is normally required upon start of operation. The condition is revised as follows:

C.2(a) If required by specific condition(s) in Section D of this permit, the Permittee shall prepare and ~~maintain~~ **implement** Preventive Maintenance Plans (PMPs) ~~no later than ninety (90) days after~~ **upon** the initial start up, including the following information on each facility:

CRP

IDEM agrees with the comment that the CRP shall also be prepared and implemented upon the initial start. The condition is revised as follows:

C.16(a) The CRP shall be prepared ~~no later than ninety (90) days after~~ **upon** initial start up, by the Permittee, supplemented from time to time by the Permittee, maintained on site, and comprised of:

OMMP

There is no OMM Plan required, at this time, in this permit. An OMM Plan is usually required under the federal regulations 40 CFR 60 (NSPS) and 40 CFR 63 (NESHAP). If the US EPA promulgates a NSPS or NESHAP applicable to a SDI, the applicable requirements will be incorporated in SDI's Part 70 permit. The condition was specified this way such that when an applicable NSPS or NESHAP requires an OMM Plan, it is already covered even though the Part 70 permit might not have been revised in time. There is no change in the draft permit due to this comment.

C.16(a) If the Permittee is required to have an Operation, Maintenance and Monitoring (OMM) Plan under 40 CFR 60 or 40 CFR 63 , such plan shall be deemed to satisfy the requirements for a CRP for those compliance monitoring conditions.

CMSOP

IDEM agrees with the comment, and the conditions are revised as follows:

D.1.10(b) The Permittee shall submit to IDEM, OAQ, ~~no later than ninety (90) days after~~ **upon** initial start up, a complete written continuous monitoring standard operating procedure (CMSOP), in accordance with the requirements of 326 IAC 3-5-4.

D.1.11(b) The Permittee shall submit to IDEM, OAQ~~, no later than ninety (90) days after~~ **upon** initial start up, a complete written continuous monitoring standard operating procedure (CMSOP), in accordance with the requirements of 326 IAC 3-5-4.

SMP

The SMP is attached to the permit (Attachment A).

FDP

The FDP is attached to the permit (Attachment B).

CMP

The Compliance Monitoring Plan consists of the compliance monitoring and testing provisions of the permit, including the associated record keeping and reporting conditions and the compliance response plan.

Good Working/Combustion/Production/ Operating/Design Practices

These practices can be in the form of training and certification of the employees involved in the operation of the plant. To mention some of the practices, SDI has to follow the manufacturer's specifications and suggested operational parameters; implement pollution prevention, as applicable, to conserve raw materials, energy and fuel; implement guidelines; and provide resources or checklists to employees. Specific practices will be different for each operations, such as what are the parameters (e.g.: time, temperature or pressure) set to operate to fully utilize the maximum capacity; how and when to add the sulfur to conserve materials; etc. These practices do not need to be specified in the permit. Most permitting agencies include this type of language to provide broad authority when necessary to address operational problems.

The BACT requirements do not solely depend or rely on work practices.

Post-Construction Ambient Monitoring

(1) Removal of Ambient Monitor

(a) The operation of the ambient monitoring sites must be maintained for the entire time SDI, Pittsboro is in operation. This will provide the community with direct information regarding ambient air quality. Extending the air monitoring period will not only insure that the plant modifications and existing equipment were designed, constructed and operating correctly, it will also insure that the indirect control systems (Scrap Management Plan, PMP, Fugitive Dust plan) that will be critical in maintaining the ongoing proper environmental control of the plant are also functioning properly. Any removal of the ambient monitoring stations or ambient reports must be subject to public comments and full review by IDEM, OAQ. It is my understanding that the ambient monitoring sites are costly to run. However, some of the BACT analysis that could improve the emissions from SDI were considered not feasible economically. IDEM, OAQ must consider the ambient monitoring sites as economically BACT for the environment of Indiana. [Lois Hoffman]

(b) Conditions (h) and (i) are unacceptable conditions and a complete dereliction of duty on IDEM OAQ part to suggest such conditions. Why should past performance guarantee future performance? This is not accepted in the stock market, why should it be accepted in terms of air quality and specifically public health? This is especially true considering that as the plant ages one would expect an increase in equipment failures, including emission control systems. The risk further heightens by the steadily increasing population in the surrounding areas, potentially putting more people at risk. Removing the testing obligation at a faction of the plants potential lifetime would eliminate an invaluable tool that could insure that the public health impact of this plant is minimized and that public confidence in SDI and IDEM, OAQ be maintained. I strongly support the continued use of these monitors over the lifetime of the permit and mill. [David Hoggatt]

(2) Criteria for Removal or Continuance of Air Monitor

(a) If discontinuance provisions deemed necessary, they should include the following at a minimum

(i) Monitoring for a minimum of 120 months at full production rate.

(ii) Public review of the request discontinue the monitoring, including a review of the data submitted to justify the discontinuance and specific methods accepted by EPA and IDEM that would be used to insure continued air safety in the future.

(iii) Specifically a member representing the Pittsboro Elementary School should be invited to represent the safety and interest of the school.

(iv) Included in the public review would be a complete summary of the permit violations to date. Include the nature of the failure, the frequency of the failure, any recurring failures (3 or more) would require a detailed report indicating why this failure has not been addressed via the PMP and/or corrective measures and root cause analysis. [David Hoggatt]

(b) The criteria for which IDEM may require additional or continued monitoring is not clear. Specifically of concern is the requirement for providing “proof that the data … will continue to comply with the National Ambient [Air] Quality Standards (NAAQS)” and what

constitutes “a threat to the NAAQS.” SDI is unclear on how compliance will be achieved with these requirements, and requests further guidance.

Also, many factors and sources will affect air quality, not just emissions from our plant. We propose the following language as an alternative to C.15 (h) through (j).

C.15(h) After 30 consecutive months of actual post-construction monitoring, the Permittee shall submit a notification to IDEM of intent to discontinue the monitoring site(s).

(i) The Permittee is allowed to discontinue monitoring following the collection of 36 months of actual post-construction monitoring.

(i) IDEM may require additional monitoring, for a specific pollutant, if the Permittee fails to collect 36 months of monitoring data for that pollutant in accordance with IDEM and US EPA quality assurance requirements, an exceedance of an applicable National Ambient Air Quality Standard (NAAQS) occurs, or a measured pollutant level is greater than 80 percent of an applicable NAAQS. In the event that additional monitoring will be required, IDEM shall notify the Permittee no later than three (3) months before such monitoring will be required. [SDI]

IDEM Response

The IDEM believes that the ambient monitoring sites will provide useful information regarding the impact of SDI on local air quality. The ambient monitoring sites provide a “real world check” on the computer modeling that already demonstrates that SDI will not cause or contribute to a violation of any NAAQS or PSD maximum allowable increase. However, several years of data may be enough to provide that check, and it would then be appropriate to discontinue the monitoring.

There are several factors that would be considered in any decision to reduce the level of monitoring. Among the factors that would be considered are:

(a) the production and emissions levels at the plant,

(b) the compliance history of the plant,

(c) the margin between the measured concentrations and the applicable National Ambient Air Quality Standards (these are the health-based air quality standards adopted by the U.S. EPA and applicable across the country),

(d) a comparison of upwind versus downwind concentrations, and

(e) a comparison of the ambient monitoring data with the predictions of the air quality modeling study.

The permit has been revised to require that a request by SDI to reduce monitoring and any decision by IDEM would be processed as a significant permit modification. That process includes an opportunity for public review and comment, including the opportunity to request a public hearing, prior to a final decision. The final decision can also be appealed to the Office of Environmental Adjudication. The IDEM provides direct notice to citizens and other potentially

affected parties when preliminary determinations are available for public review. The Pittsboro Elementary School is on the list to be notified regarding air permit decisions in Hendricks Co. The permit has been revised to require that the monitoring site at the School be operated for a minimum of 5 years. The permit has also been revised to delete the requirement to collect relative humidity, solar radiation, and UV radiation. If that data is required in any future analysis, it can be obtained from the National Weather Service at the Indianapolis International Airport.

Due to these comments, the post construction monitoring condition is revised as follows:

C.15 Post Construction Ambient Monitoring [326 IAC 2-2-4]

Pursuant to 326 IAC 2-2-4(c)(5), the Permittee shall comply with the following:

~~(a) The Permittee shall conduct a minimum of 36 months of post-construction monitoring.~~

(**a** ~~b~~) The Permittee shall establish three (3) ambient monitoring sites at locations approved by IDEM. One of the 3 sites shall be located on or near the school property of Pittsboro Elementary School.

(**b** ~~c~~) All monitors shall meet the operating and maintenance criteria outlined in the IDEM, OAQ Quality Assurance Manual.

(i) Each monitoring site shall monitor PM10, SO2, NOx and CO.

(ii) Based on the prevailing winds, one of the 3 sites shall also monitor the following meteorological parameters:
- - wind speed,
- - wind directions, **and**
- - outdoor temperature.
- - ~~relative humidity,~~
- - ~~solar radiation, and~~
- - ~~UV radiation.~~

(c) The Permittee shall conduct a minimum of 60 months of post-construction monitoring at the Pittsboro Elementary School site and 36 months of post-construction monitoring at each of the other two (2) sites.

(d) The monitoring must be performed using US EPA approved methods, procedures, and quality assurance programs and be in accordance with plan and protocol approved by IDEM, OAQ.

(e) A monitoring and quality assurance plan shall be submitted to the:
Indiana Department of Environmental Management
Office of Air Quality, Ambient Monitoring Section
2525 North Shadeland Avenue, Indianapolis, IN

no later than 90 calendar days in advance of the start of the monitoring. The plan must be approved by OAQ prior to commencement of monitoring.

(f) Ambient data along with precision and accuracy data from the monitors shall be submitted on a quarterly basis in a format approved by IDEM, OAQ, no later than 60 days after the end of the quarter being reported.

(g) The quarterly summary of monitoring shall be submitted to IDEM, OAQ, Ambient Monitoring Section, in the same address mentioned above.

(h) ~~After 30 consecutive months of actual post-construction monitoring, the Permittee shall submit a notification of intent to discontinue the monitoring site(s).~~
~~The notification shall include the data collected, and the proof that the data has complied and will continue to comply with the National Ambient Quality Standards (NAAQS).~~
No sooner than 6 months prior to the end of the minimum monitoring period, the Permittee may submit an application to modify the permit to discontinue one or more of the monitoring sites.

The application shall include the air quality and meteorological monitoring data collected, actual emissions of PM10, SO2, NOx and CO, actual steel production information, and any addition information that would support a request to discontinue the monitoring site(s).

(i) ~~After the 36-month period of post construction monitoring, the Permittee may discontinue the post construction monitoring, unless the Permittee was notified by IDEM, OAQ to continue the monitoring.~~

~~(j) The monitoring requirements may be continued beyond the minimum 36-month period if there exists a threat to the NAAQS.~~
The commissioner shall review the information submitted by the Permittee and other available information to determine whether the proper operation of the source could potentially cause or contribute to a violation of any National Ambient Air Quality Standard or maximum allowable increase under 326 IAC 1-3-4 or 326 IAC 2-2-6.

(**j** ~~k~~) ~~Not withstanding the provisions of 326 IAC 2, a revision to this permit that deletes a pollutant to be monitored or a monitoring site shall be subject to 30-day public comment and opportunity for public hearing prior to any final action by the IDEM.~~ **Any decision regarding the application shall proceed in accordance with the significant permit modifications provisions of 326 IAC 2-7-12(d).**

(3) Monitoring of the Ambient Monitor
Who monitors the outside air equipment monitoring systems and who monitors the monitoring equipment in the plant? [Jim Murphy]

IDEM Response
SDI will be hiring contractors for maintenance and upkeep of the monitors and property. The IDEM aids in the site selection, initial setup, and calibration of the equipment and the quality assurance of the data. IDEM oversees and audits these monitors for the duration of the monitors operation. The air quality data are reported to IDEM on a quarterly basis and included with the rest of the air quality data collected around the state.

IDEM performs annual audits of the contractors to make sure their services are done correctly. The contractor is expected to replace equipment is replaced as needed and update monitors are updated every five to ten years in order to maintain quality monitoring results.

Monitoring sites are selected based on wind patterns, modeled concentrations and availability of land to establish stationary sites. Electricity, phone lines and readily accessible property are necessary.

Both SDI and IDEM will be responsible for monitoring the emissions from SDI. SDI will be directly responsible for ensuring that all any compliance monitoring equipment inside the plant is properly maintained and operating in good condition.

IDEM staff will inspect the plant on a routine basis. These inspections include a check of all monitoring systems and a review of records of compliance data required by the permit. The IDEM inspector can also review the documents required to be on site such as the CRPs and the PMPs. Visible emissions evaluations, using Method 9, to determine compliance with opacity limits, can also be performed during an inspection, or as an offsite surveillance activity.

EAF and LMS PSD BACT
(Annual Production Limitations and Overall BACT)

(1) EAF and LMS Production Limitation and Allocations

(a) Product Comparison SDI vs Qualitech
Does SDI Whitley County, IN produce the exact the same product and have the exact same equipment as SDI Pittsboro, IN? [Lois Hoffman]

(b) Production Reporting Method
How will the production levels and compliance levels in Condition D.1.1(a) reported? [David Hoggatt]

(c) Annual Production Compliance Period
The production limitations listed in Condition D.1.1(b) are based on annual basis. it is suggested that a statement be added requiring compliance to be demonstrated at the end of each month as specified in Condition D.1.1(a). [Ethan Chatfield]

(d) LSB, 1100 SBQ and 1200 SBQ - - Corresponding SO2 Limits
If the product mix changes and less 1100 SBQ and 1200 SBQ are produced, the corresponding SO2 levels in the permit be adjusted to a lb/ton level proportional to the production level of each product with a "not to exceed level" indicated by Table 2. This would enforce the appropriate operating conditions during the manufacture of low sulfur grade bar and discourage less stringent control of sulfur if SDI were to elect operating at a higher percentage of low sulfur bar. [David Hoggatt]

(e) Itemized Steel Production Allocations
The steel production restrictions in Condition D.1.1(b) should be removed. Provided emissions do not exceed the total SO_2 level modeled in the air quality analysis and the specific emission rates established for each series are attained, production allocation does not need to be limited. The above change will require modification of the Steel Production Quarterly Report. [SDI]

IDEM Response
SDI Hendricks, IN will have equipment similar to SDI Whitley, IN. However, they will be producing different steel products (bars vs beams).

SDI will submit the production levels on a quarterly basis, and will use the reports attached to the permit. SDI is required to show compliance on a monthly basis. There is no change in the draft permit due to this comment. The production limit is specified on a yearly basis, but compliance will be shown by aggregating the monthly production of any 12-consecutive month period. This period is not necessarily the calendar year.

The intent of Condition D.1.1(b) is to limit the 1100 and 1200 SBQ series to less than 20% and 15% of the annul steel production, respectively. It is not the intent to limit the Low Sulfur Grade Bar product to equal or less than 65% of the annual production. This type of product can be produced higher than 65% ratio. For example: If SDI decided to produce 100% Low Sulfur Grade

Bar, then 1100 and 1200 SBQ series will be 0% and this is still in compliance with the BACT requirement. The Low Sulfur Bar Grade Bar can also be less than 65% of full capacity, as long as the 1100 and 1200 SBQ series do not exceed their respective ratio.

To make it clearer, the % designation was changed to the exact amount, in terms of tons/year. Based on this, Condition D.1.1(b) is revised as follows:

D.1.1(b) Sulfur dioxide (SO_2) emissions from the EAF Baghouse/LMS Baghouse stack shall not exceed the following rates **with compliance demonstrated at the end of each month**:

Table 1	
Series	Production (~~% of the annual steel production~~ **tons/year**)
Low Sulfur Grade Bar	~~65~~ **no limitation***
1100 SBQ	~~20~~ **219,000**
1200 SBQ	~~15~~ **164,250**

*** Low Sulfur Grade Bar has no production restriction because it can be manufactured at any rate as long as the aggregate of the 3 different product series does not exceed the maximum annual steel production specified in Condition D.1.1(a).**

These production allocations were established consistent with the BACT analysis. his is independent of the air quality analysis. If there are no restrictions to the specialty bar, BACT would have been evaluated as if SDI is a 100% specialty bar mill. The Potential to emit and BACT analysis (technological and cost) were not based on the assumption that 100% of the production can be specialty bar. The restrictions on 1100 SBQ and 1200 SBQ can not be relaxed without re-evaluating BACT.

(2) EAF and LMS Combined PSD BACT Limit

The EAF and the LMS are both emission sources that are combined for the permit. It is my understanding that these sources must be separated in a way that insure that both are operated and can be monitored in a way to insure compliance to the BACT levels. [David Hoggatt]

As discussed, since the EAF and the LMS are separate emission units with separate control devices, they should be assigned separate emission limitations and undergo separate BACT analyses. [Ethan Chatfield]

IDEM Response

In most cases of mini mills, the EAF and LMS are designed to exhaust to a common baghouse/stack. As indicated in the Appendix B (BACT Analysis) of the TSD, there are only 3 mini mills that are listed with separate BACT limits for their EAFs and LMSs. There are approximately 24 mini mills that have been used in the evaluation that do not specify that their EAFs are separate from their LMSs.

IDEM has discussed this issue with the US EPA and additional information has been provided by SDI. Since most of the sulfur is added during tapping in the EAF, not in the LMS, the SO2 emissions exhaust through the EAF Baghouse.

The following analyses have been added as explanation why a scrubber is not feasible for the EAF. As indicated in the original BACT review and documentation, there is no EAF in existence that uses a scrubber as control.

Combined limits for emission units whose emissions are commonly combined are consistent with the BACT analysis. In the case of add on control used to control particulate matter. The BACT limit for the combined emissions from SDI's EAF and LMS are as strict as any combined or individual limit for these types of units.

In the case of SDI, Hendricks, IN, there is no advantage is treating the LMS separately from the EAF because there is no addition environmental benefit.

There is no change in the draft permit due to this comment.

EAF/LMS SO2 PSD BACT

(1) EAF and LMS SO2 PTE

Applying Conditions D.1.1(a), (b), and (d) in concert leads to a 401.04 tpy SO_2 emission possibility from the EAF and LMS.

1,095,000 x (0.65 x 0.25 + 0.2 x 1.5 + 0.15 x 1.8)/2,000 = 401.04 tpy EAF SO_2.

As 402.2 tpy SO_2 was advertised for the entire operation, this leaves 1.16 tpy SO_2 for other emission units.

If there would be an assumption that this could only originate from the gas fuel in accordance with Condition D.3.4 (and elsewhere), then the total non-EAF non-LMS fuel could not exceed 1.624 billion scf.

1.16 x 2,000 x 7,000 x 2 / 0.5 x 100 = 1.624 billion scf of gas having 0.5 grains total S per 100 scf.

There is no fuel limitation in the permit, thus the SO_2 is unlimited, a clear error.

At a possible 8,768 hours per 12-consecutive months, this is 188.92 million Btu per hour.
Using a nominal 1,020 Btu per scf: 1.624 E9 x 1,020 /8,768 = 188.92 million Btu per hour.

Subtracting the Condition D.3 reheat furnace nominal rating of 185 million Btu per hour leaves 3.92 million Btu per hour capacities for other equipment. And the 185 million Btu per hour value is not enforceable as a maximum.

As, for example, the D.5 equipment (VTD and VTD Boiler) vastly exceeds the 3.92 million Btu per hour allocation, it is shown that the advertised 402.2 tpy SO_2 potential emission is incorrect. As remedy, IDEM must re-advertise the correct amount and subject the revised draft to a new comment period or amend the draft prior to issuance to conform to the advertised amount.
[Steve Loeschner]

IDEM Response
IDEM compared the emissions calculations done by IDEM and the calculations presented by Mr. Loeschner. In addition to the significant differences in the parameters used, IDEM used emission factors in the PTE calculations, rather than in terms of the grains of the fuel:

Hours of operation: 8760 hours/year vs 8768 hours/year and

Nominal heating value: 1,000 BTU/CF vs 1,020 BTU/MMCF.

The following equation also does not arrive to the same number when re-calculated and without units, the equation is incorrect:
1.16 x 2,000 x 7,000 x 2 / 0.5 x 100 = 1.624 billion scf of gas having 0.5 grains total S per 100 scf.
1.16 x 2,000 x 7,000 x 2 / 0.5 x 100 = 6.496E9 or
1.16 x 2,000 x 7,000 x 2 / 0.5 x 100 = 6.496E5

Any minor differences in the heat value or sulfur content of pipeline natural gas have very little affect on the air quality analysis and do not affect BACT.

The maximum heat capacities of the Reheat Furnace and VTD Boiler are not necessary to be specified as enforceable limits. The enforceable limits (which are already specified in the draft permit) are the emission rates (lb/MMBTU), and this is sufficient. There is no change in the draft permit due to this comment.

(2) Sulfur Content of Raw Materials

(a) Sulfur Content

What is the sulfur content limit for the raw material? [Lois Hoffman]

(b) Scrap Sulfur Content Reporting

IDEM proposes to 'protect' the Condition D.1.1(d) SO_2 limits with Condition D.1.9 tests repeated at least once every 2.5 years. While some process ingredients are to have their S content reported, there is no such requirement for the scrap.

On p. 13 of Appendix B to the TSD at (4)(A) IDEM states: Scrap metal has 0.03 - 0.07% sulfur.

So there is at least a 3:7 variability and no control. Obviously, nothing less than a SO_2 CEM on the EAF/LMS baghouse stack can demonstrate compliance with the Condition D.1.1(d) SO_2 limits, and the permit must require such. [Steve Loeschner]

(c) Accounting of Sulfur and Its Fate

The weight of the iron as a chemical element within the scrap metal charge and within the steel products, the weight of the scrap metal charge, and the weight of the steel products are within a percent or so of each other. So, for the "low sulfur bar product," ("LSB"), where presumably S is undesired, IDEM has proposed a limit of 0.25 pounds SO_2 per ton of LSB as Condition D.1.1(d). On p. 13 of Appendix B to the TSD at (4)(A) IDEM states,

Scrap metal has 0.03 - 0.07% sulfur.

This is a potential from the S in the scrap of 1.2 - 2.8 pounds SO_2 per ton of LSB (0.03 x 2 x 2,000 = 1.2 pounds potential SO_2 per ton of LSB as a result of S in the scrap.
As this low-end 1.2 pounds potential SO_2 does not include the contributions from the S in the carbon ("C") charge, the fluxes, the materials to create the slag, etc., it is likely low by a factor of more than two.
Thus the conclusion that of the S entering the LSB process, more than 90% of it leaves via a route other than an airborne SO_2 emission. While some will leave in the product steel (desired and undesired), most will leave in the slag, some will leave in the EAF and LMS captured PM, and a fraction will leave as part of the escaped PM. IDEM provided zero accounting and zero discussion of total S input and of its fate. [Steve Loeschner]

(d) Carbon

We request that "charge carbon and injection carbon" be inserted in place of "raw materials" at the end of the sentence of Condition D.1.12. [SDI]

(3) EAF and LMS SO2 PSD BACT - - 1100 and 1200 SBQ

(a) Three Different Limits for Each Pollutant

If the proposed SO2 BACT limits are different for each of the 3 series products that are being permitted, then the permit must show the 3 BACT limits for NOx, VOC, CO, PM and PM10 on the EAF. [Lois Hoffman]

(b) High SO2 Limits

The SO2 BACT limits for the 1100 and 1200 SBQ series are too high. Since they are based on the previous owner's test, there should be an option to re-evaluate them under the new owner after they have done their testing.

Condition D.1.1(d): It is our understanding that the SO2 emission limitations for the EAF/LMS common stack is divided into multiple limitations to accommodate the production of two very different types of steel produced at the plant. As discussed, the special bar quality (SBQ) steels require the addition of a sulfur additive which results in much higher SO2 emission rate during production. Although we agree that more than one emission limitation may be necessary for this source depending on the type of steel produced, we have a number of concerns with these limitations:

- - The sulfur limitations for the 1100 SBQ and 1200 SBQ are much greater than any other "similar sources" listed in the BACT analysis. Furthermore, these limits are based on "actual test results done by the previous owner"; a test preformed by a owner who reportedly did not operate the facility efficiently and during which, Region V is unaware of the type of sulfur content in the charge carbon, amount of sulfur added, or the quality of scrap material utilized during performance of the test.

- - Although multiple emission limitations are typically not allowed for a single source, if the facility has adequately justified to IDEM's satisfaction that the SBQ steel production is a unique process and warrants a separate and higher limitation, Region V agrees that more than one limits may be necessary. We are unclear however, as to why the two SBQ steel types require separate sulfur emission limitations.

- - Enforceability: If multiple steels are being produced and compliance with the sulfur limitations is based on stack test results than we are concerned that the SBQ steels may be produced in too small of batches to obtain an adequate representative sample during the stack test to determine compliance.

Condition D.1.2: It is suggested that restrictions be placed on the sulfur content of the charge carbon and/or on the amount of additional sulfur added during the production of the SBQ steels. [Ethan Chatfield]

(c) Minimum and Maximum Sulfur Content

While there is an expectation of non-linearity, there is the expectation that, in otherwise equal circumstances, if less S is charged into the process, a lower SO_2 airborne emission will result.

On p. 13 of Appendix B to the TSD at (4)(A) and elsewhere, IDEM illegally fails to mention the availability of metallurgical coke and other C having less than 0.5% percent S content. With an enforced "extensive scrap management program" in concert with C with controlled S content, and a required and controlled surplus of CaO, $Ca(OH)_2$,

$CaCO_3$, MgO, $Mg(OH)_2$, $MgCO_3$, etc., the 65% LSB could be produced with an emission substantially less than 0.25 pounds SO_2 per ton of LSB.

With zero chemical, physical, or economic basis whatsoever, IDEM states,
Charge substitution with lower sulfur-bearing raw materials is considered technically infeasible by SDI - Bar Products Division because of the type of steel products intended to be manufactured.

On p. 19 of Appendix B to the TSD at (5) IDEM continues mentioning differences but nowhere does IDEM identify the minimum S content that LSB must contain. As that minimum is likely zero (Identify it as response to comment.), IDEM has zero case to not demand that BACT for that product—65% of the mix—be 0.20 pounds or less SO_2 per ton of LSB.
C has been used since time immemorial as a reagent to reduce iron oxides to elemental iron. SDI has a right to use it in its process. The imposition of a characteristic on a raw material item via permit terms is not a re-engineering of a source. In many permits, where applicants desire to burn oil, IDEM has required that its total S content not exceed 0.05% by weight (See, e.g., ftp://ftp2.ai.org/pub/idem/oam/14185f.pdf 165-14185-00022 Condition D.1.3(b), ftp://ftp2.ai.org/pub/idem/oam/12432f.pdf 093-12432-00021 Condition D.3.1(b), and ftp://ftp2.ai.org/pub/idem/oam/14495f.pdf 093-14495-00028 Condition D.1.1(c), all incorporated in their entirety herein by reference).

It is well within IDEM's authority to require that the C used to produce LSB have no more than 0.50% total S by weight. The absence of permit control of total S LSB process constituents in the draft is clear error.

Further, SDI should specifically be prohibited from adding C beyond that required to have the product contain the desired amount of C (and or to reduce iron oxides to iron). In circumstances where there is relatively low cost O available, EAF steel makers may intentionally charge surpluses of C with the intent of it not taking O from iron oxides, but rather from it combusting with added O for the express purpose of producing process heat at a lower cost than that of the electricity and electrode replacement cost. This activity must be prohibited, as SDI has no SO_2 control per se and there is a presumption that where the electricity is generated by C combustion, there will be specific SO_2 control. The failure of IDEM to specifically disallow the creation of heat by intentionally charged C as an element of EAF SO_2 BACT is clear error and an abuse of discretion.

[Steve Loeschner]

(d) Details of SO2 Test Results Used for BACT Analysis

The establishment of the 1.5 and 1.8 pound SO_2 per ton of product limits in Condition D.1.1(d) for "1100 and 1200 series specialty bar quality" steel products respectively must be viewed as arbitrary, capricious, an abuse of discretion, and clear error. The draft permit package—166 pages—and the only technical rationale IDEM provides for its decision to pencil those numbers into the draft is on p. 21 of Appendix B to the TSD at (6): The SO_2 BACT limits for the 1100 and 1200 series were based on actual test results done by the previous owner (Qualitech).

No dates of the SO_2 tests, results of tests, circumstances of tests, names of those doing the tests, names of IDEM employees witnessing the tests, statements by those believing the tests were representative, statements by those believing the tests were not representative—nothing—nothing of substance whatsoever was provided. Were the

tests deemed complete, or did IDEM simply cease pursuit when Qualitech shut down or when Qualitech filed for bankruptcy? Did IDEM create test summaries? As response to comment, provide *all* of this information in re SO_2:
the dates, results, and circumstances of tests performed on the Qualitech facility, the names of those doing the tests, the names of IDEM employees witnessing the tests, all statements by those believing the tests were representative, all statements by those believing the tests were not representative, a statement by IDEM compliance management as to if the tests were deemed complete and technically acceptable (no matter that one or more may have shown measured values in excess of permitted amounts and or permitted rates), a statement by IDEM as to its cessation of pursuit of Qualitech when Qualitech shut down or when Qualitech filed for bankruptcy.
Also provide the minimum and maximum S content of 1100 and 1200 series specialty bar quality steel products. *See In re Tallmadge Generating Station*, PSD Appeal No. 02-12, slip op. at 17 (EAB, 21 May 2003):
The Board and its predecessors have long held that permit issuers must adequately document their decision making processes. *See, e.g., In re Steel Dynamics, Inc.*, 9 E.A.D. 165, 191 & n.31 (EAB 2000); *In re GSX Servs. of S.C., Inc.*, 4 E.A.D. 451, 453-54 (EAB 1992). Specifically, a permit issuer "'must articulate with reasonable clarity the reasons for [its] conclusions and the significance of the crucial facts in reaching those conclusions.'" *In re Ash Grove Cement Co.*, 7 E.A.D. 387, 417 (EAB 1997) (quoting *In re Carolina Power & Light Co.*, 1 E.A.D. 448, 451 (Act'g Adm'r 1978)). (emphasis added)
"Crucial facts"—to date, IDEM has supplied none in the foundation, rationale, and calculation that produced the 1.5 and 1.8 pound SO_2 per ton of product limits alleged by IDEM to be BACT. Those limits are arbitrary and capricious. Publishing them is an abuse of discretion and clear error. [Steve Loeschner]

IDEM Response

IDEM is aware that there is specific sulfur content specified for DRI and carbon in the SDI Whitley, IN permit. IDEM does not believe it is necessary to numerically restrict the sulfur content of each specific raw material in SDI Hendricks, IN. No individual sulfur content limit will provide the mill the flexibility to adjust the composition of the raw materials as long as the overall sulfur limit is not being exceeded.

SDI's goal is to recover as much as sulfur into the product as much as possible. Therefore, the process and operational practices are designed to minimize sulfur loss, and SDI has an economic incentive to practice this. IDEM took into account at what stage of the process is sulfur added and appropriate control (if applicable)in establishing BACT.

A SO2 CEMS has been added to the permit as the BACT compliance method. SDI indicated that due to the low concentration of SO2 in the gas stream, there is a possibility of the CEMS not passing the required RATA. The SO2 concentrations are expected to be 7 to 20 ppm during production. Analyzers do not typically display a sufficient level of linearity at the lower end of the operating range. In ambient monitoring, it is common to see linearity off by as much as $\pm$ 5% across the analyzer calibration curve. This could amount to 2.5 ppm in the 0 to 50-ppm range. This level of variability would not allow the SO2 CEMS. IDEM will work with permittees to pass the RATA to overcome any issues regarding RATA.

IDEM is aware of several mini mills that have SO2 CEMS. A SO2 CEMS is being considered in a pending PSD application for Nucor Steel, IN in their meltshop EAFs.

Changes due to these comments are: deletion of the sulfur content monitoring of the scrap, addition of the SO2 CEMS, and corresponding record keeping and reporting of SO2 CEMS readings. The VOC CEMS is not removed from the requirement, it is simply clarified in terms (total hydrocarbons) it actually monitors. Details of the VOC CEMS are explained in the next pages.

~~D.1.12 Pursuant to 326 IAC 2-2, the Permittee shall monitor the sulfur content of the **scrap,** charge carbon and injection carbon added to the EAF. Vendor certifications or analyses shall verify the sulfur content of raw materials.~~

D.1.10 CO and ~~VOC~~ **SO2** Continuous Emission Rate Monitoring Requirement [326 IAC 2-2] [326 IAC 3-5]

(a) Pursuant to 326 IAC 2-2 and 326 IAC 3-5-1(d), the Permittee shall install, calibrate, certify, operate, and maintain continuous emission monitoring system(s) (CEMS) and related equipment for measuring CO and ~~VOC~~ **SO2** emissions rates in **pounds per hour** from the common EAF Baghouse/LMS Baghouse stack in accordance with 326 IAC 3-5-2 and 326 IAC 3-5-3.

(b) The Permittee shall submit to IDEM, OAQ, no later than ninety (90) days after initial start up, a complete written continuous monitoring standard operating procedure (CMSOP), in accordance with the requirements of 326 IAC 3-5-4.

(c) The Permittee shall record the output of the continuous monitoring system(s) and shall perform the required record keeping and reporting, pursuant to 326 IAC 3-5-6 and 326 IAC 3-5-7.

D.1.18(c) The Permittee shall maintain records of the readings of the CO, **SO2** and ~~VOC~~ **total hydrocarbons** CEMS.

D.1.19(b) The Permittee shall submit a quarterly report of excess emissions, using the Quarterly Deviation and Compliance Monitoring Report or equivalent, of the following:

(i) CO, **SO2** and ~~VOC~~ **total hydrocarbons** readings from the CEMS,

The other pollutants have only 1 BACT limit applicable to all the types of steel products. For example: the grain loading BACT limit for PM is the most stringent limit and it was based on the particulate control and it is independent to the type of bar produced.

In February, 1999, IDEM received a notification from Qualitech that operation had started. The mill operated for approximately 28 months. During these months, IDEM had been working with Qualitech to resolve issues regarding testing schedule and what grade of product to test; the correct capacities of the emission units that were actually installed in the plant; and compliance monitoring, among other items. Permit and enforcement meetings were held, but no final resolution was made until the plant shut down.

In September, 1999, SESCO Group performed SO2 compliance tests for Qualitech. The test protocol was approved by Marie Jackson, IDEM staff and the field tests were observed by Scott Stacey, another IDEM staff. The report and sampling procedures were also verified and found to be acceptable. The test was performed to verify compliance with the SO2 BACT limits for the LSB, 1100 SBQ and 1200 SBQ products. Test results showed non-compliance on the 3 products at 39 and 54% of the maximum capacity. This is the only SO2 test that IDEM oversaw at Qualitech.

Upon further discussion with US EPA Region 5 and SDI, the permit has been revised to provide an option to re-evaluate the SO2 limit for the specialty bars products. This option to re-evaluate the SO2 limits when IDEM determines that there is sufficient actual data to support the revision of the limits.

If the actual test and CEMS data show results lower than the SO2 limits specified in the permit, IDEM will re-open the permit, if SDI does not apply for a permit modification. This option will be specified in the permit such that SDI and the public are aware that IDEM has the plan of doing this in the future.

If the actual test and CEMS data show results higher than the SO2 limits specified in the permit, SDI may apply for a permit modification.

The averaging periods of the SO2 limits were changed from 1 hour to 24-hour period because of the installation of the CEMS. The SO2 requirement is revised as follows:

D.1.1(d) Sulfur dioxide (SO_2) emissions from the EAF Baghouse/LMS Baghouse stack shall not exceed the following rates:

Table 2		
Series	SO_2 BACT Limit (lb/ton)	SO_2 BACT Limit (lb/**24-hour period**)
Low Sulfur Grade Bar	0.25	31.25
1100 SBQ	1.5	187.5
1200 SBQ	1.8	225.0 1

(i) If the stack test required under Condition D.1.9 and the SO2 CEMS show that the SO_2 actual emission rates are lower than the SO_2 limits specified for the 1100 SBQ and 1200 SBQ indicated in Table 2, the IDEM may reopen and modify the permit to re-evaluate and adjust the SO_2 limits.

IDEM will use the authority under IC 13-15-7-2 and 326 IAC 2-7-9 to re-open and revise the SO2 limits to more closely reflect the actual stack test results and CEMS data.

(ii) If the stack test required under Condition D.1.9 and the SO2 CEMS show that the SO_2 actual emission rates are higher than the SO_2 limits specified for the 1100 SBQ and 1200 SBQ indicated in Table 2, the Permittee may apply for a permit modification to modify the permit to re-evaluate and adjust the SO_2 limits.

(iii) IDEM will provide an opportunity for public notice and comment prior to finalizing any permit modification, under the significant permit modification provisions of 326 IAC 2-7-12(d).

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

(4) Wet scrubbing - - EAF and LMS SO2 PSD BACT

Please explain why this wet scrubbing option is not feasible? Absorption of the SO2 into the scrubbing solution would likely be the controlling factor. Reaction time to reduce and/or otherwise remove the SO2 once absorbed would be controlled by the size and configuration of the reservoir. I find it difficult to accept that this option would not be technically feasible. Has this assumption been verified with an independent engineering consultant/firm?

Adsorption and absorption(c) The statement is made that "almost certainly the proper equilibrium would not exist to maintain the reduction." Has this assumption been independently verified and specifically what type of substrates were evaluated? [David Hoggatt]

IDEM Response

Add on control for SO2 emissions from the EAF and LMS have already been documented in the Appendix B of the original TSD. In summary:

(a) Wet scrubbers are technically infeasible because:

- - wet scrubbers are unable to tolerate high particulate loading in the incoming stream due to plugging of spray nozzles, packing, plates and trays.
- - wet scrubbers are steady-state control devices, which are innately incompatible with the highly variable loading in EAF and LMS off-gases.
- - SO2 concentrations would be too low due to the large volume of exhaust process gases from the meltshop. Add on controls to remove low concentrations of SO_2 from exhaust gas streams are not feasible and, in the case of a wet scrubber, would create a new waste stream for disposal.

Wet scrubbers are used in applications with high concentrations of SO_2 in the exhaust gas stream (e.g., larger coal-fired electric generating units, which have inlet SO2 concentration ranges to the thousands ppm).

There is no indication that a wet scrubber has been applied to control SO_2 emissions from an EAF.

There is also no indication that a wet scrubber has been applied to a batch type operation.

(b) Spray dryer absorber are technically infeasible because:

- - The maximum expected SO2 concentrations are very low (20 ppm nominal) and at these low concentrations, SO2 removal is ineffective.
- - Outlet concentrations of scrubbers of this size achieving 90 to 96% reduction are greater than 100 ppm.
- - Space limitations at SDI make it impractical to install this system.

(c) Dry sorbent injectors are technically infeasible because:
- - Dry sorbent injectors re not high performance control technology, especially in dry gas streams with dilute SO2 concentrations.
- - Historically, the use of hydrated lime as a reagent has approached 50% removal effectiveness for 100 to 3,000 ppm of SO2.
- - Stack test data indicate low moisture in the EAF exhaust, which when combined with the low pollutant concentration, would result in difficulty obtaining sufficient mass transfer to determine control of SO2.

(5) Other Sources of Similar Operations - - SO2

Has there been a follow up to the Keystone Steel expansion? It has been 5 months since the initial contact.

Has anyone tried to contact the Nucor Steel, AR site to clarify the operating conditions?

SDI Dekalb, IN - -Please explain why the low sulfur bar limits should be considered differently than for the slab/sheet production. This along with the Nucor, NC mill have lower SO2 limits and should be considered BACT.

Based on the above the BACT limit SO2 for the low sulfur bar should be 0.20 lbs/ton or 25lbs/hr .

Given the operational percentages provided, the weighted emission rate for all product would be 0.73 lbs/ton of SO2 with 1100SBQ bar contributing the greatest amount of 0.30 lb/ton followed by emission from the 1200 SBQ bar of 0.27 lbs/ton and finally impact of the emissions from the Low Sulfur Grade Bar at 0.16 lbs/ton. Given the magnitude of the emissions from the 2 SBQ bar stocks, the level of BACT evaluation is inadequate to set these limits.

Basing the SO2limits for SBQ on test conducted by the previous owner given both that the plant was not built as permitted and compliance record of the previous owner would not be acceptable. This especially true since the proposed emission levels are 1.7-2.9 times the originally permitted level.

The SO2 limits proposed for the SBQ product for this permit would not represent BACT but would be the 2 highest permit levels in the RBLC database. Even using the weighted average emission rate for all products of 0.73 lbs/ton SO2, this would place this mill's emissions in the highest emitting quartile of the SO2 sources listed. Unless there is a technical rational as to why the limits set forth in the original permit for these products(1100 and 1200 SBQ) were in error, these should be accepted as the maximum limits considered for SDI after a complete BACT evaluation of the higher sulfur products. (SO2 for 1200 SBQ bar production would be 1.04lb/ton or 130 lbs/hr and 0.52 lb/ton or 65lbs/ton for the 1100 SBQ bar). Finally see comment on SO2 limitation based on actual product levels (comments on D.1.1(d)) [David Hoggatt]

IDEM Response

It is not necessary to make a follow up with IL EPA, because the PSD BACT comparison between SDI Hendricks, IN and Keystone Steel, IL was not based on whether the expansion has been actually constructed or not. The comparison was based on the steel products, scrap and limits. There is no change in the permit due to this comment.

It is also not necessary to have further discussions with the Arkansas permitting agency. The reason used in the initial BACT analysis for dismissing the SO2 BACT limits of Nucor Steel AR is that they expressed in lb/hour only. The same reasoning stands.

Qualitech's SO_2 permit limit for low sulfur bars was 0.25 lb/ton; SDI has requested the same limit.

There are significant physical operational differences between Nucor Steel, NC; SDI Dekalb, IN; and the proposed SDI, Hendricks, IN:

(a) EAFs are batch-type production units, and Nucor, NC is running at twice the tonnage capacity of the proposed SDI Hendricks, IN operation.

(b) Nucor Steel, NC has meltshop roof monitors, while SDI will not have a roof monitor in the meltshop.

(c) Product differentiation results not only from final form or shape but also from metallurgical specifications dictated by end use and quality requirements. Various steel products have quite different metallurgical properties, and require significantly different processing to manufacture.

(d) One differentiation between slabs and bars is that slabs are typically rolled into flat products that have to meet stricter metallurgical quality standards, thereby requiring different raw materials than typically used for bar products.

Due to limited information during the Qualitech permit review, the level of SO_2 emissions was miscalculated when in the production of re-sulfurized bar products. The limits proposed for SDI are reflective of actual operational capabilities.

The proposed SO_2 limits for SBQ products to be manufactured by SDI are based on actual operational data plus a margin of safety for compliance, consistent with the approach used to establish SO_2 limits in the Nucor Steel, NC permit and consistent with BACT guidance.

(6) Qualitech vs SDI SO2 Comparison

I disagree that you can look at this piece of paper, page two or three, and say that outflow of pollutants are necessarily going to be lower. Specifically on sulfur dioxide, decrease of 168 tons per year. Right below it, it says comparisons based on an assumption that Qualitech would produce 100 percent of the 1200 series products. So, you know, I think before somebody can make a blanket statement like that and before I even want my statement to qualify, I need to run these numbers. [Jim Murphy]

IDEM Response

The paper that Mr. Jim Murphy is referring to is the Citizen Summary provided to the attendees of the hearing held on July 7, 2003. It is correct that without further explanation it is limited information in terms of reduction in SO2 emissions because the Citizen Summary was made with the intent of making it as short and brief as possible with the basic information that can be summarized in a page.

	Qualitech (existing permit)	SDI (proposed new permit)	Difference based on operating at 125 ton per hours capacity
Sulfur dioxide (SO_2)	Low Sulfur Bar: 0.25 lb of SO_2 emitted per ton of metal produced	Low Sulfur Bar: (65% of total product) 0.25 lb of SO_2 emitted per ton of metal produced	decrease of 168 tons per year (Comparison is based on the assumption that Qualitech will produce 100% 1200 series product).
	1100 SBQ series product: 0.52 of SO_2 emitted per ton of metal produced	1100 SBQ series product: (20% of total product) 1.5 lb of SO_2 emitted per ton of metal produced	
	1200 SBQ series product: 1.04 lb of SO_2 emitted per ton of metal produced	1200 SBQ series product : (15% of total product) 1.8 lb of SO_2 emitted per ton of metal produced	

The comparison was made on the assumption that Qualitech produced 100% 1200 SBQ series because there is no restriction in the existing permit on how much of the annual production can be produced under a specific series. In making this assumption, the decrease in emissions is the biggest difference in emissions compared to the proposed SDI plant.

There are different ways to do the comparisons and arrive at different conclusions. Comparing annual SO2 emissions for the Qualitech emissions limits in the same 65/20/15% production allocations results in an increase of 143.45 tons/year. However, this evaluation of Qualitech's limits concludes that the 1100 SBQ and 1200 SBQ limits were technically infeasible. SDI's permit contains provisions that arrive at a technically achievable BACT for these products.

EAF/LMS NOx PSD BACT

(1) EAF and LMS NOx Numerical Limit

(a) There are appears to be a typographical error in Condition D.1.1(e), the NOx emission limit 43.75 lb/hr vs 45.75 lb/hr. [Ethan Chatfield]

(b) For the current NOX recommendation, 0.35 lbs/ ton would calculate to 43.75 lbs/ton based on an assumed operation rate of 125 tons/hr. It is currently listed at 45.75 lbs/ton. [David Hoggatt]

(c) The NO_x pounds per hour limit in Condition D.1.1(e) should be 43.75. Also, the condition "…based on a 3-hour block average" should be removed since compliance will not be determined via continuous emissions monitoring. [SDI]

IDEM Response:
The NOx BACT limit in Condition D.1.1(e) has been corrected as follows:

D.1.1(e) Nitrogen oxide (NO_x) emissions from the EAF Baghouse/LMS Baghouse stack shall not exceed 0.35 pounds per ton of steel produced and 4~~5~~**3**.75 pounds of NO_x per hour~~, based on a 3-hour block average~~.

(2) EAF and LMS NOx PSD BACT - - SNCR

Has IDEM contacted Exxon to see if they were aware of a successful application of this technology (Selective Non-Catalytic Reduction (SNCR) options - Exxon's Thermal DeNO$_x$ ®) in EAF mills? [David Hoggatt]

IDEM Response:
Yes. IDEM has contacted Exxon (Mr. Dave McCaffrey, Jr., Licensing Manager, 703/846-2568) and confirmed that at this time, there are no commercial use of this control in EAF. They have made studies and presentations but no pilot study of its actual application as control on EAFs. The study is based on a limited specific temperature and time window of the EAF operations. The control technology is primarily used in industrial boilers, process heaters, incinerators, and other combustion units. There is no change in the draft permit due to this comment.

(3) Other Sources of Similar Operations - - NOx

Nucor Steel, NC - This source has clearly demonstrated the BACT limit for this type of mill. Not only have they demonstrated this capability during the permit verification stage but have sustained the level of control that resulted in the lowering of their permit level to 0.27lbs/ton NOX which would indicate that their actual emission level based on stack tests was even lower. Unless overwhelming scientific rational can be produced and independently verified by an expert in the field, I can not accept the rejection of this source as BACT because they make slabs vs bars for SDI.

Further it is difficult understand why a new permit would be granted SDI that will start up approximately 5 yrs after the Nucor facility in NC and be allowed higher limits. This is especially true if NOX is of greater concern than VOC in the generation of ozone as cited in other parts of this evaluation.

BACT for the EAF (0.27 lbs/ton) and LMS (0.02 lbs/ton) should be set at 0.29 lb/ton which is the equivalent to 36.25 pound per hour. [David Hoggatt]

IDEM Response:
There are significant physical operational differences between Nucor Steel, NC and the proposed SDI operation. As indicated in the Appendix B - - PSD BACT Evaluations , Nucor Steel NC manufactures slabs, while SDI Hendricks, IN will manufacture bars. One differentiation between slabs and bars is that slabs are typically rolled into flat products that have to meet stricter metallurgical quality standards, thereby requiring different raw materials than typically used for bar products. Product differentiation results not only from final form or shape but also from metallurgical specifications dictated by end use and quality requirements. Various steel products have quite different metallurgical properties, and require significantly different processing to manufacture.

According to Table 3 of Appendix B - - PSD BACT Evaluations - - After the Nucor Steel, NC plant was originally permitted in 1999, there have been subsequent BACT determinations made; all have a limit equal to or higher than that requested by SDI, including other Nucor plants and Beta Steel in Indiana.

BACT is based on the best achievable controls, in practice. In the case of the EAF and LMS, they are operated in conjunction with one another. Therefore, it is inappropriate to combine a limit applied to the EAF located at one source with the LMS located at another. The proposed BACT limit for Steel Dynamics is equivalent to the best combined limit achieved in practice at a single source.

(4) EAF Oxy Fuel Burners Capacity
The Condition D.1.8(a) states:
The EAF shall be equipped and operated with oxy fuel burners. Nowhere within the draft permit does there appear the capacity of these emission units and nowhere within the draft permit is there any requirement for any particular percentage of oxygen to be used therein. Nor is there any performance achievement requirement for mixed nitrogen oxides expressed as NO_X. This is clear error. [Steve Loeschner]

IDEM Response
It is not necessary to specify the capacity of the oxy fuel burners because the goal is to established BACT limits as stringent or comparable to similar existing units. Also, the burners are already fueled by natural gas.

By replacing air with pure oxygen directly in the EAF's molten steel, oxy fuel burners improve heat transfer, reduce emissions and improve melting efficiency. Detailed description of Oxy fuel burner process can be found in Air Pollution Engineering Manual by the Air and Waste Management Association or other technical books on steel making. US EPA has also additional information in their web site.

(5) Use of Ultra Low NOx in EAF
Has IDEM evaluated all applications were these "ultra low NOX" can be used in the EAF? Since this is a BACT evaluation, provide the specific reduction in NOX that is expected using the "ultra

low NOX burners". Information submitted as part of the SDI Whitley, IN permit indicated that Todd/Radian and Coen have ultra low NOx burners that meet a limit of 0.011 lb/MMBTU over a wide range of combustion sources. Limits above this level would not be BACT.

[David Hoggatt]

IDEM Response

Ultra low NOx burner is a term of art applied to burners that are capable of meeting a NOx limit of 9 ppm at 3% oxygen or less. Ultra low NOx burner technology can only be used at its rated effectiveness in areas where combusted gas can be re-circulated to prevent additional burner contact with ambient air.

Designing a NOx control technology as a package with the boiler, factors such as capacity, turndown, efficiency and CO levels have to be addressed.

SDI Whitley, IN PSD permit was issued in July, 1999 and revised in January, 2001 and this permit has been scrutinized, commented, and appealed. NOx is one of the pollutants that has gone extensive review during the SDI Whitley, IN permit. The result of this review was a NOx BACT limit of 0.35 lb/ton. It is not necessary to re-evaluate, to re-state or re-visit the same process because no EAF has a lower BACT limit for NOx.

EAF/LMS CO PSD BACT

(1) Operating Practice Modification
Please provide a more detailed explanation of the operating parameters that could be used to effect the CO emission and the impact each would have on the operation. For each impact cite a reference to support the claimed effect. [David Hoggatt]

(2) Oxygen Injection
Does the failure cited in this section a technology failure and/or an operational failure do to lack of experience by the previous owner. If this technology would work, what impact would it have on the emission levels proposed for this permit given the difference in raw materials? [David Hoggatt]

(3) DSE
What are the CO reduction percentages afforded by this technology. How is it controlled and monitored? Can the system be adjusted and if so how it is actively controlled to minimize CO. It is directly linked to the CO CEM? [David Hoggatt]

I want to know the SDI inspection program that will prevent the DEC duct from being clogged, because it really raised that Alabama steel plant CO limit. [Lois Hoffman]

(4) EFSOP
The BACT evaluation of CO for the EAF using EFSOP does not present sufficient facts to determine the feasibility of this technology. Further IDEM has speculated that this technology would not yield additional results if other control devices were in place. Further data is needed to complete this assessment. [David Hoggatt]

(5) Other Sources of Similar Operations - - CO
Keystone Steel, IL - - Second paragraph. If in fact IDEM is most concerned about NOX over CO emission, then this would support recommendation that I have made concerning the lower NOX limit. (see comment in the NOX section for EAF) Please provide the mechanism and the necessary conversion factors for the generation of ozone from NOX. (i.e. if it takes 4000 moles of NOX to generate 1 mole of ozone, compared to 500 moles of VOC per mole of ozone generated.) This impacts how this permit should be evaluated.

IPSCO, IA - - The BACT level should be set after reviewing the issues above. Under no circumstances would a rate of 2.0 lbs/ton be acceptable. See the comment in the General Section concerning "Good Working Practices".

Table 15 - - EAF CO BACT of Other Similar Sources - - Regardless of the rational, under this proposal IDEM is supporting the combined emission level from NOX and CO for SDI at a level 27% higher per ton produced. Given the magnitude of this difference I would request that IDEM reevaluate it's elimination of 1.34 lbs/ton as a CO BACT level and/or make the necessary adjustments to the NOX level. David Hoggatt]

IDEM Response
Operating parameters affecting CO emissions include “optimizing” the use of :
(a) Oxyfuel burners to assist melting
(b) Balancing carbon addition and rate

(c) Oxygen injection (lancing)
(d) Foaming slag to decreases heat loss from the melt surface

Improper balance of any of these "parameters" can reduce efficiency of the melt and increase the amount CO produced. The operating factors resulting in increased CO production also reduce production efficiencies, therefore, the company incurs costs if these factors are not optimized.

Carbon is an essential material for the production of steel. The introduction of carbon in a melting (combustion) process will result in CO. However, CO has a negative impact on steel production, therefore, removing it from the process is desirable.

Oxygen injection is not currently used in any operating mills to control post-combustion CO emissions. Even without applying post combustion reaction chamber, SDI has been specified a limit comparable to the only mill that uses this technology. This is also comparable SDI Whitley, IN CO limit and more stringent than the existing CO limit under the Qualitech permit.

Because CO is a product of incomplete combustion of carbon and carbon-containing materials, calculation of CO produced is impossible. Therefore, an emission reduction percentage cannot be calculated.

The direct shell evacuation system consists of a "fixed" water-cooled duct connected to the EAF through the furnace roof's fourth hole. The space or gap between the duct and the fourth hole is set in a fixed position to allow oxygen to enter the exiting gas stream to oxidize any CO that is present.

The CO CEM continuously measures emissions exiting the stack after the required emission control, in this case, direct shell evacuation.

The NOx limit at Keystone Steel, IL is higher than the SDI Hendricks, IN limit.

O_3 chemistry is non-linear and complex, and is dependent upon many factors including:
- - Meteorology – sunny, hot days with stagnant or slow moving air masses.
- - Mix of VOC/NOx
- - Reactivity of VOC
- - Regional Transport of O_3 and O_3 precursors
- - Biogenic VOC – can represent a significant fraction of VOC loading in a rural area. On a reactivity-weighted basis, biogenic VOC plays a major role in O_3 formation (see Smokey Mountains and some southern Indiana counties within Hoosier National Forest.)

In general, O_3 is a regional pollutant significantly influenced by pollutant transport.

Regional transport of upper level NO_x from electric generating units has been identified as a significant contributor to O_3 pollution in the Eastern United States (see NO_x SIP Call).

The role of VOC in O_3 depends on both the species of VOC and the local mix of ozone precursors.

Studies, performed by US EPA and the Lake Michigan Air Directors Consortium (LADCO), indicate NO_x is a far more potent O_3 precursor than CO. Additionally, ambient levels of NO_x are significantly greater than ambient levels of CO.

Ozone transport (ozone and its precursors of NOx and VOC carried from upwind sources) is considered a large portion of the elevated ozone concentrations during hot, sunny summer days. IDEM modeling computer programs indicates increased ozone with southerly winds and decreased ozone concentrations with a northerly wind. The general nature of ozone production in the area and reductions in emissions from upwind areas will ultimately reduce ozone formation downwind.

EAF/LMS VOC PSD BACT

Other Sources of Similar Operations - - VOC

(a) SDI, Whitley, IN
Has SDI provided an update on the results of their compliance tests? If they are confirmed then this should be considered BACT. [David Hoggatt]

(b) Nucor Steel, AR
The analysis indicated that SDI will be using a different grade of scrap and therefore Nucor should not be used for BACT. This seems to be backwards. The grade of scrap used should be impart governed by the product made and the capability of the plant (including the emissions control systems).

Based on the above, the maximum level of VOC that should be considered is 0.09 lbs/ton or 11.25 lbs/hr. See comments in the General Section on the good combustion practices and the scrap management plan.

(c) Charter Steel, WI
IDEM wrote at (7) on p. 22 of Appendix B to the TSD:
On February 11, 2003, Wisconsin Department of Environmental Management (Don Faith 608/267-3135) was contacted regarding the only steel mill in their area. Charter Steel, WI was issued a modification in 2000. The VOC limit of 0.06 lb/ton was a source self imposed limit to avoid LAER and Class I federal requirements, because the source is located in an ozone nonattainment area. This mill operates at higher quality strict scrap and raw materials (containing the possible minimum oils and other non metallic materials*)* to comply with this VOC limit. In addition to using higher quality scrap, the mill produces different carbon steel products (high quality grade automotive market). SDI, Hendricks, IN is going to produce steel bars.

Charter Steel, WI has a higher NO_X BACT limit than that was being proposed for SDI, Hendricks, IN. The IDEM OAQ believes that this is due to the stringent VOC limitation, and for meltshop operations, NO_X is more significant contributors of emissions than VOC, thus, based on this it is appropriate to not require SDI, Hendricks, IN to further reduced the VOC emissions. [*sic*] (emphasis added)

First, as response to comment, publish everything in the Charter Steel, WI permit that serves to control what goes into the process (including all scrap management plans and other documents that may not be a part of that permit.

Second, explain in great detail why that restriction should not be applied as a part of EAF VOC BACT for SDI. In earlier comment I noted that, effectively, the charge content alleged by IDEM to be controlled by the draft permit is, in fact, unlimited—clear error.

The amount of C in the product is nearly irrelevant in VOC emission. Where C needs to be added, it can be added in a form that has nearly no H. In many respects, it is the avoidance of H in the charge materials that serves to reduce VOC emissions. “IDEM believes....” is totally unsupported by any technical text whatsoever. And IDEM provided zero economic data in its EAF VOC BACT draft determination. Specifically, a permit issuer “‘must articulate with

reasonable clarity the reasons for [its] conclusions and the significance of the crucial facts in reaching those conclusions.'"

"Crucial facts"—to date, IDEM has supplied none in the foundation that produced the EAF VOC BACT. The draft is patently illegal. This is abuse of discretion and clear error.

The Condition D.1.1(g) limit must be reduced to 0.060 (not 0.06) pounds VOC per ton of steel produced and simultaneously, no more than 7.50 pounds per hour in a 3-hour block average. See:

(a) Tallmadge Generating Station, PSD Appeal No. 02-12, slip op. at 17 (EAB, 21 May 2003): The Board and its predecessors have long held that permit issuers must adequately document their decision making processes.
(b) Steel Dynamics, Inc., 9 E.A.D. 165, 191 & n.31 (EAB 2000);
(c) GSX Servs. of S.C., Inc., 4 E.A.D. 451, 453-54 (EAB 1992).
(d) Ash Grove Cement Co., 7 E.A.D. 387, 417 (EAB 1997) (quoting In re Carolina Power & Light Co., 1 E.A.D. 448, 451 (Act'g Adm'r 1978)). [Steve Loeschner]

IDEM Response

At this time, the VOC test results of SDI Whitley, IN are being evaluated. The VOC CEMS measures the total hydrocarbons, which consists of VOC and non-VOC, such as methane. The limit was specified for VOC only. A single stack test result does not represent BACT. IDEM's analysis is consistent with the top down BACT methodology in the US EPA NSR Workshop Manual. This BACT guidance also allows a margin when setting up numerical BACT limits.

First: The permit information of Charter Steel, WI can be found in the permitting agency's website: http://www.dnr.state.wi.us/org.aw/air/permits. IDEM will not attach a copy of the Charter Steel, WI permit and supporting documents that were used in this evaluation because they are accessible electronically through the above-mentioned website. PSD BACT and LAER information of Charter Steel, WI are also available in the US EPA RBLC data base.

IDEM adequately documented its review process in the TSD and any clarifications or changes to be made after the comment period is documented in the TSD Addendum. These documents are available to the public.

Second: The VOC BACT limit specified for Charter Steel, WI was a self imposed limit to avoid LAER and Class I requirements. But this is not the reason why the VOC limit was not used as BACT for this review. Differences in scrap, products and customer base between the 2 mini mills were the factors used in the BACT analysis. The product made does dictate the type and quality of scrap used. In the case of both plants identified by the commentator, the products that they make dictate the use of different types and quality of scrap.

Upon further evaluation, it was determined that the VOC BACT limit for the SDI Hendricks, IN to be as stringent as any VOC limit for steel bar. The VOC condition is revised as follows:

D.1.1(g) Volatile organic compound (VOC) emissions from the EAF Baghouse/LMS Baghouse stack shall not exceed ~~0.13~~ **0.09** pounds per ton of steel produced and ~~16.25 .~~ **11.5** pounds of VOC per hour~~, based on a 3-hour block average.~~ This VOC limit also satisfies the requirements under 326 IAC 8-1-6.

At the same time, it was determined that the CEMS measures total hydrocarbons, not only VOC, thus separate requirements for VOC (compliance testing) and total hydrocarbons (CEMS) have been added:

D.1.9 (a) Pursuant to 326 IAC 2-2, and 40 CFR 60.270a (Subpart AAa), within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up of the modified EAF, the Permittee shall perform testing on the common EAF Baghouse/LMS Baghouse stack for the following:
(i) Filterable PM,
(ii) Filterable and condensible PM_{10},
(iii) SO_2,
(iv) NO_x ~~and~~
(v) Lead **and**
(vi) VOC

(h) The PM, PM_{10}, SO_2, NO_x, **VOC** and Lead tests shall be repeated at least once every 2.5 years from the date of a valid compliance demonstration.

D.1.10 CO and ~~VOC~~ **SO2** Continuous Emission Rate Monitoring Requirement [326 IAC 2-2] [326 IAC 3-5]

(a) Pursuant to 326 IAC 2-2 and 326 IAC 3-5-1(d), the Permittee shall install, calibrate, certify, operate, and maintain continuous emission monitoring system(s) (CEMS) and related equipment for measuring CO and ~~VOC~~ **SO2** emissions rates **in pound per hour** from the common EAF Baghouse/LMS Baghouse stack in accordance with 326 IAC 3-5-2 and 326 IAC 3-5-3.

(b) The Permittee shall submit to IDEM, OAQ, no later than ninety (90) days after initial start up, a complete written continuous monitoring standard operating procedure (CMSOP), in accordance with the requirements of 326 IAC 3-5-4.

(c) The Permittee shall record the output of the continuous monitoring system(s) and shall perform the required record keeping and reporting, pursuant to 326 IAC 3-5-6 and 326 IAC 3-5-7.

D.1.12 **Total Hydrocarbon Continuous Emission Rate Monitoring Requirement**
~~Sulfur Content of Raw Materials [326 IAC 2-2]~~
~~Pursuant to 326 IAC 2-2, the Permittee shall monitor the sulfur content of the charge carbon and injection carbon added to the EAF. Vendor certifications or analyses shall verify the sulfur content of raw materials.~~

(a) Pursuant to 326 IAC 2-2 (PSD), 326 IAC 2-7-5(3), and 326 IAC 3-5-1(d), the Permittee shall install, calibrate, certify, operate, and maintain a continuous emissions monitoring system (CEMS) for measuring total hydrocarbons

emissions rates in pounds per hour from the EAF Baghouse/LMS Baghouse stack, in accordance with 326 IAC 3-5-2 and 326 IAC 3-5-3.

(b) The Permittee shall submit to IDEM, OAQ, within ninety (90) days after monitor installation, a complete written continuous monitoring standard operating procedure (CMSOP), in accordance with the requirements of 326 IAC 3-5-4.

(c) The Permittee shall record the output of the system and shall perform the required record keeping and reporting, pursuant to 326 IAC 3-5-6 and 326 IAC 3-5-7.

(d) Unless operated under conditions for which the Compliance Response Plan specifies otherwise, the pound per hour rate of the total hydrocarbons, based on a 3-hour block shall be maintained at or below the maximum concentration established during the latest stack test. The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when the ppm reading is outside of the above mentioned range for any one reading. Failure to take response steps in accordance with Section C - Compliance Response Plan - Preparation, Implementation, Records and Reports, shall be considered a violation of this permit.

EAF/LMS PM and PM10 and Opacity PSD BACT

(1) Other Sources of Similar Operations - PM and PM10

Source testing from Nucor Steel, IN indicate that they were able to comply with particulate and condensable fraction of 0.0018 gr/dscf (Ramcon 6/6/97). Given this result, this represent BACT and all PM and PM10 limits must be changed to meet this BACT level.

Why are the SMI Steel, SC and the Nucor Steel, UT not used to set the BACT limits for PM10? If they do not contain the condensable can IDEM confirm that it would be reasonable to have condensable level that represent the difference between the levels for these plants and the 0.0052gr/dscf level suggested? [David Hoggatt]

IDEM Response

As shown in Table 11 of Appendix B - - PSD BACT Evaluations, the proposed limit is consistent with BACT limits applied to 10 steel mills permitted since 1995.

SDI will be required to use a negative pressure fabric filter baghouse that :

(a) has a higher particulate collection efficiency than a wet scrubber and

(b) results in application of the most stringent filterable PM limitation.

The proposed EAF PM_{10} (filterable and condensible) limit is consistent with the use of a fabric filter baghouse. The condensible fraction is not a regulated pollutant. Nucor's limit is 0.0052 gr/dscf for total PM10. A single test result is not the basis for establishing BACT. Permitting agencies must provide a reasonable margin for compliance. There is no change in the draft permit due to this comment.

(2) EAF and LMS PM and PM10 BACT - - Wet scrubbing

Please explain why this option (wet scrubbing) is not feasible. Wet scrubbing could also be used to further reduce the PM/PM10 emission. I find it difficult to accept that this option would not be technically feasible. Has this assumption been verified with an independent engineering consultant/firm? [David Hoggatt]

IDEM Response

Wet scrubbers are technically feasible to control particulate however, they are not as efficient as baghouse.

There are no known applications of a wet scrubber used to control PM emissions from an EAF.

Use of scrubbers cause the following environmental and energy impacts:

(a) higher pressure drop range (ranging from 6 - 20 inches of water), resulting in higher operational utilities usage and costs, and

(b) generation of large quantities of sludge along with the associated problem of sludge handling, de-watering, and disposal.

The main technical problem associated with the operation of wet scrubbers is the presence of high particulate loading in the EAF exhaust gas. Particulates are not acceptable in the operation of wet scrubbers because they would plug spray nozzles, packing, plates, and trays.

If there are other control technology that can attain the same control efficiency performance, in this case a Baghouse (99% or greater), the control technology with less collateral environmental and energy impacts is to be considered as BACT. This BACT limit is the most stringent limit for EAF or LMS and it is not necessary to evaluate other control technology.

There is no change in the draft permit due to this comment.

(3) EAF and LMS - - Baghouse Different Materials

Further as part of the BACT analysis, IDEM did not completely explore the potential efficiency that bags of different materials of construction (Goretex, etc). could afford. This is clearly an incomplete analysis of the technology. Instead they focused on the issue of positive and negative pressure baghouse operations. While baghouse configurations is a factor, it should not be the only factor evaluated. [David Hoggatt]

IDEM Response

IDEM has specified the PM and PM10 limits that are among the most stringent limits in accordance with top down BACT. SDI will choose bag material and other factors relevant to the baghouse design necessary to comply.

(4) EAF and LMS Multi Compartment Baghouse

What happened to the air quality during the 6-hour period that SDI have a failure in a multi compartment baghouse, if OAQ decided that SDI does not have to shut down the EAF during this failure? Will SDI be required to take air quality tests during that failure time?

If the OAQ has decided not to require the EAF to be shutdown in the event of a multi compartment baghouse failure, then OAQ should require complete air quality monitoring at the baghouse during the failure time. If PMP is strictly followed then defected equipment will be replaced before a multi compartment baghouse failure. This is another reason to require PMP to be written and approved before the permit is issued. It validates the request for shorter time frames in turning in test reports, compliance monitoring, and long term ambient monitoring.
[Lois Hoffman]

IDEM Response

Isolated bag failure in a multi compartment baghouse should not have significant impact on air quality. For multi compartment baghouses, if one compartment fails, it is taken off stream and the other compartments can usually control the emissions such that limits and opacity are still within compliance. SDI is not required to perform a stack test during a baghouse failure because it is not feasible to do a test in such a short time and notice. However, SDI is required to perform actions to correct such failure and should be complying with all applicable requirements. Other back up compliance methods and tools such as the COM will enable SDI to show compliance and decide if to continue the operation or shutdown.

(5) EAF and LMS Opacity BACT

(a) Please provide the BACT for the visible(opacity) emission level of 3%. [David Hoggatt]

(b) Permit issued for Qualitech state visible opacity from the Meltshop operation not exceeds 5% opacity, based on a 6-minute average. why has this increase to 6% opacity?

[Lois Hoffman]

IDEM Response

The 3% opacity limitation is established by using the federal regulation 40 CFR Part 60 Subpart AAa as the reference. Since this is the most stringent existing opacity limit, it is considered BACT.

IDEM can not find the 5% opacity in the Qualitech's permit and its supporting documents that is referenced in the comment. The opacity required for the meltshop operations under the federal NSPS rule is 6% opacity. There is no change to the draft permit due to this comment.

EAF/LMS PM and PM10 NSPS

(1) EAF PM and Opacity NSPS Limits

(a) Is the PM cited in Condition D.1.3(a) PM or PM10? [David Hoggatt]

(b) Is the PM (0.00052 gr/dscf) from the EAF listed correctly in the TSD? [Lois Hoffman]

IDEM Response
The particulate emissions referred to in this condition are PM. For clarification, the condition was revised as follows:

D.1.3(a) Pursuant to 40 CFR 60.272a(1), the particulate matter **(PM)** emissions from the EAF Baghouse/LMS Baghouse stack shall not exceed 0.0052 gr/dscf.

The PM limit was incorrectly written in the TSD. The correct PM limit is 0.0052 gr/dscf. This typographical error appears in the TSD only, the permit has the correct limit. The TSD is not changed in order to keep historical records and original review made from the time the permit is drafted until a final decision is made.

(2) EAF PM Limits Depending on the Production

The SDI Whitley, IN permit ties the PM and PM10 at several sources to the actual production levels such that equal enforcement can be achieved at less that full production. This provision must be added to all applicable conditions in this permit. [David Hoggatt]

IDEM Response
It seems that the PM and PM 10 limits that is being referred to in this comment that are tied to the actual production levels are the allowable particulate emissions under the rule 326 IAC 6-3-2. SDI Whitley, IN has particulate limits under this rule in addition to the PM PSD BACT limits.

As explained in the TSD of this SDI Hendricks, IN review, the requirements of 326 IAC 6-3-2 are not applicable if there are more stringent applicable requirements such as PSD. This rule is different from the version that was in existence during the SDI Whitley, IN permitting review. 326 IAC 6-3-2 was revised on May, 2002, because there is no environmental benefit to having particulate limit that is more lenient than a PSD limit in the same permit. There is no change due to this comment.

(3) EAF PM and Opacity NSPS Rule Citations

The citations listed for Conditions D.1.3(c) and (d) should be 60.272(a)(a)(3) and 60.272a(b), respectively. [Ethan Chatfield]

IDEM Response
IDEM agrees with this comment. The conditions are revised as follows which includes corrections of the citations of the rest of the condition.

D.1.3 PM and Opacity [40 CFR 60.272a]

(a) Pursuant to 40 CFR 60.272a**(a)(**1), the particulate matter **(PM)** emissions from the EAF Baghouse/LMS Baghouse stack shall not exceed 0.0052 gr/dscf.

(b) Pursuant to 40 CFR 60.272a**(a)(**2), the visible emissions from the EAF Baghouse/LMS Baghouse stack shall not exceed 3% opacity, based on a 6-minute average.

(c) Pursuant to 40 CFR 60.272a**(a)(**~~2~~**3)**, the visible emissions from the Meltshop operations shall not exceed 6% opacity, based on a 6-minute average.

(d) Pursuant to 40 CFR 60.272~~(a)~~**(b),** the visible emissions from the EAF Dust Handling System shall not exceed 10% opacity, based on a 6-minute average.

(4) EAF Dust Handling Opacity Limits

The units in D.1.1(k) and D.1.3(d) appear to be the same control points, but with different values. Unless justified by technical infeasibility, the lower value of 3% must be used. [David Hoggatt]

IDEM Response

It is correct that these 2 conditions are referring to the same operation and control. It is also correct that the opacity limits specified are different. This is because the more stringent limit (3%) is based on PSD BACT and the other opacity limit (10%) is under the NSPS 40 CFR Part 60, Subpart AAa. These are 2 different requirements and both have to be specified. There might be an instance that SDI exceeds the 3% opacity and have a violation cited for it, but may not necessarily mean they have to be cited for the NSP requirement if they did not exceed the 10%.

There is no change due to this comment.

D.1.1(k) Visible emissions from the EAF Dust Handling system shall not exceed 3% opacity, based on a 6-minute average as determined in 326 IAC 5-1-4.

D.1.3(d) Pursuant to 40 CFR 60.272a(b), the visible emissions from the EAF Dust Handling System shall not exceed 10% opacity, based on a 6-minute average.

(5) EAF Fugitive Emissions Opacity

The units in D.1.1(l) and D.1.3(c) appear to be the same control points, but with different values. Unless justified by technical infeasibility, the lower value of 3% must be used. [David Hoggatt]

IDEM Response

It is correct that these 2 conditions are referring to the same operation and control. It is also correct that the opacity limits specified are different. This is because the more stringent limit (3%) is based on PSD BACT and the other opacity limit (6%) is under the NSPS 40 CFR Part 60, Subpart AAa. These are 2 different requirements and both have to be specified. There might be an instance that SDI exceeds the 3% opacity and have a violation cited for it, but may not necessarily mean they have to be cited for the NSP requirement if they did not exceed the 6%.

There is no change due to this comment.

D.1.1(l) Fugitive emissions generated at each EAF during each complete cycle from tap to tap shall not exceed 3% opacity when emitted from any roof monitor or building opening, based on a 6-minute average as determined in 326 IAC 5-1-4.

D.1.3(c) Pursuant to 40 CFR 60.272a(a)(3), the visible emissions from the Meltshop operations shall not exceed 6% opacity, based on a 6-minute average.

EAF/LMS PSD Minor Limits of other regulated Pollutants

(1) PSD Minor Pollutants

(a) Please show the basis calculations for the limitations listed in Condition D.1.4. [Ethan Chatfield]

(b) The following pollutants should be removed from Table 3: sulfuric acid mist, vinyl chloride, hydrogen sulfide, total reduced sulfur and asbestos. The statement below the table makes it sound like SDI will limit emissions of these pollutants in order to qualify as a PSD minor. However, this is not correct. We have never had the potential-to-emit nor would we ever be expected to have the potential-to-emit these pollutants. Therefore, there is no basis for their inclusion. [SDI]

IDEM Response

The emission rates (lb/hour) were derived from the PSD significant levels of each pollutant as indicated in 326 IAC 2-2(jj). The methodology used is as follows:

Emission Rate = (PSD Significant level tons/year)*(1 year/8760 hours)*(2000 lb/ton)

IDEM agrees to remove the regulated pollutants in the table that are not expected to be emitted from the meltshop.

D.1.4 PSD Minor Pollutants [326 IAC 2-2]

The Permittee shall emit less than the following emission rates from the EAF Baghouse:

Table 3		
Pollutant	Emission Rate (lb/hr)	**PSD Significant Level (tons/year)**
Lead	0.134	**0.6**
Beryllium	5.75×10^{-5}	**0.0004**
Fluorides	0.68	**3.0**
Mercury	0.023	**0.1**
~~Sulfuric Acid Mist~~	~~1.6~~	~~7.0~~
~~Vinyl Chloride~~	~~0.228~~	~~1.0~~
~~Hydrogen Sulfide~~	~~2.28~~	~~10.0~~
~~Total Reduced Sulfur~~	~~2.28~~	~~10.0~~
~~Asbestos~~	~~0.0016~~	~~0.007~~

(2) PSD Minor Pollutants - - Hydrogen Sulfide

Table 3 Please comment on the potential for hydrogen sulfide to impact the community (toxic effects at low level including extremely low level of odor(rotten egg smell) /tolerance)

Were the H2S levels reported in Table 3 generated on an average production rate?

Were simulation conducted evaluating non-even dispersion condition and during peak emission during the 1200 SBQ production and worst case weather? [David Hoggatt]

IDEM Response

As a background, Hydrogen sulfide, H_2S:

- - is a colorless, extremely poisonous gas,
- - has a very disagreeable odor, much like that of rotten eggs (as indicated by the commentator)
- - is slightly soluble in water and is soluble in carbon disulfide.
- - forms a very weak dibasic acid that is sometimes called hydrosulfuric acid when dissolved in water.
- - is flammable;
- - is found naturally in volcanic gases and in some mineral waters.
- - is often formed during decay of animal matter.
- - - is a part of many unrefined carbonaceous fuels, e.g., natural gas, crude oil, and coal;
- - is obtained as a byproduct of refining such fuels.

Potential effect to the community are:

- - affect breathing in and by passing through the skin and can irritate nose and throat.
- - can irrigate the eye and long exposure can cause pain and redness of the eyes with blurred vision.
- - exposure can cause nausea, dizziness, confusion, headache and trouble sleeping.
- - can cause death at very high exposure.

There are no expected H2S emissions from mill. The H2S level indicated in the Table 3 of the draft permit is the rate derived from the PSD significant level. This illustrates why the IDEM has removed these limits from the permit. It gave the impression that certain pollutants would be emitted when in fact they will not.

EAF/LMS HAPs

D.1.5 - - Hazardous Air Pollutants (HAPs)
As a result of public outcry, the SDI Whitley, IN permit contains strong constraints on HAPs toxic emissions. Even though the PTE lead emission is only slightly lower in the SDI, Hendricks, IN permit, no restraining condition exist. The SDI Whitley, IN permit conditions must be applied to this permit. This would be especially true given the proximity of the local school. [David Hoggatt]

IDEM Response
It is incorrect that the draft SDI Hendricks, IN permit does not have provisions regarding HAPs. The SDI Hendricks, IN draft permit has 3 separate conditions for HAPs that are identical to the These requirements are the same requirements that are in the SDI Whitley, IN permit.

The conditions that deal with HAPs are:
- - D.1.4 (PSD Minor Pollutants),
- - D.1.5 (HAPs) and
- - D.1.9 (Testing Requirements) .

Additional information on IDEM's authority to regulate and evaluate HAPs can be found in the SEA 259 report.

There is no change in the draft permit due to this comment.

EAF/LMS PSD Scrap Management Plan (SMP)

(1) SMP - - Meaning of Free

Condition D.1.8(c) is alleged by IDEM to in some way control, bound, limit, restrict, etc. the substances that SDI may subject to iron-melt heat as the most dominant mill raw material: All grades of scrap shall be *free of* non-ferrous metals, non-metallics, excessive dirt, oil, grease, and tin plate. Heavily oiled scrap shall not be used. (emphasis added)

"Free of" means without—possessing zero. As lead, zinc, and manganese are non-ferrous metals, scrap having some of any of those shall be excluded. As chlorine and sulfur ("S") are non-metallic, scrap having some of either shall be excluded. No matter if arsenic is deemed non-metallic or metallic, it must be deemed non-ferrous and excluded. Scrap having some arsenic shall be excluded. As written, there is likely no scrap in the world that is acceptable for use. Consequently, there is no possibility of mill operation, and IDEM shall not issue a permit with the knowledge that it cannot be used.

If IDEM responds that its "free of" phrase means equal to or less than some *de minimis* value; then IDEM has the burden of providing the numeric *de minimis* values for *each* constituent in the list to which "free of" is to apply that are not arbitrary nor capricious and it must provide federally enforceable permit conditions such that it may be readily known whether or not each controlled constituent is at or below the *de minimis* value at all times as a practical matter.

Permit texts are to be technical and definitive. The word "excessive" in IDEM's text is capricious and it is an unlawful use of discretion. Permit texts are to be unambiguous. There is no way to discern if "excessive" is to apply to dirt only or if it is to apply also to the terms following dirt. Nor is it possible to resolve if dirt, oil, grease and tin plate are to be excepted from the first two restrictions (free of non-ferrous metals and simultaneously free of non-metallics).
The conclusion is clear, no part of Condition D.1.8 serves to in any way limit the charge of substances that, when subjected to iron-melt heat, will be emitted as 40 CFR 51.100(s) volatile organic compounds ("VOC") or other regulated pollutants such as condensible particulate matter which is deemed to all be that which has an aerodynamic diameter of no more than 10 microns ("PM_{10}"). [Steve Loeschner]

(2) SMP - - Availability

A scrap management control plan is a critical part of this permit and should be finalized and open to public comment before SDI permit is approved. [Lois Hoffman]

(3) Extensive SMP

Condition D.1.8(c) is alleged by IDEM to in some way control, bound, limit, restrict, etc. the substances that SDI may subject to iron-melt heat as a part of BACT, a clever legal term wherein best does not mean best (*see* 42 USC 7479(3) and 40 CFR 51.166(b)(12)) for VOC: VOC emissions shall be controlled through an *extensive scrap management program*. (emphasis added)

BACT is not to be confidential. It appears that there is no obligation that the "extensive scrap management program" be reduced to text and that that text be delivered promptly to IDEM to be public record. *And* BACT is to be public at the time the draft permit is published. *See In re*

Tallmadge Generating Station, PSD Appeal No. 02-12, slip op. at 26 (EAB, 21 May 2003): *See* http://www.epa.gov/boarddec/orders/tallmadge.pdf
The Board also noted that the permit contained no provision for the described startup/shutdown plan to be subject to the public notice and review requirements set forth in EPA regulations. *Id*. The Board held that, because of this latter deficiency, the permit "improperly allow[ed] for modification outside the permitting process." *Id*. at 554 n.22. in which the U.S. Environmental Appeals Board held that unpublished texts like an "extensive scrap management plan" improperly allow for modification of BACT outside the permitting process. The Draft permit is patently illegal.
[Steve Loeschner]

IDEM Response
The scrap management plan (SMP) was included in the application submitted by SDI and the application is part of the package that was available for the public to review. It is the same SMP used in SDI Whitley, IN. To make the plan easily available , IDEM is revising the permit to make the SMP part of the permit as an attachment (Attachment A - - SMP). SDI will follow each step in the SMP for every batch of scrap received. The request to have a public comment period for the SMP is not necessary. It is not the intention of IDEM and SDI to make this SMP confidential.

IDEM agrees with the observation that free does not necessarily mean totally zero. However, it is in SDI's advantage to inspect and accept only loads of scrap that are as visually free of oil, grease, non-ferrous materials, asbestos, chemical containers, fuel, lead and tin, as humanly possible. It has to be accepted that there might be loads now and then that might have these unwanted materials, however, in all scrap loads, SDI still has to comply with their PSD BACT limits at all times. The total hydrocarbons CEMS will also be sued to monitor emissions.

The following is revised due to these 3 comments.

D.1.8(c) VOC emissions shall be controlled through an extensive scrap management program. All grades of scrap shall **contain no observable** ~~be free of~~ non-ferrous metals, **or** non-metallics, **and shall be free of** excessive dirt, oil, grease, and tin plate. Heavily oiled scrap shall not be used.

The Permittee shall implement the scrap management plan (SMP) attached to this permit (Attachment A - SMP).

Since appeals have been used as reference in many comments, as additional information: whenever the IDEM issues a final permit, there is a memo attached to the permit ,which explains the right of interested parties to appeal. The memo also has the procedure necessary to file an appeal and the address for the Indiana's Office of Environmental Adjudication (OEA).

EAF/LMS Testing Requirements

(1) PM and PM10 Testing Methods

The permit condition D.1.9(d) lists a number of different possible methodologies for testing PM/PM10 however 60.275a(e)(1) only specifies Method 5, please explain. Also, the permit condition does not specify the sampling time and volume as stated in 60.275a(e)(1), please add these applicable requirements.

It is suggested that a provision be added, in accordance with 60.275a(e)(4) and (j) that states that the Method 9 test runs required under 60.272a(a)(1), (2), and (3) and the PM test runs be conducted concurrently. [Ethan Chatfield]

IDEM Response

The PM and PM_{10} testing in this permit is required not only because of NSPS 40 CFR Part 60 Subpart AAa but are also required under the PSD program. The citations and methods are not limited to the methods specified in the NSPS.

The Permittee is required to submit, in advance, a test protocol for IDEM review. IDEM makes sure that any methods used. It is not necessary to indicate if PM test should run concurrently because the test protocol and procedures are approved separately from permitting.

There is no change in the draft permit due to this comment. This Condition D.1.9(d) in the draft permit is now Condition D.1.9(e) in the final permit.

(2) Frequency of Testing

(a) This compliance testing in Condition D.1.9(g) is referring to the modified EAF, which consists of the EAF Baghouse/LMS Baghouse stack. As stated before the compliance testing should be more frequent to insure that the affected citizens residing near SDI are adequately protected from the harmful air pollutants. [Lois Hoffman]

(b) I would suggest moving toward a statistical based approach requiring testing annually until such time as data exist to extent the testing to every 2.5 years, but no sooner than after 10years of full scale operation. [David Hoggatt]

IDEM Response

IDEM re-evaluated the frequency of the testing and has concluded that testing once every 2.5 years is sufficient. The permit requires numerous requirements for compliance-related monitoring to ensure compliance on a day to day basis.

Even though a specific time frame for testing schedule is specified in the permit, IDEM has the authority to request for a test earlier than the scheduled time if IDEM sees that there is sufficient reason to warrant a test.

There is no change in the draft permit due to this comment. This Condition D.1.9(g) in the draft permit is now Condition D.1.9(h) in the final permit.

(3) Qualitech vs SDI Testing Requirements

(a) Does the proposed modification request less testing and monitoring of emissions than the permit given to Qualitech? Or will be more monitoring and testing? Who will do the testing and monitoring? Allowing SDI to do this is like letting the fox guard the chicken coop.
[Susan Ebershoff-Coles]

(b) Please define the time frame for the more frequent stack testing in the permit.
[Lois Hoffman]

IDEM Response
Overall, there are more frequent testing and monitoring required in this draft permit. If not, it was at least clarified why there is a difference. It is the source's responsibility to do the compliance monitoring and stack test. Most companies generally contract professional firms to conduct stack testing and the entire process is subject to close oversight by IDEM staff. In all cases, authorized DEM staff must approve test protocol in advance and must be present during the test. If testing is done without an authorized IDEM representative present, the test will not be considered valid or qualified to show compliance.

(4) SO2, NOx and Lead Test
What kind of a test for SO2, NOx, and Lead is this? [Lois Hoffman]

IDEM Response
The stack test required for SO2, NOx and Lead are required to verify compliance with the units' BACT limits. During the tests, parameter variables and ranges, such as pressure drop, temperature, air flow, grain loading, are set. The federal rule 40 CFR Part 60, Appendix A regulates the approved methods to use for testing these pollutants. Approved testing methods are Methods 6, 6A, 6B, 6C, 8 or 19 for SO2; Methods 7, 7A, 7B, 7C, 7D, and 7E for NOx; Methods 5, 5A, 5B, 5D, 5E, 5F, 5G and 17 for Particulate/Lead. There are specific test methods for specific operations. The permit does not specifically indicate the specific methods to use, because of different factors involved, for example, Method 5 is normally used for negative pressure baghouse and Method 5D is used for positive pressure baghouse. SDI will evaluate which approved methods are appropriate and IDEM will evaluate and approve the methods.

IDEM is also adding the following Lead testing requirement and the remaining portions of D.1. 9 have been re-lettered:

D.1.9(c) **The baghouse EAF dust shall be sampled and analyzed for Lead content on a monthly basis according to the procedures specified in the EPA publication SW-846-6010B, entitled Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.**

(5) Opacity Test
What does initial compliance test for opacity mean? [Lois Hoffman]

IDEM Response
Initial compliance for opacity test is a test to determine visible emissions. It is normally conducted concurrently with the particulate test, unless inclement weather interferes. Method 9 is the approved method for the opacity test. Under Method 9, the qualified opacity reader should be certified and must follow consistent and specific guidelines in terms of the position and distance

from the stack, point of observations, recording, and data reduction. Details of this guideline is written in the federal rule 40 CFR Part 60, Appendix A. The COM will provide ongoing demonstrations of the compliance status of the main stack.

EAF/LMS COM

(1) Shop Opacity

Since the EAF is equipped with a DEC system, it appears that the facility should be required to perform observation of shop opacity in accordance with 60.273a(d), however I was unable to locate this requirement in the permit. [Ethan Chatfield]

IDEM Response

Pursuant to 40 CFR 60.273a(d), a furnace static pressure monitoring device is not required on any EAF with a DEC system if observation of shop opacity are performed by a certified visible emission observer.

First, the EAF stack is going to be equipped with a COM, thus a certified visible emission observer is not necessary.

Second, the meltshop in this plant does not have a roof monitor. All operations exhaust to a stack, and there is no other expected shop opacity emissions.

As indicated in the TSD of this review: The requirement under 40 CFR 60.274a(f) and 40 CFR 60.274a(g) to monitor the free space inside the EAF is not applicable because there is no roof monitor in the meltshop.

(2) Visible Emission Notations and Opacity Readings - - 6 Hours

Does this Condition D.1.14(c)(i)(B) indicate that the plant could be emitting significant factors that effect opacity (PM/PM10?) for up to 6 hours before method 9 measures would be implemented? Minimally the conditions under D.1.14(c)(i) should be continued and the data recorded until method 9 is in place.

Under what conditions would the plant be required to shutdown if they were not able to have either COM on-line in 24 hours or a certified opacity reader? [David Hoggatt]

IDEM Response

It is correct that SDI is provided options to show compliance with the opacity limit by performing VE and then opacity readings when the COM is malfunctioning or down for a period of time. However, it is incorrect that SDI will be emitting particulate emissions that are significant and not with in the limits. COM is not the only compliance tool required to SDI to show compliance. There are other compliance methods to show compliance with the particulate emissions, such as the baghouse inspection and pressure drop readings. These requirements are to be followed at all times and serve as a back up compliance assurance when the COM is down. It will be a rare occurrence that SDI, which has an environmental staff responsible for all aspect of environmental areas, would not have a certified opacity reader available. If this happens, SDI is required to report such occurrence and IDEM will investigate and evaluate the violation.

There is no change in the draft permit due to this comment.

(3) Certified Opacity Reader Qualification

Please specify the minimum standards required to be a certified opacity reader as specified in this Condition D.1.14(c)(ii). [David Hoggatt]

IDEM Response

A certified opacity reader is a qualified reader who has gone testing and demonstrates the ability to assign opacity readings in 5% increments to different 50 black and white plumes, with an error not to exceed 15% opacity in any one reading and an average error not to exceed 7.5% opacity in each black and white category. The certification is valid for a period of 6 months, at which the qualification procedure must be repeated in order to retain the certification. These standards are consistent to all certified opacity readers because they are specified in the federal rule 40 CFR Part 60, Appendix A.

There is no change in the draft permit due to this comment.

(4) Reporting of Opacity Exceedance

We request that "readings" in Condition D.1.14(c)(iv) be changed to "exceedances" to reflect that only excess opacity readings need to be reported in the Quarterly Opacity Exceedances Report. [SDI]

IDEM Response

This portion of the condition concentrates to the time the COM is malfunctioning. It is the intent that all opacity readings, not only exceedances, during this specific time period be reported. The COM is the primary tool to show continuous compliance, thus when it is malfunction, SDI needs to document and report the opacity readings.

There is no change in the draft permit due to this comment.

D.1.14(c) Whenever a COM is malfunctioning or will be down for calibration, maintenance, or repairs for a period of one (1) hour or more during EAF operation, compliance with the applicable opacity limits shall be demonstrated by the following:

(iv) All of the opacity readings during this period shall be reported with the Quarterly Opacity Exceedances Reports.

EAF/LMS CEMS

(1) Responsible for the CEMS

(a) Who is responsible for maintaining and calibrating the CEMS? [Lois Hoffman]

(b) How often will OAQ monitor the RATA? [Lois Hoffman]

IDEM Response
SDI is responsible for installing, calibrating and maintaining the CEMS. The CEMS are required to follow quality assurance procedures pursuant to State and Federal rules.

IDEM oversees the calibration procedure to assure it is done in accordance with the approved methods. These relative accuracy test audits (RATA) are normally performed by an outside contracted company and are monitored by the IDEM. The results of the RATA is public information and the emissions reports required are to be submitted. IDEM also inspects records of the output of these CEMS.

Indiana state rules require that RATA be performed on CEMS once a year. IDEM is notified 35 days prior to the audit. Details of the RATA notification, monitor certification, quality assurance, record keeping and reporting can be found in 326 IAC 3-5-1 to 326 IAC 3-5-7.

(2) NOx, PM and SO2 CEMS

(a) For the areas of major source emissions and potential, CEMS must be required. This is strongly favored by EPA. For the stack serving the EAF/LMS this would include COM, and SO2, NOx, CO and VOC CEMS. Only continuous monitoring can provide assurance that the permit being enforced.

NOx and SO2- For IDEM not to require CEMS for NOx and SO2 they to prove that CEMS is not feasible and/or that stack testing is statistically a more robust and a superior method of determining emissions. Neither is true. As IDEM has noted, since no control devices are currently in place to lower these emissions and they are dependent on process controls and operation practices. This is the exact justification for why CEM must be required for NOX and SO2. CEM for NOX and SO2 will provide a continuous direct measure of the emissions levels and serve as a means to confirm the effectiveness of the operational methods that control and effect these emissions. CEM of SO2 and NOX must be required as BACT on the EAF. CEM of NOX and CO must be required for the reheat furnace I have noted several questions throughout the review concerning monitoring of PM. Of those areas that have a PM limit that is controlled through Opacity, IDEM is asked to justify any non -CEM technology for those applications. [David Hoggatt]

(b) The requirements to install CEMS stems from the long-standing policy of U.S. Environmental Protection Agency ("EPA") as described in the *New Source Review Workshop Manual* (Draft, Oct. 1990) ("Manual"). *See* http://www.epa.gov/ttn/nsr/gen/wkshpman.pdf via http://www.epa.gov/ttn/nsr/techinfo.html
This document is the guiding force for implementing the PSD program and review issues, and is held in high esteem by the Environmental Appeals Board ("EAB") of EPA,

the appellate authority for the PSD approvals issued by EPA and the delegated state agencies. The EAB has stated in a decision for Metcalf Energy Center *See In re Metcalf Energy Center,* PSD Appeal Nos. 01-07 and 01-08 footnote 9 at 11 (EAB, 10 Aug. 2001) http://www.epa.gov/eab/orders/metcalf.pdf , that:

In 1990, EPA issued draft guidance for permitting authorities to use in, among other things, analyzing PSD requirements. *See* U.S. EPA, Office of Air Quality Planning & Standards, *New Source Review Workshop Manual* (draft Oct. 1990) ("*NSR Manual*"). Although it is not accorded the same weight as a binding Agency regulation, the NSR Manual has been considered by this Board to be a statement of the Agency's thinking on certain PSD issues. *See, e.g., In re Tondu Energy Co.,* PSD Appeal Nos. 00-05 & 00-07, slip op. at 13 n.13 (EAB Mar. 28, 2001), 10 E.A.D. ___. (emphasis added)Manual p. B.56 states:
BACT emission limits or conditions must be met on a continual basis at all levels of operation (e.g., limits written in pounds / million Btu or percent reduction achieved), demonstrate protection of short term ambient standards (limits written in pounds / hour) and be enforceable as a practical matter (contain appropriate averaging times, compliance verification procedures and record keeping requirements).... [T]he permit must ... specify a reasonable averaging time consistent with established reference methods, contain reference methods for determining compliance, and provide for adequate reporting and record-keeping so that the permitting agency can determine the compliance status of the source. (emphasis added)
Manual p. H.6 states:
The permit should state how compliance with each limitation will be determined, and include, but is not limited to, the test method(s) approved for demonstrating compliance. These permit compliance conditions must be very clear and enforceable as a practical matter (see Appendix C)." Additionally, Manual p. H.10 Table H.2 states "Continual and continuous *emissions performance monitoring* and record keeping (direct and/or surrogate) should be specified where feasible [emphasis in original]." Manual p. c.4 in Appendix C states "Emissions limits should reflect operation of the control equipment, be short term, and, where feasible, the permit should require a continuous emissions monitor. (emphasis added)

In a guidance memo (*See* Memorandum from Terrell E. Hunt, Associate Enforcement Counsel, Air Enforcement Division, Office of Enforcement and Compliance Monitoring, and Stationary Source Compliance Division Office Of Air Quality Planning And Standards, EPA in *Limiting Potential To Emit In New Source Permitting*—13 June 1989 incorporated in its entirety herein by reference.
http://www.epa.gov/rgytgrnj/programs/artd/air/nsr/nsrmemos/lmitpotl.pdf
http://www.epa.gov/rgytgrnj/programs/artd/air/title5/t5memos/lmitpotl.pdf
on this subject EPA stated:
The particular circumstances of some individual sources make it difficult to state operating parameters for control equipment limits in a manner that is easily enforceable as a practical matter. Therefore, there are two exceptions to the absolute prohibition on using blanket emission limits to restrict potential to emit. If the permitting agency determines that setting operating parameters for control equipment is infeasible in a particular situation, a federally enforceable permit containing short term emission limits (e.g. lbs per hour) would be sufficient to limit potential to emit, provided that such limits reflect the operation of the control equipment, and the permit includes requirements to install, maintain, and operate a continuous emission monitoring (CEM) system and to

retain CEM data, and specifies that CEM data may be used to determine compliance with the emission limit. (emphasis added)
While IDEM did require some CEM for some pollutants of some SDI emission units, the number and type that are absent constitute clear error.

For IDEM to reject CEM for NO_X and filterable PM to protect the Condition D.1.1(e) NO_X and (h) filterable PM limits, IDEM must demonstrate that they are infeasible. As IDEM cannot make that demonstration, they must be required by the permit. [Steve Loeschner]

IDEM Response
IDEM agrees that CEMS are the best compliance tools, however, in most situations CEMS are used to document compliance when a control device is used to reduce emissions.

Outside of the Part 70 permitting program and 40 CFR Part 75 (Compliance Assurance Monitoring), there are a limited number of State and Federal rules which require a CEMS. Even in the 40 CFR 64, one of the criteria to require a COM is when the emission has a unit and emits major levels. In looking at this SDI plant, the EAF has a control device for CO, VOC and PM. The IDEM has required a CEM system for CO and VOC to ensure that the DEC air gap and post combustion chamber are being operated properly. Since there is a lack of other parameters that could be used to determine proper operation of this system, the IDEM concludes that CEMS were appropriate in this situation.

For PM, there are no available technologies to directly monitor mass emissions of PM. However, opacity can be used as a surrogate parameter to ensure that the control device is operating properly. The IDEM has required that SDI continuously monitor the opacity from the EAF stack. The monitoring required for PM is sufficient for determining compliance with the lead emission limitation.

For the other regulated pollutants (SO_2 and NOx) emitted from the EAF, there are no control devices used to lower emissions. Instead process controls and operating practices are used to control SO_2 and NOx. SO_2 emissions are directly proportional to the amount of sulfur being introduced into the process. Even though sulfur content of the raw materials entering the EAF can be directly monitored, IDEM is requiring SDI to install a SO2 CEMS to show continuous compliance. More frequent stack testing will provide enough information to assess compliance with the NOx limits.

For the monitors required by the permit, the Permittee will be required to operate these monitors continuously and indefinitely. The IDEM is unaware of any circumstances where the Permittee has requested and received the removal of a CEMS that is required in a PSD permit. Such request would undergo permit review and public notification process under the significant permit modification 326 IAC 2-7-12.

(3) Back up CEMS
The requirement in Condition D.1.13(b) for bringing a calibrated backup CEMS online within four (4) hours should the primary CEMS malfunction or be down for maintenance or repair is unnecessary and impractical, and should be removed. Given the capital costs and ongoing operating expense it is unreasonable to require installation and maintenance of a certified backup CEMS.

The four (4) hour time frame allowed for restoring continuous compliance monitoring and the possibility of enforcement provides more than enough incentive to resolve malfunctions, or complete repairs and maintenance in a timely manner. [SDI]

IDEM Response
IDEM worked with SDI in coming up with the best option to show compliance in case the CO CEM is down for various reasons. Based on these discussions, 4 hours to bring a calibrated CO CEMS on line is not feasible. Instead, SDI is going to do a once per shift inspection of the DSE control and canopy hood, until a calibrated CO CEMS is back on line. SDI has 3 days to put the back up CO CEM. The new requirement is as follows:

D1.13(b) ~~Whenever the CO or VOC CEMS is malfunctioning or will be down for calibration, maintenance, or repairs for a period of four (4) hours or more, a calibrated backup CEMS shall be brought online no later than four (4) hours of shutdown of the primary CEMS, and shall be operated until such time as the primary CEMS is back in operation.~~

Whenever the CO CEMS is malfunctioning or will be down for calibration, maintenance, or repairs for a period of four (4) hours or more, the Permittee shall perform once per shift operational status inspections of the equipment that is important to the performance of the DSE, canopy hood and total capture system (i.e., pressure sensors, dampers, and damper switches). This inspection shall include observations of the physical appearance of the equipment (e.g., presence of holes in ductwork or hoods, flow constrictions caused by dents or accumulated dust in ductwork, and fan erosion). Any deficiencies shall be noted and proper maintenance performed. This requirement does not replace the routine monthly inspections of the same equipment.

(c) Whenever the SO2 CEMS is malfunctioning or will be down for calibration, maintenance, or repairs for a period of four (4) hours or more, the Permittee shall monitor the sulfur content of the scrap, charge carbon and injection carbon added to the EAF. Vendor certifications or analyses shall verify the sulfur content of raw materials.

(d) **A calibrated backup CO or SO2 CEMS shall be brought online no later than seventy-two (72) hours of shutdown of the primary CEMS, and shall be operated until such time as the primary CEMS is back in operation.**

EAF/LMS Baghouse Operation

(1) Broken or Failed Bag Detection

This section is clearly deficient compared to the same section in the SDI Whitley, IN permit. Bag Detection must be required for this permit and the same or more stringent conditions must be met. [David Hoggatt]

IDEM Response

The original SDI Whitley, IN permit had the same baghouse inspection condition as the one in the draft SDI Hendricks, IN permit. The condition was changed as a result of comments from interested parties to insure that Lead emission limitation is enforceable in a practical matter. SDI is claiming that since the opacity limit (3%) is already stringent and the COM has its own alarm, there is no benefit in installing a bag leak detection system (BLDS). IN addition, SDI Whitley has not experience a BLDS alarm and has not had compliance problems with the filterable PM limit of the EAF baghouse. The filterable PM is the parameter measured by BLDS, which is the same parameter that a COM also measures.

IDEM has evaluated these claims, however, IDEM does not see overwhelming justification that a BLDS is not a good indicator of baghouse operations. The IDEM believes that in addition to the COM, to ensure that the baghouse is operating at optimum efficiency, a baghouse leak detection condition is to be added to the permit.

D.1.15 Bag Leak Detection System (BLDS)

(a) The Permittee shall install and operate a continuous bag leak detection system (BLDS).

(b) The BLDS shall meet the following requirements:

(i) The bag leak detection system must be certified by the manufacturer to be capable of detecting particulate matter emissions at concentrations of 0.0018 grains per actual cubic foot or less.

(ii) The bag leak detection system sensor must provide output of relative particulate matter loading.

(iii) The bag leak detection system must be equipped with an alarm system that will alarm when an increase in relative particulate loading is detected over a preset level established or verified during a stack test.

(iv) The bag leak detection system shall be installed and operated in a manner consistent with available written guidance from the U.S. Environmental Protection Agency or, in the absence of such written guidance, the manufacturer's written specifications and recommendations for installation, operation, and adjustment of the system.

(v) **The initial adjustment of the system shall, at a minimum, consist of establishing the baseline output by adjusting the sensitivity (range) and the averaging period of the device, and establishing the alarm set points and the alarm delay time.**

(vi) **In no event shall the sensitivity be increased by more than 100 percent or decreased by more than 50 percent over a 365 day period unless such adjustment follows a complete baghouse inspection, which demonstrates the baghouse, is in good operating condition.**

(vii) **The bag detector must be installed downstream of the baghouse.**

(c) In the event that bag failure has been observed:

(~~a~~ **i**) For multi-compartment units, the affected compartments will be shut down immediately until the failed units have been repaired or replaced. No later than six (6) business hours of the determination of failure, response steps according to the timetable described in the Compliance Response Plan shall be initiated. For any failure with corresponding response steps and timetable not described in the Compliance Response Plan, response steps shall be devised no later than six (6) business hours of discovery of the failure and shall include a timetable for completion. Failure to take response steps in accordance with Section C - Compliance ~~Monitoring~~ **Response** Plan - Preparation, Implementation, Records and Reports, shall be considered a violation of this permit.

(~~b~~ **ii**) For single compartment baghouses, failed units and the associated process will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section C - Emergency Provisions).

(2) Baghouse Pressure Drop Readings

We request that in the fifth line in Condition D.1.15(a) “a range established during stack testing” be inserted in place of “a range established during the latest stack test” at the end of the sentence. [SDI]

(3) Baghouse Inspections

(a) There appears to be a typographical error in the permit requirement Condition D.1.16(a), please correct or clarify. [Ethan Chatfield]

(b) We request that the wording in Condition D.1.16(a) be changed to read “The EAF and LMS Baghouses shall be inspected each calendar quarter. [SDI]

(c) We request that this requirement in Condition D.1.16(b) be removed since it repeats the requirements of Condition D.1.16(a). [SDI]

Since BLDS is chosen method of compliance monitoring, the requirements to monitor the baghouse pressure drop parametric monitoring and inspections are removed. Subsequent conditions have been re-numbered. The Table of Contents is also revised accordingly.

~~D.1.15 Parametric Monitoring~~

~~(a) The Permittee shall record the total static pressure drop across the EAF Baghouse and LMS Baghouse, at least once per shift when the EAF and LMS is in operation and when venting to the atmosphere. Unless operated under conditions for which the Compliance Response Plan specifies otherwise, the pressure drop across the baghouse shall be maintained within the range of 5 and 11 inches of water or a range established during the latest stack test. The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when the pressure reading is outside of the above mentioned range for any one reading. Failure to take response steps in accordance with Section C - Compliance Monitoring Plan - Preparation, Implementation, Records and Reports, shall be considered a violation of this permit.~~

~~(b) The instrument used for determining the pressure shall comply with Section C - Pressure Gauge and Other Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.~~

~~D.1.16 Baghouse Inspections~~

~~(a) An inspection shall be performed each calendar quarter of the EAF Baghouse and LMS Baghouse is configured to vent to the atmosphere.~~

~~(b) A baghouse inspection shall be performed no later than three months of redirecting vents to the atmosphere and every three months thereafter.~~

~~(c) Inspections are optional when venting to the indoors.~~

~~(d) Inspections required by this condition shall not be performed in consecutive months.~~

~~(e) All defective bags shall be replaced.~~

~~The corresponding record keeping for these monitoring has been deleted:~~

~~D.1.20(g) The Permittee shall maintain records of the following and make available upon request to IDEM, OAQ, and the US EPA:~~

~~(i) Records of the baghouses pressure drop readings.~~

~~(ii) Records of the results of the baghouse inspections.~~

~~(iii) Documentation of all response steps implemented for every pressure drop reading that is outside of the range.~~

EAF/LMS NSPS Monitoring Requirements

(1) Since the EAF is equipped with a DEC system, it appears that the facility should be subject to the requirements of 60.274a(f), (g), and (h). [Ethan Chatfield]

(2) Final paragraph in the section D.1.18(a). Please insert the wording accurate into the sentence so that it reads……"exhaust duct such that accurate and reproducible flow". [David Hoggatt]

IDEM Response
As indicated in the TSD, the requirements to monitor the free space inside the EAF are not applicable because there is no roof vent in the meltshop.

The recommended language to be added is already in the condition. Condition D.1.18 in the draft permit is now Condition D.1.16 in the final permit.

EAF/LMS Record Keeping and Reporting Requirements

(1) CO and VOC Limits with CEMS
Both Conditions D.1.20(c) and D.1.21(b) need to reflect that continuous compliance and record keeping with the CO and VOC limits demonstrated by the CEMS applies with respect to the lb/hour limit only. [SDI]

(2) NSPS Record Keeping and Reporting
We propose the following language to make these conditions D.1.20(f) and D1.21(b)(iii) and (iv) consistent with the requirements of Section D.1.18.
(f) The Permittee shall maintain records of the following:
(h) Values of the control system fan motor amperes that exceed 15 percent of the value established under 40 CFR 60.274a(c) and damper position, as recorded once-per-shift, r
(ii) Values of flow rates lower than those established under 40 CFR 60.274a(c). [SDI]

(3) NSPS Monthly Inspection Record Keeping
What are the record keeping requirements in Condition D.1.18(c) for these inspections and corrective measures? [David Hoggatt]

(4) Reporting of Excess Emissions
Condition D.1.21(b) Subdivisions (i) through (iv) should be removed because, based on the sample for provided by IDEM, the information requested is not consistent with the information to be included in the Quarterly Deviation and Compliance Monitoring Report. [SDI]

IDEM Response
These 4 sets of comments all deal with the record keeping and reporting of exceedances, readings and parameters required for the meltshop operations. IDEM agrees that there should be a complete record keeping and reporting.

The parameters specified in Condition D.1.18(a), now Condition D.1.16 need to be recorded and reported, and the corresponding conditions have been clarified as follows:

D.1.~~18~~ **16** (a) Pursuant to 40 CFR 60.274a(b), the Permittee shall check and record on a once-per-shift basis the furnace static pressure and either:
(i) Check and record the control system fan motor amperes and damper positions on a once-per-shift basis; or
(ii) Install, calibrate, and maintain a monitoring device that continuously records the volumetric flow rate through each separately ducted hood; or
(iii) Install, calibrate, and maintain a monitoring device that continuously records the volumetric flow rate at the control device inlet and records damper positions on a once-per-shift basis.

D.1.~~20~~ **18** (f) The Permittee shall maintain records of the following:
(i) ~~Values of control system fan motor amperes that exceed 15 percent of the value established under 40 CFR 60.274a(c).~~ **Records of the once-per-shift furnace static pressure and either:**

(ii) ~~Values of flow rates lower than those established under 40 CFR 60.274a(c).~~ **Records of the once-per-shift control system fan motor amperes and records of the once per shift damper positions, or**

(iii) ~~Damper positions.~~ **Records of the volumetric flow rate through each separately ducted hood, or**

(iv) Records the volumetric flow rate at the control device inlet and records of the once per shift damper positions.

D.1.~~21~~ **19** (b) The Permittee shall submit a quarterly report of excess emissions, using the Quarterly Deviation and Compliance Monitoring Report or equivalent, of the following:

(i) CO, SO_2 and total hydrocarbons readings from the CEMS,

(ii) Opacity readings from the COM,

(iii) **Furnace static pressure and either:**

(~~iii~~ iv) Values of control system fan motor amperes that exceed 15 percent of the value established under 40 CFR 60.274a(c), and **position of the damper during the exceedance or**

(~~iv~~) Values of volumetric flow rates through each separate ducted hood ~~and control device inlet, lower than those established under 40 CFR 60.274a(c).~~ **or**

(vi) Values of volumetric flow rates at the control device inlet, lower than those established under 40 CFR 60.274a(c) **and the position of the damper during this flow rate.**

The record keeping and reporting for Condition D.1.18(c) requirement was overlooked, thus additional conditions were added and subsequent conditions are re-numbered:

D.1.~~18~~ **16** (c) Pursuant to 40 CFR 60.274a(d), the Permittee shall perform monthly operational status inspections of the equipment that is important to the performance of the total capture system (i.e., pressure sensors, dampers, and damper switches). This inspection shall include observations of the physical appearance of the equipment (e.g., presence of holes in ductwork or hoods, flow constrictions caused by dents or accumulated dust in ductwork, and fan erosion). Any deficiencies shall be noted and proper maintenance performed.

D.1.~~20~~ **18** (g) **The Permittee shall maintain records of the monthly operational status inspections of the equipment that is important to the performance of the total capture system under 40 CFR 60.274a(d) and make available upon request to IDEM, OAQ, and the US EPA.**

Lastly, exceedances are required to be reported. It is SDI's choice to use the provided formatted report or its equivalent, as long as the readings and parameters are clearly identified and supporting information of the exceedances are incorporated.

Caster Roof Monitor

(1) Describe in great detail the Condition D.2 "roof monitor." This sounds a lot like a rather large roof with a rather small hole in it.

What is the "floor coverage" area of the roof and what is the effective cross-sectional area of the hole in it.

What will be the average pressure in the caster room relative to ambient atmospheric? For a short-term average, such as a minute, what will be the roof monitor average cubic foot per minute flow at the maximum expected flow rate?

40 CFR 51.166(b)(20) states: *Fugitive emissions* means those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening. A roof monitor is obviously a stack, chimney, vent, or other functionally equivalent opening. Emissions from a roof monitor are not fugitive and IDEM has the obligation to apply a full PM BACT analysis and limit to those emissions accordingly. Failure to notice this fact is clear error.

Emissions from the D.2 roof monitor must be limited not less stringently than Conditions D.1.1(h) - (l), D.1.3, D.1.7, D.1.9, D.1.11, and D.1.14 - D.1.20. IDEM provided zero rationale as to any allegation that the 0.0018 grain per dscf limit cannot be technically, economically or physically applied to the caster room roof monitor. There is nothing in the record showing that IDEM considered requiring identical filtration to control caster roof monitor openings as it did to control the EAF baghouse openings. This is a lack of diligence, clear error, and abuse of discretion. IDEM must require the caster roof monitor filterable PM concentration to not exceed 0.0018 grains per dscf prior to issuance. [Steve Loeschner]

(2) Why a roof monitor (open vent) is acceptable for this application? This source should be vented to a common baghouse. [David Hoggatt]

IDEM Response
The Caster has been described as follows:
One (1) continuous Caster with a nominal casting rate of 125 tons/hour. This Caster is located in a separate room from the EAF and LMS and the tundish is covered with a lid. **The continuous Caster vents to a roof monitor (vent).**

The roof monitor (vent) provides ventilation for the comfort of the workers. The roof monitor in the Caster area traverses the entire roof length. Openings run along both sides with a large opening in the center down the entire length. The openings are covered to prevent water from running back into the plant. Heat from processes rises and exists the building through the monitors. Heat and a small amount of PM exhaust through the roof monitor (vent).

Based on the information submitted for air quality impact analysis, there are 3 roof monitors/vents in the entire plant and each has a release height of 40.39 meters.

The PTE of the Caster was estimated to be less than 1 ton/year of particulate matter. Based on these minimal emissions, it is not economically beneficial to install a control. Installing an add-on control such as a Baghouse will add cost to the project which the company would have prefer to spend on controlling significant emission units. Additional energy usage will also occur for the add-on control operation with minimal results in reducing the emissions.

IDEM performed PSD BACT review on the Caster (see Appendix A - - PSD BACT Evaluations). The PM (pound/ton) and opacity limits were specified as BACT limits. IDEM did not go through the same extensive steps for the Caster BACT review, because based on professional and technical judgement, the conclusion will arrive at the same conclusion as it is now. The conclusion is already the most stringent BACT based on the Top Down BACT procedure.

To provide a clear picture of the arrangement of the meltshop, the following is added in the description:

Section A.2(1) One (1) batch mode EAF, with a nominal capacity of 125 tons of steel per hour, utilizing capture system on a fourth hole duct or direct shell evacuation (DSE) system venting to a baghouse (EAF Baghouse) and a canopy hood for overhead roof exhaust. The EAF is equipped with natural gas fired oxy-fuel burners and uses low sulfur charge carbon. The EAF Baghouse has a flow rate of 675,000 acf/min.

The EAF is separated by a wall from the LMS and Caster and does not have a roof monitor (vent).

Emission Units with PSD BACT Limits and No Specific Compliance Monitoring

(1) D.2.1, D.3.1, D.4.1, D.6.1 and D.7.1 - - PSD BACT

(a) The permit conditions listed specific particulate matter or other pollutant limitation but there are no monitoring or record keeping requirements to verify compliance. How are compliance with these emission limitations enforced? [Ethan Chatfield]

(b) How will the other emission levels be verified if they are not tested in the compliance demonstration? [David Hoggatt]

(c) How will this permit condition be monitored and enforced if testing is not required? Given a opacity limit, some means of measurement must be made (COM?). [David Hoggatt]

(2) D.2.1, D.3.1, D.6.1, D.7.1, D.8.1 and D.10.1 - - Opacity PSD BACT

The permit conditions listed specifies an opacity limitation however there are no monitoring or record keeping requirements to verify compliance. How are compliance with these limitations enforced? [Ethan Chatfield]

IDEM Response

These sets of comments deal with emissions units hat have limitations and minimal compliance monitoring, record keeping or reporting, if none at all. Most of these units' emissions are due to combustion. The permit limits, such as opacity, are enforced by requiring the Permittee to use natural gas as fuel. Since natural gas is consider the least emitting fuel, it is sufficient to show compliance by using pipeline natural gas. It is not uncommon that only record keeping of the raw materials or fuel to be required as a compliance tool. If smoke is coming out from these units that is clearly in violation of their opacity limits, it is the Permittee's obligation to investigate the cause and perform corrective actions and in most instances, the cause is not because of the use of natural gas.

Reheat Furnace PSD BACT

(1) Reheat Furnace Testing

(a) How will the other emission levels be verified if they are not tested in the compliance demonstration? [David Hoggatt]

(b) I would suggest moving toward a statistical based approach requiring testing annually until such time as data exist to extent the testing to every 2.5 years, but no sooner than after 10 yrs of full scale operation. [David Hoggatt]

(c) Testing for HAPs and CO testing at the Reheat Furnace should be required of SDI Pittsboro, IN. [Lois Hoffman]

(d) The trailing "s" in "testings" is a typo and should be removed in Condition D.3.5(a). [SDI]

IDEM Response
NOx is the main pollutant in consideration from the Reheat Furnace. The other pollutants are not significant. There is no need to require tests for the other pollutants because compliance is shown by using natural gas as fuel.

The condition D.3.5(a) has been revised to remove the "s: after testing.

D3.5(a) Within 60 days after achieving maximum production but no later than 180 days after startup, the Permittee shall perform NO_x testings on the Reheat Furnace.

(2) Reheat Furnace NOx PSD BACT

(a) If SDI intents to install ultra low-NOX burners, this permit should reflect those emissions based on the installation. This emission is significant and corrective actions must be required prior to start up. "Future promises" that are not legally binding and without timelines will be difficult if not impossible to enforce. [David Hoggatt]

(b) Have the cost estimates in Table 18 been verified by an independent source? [David Hoggatt]

(c) Under the cost evaluation of the SCR technology the statement is made that a certain cost/ton of emission reduction is not feasible. What is the threshold for feasibility and how is this determined? [David Hoggatt]

(d) The NOX level should not be set until there is agreement to install the ultra low NOX burner prior to start up of the facility. The permit levels should be those that are achievable using the new ultra-low NOX burners. [David Hoggatt]

(e) Air products plants ("APP," compressed ambient air cryogenic distilleries) are frequently built close to demand. Argon ("Ar"), for liquid steel stirring, is a big product. Liquid

nitrogen ("N") is a substantial expendable refrigerant. Oxygen ("O") is sold for medical uses, welding, and for removing C from liquid steel. Liquid O may be among the least valuable products of APP and surpluses may be vented when the burden of marketing and or storage of something dangerous exceeds the value of letting it harmlessly blow away. Absent a malfunction, APP are likely going to operate at less than their capacity, as their raw materials consist of free ambient air and expensive electrical energy. They will strive to purchase the lowest cost electricity, which is "off-peak." APP are likely always over-built in that they can produce all of their most salable products in less time than the off-peak electricity is available. As Ar boils at a lower temperature than O, typically, for every ton of Ar that is produced, about 16.8 tons of O will be produced Assuming there is about 21 times the diatomic molecular O by volume of Ar in ambient air, and the $Ar:O_2$ molecular weight ratio is 40:32: 1 x 21 x 32 / 40 = 16.8 tons O per ton of Ar. As N boils at a lower temperature than Ar, an APP may elect not to make all of the corresponding N that it can—but it probably will. For every ton of Ar that is produced, about 54.6 tons of N may be produced—3.25 times the weight of the O. Assuming there is about 21 times the diatomic molecular O by volume of Ar in ambient air, and the $Ar:O_2$ molecular weight ratio is 40:32: 1 x 21 x 32 / 40 = 16.8 tons O per ton of Ar.

One way to inhibit NO_X emission is to cause combustion in such a way that NO_X is not generated. If a fuel having very low N is burnt with an oxidizing gas (mostly O) that contains very low N, then very little NO_X will be created.

At 185 million Btu per hour, the D.3 reheat furnace ("RHF") appears to be the single largest combustion emission unit. If the gas fuel is methane ("CH_4"), then the consumption would be about 4.04 tons per hour
(Assuming the fuel is about 22,900 Btu per pound: 185 E6 / 22,900 / 2000 = 4.04 tons fuel per hour).

This combustion will use about 16.16 tons per hour of O
(Assuming the fuel is about 22,900 Btu per pound: 185 E6 / 22,900 / 2000 = 4.04 tons fuel per hour.).

As, for example, the 400 ton per day (total products presumed) Whitley County APP can only produce about 3.87 tons O per hour .

(*See, e.g.*, http://ftp2.ai.org/pub/idem/oam/11911f.pdf 183-11911-00032 Praxair Whitley County registration p.1 and 4 incorporated herein in its entirety by reference.
400 x 16.8 / (1 + 16.8 + 54.6) / 24 = 3.87 tons O per hour capacity from a "400 ton per day" APP. The use of 90+% O rather than ambient air for such a large use as the RHF would not be practical if it was a *single* unit.

As response to comment, state the ton per day capacity of the APP located closest to SDI and detail that capacity if it is something other than a close approximation of Ar + N + O.

The RHF *is not a single unit*—it is a whole series of individual burners having independently valved fuel admissions over many tens of feet of lateral mill floor length. As response to comment, identify the number of independent RHF fuel valves. Where there is O available at reasonable cost—as it should be on or near SDI, IDEM has the obligation to consider its use in the top-down BACT analysis process. Generating NO_X at rate considerably less that the 80 pounds per billion Btu of Condition D.3.1(a) should be

technologically and physically easy; and, if the local APP is operating near an economic surplus of O, it should be economically feasible too.

On p. 5 of Appendix B to the TSD at (1)(A), IDEM, with zero detail in re percentages of O:N by volume or by weight, speaks of "oxyfuel" burners—implying something other than ambient air as the oxidizing gas. On p. 34 of Appendix B to the TSD at (1), IDEM states: The same control technologies evaluated for the EAF were also examined for potential use in controlling NO_X emissions from the reheat furnace.

In fact, there appears no evidence within showing any consideration of use of anything other than ambient air for the entire RHF. This is clear error. IDEM must identify the incremental cost of O at SDI that is of "combustion air substitute for NO_X generation avoidance" quality ("inexpensive O"). I have no idea what that quality is—I suspect it is something like 90+% by volume or by weight. IDEM must provide a proper NO_X BACT analysis for use of inexpensive O for part of the RHF, and for the myriad smaller combustion emission units. All available inexpensive O should go toward NO_X emission reduction by the direct reduction of NO_X creation as a BACT obligation as set of federally enforceable permit conditions. This technique is in use as evidenced by text that IDEM wrote prior to October 2000 (*See, e.g.*, ftp://ftp2.ai.org/pub/idem/oam/12405.pdf 089-12405-00032 TSD P.3 Jupiter Aluminum Lake County permit modification published on or about 1 October 2000 incorporated in its entirety herein by reference.

100% oxygen enrichment means controlled oxygen supplementation to the natural gas stream sufficient to provide all the oxygen necessary to burn the fuel. This burns hotter, more efficiently, and is economically beneficial to the company. Also, no oxygen is required from the ambient air which contains 79% nitrogen and produces nitrogen oxides (NO_X) when used to burn fuel. Negligible nitrogen oxides are emitted after this modification.

The only impeachment possibility for this NO_X non-creation technique is that of the cost of the O. Nothing less than the true incremental cost of O to SDI at SDI will serve as a part of adequate comment response.

IDEM provided zero explanation why the RHF NO_X limit is 80 pounds per billion Btu, while the Condition D.5.1(a) Vacuum Tank Degasser Boiler burner NO_X limit is 40 pounds per billion Btu. Why cannot the RHF meet 40? [Steve Loeschner]

IDEM Response

The existing NOx PSD BACT limit in the Qualitech' permit is 0.15 lb/MMBTU. This is being revised to 0.08 lb/MMBTU. This will be the most stringent NO_x BACT limit for a reheat furnace, without add-on control, in the country. The lowest limit in the country equipped with a SCR is Beta Steel's reheat furnace, with a limit of 0.077 lb/MMBTU. If there is no control that is either technically or economically feasible, the PSD BACT to be considered is the most stringent existing numerical BACT limit. In this case, the NOx limit specified for SDI is more stringent than any Reheat Furnace BACT limits without add on control.

There are no steel mill reheat furnaces in the RBLC using ultra-low NO_x burners as BACT. Because the reheat furnace is not steady state in operation and must have openings that allow ambient air into the furnace, low NO_x burners are the appropriate control technology for this application.

The cost summary shown in Table 18 (SCR Cost Summary for the reheat Furnace) in the Appendix B - - PSD BACT Evaluations - - was submitted by SDI. This was not verified by an independent party. The IDEM compared these costs to the 2001 cost analysis for the SCR for the Reheat Furnace at SDI Whitley, IN permit review. These costs had been verified by documented vendor quotes. The costs were comparable at both plants.

There is no specific, hard-line and fixed cut off dollar amount that can be used as reference point for a control cost effectiveness. The determination, as in other aspect of BACT evaluation, is on a case by cases basis. In the case of SDI, $24,756.00/ton is considered not cost effective.

Air Liquide is the closest APP to the SDI Hendricks, IN plant. Air Liquide is an independently owned source from SDI and not subject to this proposed permit. Air Liquide has different clients and has been operating even when the mill was shut down.

As previously indicated, the NOx BACT limit at 0.08 lb/MMBTU for the reheat furnace is already the most stringent in the country and therefore considered the Top Down BACT. Thus, per the BACT guidance it is not necessary to evaluate other controls, such as oxy fuel burners. In addition, the RBLC does not show any reheat furnace controlled by an oxy fuel burners.

Per the BACT guidance, similar units or operations are to be used in comparing BACT technology and limits. It is inappropriate to compare the emission limits for a boiler and a reheat furnace because they do not operate in the same manner. For example, a boiler is enclosed and can be better regulated to control the influx of ambient air, while a reheat furnace must have large openings to allow for steel loading/unloading. In this BACT analysis, the boilers were compared with other boilers of the same range of capacities and the reheat furnace was compared to other reheat furnaces in the country and was proposed with the most stringent BACT limit for reheat furnaces.

(3) Reheat Furnace CO BACT

(a) IDEM has not provided any information of the performance of the ultra low NOX burners and the actual impact on CO generation, so it is difficult to accept setting a generous CO based on unknown information. The proposed limit set under this section is in the highest third of those sources cited and higher than what was originally calculated as part to the permit for the previous owner. It is important to note that SDI, Whitley, IN is permitted at 0.030 lbs/MMBTU which is 35% of the emission level IDEM is seeking under this proposal. IDEM needs to provide very specific data if the level is to be set above 0.04 lbs/MMBTUs. [David Hoggatt]

(b) Table 20 - Have the cost estimates been verified by an independent source? [David Hoggatt]

(c) While there is an expectation of non-linearity, there is the expectation that, in otherwise equal circumstances, if less C is charged into the process, a lower CO airborne emission will result. IDEM has the duty to impose conditions to require minimal CO generation—not merely allow an arbitrary emission. The failure of IDEM to specifically disallow the creation of heat by intentionally charged C as an element of EAF CO BACT is clear error and an abuse of discretion. The 84 pound CO per billion Btu Condition D.3.1(c) is an

abomination compared to the 30 pound CO per billion Btu 183-10097-00030 Condition D.5.2 (*See* http://ftp2.ai.org/pub/idem/oam/10097f.pdf Whitley County SDI PSD permit incorporated in its entirety herein by reference. IDEM offered zero technical explanation why 30 pounds CO per billion Btu cannot be achieved as BACT for Conditions D.3.1(c), D.4.1(b), and D.5.1(b). Each of those three conditions must be amended to not more than 30 pounds CO per billion Btu prior to issuance. A non-technical "Golden Calf" defense by IDEM alleging that superior diligence and stringency in re NO_X provides discretion to grant SDI laissez faire in re CO is not acceptable. [Steve Loeschner]

IDEM Response
As explained in the Appendix C - - PSD BACT Evaluations - - of the original TSD, post combustion control, such as RTO, is not feasible. Based on the Top Down BACT Guidance, if a control is not feasible, there is no need to perform cost analysis. The cost analysis for the RTO was provided as a supplemental confirmation as BACT feasibility. Since the RTO is not technically feasible, there is no need to verify the cost analysis.

Upon further evaluation, IDEM agrees that the CO BACT limit for the Reheat Furnace should at least be as stringent as the NOx limit specified under Qualitech. The evaluation was made by comparing the CO and NOx BACT limits of several mills for CO affect the NOx emissions. SDI Hendricks, IN has the most stringent Top Down BACT for NOx emissions, and there is no other steel mills that has a lower CO BACT limit that is based by burner design. Beta Steel, IN has a more stringent CO limit, however, it is based on an add on control technology. As previously indicated, the same add on control has been evaluated to be not cost effective.

Source Name	NOx (lb/MMBTU)	CO (lb/MMBTU)
SDI Hendricks, IN	0.08	0.084
Qualitech, IN	0.15	0.061
SDI Whitley, IN	0.11	0.030
Quanex ,AR	0.14	0.35
Republic Technologies, OH	0.112	0.39

There is no change in the draft permit due to this comment.

(4) Reheat Furnace VOC BACT
If the VOC level proposed are both calculated values, one from the previous permit and one from SDI, can IDEM clarify the difference in the two values and justify why it would be appropriate to accept the higher value? [David Hoggatt]

IDEM Response
Lack of operational experience led Qualitech to underestimate VOC emissions from the reheat furnace. The limit proposed for SDI is consistent with emissions from similar units, based on calculations using U.S. EPA's AP-42 emission factors. This should be noted that this new VOC BACT limit is more stringent than the last PSD permit that IDEM has issued for a similar operation/emission unit (SDI Whitley, IN). There is no change in the draft permit due to this comment.

(5) Reheat Furnace PM and PM10 BACT

Of the sources in Table 24 (Reheat Furnace PM/PM10 BACT of other Similar Sources) in Appendix B - - PSD BACT Analysis, are we to assume that the level is a combined PM/PM10 limit as indicated in the column heading? If the SDI limit was a combined value, what value would be used and how does this compare with the other values in the table. [David Hoggatt]

IDEM Response
Table 24 shows SDI, Hendricks, IN written twice. It is incorrect to assume that the limits are the combined PM/PM10 limits. There are 2 separate limits for PM (0.0019 lb/MMBTU) and PM10 (0.0076 lb/MMBTU). The PM PSD BACT limit will be the most stringent, while the PM10 PSD limit is comparable to the other limits. There is no change in the draft permit due to this comment.

(6) CEMS on the Reheat Furnace
For the Reheat Furnace, CEMS for NOx and CO must be required. [David Hoggatt]

IDEM Response
The CO and NOx emissions from the Reheat Furnace are from combustion. CEMS are used to document compliance when a control device is used to reduce emissions. The Reheat Furnace does not have add-on controls for CO and NOx emissions. There is no need to use CEMS to show compliance because the use of natural gas pipeline is sufficient to enforce the CO and NOx PSD BACT limits.

Preheaters/Dryers PSD BACT

(1) Low NOx Burners vs Ultra Low NOx Burners
Please differential between low NOX burners and ultra low NOX burners? [David Hoggatt]

(2) Ultra Low NOx Burners as PSD BACT
Why aren't Ultra low NOX burners considered BACT for this application and all other natural gas burning operation in the site? [David Hoggatt]

IDEM Response
Low NOx burners operate on the principle of controlled separation, distribution and mixing of the combustion air and fuel to minimize NOx and unburrned carbon emissions. The combustion air reduces the oxygen concentration in the primary burner combustion zone, lowering the amount of NO formed in this zone, and increasing the amount of NO reducing agents formed in the oxygen deficient combustion zone. Secondary and tertiary air injections complete the combustion downstream of the primary zone, lowering peak temperature and reducing thermal NOx formations.

Ultra low NOx burner is a technological term applied to burners that are capable of meeting a NOx limit of 9 ppm at 3% oxygen or less. Ultra low NOx burner technology can only be used at its rated effectiveness in areas where combusted gas can be re-circulated to prevent additional burner contact with ambient air.

Designing a NOx control technology as a package with the boiler, factors such as capacity, turndown, efficiency and CO levels have to be addressed.

The capacity of these preheaters and dryers range from 6 MMBTU/hour to 37.5 MMBTU/hour. These units are not significant contributors of emissions. The emissions are due to combustion. PSD BACT limits for these units are considered either the most stringent category or comparable to existing similar units. The BACT numerical limits satisfy the PSD program without requiring the installation of ultra low NOx burners.

In the SDI Whitley, IN permit review, IDEM staff had contacted several NOx control vendors. According to these vendors, the NOx control for burners that are located in a combustion chamber. Many of these types of combustion chambers also require flue gas re-circulation in order to achieve optimum combustion. In addition, the ability to house these burners in a separate combustion chamber upstream of the process is infeasible. These burners must be able to dry and heat ladles and tundishes quickly between heats. The ladles and tundishes must be preheated to extremely high temperatures (800-1000) before coming into contact with molten steel. If the ladles and tundishes are not sufficiently heated, the hot metal could crack these containers and create a safety hazard. The amount of heat loss that would be experienced by a forced air or radiant heating system would not allow for the proper drying or heating of the ladles or tundishes. These types of units have never been used in the steel industry.
There is no change in the draft permit due to this comment.

Natural Gas as PSD BACT

(1) AP-42 EF for Natural Gas Sulfur

Please note that emission factors specified in Chapter 1.4 of AP-42 are based on an average sulfur content of natural gas of 0.2 grains of total sulfur per 100 standard cubic feet (versus the 0.5 specified in the permit condition), an average higher heating value of 1,020 Btu/scf and a methane content of 85 percent (versus the 70 percent specified).

Please correct or explain your rationale for using a lower required methane content and higher allowable sulfur content. Furthermore, it is suggested that if the sulfur content of pipeline natural gas be stated as an enforceable permit condition (i.e. the natural gas utilized shall contain 0.2 grains/100scf or less). [Ethan Chatfield]

(2) Natural Gas Sulfur Content

The 0.0006 pound SO_2 per million (gross calorific value assumed throughout) British thermal unit ("Btu") limit of Condition D.3.1(b), D.4.1(d), and D.5.1(d), which is a nominal 0.2142 grains total S per 100 scf (The weight of SO_2 being twice the weight of the S therein, and assuming a nominal 1,020 Btu per scf: 0.0006 / E6 x 1,020 x 7,000 / 2 x 100 = 0.2142 grains total S per 100 scf. , is sufficiently low that it may be violated from time to time. *See* 66 FR 31978, 31980 (13 June 2001) III.A.1: ... typical supplies of pipeline natural gas that have an average [total] sulfur content of 0.2 to 0.3 grains per 100 scf ...
Rather than have SDI fail these limits and or appeal, it would be wise to change them all to 1.40 or 1.401 pounds SO_2 per billion Btu.

1.4 or 1.41 pounds SO_2 per billion Btu would be unacceptable. 0.0014 or 0.00141 pounds SO_2 per million Btu would be unacceptable. *See* 67 FR 78203, 78205 (23 December 2002) III.
[Steve Loeschner]

(3) Natural Gas Compliance Test

SDI should be required to request data from the natural gas supplier on a periodic basis (quarterly) to confirm that the gas used in the mill will meet the standards under this section. The documents will be retained in a manner consistent with other environmental documents.
[David Hoggatt]

IDEM Response

This natural gas definition written in the permit is taken from the federal Acid Rain program (Title IV). IDEM acknowledges that there are different specification that might be indicated for natural gas in different references such as the AP-42. Differences might occur due to averaging of rates to get an emission factor, range of heating value, and sulfur content. Since the definition in the Title IV is the only definition that can be found and its development underwent public and legal reviews for its final promulgation, it is the definition that IDEM will use.

SDI is not required to verify the specifications of the natural gas. When looking at the NOx emissions from this source due to the use of natural gas, IDEM does not consider it necessary to require stack tests to demonstrate compliance. Compliance is assumed to be in order as long as pipeline natural gas is used. In addition, there are no operational parameters that can be measured to demonstrate continuous compliance. It is in the company's best interest to assure that these

units are operating properly such as to prevent unnecessary natural gas consumption. IDEM retains the authority to require testing if necessary and EPA has corresponding authority under the Clean Air Act (CAA).

There is no change in draft permit due to this comment.

VTD, VTD Boiler and VTD Flare PSD BACT

(1) VTD Flare

I didn't see any evaluation of a VTD flare and/or any flare technology in the BACT evaluation. Obviously it has the potential to emit. [David Hoggatt]

IDEM Response

The evaluation of BACT focuses on the emissions from the emission unit with or without add on controls. The emissions from the boiler meets BACT by means of burner design. The emissions from the vacuum degasser are controlled by a flare. The controlled emissions meet BACT requirements by comparing them to other vacuum degassers. No further analysis is necessary.

(2) VTD Boiler Design

(a) Does SDI, Pittsboro, IN have a newer combustor design on the boilers? [Lois Hoffman]

(b) How are the limits set in Condition 5.1 be monitored and enforced? Minimal standards would require initial compliance testing with annual retest. BACT compliance would likely require more stringent monitoring (CEM). [David Hoggatt]

IDEM Response

The boilers in SDI, such as this VTD Boiler, are equipped with modern Low NOx burners. Thus the control is already part of the boiler design. In addition to implementing work practices, SDI has to make sure that the built in parameters design of the boilers they are going to buy and operate can comply with the BACT limits.

This built in design meets BACT requirements without add on air pollution control equipment. Emissions from the degasser are controlled by the use of flare. Compliance is going to be verified by checking and recording the temperature of the flare. There is no change in the draft permit due to this comment.

(3) VTD Boiler NOx

(a) VTD Boiler NOx BACT

The NOx limit (0.040 lb/MMBTU) for the VTD Boiler is too generous for this source using Ultra Low NOx burners. The limit should be 0.0011 lb/MMBTU. Unless otherwise justified, I would propose that the limit be set at 0.035 lbs/MMBTU which seems to be more representative of the BACT candidates listed. [David Hoggatt]

(b) Ultra Low NOx Burners as BACT

Has IDEM evaluated all applications were these "ultra low NOX" can be used in the VTD boiler etc? Since this is a BACT evaluation, provide the specific reduction in NOX that is expected using the "ultra low NOX burners" . Information submitted as part of the SDI Whitley, IN permit indicated that Todd/Radian and Coen have ultra low NOx burners that meet a limit of 0.011 lb/MMBRU over a wide range of combustion sources. Limits above this level would not be BACT. [David Hoggatt]

(c) FGR

Why is FGR not mentioned other NOX BACT evaluation? Is this technology used in the steel industry at other sites? [David Hoggatt]

IDEM Response
Upon further investigation of the NOx BACT limit, IDEM is revising the limit from 0.040 lb/MMBTU to 0.035 lb/MMBTU. This is a further reduction from the existing 0.081 lb/MMBTU limit under Qualitech permit. The limit in the draft permit was based on the analysis that the boiler is equipped with a low NOx burner and comparable with the boiler in SDI Whitley, IN, and the same limit was proposed. However, the VTD boiler in SDI Hendricks, IN, will not be combusting the off gases as in the case in SDI Whitley, IN.

The revised condition is as follows:
D.5.1(a) The NO_x emissions from the VTD Boiler shall not exceed ~~0.040~~ **0.035**lb/MMBTU.

IDEM disagrees that FGR is not mentioned in the VTD Boiler BACT analysis. Appendix B - - PSD BACT Evaluations - - explains the technology feasibility and the cost analysis. Since it is already documented in the Appendix B and in the application submitted by SDI, the analysis will not be re-written in this TSD Addendum. There is no change in the draft permit due to this comment.

(4) VTD Boiler PM
Please list the good combustion practices that SDI will implement for the PM and PM10 BACT for the VTD Boiler. How will SDI be held accountable for good combustion practices? [Lois Hoffman]

IDEM Response
SDI is accountable for training their employees/workers on how to properly operate and maintain the units, providing guidelines or checklist, maintaining manufacturer's operating specifications, implementation of back up plans, maintaining proper environment for the units, and other steps and procedures that prolonged the operating life of the units at their full capacities.

As work practice, SDI will practice proactive safety first, followed by minimizing the use of raw material and fuels. These same criteria that result in increased efficiency and production decrease emissions. There is no change in the draft permit due to this comment.

(5) VTD Boiler CO
The proposed CO limit is not even within the best 50% of the source list. How can this be justified as BACT? Levels contained in the original permit of 0.061 lb/MMBTU would seem more in line with BACT. [David Hoggatt]

IDEM Response
IDEM agrees that the CO BACT limit should not be less stringent than the existing CO BACT limit under Qualitech permit. The CO is specified back to the original limit. The VTD Boiler operates differently from the other boilers for it has to accommodate various load swing nature of the vacuum degasser.

D.5.1(b) The CO emissions from the VTD Boiler shall not exceed ~~0.084~~ **0.061** lb/MMBTU.

Supporting operations consisting of: Caster cutting torches with nominal total capacity of 6.3 MMBTU/hour, and use natural gas as fuel, Bar cutting operation venting to a particulate control at a flow rate of 0.0052 gr/dscf , and 30,000 dscf/min, Scarfer venting to a baghouse at a flow rate of 48,200 dscf/min, Bloom billet caster, Water descaler, Roughing mill, Finishing mill, Cooling bed, Shipping and Storage PSD BACT

(1) Grain Loading PSD BACT

Emissions from the Conditions D.6.1(a) and (b) must be limited not less stringently than Conditions D.1.1(h) - (l), D.1.3, D.1.7, D.1.9, D.1.11, and D.1.14 - D.1.20. IDEM provided zero rationale as to any allegation that the 0.0018 grain per dscf limit cannot be technically, economically or physically applied to the Scarfer and bar cutting exhausts. There is nothing in the record showing that IDEM considered requiring identical filter material to control the Scarfer and bar cutting exhausts as it did to control the EAF baghouse openings. This is a lack of diligence, clear error, and abuse of discretion. IDEM must require the Scarfer and bar cutting exhaust PM concentration to not exceed 0.0018 grains per dscf prior to issuance.

The Draft permit is patently illegal for there is no testing to verify compliance with the Condition D.6.1 limits, nor is there any compliance monitoring or record keeping required. Thus the D.6.1 limits are totally unenforceable limits. Filterable PM testing for the Scarfer and bar cutting exhausts must be required not less frequently than annually. [Steve Loeschner]

(2) Compliance Monitoring of PM and PM10

How will these emissions be compliance demonstrated? Also is COM being utilized for D.6.1(c) and D.7.1(b)? [David Hoggatt]

(3) Bar Cutting PM Control

The type of particulate control used in the Bar Cutting Operations should be finalized and open to public comment before SDI permit is approved. [Lois Hoffman]

(4) Scarfer and Bar Cutting Separate PM and PM10 Limits

(a) The $PM_{(filterable)}$ emissions in Conditions D.6.1(a) and (b)should have its own emission limit of 0.0052 gr/dscf separate from the $PM10_{(filterable\ and\ condensable)}$ emission limit of 0.0052 gr/dscf. This is consistent with other sources where the PM and PM10 emission limits are separate. [SDI]

(b) Why are the PM/PM10 level combined for these sources and separated for others? [David Hoggatt]

IDEM Response

Appendix A contains less detail on BACT for these operations due to the comparative lack of information in the RBLC. However, the BACT determinations for SDI are as strict as any found by, or presented to, IDEM.

The PM10 limits are not necessary if there are no ondensible portions due to combustion emissions, such as in the mechanical bar cutting operation:

6.1 (a) The $PM_{(filterable)}$ ~~and PM_{10} (filterable and condensible)~~ emissions from the Scarfer shall be controlled by a baghouse and shall not exceed 0.0052 gr/dscf.

(b) **The PM_{10} (filterable and condensible) emissions from the Scarfer shall be controlled by a baghouse and shall not exceed 0.0052 gr/dscf.**

(~~b~~ **c**) The PM (filterable) ~~and PM_{10} (filterable and condensible)~~ emissions from the Bar Cutting operation shall be controlled by a ~~particulate control~~ **baghouse** and shall not exceed 0.0052 gr/dscf.

(~~c~~ **d**) The visible emissions from **each** ~~these~~ baghouse~~/particulate control~~ shall not exceed 3% opacity, based on a 6-minute average as determined in 326 IAC 5-1-4.

D.6.3 Particulate Matter (PM) Control [326 IAC 2-2]
Pursuant to 326 IAC 2-2, the baghouse**s** ~~/particulate control~~ for particulates shall be in operation and control emissions at all times that the Scarfer and Bar Cutting operations are in operation.

Storage Silos PSD BACT

(1) 0.01 gr/dscf vs 0.010 gr/dscf

If there were tests supportive of the Condition D.7.1(a) 0.01 grain per dscf filterable PM and simultaneous 0.01 grain per dscf filterable plus condensible PM_{10} limits, there can be no doubt that SDI would claim that if they averaged to 0.014999 grains PM per dscf, that that would constitute a passing grade. This round-off escalation must be disallowed by statement as 0.010 rather than 0.01. *See* 67 FR 78203, 78205 (23 December 2002) III.

The 0.01 grain limits of Condition D.7.1(a) are an abomination in light of the 0.0018 grain per dscf limit filterable PM limit of Condition D.1.1(h). IDEM provided zero rationale as to any allegation that the 0.0018 grain per dscf limit cannot be technically, economically or physically applied to the silo vents. There is nothing in the record showing that IDEM considered requiring identical filter material to control the silo vent openings as it did to control the EAF baghouse openings. This is a lack of diligence, clear error, and abuse of discretion. IDEM must reduce the silo vent filterable PM concentration limit to not more than 0.0018 grains per dscf prior to issuance.

The SDI Draft is patently illegal for there is no testing to verify compliance with the Condition D.7.1(a) limits, nor is there any compliance monitoring or record keeping required. Thus the D.7.1(a) limits are totally unenforceable eunuchs. Filterable PM testing for all silo vents must be required not less frequently than annually. [Steve Loeschner]

(2) 0.0018 gr/dscf vs 0.0052 gr/dscf

Why should the BACT level for this application be above the PM10 limit of 0.0018gr/dsdf and PM10 limit of 0.0052 gr/dscf granted for the EAF baghouse. This application should be far less challenging given the limited flow rate and temperature of the operation? [David Hoggatt]

(3) PM and PM10 Separate Limits

The $PM_{(filterable)}$ emissions in Condition D.7.1(a) should have its own emission limit of 0.0052 gr/dscf separate from the $PM10_{(filterable\ and\ condensable)}$ emission limit of 0.0052 gr/dscf. This is consistent with other sources where the PM and PM10 emission limits are separate. [SDI]

(4) Storage Silo Opacity

I could not distinguish if the 3% opacity was for each material storage silo or if that was for the total of nine. That was not clear. [Lois Hoffman]

IDEM Response

The BACT requirements in the permit limit the PM emissions to less than one (1) pound per hour. The 0.1 grain loading and 3% opacity requirements are as stringent as any found in the RBLC and meets the requirement for BACT. Each limit applies independently to each silo. In response to comments the permit has been revised to delete the reference to condensible emissions because there are none from this type of operation. The grain loading limit is now expressed at two significant figures, 0.10 grains per dry standard cubic foot.

D.7.1(a) The PM $_{(filterable)}$ ~~and PM_{10} $_{(filterable\ and\ condensible)}$~~ emissions from each storage silo shall be each controlled by bin vent filter at an outlet grain loading of 0.010 grains per dry standard cubic feet.

(b) The visible emissions from each storage silo bin vent shall not exceed 3% opacity, based on a 6-minute average as determined in 326 IAC 5-1-4.

Slag Handling and Processing PSD BACT

(1) Slag Handling and Processing

(a) Slag Handling Capacity

Condition D.8.1(a) mentions a slag handling capacity of 2,628,000 tph—this for a mill with a 1,096,000 tpy product capacity seems a bit large. What is the expected average tpy slag generation? Will SDI be permitted to import slag?

A Condition D.8.1(a) limit that is by month, not by year, and that is perhaps three times the expected slag generation rate would allow SDI to deal with the slag as something other than a winter frozen heap and it would allow them considerable (and adequate) flexibility in work scheduling. [Steve Loeschner]

(b) Slag Capacity - - SDI Whitley vs SDI Hendricks

Why is the slag handling rate 2 times that of the SDI Whitley, IN? Confirm that no slag originating from outside of this plant will be processed in this facility? [David Hoggatt]

(c) Opacity Compliance of Slag Handling and Processing

Table 4 of Condition 8.1(b) represents several manual operations that have significant potential to emit. How will this operations be controlled, maintained and monitored such that conditions/results observed during testing will be maintain in the day to day operation through out the life of the plant?

This slag area represents a huge potential to emit. How will be opacity limits proposed in Table 39 in Appendix A - PSD BACT Evaluation -- be monitored and what is the frequency of the monitoring required?

For the slag handling PM and PM10 emissions, COM or similar technology must be used. Laser Opacity (KVB Enterec) were brought to attention of IDEM during the SDI Whitley, IN permit process. Other brands are likely available at this time.

Will the Opacity measurements be sufficiently robust and objective to provide the necessary control given the potential of this source. Given that the previous BACT standard set by IDEM was set at "No visible emission" ,a proposed limit of 10% on paved roads, unpaved roads and unpaved areas seems very generous. Given that none of the emitting operations in Table 39 exceeds 10%, setting a 10% opacity limit for all "paved roads, unpaved roads and unpaved area" is unacceptable given the size and magnitude of the area that is represented. The maximum limit that could be justified would be 3% opacity unless other data and/or rational is provided. How is this BACT limit effected and/or support the constraint listed in C.6 of the permit? [David Hoggatt]

(d) Slag Specific Plan

This slag dumping operation need to be controlled by a specific plan that is written, reviewed and approved as part of this permit. Specify what chemical suppressants would be allowed/used? Provide an estimate of their potential to emit and/or be classified by other regulations or considerations under this permit. [David Hoggatt]

(e) Slag Pit in a Building
I was wondering if there was anything that SDI could do such that it has the slag pit and dig out operation contained in the building. [Lois Hoffman]

(f) Scrap Handling
"Scrap material handling, lime handling, and carbon handling" should be moved to Section D.6, which lists other supporting operations with no specific permit conditions. These operations are not part of the slag handling operations listed in Section D.8. [SDI]

IDEM Response

The maximum hourly rate is the instantaneous rate that can be process. SDI does not have the intention of processing slag from other mills. To address the concern on this, the annual slag limitation to be processed has been revised to a more realistic rate based on the expected amount of slag that will be generated on site:

D.8.1(a) The Permittee shall not process more than ~~2,628,000~~ **876,000** tons of slag per 12-consecutive month period with compliance demonstrated at the end of each month.
The Permittee shall not accept or process slag from other mills or outside sources.

Slag processing is limited on an annual basis. Compliance must be demonstrated for any consecutive 12 month period. The permit requires SDI, or its contractor, to maintain monthly records of slag processing in order to make this demonstration.

Section D.8 deals not only with slag processing, however, to avoid confusion the scrap and other raw material handling is separated from the slag processing, as follows:

(1) Scrap material handling, lime handling, carbon handling

(2) **S**lag handling, slag dumping, slag pots, slag crushing, slag screening, drop ball breaking, conveyors, and storage piles. The slag processing and handling has a nominal rate of 300 tons/hour.

IDEM is also adding the following requirements and subsequent conditions in Section D.8 have been re-numbered:

D.8.4 Scrap Handling and Processing
Pursuant to 326 IAC 2-2 (PSD), the Permittee shall comply with the following BACT requirements:

(a) Scrap cutting is not allowed outdoors.

(b) Good working practices shall be observed.

(2) Slag and Groundwater
How about the slag polluting of the groundwater in the wells around? Who at IDEM will look at that and ensures that groundwater is protected? [Robert Lake]

IDEM Response

The IDEM Drinking Water Branch monitors the quality of water wells in Indiana. Pittsboro's drinking water is supplied by the Indianapolis Water Company. For question or additional information regarding water quality in Indiana, interested party may contact Mr. Pat Carroll at 317/308-3282 or go to the website http://www.in.gov/idem/water/dwb/index.html for detailed water quality data.

SDI will be supplied by the Pittsboro and Indianapolis water system and does not plan to install high capacity wells.

The Indiana Department of Natural Resources (IDNR) is the agency with authority to address concerns about water rights and is aware of the this plant. IDNR has the jurisdiction to specifically address situations where the construction of wells affect the quality or quantity of other wells. If additional information is needed regarding water wells registration, Mr. Mark Basch can be contacted at 317/232-4160 or toll free at 877/928-3755.

Paved and Unpaved Roadways PSD BACT

(1) Transportation Fugitive Dust

(a) Additional Control for Fugitive Emissions

The PM emission from fugitive emissions from this plant are approximately equal to the EAF baghouse emission. This is an unacceptable level. Additional controls must be added to significantly reduce this emission source. [David Hoggatt]

(b) More Than 1 Roads and Parking Lots

This requirement in Condition D.9.2 should read "…from paved roads, parking lots…" [SDI]

(c) FDP - - Upon Request

We request that "upon request" be added to the end of the sentence of Condition 9.2. [SDI]

(d) Specific Control Measures in the FDP

These requirements in Condition D.9.2(c),(d) and (e) should be removed because they are impractical and afford no additional protection to the public health and environment beyond that provided by the state fugitive dust rule, 326 IAC 6-4 and the general "good housekeeping practices" employed by SDI. We propose the following language as an alternative.

D.9.2 Pursuant to 326 IAC 2-2, the Permittee shall develop, maintain and comply with a site-specific Fugitive Dust Plan for transportation sources.
The plan shall address how the Permittee will control fugitive emissions from paved roads, parking lots, unpaved roads, traveled open areas and traveled areas around storage piles. [SDI]

IDEM Response

Controlled fugitive emissions were estimated by applying dust suppressants at the rate of 70% to 80% efficiency. This range is conservative. The critical requirement for SDI's fugitive emissions from the paved roads/areas and unpaved roads/areas is the 10% opacity limit. This is an opacity limit that is comparable to other mills in the RBLC and the requirements for Lake County in Indiana's SIP for PM10. IDEM believes that the specifications in the Fugitive Dust Plan and the requirements in the proposed permit are sufficient to comply with this limit on a day to day basis.

The request to remove portion of Condition 9.2 is denied because these conditions are existing conditions of the existing permit under the previous owner. These conditions are also clearer and explicit on how SDI should minimize dusts.

D.9.2 Pursuant to 326 IAC 2-2, the Permittee shall maintain, update, comply, and implement its Fugitive Dust Plan.

(a) At a minimum, the fugitive dust plan shall address any fugitive emissions from paved roads, parking lots, unpaved roads, and traveled open areas and storage piles.

(b) The job title and telephone number on site of the person responsible in implementing the fugitive dust plan shall be provided to IDEM, OAQ.

(c) Paved roads and paved parking lots silt shall be controlled by the use of vehicular vacuum sweeper or water flushing and shall be performed every 14 days, **unless it is raining.**

(d) Upon request by IDEM, OAQ, the Permittee shall sample surface material silt content and surface dust loading in accordance with filed and laboratory procedure set by IDEM, OAQ. Road segments to be sampled shall be approved by IDEM, OAQ.

(e) The Permittee shall provide supplemental cleaning of paved roads found to exceed allowable silt loading.

(2) Roadways, Parking Lots and other Areas Opacity

(a) Unrealistic and Unreliable Monitoring - - Paved
These conditions and methods in Condition D.9.3 seem unrealistic and certainly unreliable source of monitoring for such a significant source of PM emissions. It is difficult to believe that COM is not available in some form for this operation. [David Hoggatt]

(b) Excessive and Impractical Monitoring - Paved
These requirements in Condition D.9.3 are excessive and impractical and should be removed. There is no evidence that they will afford additional protection to the public health and environment beyond that provided by the state fugitive dust rule, 326 IAC 6-4 and the general "good housekeeping practices" employed by SDI. [SDI]

(c) Unrealistic and Unreliable Monitoring - - Unpaved
These conditions and methods in Condition D.9.4 seem unrealistic and certainly unreliable source of monitoring for such a significant source of PM emissions. It is difficult to believe that COM is not available in some form for this operation. For the PM and PM10 emissions from the road unpaved surfaces, etc. COM or similar technology must be used. Laser Opacity (KVB Enterec) were brought to attention of IDEM during the SDI Whitley, IN permit process. Other brands are likely available at this time. [David Hoggatt]

(d) Excessive and Impractical Monitoring - Unpaved
These requirements in Condition 9.4 are excessive and impractical and should be removed. There is no evidence that they will afford additional protection to the public health and environment beyond that provided by the state fugitive dust rule, 326 IAC 6-4 and the general "good housekeeping practices" employed by SDI. [SDI]

(e) Record Keeping Requirements
These requirements in Condition D.9.5(a) are excessive and impractical and should be removed. There is no evidence that they will afford additional protection to the public health and environment beyond that provided by the state fugitive dust rule, 326 IAC 6-4 and the general "good housekeeping practices" employed by SDI. [SDI]

IDEM Response
IDEM has found no application of COM technology as an element of a fugitive dust control plan or for enforcing limitations on fugitive dust. The permit condition establishes the method that an inspector would use to enforce this limit. Problems with fugitive dust control are observable by IDEM inspectors during comprehensive inspections, including those by inspectors from the Offices of Land, Water, and Air Quality and by surveillance activities, including those initiated in response to complaints.

The permit has been revised to clarify that the methods contained in conditions D.9.3 and D.9.4 are to be used to demonstrate compliance with the limits. There is no ongoing obligation for SDI to routinely perform visible emissions evaluation. D.9.5 has been revised to require records of activities related to the fugitive dust control plan.

D.9.3 Paved Roadways and Paved Parking lots [326 IAC 2-2]

(a) The opacity from paved roadways and parking lots ~~shall be performed once per day by a trained employee during normal daylight operations and~~ shall be the average of twelve (12) instantaneous opacity readings, taken for four (4) vehicle passes, consisting of three (3) opacity readings for each vehicle pass.

~~(b) 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 visible emissions for that specific process.~~

(c) The three (3) opacity readings for each vehicle pass shall be taken as follows:
  (i) The first will be taken at the time of emission generation.
  (ii) The second will be taken five (5) seconds later.
  (iii) The third will be taken five (5) seconds later or ten (10) seconds after the first.

(d) The three (3) readings shall be taken at the point of maximum opacity.

(e) The ~~trained employee~~ **readings shall be taken** ~~shall stand~~ at least fifteen (15) feet, but no more than one-fourth (1/4) mile, from the plume and at approximately right angles to the plume.

(f) Each reading shall be taken approximately four (4) feet above the surface of the paved roadway.

D.9.4 Unpaved Roadways and Unpaved Areas [326 IAC 2-2]

(a) The opacity from unpaved roadways and unpaved areas around slag storage piles and steel scrap piles ~~shall be performed by a trained employee once per day during normal daylight operations and~~ shall be the average of twelve (12) instantaneous opacity readings, taken for four (4) vehicle passes, consisting of three (3) opacity readings for each vehicle pass.

~~(b) 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 visible emissions for that specific process.~~

(c) The three (3) opacity readings for each vehicle pass shall be taken as follows:
  (i) The first will be taken at the time of emission generation.
  (ii) The second will be taken five (5) seconds later.
  (iii) The third will be taken five (5) seconds later or ten (10) seconds after the first.

(d) The three (3) readings shall be taken at the point of maximum opacity.

(e) The ~~trained employee~~ **readings shall be taken** ~~shall stand~~ at least fifteen (15) feet, but no more than one-fourth (1/4) mile, from the plume and at approximately right angles to the plume.

(f) Each reading shall be taken approximately four (4) feet above the surface of the unpaved roadway.

D.9.5 Record Keeping Requirements

(a) The Permittee shall maintain records of the ~~daily visible emission readings taken by the Permittee~~ **activities required by the fugitive dust control plan** and make available upon request to IDEM, OAQ and the US EPA.

~~(b) Records necessary to demonstrate compliance shall be available within 30 days of the end of each compliance period.~~

(~~c~~ **b**) All records shall be maintained in accordance with Section C - General Record Keeping Requirements of this permit.

Cooling Towers PSD BACT

(1) Cooling Towers downwash Impact
Is there any downwash impact from the cooling towers? [Lois Hoffman]

IDEM Response
IDEM has included the emissions of the cooling towers in the air impact analysis. The cooling towers were analyzed as point source.

(2) Cooling Towers Water Treatment
Please comment on the Air impact on any water treatment chemicals that will be used in the cooling towers including emission rates, acceptable additives and any impact that should be cover and/or considered under this permit. [David Hoggatt]

IDEM Response
Water treatment chemicals were not specifically reviewed under this permit because they do not they do not contain significant VOC or HAPs and are not specifically regulated. SDI will be using various chemicals for variety of purposes: such as: coagulation, flocculation, pH adjustment, and algae reduction. These chemical will bind with the water to change a characteristic or with constituents in the water so that they can be filtered out. At this time, it is not necessary to definitely indicate the brands and composition of the chemicals because there is minimal or no impact on air quality. During inspections, IDEM can inspect the MSDS of these chemicals to ensure that they would not influence BACT.

(3) Cooling Tower Limit

(a) Other Sources of Similar Operations - - PM and Drift
The data provided did not help to explain the limit set. Approx. 35 sources were listed, but none with specific data. Of the data provided, there was a range provided for PM and a range for percent drift, yet the BACT limit for SDI was set in OPACITY. IDEM needs to provide the data on the sources and justify the SDI opacity limits on this data and/or the appropriate conversion of drift percentage and/or PM data to Opacity. [David Hoggatt]

(b) Numerical Drift Limit
On p. 56 of Appendix B to the TSD, IDEM wrote:
Cooling tower may be the most overlooked piece of equipment at a source. [*sic*] True enough.

Then IDEM proceeds to overlook placing a numeric drift (PM) rate in the draft permit for any of the four cooling towers. Cooling towers with mechanical flow features producing no more than 0.0005% drift are readily available and that numeric limit is specified in many permits. Absent compelling economic argument , such a limit must be imposed on each of the SDI cooling towers.

The absence of that argument is clear error. The small size of these emission units does not give license to fail to numerically constrain their emissions. No part of 40 CFR 51.166 grants that discretion. [Steve Loeschner]

IDEM Response
The permit has been revised to ass a drift limit of 0.0005%. IDEM plans to determine compliance with this limit based on the final design of the cooling towers. If necessary, based on this review and technical feasibility, the IDEM can also order a test to measure actual drift rate.

Condition D.10.1 is revised as follows:
D.10.1PSD BACT [326 IAC 2-2]

(a) Pursuant to 326 IAC 2-2, the visible emissions from each cooling tower shall not exceed 20% opacity, based on a 6-minute average as determined in 326 IAC 5-1-4.

(b) Pursuant to 326 IAC 2-2, the drift rate from each cooling tower shall not exceed 0.0005%.

(c) The Permittee shall submit the drift design specification of the cooling towers upon initial start up of the cooling towers.

Emergency Generators PSD BACT

(1) Sulfur Content of Diesel Fuel

The permit condition D.1.11(c) listed does not specify how the sulfur limitation listed will be enforced. Please add record keeping requirement requiring Permittee to track the sulfur content in the fuel. [Ethan Chatfield]

IDEM Response

It is normally not required for insignificant units, such as emergency generators, to verify compliance to the sulfur content of the fuel. The primary requirement that applies to these emergency units is the hours of operation. Verification through vendor certification may be required if SDI exceeds the limited hours of operation.

There is no change in the draft permit due to this comment.

D.1.11(c) The sulfur content of the diesel fuel used shall not exceed 0.05 percent by weight.

(2) Natural Gas vs Diesel for Emergency Generators

Why not use clean fuel source such as natural gas? [David Hoggatt]

IDEM Response

The IDEM acknowledges that natural gas is less polluting than diesel. However, if an applicant is planning to construct and operate a unit designed with a specific fuel or raw material, the permitting agency does not have the authority to change the type of fuel or raw material as BACT.

BACT determination is not a means to redefine the design of a unit when considering available control alternatives. Rather, IDEM has the authority to require the applicant to use the least polluting grade of diesel fuel as BACT.

Therefore, IDEM does not have the authority to influence and change the basic design of the emergency generators (from diesel to natural gas).

There is no change in the draft permit due to this comment.

(3) Emergency Generators Operating Hours

We request that the wording in Condition D.11.1(b) be changed to read "…500 hours within a 12-consecutive month…" [SDI]

IDEM Response

IDEM is revising Condition D.1.11(b) to specify the time period, but it is not the exact change that SDI requested.

D.1.11(b) Each emergency generator shall not operate more than 500 hours **per** 12-consecutive month period, with compliance determined at the end of each month.

Comments on the TSD

(1) History

Why is the Table 1 (Issued Approvals) not inclusive, even though attempts have been made to account for all the issued air approvals made to Qualitech? [Lois Hoffman]

IDEM Response

Table 1 lists all the air approvals. However, because there might be an approval that was accidentally overlooked, IDEM included a disclaimer.

(2) County Attainment Status

Twelve electronic air monitors throughout the 9 county metro area detected ozone levels during the past 2 years exceeding the new 8-hour federal standards. In May 2003, the metro area counties plan to reduce ozone levels was rejected by EPA. Steve Ostermeier, Hendricks County Commissioner stated for the Indianapolis newspaper that "I'm concerned because many things could be mandated on us, and this could stop commercial and industrial development because we can't meet air quality guidelines".

In an article titled "Stricter pollution controls may loom for 17 counties" in the Indianapolis newspaper it quoted Cheryl Newton, acting director of the air and radiation in EPA Region 5: "The EPA has not decided what pollution controls will be required in those areas, but options include testing vehicle emissions and requiring new business to find ways to reduce pollution before locating in areas that don't meet the ozone limits".

SDI is a new business. SDI has proposed modifications and additions to the existing facility and will be producing different steel products. Due to the extensive differences between the existing units and the proposal for a new PSD/SSM permit SDI is a new industry in a county that does not meet EPA ozone attainment levels. No new industry pollutant discharges should be permitted until EPA approves the multi-county plan for ozone attainment. [Lois Hoffman]

(3) 42 USC 7475(a)(3) and 40 CFR 50.10

IDEM, via the Indiana Air Pollution Control Board, has been continuously contumacious of the relationship of 42 USC 7475(a)(3) (*See* "air quality control region," *see also* 40 CFR 51.166(k); and 40 CFR 50.10, the 8-hour average ground-level ozone National Ambient Air Quality Standard ("NAAQS"), since the inception of that standard. Both of those texts reasonably are superior to 326 IAC. There is every reason to believe the SDI emissions of NO_X and 40 CFR 51.100(s) VOC will contribute to violations of the 40 CFR 50.10 NAAQS in the 40 CFR 81.29, 81.202, 81.215, 81.216, and 81.218 air quality control regions and in other air quality control regions too numerous to mention. For each of the six years 1997 - 2002, the "Noblesville" ambient ozone monitor, downwind of the SDI, site has had its 4th highest 8-hour average exceed 85 parts per billion by volume ("ppbv"). In 2002, a new record of 101 ppbv was set (*See* http://www.in.gov/idem/air/standard/central/02o3ce.pdf incorporated in its entirety herein by reference.

IDEM devoted much of p. 5 of Appendix C to the TSD to ozone analysis. Nowhere did IDEM consider the 40 CFR 50.10 NAAQS. That is clear error. Nowhere did IDEM consider the effects of SDI's VOC and NO_X as applied to an area reaching several hundreds of miles to the north and east encompassing the entire NE quarter of a circle having SDI at its axis.

42 USC 7475(a) is filled with legion exceptions. In general, USC always supercedes CFR. However, the USC has considerable age, and it has been tested from time to time. A rather clear portion of "petition" law, administrative order having the effect of law and or superceding older statutory law, has been codified as 40 CFR 52.34 and Appendix F to 40 CFR 52. There is clear and convincing evidence that contributions of pollutants in one air quality control region cause and contribute to violations of NAAQS violations in other air quality control regions. *See* "any:" (42 USC 7475(a)(3), 5 places; and 40 CFR 51.166(k), 4 places.

To IDEM, the court case that caused the creation of 40 CFR 52.34 simply did not happen. This blindness is clear error.

The key here is "will not cause, or contribute to, any air pollution in excess of any NAAQS in any air pollution control region." There is no requirement that either the transmitting geographic area or the receiving geographic area be designated as non-attainment for any NAAQS—only the requirement of causing or contributing a NAAQS exceedance.

In fact, SDI's NO_X and VOC will cause or contribute to NAAQS exceedance in many air quality control region, it is not possible for SDI to make the required 42 USC 7475(a)(3) demonstration, and thus SDI is prohibited from obtaining a PSD permit to emit either NO_X or VOC.

Therefore, the permitting process for NO_X and VOC must begin *de novo* in accordance with 42 USC 7501 *et seq*. incorporating pollution control equipment wherein economic considerations are not a factor in the process in accordance with 42 USC 7501(3) "lowest achievable emissions rate" ("LAER").

As selective catalytic reduction and selective non-catalytic reduction have been applied to RHF for NO_X control in other steel mills, the economic factor that SDI furnished and that IDEM cited to waive their use as BACT will be quashed for LAER. Those technologies must be applied to the smaller emission units as well.

A variety of precious metal (platinum, palladium, etc.) oxidation catalyst systems would need to be applied to most of the emission units with several requiring recuperative heat exchange plumbing as VOC LAER. [Steve Loeschner]

IDEM Response

The air quality analysis conducted for this source is consistent with Indiana's rules and federal requirements for review of proposed sources. US EPA has not yet designated any areas of the country as nonattainment regions under the eight hour ozone standard, therefore the air quality analysis was properly conducted in accordance with the Prevention of Significant Deterioration rule, 326 IAC 2-2. That rule requires a demonstration that the proposed source will not cause or contribute to air pollution in violation of any ambient air quality standard as designated in 326 IAC 1-3. The Indiana Air Pollution Control Board has not yet adopted the 8-hour ozone standard into 326 IAC 1-3 because legal challenges at the federal level significantly delayed US EPA's implementation of this standard. (A rulemaking to adopt the standard was commenced once the federal challenges were concluded and are expected to be completed in the fall of 2003). Therefore, IDEM properly evaluated the predicted impacts of the proposed source against the ozone standard that was in effect and found that it would not cause or contribute to an exceedance of that standard.

Moreover, because of the complex way ozone is formed, it is unlikely that any single source will significantly contribute to an air quality violation. Even estimating the impacts on ozone values of an individual source is extremely difficult. Ozone is formed from a wide variety of sources over a broad geographic area. The precise mix of ozone precursors (VOC and NOX) and meteorology will determine ozone levels under given conditions, and available air quality modeling tools are of limited accuracy. For this reason, IDEM's analysis of the likely impact of a

proposed source on ozone begins with a determination of how much VOC and NOX the source will contribute to the region-wide inventory. In this case, SDI's contribution to the VOC inventory is very small (1.4% of the total VOC emissions) and while its NOX emissions represent a larger percentage of the regional inventory (4.2%), NOX emissions will be decreasing substantially after the requirements 326 IAC 10-3 and 10-4 (the Indiana "NOX SIP Call" rule) are fully implemented in 2004. Under these circumstances, a conclusion that emissions from the proposed facility would not contribute to a violation of an air quality standard was reasonable.

The ozone analysis used a model-screening tool called the Reactive Plume Model (RPM). This model program only predicts 1-hour concentrations for a given ozone day. The RPM model has no ability to predict 8 hour averages. Single source 8-hour ozone modeling maybe 3 to 4 years in the future for certain parts of the state given the current technology and software. The current modeling analysis predicts the 8-hour concentrations because it is beyond the technical ability of the current model. However, the analysis does show that SDI will not increase one-hour concentrations, within the range of the current modeling tools. Therefore SDI will not have a significant impact on local 8-hour ozone levels.

There is no change in the draft permit due to this comment.

At this time, Hendricks County, IN is classified as attainment for all criteria pollutants, SDI or any source in the entire county has to be evaluated in terms of air regulations based on existing effective rules. IDEM does not have the authority to specify requirements beyond the existing status of the county. However, IDEM has made preliminary recommendations on each county and this recommendation can be found in the IDEM's website and part of this TSDA.

Additional information and updates of the status of the Eight-Hour National Ambient Air Quality Standards for Ozone can be viewed in the IDEM's web site:
http://www.in.gov/idem/air/8hourstandard/index.html

Comments on Appendix B - PSD BACT Analysis

(1) Domestic BACT Data

The BACT evaluation seems to only cite domestic source data. I do not believe that BACT is legally limited to domestic sources. Therefore the BACT evaluation is incomplete. Numerous examples of emission control technologies from OUS sources were cited by interested parties during the SDI Whitley, IN permit process. [David Hoggatt]

IDEM Response

The IDEM evaluated the sources outside of the US during the review of the Whitley County permit and found that there were no sources with lower emissions than those found in the RBLC. The IDEM continues to evaluate all known sources of information when evaluating BACT.

(2) Radioactive Materials

(a) Even though OAQ is not aware that radioactive materials will be used in the SDI plant, the permit should specify not to accept any load of scrap material if radioactive materials or radiation sources are detected. [Lois Hoffman]

(b) Will IDEM under this permit require that all scrap used in this operation be scanned and/or screened for radioactivity? This must be a direct, enforceable requirement of this permit. [David Hoggatt]

IDEM Response

As part of the Scrap Management Plan (SMP), SDI has to check scrap visually and by the use of radiation detector. The SMP is part of the permit, and it is an enforceable requirement.

(3) Endangered Species

Please list the sources(databases etc) that were used to make this determination. [David Hoggatt]

IDEM Response

Attached to this TSD Addendum is a list of endangered species. IDEM used this and the information in the web sites of the Indiana Department of Natural Resources, Indiana Division of Fish and Wildlife, US Fish and Wildlife Services in Indiana and Department of Commerce, National Marine Fisheries references for determinations regarding impacts of the proposed facility on endangered species. (http://endangered.fws.gov)

Comments on Appendix C - - Air Quality Analysis

(1) Air Modeling Evaluation

Was the modeling that was conducted to address topics (D) and (E) in the introduction [National Air Quality Standards or Prevention of Significant Deterioration(PSD) increment and Air toxins compounds for a health risk factor of the general population] conducted in such a way to simulated the conditions that could be present from making the different grades of product. Also, as was clear in the BACT evaluation, the emissions levels cycle with the operations specifically the impact of the EAF operations. Were these peaks also simulated in the model? If such peaks were not included, IDEM should provide this data as part of the review process.

[David Hoggatt]

IDEM Response

The modeling for the NAAQs, increment, and toxics was conducted based on the maximum allowable emission rates in Appendix B (Appendix B emission rates correspond to Table 1-1 and Table 4-1 of the application). The Table 4-1 emission rates were used for the NAAQS and increment AQ analysis.

For SO2, the highest allowable emissions were used for the 3 hour and 24 hour standards. The maximum allowable annual emissions were used for the annual standards. Those rates are stated in Table 4-1. Regardless of the products made, the SDI cannot go above the emission rates they have applied for in their permit application. There is no change in the draft permit due to this comment.

(2) Lead Toxicity

Given the toxicity of Pb, IDEM should include the data from the modeling of Pb that was discussed in the 3rd paragraph of this section. [David Hoggatt]

IDEM Response

Lead (Pb) is regulated by US EPA under the NAAQS. Below is the worst modeled concentration for lead from SDI. The total concentration is well below the NAAQS. There is no change in the draft permit due to this comment.

Year	Quarter	Source ug/m^3	Background ug/m^3	Total ug/$m3^3$	NAAQS ug/m^3
1994	3	.008	.09	.098	1.5

(3) 1991 SO2 Annual Emissions

The SO2 annual results(1991) , "Background concentration" do not match those in Table 4 of this appendix. Which is correct? [David Hoggatt]

IDEM Response

This was a typographical error. The background value is 15.7 ug/m^3 as stated in Table 4 of Appendix C.

(4) Air Analysis Other Tools

Documents provided during the SDI Whitley, IN permit process clearly demonstrate that multiple assessment tools are available to evaluate the additional risk to the public as a result of this source. This evaluation/health assessment must be conducted and shared with the public prior to permit approval. [David Hoggatt]

IDEM Response
Determining the increased risk to public health from a particular facility is extremely difficult. IDEM has conducted appropriate analysis of the impacts of the proposed facility on human health and concludes that this plant will not threaten the health of citizens living, working, or attending school in the vicinity of the plant.

For some pollutants, such as lead, US EPA has established ambient levels that are protective of human health. Anticipated emissions can be modeled and resulting ambient levels compared to the federal standard. If levels are not expected to increase above US EPA's ambient standard, it is appropriate to conclude that the proposed facility will not pose an increased threat to public health. In this case, ambient levels are predicted to be significantly below the health standard even with SDI's emissions.

With respect to the health impacts of air toxics, pollutants for which US EPA has not established acceptable ambient levels, the health risk is even much more difficult to asses. The evaluations conducted by IDEM are much more detailed than required by US EPA or performed by other states in similar situations. US EPA does not required that any air quality modeling be conducted for new sources of HAP to determine their possible impact on public health but rather relies on the implementation of maximum achievable control technology (MACT) for those sources determined to be major sources of HAP. This is true because there is no universally accepted method to evaluate the potential risk to public health and the environmental harm resulting from exposure to emissions of air toxics from a particular source. The difficulty of basing a regulatory strategy on risk assessment is exemplified by the lack of emission regulations for HAP prior to the 1990 Clean Air Act Amendments. It should also be noted that existing air quality models for HAP are limited in their ability to accurately forecast concentrations of pollutants, commonly measured in the parts-per-billion or parts-per-trillion ranges.

(5) Indiana's Air Quality
Indiana's air quality is very poor and the pollutants poured into the air on a daily basis are not doing anyone in this state any good. Adding more pollution is not desirable.
[Susan Ebershoff-Coles]

IDEM Response
The Clean Air Act (CAA) established requirements and a process for states to improve air quality and preserve healthy air. That process involves regional assessments, planning and reduction strategies as well as strict permitting requirements for all new significant sources of emissions. The CAA does not prohibit the construction of new sources in order to preserve air quality. In fact, one of the premises of the CAA is that, over time, industry will become less polluting. The permitting requirements help accomplish this goal, by requiring new sources to use the most up to date pollution control technology. If a source shows in its permit application that it will meet the strict requirements, it will be issued a permit. That permit will ensure that the source's emissions will be restricted as required by law to protect air quality.

Separate efforts are underway in Central Indiana to identify measures that will improve air quality. There will be substantial reductions in NOx emissions region wide when Indiana's NOx control rule is fully affective in 2004, and federal rules requiring cleaner diesel engines and lower sulfur fuel will be implemented over the next several years. Regional air quality plans that include clean air programs such as these complement the permitting programs so that progress can be made toward cleaner air without shutting down economic activities.

There is no change in the draft permit due to this comment.

(6) Existing Air Monitors

In Table 4, does IDEM take into consideration the other 2 monitors operated by Qualitech? Qualitech never operated at full capacity. SDI is in the process of expanding the perimeters of the mill at this time. [Lois Hoffman]

IDEM Response

Yes. The values for the two (2) monitors were lower so IDEM chose the monitor with the highest value for the AQ analysis. The post construction monitoring used in the AQ analysis is a good representation of the area's existing air quality. This was used as background for the AQ analysis. The modeling takes into account any expansion of SDI's emissions. There is no change in the draft permit due to this comment.

(7) NATA/CEP Benchmarks

(a) In Table 8, Arsenic, Cadmium, Chromium VI emission levels are above the NATA/CEP benchmarks. Please give further information concerning less toxic and carcinogenic emissions. In comparing the Qualitech PSD with the current document, it appears that SDI will be emitting higher levels of some of the HAPs. The Qualitech document stated that the applicant was notified in writing that the air toxic emissions exceeded the major source applicability levels and that it would be beneficial to everyone if they would reduce or eliminate these emissions. This should be addressed in the SDI document. [Lois Hoffman]

(b) IDEM should specifically summarized the health risk associate with the 3 compounds (Arsenic, Cadmium and Chromium VI) that exceed the National Air Toxic Assessment/Cumulative Exposure Project benchmark(summarized in Table 8). The summary section of this appendix notes the 3 emissions, but makes not a statement of potential to impact public health. This must be clearly understood prior to issuance of this permit . [David Hoggatt]

IDEM Response

This permit contains provisions that ensure compliance with every legal requirement that the Office of Air Quality has authority to apply to the construction of new sources. As previously discussed, the IDEM and ISDH have published a report in response to SEA 259 regarding activities that the departments should pursue, including seeking additional authority to regulate HAPs. The information regarding the potential air quality impact of HAPs is one of many examples of information that will guide future decisions in this area. Again, as previously discussed, the SEA 259 Report has identified electric arc furnaces as a potential area of focus.

General Comments

(1) Potential to Emit - - Qualitech vs SDI

Does the proposed modification of the Qualitech permit allow more pollution or less pollution? If more pollution is to be allowed, why? Since technology is such a wonderful thing and corporations are such responsible citizens, surely the pollution control methods are better and more sophisticated now than they were when Qualitech received permission to pollute.

[Susan Ebershoff-Coles]

IDEM Response

Below is the table provided at the public hearing that compares the emissions limits of the Qualitech's permit to those proposed for SDI. The SDI permit will allow less emissions than were permitted under Qualitech permit.

	Qualitech (existing permit)	SDI (proposed new permit)	Difference based on operating at 125 ton per hours capacity
Maximum Capacity	135 tons of Metal produced per Hour	125 tons of Metal produced per hour	Lower capacity
NO_x	0.50 lb of NOx emitted per ton of metal produced	0.35 lb of NOx emitted per ton of metal produced	decrease of 81.125 tons per year
SO_2	Low Sulfur Bar: 0.25 lb of SO_2 emitted per ton of metal produced	Low Sulfur Bar: (65% of total product) 0.25 lb of SO_2 emitted per ton of metal produced	decrease of 168 tons per year (Comparison is based on the assumption that Qualitech will produce 100% 1200 series product and SDI is based on the 35%. However, individual 1100 and 1200 limits are being revised).
	1100 SBQ series product: 0.52 of SO_2 emitted per ton of metal produced	1100 SBQ series product: (20% of total product) 1.5 lb of SO_2 emitted per ton of metal produced	
	1200 SBQ series product: 1.04 lb of SO_2 emitted per ton of metal produced	1200 SBQ series product : (15% of total product) 1.8 lb of SO_2 emitted per ton of metal produced	
VOC	0.13 lb of VOC emitted per ton of metal produced	0.13 lb of VOC emitted per ton of metal produced	SAME
CO	4.7 lb of CO emitted per ton of metal produced	2 lb of CO emitted per ton of metal produced	decrease of 1478.25 tons per year
PM PM_{10}	0.0032 grains per dry standard cubic feet	PM: 0.0018 grains per dry standard cubic feet PM_{10} = 0.0052 grains per dry standard cubic feet	decrease of 28.9 tons per year
Opacity	3% from the EAF Baghouse 5% from other Meltshop operations	3% from the EAF Baghouse/LMS Baghouse common stack There is no Meltshop roof monitor	SAME 0% opacity
Fugitive Dust	3% Roof canopies	3% Roof canopies	SAME

As described elsewhere in this Addendum, several emission limits have been made more strict in the final permit.

(2) Permit - - Qualitech vs SDI Part 2

In several places throughout the permit, OAQ made references to Qualitech permit, and stated that SDI will follow the same procedure, however, the procedure was not stated. It is stated that the proposed PSD/SSM permit replaces all the existing permits of the steel mill. The SDI permit therefore should contain the written procedure that was stated in the Qualitech permit. [Lois Hoffman]

IDEM Response

Qualitech's existing permit was used as a reference. Most limits and applicable requirements have been revised and specified in the proposed permit. The new permit that will be issued to SDI, Hendricks, IN is a stand-alone permit, independent and enforceable on it own and applicable requirements have all been incorporated.

(3) Grounds For Permit Denial

Based on my review, I strongly recommend that this permit not be issued in its current state (as provided for public comment). [David Hoggatt]

IDEM Response

IDEM considers comments from the public and interested parties seriously and as a result has made changes to the permit in response to valid points that have been raised. IDEM does not have a legal basis to deny the permit. The permit was written assures that SDI will comply with all applicable requirements.

(4) Application Submission Date

The application was received on 12/31/02. Was there any regulatory advantage gained in filing in 2002, instead of 2003? if so list the specific rules/regulations and how they may have impacted the permit. [David Hoggatt]

IDEM Response

There is no difference in requirements due to the application being filed in 2002 rather than 2003. The filing date is mainly used as the reference date in determining the permit accountability time frame. Rules, regulations and applicable requirements are evaluated based on their applicability at the time of the permitting review.

(5) Train and Truck Emissions

Have train and truck emissions that will be servicing this facility been factored into the evaluation as well as any impact from the interstate. [David Hoggatt]

IDEM Response

Fugitive dust emitted from trucks within the property lines of SDI has been taken into account in this review. It is SDI's responsibility to minimize emissions while these vehicles are within their boundary and to assure that emissions do not cross the property line, the fugitive dust plan is the control method to lessen the dust.

Emissions from trucks and locomotives are considered secondary and mobile emissions. Under the definition of potential to emit in 326 IAC 2-2, secondary emissions from such as these are not counted toward determination of PSD applicability.

The impact of secondary emissions must be evaluated when the source is to be located with in 100 kilometers of a Class I area (i.e. wilderness). SDI Hendricks, IN is located more than 100 kilometers from the nearest Class I area (Mammoth Cave, KY), so this analysis was not required.

(6) Testing Device

Who will own the testing devices? How often will they be monitored? How long will the monitoring continue? [Susan Ebershoff-Coles]

IDEM Response

The testing devices will be either owned by SDI or by a consultant if SDI contracts for these services.

In most cases, monitoring is required to be done once per shift that SDI is operating, though in some cases, different frequencies apply. The monitoring is continuous and lasts as long as SDI is operating.

(7) Violation and Penalty

What penalties will be accessed for violations? As to Qualitech, the promises were never fulfilled. There were violations. What fines were levied and what actions, if any, were taken to correct the problems? [Susan Ebershoff-Coles]

IDEM Response

Indiana State law authorizes a fine up to $25,000 per day per violation. The amount of the fine depends on the magnitude of the violation, the potential harm to human health and the environment, the economic benefit gained by the violator by not complying, and the violator's efforts to achieve compliance. The provisions for enforcing the Indiana Administrative Code (IAC) are found in the Indiana Code at IC 13-14-1-12, IC 13-14-2-7 and IC 13-30-3. The IDEM does not believe that it is necessary to include the provisions for enforcement in the permit. Since the action for enforcement depends on the type of violation, it would be impossible to specifically list what action would be taken for a given violation.

The IDEM's mission is to respond to violations with timely, quality enforcement actions that accomplish three (3) major goals:

(a) achieve compliance,
(b) deter future violations, and
(c) result in an improved environment.

IDEM confirms that there were instances of non-compliance that occurred in the mill when it was operating under Qualitech. These were primarily mostly opacity exceedances and baghouse failures. IDEM worked with Qualitech to resolve the exceedances, which were mostly due poor engineering design of the plant. The violations were not resolved because the plant shut down.

A company's compliance history is taken into consideration while drafting the permit. These considerations are made to determine what monitoring and testing is necessary at the plant.

With the knowledge of the previous owner's problems, SDI purchased a new opacity monitor ($25,000), to replace Qualitech's COM. The new monitor is specifically designed to measure opacity in the 0 to 10% range (as opposed to the existing monitor, which was designed to measure in the 0 to 100% range). SDI made this step:

(a) to collect higher quality data for purposes of assessing operation and compliance and
(b) to provide more precise data to assist in quickly identifying and resolving operational problems, should they occur.

In addition to a new COM, SDI is required to install a baghouse leak detector, which is a supplemental method to monitor compliance and problems that may be developing in a quick and accurate manner.

(8) Activities in the Plant Prior to Permit Issuance

(a) I have noted activity at the plant. What pollutants are currently being spewed into the air? [Susan Ebershoff-Coles]

(b) Any activities in the plant that is going on prior to the issuance of the permit? [Lois Hoffman]

IDEM Response
There are no activities related to the physical construction or modification at SDI. There are SDI personnel doing various office work, landscaping, and physical plant evaluations. Also the Air Liquide plant continues to operate to serve its other clients.

(9) Consistent Use of PM and PM10

PM and PM10 were not consistently applied to the operations represented in this permit. It would be helpful if IDEM would provide a consistent use of these terms and/or offer means of comparisons to other BACT sources. [David Hoggatt]

IDEM Response
IDEM has reviewed the entire draft permit and when appropriate either made the changes or added an explanation.

(10) Modified Plans and Controls

Has IDEM reviewed the modified plan, modified emission controls? Have you they been found to be fully compliant with the requirements? [Jim Murphy]

IDEM Response
IDEM has reviewed the modified plan and emission controls that are being proposed in the mill. The BACT requirements (limits and control equipment) were evaluated based on these modified plans. SDI must modify existing emitting units and/or install new units to comply with all the requirements of their permit.

(11) Nighttime Operations

Around 10:30 PM, I go to work at night. Several times I have caught them (Qualitech) releasing pollutants at night when no one can see it. You can drive by and you can taste it in your car. A big orange cloud would float across the highway. [Robert Lake]

IDEM Response
SDI must use the same controls, implement the same work practices, comply with the same limits and maintain the same monitors at any time of the day that they are operating. SDI must keep records and certify on a regular basis that they are in compliance with all requirements all the time.

If there is a reason to believe that SDI is not complying at night or at any other time, or IDEM receives complaints from citizen, IDEM will investigate and take actions appropriate. IDEM and upon investigation, IDEM may perform surveillance of the plant during the night operation. IDEM compliance inspections are unannounced and can last up to three (3) days for plants such as this. In addition to inspecting the plant operations, records are reviewed for past operation. Visible emissions can also be determined during routine surveillance activities that are shorter in duration and may not require entrance into the plant.

(12) Economy

(a) In addition to the SDI's emissions will either be the same or less than Qualitech's permit allows, there are 200-plus jobs that SDI is proposing to provide, it is estimated that an approximately $250 million into this area's economy, IDEM is urged to issue the permit. [Harold Gutzwiller]

(b) The town works with IDEM on numerous occasions and found that they been pretty good watchdog over us and we will assume this will continue with the steel mill. I think we need the job. It is also going to help the community with our wastewater rates and tax dollars. [Terry Mitchell]

(c) We built with the idea of getting jobs, economic benefit to the town. I hope SDI comes on strong, does a good job, and we have a relationship for 30 to 50 years. [Larry Herring]

(d) The steel mill has been there. I think it will be a boom to our community. In the overview of the states, if an applicant demonstrate that they will be able to comply with all federal and state laws, IDEM is required by law to issue the permit. these people may be going after you, but they need to be going after the people that set the law, set the standards, rather than you. Rather than them coming here and trying to be against the steel mill or something, go to the people that write these laws, set the requirements, and then you've got something else to work with. But until that time, I think you -- if they comply with the issues involved, I think they deserve to get the permits. [Myron Mitchell]

(e) I believe it would be a good thing for the community as far as the economy. Based upon all the jobs leaving around, I think it would do nothing but good. [Clark Davis]

(f) It has never been a nuisance to me. There's nothing between me and but bare fields in the wintertime. The noise is nothing compared to the airplanes and school buses, so I think it is a great thing. [Elizabeth Ammons]

(g) This town has done nothing but gripe and complain over the water and sewer since the steel mill shut down because we lost all of the payment from it, and I think it's a good thing that it is opening back up. [Robert Barnette]

(h) This country was built by mining and manufacturing, so a little manufacturing might be good. [Fred Davis]

(i) I do not think it is a political issue. I mean as some of these people are trying to say we need the jobs, it's not really a political issue if it's going to be here or not. I believe most people's concern at this point is to make it as environmentally friendly as possible to all of the surrounding people, and that's our goal in this, and that's why we are concerned and are trying to get involved. [Daryl Hoffman]

(j) Has SDI received any public or government funding or has performance bond to protect the county? [Bill Bollman]

IDEM Response

IDEM acknowledges comments expressing support for the issuance of the permit. Federal and State air permitting programs have been established to ensure that new or existing plants will emit air pollutants at a rate that protects the environment and the citizen. IDEM is not aware of any public or government funding or bonds that SDI received to re-start the operation of the mill. For more information, the Hendricks County Commissioner can be contacted. IDEM does not have the authority to require a private company to provide funding for county or state environmental programs. IDEM appreciates the time and effort of the public in the air-permitting program. There is no change in the draft permit due to these comments.

May 12, 1999

ENDANGERED, THREATENED AND RARE SPECIES, HIGH QUALITY NATURAL COMMUNITIES,
AND SIGNIFICANT NATURAL AREAS DOCUMENTED FROM ALLEN, HUNTINGTON, KOSCIUSKO, NOBLE
WABASH AND WHITLEY COUNTIES, INDIANA

TYPE	SPECIES NAME	COMMON NAME	STATE	FED	QUADRANGLE	TOWNRANGE	SEC	NOTES	DATE	COMMENTS
Allen County										
Mollusk	EPIOBLASMA OBLIQUATA PEROBLIQUA	WHITE CAT'S PAW PEARLYMUSSEL	SE	LE	FORT WAYNE WEST	030N012E		ST MARYS	1912	HISTORICAL
Bird	FALCO PEREGRINUS	PEREGRINE FALCON	SE	E(S/A)	FORT WAYNE WEST	030N012E	02	EH SEQ	1999	
Mollusk	PLEUROBEMA CLAVA	CLUBSHELL	SE	LE	FORT WAYNE EAST	030N012E	2		1997	FRESH DEAD
						030N012E	3	Mollusk	EPIOBLASMA OBLIQUATA PEROBLIQUA	WHITE CAT'S PAW PEARLYMUSSEL
SE	LE	FORT WAYNE EAST			030N013E	MAUMEE RIVER		1912	HISTORICAL	
								BETWEEN NEW	Mollusk	EPIOBLASMA OBLIQUATA PEROBLIQUA
WHITE CAT'S PAW PEARLYMUSSEL	SE	LE	FORT WAYNE EAST		031N012E	25	SEQ SEQ NEQ	1997	FRESH DEAD	
Mollusk	EPIOBLASMA TORULOSA RANGIANA	NORTHERN RIFFLESHELL	SE	LE	FORT WAYNE EAST	031N012E	25	SEQ SEQ NEQ	1988	SUBFOSSIL
Mollusk	PLEUROBEMA CLAVA	CLUBSHELL	SE	LE	FORT WAYNE EAST	031N012E	25	SEQ SEQ NEQ	1997	FRESH DEAD
Mollusk	EPIOBLASMA OBLIQUATA PEROBLIQUA	WHITE CAT'S PAW PEARLYMUSSEL	SE	LE	CEDARVILLE	031N013E		FEEDER CANAL	1912	HISTORICAL
								OF WABASH	Mollusk	EPIOBLASMA OBLIQUATA PEROBLIQUA
WHITE CAT'S PAW PEARLYMUSSEL	SE	LE	WOODBURN NORTH		031N015E	05	SWQ SEQ SEQ	1988	SUBFOSSIL	
						031N015E	08	NWQ NEQ NEQ	Mollusk	PLEUROBEMA CLAVA
CLUBSHELL	SE	LE	WOODBURN NORTH		031N015E	05	SWQ SEQ SEQ	1988	WEATHERED SHELLS	
						031N015E	08	NWQ NEQ NEQ	Mollusk	EPIOBLASMA OBLIQUATA PEROBLIQUA
WHITE CAT'S PAW PEARLYMUSSEL	SE	LE	GRABILL		031N015E	07	NWQ SWQ SEQ	1988	SUBFOSSIL	
Mollusk	EPIOBLASMA TORULOSA RANGIANA	NORTHERN RIFFLESHELL	SE	LE	GRABILL	031N015E	07	NWQ SWQ SEQ	1988	SUBFOSSIL
Mollusk	PLEUROBEMA CLAVA	CLUBSHELL	SE	LE	GRABILL	031N015E	07	NWQ SWQ SEQ	1988	WEATHERED SHELLS
Mollusk	EPIOBLASMA OBLIQUATA PEROBLIQUA	WHITE CAT'S PAW PEARLYMUSSEL	SE	LE	CEDARVILLE	032N013E	28	NEQ SWQ SEQ	1988	SUBFOSSIL
Mollusk	EPIOBLASMA TORULOSA RANGIANA	NORTHERN RIFFLESHELL	SE	LE	CEDARVILLE	032N013E	28	NEQ SWQ SEQ	1988	SUBFOSSIL
Mollusk	EPIOBLASMA TORULOSA RANGIANA	NORTHERN RIFFLESHELL	SE	LE	CEDARVILLE	032N013E	28	SWQ SWQ NEQ	1988	SUBFOSSIL

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ENDANGERED, THREATENED AND RARE SPECIES, HIGH QUALITY NATURAL COMMUNITIES,
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WABASH AND WHITLEY COUNTIES, INDIANA

TYPE	SPECIES NAME	COMMON NAME	STATE	FED	QUADRANGLE	TOWNRANGE	SEC	NOTES	DATE	COMMENTS
Mollusk	PLEUROBEMA CLAVA	CLUBSHELL	SE	LE	CEDARVILLE	032N013E	28	NEQ SWQ SEQ	1988	SUBFOSSIL
Mollusk	PLEUROBEMA CLAVA	CLUBSHELL	SE	LE	CEDARVILLE	032N013E	28	SWQ SWQ NEQ	1988	SUBFOSSIL
Mollusk	PLEUROBEMA CLAVA	CLUBSHELL	SE	LE	CEDARVILLE	032N013E	32	SEQ SWQ NEQ	1988	WEATHERED SHELLS
Mollusk	PLEUROBEMA CLAVA	CLUBSHELL	SE	LE	CEDARVILLE	032N013E	32	SWQ NWQ SEQ	1988	WEATHERED SHELLS
Huntington County										
Mammal	MYOTIS SODALIS	INDIANA BAT OR SOCIAL MYOTIS	SE	LE	MOUNT ETNA	027N009E	33	NEQ SWQ	1990	
Mollusk	PLEUROBEMA CLAVA	CLUBSHELL	SE	LE	MAJENICA	028N009E	27	SEQ SEQ NEQ	1988	WEATHERED SHELLS
Kosciusko County										
Mollusk	PLEUROBEMA CLAVA	CLUBSHELL	SE	LE	SOUTH WHITLEY WEST	030N007E	11	SEQ	1987	WEATHERED SHELLS
Mollusk	EPIOBLASMA TORULOSA RANGIANA	NORTHERN RIFFLESHELL	SE	LE	MENTONE	032N004E	10	NEQ NWQ	1991	WEATHERED SHELLS
Mollusk	PLEUROBEMA CLAVA	CLUBSHELL	SE	LE	MENTONE	032N004E	10	NEQ NWQ	1991	FRESH DEAD
Mollusk	EPIOBLASMA OBLIQUATA PEROBLIQUA	WHITE CAT'S PAW PEARLYMUSSEL	SE	LE	BURKET	032N005E	05	SWQ SEQ SWQ	1991	WEATHERED SHELLS
						032N005E	08	NWQ NEQ NWQ	Mollusk	EPIOBLASMA TORULOSA RANGIANA
	NORTHERN RIFFLESHELL	SE	LE	BURKET	032N005E	05	SWQ SEQ SWQ	1991	WEATHERED SHELLS	
Mollusk	PLEUROBEMA CLAVA	CLUBSHELL	SE	LE	BURKET	032N005E	05	SWQ SEQ SWQ	1991	LIVE
						032N005E	08	NWQ NEQ NWQ	Mollusk	EPIOBLASMA TORULOSA RANGIANA
	NORTHERN RIFFLESHELL	SE	LE	BURKET	032N005E	11	NEQ NEQ NWQ &	1992	WEATHERED SHELLS	
							NWQ NWQ NEQ	Mollusk		PLEUROBEMA CLAVA

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TYPE	SPECIES NAME	COMMON NAME	STATE	FED	QUADRANGLE	TOWNRANGE	SEC	NOTES	DATE	COMMENTS
		CLUBSHELL	SE	LE	BURKET	032N005E	11	NEQ NEQ NWQ & 1992 WEATHERED SHELLS		
								NWQ NWQ NEQ		
Mollusk	PLEUROBEMA CLAVA	CLUBSHELL	SE	LE	BURKET	032N006E	06	SWQ SEQ SWQ	1992	WEATHERED SHELLS
Mammal	MYOTIS SODALIS	INDIANA BAT OR SOCIAL MYOTIS	SE	LE	WARSAW	032N006E	12	NWQ SWQ SWQ	1992	
Mollusk	EPIOBLASMA TORULOSA RANGIANA	NORTHERN RIFFLESHELL	SE	LE	LEESBURG	033N006E	14	SWQ	1987	WEATHERED SHELLS
Mollusk	EPIOBLASMA TORULOSA RANGIANA	NORTHERN RIFFLESHELL	SE	LE	LEESBURG	033N006E	14	SWQ NEQ NEQ	1992	WEATHERED SHELLS
Mollusk	PLEUROBEMA CLAVA	CLUBSHELL	SE	LE	LEESBURG	033N006E	14	NWQ SWQ	1991	LIVE
Mollusk	PLEUROBEMA CLAVA	CLUBSHELL	SE	LE	LEESBURG	033N006E	14	SWQ NEQ NEQ	1992	FRESH DEAD
Mollusk	EPIOBLASMA OBLIQUATA PEROBLIQUA	WHITE CAT'S PAW PEARLYMUSSEL	SE	LE	LEESBURG	033N006E	15	SEQ SEQ	1992	WEATHERED SHELLS
						033N006E	22	NEQ NEQ	Mollusk	EPIOBLASMA TORULOSA
RANGIANA	NORTHERN RIFFLESHELL	SE	LE	LEESBURG	033N006E	15	SEQ SEQ	1992	WEATHERED SHELLS	
Mollusk	PLEUROBEMA CLAVA	CLUBSHELL	SE	LE	LEESBURG	033N006E	15	SEQ SEQ	1992	LIVE
						033N006E	22	NEQ NEQ	Mollusk	EPIOBLASMA TORULOSA
RANGIANA	NORTHERN RIFFLESHELL	SE	LE	LEESBURG	033N006E	21	SEQ SEQ NEQ & 1992 WEATHERED SHELLS			
						033N006E	22	NEQ NEQ SEQ	Mollusk	PLEUROBEMA CLAVA
	CLUBSHELL	SE	LE	LEESBURG	033N006E	21	SEQ SEQ NEQ & 1992 LIVE			
						033N006E	22	NEQ NEQ SEQ		
								SWQ SWQ NWQ	Mollusk	EPIOBLASMA OBLIQUATA
PEROBLIQUA	WHITE CAT'S PAW PEARLYMUSSEL	SE	LE	LEESBURG	033N006E	30	SH SEQ SEQ	1991	WEATHERED SHELLS	
						033N006E	31	NH NEQ NEQ	Mollusk	EPIOBLASMA TORULOSA
RANGIANA	NORTHERN RIFFLESHELL	SE	LE	LEESBURG	033N006E	30	SEQ	1987	WEATHERED SHELLS	
Mollusk	PLEUROBEMA CLAVA	CLUBSHELL	SE	LE	LEESBURG	033N006E	30	SH SEQ SEQ	1991	LIVE
						033N006E	31	NH NEQ NEQ	Bird	FALCO PEREGRINUS
	PEREGRINE FALCON	SE	E(S/A)	NORTH WEBSTER	033N007E		MINERAL	1942		
								SPRINGS	Mollusk	EPIOBLASMA TORULOSA
RANGIANA	NORTHERN RIFFLESHELL	SE	LE	NORTH WEBSTER	033N007E	15	CTR	1987	WEATHERED SHELLS	

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TYPE	SPECIES NAME	COMMON NAME	STATE	FED	QUADRANGLE	TOWNRANGE	SEC	NOTES	DATE COMMENTS
Mollusk	EPIOBLASMA TORULOSA RANGIANA	NORTHERN RIFFLESHELL	SE	LE	NORTH WEBSTER	033N007E	15	SEQ SEQ NEQ	1991 WEATHERED SHELLS
TRI - COUNTY STATE FISH AND WILDLIFE AREA (DNR FISH AND WILDLIFE)									
Mammal	MYOTIS SODALIS	INDIANA BAT OR SOCIAL MYOTIS	SE	LE	NORTH WEBSTER	034N007E	34		1955
Noble County									
Plant	PLATANTHERA LEUCOPHAEA	PRAIRIE WHITE-FRINGED ORCHID	SE	LT	MERRIAM	033N009E	03		1884
Plant	PLATANTHERA LEUCOPHAEA	PRAIRIE WHITE-FRINGED ORCHID	SE	LT	KENDALLVILLE	034N010E	14		1886
Wabash County									
Mollusk	CYPROGENIA STEGARIA	EASTERN FANSHELL PEARLYMUSSEL	SE	LE	WABASH	027N006E	14		1988 LIVE
Mammal	MYOTIS SODALIS	INDIANA BAT OR SOCIAL MYOTIS	SE	LE	ROANN	028N005E	14	SEQ SWQ NWQ	1990
Mollusk	CYPROGENIA STEGARIA	EASTERN FANSHELL PEARLYMUSSEL	SE	LE	LAGRO	028N008E	29	SWQ SEQ	1988 WEATHERED SHELLS
Mollusk	PLEUROBEMA CLAVA	CLUBSHELL	SE	LE	NORTH MANCHESTER SOUTH	029N006E	01	NEQ SEQ	1987 WEATHERED SHELLS
Mollusk	PLEUROBEMA CLAVA	CLUBSHELL	SE	LE	NORTH MANCHESTER SOUTH	029N006E	10	SEQ SEQ SEQ	1987 WEATHERED SHELLS
Whitley County									

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Cancer and Non-Cancer Risk Based Concentrations				
.		INHALATION		
.		CHRONIC		
.		NONCANCER	CANCER	MINIMUM
CHEMICAL NAME	CAS NO	ug/m^3	ug/m^3	ug/m^3
Acetaldehyde	75-07-0	9	0.45	0.45
Acetamide	60-35-5	-	0.05	0.05
Acetonitrile	75-05-8	60	-	60
Acrolein	107-02-8	0.02	-	0.02
Acrylamide	79-06-1	0.7	0.00077	0.00077
Acrylic acid	79-10-7	1	-	1
Acrylonitrile	107-13-1	2	0.015	0.015
Allyl chloride	107-05-1	1	0.17	0.17
Aniline	62-53-3	1	0.63	0.63
Antimony trioxide	1309-64-4	0.2	-	0.2
Arsenic compounds	7440-38-2	0.03	0.00023	0.00023
Arsine	7784-42-1	0.05	-	0.05
Benzene	71-43-2	60	0.13	0.13
Benzidine	92-87-5	10	0.000015	0.000015
Benzotrichloride	98-07-7	-	0.00027	0.00027
Benzyl chloride	100-44-7	-	0.02	0.02
Beryllium compounds	7440-41-7	0.02	0.00042	0.00042
Bis(2-ethylhexyl)phthalate	117-81-7	10	0.42	0.42
Bis(chloromethyl)ether	542-88-1	-	0.000016	0.000016
Bromoform	75-25-2	-	0.91	0.91
1,3-Butadiene	106-99-0	8	0.1	0.1
Cadmium compounds	7440-43-9	0.02	0.00056	0.00056
Captan	133-06-2	-	1	1
Carbon disulfide	75-15-0	700	-	700
Carbon tetrachloride	56-23-5	40	0.067	0.067
Chlordane	57-74-9	0.7	0.01	0.01
Chlorine	7782-50-5	0.2	-	0.2
2-Chloroacetophenone	532-27-4	0.03	-	0.03
Chlorobenzene	108-90-7	1000	-	1000
Chlorobenzilate	510-15-6	-	0.013	0.013
Chloroform	67-66-3	98	0.043	0.043
Chloroprene	126-99-8	7	-	7
Chromium (VI) compounds	18540-29-9	0.1	0.000083	0.000083
Chromium (VI) trioxide	1333-82-0	0.1	-	0.1
Cobalt compounds	7440-48-4	0.005	-	0.005
Coke Oven Emissions	8007-45-2	-	0.0016	0.0016
Cresols (mixed)	1319-77-3	180	-	180
Cumene	98-82-8	400	-	400
Cyanazine	21725-46-2	-	0.0042	0.0042
Acetone cyanohydrin	75-86-5	10	-	10
Hydrogen cyanide	74-90-8	3	-	3
DDE	72-55-9	-	0.01	0.01
DDT	50-29-3	-	0.01	0.01
Dibromochloromethane	124-48-1	-	0.042	0.042
1,2-Dibromo-3-chloropropane	96-12-8	0.2	0.0005	0.0005
p-Dichlorobenzene	106-46-7	800	0.091	0.091
3,3'-Dichlorobenzidine	91-94-1	-	0.0029	0.0029
Dichloroethyl ether	111-44-4	-	0.003	0.003
1,3-dichloropropene	542-75-6	20	0.25	0.25
Dichlorvos	62-73-7	0.5	0.012	0.012
Diethanolamine	111-42-2	20	-	20
3,3'-Dimethoxybenzidine	119-90-4	-	0.25	0.25

Cancer and Non-Cancer Risk Based Concentrations				
.		INHALATION		
.		CHRONIC		
.		NONCANCER	CANCER	MINIMUM
CHEMICAL NAME	CAS NO	ug/m^3	ug/m^3	ug/m^3
p-Dimethylaminoazobenzene	60-11-7	-	0.00077	0.00077
3,3'-Dimethylbenzidine	119-93-7	-	0.00038	0.00038
Dimethyl formamide	68-12-2	30	-	30
1,1-Dimethylhydrazine	57-14-7	-	0.0004	0.0004
2,4-Dinitrotoluene	121-14-2	7	0.011	0.011
2,4/2,6-Dinitrotoluene (mixture)	25321-14-6	-	0.0053	0.0053
1,4-Dioxane	123-91-1	3000	0.13	0.13
1,2-Diphenylhydrazine	122-66-7	-	0.0045	0.0045
Epichlorohydrin	106-89-8	1	0.83	0.83
1,2-Epoxybutane	106-88-7	20	-	20
Ethyl acrylate	140-88-5	-	0.071	0.071
Ethyl benzene	100-41-4	1000	-	1000
Ethyl carbamate	51-79-6	-	0.0034	0.0034
Ethyl chloride	75-00-3	10000	1.2	1.2
Ethylene dibromide	106-93-4	0.8	0.0045	0.0045
Ethylene dichloride	107-06-2	2400	0.038	0.038
Ethylene glycol	107-21-1	70	-	70
Ethylene oxide	75-21-8	30	0.011	0.011
Ethylene thiourea	96-45-7	3	0.077	0.077
Ethylidene dichloride	75-34-3	500	0.63	0.63
Formaldehyde	50-00-0	9.8	0.077	0.077
Diethylene glycol monobutyl ether	112-34-5	20	-	20
Ethylene glycol butyl ether	111-76-2	970	-	970
Ethylene glycol ethyl ether	110-80-5	200	-	200
Ethylene glycol ethyl ether acetate	111-15-9	300	-	300
Ethylene glycol methyl ether	109-86-4	20	-	20
Ethylene glycol methyl ether acetate	110-49-6	90	-	90
Heptachlor	76-44-8	-	0.00077	0.00077
Hexachlorobenzene	118-74-1	3	0.0022	0.0022
Hexachlorobutadiene	87-68-3	90	0.045	0.045
Hexachlorocyclopentadiene	77-47-4	2.2	-	2.2
Hexachlorodibenzo-p-dioxin, mixture	19408-74-3	-	0.00000077	0.00000077
Hexachloroethane	67-72-1	80	0.25	0.25
Hexamethylene-1,6-diisocyanate	822-06-0	0.01	-	0.01
n-Hexane	110-54-3	200	-	200
Hydrazine	302-01-2	0.2	0.0002	0.0002
Hydrochloric acid	7647-01-0	20	-	20
Hydrofluoric acid	7664-39-3	30	-	30
Isophorone	78-59-1	2000	3.7	3.7
Lead compounds	7439-92-1	NAAQS	0.083	0.083
Lindane	58-89-9	0.3	0.0032	0.0032
alpha-Hexachlorocyclohexane (a-HCH)	319-84-6	20	0.00056	0.00056
beta-Hexachlorocyclohexane (b-HCH)	319-85-7	2	0.0019	0.0019
technical Hexachlorocyclohexane (HCH)	608-73-1	-	0.002	0.002
Maleic anhydride	108-31-6	1	-	1
Manganese compounds	7439-96-5	0.05	-	0.05
Mercury (elemental)	7439-97-6	0.3	-	0.3
Mercury compounds	HG_CMPDS	0.3	-	0.3
Methanol	67-56-1	10000	-	10000
Methyl bromide	74-83-9	5	-	5
Methyl chloride	74-87-3	100	0.56	0.56

Cancer and Non-Cancer Risk Based Concentrations				
.		INHALATION		
.		CHRONIC		
.		NONCANCER	CANCER	MINIMUM
CHEMICAL NAME	CAS NO	ug/m^3	ug/m^3	ug/m^3
Methyl ethyl ketone	78-93-3	1000	-	1000
Methyl hydrazine	60-34-4	-	0.0032	0.0032
Methyl isobutyl ketone	108-10-1	80	-	80
Methyl isocyanate	624-83-9	1	-	1
Methyl methacrylate	80-62-6	700	-	700
Methyl tert-butyl ether	1634-04-4	3000	-	3000
4,4'-Methylene bis(2-chloroaniline)	101-14-4	-	0.0023	0.0023
Methylene chloride	75-09-2	1000	2.1	2.1
Methylene diphenyl diisocyanate	101-68-8	0.6	-	0.6
4,4'-Methylenedianiline	101-77-9	20	0.0022	0.0022
Naphthalene	91-20-3	3	-	3
Nickel compounds	7440-02-0	0.2	0.0038	0.0038
Nickel oxide	1313-99-1	0.1	-	0.1
Nickel refinery dust	NI DUST	-	0.0042	0.0042
Nickel subsulfide	12035-72-2	-	0.0021	0.0021
Nitrobenzene	98-95-3	30	-	30
2-Nitropropane	79-46-9	20	0.00037	0.00037
Nitrosodimethylamine	62-75-9	-	0.000071	0.000071
N-Nitrosomorpholine	59-89-2	-	0.00053	0.00053
Polychlorinated biphenyls	1336-36-3	-	0.0091	0.0091
Pentachloronitrobenzene	82-68-8	-	0.014	0.014
Pentachlorophenol	87-86-5	100	0.2	0.2
Phenol	108-95-2	600	-	600
o-Phenylphenol	90-43-7	-	1.8	1.8
Phosgene	75-44-5	0.3	-	0.3
Phosphine	7803-51-2	0.3	-	0.3
Phosphorus, white	7723-14-0	0.07	-	0.07
Phthalic anhydride	85-44-9	10	-	10
Polycyclic Organic Matter	POM	-	-	-
Benzo(a)anthracene	56-55-3	-	0.0091	0.0091
Benzo(b)fluoranthene	205-99-2	-	0.0091	0.0091
Benzo(k)fluoranthene	207-08-9	-	0.0091	0.0091
Benzo[j]fluoranthene	205-82-3	-	0.0091	0.0091
Benzo(a)pyrene	50-32-8	-	0.00091	0.00091
Carbazole	86-74-8	-	0.18	0.18
Chrysene	218-01-9	-	0.091	0.091
Dibenz[a,h]acridine	226-36-8	-	0.0091	0.0091
Dibenz[a,j]acridine	224-42-0	-	0.0091	0.0091
Dibenz(a,h)anthracene	53-70-3	-	0.00083	0.00083
7H-Dibenzo[c,g]carbazole	194-59-2	-	0.00091	0.00091
Dibenzo[a,e]pyrene	192-65-4	-	0.00091	0.00091
Dibenzo[a,h]pyrene	189-64-0	-	0.000091	0.000091
Dibenzo[a,i]pyrene	189-55-9	-	0.000091	0.000091
Dibenzo[a,l]pyrene	191-30-0	-	0.000091	0.000091
7,12-Dimethylbenz(a)anthracene	57-97-6	-	0.000014	0.000014
1,6-Dinitropyrene	42397-64-8	-	0.000091	0.000091
1,8-Dinitropyrene	42397-65-9	-	0.00091	0.00091
Indeno(1,2,3-cd)pyrene	193-39-5	-	0.0091	0.0091
3-Methylcholanthrene	56-49-5	-	0.00016	0.00016
5-Methylchrysene	3697-24-3	-	0.00091	0.00091
2-Naphthylamine	91-59-8	-	0.000027	0.000027
5-Nitroacenaphthene	602-87-9	-	0.027	0.027
6-Nitrochrysene	2/8/7496	-	1/0/1900	1/0/1900
2-Nitrofluorene	607-57-8	-	0.091	0.091
1-Nitropyrene	5522-43-0	-	0.0091	0.0091

Cancer and Non-Cancer Risk Based Concentrations				
.		INHALATION		
.		CHRONIC		
.		NONCANCER	CANCER	MINIMUM
CHEMICAL NAME	CAS NO	ug/m^3	ug/m^3	ug/m^3
4-Nitropyrene	57835-92-4	-	0.0091	0.0091
1,3-Propane sultone	1120-71-4	-	0.0014	0.0014
Propoxur	114-26-1	-	0.91	0.91
Propylene dichloride	78-87-5	4	0.053	0.053
Propylene glycol monomethyl ether	107-98-2	2000	-	2000
Propylene oxide	75-56-9	30	0.27	0.27
1,2-Propyleneimine	75-55-8	-	0.00015	0.00015
Quinoline	91-22-5	-	0.00029	0.00029
Selenium compounds	7782-49-2	20	-	20
Hydrogen selenide	7/5/7783	1/0/1900	-	1/0/1900
Styrene	100-42-5	1000	-	1000
Styrene oxide	96-09-3	6	-	6
Chlorinated dibenzo-p-dioxins & furans as TEQ	dioxins	0.00004	-	0.00004
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	-	0.00000003	0.00000003
1,1,2,2-Tetrachloroethane	79-34-5	-	0.017	0.017
Tetrachloroethene	127-18-4	270	0.17	0.17
Titanium tetrachloride	7550-45-0	0.1	-	0.1
Toluene	108-88-3	400	-	400
2,4-Toluene diamine	95-80-7	-	0.00091	0.00091
2,4/2,6-Toluene diisocyanate mixture (TDI)	26471-62-5	0.07	0.091	0.07
o-Toluidine	95-53-4	-	0.02	0.02
Toxaphene	8001-35-2	-	0.0031	0.0031
1,2,4-Trichlorobenzene	120-82-1	200	-	200
1,1,2-Trichloroethane	79-00-5	400	0.063	0.063
1,1,1-Trichloroethane	71-55-6	1000	-	1000
Trichloroethylene	79-01-6	600	0.5	0.5
2,4,6-Trichlorophenol	88-06-2	-	0.32	0.32
Triethylamine	121-44-8	7	-	7
Trifluralin	1582-09-8	-	0.45	0.45
Uranium compounds	7440-61-1	0.3	-	0.3
Vinyl acetate	108-05-4	200	-	200
Vinyl bromide	593-60-2	3	0.032	0.032
Vinyl chloride	75-01-4	100	0.11	0.11
Vinylidene chloride	75-35-4	20	0.02	0.02
Xylenes (mixed)	1330-20-7	430	-	430

Indiana Department of Environmental Management
Office of Air Quality

Technical Support Document (TSD) for a Prevention of Significant Deterioration (PSD) and Part 70 Significant Source Modification (SSM)

Source Background and Description

Source Name:	Steel Dynamics, Inc. (SDI) - Bar Products Division
Source Location:	8000 North County Road 225 East, Pittsboro, IN 46167
Mailing Address:	8000 North County Road 225 East, Pittsboro, IN 46167
General Telephone Number:	317/892-7000
Responsible Official:	Plant Manager
County:	Hendricks
SIC Code:	3312 (Steel Mill)
NAICS Code:	331211
Source Categories:	1 of 28 Listed Source Categories Major PSD Source Minor Source under Section 112 of the CAA
Significant Source Modification:	PSD 063-16628-00037
Permit Reviewer:	Iryn Calilung

History

On October 31, 1996, the Office of Air Quality issued PSD permit 063-6093-00037 to Qualitech Steel Corporation (Qualitech), Section 35 and 36, Middle Township, Pittsboro, IN 46167 for a mini-steel recycling plant. The address was finalized by the postal service and the address of the plant is 8000 North County Road 225 East, Pittsboro, IN 46167. It started operating in 1998, however, the plant ceased operating in 2001.

Table 1 shows the air approvals issued to Qualitech , this information is based on the OAQ database. They are arranged in descending order of their issuance dates. This table is not inclusive, even though attempts have been made to account for all the issued air approvals made to Qualitech.

Table 1

Permit No.	Type	Issuance Date
063-8170-00037	Administrative Amendment	March 13, 1997
063-7276-00037	Administrative Amendment	December 20, 1996
063-6093-00037	Prevention of Significant Deterioration	October 31, 1996

Detailed Description of Proposed Project

Steel Dynamics, Inc. (SDI) purchased this mini mill. On December 31, 2002, SDI submitted an application to modify the plant to increase efficiency and accommodate the manufacturing of various bar products.

This mini-mill consists of the following units or processes:

(1) One (1) batch mode EAF, with a nominal capacity of 125 tons of steel per hour, utilizing capture system on a fourth hole duct or direct shell evacuation (DSE) system venting to a baghouse (EAF Baghouse) and a canopy hood for overhead roof exhaust. The EAF is equipped with natural gas fired oxy-fuel burners and uses low sulfur charge carbon. The EAF Baghouse has a flow rate of 675,000 acf/min.

(2) One (1) Ladle Metallurgy station (LMS), rated at 125 tons/hour, and exhausting to its own baghouse (LMS Baghouse). The LMS Baghouse has a flow rate of 85,000 acf/min.

Both the EAF Baghouse and LMS Baghouse exhaust to the same common stack. The meltshop does not have roof monitor.

(3) The EAF dust is conveyed to a dust storage silo, identified as EAF Dust Handling System.

(4) One (1) continuous Caster with a nominal casting rate of 125 tons/hour. This Caster is located in a separate room from the EAF and LMS and the tundish is covered with a lid. The fugitive emissions exhaust to a roof monitor.

(5) One (1) Reheat Furnace, with nominal capacity of 185 MMBTU/hour and equipped with natural gas fueled low NOx burners.

(6) Two (2) natural gas fueled low NOx Tundish Preheaters, each with nominal capacity of 9 MMBTU/hour.

(7) Five (5) natural gas fueled low NOx LMS Ladle Preheaters/Dryers, each with nominal capacity of 7.5 MMBTU/hour.

(8) Two (2) natural gas fueled low NOx Tundish Dryers, each with nominal capacity of 9 MMBTU/hour.

(9) Three (3) natural gas fueled low NOx Tundish Nozzle Preheaters, with nominal total capacity of 6 MMBTU/hour.

(10) One (1) vacuum tank degasser (VTD), rated at 125 tons/hour, equipped with a 38.4 MMBTU/hour flare; and one (1) VTD Boiler, rated at a nominal capacity of 48.4 MMBTU/hr and equipped with natural gas fueled low NOx burners.

(11) Supporting operations consisting of:
- - Caster cutting torches with nominal total capacity of 6.3 MMBTU/hour and use natural gas as fuel,
- - Bar cutting operation venting to a baghouse at a flow rate of 0.0052 gr/dscf and 30,000 dscf/min,
- - Scarfer venting to a baghouse at a flow rate of 48,200 dscf/min,
- - Bloom billet caster,
- - Water descaler,
- - Roughing mill,
- - Finishing mill,
- - Cooling bed,
- - Shipping and
- - Storage.

(12) Nine (9) silos to store lime, carbon, flux additives and EAF dust. Each silo is equipped with a bin vent filter, with a grain loading of 0.01 gr/dscf at a flow rate of 1,200 dscf/min.

(13) Scrap material handling, lime handling, carbon handling, slag handling, slag dumping, slag pots, slag crushing, slag screening, drop ball breaking, conveyors, storage piles. The slag processing and handling has a nominal rate of 300 tons/hour.

(14) Transportation on paved roadways, paved parking lots, unpaved roadways, and other unpaved areas around slag piles and steel scrap piles.

(15) Contact and Non-Contact Cooling towers, with nominal capacity of 44,000 gal/min and with drift eliminators as control:

Tower 1 -- Meltshop Non-Contact Cooling Tower - - 26,700 gal/min,
Tower 2 -- VTD Contact Cooling Tower - - 2,000 gal/min,
Tower 3 -- Bar Mill Contact Cooling Tower - - 9,700 gal/min, and
Tower 4 -- Bar Mill Non-Contact Cooling Tower - - 5,600 gal/min.

(16) Diesel fueled Emergency Generator(s), with total nominal capacity of 485 HP.

Prior to this application, Qualitech has provided documentation that some of the units and processes were not constructed as permitted. Qualitech and OAQ had several discussions on these and attempted to resolve the uncertainties during the source Part 70 permit review.

In this application, SDI - Bar Products Division evaluated the specifications of the existing units and processes and the table below compares the significant units or processes as previously permitted and the proposed modification.

SDI -Bar Products Division is proposing to modify the existing electric arc furnace (EAF). The EAF was previously estimated by Qualitech that the maximum capacity is 135 tons/hour. SDI re-evaluated this and determines that 125 ton/hour is the realistic nominal capacity of the EAF.

The mini-mill has an existing reheat furnace. SDI -Bar Products Division re-evaluated the specifications of this reheat furnace and proposing to utilize it at its realistic nominal capacity of 185 MMBTU/hour, and equipped with natural gas fueled low NOx burners.

On February 7, 2003, SDI - Bar Products Division submitted additional information on their intention to manufacture specialty bar quality (SBQ) products in addition to the standard long bar products. SDI -Bar Products Division is proposing to produce 65% of the low sulfur grade bar, 20% of the Series 1100 SBQ and 15% of the Series 1200 SBQ. The plant under Qualitech ownership was permitted to manufacture SBQ products. SDI - Bar Products Division re-evaluated the operations, test results and provided them as part of the PSD application and PSD BACT review.

On March 25, 2003, SDI - Bar Products Division submitted additional information on the addition of a baghouse to control the LMS for additional particulate control and safety of the employees, instead of the LMS exhausting to the EAF Baghouse. Both the EAF and LMS Baghouse are exhausting to a common stack, thus PSD BACT limits will be specified for the common stack, instead of for each baghouse.

On April 2, 2003, SDI - Bar Products Division and OAQ staff had a meeting and discussed the details of PSD BACT preliminary findings. A new responsible official and general phone contact

specific for the plant was also provided during this meeting.

The table below summarizes a comparison of the plant as previously permitted and as proposed.

Table 2

Unit/Process	Qualitech	SDI-Bar Products Division
EAF and Baghouse	135 ton/hr	125 ton/hr
EAF Baghouse Silo (Dust Handling)	- -	- -
LMS and Baghouse	135 ton/hr	125 ton/hr
Caster	135 ton/hr	125 ton/hr
Bloom/Billet Caster Cutting Torches	- -	6.3 MMBTU/hr
Vacuum Tank Degasser (VTD)	135 ton/hr	125 ton/hr
VTD Flare	- -	38.4 MMBTU/hr
VTD Boiler	67.5 MMBTU/hr	48.4 MMBTU/hr
Tundish Preheaters	5 MMBTU/hr (total for 2 units)	18 MMBTU/hr (total for 2 units)
Tundish Dryers	5 MMBTU/hr	18 MMBTU/hr
Ladle Preheaters/Dryers	8 MMBTU/hr (each for 4 units)	7.5 MMBTU/hr (each for 5 units)
Tundish Nozzle Preheaters	6 MMBTU/hr (total for 3 units)	6 MMBTU/hr (total for 3 units)
Reheat Furnace	175 MMBTU/hr	185 MMBTU/hr
Material Storage Silos	8	9
	- -	0.01 gr/dscf at 1,200 dscf/min
Tower 1 -Meltshop Non-Contact Cooling	12,000 gal/min	26,700 gal/min
Tower 2 - VTD Contact Cooling	2,000 gal/min	2,000 gal/min
Tower 3 - Bar Mill Contact Cooling	8,850 gal/min	9,700 gal/min
Tower 4 - Bar Mill Non-Contact Cooling		5,600 gal/min
Emergency Generator(s)	- -	485 HP
Unpaved and Paved Roads and Areas	- -	- -
Slag Handling and Processing	- -	300 tons/hr
Scarfer and Baghouse	36,300 dscf/min	48,200 dscf/min
Bar Cutting Building and Baghouse	- -	30,000 dscf/min.
Crushing Plant	- -	- -

Emission Calculations

Appendix A of this TSD shows the PTE of the mini mill. Permit level and PSD review was based on PTE after controls.

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.”

Table 3		
Pollutant	PTE (tons/yr)	PSD Significant Level (tons/yr)
CO	1,227.4	100
SO_2	402.199	40
NO_x	297.619	40
PM	115.49	25
PM_{10}	92.09	15
VOC	80.092	40
Lead	0.2186	0.6
Beryllium	0.000256	0.0004
Fluorides	1.89	3.0
Mercury	0.0620	0.1
Vinyl Chloride	0	1.0
Sulfuric Acid Mist	0	7.0
Hydrogen Sulfide	0	10
Total Reduced Sulfur	0	10
Asbestos	0	0.007

This table shows that the proposed modification is subject to PSD major review for CO, SO_2, NOx, PM, PM_{10} and VOC.

Justification for Modification

The Part 70 Source is being modified through a Part 70 Significant Source Modification, pursuant to 326 IAC 2-7-10.5 (f) (1) because this modification is major for 326 IAC 2-2 (Prevention of Significant Deterioration). This modification is major for PSD review, because the PTE from this modification is greater than significance thresholds under 326 IAC 2-2-1.

County Attainment Status

The source is located in Hendricks County. The table below shows the attainment status of Hendricks County.

Table 4	
Pollutant	Status
PM-10	Attainment
SO_2	Attainment
NO_2	Attainment
Ozone	Attainment
CO	Attainment
Lead	Attainment

(1) Volatile organic compounds (VOC) and Ozone
VOC are precursors for the formation of ozone. Therefore, VOC emissions are considered when evaluating the rule applicability relating to the ozone standards. Hendricks 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.

(2) Criteria Pollutants
Hendricks County has been classified as attainment or unclassifiable for all the other pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

(3) Fugitive Emissions
Since this type of operation is one of the 28 listed source categories under 326 IAC 2-2-1(y)(1), the fugitive PM emissions are counted toward determination of PSD and Emission Offset applicability.

Source Status

(1) 1 of 28 Listed Source Categories
SDI- Bar Products Division 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.

(2) Actual Emissions
The following table shows the actual emissions submitted by Qualitech. This information was taken from the OAQ Emission Inventory Database.

Table 5

Calendar Year	CO	NO_x	SO_2	PM_{10}	VOC	Pb
2001	1	3	0	0	0	- -
2000	498	122	72	9	10	- -
1999	263	58	44	6	5	- -
1998	144	35	5	10	6	0.3
Previous PTE	2,880	483	150	180	93	0.4
Proposed PTE	1,227.4	297.619	402.199	92.09	80.092	0.2186

(a) Actual emissions and PTE are in tons/year.

(b) The Previous PTE was at 135 ton/hr capacity and derived from the TSD of the PSD permit 063-6093-00037.

(c) The Proposed PTE is the PTE at 125 tons/hour and derived from this SDI - Bar Products Division application.

(d) Based on the actual emissions and proposed PTE, it can be concluded that the existing steel mill did not operate at its full capacity for the four years it had operated.

(3) Part 70 Source
Qualitech Steel submitted their Part 70 permit application on July 13, 1999. The Part 70 permit has not yet been issued. Review of the Part 70 application is suspended at this time because of the change of ownership and this proposed modification.

Federal Rule Applicability

(1) New Source Performance Standards (NSPS)

(a) SDI - Bar Products Division, IN is subject to 40 CFR Part 60 Subpart AAa (NSPS for steel plants: EAF and AOD).The provisions of these federal rules are subject to the EAF, and dust handling systems. This mini-mill does not have an AOD.

(i) Pursuant to 40 CFR 60.272a(1), the PM from the EAF shall not exceed 0.00052 gr/dscf.

(ii) Pursuant to 40 CFR 60.272a(2), the opacity from the baghouse controlling the EAF shall not exceed 3%.

(iii) Pursuant to 40 CFR 60.272a(2), the visible opacity from the Meltshop operations shall not exceed 6% opacity, based on a 6-minute average. There is no roof monitor in the meltshop.

(iv) Pursuant to 40 CFR 60.272a(2), the opacity from the EAF Dust handling System shall not exceed 10%.

(v) The requirement under 40 CFR 60.274a(f) and 40 CFR 60.274a(g) to monitor the free space inside the EAF is not applicable because there is no roof monitor in the meltshop.

(b) The VTD Boiler (48.4 MMBTU/hr) is subject to 40 CFR 60.40c Subpart Dc because it was constructed after June 9, 1989, and with maximum capacity between 10 MMBTU/hr and 100 MMBTU/hr. [40 CFR part 60.40c]

(i) There is no SO_2 emission standard for boilers using natural gas as fuel.

(ii) There is no PM emission standard for boilers using natural gas as fuel.

(iii) Pursuant to 40 CFR Part 60.48c(a), notification of the date of construction, anticipated start up, and actual start up shall be submitted.

(iv) Pursuant to 40 CFR Part 60.48c(g), records of the amount of fuel combusted each day shall be maintained.

(v) Pursuant to 40 CFR Part 60.48c(i), records shall be maintained for a period of two (2) years following the date of such record.

(vi) Upon further evaluation and since the boiler is using pipeline natural gas as fuel, a certification of natural gas usage is not necessary.

(2) National Emission Standards for Hazardous Air Pollutants (NESHAP)
A NESHAP for integrated iron and steel manufacturing plants is in proposed stage at this time. It is applicable to sinter plants, blast furnaces and BOP shops. SDI - Bar Products Division is not subject to this proposed NESHAP because it does not have the processes mentioned.

(3) Section 112(j) of the Clean Air Act (CAA)
Based on OAQ database, Qualitech did not submit a Part 1 application.

Based on the PTE, SDI - Bar Products Division, IN is not consider a major source for HAPs because its HAPs PTE is less than 10 tons/year for a single HAP and 25 tons/year for any combination.

Table 6	
HAPs	PTE (tons/year)
Benzene	0.00335
Formaldehyde	0.197
Hexane	4.52
Toluene	3.98
Lead	0.2186
Chromium	0.69
Cadmium	0.001756
Manganese	3.126
Nickel	1.0
Total	13.74

(4) Prevention of Significant Deterioration (PSD) 40 CFR 52.21
On March 3, 2003, the federal NSR reform under 40 CFR 52.21 became effective. The revisions provided new applicability provisions for PSD rules for baseline emissions determination, actual-to-projected-actual methodology, plant wide applicability limitations, clean units, and pollution control projects. None of these new provisions will change the final outcome of the PSD review on this proposed modification.

On March 3, 2003, US EPA published a notice for "Conditional Approval of Implementation Plan: Indiana" in the Federal Register. This notice grants conditional approval to the PSD State Implementation Plan (SIP) under provisions of 40 CFR 51.166 and 40 CFR 52.770 while superceding the delegated PSD SIP authority under 40 CFR 52.793. The effective date for these provisions is April 2, 2003. Therefore, the PSD permits will be issued under the authority of 326 IAC 2-2 and will no longer be issued under the provision of 40 CFR 52.21 and 40 CFR 124.

The main difference between a SIP approved and PSD delegation is in the effective date of the permit:

- - Under PSD delegation, the permit becomes effective immediately upon its issuance if no comments requested a change in the draft permit. If a comment is received which requests a change, the effective date of the permit will be 30 days after the service of notice of the decision. If the final day of the 30 day time period falls on a weekend or legal holiday, the time period is extended to the next working day. [40 CFR 124.15, 40 CFR 124.19, and 40 CFR 124.20]

- - Under PSD SIP approved, the permit becomes effective upon its issuance. [IC 13-15-5-3]

Another difference is in the appeal process:

- - Under PSD delegation, petition of appeals are directed to the Environmental Appeals Board (EAB) within the 33 calendar days from the mailing of the decision (40 CFR 124.19) and to the Office of Environmental Adjudication (OEA) within 18 calendar days from the mailing of the decision. Permits appealed to the EAB were automatically stayed pending resolution of the appeal.

- - Under PSD SIP approved, petitions of appeals are now only directed to the OEA. There are no automatic stays if the permit is appealed under the SIP

approved program.

The OAQ web site has been updated to include the SIP approval and information about the rulemaking. http://www.in.gov/idem/air/permits/psdapprovalhistory.html

The conditionally approval of the PSD program can be found at: http://a257.g.akamaitech.net/7/257/2422/14mar20010800/edocket.access.gpo.gov/2003/03-5024.htm

(5) 40 CFR 64 (Compliance Assurance Monitoring)

(a) The PTE of the EAF for SO_2, and NOx are greater than 100 tons/year, but the EAF does not utilize control for these pollutants. Therefore, the requirements of 40 CFR 64 do not apply to these pollutants.

(b) The PTE of the EAF for PM and PM_{10} is greater than 100 tons/year and have control (baghouse) to comply with emission standards or limitations. Therefore, the requirements of 40 CFR Part 64, Compliance Assurance Monitoring, are applicable to this EAF for these pollutants. Monitoring of the pollutant-specific emission unit will be conducted pursuant to 40 CFR 64.

For PM and PM_{10}, there are no available technologies to directly monitor mass emissions of PM. However, opacity can be used as a surrogate parameter to ensure that the control device is operating properly. The OAQ will require SDI to continuously monitor the opacity from the EAF stack. This is in addition to compliance monitoring that will be required for the baghouse. These will satisfy the requirements of 40 CFR 64.

(c) The PTE of the EAF for CO is greater than 100 tons/year and have control (DSE and canopy hood) to comply with emission standards or limitations. Therefore, the requirements of 40 CFR Part 64, Compliance Assurance Monitoring, are applicable to this EAF for this pollutant. Monitoring of the pollutant-specific emission unit will be conducted pursuant to 40 CFR 64.

CEM will be used to show compliance with the CO limit, and the use of CEM satisfies the requirement of 40 CFR 64.

State Rule Applicability

(1) 326 IAC 1-6-3 (PMP)
The steel mini-mill is subject to this rule even prior to the change of ownership and this proposed modification.

(a) PMP will be required for the EAF and LMS and their controls.

(b) Even though the potential to emit of the Caster after the control (lid) is minimal, PMP is required for the Caster to assure that proper operation and working practices are observed to minimize fugitive emissions to the roof monitor. No additional compliance monitoring will be required.

(c) Even though there is no add-on control in the Reheat Furnace, PMP will be required because the PTE are significant.

(d) No PMP and compliance monitoring will be required for the preheaters and dryers because none of them has nominal capacity of 10 MMBTU/hr or greater.

(e) PMP is not required for the VTD boiler because the PTE are below 10 lb/hr.

(f) PMP is required for the VTD flare to assure that CO emissions is controlled properly.

(g) PMPs will be required for the Scarfer baghouse, Bar Cutting baghouse and bin vents, even though the PTE after controls is less than 10 lb/hr, to assure that the controls are operating properly. No additional compliance monitoring will be required.

(h) PMP is not required for the slag processing and handling because once a conveyor breaks, the process automatically shuts down.

(i) PMP will not be required for the fugitive emissions from paved and unpaved areas, because a Fugitive Dust Plan is required.

(j) PMP will be required for the cooling towers drift eliminators to assure proper operation, however, additional compliance monitoring will not be required for the cooling towers because the PTE after the drift eliminators is minimal.

(k) PMP will not be required for the emergency generator because the PTE is insignificant.

(2) 326 IAC 1-7-1 (Stack height requirements)
SDI - Bar Products Division is subject to this rule because it emits more than 25 ton/yr of PM and SO_2. The stacks heights of the mill are less than the good engineering practice (GEP) stack heights, thus a dispersion modeling has been performed to analyze air quality impact. Detailed analysis of this is in Appendix C.

Table 7

Stack ID	Stack Height (feet)	Stack Diameter (feet)	Maximum Flow Rate (acfm)	Stack Gas Temperature (^{0}F)
1	160	13.8	675,000	250
2	150	7.2	84,684	900
3	45	2.8	1,200	70
4	45	2.8	1,200	70
5	45	2.8	1,200	70
6	134	1.5	5,670	120
7	40	2.5	18,000	500
9	60	4.3	55,377	210
64	35	15	139,719	73
65	26	28	956,579	115
66	28	28	1,278,668	361
67	28	28	468,603	361

(3) 326 IAC 2-1.1-8 (Time periods for determination on permit applications)
Pursuant to 326 IAC 2-1.1-8(a)(1), a final action needs to be issued no later than 270

calendar days from the receipt of the application, taking into account actions that IDEM can suspend the time period. The application was received on December 31, 2002. Without any suspension in the time period, the 270 day-period is estimated to end on October 1, 2003.

A rough draft of the PSD preliminary findings was provided to SDI on March 24, 2003.

(4) 326 IAC 2-2-1(PSD)
The proposed modification is considered major modification and subject to PSD review for PM, PM_{10}, NOx, CO, VOC and SO_2, based on the emissions calculation. Appendix A details the emission calculations.

(5) 326 IAC 2-2-3 (PSD control technology)
PSD review of the best available control technologies for the new units/operations and units being physically modified is in Appendix B.

(6) 326 IAC 2-2-4 (PSD air quality analysis)
SDI - Bar Products Division submitted an air quality analysis. This analysis has been evaluated by the OAQ Modeling Section. PSD air quality analysis is explained in Appendix C.

(7) 326 IAC 2-2-5 (PSD air quality impact)
SDI - Bar Products Division is not located within 200 kilometers radius of the closest Federal Class 1 area. The closest Class I area is the Mammoth Cave, KY. The analysis and results submitted by SDI - Bar Products Division were checked by the OAQ Air Modeling Section. The analysis and conclusion are in Appendix C.

(8) 326 IAC 2-2-6 (PSD increment consumption)
Analysis of this requirement is explained in Appendix C. Demonstration has been shown that the increase emissions do not exceed 80% of the available maximum allowable increases over the baseline for SO_2, PM and NOx.

(9) 326 IAC 2-2-7 (PSD additional analysis)

(a) Land use classification - -rural

(b) Air quality impact on vegetation - - There will be no significant adverse impact on vegetation because the predicted concentrations are below the NAAQS level.

(c) Topography - - The elevation of the plant is approximately 940 feet above sea level. The topography of the site is essentially flat lands.

(d) Air quality impact on soil - - no significant adverse impact on soil is anticipated, because the concentrations are below the NAAQS level.

(e) Air quality impact on visibility - - SDI - Bar Products Division will not adversely impact the visibility at a Federal Class I area. Appendix C has the details.

(f) Wind Flow Pattern - - The prevailing wind directions are from south to west, occurring approximately 44% of the time. .

(g) Construction impact - - emissions from and during the general construction are not expected to cause significant impact. Fugitive dust during construction phase

is expected to be minimal.

(h) Endangered Species -- Based on the location of the mill and air quality analysis done, the impact of the modification would not affect habitats of endangered species.

(10) 326 IAC 2-2-8 (PSD source obligation)

(a) Approval to construct shall become invalid if construction is not commenced within 18 months after receipt of the approval, or if construction is not completed within reasonable time. [326 IAC 2-2-8(a)(1)]

(b) Approval for construction does not relieve SDI - Bar Products Division of the responsibility to comply fully with applicable provisions of the Indiana implementation plan and any other requirements under local, state or federal law. [326 IAC 2-2-8-(a)(2)]

(11) 326 IAC 2-2-9 (PSD innovative control technology)
There is no requirement at the State or Federal level which requires innovative control to be used. Innovative control means a control that has not been demonstrated in a commercial application on similar units, As stated in the U.S. EPA Top-Down BACT Guidance (Section V.A.2):

> "Although not required, innovative controls may also be evaluated and proposed as BACT... Innovative technologies are distinguished from technology transfer BACT candidates in that an innovative technology is still under development and has not been demonstrated in a commercial application on identical or similar emission units."

Innovative controls are normally given a waiver from the BACT requirements due to the uncertainty of actual control efficiency. PSD BACT requires that the applicant install the best available control technology, not create new ones. Based on this the OAQ will not evaluate or require any innovative controls for this BACT analysis. Only available and proven control technologies are evaluated. A control technology is considered "available" when "there are sufficient data indicating (but not necessarily proving)" the technology "will lead to a demonstrable reduction in emissions of regulated pollutants or will otherwise represent BACT."

(12) 326 IAC 2-2-10 (PSD source information)
SDI - Bar Products Division has submitted the information necessary to perform analysis or make determination required under PSD review.

(13) 326 IAC 2-2-11 (PSD Stack height)
This rule applies to source which commenced construction after December 31, 1970. The stacks heights of the mill are less than the good engineering practice (GEP) stack heights, thus a dispersion modeling has been performed to analyze air quality impact. Detailed analysis of this in Appendix C.

(14) 326 IAC 2-2-12 (PSD permit rescission)
The construction permit remains in effect, unless it is rescinded, modified, revoked, or expires.

(15) 326 IAC 2-2-13 (Area designation and re-designation)
SDI - Bar Products Division does not fall on any of the listed areas.

(16) 326 IAC 2-2-14 (Additional requirements impacting Class I area).
SDI - Bar Products Division is not subject to this requirement because it does not impact a Federal Class I area. The nearest Class 1 area is the Mammoth Cave National Park, Edmonson County, KY. The state of Indiana has no Federal Class I and III areas.

(17) 326 IAC 2-2-15 (Public participation)
A copy of the application has been provided to the Brownsburg Public Library, 450 South Jefferson, Brownsburg, IN 46112. A notice of the preliminary findings will be published in the most circulated newspaper in the area. There will be a 30-day comment period. A public hearing will also be schedule.

As part of the public participation, per Mr. David Hoggatt's request, he has been provided a copy of the application, and a rough draft copy of the permit and its supporting documents prior to the official public comment period.

(18) 326 IAC 2-2.5-1 (PCP)
SDI - Bar Products Division can not utilize this exclusion because the units that will be controlled by new or upgraded controls (baghouse, lid, Low NOx burners, drift eliminators, and bin vents filters) are also being physically modified.

(19) 326 IAC 2-6-1 (Emission Reporting)
Even prior to this proposed modification, SDI - Bar Products Division is subject to this requirement because it has a PTE of greater than 100 tons/year.

(20) 326 IAC 2-7 (Part 70 program)
Qualitech submitted their Part 70 permit application on July 13, 1999. The Part 70 permit has not yet been issued. The review of the Part 70 application is suspended at this time due to this proposed modification.

(21) 326 IAC 3-5-1 (Continuous Monitoring of Emissions)
SDI - Bar Products Division shall install continuous monitoring system, as appropriate, to determine continuous compliance. CEMS for CO and VOC will be required in the EAF Baghouse/LMS Baghouse common stack.

The use of CO CEM also satisfies the requirement of 40 CFR 64.

(22) 326 IAC 4-1 (Open Burning)
SDI - Bar Products Division shall not open burn material except as provided in 326 IAC 4-1-3, 326 IAC 4-1-4, or 326 IAC 4-1-6.

(23) 326 IAC 2-4.1 (Hazardous Air Pollutants)
Based on the PTE, SDI - Bar Products Division is not consider a major source in terms of HAPs because HAPs PTE is less than 10 tons/year for any single HAP and less than 25 tons/year for the sum of all the HAPs emitted.

(24) 326 IAC 5-1 (Opacity limitations)
Specific opacity limits have been indicated as BACT limits. If there is no specific opacity limit indicated, then this rule applies. The visible emissions shall not exceed 40% opacity.

(25) 326 IAC 6-1 (PM Nonattainment limitation)
This rule does not apply to SDI - Bar Products Division because it is not located in a nonattainment area.

(26) 326 IAC 6-2
The VTD Boiler (48.4 MMBTU/hr) is subject to these rules. However, since this boiler is also subject to NSPS and PSD, the limits specified by these 2 federal requirements supersede the 326 IAC 6-2 limits.

(27) 326 IAC 6-3 (Particulates emission for manufacturing process)
The units/process involved in this modification are not subject to this rule, because more stringent PM limits have been established by 326 IAC 2-2.

(28) 326 IAC 6-4 and 6-5 (Fugitive dust)
Even prior to this modification, SDI - Bar Products Division is subject to these rules. SDI - Bar Products Division has submitted a fugitive dust plan to comply with these rules. Fugitive dust crossing the boundary or property line should not be visible.

(29) 326 IAC 7-1 (SO_2 Limitation)
The EAF is subject to this rule because it has a PTE of 25 tons/yr of SO_2 and 10 lb/hour of actual emissions. However, no specific SO_2 limit is applicable to the EAF because the EAF is not a fuel combustion facility.

The emergency generators will use distillate oil, however, their PTE is less than 25 tons/year and their actual emissions are less than 210 lb/hour, thus this SO_2 rule does not apply.

(30) 326 IAC 8 (VOC)
The EAF is subject to this rule because it has actual emissions greater than 15 lb/day. VOC BACT limits established under 326 IAC 2-2 (PSD) satisfy the requirements of 326 IAC 8-1-6. For the VOC limits, refer to Appendix B.

(31) 326 IAC 9 (CO emission rules)
SDI - Bar Products Division is subject to this rule because it commenced operation after March 21, 1972, however, no emission limit is specified for steel mill.

(32) 326 IAC 10 (NOx rules)
This rule does not apply to SDI - Bar Products Division because it is not located in Clark or Floyd Counties.

(33) 326 IAC 11 (Source Specific limitations)
Steel mill is not one of the operation listed in this rule.

(34) 326 IAC 12 (NSPS)
Compliance with this rule have been addressed under the Federal Rules Applicability of this TSD.

(35) 326 IAC 13 (Motor vehicles emissions)
Not applicable.

(36) 326 IAC 14 (HAPs Emission)
This rule incorporates by reference the 40 CFR 61. No 40 CFR Part 61 applies to this source.

(37) 326 IAC 15 (Lead Rules)
SDI - Bar Products Division, IN is not of the listed sources subject to this rule.

(38) 326 IAC 16 (Environmental Assessment, Activities of State Agencies)
The air permitting review process indirectly satisfies this rule.

(39) 326 IAC 17 (Public records)
There is no confidentiality request made regarding the application submitted.

(40) 326 IAC 18 (Asbestos Management at School)
Not applicable.

(41) 326 IAC 19 (Mobile Source Rules)
These particular rules are applicable to employees in Lake and Porter Counties only. These are not applicable because the source is located in Hendricks County.

Compliance Emission Monitoring

(1) The PSD permit 063-6093-00037 under Qualitech required that a COM be installed, operated and maintained to monitor visible emission from the EAF Baghouse. This was also required under 20 CFR 60.273a (Subpart AAa). This requirement will be retained.

The requirement to monitor opacity with the use of a COM also satisfies the requirement of 40 CFR 64.

(2) Pursuant to 40 CFR 60.273(b), no COM is required for the EAF dust handling system.

(3) The PSD permit 063-6093-00037 required that an emissions monitoring be installed, operated and maintained to monitor CO emissions at the EAF Baghouse. This requirement will be retained. It is clarified that the CO CEMS will be located in the EAF Baghouse/LMS Baghouse common stack.

The requirement to monitor CO emissions with the use of a CEM also satisfies the requirement of 40 CFR 64.

(4) A CEM will be required to be installed, operated and maintained to monitor VOC emissions in the EAF Baghouse/LMS Baghouse common stack.

(5) In the event of a multi compartment baghouse failure, it is normally allowed for operations to continue operating only if there is no visible emission.

The EAF is a type of process which can not be easily and practically shut down at a short notice because the EAF is a batch process, it takes time and effort to re-start, it is hard to be emptied and leaving partially melted steel will ruin it. Based on these, the OAQ decided not to require the EAF to be shut down if a multi compartment baghouse fails. The normally 8 hours allowed to implement a corrective action has been shortened to 6 hours.

(6) The PSD permit 063-6093-00037 required that 3 ambient monitoring sites shall be established at locations approved by IDEM. The ambient monitoring stations ran for 3 years (1998, 1999 and 2000) and monitored PM_{10}, SO_2, NO_x and CO. One of these 2 sites shall be located on or near the school property of Pittsboro Elementary School, as previously required under the Qualitech permit. This requirement will be retained.

(7) Compliance monitoring, such as VE, is not required for the Caster because the PM PTE after the control (lid) is less than 1 ton/year.

(8) No VE or other compliance monitoring required for the Reheat furnace because the PM emissions are minimal. The reheat furnace is required to operate with low NOx burners and use natural gas as fuel to comply with the CO and NOx emissions, which are the highest emitting pollutant from the Reheat furnace. PMP is required to assure proper combustion is practice.

(9) No compliance monitoring will be required for the preheaters and dryers because none of them has nominal capacity of 10 MMBTU/hr or greater.

(10) There will be no compliance monitoring required for the Scarfer baghouse, Bar Cutting baghouse (or equivalent particulate control) and Storage Silos bin vents because the potential to emit after control from each operation is less than 10 lb/hour.

(11) Compliance monitoring will not be required for the cooling towers because the PTE after the drift eliminators is minimal.

(12) Compliance monitoring will not be required for the emergency generator because the PTE is insignificant

(13) Pursuant to 40 CFR 60.276a, written report of exceedances of the COM be submitted on a semi annual basis. This will be change to quarterly to be consistent with the Part 70 requirement.

(14) Written exceedances of the furnace static pressure established under 40 CFR 60.274a(g) and values of control system fan motor amperes that exceed 15 percent of the value established under 40 CFR 60.274a(c) or values of flow rates lower than those established under 40 CFR 60.274a(c) will also be required to be submitted on a quarterly basis.

Testing Requirements

(1) The PSD permit 063-6093-00037 under Qualitech required that compliance testing be performed for the following:

(i) EAF Baghouse:
- - filterable PM and PM_{10}
- - SO_2
- - CO
- - VOC
- - NO_x
- - Lead

(ii) Reheat furnace:
- - NO_x

(iii) 100% scrap only

(iv) Maximum iron carbide injection rate

These compliance testings will be required again in this modification, except for CO and VOC for the EAF because CEMS will be required.

(2) The PM and PM_{10} testing will be required within 60 days to 180 days after initial start up

because these tests are also required under the 40 CFR Part AAa.

(3) SDI requested that the SO_2, NO_x and Lead tests be allowed a longer time frame (60 days to 540 days or 60 days to 365 days) due to the batch operations of the EAF and that there is no time frame specified in the rule.

The OAQ believes that the original time frame to perform tests (60 days to 180 days) required under Qualitech is appropriate. Extending the time frame longer than this presents concern of compliance status during that period. The OAQ believes that compliance has to be established and verified as soon as possible after operation.

(4) The PM, PM_{10}, SO_2 and NO_x tests will be required at a frequency of once every 2.5 years.

SDI requested that the frequency of the Lead testing be evaluated depending on the result of the latest valid compliance test because the lead limit is less than the PSD significant threshold. At this time the draft permit will indicate the same frequency as the other pollutant (once every 2.5 years). SDI may request, at a future date, to lessen the frequency.

The original permit under Qualitech did not specify the frequency of the testings.

(5) In September, 1999, Qualitech performed compliance testing at the EAF for PM, PM_{10}, NO_x and SO_2.

Based on the test results, SO_2 emission rates are as follows:

(i) 1200 Sulfur Grade - - 1.68 lb/ton
(ii) 1100 Sulfur Grade - - 1.5 lb/ton
(iii) Low Sulfur Grade - - 0.71 lb/ton

These test results were used by SDI - Bar Products Division for the SO_2 PSD BACT analysis.

(6) It is clarified that compliance testing will be required for the EAF Baghouse/LMS Baghouse common stack for both filterable PM, and filterable and condensible PM_{10}.

(7) SDI recently performed testing on their Whitley County, IN plant and detected no emissions from Hexane, Toluene, Benzene, Formaldehyde, Napthalene and Beryllium. Manganese was detected, however, it is 11 times below the applicable limit. Based on this information, testing for HAPs will not be required for the SDI - Bar Products Division, Hendricks County.

(8) Initial opacity compliance testing will be required at the EAF dust handling system.

(9) Compliance testing will be required at the Reheat Furnace to verify compliance with the NOx BACT limit. There will no compliance testing requirement to comply with CO because based on the most recent test performed by SDI in their Whitley County, IN plant the CO test results is 10 times below the BACT limit.

(10) No compliance testing will be required for the VTD Boiler. Qualitech performed a NOx compliance test in September, 1999. Based on the NOx test result (0.01 lb/MMBTU), the VTD boiler will be in compliance with its BACT limit (0.04 lb/MMBTU).

(11) Initial compliance test for opacity will be required at the slag handling and processing.

(12) No compliance testing will be required for the Scarfer baghouse and Bar Cutting baghouse because the PTE after the baghouses are less than 10 tons/year.

(13) No compliance testing will be required for the cooling towers drift eliminators because the PTE after the drift eliminators is minimal.

(14) At this time, no compliance testing will be required for: Caster, Preheaters, Dryers, VTD Degasser, VTD Boiler, VTD Flare, Emergency Generator and other significant operations because either implementing the PMPs or complying with the monitoring methods is sufficient to show compliance.

(15) No compliance testing is required to verify the composition of the natural gas fuel, as long as the natural gas used is distributed thru pipeline.

(16) Testing requirements shall comply with the provisions of 326 IAC 3-6.

Recommendation

Based on the based on the facts, conditions and evaluations made, OAQ recommends to the IDEM Commissioner that the preliminary findings in the PSD/SSM 063-16628-00037 be provided to the public for review.

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 December 31 2002 and additional information received on February 10, 2003, March 28, 2003, April 2, 2003, and April 4, 2003.

The applicant has provided a copy of the application to the Brownsburg Public Library, 450 South Jefferson, Brownsburg, IN 46112.

The following officials have been notified by SDI of this proposed modification:
(1) Hendricks County Commissioner, 355 South Washington, Danville, IN 46122; and
(2) Pittsboro City Council, 80 North Meridian St. Pittsboro, IN 46167.

Conclusion

The construction of this proposed modification shall be subject to the conditions of the attached proposed Part 70 SSM and PSD Permit No. 063-16628-00037. Due to extensive differences between the existing units and the proposed modification, as well as the re-evaluation of PSD BACT limits, the proposed PSD/SSM permit replaces all the existing permits of the steel mill.

The issuance of this PSD/SSM permit will supersede the following air approvals:

Permit No.	Type	Issuance Date
063-8170-00037	Administrative Amendment	March 13, 1997
063-7276-00037	Administrative Amendment	December 20, 1996
063-6093-00037	Prevention of Significant Deterioration	October 31, 1996

Indiana Department of Environmental Management
Office of Air Quality

Appendix A - - Potential to Emit Calculations - - for a Prevention of Significant Deterioration (PSD) and Part 70 Significant Source Modification (SSM)

Source Background and Description

Source Name:	Steel Dynamics, Inc. (SDI) - Bar Products Division
Source Location:	8000 North County Road 225 East, Pittsboro, IN 46167
Mailing Address:	8000 North County Road 225 East, Pittsboro, IN 46167
General Telephone Number:	317/892-7000
Responsible Official:	Plant Manager
County:	Hendricks
SIC Code:	3312 (Steel Mill)
Source Categories:	1 of 28 Listed Source Categories Major PSD Source
Significant Source Modification:	PSD 063-16628-00037
Permit Reviewer:	Iryn Calilung

Potential to Emit Calculations

IDEM, OAQ has verified the potential to emit calculations that SDI- Bar Products Division has submitted as part of their PSD application. The calculations are correct and accurate. Below are the summaries of these calculations, in case the actual PSD application is not available for any interested parties to use and review.

Table 1 - - Total PTE
Table 2 - - EAF and EAF Baghouse
Table 3 - - Caster
Table 4 - -LMS, Caster Cutting and Scarfer Baghouses
Table 5 - - Reheat Furnace
Table 6 - - VTD Boiler and VTD Flare
Table 7 - - Ladle Preheaters and Dryers
Table 8 - - Tundish Preheaters and Dryers
Table 9 - - Scarfer
Table 10 - - Cooling Towers
Table 11 - - Emergency Generator
Table 12 - - Roads
Table 13 - - Crushing Plant
Table 14 - - Miscellaneous Operations

Table 1 - - Total PTE (tons/year)							
Unit/Process	PM	PM_{10}	SO_2	NO_x	VOC	CO	Pb
EAF Baghouse	37.17	37.17	401.045	191.625	71.175	1095	0.213
LMS Baghouse	5.7	5.7	- -	- -	- -	- -	- -
Caster	0.7665	0.7665	- -	- -	- -	- -	- -
Reheat Furnace	1.5	6.2	0.49	64.824	4.46	68.07	0.000405
VTD Flare and VTD Boiler	0.7	2.9	0.2	18.63	2.1	31.9	0.00019
Ladle Preheaters/Dryers	0.3	1.25	0.10	8.2	0.90	13.80	0.0000821
Tundish Nozzle Preheaters, Tundish Preheaters and Tundish Dryers	0.3	1.4	0.1	9.2	1.0	15.5	0.000092
Caster Cutting Torches	0.5	0.5	- -	- -	- -	- -	- -
Scarfer	0.052	0.21	0.016	1.38	0.152	2.32	0.00000138
Storage Silos	4.05	4.05	- -	- -	- -	- -	0.00482
Scarfer Baghouse	9.41	9.41	- -	- -	- -	- -	--
Bar Cutting Building Baghouse	5.86	5.86	- -	- -	- -	- -	- -
Cooling Towers	3.95	3.95	- -	- -	- -	- -	- -
Crushing Plant	5.86	2.75	- -	- -	- -	- -	- -
Paved Roads and Unpaved Roads	36.04	8.20	- -	- -	- -	- -	- -
Wind Erosion	2.05	1.03	- -	- -	- -	- -	- -
Bulk Loading	0.14	0.07	- -	- -	- -	- -	- -
Pot Slagging	0.27	0.13	- -	- -	- -	- -	- -
Pot Skulling	0.27	0.13	- -	- -	- -	- -	- -
Pot Digging	0.33	0.16	- -	- -	- -	- -	- -
Emergency Generator	0.267	0.267	0.248	3.76	0.305	0.81	- -
TOTAL	**115.49**	**92.09**	**402.199**	**297.619**	**80.092**	**1,227.4**	**0.2186**
PSD Significant Level	25	15	40	40	40	100	0.6
PSD Review	yes	yes	yes	yes	yes	yes	no

This table shows that the proposed modification is subject to PSD major review for PM, PM_{10}, SO_2, NOx, VOC, and CO.

Table 2 --- EAF and EAF Baghouse		
Pollutant	Emission Factor (EF) (lb/ton)	PTE (tons/year)
SO_2	1.8	147.825
	1.5	164.25
	0.25	88.97
NOx	0.35	191.625
VOC	0.13	71.175
CO	2.0	1,095
PM	- -	37.17
PM_{10}	- -	37.17
Lead	0.00039	0.213
Manganese	0.00571	3.126
Hexane	0.00595	3.26
Toluene	0.00727	3.98
Flouride	0.0034	1.86
Nickel	0.00183	1.00
Chromium	0.00126	0.689

Methodology and Assumptions:
(a) Nominal capacity = 125 tons/hour = 1,095,000 tons/year at 8760 hours/year
(b) PTE is considered after control because this steel mill has been issued a PSD permit, thus existing controls are considered federally enforceable.
(c) EFs for the criteria pollutants are the existing BACT limits of the steel mill.
(d) The grain loading is the manufacturer's guaranteed specifications and it is also considered the BACT limit.
(e) HAPs PTE are based on EAF dust analysis. Only the top 6 HAPs with the most emissions are indicated to make the review streamlined.
(f) There are 3 different EFs for different SBG series.
15% of the Nominal capacity is at 1.8 lb/ton
20% of the Nominal capacity is at 1.5 lb/ton and
65% of the Nominal capacity is at 0.25 lb/ton. .
(g) PTE = (EF lb/ton)(Nominal capacity tons/hour)(8760 hr/yr)(1ton/2000 lb)
(h) PM/PM10 = (0.0018 grain/dscf)(550,000 flow rate dscf/min)(1 lb/7,000 grains)(60 min/hr)(8760 hr/yr)(1 ton/2000 lb)
(i) There is no Meltshop Roof Monitor.
(j) The EF used are also considered the PSD BACT limits. The grain loading used to calculate PTE is also considered the PSD BACT limit.

Table 3 — Continuos Caster Emissions		
Operation	EF (lb/ton)	PM/PM_{10} PTE (tons/year)
Caster	0.07	38.325

Methodology and Assumptions:
(a) The Caster is not controlled. It is in a separate room from the EAF and LMS. It exhausts through roof monitor.
(b) PTE = (EF lb/ton)(125 Nominal capacity tons/hour)(8760 hr/yr)(1ton/2000 lb)
(c) The casting is water cooled and a lid is used to control emissions from the tundish, thus PTE after the lid is less than 1 ton/year.

Table 4 — LMS, Caster Cutting Torches and Scarfer PTE			
Operation	Grain Loading (gr/dscf)	Flow Rate (dscf/min)	PM/PM_{10} PTE (tons/year)
LMS & LMS Baghouse	0.0018	85,000	5.7
Scarfer & Scarfer Baghouse	0.0052	48,200	9.41
Bar Cutting & Baghouse	0.0052	30,000	5.86
Storage Silos (9)	0.01	1200	4.05

Methodology and Assumptions:
(a) The LMS, Scarfer and Bar Cutting are each controlled by a Baghouse.
(b) The Storage Silos are controlled by bin vents.
(c) $PM = PM_{10}$
(d) PM/PM_{10} PTE = (grain/dscf)(flow rate dscf/min)(1 lb/7,000 grains)
(60 min/hr)(8760 hr/yr)(1 ton/2000 lb)
(e) The PM/PM10 for the storage silos is the total for nine silos.

Table 5 --- Reheat Furnace (185 MMBTU/hr)		
Pollutant	Emission Factor (EF) (lb/MMCF)	PTE (tons/year)
SO_2	0.6	0.49
NO_x	80	64.824
VOC	5.5	4.46
CO	84	68.07
PM	1.9	1.5
PM_{10}	7.6	6.2
Benzene	0.0021	0.0017
Formaldehyde	0.075	0.0608
Hexane	1.8	1.46
Toluene	0.0034	0.00276
Lead	0.00005	0.000405
Chromium	0.0014	0.00113

Methodology and Assumptions:
(a) Nominal capacity = 185 MMBTU/hour
(b) PM EF is filterable only.
(c) PM_{10} EF is condensable and filterable combined.
(d) EFs are from AP-42, Chapter 1.4. Tables 1.4-1,1.4-2, 1.4-3, SCC # 1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (Supplement D 7/98); except NOx EF, which is the BACT limit indicated by the source.
(e) PTE = (Heat Input MMBTU/hr)(EF lb/MMCF)(1MMCF/1,000MMBTU)(8760 hr/yr)(1ton/2000 lb)

Table 6 --- VTD Boiler and Flare (86.8 MMBTU/hr)		
Pollutant	Emission Factor (EF) (lb/MMCF)	PTE (tons/year)
SO2	0.6	0.2
NOx	49	18.63
VOC	5.5	2.1
CO	84	31.9
PM	1.9	0.7
PM10	7.6	2.9
Benzene	0.0021	0.000798
Formaldehyde	0.075	0.02851
Hexane	1.8	0.684
Toluene	0.0034	0.00129
Lead	0.00005	0.00019
Chromium	0.0014	0.0005323

Methodology and Assumptions:
(a) The vacuum degasser uses a flare to burn off CO gases.
(b) Nominal capacity = 48.4 MMBTU/hour + 38.4MMBTU/hour = 86.8 MMBTU/hour
(c) PM EF is filterable only.
(d) PM_{10} EF is condensable and filterable combined.
(e) All EFs are based on normal firing.
(f) 1 MMBTU = 1,000,000 BTU
(g) EFs are from AP-42, Chapter 1.4 Tables 1.4-1,1.4-2, 1.4-3, SCC # 1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (Supplement D 7/98); except NOx, which is the BACT indicated by the source.
(h) PTE = (Heat Input MMBTU/hr)(EF lb/MMCF)(1MMCF/1,000MMBTU)(8760 hr/yr)(1ton/2000 lb)

Table 7 --- Ladle Preheaters and Dryers (37.5 MMBTU/hour)		
Pollutant	Emission Factor (EF) (lb/MMCF/yr)	PTE (tons/year)
SO2	0.6	0.1
NOx	50	8.2
VOC	5.5	0.9
CO	84	13.8
PM	1.9	0.3
PM10	7.6	1.2
Benzene	0.0021	0.000344
Formaldehyde	0.075	0.01232
Hexane	1.8	0.296
Toluene	0.0034	0.000558
Lead	0.00005	0.0000821
Chromium	0.0014	0.00023

Methodology and Assumptions:
(a) Nominal capacity = (5 heaters)(7.5 MMBTU/hour) = 37.5 MMBTU/hour
(b) PM EF is filterable only. PM_{10} EF is condensable and filterable combined.
(c) All EFs are based on normal firing. 1 MMBTU = 1,000,000 BTU
(d) EFs are from AP-42, Chapter 1.4, Tables 1.4-1,1.4-2, 1.4-3, SCC # 1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (Supplement D 7/98);
(e) PTE = (Heat Input MMBTU/hr)(EF lb/MMCF)(1MMCF/1,000MMBTU)(8760 hr/yr)(1ton/2000 lb)

Table 8 --- Tundish Preheater, Tundish Nozzle Preheater and Tundish Dryers (42 MMBTU/hr)		
Pollutant	Emission Factor (EF) (lb/MMCF)	PTE (tons/year)
SO2	0.6	0.1
NOx	50	9.2
VOC	5.5	1.0
CO	84	15.5
PM	1.9	0.3
PM10	7.6	1.4
Benzene	0.0021	0.000386
Formaldehyde	0.075	0.0138
Hexane	1.8	0.331
Toluene	0.0034	0.0006255
Lead	0.00005	0.000092
Chromium	0.0014	0.000257

Methodology and Assumptions:
(a) Nominal capacity =(2)(9 MMBTU/hr)+(6 MMBTU/hour)+(2)(9 MMBTU/hr) = 42 MMBTU/hr
(b) PM EF is filterable only.
(c) PM_{10} EF is condensable and filterable combined.
(d) All EFs are based on normal firing.
(e) 1 MMBTU = 1,000,000 BTU
(f) EFs are from AP-42, Chapter 1.4, Tables 1.4-1,1.4-2, 1.4-3, SCC # 1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (Supplement D 7/98);
(g) PTE = (Heat Input MMBTU/hr)(EF lb/MMBTU)(1MMCF/1,000MMBTU)(8760 hr/yr)(1ton/2000 lb)

Table 9 --- Scarfer (6.3 MMBTU/hr)		
Pollutant	Emission Factor (EF) (lb/MMCF)	PTE (tons/year)
SO2	0.6	0.016
NOx	50	1.38
VOC	5.5	0.152
CO	84	2.32
PM	1.9	0.052
PM10	7.6	0.21
Benzene	0.0021	0.000058
Formaldehyde	0.075	0.0021
Hexane	1.8	0.05
Toluene	0.0034	0.000094
Lead	0.00005	0.00000138
Chromium	0.0014	0.000039

Methodology and Assumptions:
(a) Nominal capacity = 6.3 MMBTU/hr
(b) PM EF is filterable only.
(c) PM_{10} EF is condensable and filterable combined.
(d) 1 MMBTU = 1,000,000 BTU
(e) PTE = (Heat Input MMBTU/hr)(EF lb/MMCF)(1MMCF/1,000MMBTU)(8760 hr/yr)(1ton/2000 lb)
(f) PM/PM_{10} emissions are based upon AP-42 Table 12.5-1 (Scarfing) and with the assumptions that 10% escapes the building.

Table 10 - - Cooling Towers		
Cooling Towers	Capacity (gal/min)	PM PTE (tons/year)
Tower 1 - Meltshop Non-Contact	26,700	1.76
Tower 2 - VTD Contact	2,000	0.18
Tower 3 - Bar Mill Contact	9,700	1.28
Tower 4 - Bar Mill Non-Contact	5,600	0.74
Total	**44,000**	**3.95**

Table 11 --- Emergency Generators (485 HP)		
Pollutant	Emission Factor (lb/hp-hr)	PTE (tons/year)
SO_2	0.00205	0.248
NOx	0.031	3.76
VOC	0.0025141	0.305
CO	0.00668	0.81
PM	0.0022	0.267
PM_{10}	0.0022	0.267

Emission factors are from AP-42, Table 3.3-2 Supplement B 10/96.
Since these are emergency generators, PTE is based at 500 hours/year.
PTE = (Nominal Capacity Hp)(EF lb/hp-hr)(500 hr/yr)(1ton/2000 lb)
The limited hours of operation (500 hr/yr) for each emergency generators will be considered as PSD BACT.

Table 12 --- Roads		
Operation	PM (ton/year)	PM_{10} (ton/year)
Shipping Out Roads	16	3.1
Paved Employee Parking	0.3	0.1
Paved Direct Scrap Delivery Roads	9.5	1.9
Paved Scrap Delivery Yard Roads	6.3	1.2
Unpaved Scrap Delivery Yard Roads	3.5	1.6
Paved Alloy Delivery to Point 1 Roads	0.2	0.04
Paved Alloy Delivery to Point 2 Roads	0.2	0.04
Alloy Delivery to Point 2 Unpaved Roads	0.04	0.02
Subtotal	**36.04**	**8.2**

Roads - - Shipping Out

Emissions from traffic on paved roads uses an equation from AP-42., Section 13.2.1.
E=(k)(SU2)60.65 (W/3)"1.5 lb/mi
where: k = 0.082 for PM, k = 0.016 for PM-10
SL = 9.7 (silt loading) Table 13.2.1-3, AP-42
W = 30 tons (average weight of trucks) (20 tons empty, 40 tons full)/2
PM EF = (0.082)(9.7/2)"0.65 (30/3)"1.5 = 7.24 lb/mi
PM-10 EF = (0.016)(9.7/2-"0.65 (30/3)"1.5 = 1.41 lb/mi
trips per year = 400,000 tons/yr /20 T/trip = 20000 trips/yr
VMT = (20,000 trips/yr)(1950 ft one way)(2)/5280 ft/mi = 14773 mi/yr
70% control assumed for watering/cleaning roads
PM = (7.24lb/mi)(14773 mi/yr)(1-0.7)/2000 lb/T = 16.0 TPY
PM-10 = (1.41 lb/mi)(14773 mi/yr)(1-0.7)/2000 lb/T = 3.1 TPY

Employee Parking Paved Roads

W = 2 tons (average weight of vehicles)
PM EF = (0.082)(9.7/2)"0.65 (2/3)"1.5 = 0.12 lb/mi
PM-10 EF = (0.016)(9.7/2)"0.65 (2/3)"1.5 = 0.02lb/mi
VMT = (250 trips/day)(365 days/yr)(500 ft one way)(2)/5280 ft/mi = 17282 mi/yr
PM (0.12 lb/mi)(17282 mi/yr)(1-0.7)/2000 lb/T = 0.3 TPY
PM-10 (0.02 lb/mi)(17282 mi/yr)(1-0.7)/2000 lb/T = 0.1 TPY

Scrap Delivered Direct - Paved Roads

W = 30 tons (average weight of trucks)
PM EF = (0.082)(9.7/2)"0.65 (30/3)"1.5 = 7.24lb/mi
PM-10 EF = (0.016)(9.7/2)"0.65 (30/3)"1.5 = 1.41 lb/mi
MT = (10,500 trips/yr)(2200 ft one way)(2)/5280 ft/mi = 8750 mi/yr
PM (7.24 lb/mi)(8750 mi/yr)(8750 mi/yr)(1-0.7)/2000 lb/T = 9.5 TPY
PM-10 (1.41 lb/mi)(8750 mi/yr)(1-0.7)/2000 lb/T = 1.9 TPY

Scrap Delivered Direct - Unpaved Roads

Emissions from traffic on unpaved roads uses an equation from AP-42 Section 13.2.2.
E = (k)(5.9)(s/12)(S/30)(W/3)I\O.7 (w/4)1\0.5 «365-p)/365) (lbNMT) where:
k = particle size multiplier. 0.8 for PM, 0.36 for PM-10
s = silt content of road surface material (%) (6%)
S = mean vehicle speed (mph) (10)
W = mean vehicle weight (tons) (30)
w = mean number of wheels (18)
p = number of days per year with at least 0.0 inches of precipitation (110)
PM EF = (0.8)(5.9)(6/12)(10/30)(30/3)1\0.7 (18/4)1\0.5 «365-110)/365) = 5.84 lb/mi
PM-10 EF = (0.36)(5.9)(6/12)(10/30)(30/3)I\O.7 (18/4)1\0.5 «365-110)/365) = 2.63lb/mi
VMT = (10,500 trips/yr)(200 ft one way)(2)/5280 ft/mi = 795 mi/yr
Assume 80% control watering/chemical application on unpaved roads
PM = (5.84 lb/mi)(795 mi/yr)(1-0.8)/2000 lb/T = 0.5 TPY
PM-10 = (2.63 lb/mi)(795 mi/yr)(1-0.8»/2000 lb/T = 0.2 TPY

Scrap Delivered Yard - - Paved Roads

W = 30 tons (average weight of trucks)
PM EF = (0.082)(9.7/2)1\0.65 (30/3)1\1.5 = 7.24 lb/mi
PM-10 EF = (0.016)(9.7/21\0.65 (30/3)1\1.5 = 1.41 lb/mi
PMT = (10,500 trips/yr}(1450 ft one way)(2)/5280 ft/mi = 5767 mi/yr
PM = (7.24 lb/mi}(5767 mi/yr}(1-0.7)/2000 lb/T = 6.3 TPY
PM-10 = (1.41 lb/mi}(5767 mi/yr}(1-0.7)/2000 lb/T = 1.2 TPY

Scrap Delivered Yard - - Unpaved Roads

S= 10 mph, W = 30 tons :7 w = 18 wheels
PM EF = (0.8)(5.9)6/12)(1 O/30)(30/3)J\0. 7 (18/4)J\0.5 «365-110)/365) = 5.84 lb/mi
PM-10 EF = (0.36)(5.9)(6/12)(1 O/30)(30/3)J\0. 7 (18/4)J\0.5 «365-110)/365) = 2.63 lb/mi
VMT = (10,500 trips/yr)(1500 ft one way)(2)/5280 ft/mi = 5966 mi/yr
Assume 80% control watering/chemical application on unpaved roads
PM = (5.84lb/mi)(5966 mi/yr)(1-0.8)/2000 lb/T = 3.5 TPY
PM-10 = (2.63lb/mi)(5966 mi/yr)(1-0.8)/2000lb/T = 1.6 TPY

Alloy Delivery to Point 1 Paved Roads

W = 30 tons (average weight of trucks)
PM EF = (0.082)(9.7/2)J\0.65 (30/3)J\1.5 = 7.241b/mi
PM -10 EF = (0.016)(9.7/2)J\0.65 (30/3)J\1.5 = 1.411b/mi
VMT = (213 trips/yr)(2100 ft one way)(2)/5280 ft/mi = 169 mi/yr
PM = (7.24lb/mi)(169 mi/yr)(1-0.7)/2000 lb/T = 0.2 TPY
PM-10 = (1.41lb/mi)(178 mi/yr)(1-0.7)/2000 lb/T = 0.04 TPY .

Alloy Delivery to Point 2 - - Paved Roads

W = 30 tons
PM EF = (0.082)(9.7/2)J\0.65 (30/3)J\1.5 = 7.24 lb/mi
PM-10 EF = (0.016)(9.7/2)J\0.65 (30/3)J\1.5 = 1.411b/mi
VMT = (213 trips/yr)(2200 ft one way)(2)/5280 ft/mi = 178 mi/yr
PM (7.24lb/mi)(178 mi/yr)(1-0.7)/2000 lb/T = 0.2 TPY
PM-10 (1.41lb/mi)(178 mi/yr)(1-0.7)/2000 lb/T = 0.04 TPY

Alloy Delivery to Point 2 - - Unpaved Roads

S = 10 mph, W = 30 tons, w = 18 wheels
PM EF = (0.8)(5.9)(6/12)(1 O/30)(30/3)J\0.7 (18/4)J\0.5 «365-110)/365) = 5.84 lb/mi
PM-10 EF = (0.36)(5.9)(6/12)(1 O/30)(30/3)J\0.7 (18/4)J\0.5 «(365-110)/365) = 2.63 lb/mi
VMT = (213 trips/yr)(900 ft one way)(2)/5280 ft/mi = 73 mi/yr
PM = (73 mi/yr)(5.84 lb/mi)(1-0.8)/2000 lb/T = 0.04 TPY
PM-10 = (73 mi/yr)(2.63lblmi)(1-0.8)/2000 lb/T = 0.02 TPY

Table 13 --- Crushing Plant					
Operation	Throughput	PM EF	PM10 EF	PM PTE	PM10 PTE
Grizzle Feeder	300	0.0001	0.000048	0.13	0.06
36" Conveyor #14	300	0.0001	0.000048	0.13	0.06
30" Conveyor #13	10			0	0
30 “Conveyor #10	290			0.08	0.04
36" Conveyor #9	50			0.13	0.06
24' Conveyor #8	45			2.25	1.05
42" Conveyor #7	305			0.02	0.01
30" Conveyor #3A	25			0.24	0.12
24" Conveyor #3	25			0.02	0.01
42" Conveyor #2B	25			0.13	0.06
24" Conveyor #2A	25			2.4	1.12
36" Conveyor #2	60			0.01	0.01
5' x 12' Screen (2)	10	0.0018	0.0084	0.01	0.01
4' x 8' Screen (1)	285			0.13	0.06
6' x 16' Screen (3)	305			0.01	0.01
Jaw Crusher	45	0.0012	0.00059	0.01	0.01
51/2 Cone Crusher	25			0.05	0.03
24" Stacker #S4	120	0.0001	0.000048	0.04	0.02
24" Stacker #S5	100			0.03	0.01
24" Stacker #S1	60			0.03	0.0
Subtotal				**5.86**	**2.75**

Methodology and Assumptions:

(a) PM/PM10 =(EF)(Nominal Capacity)(8760 hr/yr)(1 ton/2000 lb)
(b) EFs are from AP-42, Section 11.19.
(c) The grain loading is the manufacturer’s guaranteed specifications and it is also considered the BACT limit.

Table 14 --- Miscellaneous Particulate Emitting Facilities					
Operation	Capacity (tons/yr)	PM EF (lb/ton)	PM10 EF (lb/ton)	PM PTE (ton/yr)	PM10 PTE (ton/yr)
Wind Erosion	77,250	- -	- -	2.05	1.03
Bulk Loading	77,250	0.0035	0.0017	0.14	0.07
Pot Slagging	20,625	0.026	0.013	0.27	0.13
Pot Skulling	20,625	0.026	0.013	0.27	0.13
Pot Digging	75,000	0.0018	0.0043	0.33	0.16
Subtotal				**3.06**	**1.52**

Methodology and Assumptions:
(a) Emission Factors are from AP-42, Section 12.5, Section 13.2.4, Section 13.2.5
(b) Wind erosion emissions are from storage piles. PTE was determined using the procedure outlined in AP-42 Section 13.2.5.
(c) Pot Slagging/Skulling = 5.5 tons/pot and 3,750 pots per year.

Wind Erosion

Wind erosion emissions from storage piles are estimated using procedures outlined in AP-42, Section 13.2.5. A year of meteorological data was reviewed (Indianapolis, 1994) to determine highest daily wind speeds to utilize in the calculations. The annual throughput is 77,250 tons so a 30 day supply would equal approximately 6400 tons.

Assuming a density of calcined gypsum (55 lb/ft3), the volume of the pile would be:
(6400 tons)(2000 lb/T)/(55 lb/ft3) = 232, 727 ft3

The volume of a cone is equal to : V = (1/3)(pi)(r)1\2 (h)
Assuming that the slope is 30 degrees, the height is equal to r x tan 30 or 0.577 r.
Substituting this into the above equations results in V = (1/3)(pi)(r)1\2 (0.577 r) = 232,727 ft3

Solving for r and h:
r = 72.8 ft h = 42.0 ft

The surface area of a cone is equal to: .S = (pi)(r)(r1\2 + hl\2)1\0.5

Substituting in the appropriate values results in an area of 19222 ft2 which is equivalent to 0.44 acres or 1786 square meters.
The subareas of the pile are : 0.2 1786 sq m * 0.40 = 714.4 sq m
0.6 1786 sq m * 0.48 = 857.3 sq m
0.9 1786sqm*0.12=214.3sqm

Emissions are based upon emission factors determined from the frequency of the wind over critical threshold wind speeds.
0.2 714.4 sq m x 0 glm2/yr x 11b/453.6 g x 1 T/2000 lb = 0 tpy
0.6 857.3 sq m x 904.2 glm2/yr x 11b/453.6 g x 1 T/2000 lb = 0.85 tpy
0.9 214.3 sq m x 5074 glm2/yr x 11b/435.6 g x 1 T/2000 lb = 1.2 tpy
PM TOTAL = 2.05 tpy
PM-10 is one half of PM PM-10 TOTAL = 1.03 tpy

Indiana Department of Environmental Management
Office of Air Quality

Appendix B - - PSD BACT Evaluations - - for a Prevention of Significant Deterioration (PSD) and Part 70 Significant Source Modification (SSM)

Source Background and Description

Source Name:	Steel Dynamics, Inc. (SDI) - Bar Products Division
Source Location:	8000 North County Road 225 East, Pittsboro, IN 46167
Mailing Address:	8000 North County Road 225 East, Pittsboro, IN 46167
General Telephone Number:	317/892-7000
Responsible Official:	Plant Manager
County:	Hendricks
SIC Code:	3312 (Steel Mill)
NAICS Code:	331211
Source Categories:	1 of 28 Listed Source Categories Major PSD Source Minor Source under Section 112 of the CAA
Significant Source Modification:	PSD 063-16628-00037
Permit Reviewer:	Iryn Calilung

PSD BACT Overview

The Prevention of Significant Deterioration (PSD) Program requires a best available control technology (BACT) review and air quality modeling to be performed on the proposed modification. BACT is an emission limitation based on the maximum degree of reduction of each pollutant that is subject to the PSD requirements. In accordance with the *"Top-Down" Best Available Control Technology Guidance Document* outlined in the 1990 draft USEPA *New Source Review Workshop Manual*, this BACT analysis takes 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, work practices, and 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.

All BACT analyses are conducted according to the guidelines set forth by the U.S. EPA's New Source Review Workshop Manual and "Top-Down" Best Available Control Technology Guidance Document. According to these guidance documents, the determination of BACT is dependent on both the technology and the limitation. These guidance documents also specify a five-step process to make these determinations.

- - The first step is to identify all control technologies.
- - The second step is to eliminate technically infeasible options.
- - The third step is to rank the remaining control technologies by effectiveness.
- - The fourth step is to evaluate the most effective controls and document results.
- - The last step is to select the BACT control and limit.

In going through the feasible controls, there may be several different limits that have been set as BACT for the same technology. The best alternative is the most stringent and the applicant would be required to demonstrate in a convincing manner why that limit is not feasible, either technically or economically. The final BACT determination would be the technology with the most stringent corresponding limit that is feasible.

There is no requirement at the State or Federal level which requires innovative control to be used. Innovative control means a control that has not been demonstrated in a commercial application on similar units, As stated in the U.S. EPA Top-Down BACT Guidance (Section V.A.2):

> "Although not required, innovative controls may also be evaluated and proposed as BACT... Innovative technologies are distinguished from technology transfer BACT candidates in that an innovative technology is still under development and has not been demonstrated in a commercial application on identical or similar emission units."

Innovative controls are normally given a waiver from the BACT requirements due to the uncertainty of actual control efficiency. PSD BACT requires that the applicant install the best available control technology, not create new ones. Based on this, the OAQ will not evaluate or require any innovative controls for this BACT analysis. Only available and proven control technologies are evaluated. A control technology is considered "available" when "there are sufficient data indicating (but not necessarily proving)" the technology "will lead to a demonstrable reduction in emissions of regulated pollutants or will otherwise represent BACT."

The primary goal of BACT is to assure that all new major sources and major modifications apply the best available control technology at the time of permit issuance. If the best available control technology happens to also be a standard for the industry, the BACT analysis is not supposed to require above and beyond the existing BACT. But if in reviewing the existing control technologies it is determined that new similar controls can do better, then the limitations will become more stringent. In addition, the presumption that one stack test can prove a lower standard is more appropriate is incorrect. In order to determine when an existing limitation should be lowered for BACT, U.S. EPA's guidance provides many factors must be considered.

Proposed Modification

The mini-mill is located in Hendricks County, IN which is designated as attainment or unclassifiable for all criteria pollutants. The plant was previously permitted and operated under Qualitech Steel. It was purchased by Steel Dynamics, Inc. (SDI). Based upon the emissions calculations (see Appendix A), the proposed modification exceeds the PSD significant threshold levels stated in 326 IAC 2-2-1 for PM, PM_{10}, NO_x, CO, SO_2 and VOC. Therefore, these pollutants are reviewed under the PSD Program (326 IAC 2-2). Since the primary goal of SDI -Bar Products Division's PSD modification is to re-start the operation of the mill, increase efficiency and accommodate the manufacturing of various bar products, it will clearly result in increase utilization in all the existing units and operations.

The following BACT determinations are based on information obtained from the PSD permit application submitted by SDI -Bar Products Division on December 31, 2002, additional documentation provided by SDI -Bar Products Division subsequent to the submittal of the application, and the EPA RACT/BACT/LAER (RBLC) Clearinghouse. The RBLC is a database system that provides emission limit data for industrial processes throughout the United States. It will be obvious that there are wide ranges of existing BACT limits and controls even for similar sources or units. Some significant factors contributing to these are: (a) Type of raw material used and products manufactured, (b) Search of the RBLC database is sometimes limited to the most recently issued permits, (c) If the permitting agency is SIP approved in terms of PSD program, (d) Public interests and (e) Data not input in the RBLC due to recent permit revisions. Due to some factors that cannot be found in the RBLC, permitting agencies have been contacted to discuss review process. This is in addition to using available information in the permitting agency's web sites.

EAF and LMS BACT Analysis

SDI -Bar Products Division is proposing to modify the existing electric arc furnace (EAF) of the mini-mill. The EAF was previously estimated by Qualitech that the maximum capacity is 135 tons/hour. SDI re-evaluated this and determined that 125 tons/hour is the realistic nominal capacity of the EAF.

The batch mode EAF has a nominal capacity of 125 tons of steel per hour, utilizing capture system on a fourth hole duct or direct shell evacuation (DSE) system venting to a baghouse (EAF Baghouse) and a canopy hood for overhead roof exhaust. The EAF is equipped with natural gas fired oxy-fuel burners, uses low sulfur charge carbon, and its dust is conveyed to a dust storage silo (EAF Dust Storage Silo).

The EAF Baghouse and LMS Baghouse exhaust to a common stack. Based on this arrangement, the BACT limits applicable to the common EAF Baghouse/LMS Baghouse stack encompasses the limits for the EAF and LMS. There will be no separate BACT analysis for the LMS.

The table below summarizes the existing and proposed PSD BACT limits. Detailed evaluations are in the subsequent pages.

Table 1 - - EAF BACT Limits

Pollutant	Existing Limit (Qualitech, IN)	New PSD BACT/Limit (SDI, Hendricks, IN)
NO_x	0.50 lb/ton	0.35 lb/ton Natural gas oxy fuel NO_x burners
SO_2	1200 SBQ series - - 1.04 lb/ton 1100 SBQ series - - 0.52 lb/ton Low Sulfur Bar - - 0.25 lb/ton Scrap Management Plan	1200 SBQ series - - 1.8 lb/ton 1100 SBQ series - - 1.5 lb/ton Low Sulfur Bar - - 0.25 lb/ton Scrap Management Plan
VOC	0.13 lb/ton	0.13 lb/ton DSE
CO	4.7 lb/ton	2 lb/ton DSE
PM PM_{10}	0.0032 gr/dscf , Baghouse	Baghouse PM = 0.0018 gr/dscf (Filterable) PM_{10} = 0.0052 gr/dscf (Filterable & Condensible)
Opacity	3% from the EAF Baghouse 5% from other Meltshop operations	3% from the EAF Baghouse/LMS Baghouse stack There is no Meltshop roof monitor
Fugitive	3% Roof canopies	3% Roof canopies
Capacity	135 tons/hour	125 tons/hour

Note: The sources shown above as SDI, Hendricks, IN and Qualitech, IN are one and the same plant under different ownerships.

Summary of Existing EAF Limits in the RBLC

The table below summarizes the existing BACT limits for EAF that are listed in the RBLC. Sources are listed in alphabetical order.

Table 2 - - EAF BACT Comparison					
Source Name	NO_x (lb/ton)	SO_2 (lb/ton)	PM/PM10 (gr/dscf)	VOC (lb/ton)	CO (lb/ton)
Ameristeel (Florida Steel), FL	0.33	- -	0.0034	0.0295	3.0
Ameristeel, NC	6.0	- -	- -	- -	6.0
Arkansas Steel, AR	1.0	0.7	0.0052	0.35	6.0
Beta Steel, IN	**0.22** 0.45	**0.047** 0.25	0.0052	0.13 0.15	8.17
Birmingham Steel (now Nucor Steel), IL	0.26	- -	- -	- -	2.01
Chaparral Steel, VA	0.7	0.7	0.0018	0.35	4.0
Charter Steel, WI	0.51	- -	**0.0015**	**0.06**	3.5
IPSCO, IA	0.27 0.8	0.06 0.7	0.0052	0.18	**0.91** 1.93
IPSCO, AL	0.4	0.7	0.0033	0.35	2.0
Keystone Steel, IL	0.51	0.2	0.0018	0.13	1.34
Mac Steel, AR	0.51	0.54 1.05	0.0018	0.13	4.9
Nucor Steel, AL	0.35 0.4 0.5	0.09 0.5 0.6	0.0032	0.20	2.0
Nucor Steel, AR	0.51	0.2 0.84	0.0018	0.09	- -
Nucor Steel, IN	0.51	0.2	0.0018	0.13	2.0
Nucor Steel, SC	0.35	0.2 0.35	0.0052	0.13	2.0 2.76
Nucor Steel, UT	0.33 0.73	0.31	0.0020 0.0033	- -	5.87 14.97
Nucor Steel, NC	0.27 0.51	0.22	0.0018	0.13	1.82 4.0
Nucor-Yamato, AR	0.38	0.15	0.0018	0.13	2.0
Qualitech, IN	0.5	0.25 0.52 1.04	0.0032	0.15	4.7
Republic Technologies, OH	0.35	0.07	0.0032	0.35	4.0
Roanoke Steel, VA	0.378	0.17	0.0034	0.3	1.37 2.4
SDI, Dekalb, IN	0.51	0.2	0.0032	0.13	2.0
SDI, Hendricks, IN	0.35	0.25 1.5 1.8	0.0018 0.0052	0.13	2.0
SDI, Whitley, IN	0.35	0.25	0.0018 0.0052	0.09	2.0
SMI Steel, SC	0.51	0.35	0.0020		2.0
Stafford Steel, AR	0.52	0.07	0.0018	0.09	2.0
Tuscaloosa Steel, AL	0.35	0.62	0.00325	0.13	2.0

Based on this summary table, the BACT limits for EAF should be:

NO_x = 0.22 lb/ton SO_2 = 0.0.47 lb/ton PM/PM_{10} = 0.0018 gr/dscf
VOC = 0.06 lb/ton CO = 0.91 lb/ton

However, BACT analysis takes into account several factors in evaluating and deciding what should be the BACT limits. Some of these factors to consider, in no particular order, are: PSD SIP status of the permitting agency, attainment status of the source location, issuance date of the permit, compliance with the BACT limits, design of the operation, pollution control technologies, pending revisions of existing BACT limits, products produced, raw materials used, construction or operation status of the source, available resources during the permit review, public interests and participation, economic climate, and participation/input of the US EPA. Based on these contributing factors, further research, communication and documentation are required in performing BACT review.

In the next pages, BACT analysis for each pollutant is explained.

(1) NO_x Control Technology Technical Feasibility Study

Four (4) available control alternatives were evaluated to control NO_x from the EAF:

(A) Combustion Controls,
(B) Selective Catalytic Reduction (SCR),
(C) Non-Selective Catalytic Reduction (NSCR), and
(D) Selective Non-Catalytic Reduction (SNCR) options - Exxon's Thermal DeNO$_x$ ® and Nalco Fuel Tech's NO$_x$OUT®.

(A) Combustion Controls

There is an entire family of combustion controls for NO_x reduction from various combustion units - low excess air (LEA), low-NO_x/oxy-fuel burners, overfire air (OFA), burners out of service (BOOS), reduced combustion air temperature, load reduction, and flue gas re-circulation (FGR). Among these, low-NO_x/oxyfuel burners are considered technically feasible for controlling NO_x emissions from EAFs. LEA and OFA generally create more CO emissions due to low primary air resulting to incomplete combustion. Such conditions can result in inefficient scrap melting and unacceptable increases in tap-to-tap time. NO_x reduction using these technologies are also very minimal (i.e., 10% - 20%). BOOS, reduced combustion air temperature, and load reduction all result in an inefficient scrap melting and unacceptable increases in tap-to-tap time. FGR alters the distribution heat, resulting in cold spots) and lowers the efficiency of the EAF.

(B) Selective Catalytic Reduction (SCR)

SCR is a technology that uses a catalyst and ammonia injection to promote the removal of NO_x at certain exhaust stream parameters such as inlet NO_x concentration, volumetric flow and temperature range. SCR operates best when inlet NO_x concentrations and exhaust temperatures are constant and in the range specified for the particular catalyst. Other parameter that can affect the performance of the catalyst is poisoning due to certain metals or chemicals in the exhaust stream and fouling or masking due to particulate matter plugging or covering the catalyst. In selective catalytic reduction (SCR) systems, ammonia (NH_3), usually diluted with air or steam, is injected through a grid system into the exhaust gas stream upstream of a catalyst bed. On the catalyst surface, the NH_3 reacts with NO_x to form molecular nitrogen and water. The function of the catalyst is to effectively lower the activation energy of the NO_x decomposition reactions.

In order for a SCR system to effectively reduce NO_x emissions, the exhaust gas stream should have relatively stable gas flow rates, NO_x concentrations, and temperature - steady-state system. The EAF operation is a highly transient process and is a batch

operation. The temperature of the EAF exhaust gas will vary widely over the melt cycle, and the gas flow rates and NO_x concentrations will exhibit a wide amplitude.

SCR systems are highly susceptible to catalyst poisoning due to contamination of the catalyst by reactive materials entrained in the EAF gas stream. Other problems with catalysts are their propensities to fouling and masking. Fouling occurs when the catalyst's cell openings are plugged with a solid material. Masking occurs when the catalyst surfaces are covered with residues which prevent their contact with the flue gas. The problems with catalyst poisoning, fouling, and masking would, at a minimum, require the placement of the SCR unit downstream of the particulate control device (baghouse). SCR catalysts require high gas stream temperatures (500 to 1,100 ^oF), thus the gas stream would have to be reheated from approximately 200 ^oF to the proper operating temperature for the catalyst. This would require substantial energy expenditure (natural gas combustion) and result in additional NO_x emissions, not to mention CO emissions. SCR catalyst suppliers and manufacturers that were contacted confirm the above problems. Therefore, SCR is considered technically infeasible.

The OAQ is not aware of any situation where a SCR system has been properly operated to control NO_x emissions from an EAF.

(C) Non-Selective Catalytic Reduction (NSCR)

A non-selective catalytic reduction (NSCR) system is a post combustion add-on exhaust gas treatment system. It is often referred to as "three-way conversion" catalyst since it reduces NO_x, unburdened hydrocarbons (UBH), and CO simultaneously. In order to operate properly, the combustion process must be near-stoichiometric. Under this condition, in the presence of a catalyst, NO_x is reduced by CO, resulting in nitrogen (N_2) and carbon dioxide (CO_2). Steelmaking in an EAF is not considered a combustion process. Although combustion of CO and hydrocarbons occurs in the EAF and DEC ductwork, the process is not steady state with respect to available fuel (CO) and hydrocarbons and combustion air. Steady-state near-stoichiometric combustion conditions do not exist in the DEC ductwork. Other potential problems with NSCR systems include catalyst poisoning by additives such as phosphorous and zinc which may be present in the steel scrap charge into the EAF. Therefore, NSCR is considered technically infeasible.

The OAQ is not aware of a steel mill where an NSCR system has been operated to control NO_x emissions from an EAF.

(D) Selective Non-Catalytic Reduction (SNCR) options - Exxon's Thermal DeNO$_x$ ® and Nalco Fuel Tech's NO$_x$OUT®

The two (2) commercially available selective non-catalytic reduction (SNCR) systems are *Exxon's Thermal DeNO$_x$® system* and *Nalco Fuel Tech's NO$_x$OUT® system*. In order for the Thermal DeNO$_x$® system and NO$_x$OUT® system to effectively reduce NO_x emissions, the exhaust gas stream should have relatively stable gas flow rates, ensuring the requisite residence time and temperature requirements. The temperature of the EAF exhaust gas varies widely over the melt cycle, and does not remain in the desired temperature window during all phases of the EAF operation. Similarly, the gas flow rates do not remain stable during the EAF operation, precluding the possibility of adequate residence time. Therefore, these SNCR technologies are considered technically infeasible.

The OAQ is not aware of a steel mill where either type of SNCR system has been properly operated to control NO_x emissions from an EAF.

(2) NO_x Existing BACT Emission Limitations

The RBLC indicates that all steel mills listed do not have add-on control devices to control NO_x emissions from EAFs. Instead, either low-NO_x burners, oxyfuel burners, or a combination of low-NO_x and oxyfuel burners have been required as combustion controls. The RBLC also indicates a wide range of NO_x emission limitations (0.22 lb/ton - 6.0 lb/ton).

The table below lists the NO_x BACT limits of EAFs. Limits are arranged in an ascending order.

Note: The sources shown below as SDI, Hendricks, IN and Qualitech, IN are one and the same plant under different ownerships.

Table 3 - - EAF NO_x BACT of Other Similar Sources

Source Name	NO_x Limit (lb/ton)	Source Name	NO_x Limit (lb/ton)
Beta Steel, IN (1992)	0.22	Beta Steel, IN (2003)	0.45
Birmingham Steel (Nucor), IL (1993)	0.26	Nucor (Trico Steel), AL (2002)	0.50
IPSCO, IA (1996)	0.27	**Qualitech, IN (1996)**	0.50
Nucor Steel, NC (2002)	0.27	Charter Steel, WI (2000)	0.51
Ameristeel (Florida Steel), FL (1999)	0.33	Keystone Steel, IL (2000)	0.51
Nucor Steel, UT (1994)	0.33	SDI, Dekalb, IN (1994)	0.51
Tuscaloosa Steel, AL (1995)	0.35	SMI Steel, SC (2001)	0.51
Republic Technologies, OH (1999)	0.35	Mac Steel, AR (1998)	0.51
Nucor Steel, SC (1996)	0.35	Nucor Steel, AR (1991)	0.51
SDI, Whitley, IN (1999)	0.35	Nucor Steel, NC (1999)	0.51
Nucor (Trico Steel), AL (2002)	0.35	Nucor Steel, IN (1996)	0.51
SDI, Hendricks, IN (2003)	0.35	Stafford Railsteel, AR (1993)	0.52
Roanoke Electric, VA (1998)	0.378	Chaparral Steel, VA (1998)	0.70
Nucor Yamato, AR (2001)	0.38	Nucor Steel, UT (1997)	0.73
Nucor (Trico Steel), AL (2002)	0.40	IPSCO, IA (2002)	0.80
IPSCO Steel, AL (1998)	0.40	Arkansas Steel, AR (1998)	1.0

Beta Steel, IN

- - Beta Steel, IN is listed twice in the above table.

Beta Steel, IN was permitted the most stringent limit of 0.22 lb/ton. The limit was given at that time based on an AP-42 emission factor with an “E” rating (lowest rating of accuracy). A recently issued permit revises the NO_x limit to 0.35 lb/ton for the EAF, and 0.45 lb/ton to the combination of EAF, LMF and Caster.

The BACT limit (0.22 lb/ton) will not be use in the evaluation. The BACT limit (0.45 lb/ton) will not be use in the evaluation because it is less stringent what is going to be proposed for SDI, Hendricks, IN.

Birmingham Steel (now Nucor Steel), IL

- - On May 23, 2003, the IDEM confirmed that this Birmingham Steel, Kankakee, IL plant was

bought by Nucor Steel, IN in 2002 and is still in operation, producing billets. This NO_x limit is one of the earliest BACT limits established (1993), however, it was not entered in the RBLC until 1998. The Title V permit issued in July 2002 also indicated the NO_x limit in terms of lb/hour rate, in addition to the lb/ton rate. No compliance testing nor monitoring was required for the NO_x limit. The NO_x BACT limit encompasses the emissions from the EAF only. Birmingham Steel, IL does not have an LMF, thus it is not an accurate comparison if this limit and the proposed SDI limits are compared.

Due to differences in meltshop operations and arrangements and steel products produced, this NO_x BACT limit (0.26 lb/ton) will not be consider as BACT for this evaluation.

It is also not an accurate comparison if this EAF only NO_x BACT limit is combined with LMF only NO_x BACT limits of other sources due to differences in operations and production.

IPSCO, IA

- - IPSCO, IA is listed twice in the table above.

On February 5, 2003, the IOWA DNR (Corey Detter 515/281-4842) was contacted regarding the limits of IPSCO, IA. The 0.27 lb/ton NO_x limit was specified in 1996, however, IPSCO can not comply with it. In July, 2002, the NO_x limit was revised to 0.8 lb/ton. This new limit was not considered as BACT because the IOWA DNR admits that they did not have the time to extensively perform a BACT analysis, and US EPA has provided significant comments to the proposed limit. The permit was issued even with the significant comments. IOWA is SIP approved in terms of PSD program.

Based on this information, both the old (0.27 lb/ton) and new (0.8 lb/ton) NO_x limits will not be use in this BACT evaluation.

Nucor Steel, NC

- - Nucor Steel, NC is listed twice in the above table.

On February 6, 2003, the North Carolina Air Pollution Division (Fred Langenback 919/715-6242) was contacted regarding the only steel mill in their area. Nucor Steel, NC was initially permitted at 0.51 lb/ton NO_x in 1999. The permit has a provision that provides an opportunity to re-open the BACT review based on testing data that the existing limit can be revised. The NO_x limit was changed to 0.27 lb/ton in December, 2002. 2002. This is one of the revised NO_x limits that is changed to a more stringent limit. There were extensive comments received from the public. Nucor Steel, NC manufactures slabs, while SDI, Hendricks, IN will manufacture bars and specialty bar quality products.

Due to difference in steel products, and one of the 2 sources with this limit has shown non compliance, the NO_x limit (0.27 lb/ton) will not be use in this evaluation.

Ameristeel (Florida Steel), FL

- - On June 4, 2003, the Florida Division of Air Resources (Teresa Heron and Arif Syed 850/921-9529) was contacted regarding this mill. Ameristeel, FL was formerly the Florida Steel. This mill produced steel reinforcing bars and steel rods. A permit was issued in 1999, but the information was not put in the RBLC until 2001. This permit is to increase the steel production from 600,000 tons/year to 720,000 tons/year and to install a new LMF. The NO_x limit was not revised with this modification. The NO_x limit (0.33 lb/ton) was established when the mill did not have a LMF in its operations. NO_x compliance testing was required in the Title V permit issued in 2000, however, a NO_x CEM was not.

Due to the difference in products produced (reinforced bars and rods versus specialty bars) and the NO_x BACT limit (0.33 lb/ton) is for the EAF only and does not take into account the emissions from an LMF, an accurate comparison of the BACT limits is not being made, thus this limit will not be use in this evaluation.

Even though there is difference in operations and products, if the LMF emissions (found in the RBLC) are taken into account and added to the EAF emissions rate of 0.33 lb/ton, majority of the total emission rates are comparable to the proposed NO_x limit (0.35 lb/ton) of SDI, Hendricks, IN, that encompasses both the EAF and LMF emissions, as shown below.

Table 4 - - LMF Only NO_x BACT Limits of Other Similar Sources

Source	LMF NO_x Limit (lb/ton)	Ameristeel, FL EAF NO_x Limit (lb/ton)	EAF and LMF Limit (lb/ton)
Nucor Steel, IN	0.0176	add 0.33	0.3476
Nucor Steel (Trico), AL	0.02		0.35
Nucor-Yamato, AR	0.02		0.35
SDI, Dekalb, IN	0.025		0.355
Roanoke Steel, VA	0.06		0.39

Nucor Steel, UT

- - Nucor Steel, UT is listed twice in the above table.

The permit for Nucor Steel, UT was issued in 1994, but the information was not put in the RBLC until 2001. The permit limits the steel production to 1.4 million ton/year of scrap fed to the source's 2 EAFs. The NO_x BACT limit was specified in lb/hour rate. The NO_x BACT limit (0.33 lb/ton) indicated in the above table was determined based on the maximum capacity of each EAF at 65 ton/hour. No additional information can be found to supplement this information found in the RBLC.

The RBLC is also showing another permit issued in 1997 for Nucor Steel, UT. The NO_x BACT limit was specified in lb/hour rate. The NO_x BACT limit (0.73 lb/ton) indicated in the above table was determined based on the maximum capacity of each EAF at 65 ton/hour. No additional information can be found to supplement this information found in the RBLC.

The NO_x BACT limits (0.33 lb/ton and 0.73 lb/ton) will not be used in the evaluation because the limits are in terms of lb/hour and the source is not required to comply with the lb/ton rates.

Tuscaloosa Steel, AL

- - On February 6, 2003, the Alabama DEM (Doug Carr 334/271-7887) was contacted regarding this mill. The state of Alabama is SIP approved for the PSD program. The NO_x (0.35 lb/ton) limit for Tuscaloosa Steel, AL has not been revised. Tuscaloosa Steel, AL is showing in the RBLC to be in compliance with their 0.35 lb/ton NO_x BACT limit by using conventional burners.

Since compliance has been verified with the NO_x BACT limit of 0.35 lb/ton, this limit will be consider as BACT.

Republic Technologies, OH

- - The EAF No. 9 of Republic Technologies, OH has a maximum capacity of 165 ton/hour. The NO_x limit was specified both in terms of lb/ton (primary limit) and lb/hour (secondary limit). However, if calculation is made, the emission rates do not coincide.

NO_x = (0.35 lb/ton)(165 ton/hr) = 57.75 lb/hr.

RBLC indicates the NO_x limit to be 33 lb/hr and to arrive to this lb/hr rate, the NO_x limit should have been 0.2 lb/ton.

NO_x = (33 lb/hr)/(165 ton/hr) = 0.2 lb/ton.

No additional information can be found to supplement this information found in the RBLC.

The NO_x rate (0.2 lb/ton) will not be consider in this BACT evaluation.

Nucor Steel, SC

- - The NO_x BACT limit for Nucor Steel, SC was set at 0.35 lb/ton and uses low NO_x burners. The NO_x limit encompasses the EAF and LMF because both of them exhaust to the EAF baghouse. Nucor Steel, SC is showing in the RBLC to be in compliance with their 0.35 lb/ton NOx BACT NO_x limit and this was confirmed by the South Carolina Department of Health and Environment.

  Since compliance has been verified with the NO_x BACT limit of 0.35 lb/ton, this limit will be consider as BACT.

SDI, Whitley, IN

- - SDI, Whitley, IN was provided a limit of 0.51 lb/ton for a transition period of 540 days, and then the limit becomes 0.35 lb/ton. This mill was recently tested on February, 2003 for compliance. Based on preliminary review of the test results, it seems that SDI, Whitley, IN complied with the 0.35 lb/ton limit. The NO_x limit encompasses the emissions from the EAF and LMF.

  Since compliance has been verified with the NO_x BACT limit of 0.35 lb/ton, this limit will be consider as BACT.

Nucor Steel, AL (formerly Trico Steel)

- - Nucor Steel, AL is listed 3 times in the above table.

  On February 6, 2003, the Alabama DEM (Doug Carr 334/271-7887) was contacted regarding this mill. The state of Alabama is SIP approved for the PSD program. Nucor Steel, AL (formerly Trico Steel) was initially permitted at 0.35 lb/ton of NO_x. The NO_x limit was changed in November, 2002. Nucor Steel, AL was given a limit of 0.4 lb/ton when the production is equal to or greater than 352 ton/hr and 0.5 lb/ton when the production is less than 352 ton/hr.

  These BACT limits (0.4 lb/ton and 0.5 lb/ton) will not be consider because they are less stringent.

SDI, Hendricks, IN

- - Three (3) sources among the 5 sources listed in the RBLC with the NO_x limit of 0.35 lb/ton that compliance has been verified. Following the Top Down BACT analysis has sufficiently satisfied in eliminating the other more stringent limits as BACT. Information that follows regarding the other sources are additional information that supplement the BACT analysis.

Roanoke Steel, VA.

- - On February 10, 2003, the Virginia Air Pollution Control (Dean Downs 540/597-2711) has been contacted regarding the Roanoke Steel, VA. This mill applied for a modification to increase the maximum capacity of their EAF from 70 ton/hr to 100 ton/hr. The NO_x limit was changed from

0.12 lb/ton to 0.378 lb/ton. This is based on stack test done on the plant. Roanoke Steel, VA has a separate stack for the EAF and LMF, which is different from most meltshops.

This BACT limit (0.378 lb/ton) will not be consider because it is less stringent.

Nucor-Yamato, AR

- - The permit issued to Nucor-Yamato, AR was for an increase in production. Nucor Yamato, AR limit encompasses emissions from EAF only. This NO_x limit in terms of lb/ton is a secondary limit. The primary NO_x limit was specified in lb/hr. Nucor-Yamato, AR is required to show compliance with its NO_x BACT limit by using CEM.

  To make a correct comparison with SDI, Hendricks, IN, the LMF NO_x BACT limit (0.02 lb/ton) of Nucor-Yamato, AR is added to the 0.38 lb/ton EAF limit, thus resulting to 0.4 lb/ton total NO_x emission rate.

  Both the 0.38 lb/ton and 0.4 lb/ton BACT limits will not be consider because they are less stringent.

IPSCO, AL

- - On February 6, 2003, the Alabama DEM (Doug Carr 334/271-7887) was contacted regarding this mill. The state of Alabama is SIP approved for the PSD program. The NO_x (0.4 lb/ton) limit for IPSCO, AL has not been revised.

  This BACT limit (0.4 lb/ton) will not be consider because it is less stringent.

Charter Steel, WI

- - On February 11, 2003, Wisconsin Department of Environmental Management (Don Faith 608/267-3135) was contacted regarding their only steel mill that manufactures specialty bars. Charter Steel, WI was issued a modification in 2000. The NO_x limit was specified at 0.51 lb/ton, which has been the existing NO_x BACT limit since 1996. EPA Region 5 did not provide comment on this PSD modification.

  This BACT limit (0.51 lb/ton) will not be consider because it is less stringent.

Keystone Steel, IL

- - On February 10, 2003, the Illinois EPA (Jason Schnepp 217/524-3724) was contacted to discuss the limits of Keystone Steel, IL. The permit was for an expansion, however, it can not be confirmed if the expansion has been constructed.

  This BACT limit will not be consider because it is less stringent.

SDI, Dekalb, IN

- - The permit issued in 1994 was for an EAF with a maximum capacity of 22 ton/hour.

  This BACT limit (0.51 lb/ton) will not be consider because it is less stringent.

SMI Steel, SC

- - On February 10, 2003, the South Carolina Air Permitting (Matt Gibbs 8-3/898-3288 and Larry Ragsdale 803/898-3840) was contacted regarding SMI Steel.

  The NO_x BACT limit for SMI Steel, SC was set at 0.51 lb/ton. SMI Steel, SC uses pet coke and injection carbon, and low grade scrap to manufacture rebars. The NO_x limit encompasses the

EAF and LMF because both of them exhaust to the EAF baghouse and was revised to 0.51 lb/ton based on stack test results. This is the most recent PSD permit issued by this permitting agency. SC is SIP approved in terms of the PSD program.

This BACT limit (.51 lb/ton) will not be consider because it is less stringent.

Mac Steel, AR

- - The NO_x BACT limit specified for the Mac Steel, AR is primarily expressed in lb/hour. Converting the lb/hour limit to lb/ton rate at its maximum capacity of 86 ton/hour resulted to 0.51 lb/ton. No additional information can be found to supplement this information found in the RBLC.
  This NO_x rate (0.51 lb/ton) will not be consider because it is less stringent, in addition that the mill is not required to comply with a lb/ton rate.

Nucor Steel, AR

- - RBLC indicates the NO_x BACT limit for Nucor Steel, AR in terms of lb/hour. Converting the lb/hour limit to lb/ton rate based on the maximum capacity (300 ton/hour) of the plant resulted to 0.51 lb/ton. This permit was issued in 1991. No additional information can be found to supplement this information found in the RBLC.

  This NO_x rate (0.51 lb/ton) will not be consider because it is less stringent, in addition that the mill is not required to comply with a lb/ton rate.

Nucor Steel, IN

- - Nucor Steel, IN has a NO_x BACT limit of 0.51 lb/ton for their EAF. Nucor Steel, IN submitted an application for the modification of their mill and the NO_x BACT limit is being re-evaluated.

  This BACT limit (0.51 lb/ton) will not be consider because it is less stringent

Stafford Steel, AR

- - Previous PSD reviews indicated that the Stafford Steel, AR was never built. Based on this, compliance has not been established. This limit will not be considered in this BACT evaluation.

Chaparral Steel, VA

- - Chaparral Steel, VA has a NO_x limit of 0.7 lb/ton and it encompasses the emissions from the EAF and LMF. No additional information can be found to supplement this information found in the RBLC.

  This BACT limit will not be consider because it is less stringent.

Arkansas Steel, AR

- - The permit issued in 1998 for Arkansas Steel, AR was for an EAF with a maximum capacity of 50 tons/hour. The NO_x BACT limits was both specified in terms of lb/ton and lb/hour.

  This BACT limit will not be consider because it is less stringent.

- - Even with attempts to discuss the BACT limits and search of the permitting agency's web site, the status of the other mills can not be verified and confirmed if they have been constructed, operated or in compliance.

- - There are 4 sources with NO_x limits of 0.35 lb/ton.

- - There are 8 sources with NO_x limits of 0.51 lb/ton.

- - This mini mill under Qualitech, IN has a NO_x BACT limit of 0.5 lb/ton. Under this proposed modification, SDI - Bar Products Division is proposing to lower it to 0.35 lb/ton.

(3) Proposed NO_x BACT for SDI -Bar Products Division, IN

No add-on control devices that are technically feasible in controlling NO_x emissions from EAFs. EAF operational practices with natural gas fueled oxy fuel burners will be considered as BACT.

The NO_x BACT for the EAF is 0.35 lb/ton, which is equivalent to 45.75 pound of NOx per hour, based on a 3-hour block average, and the EAF is equipped with natural gas fueled oxy fuel burners. This is a revision from 0.50 lb/ton to 0.35 lb/ton. This NO_x limit is comparable to existing NO_x limits of the same meltshop arrangement (EAF, LMS and Caster exhausting to the same baghouse).

(4) SO_2 Control Technology Technical Feasibility Study

Two (2) available control alternatives were evaluated to control SO_2 from the EAF:
(A) Charge substitution and
(B) Flue Gas Desulfurization (FGD) options - wet scrubbing, spray dryer absorption (SDA), and dry sorbent injection.

(A) Charge substitution
Sulfur dioxide (SO_2) emissions are directly related to the amount of sulfur being charged to the EAF. Scrap, direct reduced Iron (DRI), pig iron, injection carbon, charge carbon, and pet coke all have varying amounts of sulfur that will end up in the steel, slag or exhaust air. Sulfur content can vary from 0.2 % for DRI, 2.5 % (injection carbon) to 3% (pet coke). The sulfur that enters the exhaust stream may be oxidized to SO_2 when contacted with extreme heat and oxygen present in the ambient air. The amount of SO_2 present in the exhaust air will not be great enough to allow for any control technology to remove. One other factor that affects the SO_2 emissions is the sulfur content of the metal being charged to the furnace. Scrap metal inherently has low sulfur content (0.03-0.07% sulfur).

Charge substitution with lower sulfur-bearing raw materials is considered technically infeasible by SDI -Bar Products Division because of the type of steel products intended to be manufactured. Therefore, the OAQ does not believe that requiring scrap with a lower sulfur content is a probable solution and the OAQ is not aware of any other means to assure low sulfur content in the scrap besides a scrap management plan. The OAQ believes that the scrap management plan required is consistent with the best scrap management plans at other PSD sources.

(B) FGD options - wet scrubbing, spray dryer absorption (SDA), and dry sorbent injection. FGD systems currently in use for SO_2 abatement can be classified as wet and dry systems. FGD options have been applied to utility boilers and other steel mill blast furnaces.

- - Wet scrubbers are regenerative processes which are designed to maximize contact between the exhaust gas and the absorbing liquid. The exhaust gas is scrubbed with a 5% - 15% slurry, comprised of lime (CaO) or limestone ($CaCO_3$) in suspension. The SO_2 in the exhaust gas reacts with the CaO or $CaCO_3$ to

form calcium sulfite ($CaSO_3$*$2H_20$) and calcium sulfate ($CaSO_4$). The scrubbing liquor is continuously recycled to the scrubbing tower after fresh lime or limestone has been added.

The types of scrubbers which can adequately disperse the scrubbing liquid include packed towers, plat or tray towers, spray chambers, and venturi scrubbers. In addition to lime and limestone, numerous other absorbents are available including sodium solutions and ammonia-based solutions.

The main technical problem associated with the operation of wet scrubbers is the presence of high particulate loading in the EAF exhaust gas. Particulates are not acceptable in the operation of wet scrubbers because they would plug spray nozzles, packing, plates, and trays. However, locating the wet scrubber downstream of the EAF particulate control device would make operation of the wet scrubber technically feasible. However, due to the expected low concentration of SO_2 in the exhaust gas stream, any add-on control device would be considered technically infeasible and economically infeasible.

The OAQ is not aware of a steel mill where a wet scrubber has been operated to control SO_2 emissions from an EAF.

- - As in wet scrubbing, spray dryer absorption (SDA), also known as dry scrubbing, the gas phase SO_2 is removed by intimate contact with a suitable absorbing solution. Typically, this may be a solution of sodium carbonate (Na_2CO_3) or slaked lime [$Ca(OH)_2$]. In SDA systems, the solution is pumped to rotary atomizers which create a spray of very fine droplets. The droplets mix with incoming SO_2-laden exhaust gas in a very large chamber and subsequent absorption leads to the formation of sulfites and sulfates within the droplets. Almost simultaneously, the sensible heat of the 200 ^oF exhaust gas which enters the chamber evaporates the water in the droplets, forming a dry powder before the gas leaves the spray dryer.

  Unlike wet scrubbing, the presence of high particulate loading in the EAF exhaust gas is not much of a problem. Hence, it can be operated prior to a particulate control device, especially baghouses employing teflon-coated fiberglass bags to minimize bag corrosion. This arrangement would also make the particulate control device capture the precipitated particulates from the spray dryer. Like wet scrubbing, due to the expected low concentration of SO_2 in the exhaust gas stream, any add-on control device would be considered technically infeasible and economically infeasible.

  The OAQ is not aware of a steel mill where a spray dryer absorption unit has been operated to control SO_2 emissions from an EAF.

- - Dry sorbent injection typically involves the injection of dry powders into either the furnace or post-furnace region of utility-sized boilers. This process was developed as a lower cost option to conventional FGD technology. Since the sorbent is injected directly into the exhaust gas stream, the mixing offered by the dry scrubber tower is not realized. Unlike wet scrubbing, the presence of high particulate loading in the EAF exhaust gas is not much of a problem. Like wet scrubbing, due to the expected low concentration of SO_2 in the exhaust gas stream, any add-on control device would be considered technically infeasible

and economically infeasible.

The OAQ is not aware of a steel mill where dry sorbent injection has been operated to control SO_2 emissions from an EAF.

Adsorption and absorption control technologies have not been designed to control exhaust gas stream from an EAF with concentrations of 5 ppm and below because:

(a) The only control technologies proven to remove SO_2 emissions from industrial processes with exhaust gas streams similar to an EAF were wet/dry scrubbers using lime, limestone or alkali metal scrubbing agents and lime spray dryers. This is supported by every BACT determination that the IDEM, OAQ has seen from other states.

(b) Although several different absorption and adsorption processes exist which may use different chemical reactions for removal, they all must have the same basic operating properties, which are sufficient contact between the SO_2 and scrubbing agent, sufficient residence time, and the necessary equilibrium in the exhaust.

(c) For an exhaust with a concentration of 5 ppm or less and 1.3 million cubic feet per minute exhaust, an unreasonable amount of reagent would be necessary to provide sufficient contact between the SO_2 and reagent, and even if absorbed or adsorbed in the tower, almost certainly the proper equilibrium would not exist to maintain the reduction.

(5) SO_2 Existing BACT Emission Limitations

The original permit under Qualitech specified 3 SO_2 BACT limits for 3 different specialty bar products/series. SDI - Bar Products Division, IN is proposing to manufacture the same specialty bar, however, the SO_2 BACT limits have been revised using the test results performed by Qualitech.

Table 5 - SO_2 BACT Limits

Series SBQ	Qualitech, IN	SDI, Hendricks, IN		
1200 SBQ	1.04 lb/ton	1.8 lb/ton	225 lb/hr	15% of the steel production
1100 SBQ	0.52 lb/ton	1.5 lb/ton	187.5 lb/hr	20% of the steel production
Low Sulfur Bar	0.25 lb/ton	0.25 lb/ton	31.25 lb/hr	65% of the steel production

The table below lists the SO_2 BACT limits of similar sources. Limits are arranged in an ascending order.

Note: The sources shown below as SDI, Hendricks, IN and Qualitech, IN are one and the same plant under different ownerships.

The RBLC indicates that all steel mills listed do not have add-on control devices to control SO_2 emissions from EAFs. The RBLC indicates a wide range of SO_2 limits from 0.047 to 1.5 lb/ton.

The RBLC does not show any other steel mill with different SO_2 limits based on specialty bar series.

Table 6 - - EAF SO_2 BACT of Other Similar Sources					
Source Name		SO_2 Limit (lb/ton)	Source Name		SO_2 Limit (lb/ton)
Beta Steel, IN	(1992)	0.047	Beta Steel, IN	(2003)	0.33
IPSCO, IA	(1996)	0.06	SMI Steel, SC	(2001)	0.35
Republic Technologies, OH	(1999)	0.07	Nucor Steel, SC	(1996)	0.35
Stafford Railsteel, AR	(1993)	0.07	Nucor (Trico Steel), AL	(2002)	0.50
Roanoke Electric Steel, VA	(1998)	0.075	**Qualitech, IN**	**(1996)**	0.52
Nucor (Trico Steel), AL	(1996)	0.09	Mac Steel, AR	(1993)	0.54
Nucor, Yamato Steel, AR	(2001)	0.15	Nucor (Trico Steel) AL	(2002)	0.60
Nucor Steel, AR	(1992)	0.20	Tuscaloosa Steel, AL	(2003)	0.62
Nucor Steel, SC	(1995)	0.20	Chaparral Steel, VA	(1998)	0.70
Keystone Steel, IL	(2000)	0.20	IPSCO, IA	(2002)	0.70
Nucor Steel, IN	(1996)	0.20	IPSCO Steel, AL	(1998)	0.70
SDI, Dekalb, IN	(1997)	0.20	Arkansas Steel, AR	(1998)	0.70
Nucor Steel, NC	(2002)	0.22	Nucor Steel, AR	(1991)	0.84
SDI, Whitley, IN	(1999)	0.25	**Qualitech, IN**	**(1996)**	1.04
SDI, Hendricks, IN	**(2003)**	0.25	Mac Steel, AR	(1998)	1.05
Beta Steel, IN	(2003)	0.25	**SDI, Hendricks, IN**	**(2003)**	1.5
Qualitech, IN	**(1996)**	0.25	**SDI, Hendricks, IN**	**(2003)**	1.8
Nucor Steel, UT	(1997)	0.31			

Beta Steel, IN

- - Beta Steel, IN is listed 3 times in the table above.

  Beta Steel, IN was initially permitted at 0.047 lb/ton SO_2. A recently issued revises SO2 limit from 0.047 lb/ton to 0.25 lb/ton for the EAF. Since the EAF exhausts in a common baghouse together with the LMF and Caster, the SO_2 limit for the combination is set at 0.33 lb/ton.

  The SO_2 limit (0.047 lb/ton) will not be relied upon in this BACT evaluation, because it has been revised.

  The revised SO_2 limit (0.25 lb/ton) is the same limit as the proposed BACT limit for SDI, Hendricks, IN.

  The SO_2 limit (0.33 lb/ton) will not be consider in this evaluation because it is less stringent that the proposed limit by SDI, Hendricks, IN.

IPSCO, IA

- - IPSCO, IA is listed twice in the table above.

  On February 5, 2003, the IOWA DNR (Corey Detter 515/281-4842) was contacted regarding the limits of IPSCO, IA. The 0.06 lb/ton SO_2 limit was specified in 1996, however, IPSCO can not comply with it. In July, 2002, the SO_2 limit was revised to 0.7 lb/ton. This new limit was not considered as BACT, even though it is already lower than the test result (0.85 lb/ton), because the IOWA DNR admitted that they did not have time to extensively preform a BACT analysis, and US EPA has provided significant comments on the limit. The permit was issued even with the comments. IOWA is SIP approved in terms of PSD program.

Since the old SO_2 limit (0.06 lb/ton) is not being complied with and the new SO_2 limit (0.7 lb/ton) is not considered as BACT, both limits will not be considered in this BACT evaluation.

Republic Technologies, OH

- - The SO_2 limit for the EAF No. 7 of Republic Technologies, OH was specified in terms of lb/hour. The SO2 limit (0.07 lb/ton) indicated in the above table was converted based on the maximum capacity of the EAF at 85 ton/hour. The lb/ton rate was not listed in the RBLC.

  Since the limit is specified in lb/hour rate, the equivalent rate in lb/ton (0.07 lb/ton) will not be used in this evaluation.

Roanoke Steel, VA

- - On February 10, 2003, the Virginia Air Pollution Control (Dean Downs 540/597-2711) has been contacted regarding the Roanoke Steel, VA. This mill applied for a modification in 1998, to increase the maximum capacity of their EAF from 70 ton/hr to 100 ton/hr. The SO_2 limits were specified in terms of lb/hour and tons/year rates. The NO_x lb/ton rate (0.075 lb/ton) was converted using the 100 tons/hour maximum capacity of the EAF.

  The SO_2 rate (0.075 lb/ton) will not be use in this evaluation, because the mill is not required comply with a lb/ton BACT limit.

Stafford Steel, AR

- - Previous PSD reviews indicated that the Stafford Steel, AR was never built. Based on this, compliance has not been established.

  This BACT limit (0.07 lb/ton) will not be considered in this BACT evaluation.

Nucor Steel, AL (formerly Trico Steel), AL

- - Nucor Steel, AL is listed 3 times in the above table.

  On February 6, 2003, the Alabama DEM (Doug Carr 334/271-7887) was contacted regarding Nucor Steel, AL. The state of Alabama is SIP approved for the PSD program. SO_2 limits range from 0.5 to 0.7 lb/ton in the State of Alabama.

  Nucor Steel, AL (formerly Trico Steel) was initially permitted at 0.09 lb/ton of SO_2, due to Class I area impact. The SO_2 limit was changed in November, 2002 because of the high cost and scarcity of injection carbon. Nucor Steel, AL was given new limits of 0.5 lb/ton when the production is equal to or greater than 352 ton/hr and 0.6 lb/ton when the production is less than 352 ton/hr.

  The OAQ will not rely on these SO_2 existing (0.09 lb/ton) limit and new (0.5 lb/ton and 0.6 lb/ton) limits as BACT because the ADEM admitted that the decisions were simply based on the fact that the limits are within the range of existing limits.

Nucor Steel-Yamato, AR

- - Nucor Steel-Yamato, AR was permitted at 0.15 lb/ton SO_2 for their EAF rated at 450 tons/hour. This mill produces steel beams. The SO_2 limit is for the EAF only and uses a low sulfur injection carbon.

  To make an accurate comparison between the Nucor-Yamato, AR and SDI, Hendricks, IN SO2 limits, the EAF limit (0.15 lb/ton) is added to the LMF limit (0.36 lb/ton), resulting to 0.51 lb/ton, which is less stringent than the proposed SO2 limit (0.25 lb/ton), as shown below.

Based on this, the SO_2 limit (0.15 lb/ton) will not be consider in this evaluation.

Table 7 - - SO2 BACT Comparison			
Source Name	SO_2 EAF (lb/ton)	SO_2 LMF (lb/ton)	SO_2 Total (lb/ton)
Nucor-Yamato, AR	0.15	0.36	0.51
SDI, Hendricks, IN			0.25

Nucor Steel, AR

-- Nucor Steel, AR is listed twice in the table above.

The RBLC is showing a permit issued in 1992, which specified the SO_2 limit in terms of lb/hr. This is equivalent to 0.2 lb/ton based on the 300 tons/hour maximum capacity of the EAF.

However, another permit issued to Nucor Steel, AR in 1991 specified a SO_2 limit in terms of lb/hr, and based on the maximum capacity of 300 ton/hour, it is converted to the 0.84 lb/ton rate, listed in the table above.

No additional information can be found to supplement this information found in the RBLC.

Since both permits indicated the SO_2 BACT limit in terms of lb/hour, the equivalent SO_2 rates (0.2 lb/ton and 0.84 lb/ton) will not be use in this evaluation.

Nucor Steel, SC

- - Nucor Steel, SC is listed twice in the above table.

On February 10, 2003, the South Carolina Air Permitting (Matt Gibbs 8-3/898-3288 and Larry Ragsdale 803/898-3840) was contacted regarding Nucor Steel, SC. The SO_2 BACT limit for Nucor Steel, SC was set at 0.20 lb/ton. This limit is for the EAF only at 165 ton/hour capacity. Nucor Steel, SC initially had problems in complying with the SO_2 limit, however, their scrap management plan was revised to wash the oil from the scrap. Nucor Steel, SC is now complying with the limit.

RBLC is indicating another SO_2 limit (0.35 lb/ton) for the Meltshop no. 3 which encompasses the emissions from the EAF, LMF, and caster. This meltshop no. 3 has a capacity of 150 tons/hour. The SO_2 limit was also specified in terms of lb/hour rate and the equivalent rate (0.35 lb/ton) was based on the maximum capacity of the EAF.

The SO_2 limit (0.2 lb/ton) will not be consider as BACT in this evaluation because it only encompasses the emissions from the EAF. SDI, Hendricks, IN has the EAF, LMF and Caster exhausting to the same stack.

The SO_2 limit (0.35 lb/ton) will not be consider in this evaluation because it is less stringent that what is being proposed.

Keystone Steel, IL.

- - On February 10, 2003, the Illinois EPA (Jason Schnepp 217/524-3724) was contacted to discuss the limits of Keystone Steel, IL. The permit issued in 2000 was for an increase in production to 1.2 million tons/year. The mill is going to use low sulfur injection coke (0.65% or less). He can not confirmed if the expansion has been constructed.

The SO2 limit encompasses the emissions from the EAF and LMF. The OAQ believes that 0.2 lb/ton is not consider as BACT for the SDI plant in Pittsboro, Hendricks, IN because of the difference in products manufactured. SDI, Dekalb, IN and other steel mills with this 0.2 lb/ton SO_2 limit manufacture slabs or sheets and SDI, Hendricks will manufacture bars (low sulfur grade and specialty bar quality).

Nucor Steel, IN

- - Nucor Steel, IN submitted an application to fully utilize the capacity of their mill and has proposed to revise the 0.2 lb/ton SO_2 limit to a higher limit to accommodate customer demands. The OAQ is still evaluating the application. Nucor Steel, IN manufactures slabs and sheets of steel, while SDI, Hendricks, IN will manufacture steel bars.

  The OAQ believes that 0.2 lb/ton is not consider as BACT for the SDI plant in Pittsboro, Hendricks, IN because of the difference in products manufactured. SDI, Dekalb, IN and other steel mills with this 0.2 lb/ton SO_2 limit manufacture slabs or sheets of steel and SDI, Hendricks will manufacture steel bars (low sulfur grade and specialty bar quality).

SDI, Dekalb, IN

-- In 1998, a permit issued to SDI, Dekalb, IN specified a SO_2 limit of 0.20 lb/ton for the combined emissions of EAF and LMF. This was the same limit issued in 1997.

  The OAQ believes that 0.2 lb/ton is not consider as BACT for the SDI plant in Pittsboro, Hendricks, IN because of the difference in products manufactured. SDI, Dekalb, IN and other steel mills with this 0.2 lb/ton SO_2 limit manufacture slabs or sheets and SDI, Hendricks will manufacture bars (low sulfur grade and specialty bar quality).

Nucor Steel, NC

-- On February 6, 2003, the North Carolina Air Pollution Division (Fred Langenback 919/715-6242) was contacted regarding the only steel mill in their area. Nucor Steel, NC SO_2 limit has been revised in December, 2002, to 0.22 lb/ton, based on testing data. This is the only steel mill that its existing limit has been changed to a more stringent one. However, it is still not the most stringent SO_2 BACT limit documented in the RBLC.

SDI, Whitley, IN

-- SDI, Whitley, IN was issued a PSD permit with 0.25 lb/ton SO_2 BACT limit. This mill was recently tested on February, 2003 for compliance. Based on preliminary review of the test results, it seems that SDI, Whitley, IN complied with the 0.25 lb/ton limit. The SO_2 limit encompasses the emissions from the EAF and LMF. This is the same limit that SDI, Hendricks, IN is proposing.

- - Qualitech, IN was also issued the same SO_2 BACT limit for its low sulfur grade bar. SDI, Hendricks, IN is proposing the same SO_2 limit as BACT.

  The SO_2 limit (0.25 lb/ton) will be consider as BACT, because compliance has been shown.

Nucor Steel, UT

- - The permit limits the steel production of Nucor Steel, UT, to 1.4 million ton/year of scrap fed to the source's 2 EAFs. The SO_2 BACT limit was specified in lb/hour rate. The SO_2 BACT limit (0.31 lb/ton) indicated in the above table was determined based on the maximum capacity of each EAF at 65 ton/hour. No additional information can be found to supplement this information found in the RBLC.

Since the limit is specified in lb/hour rate and the mill does not need to comply with a lb/ton rate, the equivalent rate in lb/ton (0.31 lb/ton) will not be used in this evaluation. In addition, this 0.31 lb/ton rate is less stringent than the SO_2 limit that is being consider in this evaluation.

SMI Steel, SC

- - On February 10, 2003, the South Carolina Air Permitting (Matt Gibbs 8-3/898-3288 and Larry Ragsdale 803/898-3840) was contacted regarding SMI Steel, SC. The SO_2 BACT limit for SMI Steel, SC was set at 0.35 lb/ton. This limit encompasses the EAF and LMF because both of them exhaust to the EAF baghouse.

  This BACT limit will not be consider because it is less stringent.

Mac Steel, AR

- - Mac Steel, AR is listed twice in the table above.

  In 1993, a permit was issued for Mac Steel, AR, for an EAF at a rate of 74 tons/hour. The SO_2 limit was 0.54 lb/ton. However, the information was not put in the RBLC until 2002.

  Another permit was issued in 1998 and the SO_2 limit was specified in terms of lb/hour rate. Converting it based on the EAF's maximum capacity of 85 ton/hour, the SO_2 limit is equivalent to 1.05 lb/ton, as indicated in the table above. No additional information can be found to supplement this information found in the RBLC.

  Both the equivalent rates (0.54 lb/ton and 1.05 lb/ton) will not be consider in this BACT evaluation.

Tuscaloosa Steel, AL

- - On February 6, 2003, the Alabama DEM (Doug Carr 334/271-7887) was contacted regarding this steel mill. Tuscaloosa Steel, AL was not initially reviewed as PSD for SO_2, due to use of test results as emission factors from another steel mill. However, when the test in the steel mill itself was done, the SO_2 came up as significant in terms of PSD. A proposed permit was put on publication for public review in January 2003, with a SO_2 limit of 0.62 lb/ton, indicating that this limit is acceptable because it is within the range of existing limits in the RBLC. Since this limit is not final yet, the SO_2 limit (0.62 lb/ton) will not be used in this BACT evaluation.

Chaparral Steel, VA

- - Chaparral Steel, VA has a limit of 0.7 lb/ton of SO_2. This limit is based on the arrangement that the baghouse captures the emissions of the EAF and LMF and other processes of the meltshop.

  This BACT limit (0.7 lb/ton) will not be consider because it is less stringent.

Arkansas Steel, AR

- - The permit issued in 1998 for Arkansas Steel, AR was for an EAF with a maximum capacity of 50 tons/hour. The NO_x BACT limits was both specified in terms of lb/ton and lb/hour.

  This BACT limit will not be consider because it is less stringent.

IPSCO, AL

- - On February 6, 2003, the Alabama DEM (Doug Carr 334/271-7887) was contacted regarding this steel mill. The SO_2 limit (0.7 lb/ton) for IPSCO, AL has not been revised.

- - Even with attempts to discuss the BACT limits and search of the permitting agency's web site, the status of the other mills can not be verified and confirmed if they have been constructed, operated or in compliance.

- - Several steel mills have been permitted in 1998 with higher SO_2 BACT limits because of the types of raw materials being charged to the furnace. These are Chaparral Steel, VA; Arkansas Steel, AR; and IPSCO Steel, AL; which have all been permitted at 0.7 lbs/ton. However, there are also steel mills that have been recently permitted at a much lower SO_2 limit.

(6) Proposed SO_2 BACT Limit for SDI -Bar Products Division, IN

The existing EAF is currently permitted with 3 different SO_2 BACT limits depending on the series.

The proposed SO_2 BACT limit for the EAF is as follows, with scrap management plan. The majority (65%) of the steel produced is estimated to be low sulfur grade bar. It is necessary to indicate, as part of BACT analysis, that majority of the steel production is under the a BACT limit that is comparable to other BACT limits.

Table 8 - - Proposed SO_2 BACT Limits

Series	SO_2 BACT Limit (lb/ton)	SO_2 BACT Limit (lb/hr)	Production (% of the steel production)
1200 SBQ	1.8	225.0 1	15
1100 SBQ	1.5	187.5	20
Low Sulfur Grade Bar	0.25	31.25	65

The SO_2 BACT for the low sulfur grade bar is comparable to existing and proposed BACT limits that have the same arrangement. The SO_2 BACT limits for the 1100 and 1200 series were based on actual test results done by the previous owner (Qualitech).

(7) VOC Control Technology Technical Feasibility Study and Existing BACT Emission Limitations

VOC emissions from the EAF will be generated due to the volatilization of organic compounds (e.g., oils and paints) present in the scrap metal during charging of the scrap into the furnace.

Note: The sources shown above as SDI, Hendricks, IN and Qualitech, IN are one and the same plant under different ownerships.

The RBLC indicates a wide range of VOC BACT emission limits for EAF's (0.06 lb/ton – 0.35 lb/ton). Majority of the steel mills have direct shell evacuation (DSE) system and implementing a scrap management plan as VOC BACT.

Table 9 - - EAF VOC BACT of Other Similar Sources			
Source Name	VOC Limit (lb/ton)	Source Name	VOC Limit (lb/ton)
Charter Steel, WI (2003)	0.06	Keystone Steel, IL (2000)	0.13
SDI, Whitley, IN (1999)	0.09	**Qualitech, IN (1996)**	0.15
Stafford Railsteel, AR (1993)	0.09	Beta Steel, IN (2003)	0.15
Nucor Steel, AR (1991)	0.09	IPSCO Steel, IA (2002)	0.18
Nucor Steel, IN (1996)	0.13	Nucor (Trico Steel), AL (2002)	0.20
Nucor- Yamato Steel, AR (2001)	0.13	Ameristeel, FL (1995)	0.295
Nucor Steel, NC (2002)	0.13	Roanoke Steel, VA (1998)	0.30
Nucor Steel, SC (1996)	0.13	Republic Tech, OH (1999)	0.35
Beta Steel, IN (1992)	0.13	IPSCO, AL (1998)	0.35
SDI, Dekalb, IN (1997)	0.13	Chaparral Steel, VA (1998)	0.35
Tuscaloosa Steel, AL (2002)	0.13	Arkansas Steel, AR (1998)	0.35
SDI, Hendricks, IN (2003)	0.13		

Charter Steel, WI

- - On February 11, 2003, Wisconsin Department of Environmental Management (Don Faith 608/267-3135) was contacted regarding the only steel mill in their area. Charter Steel, WI was issued a modification in 2000. The VOC limit of 0.06 lb/ton was a source self imposed limit to avoid LAER and Class I federal requirements, because the source is located in an ozone nonattainment area. This mill operates at higher quality strict scrap and raw materials (containing the possible minimum oils and other non metallic materials) to comply with this VOC limit. In addition to using higher quality scrap, the mill produces different carbon steel products (high quality grade automotive market). SDI, Hendricks, IN is going to produce steel bars.

  Charter Steel, WI has a higher NO_x BACT limit than that was being proposed for SDI, Hendricks, IN. The OAQ believes that this is due to the stringent VOC limitation, and for meltshop operations, NOx is more significant contributors of emissions than VOC, thus, based on this it is appropriate to not require SDI, Hendricks, IN to further reduced the VOC emissions.

Table 10 - - VOC and NO_x BACT Comparison		
Source Name	VOC (lb/ton)	NO_x (lb/ton)
Charter, WI	0.06	0.51
SDI, Hendricks, IN	0.13	0.35

  Charter Steel, WI has a pending application for a different EAF and has requested a higher VOC limit because of different products (stainless steel) to be produced.

  This VOC limit (0.06 lb/ton) will not be used in this BACT evaluation due to differences in scrap used and products produced.

SDI, Whitley, IN

- - The VOC BACT limit for the SDI, Whitley, IN was initially proposed at 0.13 lb/ton, however, it was changed to 18 lb/hr (which is equivalent to 0.09 lb/ton) with scrap management plan, thermal oxidizer and maintaining a negative pressure at the dec air gap, when the permit was finalized. SDI, Whitley, IN has started operation in October, 2002, and has recently performed compliance tests in February, 2003. SDI, Whitley, IN manufactures slabs/sheets and SDI, Hendricks, IN will manufacture bars.

Since the VOC BACT limit was specified in lb/hr rate, and the mill is not required to comply with the lb/ton rate, the VOC rate of 0.09 lb/ton will not be use in this evaluation.

Stafford Railsteel, AR

- - Stafford Railsteel, AR has a VOC BACT emission limit of 0.09 lb/ton, but this mill was never built. Based on this, compliance has not been established.

  This VOC limit (0.09 lb/ton) will not be considered in this BACT evaluation.

Nucor Steel, AR

- - Nucor Steel, AR can justify a lower limit of 0.09 lb/ton due to its use of very high grade scrap for the production of slabs and sheets. In addition, Nucor Steel, AR has been approved a unique test method to show compliance. SDI, Hendricks, IN will be producing bars and will be using different grades of scrap.

  This VOC limit (0.09 lb/ton) will not be considered in this BACT evaluation.

Nucor Steel, IN; Nucor-Yamato, AR; Nucor Steel, NC; Nucor Steel, SC, Beta Steel, IN; SDI, Dekalb, IN; Tuscaloosa Steel, AL; and Keystone Steel, IL

- - These sources have 0.13 lb/ton as VOC BACT limit.

- - Nucor Steel, IN has a pending application under review, and the VOC limit was not requested to be revised.

- - The RBLC does not indicate the VOC BACT limit for Keystone Steel, IL. The information was taken from the permit itself.

Nucor Steel, NC

- - On February 6, 2003, the North Carolina Air Pollution Division (Fred Langenback 919/715-6242) was contacted regarding the only steel mill in their area. Nucor Steel, NC was initially permitted at 0.35 lb/ton VOC in 1999. The permit has a provision that provides an opportunity to re-open the BACT review that based on testing data the existing limit can be revised. The VOC limit was changed to 0.13 lb/ton in December, 2002.

  Since compliance has been confirmed with the NO_x BACT limit (0.13 lb/ton), this will be consider as BACT in this evaluation.

Beta Steel, IN

- - The Beta Steel, IN was initially permitted at 0.13 lb/ton VOC. A draft permit is at this time on public review that revises it to 0.15 lb/ton, based on stack test results. Beta Steel, IN is listed twice in the table above.

SDI, Hendricks, IN (formerly Qualitech, IN)

- - SDI, Hendricks, IN is proposing to revise the VOC BACT limit from 0.15 lb/ton to 0.13 lb/ton. Based on the numbers of mills with the 0.13 lb/ton limit, the OAQ believes that this is the VOC BACT limit.

IPSCO, IA.

- - On February 5, 2003, the IOWA DNR (Corey Detter 515/281-4842) was contacted regarding the limits of IPSCO, IA. The limit for IPSCO was originally specified at 0.13 lb/ton for VOC. It was revised to 0.18 lb/ton in July 2002.

This VOC BACT limit of 0.18 lb/ton will not be considered as BACT because it is less stringent.

Roanoke Steel, VA.

- - On February 10, 2003, the Virginia Air Pollution Control (Dean Downs 540/597-2711) has been contacted regarding the Roanoke Steel, VA. This mill applied for a modification to increase the maximum capacity of their EAF from 70 ton/hr to 100 ton/hr. The VOC limit was changed from 0.35 lb/ton to 0.3 lb/ton. This is based on stack test done on the plant. This is considered a BACT limit, however, it will not be the BACT limit to be specified to SDI -Bar Products Division, IN, because, it is less stringent.

- - There are eight (8) steel mill sources listed in the RBLC given a limit of 0.13 lb/ton. SDI is proposing the same limit to the SDI-Bar Products Division, Hendricks, IN.

(8) Proposed VOC BACT Limit for SDI -Bar Products Division, IN

The VOC BACT limit of the EAF is 0.13 lb/ton, 16.25 pounds of VOC per hour, based on a 3-hour block average, in addition to DSE system, good combustion practices and scrap management plan. This limit is comparable to existing VOC BACT limits in the RBLC.

(9) PM and PM_{10} Control Technology Technical Feasibility Study

Four (4) available technologies were evaluated to control particulate emissions from EAFs:

(A) Electrostatic Precipitator (ESP),
(B) High Efficiency Cyclones,
(C) High Energy Scrubbers, and
(D) Fabric Filters (i.e., baghouses).

(A) ESPs use an electrostatic field to charge particulate matter contained in the gas stream and then attract and collect the particles on a collection surface of opposite charge. While ESPs have a very high removal efficiency (99% or better) for many sources of particulate, they have been proven as unsuitable for applications involving particulate with a high concentration of iron compounds such as those emitted from EAFs. Due to the electromagnetic properties of small charged particles of iron compounds in an electric field, the particles adhere very strongly to the collection plates of an ESP and are extremely difficult to dislodge, resulting in an in-effectivity of the ESP. In addition, the exhaust gas stream from an EAF contains high levels of zinc (10% - 20%) and other metal compounds which can foul ESP electrodes. Thereby, making the ESP ineffective. Therefore, ESP is considered technically infeasible for controlling particulate emissions from EAFs.

The OAQ is not aware of a steel mill where an ESP has been operated to control particulate emissions from an EAF.

(B) Particulate removal in cyclone collectors is achieved through the action of inertial forces, especially centrifugal. As the gas stream enters the top of the cyclone, a vortex is induced as it is forced to travel a circular path. Centrifugal forces cause the heavier particles to concentrate near the outer wall of the cyclone and particle of lesser mass to remain closer to the center of the vortex.

Frictional and gravitational forces then act on the particles closest to the wall, causing them to fall toward the bottom of the cyclone, where they are collected in a hopper. Within the lower segment of the cyclone, the direction of the gas-flow vortex is reversed, and an inner ascending vortex is formed. The inner vortex consists of comparatively particulate-free air, which is collected through an outlet duct at the top of the cyclone.

Cyclone collectors are considered technically feasible. However, they achieve the lowest particulate removal efficiencies (less than 90%) of all particulate control devices, especially for submicron particulates that will be emitted from the EAF.

The OAQ is not aware of a steel mill where a cyclone collector has been operated to effectively control particulate emissions from an EAF.

(C) High energy wet scrubbers are technically feasible and can achieve a high particulate collection efficiency (90% or better), but at the expense of a punitive pressure drop (ranging from 6 - 20 inches of water), higher operational utilities, generation of large quantities of sludge along with the associated problem of sludge handling, de-watering, and disposal.

The OAQ is not aware of a steel mill where a high energy wet scrubber has been operated to control particulate emissions from an EAF.

(D) Fabric filters or baghouses are technically feasible for collecting fine particulate matter emissions associated with metals from EAFs or other types of furnaces that have high particulate emissions. They can also achieve the highest control efficiency, among other particulate control devices, as applied to EAFs.

Positive pressure baghouses or negative pressure baghouses have been used in the steelmaking industry. Positive pressure baghouses operate at internal pressures greater than the atmospheric pressure. Typically, the fans are located before the fabric filters. This allows the fans to pull air from the EAF and push the dust laden air through the fabric filters and into the ambient air via a continuous ridge vent (old design) rather than a stack. The discharge area of a ridge vent is on the order of four times that of a single stack. Negative pressure baghouses operate at internal pressure less than atmospheric. The fans are located after the fabric filters. This allows the fans to pull the gas laden air from the EAF, through the fabric filters, then push the air up through a central stack.

(10) PM and PM_{10} Existing BACT Emission Limitation

Note: The sources shown above as SDI, Hendricks, IN and Qualitech, IN are one and the same plant under different ownerships.

Evaluation of the limits in the RBLC indicates that 0.0032 grains per dry standard cubic feet has been considered BACT for negative pressure baghouses compared to 0.0018 grains per dry standard cubic feet for positive pressure baghouses. Although there was this distinction, baghouse manufacturer's claim that there is no difference in filtering capability between these types of baghouses. The OAQ determines that the achievable control technology and emission limitation should be used to determine the best available control technology for a baghouse instead of a specific type of bag that can be used. The OAQ believes that the limitation of 0.0018 gr/dscf is the most stringent filterable PM limitation applied to an EAF baghouse and should be considered BACT regardless of what type of bags the permittee uses. Therefore,

either type of baghouse should meet 0.0018 grains per dry standard cubic feet (gr/dscf) for filterable PM. It is the applicant's responsibility to construct a control device which meets these stringent limitations.

Table 11 - - EAF PM BACT of Other Similar Sources

Source Name	PM/PM_{10} Limit (gr/dscf)	Source Name	PM/PM_{10} Limit (gr/dscf)
Charter Steel, WI	0.0015	Nucor Steel, UT (PM)	0.0033
Chaparral Steel, VA	0.0018	IPSCO, AL	0.0033
Stafford Railsteel, AR	0.0018	Roanoke Electric Steel, VA	0.0034
Nucor-Yamato, AR	0.0018	Ameristeel Corp, FL	0.0034
Nucor Steel, AR	0.0018	Tuscaloosa Steel, AL	0.0035
SDI, Whitley, IN (PM)	0.0018	Atlantic Steel, GA	0.0036
Nucor Steel, NC	0.0018	Ameristeel Corp, FL	0.0042
Keystone Steel, IL	0.0018	Florida Steel, TN (PM_{10})	0.0052
Nucor Steel, IN	0.0018	IPSCO, IA	0.0052
MacSteel, AR	0.0018	Florida Steel, FL	0.0052
SDI, Hendricks, IN (PM)	0.0018	**SDI, Hendricks, IN** (PM_{10})	0.0052
Bethlehem Steel, PA	0.0020	SDI, Whitley, IN (PM_{10})	0.0052
SMI Steel, SC (PM_{10})	0.0020	Nucor Steel, SC	0.0052
Nucor Steel, UT (PM_{10})	0.0026	Cascade Steel, OR	0.0052
Co-Steel Raritan, NJ	0.0030	Armco Steel, MD	0.0052
Qualitech, IN	0.0032	Beta Steel, IN	0.0052
SDI, Dekalb, IN	0.0032	Nucor Steel, SC	0.0052
Republic Tech, OH	0.0032	Arkansas Steel, AR (PM_{10})	0.0052
Trico Steel, AL	0.0032		

Charter Steel, WI

- - Charter Steel, WI has the lowest BACT limit in terms of grain loading, however, the grain loading limit is considered the secondary PSD BACT limit. The primary limit is in terms of lb/hr, which is 6.5 lb/hr at 550,000 tons/year capacity of the mill. The opacity limit is set at 20%. This grain loading will not be considered in the BACT analysis because the lb/hr is not comparable with other mills with bigger capacity. Also, most steel mills have 3% as opacity BACT limit.

  Charter Steel, WI has PM BACT limit of 6.05 lb/hr at 550,000 ton/yr capacity, while SDI - Bar Products Division, IN will emit 8.48 lb/hr at 1,095,000 ton/yr capacity. Even at a lower grain loading, Charter Steel, WI has a higher emission rate (lb of PM per ton of steel) than SDI - Bar Products Division, IN.

Table 12 - - PM BACT Comparison

Source Name	PM (lb/hr)	Maximum Capacity (ton/yr)
Charter, WI	6.05	8.48
SDI, Hendricks, IN	550,000	1,095,000

Nucor Steel, NC

- - On February 6, 2003, the North Carolina Air Pollution Division (Fred Langenback 919/715-6242) was contacted regarding the only steel mill in their area. Nucor Steel, NC was initially permitted at 0.0032 gr/dscf for filterable PM in 1999. The permit has a provision that provides an opportunity to re-open the BACT review based on testing data that the existing limit can be

revised. The PM limit was changed in December, 2002, to 0.0018 gr/dscf for filterable PM and 0.0052 gr/dscf for filterable and condensible PM_{10}.

- - It was confirmed that most of the permits do not clearly distinguished a BACT limit for filterable PM and Filterable and Condensible PM_{10}. The particulate limits indicated in this table are specified for filterable PM and PM_{10} only, except for IPSCO Steel, IA where the limit applies to the total PM_{10} (filterable and condensible portions combined). SDI, Whitley, IN is also one of the few sources with a separate limits for filterable and condensible particulates.

- - There are 9 steel mills sources that have 0.0018 gr/dscf as BACT limits. SDI, Whitley, IN is one of these sources. SDI is proposing the same limit for the SDI-Bar Products Division, IN.

- - There are 10 steel mills with 0.0052 gr/dscf as BACT limits, 3 of these specified that it is for PM_{10} only.

(11) Proposed PM/PM_{10} BACT Limit for SDI -Bar Products Division, IN

The limitation of 0.0018 gr/dscf is the most stringent filterable PM limitation applied to any source and should be considered BACT. Since there is limited information available to determine the filterable and condensible PM_{10}, the 0.0052 grain/dscf will be considered as BACT.

The filterable PM BACT for the EAF is the use of a baghouse with a limit of 0.0018 grains per dry standard cubic feet.

The filterable and condensible PM_{10} BACT for the EAF is the use of a baghouse with a limit of 0.0052 grains per dry standard cubic feet.

The visible emissions from the EAF shall not exceed 3%.

(12) CO Control Technology Technical Feasibility Study

Eight (8) alternatives were evaluated to control CO from the EAF:

(A) Operating Practice Modification
(B) Flaring of CO emissions,
(C) Post Combustion Reaction Chamber,
(D) CO Oxidation Catalysts
(E) Catalytic Incineration,
(F) Oxygen Injection, and
(G) Direct Shell Evacuation Control (DEC) System
(H) Expert Furnace System Optimization Process (EFSOP)

(A) Operating Practice Modification
Due to marketplace demands on the type of products produced and the required product quality, any additional operating practice modifications that will alter CO emissions from the proposed EAF is technically infeasible. Additional operating practice modifications means the use of less carbon in the raw materials to reduce CO formation.

(B) Flaring of CO emissions

Flaring is a form of thermal oxidation and has been a proven technology in controlling CO emissions from furnaces but not EAFs. This technology can successfully oxidize up to 99% of the CO emissions, especially if an exhaust gas temperature of 1,300 of - 1,800 ^{o}F, depending on the residence time, is maintained. The exhaust gas stream will be approximately 875,000 acf/min at 200 ^{o}F. Due to the relatively large gas volumetric flow at a substantial temperature differential, this would necessitate using a considerable amount of auxiliary fuel which would in turn create more emissions. Therefore, flaring is considered technically infeasible.

The OAQ is not aware of a steel mill where flaring has been used to control CO emissions from an EAF.

(C) Post Combustion Reaction Chamber,

Post combustion reaction chambers, another form of thermal oxidation, has been a proven technology in controlling CO emissions from furnaces but not EAFs. Like flaring, this technology can successfully oxidize up to 99% of the CO emissions, especially at a relatively high temperature and residence time. This technology also works more efficiently without the presence of particulate matter in the exhaust gas stream which can foul the burners. Due to the high particulate loading of the EAF exhaust gases, it would be necessary to operate a baghouse for particulate control prior to the thermal oxidizer. However, baghouses cannot handle the high temperatures associated with thermal oxidation of CO and the exhaust gas must be cooled to a minimum of 350 of prior to entering the baghouse. After the gas leaves the baghouse, it would need to undergo extreme heating to bring the temperature back up to the required thermal oxidation temperature. This would necessitate using a considerable amount of auxiliary fuel which would in turn create more emissions. Based on the above discussion, a post combustion reaction chamber is considered technically infeasible.

The OAQ is aware of one (1) case where post combustion reaction chamber has been determined as BACT for EAFs. IPSCO Steel, IA was issued a PSD permit on April 1996 (Project No. 95-314) which required to install a post combustion chamber in addition to DSE system. IPSCO Steel was initially specified a CO limit of 0.91 pound per ton. However, in 2002, the CO limit was changed to 1.93 lb/ton.

Tuscaloosa Steel, AL has employed oxyfuel burners in the post combustion chamber to promote oxidation of CO. However, this system was not required as part of their BACT analysis, but has been used in trials to determine a means to meet their current BACT limitation of 2.0 lbs/ton. These burners have been removed due to continual maintenance because of particulate plugging.

The OAQ is not aware of a proven oxygen injection or oxyfuel injection system in a post combustion chamber or exhaust ductwork that has achieved lower emissions than what is proposed in this permit.

(D) CO Oxidation Catalysts and

(E) Catalytic Incineration

Catalytic oxidizers and catalytic incineration use the same principle as thermal oxidation with the addition of catalyst to reduce the oxidation temperature. The optimal working temperature range for CO oxidation catalysts is approximately 850 ^{o}F - 1,100 ^{o}F with a minimum exhaust gas stream temperature of 500 of for minimally acceptable CO control. The optimal working temperature range for catalytic incineration is approximately 500 ^{o}F - 600 ^{o}F. Exhaust gases from the EAF will undergo rapid cooling

as they are ducted from the furnace. Thus, the temperature will be far below the minimum 500 ^{o}F threshold for effective operation of either type of control technology. Additionally, the particulate loading in the exhaust gas stream is expected to be too high for efficient operation of the catalyst. Plugging and coating of the catalyst surface would significantly degrade the performance of the catalyst. Therefore, catalytic oxidizers and catalytic incineration are considered technically infeasible.

The OAQ is not aware of a steel mill where these technologies have been used to control CO emissions from an EAF.

(F) Oxygen Injection

Oxygen injection is not a proven technology in controlling CO emissions from EAFs. One can only speculate how much additional reduction of CO would it contribute, especially if a DSE system is also used. Oxygen would be injected at the entrance of the DSE ductwork to increase oxidation of the available CO to CO_2.

The OAQ is aware of only one (1) case where oxygen injection has been determined as BACT for controlling CO emissions from an EAF. Qualitech Steel, IN, was issued a PSD permit on October 31, 1996 which required to install six (6) oxygen injectors in addition to DSE system. However, during the review of Qualitech Steel's permit, there were many discussions about the spikes of CO that they expected to see from their operation and how they would control those spikes. In the final BACT determination, an oxygen injection system was required to alleviate the problems with CO spiking. This technology was unproven and received a much higher limit than other facilities because of the high carbon content of the raw materials and the uncertainty of control efficiency. The facility was required to install a CEM for CO, but was never able to certify the monitor. The plant is currently shut down and was purchased by SDI. In this review, the BACT limit will be revised to a lower limit even without the consideration of this unproven technology. In addition, a CO CEM will be required to monitor CO emissions.

(G) Direct Shell Evacuation (DSE) Control

In the steel industry, DSE systems (i.e., "fourth hole" furnace control system) continue to be the primary control technology for controlling CO emissions from EAFs. A DSE system consists of a water-cooled duct connected to the EAF through the furnace roof's "fourth hole". This duct is connected to the melt shop canopy collector system. During melting and refining, a slight negative pressure is maintained within the furnace to withdraw exhaust gases through the DSE duct. At the point where the DSE duct meets the "fourth hole", there is an adjustable gap that allows combustion air to enter, providing oxygen to oxidize the CO which is present. The DSE system allows excellent process emissions capture and combustion of CO, and requires the lowest air volume of other EAF capture devices. Therefore, DSE system control is considered technically feasible.

(H) Expert Furnace System Optimization Process (EFSOP)

The Expert Furnace System Optimization Process (EFSOP) designed by Goodfellows Technologies, Inc. (GTI) was designed to allow companies to optimize the energy requirements of their EAFs. Carbon monoxide produced in the EAF can be a valuable source of energy. When oxidized to CO_2, the reaction gives off heat which can be used to melt the steel. By monitoring CO, CO_2, H_2 and O_2 they can determine whether additional fuel or oxygen is necessary to promote the oxidation of CO in the furnace shell. By operating the furnace at optimum levels, it is thought that CO emissions at the exhaust may be lessened. In addition, GTI contends that although more heat is

generated at the furnace shell, NO_x emissions may decrease as well because fuel consumption may be optimized.

Because the plants using these optimization systems are located outside of the United States, they have no CO emissions limitations at the stack. The companies are not required to have a post combustion chamber or any other technology to destruct CO emissions. It is likely that if this type of system is added to an uncontrolled EAF, there would be reductions in CO emissions. However, when a control device is already in place to oxidize the CO emissions escaping the furnace, there is no data to support a claim that greater CO emissions reductions would be realized with the addition of an optimization system. GTI does not guarantee any emissions reduction with the use of EFSOP.

Based on the above control technology review, the DSE system is considered BACT for CO.

(13) CO Existing BACT Emission Limitations

The table below summarizes the CO limits for EAF. Limits are arranged in ascending order.

Note: The sources shown above as SDI, Hendricks, IN and Qualitech, IN are one and the same plant under different ownerships.

The RBLC indicates a wide range of CO emission limitations (1.34 lb/ton - 14.97 lb/ton) for this type of control technology.

Table 13 - - EAF CO BACT of Other Similar Sources

Source Name	CO Limit (lb/ton)	Source Name	CO Limit (lb/ton)
IPSCO, IA	0.91	**SDI, Hendricks, IN**	2.0
Keystone Steel, IL	1.34	Nucor Steel (Birmingham), IL	2.01
Roanoke Steel, VA	1.37	Roanoke Electric Steel, VA	2.4
Nucor Steel, NC	1.82	Nucor Steel, SC	2.76
IPSCO, IA	1.93	Ameristeel, FL	3.0
SDI, Whitley, IN	2.0	Charter Steel, WI	3.5
Nucor (Trico Steel), AL	2.0	Republic Technologies, OH	4.0
SMI Steel, SC	2.0	Chaparral Steel, VA	4.0
Stafford Railsteel, AR	2.0	**Qualitech, IN**	4.7
IPSCO Steel, AL	2.0	Mac Steel, AK	4.9
Nucor Steel, IN	2.0	Nucor Steel, UT	5.87
Nucor-Yamato Steel, AR	2.0	Ameristeel, NC	6.0
Nucor Steel, SC	2.0	Arkansas Steel, AR	6.0
SDI, Dekalb, IN	2.0	Beta Steel, IN	8.17
Tuscaloosa Steel, AL	2.0	Nucor Steel, UT	14.97

IPSCO, IA
- - IPSCO, IA is listed twice in the above table.

On February 5, 2003, the IOWA DNR (Corey Detter 515/281-4842) was contacted regarding the limits of IPSCO, IA. The CO limit for IPSCO was originally specified in terms of of lb/hr rate and the equivalent rate is 0.91 lb/ton. Another permit was issued in 1995 which specifies the CO limit

in terms of ppm. It was revised to 1.93 lb/ton in July 2002. This limit was based on test results performed in the source.

Stack test results at IPSCO, IA also show that IPSCO did not comply with its NO_x limit. The NO_x was revised to a less stringent limit (from 0.27 lb/ton to 0.8 lb/ton). The OAQ believes that the post combustion chamber could have contributed to the increase in NO_x emissions. Since NO_x emissions is more of a concern due to it being a precursor in the formation of ozone, the OAQ believes that it is appropriate to not require SDI to install a post combustion chamber to further control CO emissions from the EAF. SDI, Hendricks, IN will be specified a more stringent NO_x BACT limit (0.35 lb/ton) than IPSCO, IA.

Table 14 - - CO and NO_x Comparison

Source Name	CO (lb/ton)	NO_x (lb/ton)
IPSCO, IA	0.91	0.8
SDI, Hendricks, IN	2.0	0.35

Keystone Steel, IL.

- - On February 10, 2003, the Illinois EPA (Jason Schnepp 217/524-3724) was contacted to discuss the limits of Keystone Steel, IL. The permit was issued in 2000 for an increase in capacity to 1.2 million tons/year. It can be confirmed if the expansion has been constructed. There is no information available to verify the CO limit prior to the increase modification. Keystone Steel, IL has a lower CO limit because in addition to the DSE, it has post combustion chamber to control the CO emissions. However, the mill has a higher NO_x limit.

The OAQ believes that the post combustion chamber could have contributed to the increase in NO_x emissions. Since NO_x emissions is more of a concern due to it being a precursor in the formation of ozone, the OAQ believes that it is appropriate to not require SDI, Hendricks, IN to install a post combustion chamber to further control CO emissions from the EAF.

Table 15 - - CO and NO_x BACT Comparison

Pollutant	Keystone Steel, IL		SDI, Hendricks, IN	
CO	1.34 lb/ton	804 tons/yr	2.0 lb/ton	1,095 tons/yr
NO_x	0.51 lb/ton	306 tons/yr	0.35 lb/ton	191.62 tons/yr
Capacity	1.2 million tons/year		1.095 million tons/year	

Based on the above comparison, the CO BACT (1.34 lb/ton) will not be consider as BACT for this evaluation.

Roanoke Steel, VA.

- - Roanoke Steel, VA is listed twice in the above table.

On February 10, 2003, the Virginia Air Pollution Control (Dean Downs 540/597-2711) has been contacted regarding the Roanoke Steel, VA. This mill applied for a modification to increase the maximum capacity of their EAF from 70 ton/hr to 100 ton/hr. The CO limit was changed from 1.37 lb/ton to 2.4 lb/ton. This is based on stack test done on the plant.

The CO limit (1.37 lb/ton) will not be consider as BACT because it has been revised due to non compliance.

The CO limit (2.4 lb/ton) will not be considered as BACT, because it is less stringent.

Nucor Steel, NC

- - On February 6, 2003, the North Carolina Air Pollution Division (Fred Langenback 919/715-6242) was contacted regarding the only steel mill in their area. Nucor Steel, NC was initially permitted at 4 lb/ton CO in 1999. The permit has a provision that provides an opportunity to re-open the BACT review that based on testing data the existing limit can be revised. The CO limit was changed to 1.82 lb/ton in December, 2002. This is the only steel mill that OAQ is aware of that the existing limit has been changed to a more stringent one. Nucor Steel, NC manufactures slabs, while SDI, Hendricks, IN will manufacture bars.

  Nucor Steel, NC is permitted for an EAF with maximum capacity of 250 tons/hour, using DSE and post combustion chamber for CO control.

  The difference in CO emissions if SDI, Hendricks, IN is required to further reduce the CO emissions from their 125 ton/hour EAF:

  (2.0 lb/ton)*(125 ton/hour capacity) = 250 lb/yr
  (1.88 lb/ton)*(125 ton/hour capacity) =235 lb/hr
  = 15 lb/hr = 65.7 ton/yr

  Supplementing the DSE with the use of a post combustion chamber is not economically feasible to control these difference in CO emissions, as discussed in details in the Reheat Furnace BACT analysis.

  Due to difference in steel products manufactured and the economic infeasibility of additional control, the CO BACT (1.82 lb/ton) will not be consider as BACT in this evaluation.

SDI, Hendricks, IN (formerly, Qualitech, IN)

- - SDI is proposing this limit as CO BACT for the SDI-Bar Products Division. This is a revision of the CO limit from 4.7 lb/ton.

  There are at least ten (10) steel mills given a CO BACT limit of 2.0 lb/ton. Three of the four steel mills in Indiana (as listed above) have CO BACT limit of 2 lb/ton.

  All steel mills that have this limit have tested in compliance, except for Tuscaloosa Steel Corporation in Alabama. According to a staff member of the Alabama Department of Environmental Management (ADEM), Tuscaloosa Steel's DEC duct was clogged which prevented sufficient oxidation of the EAF exhaust gases by the combustion air that enters the air gap.

Nucor Steel (formerly Birmingham Steel), IL

- - RBLC indicates the CO BACT limit to be 2.01 lb/ton, however, the Title V permit recently issued to the source indicates the CO limit to be 2.0 lb/ton.

(14) Proposed CO BACT Limit for SDI -Bar Products Division, IN

The CO BACT limit for the EAF is 2.0 lb/ton, which is equivalent to 250 pounds of CO per hour, based on a 3-hour block average and the use of DSE and good working practices. This is comparable to existing CO BACT limits in the RBLC.

Continuous Caster BACT Analysis

SDI - Bar Products Division is proposing to operate the continuous Caster which has a nominal casting rate of 125 tons/hour. This Caster is located in a separate room from the EAF and LMS and its fugitive emissions exhaust to a roof monitor.

PM fugitive emissions are generated in the caster. A lid is used to control emissions from the tundish. The fugitive emissions will be emitted to the roof monitor. The fugitive emissions after the lid are less than 1 ton/year, thus add-on control is economically infeasible.

Search of the RBLC shows that majority of the casters are vented to the EAF Baghouse.

Based on the original PSD permit issued to this mill, **the PM and PM_{10} BACT limits before control for the Caster shall not exceed 0.07 pound per ton of steel produced, and the tundish shall be covered by a lid to control fugitive emissions. The visible emissions from the Caster roof monitor shall not exceed 3% opacity, based on a 6-minute average.**

Natural Gas Fuel as BACT

Use of natural gas is considered BACT for all units that use it as fuel. Since there is no definition for Natural Gas in the Indiana IAC rules, other references have been used to clarify what is meant by natural gas fuel.

(a) Webster Dictionary
Natural gas means a mixture of hydrocarbon gases that occurs with petroleum deposit, chiefly methane with one ethane, propane, and butane.

(b) 40 CFR 72.2 Acid Rain Program
Natural gas means a naturally occurring fluid mixture of hydrocarbons (e.g., methane, ethane, or propane) produced in geological formations beneath the Earth's surface that maintains a gaseous state at standard atmospheric temperature and pressure under ordinary conditions. Natural gas contains 20.0 grains or less of total sulfur per 100 standard cubic feet. Additionally, natural gas must either be composed of at least 70 percent methane by volume or have a gross calorific value between 950 and 1100 BTU per standard cubic foot.

Natural gas does not include the following gaseous fuels: landfill gas, digester gas, refinery gas, sour gas, blast furnace gas, coal-derived gas, producer gas, coke oven gas, or any gaseous fuel produced in a process which might result in highly variable sulfur content or heating value.

(c) 40 CFR 72.22 Acid Rain also has a definition for Pipeline natural gas as: a naturally occurring fluid mixture of hydrocarbons (e.g., methane, ethane, or propane) produced in geological formations beneath the Earth's surface that maintains a gaseous state at standard atmospheric temperature and pressure under ordinary conditions, and which is provided by supplier through a pipeline. Pipeline natural gas contains 0.5 grains or less of total sulfur per 100 standard cubic feet. Additionally, pipeline natural gas must either be composed of at least 70 percent methane by volume or have a gross calorific value between 950 and 1100 BTU per standard cubic foot.

SDI - Bar Products Division, IN will be required to use pipeline natural gas as BACT.

Reheat Furnace BACT Analysis

The mini-mill has an existing reheat furnace. SDI -Bar Products Division re-evaluated the specifications of this reheat furnace and proposed to utilize it at its realistic nominal capacity of 185 MMBTU/hour. The Reheat Furnace is equipped with natural gas fueled low NO_x burners.

The table below summarizes the existing and proposed limits of the Reheat Furnace:

Table 16 - - Reheat Furnace

Pollutant	Existing (lb/MMBTU)	Proposed (lb/MMCF)	Proposed (lb/MMBTU)
NO_x	0.15	80	0.080
CO	- -	84	0.084
VOC	- -	5.5	0.0055
SO_2	- -	0.6	0.0006
PM_{10}	- -	7.6	0.0076
PM	0.003	1.9	0.0019
Capacity	175 MMBTU/hour	185 MMBTU/hr	

(1) NO_x Control Technology Technical Feasibility Study

Most of the NO_x from the reheat furnace will be generated as thermal NO_x, due to the thermal dissociation and subsequent reaction of nitrogen and oxygen molecules in the combustion air. There will be also NO_x emissions from combustion.

The same control technologies evaluated for the EAF were also examined for potential use in controlling NO_x emissions from the reheat furnace. Review of the RBLC indicates that the use of natural gas and low-NO_x burners are common in controlling NO_x emissions from a reheat furnace. SDI will be installing ultra low-NO_x burners as combustion control and accepted a limit that will be the lowest in the RBLC after the issuance of this permit.

Four (4) available control alternatives were evaluated to control NO_x from the Reheat Furnace:

(a) SNCR
Selective non-catalytic reduction (SNCR), using Exxon's Thermal DeNO$_x$® system or Nalco Fuel Tech's NO$_x$OUT® system, was considered technically infeasible and was not examined for economic feasibility. IDEM, OAQ is not aware of a reheat furnace using SNCR as control.

(b) NSCR and SCONO$_x$
A non-selective catalytic reduction (NSCR) system is a post combustion add-on exhaust gas treatment system. It is often referred to as "three-way conversion" catalyst since it reduces NO_x, unburdened hydrocarbons (UBH), and CO simultaneously. In order to operate properly, the combustion process must be near-stoichiometric. Under this condition, in the presence of a catalyst, NO_x is reduced by CO, resulting in nitrogen (N_2) and carbon dioxide (CO_2). Steelmaking in an EAF is not considered a combustion process. Although combustion of CO and hydrocarbons occurs in the EAF and DEC ductwork, the process is not steady state with respect to available fuel (CO) and hydrocarbons and combustion air. Steady-state near-stoichiometric combustion conditions do not exist in the DEC ductwork. Other potential problems with NSCR systems include catalyst poisoning by additives such as phosphorous and zinc which

may be present in the steel scrap charge into the EAF. Therefore, NSCR is considered technically infeasible.

The OAQ is not aware of a steel mill where a NSCR system has been operated to control NO_x emissions from a reheat furnace.

SCONOx is a proprietary nonselective catalytic reduction technology. Since SCONOx is described as an NSCR-type technology, and NSCR is already found to be technically feasible. Notwithstanding the uncertainty on the technical feasibility of using NSCR, and to pro-actively address concerns, SCONOx is examined further.

SCONOx has been used on a 32 MW combined-cycle turbine in Los Angeles, California and a 5 MW combined-cycle turbine in Andover, Massachusetts. Both turbines are in serious or severe nonattainment areas for ozone. SCONOx has never been installed on any reheat furnace. Turbines are considered to be much steadier-state than a reheat furnace. Flue gas characteristics for a reheat furnace vary significantly in the matter of a few minutes. The greatest variation for turbines is during start up and shut down with other periods showing much steadier operation, thus a reheat furnace and a turbine can not be compared as are similar sources. Therefore, SCONOx is not technically feasible and is eliminated as a BACT NO_x control option.

The OAQ is not aware of a steel mill where a SCONOx system has been operated to control NO_x emissions from a reheat furnace.

(c) SCR

SCR is a technology that uses a catalyst and ammonia injection to promote the removal of NO_x at certain exhaust stream parameters such as inlet NO_x concentration, volumetric flow and temperature range. SCR operates best when inlet NO_x concentrations and exhaust temperatures are constant and in the range specified for the particular catalyst. Other parameters that can affect the performance of the catalyst are poisoning due to certain metals or chemicals in the exhaust stream and fouling or masking due to particulate matter plugging or covering the catalyst. In selective catalytic reduction (SCR) systems, ammonia (NH_3), usually diluted with air or steam, is injected through a grid system into the exhaust gas stream upstream of a catalyst bed. On the catalyst surface, the NH_3 reacts with NO_x to form molecular nitrogen and water. The function of the catalyst is to effectively lower the activation energy of the NO_x decomposition reactions. In order for a SCR system to effectively reduce NO_x emissions, the exhaust gas stream should have relatively stable gas flow rates, NO_x concentrations, and temperature - steady-state system.

SCR systems are highly susceptible to catalyst poisoning due to contamination of the catalyst by reactive materials entrained in the gas stream. Other problems with catalysts are their propensity to fouling and masking. Fouling occurs when the catalyst's cell openings are plugged with a solid material. Masking occurs when the catalyst surfaces are covered with residues which prevent their contact with the flue gas. The problems with catalyst poisoning, fouling, and masking would, at a minimum, require the placement of the SCR unit downstream of the particulate control device (baghouse). SCR catalysts require high gas stream temperatures (500 to 1,100 ^{o}F), thus the gas stream would have to be reheated from approximately 200 ^{o}F to the proper operating temperature for the catalyst. This would require substantial energy expenditure (natural gas combustion) and result in additional NO_x emissions, not to mention CO emissions.

SCR catalyst suppliers and manufacturers that were contacted confirm the above problems. SCR is considered technically infeasible.

However, the IDEM, OAQ is aware of only one (1) situation where selective catalytic reduction (SCR) is used to control NO_x emissions from a reheat furnace. Beta Steel, IN has a SCR system installed at its Hot Strip Mill Slab Reheat Furnace. However, Beta Steel has experienced problems with the performance of its SCR system. This innovative application has not achieved manufacturer's claims. Notwithstanding the uncertainty on the technical feasibility of using SCR and the lower than expected performance of the only once case where SCR has been used in a reheat furnace, and to pro-actively address concerns, an economic analysis was performed for this technology. When Beta Steel proposed to apply the SCR control technology to the reheat furnace in its permit application submitted on December 12, 1991, no extensive BACT analysis was performed and no cost information was required.

In a previous PSD permit review for another steel mill (SDI, Whitley, IN) in Indiana, it has been evaluated and comparison has been made which showed that the SCR proposed for SDI could be at least 35-38% more costly than Beta's components would be in today's dollars. For more information, refer to the supporting documents of PSD permit 183-10097-00030, issued on July 7, 1999.

The following table shows the control efficiency of the add-control:

Table 17 - - Add-on Control Efficiency	
Add-on Control Option	**% Efficiency**
SCR	80
Beta Steel, IN has never achieved 80% control with any consistency. Other states have conducted BACT analyses using SCR control efficiencies of 50%-70%.	

SDI - Bar Products Division submitted a cost analysis of installing and operating a SCR for the reheat furnace.

The table below shows the cost summary of installing and using SCR to control NOx emissions from the Reheat Furnace.

Table 18 - - SCR Cost Summary for the Reheat Furnace			
Costs	**$**	**Total $**	
Direct Purchased Equipment Cost	2,232,000	3,982,716.00	
Direct Installation Cost	1,252,356		
Indirect Capital Cost	498,360		
Capital Recovery (7%, 10 years)	567,049		1,283,852.00
Operation and Maintenance Direct Cost	459,952	716,776.00	
Operation and Maintenance Indirect Cost	256,824		
Annual Cost Effectiveness		$24,756.00	

The NOx PTE of the Reheat Furnace = 62.824 tons/year.

Annual Cost = $\frac{\$1,283,852}{(62.824 \text{ tons/year})*(80\% \text{ Eff})}$ = $24,756.00/ton

Cost analysis were mostly based (scaled up or down) on the cost analysis performed during the PSD BACT review of SDI's plant in Whitley, IN.

This cost analysis follows the criteria established in EPA's draft BACT guidance document (EPA's March 15, 1990 Draft Document). According to the guidance, cost effectiveness is the key criterion to be used in assessing the economic feasibility of a control alternative. It further states that where a control technology has been successfully applied to similar sources in a source category, an applicant should concentrate on documenting significant cost differences, if any, between the application of the control technology on those other sources and the particular source under review.

At 80% NOx control, the total annualized capital costs and operational/maintenance cost would be $1,283.825 and the cost/ton is $24,756.00. Based on this amount, use of SCR as control is not economically feasible.

SCR is not considered a feasible control alternative for the proposed SDI - Bar Division Products because:

(i) SCR has not been successfully applied to similar sources in a source category (Beta Steel, IN), and

(ii) the cost/ton for SDI is far higher than what is considered economically feasible.

The same conclusion was arrived at that SCR is not economically feasible during the PSD BACT review of the SDI, Whitley, IN plant.

(d) Combustion
Technology evaluations arrived to the conclusion that use of low NO_x burners is technically and economically feasible.

(2) NO_x Existing BACT Emission Limitations

The table below lists the NOx BACT limits of Reheat Furnaces. Limits are arranged in ascending order.

Table 19 - - Reheat Furnace NO_x BACT of Other Similar Sources

Source Name	NO_x Limit (lb/MMBTU)	Source Name	NO_x Limit (lb/MMBTU)
Beta Steel, IN	0.077	**Qualitech, IN**	0.150
SDI, Hendricks, IN	0.080	IPSCO, AL	0.172
Charter Steel, WI	0.090	Ameristeel, FL	0.190
Nucor-Yamato, AR	0.094	Chaparral Steel, VA	0.210
Nucor Steel, SC	0.098	IPSCO, IA	0.230
SDI, Whitley, IN	0.110	IPSCO, IA	0.269
Republic Technologies, OH	0.112	Note: The sources shown in this table as SDI, Hendricks, IN and Qualitech, IN are one and the same plant under different ownerships.	
Nucor Steel, SC	0.125		
Nucor Steel, NC	0.128		
MacQuanex, AR	0.140		

Review of the RBLC indicates that the use of natural gas and low-NO_x burners are common in controlling NO_x emissions from a reheat furnace.

The RBLC indicates NO_x limits ranging from 0.077 lb/MMBTU to 0.269 lb/MMBTU. Information in the RBLC also shows no 2 NO_x limits are the same.

Beta Steel, IN is not listed in the RBLC. Cost analysis shown in the previous evaluation concludes that NOx limit of 0.077 lb/ton is not considered as BACT.

(3) Proposed NO_x BACT for SDI -Bar Products Division, IN

The NO_x BACT for the Reheat Furnace shall be the use of natural gas and low-NO_x burners and NO_x emissions shall not exceed 0.080 lb/MMBTU. This limit is considered the most stringent NOx BACT limit for a reheat furnace without add-on control.

(4) CO Control Technology Technical Feasibility Study

CO will be a by-product of incomplete combustion of natural gas.

SDI - Bar Products Division submitted BACT control analysis for CO from the reheat furnace. The same control technologies evaluated for the EAF were also examined for controlling CO emissions from the reheat furnace.

Flaring or post combustion reaction chambers are considered technically infeasible for the following reasons.

- - First, the exhaust gases from the reheat furnace will contain insufficient CO levels to support self-combustion thus CO in the exhaust will not self-combust as necessary for flaring or a post combustion chamber. Additional natural gas combustion would be needed to substantially raise the CO concentration to provide self-combustion.

- - Second, in order to raise the exhaust gas temperature from 500 ^oF to the minimum operating temperature required by a flare (1,300 ^oF) or a post combustion chamber (850 ^oF), additional heat input for flaring and for a post combustion chamber would be needed. This additional fuel requirement would result in additional CO emissions. Therefore, theses technologies are considered technically infeasible for controlling CO emissions from a reheat furnace.

The same catalyst problems encountered with the use of SCR to control NO_x emissions are as likely to be encountered with the use of oxidation catalysts or catalytic incineration. Therefore, these technologies are technically infeasible for controlling CO emissions from a reheat furnace.

Technology evaluations arrived to the conclusion that add-control is not feasible.

SDI - Bar Products Division submitted a cost analysis of installing and operating a RTO for the reheat furnace.

The table below shows the cost summary of installing and using RTO to control CO emissions from the Reheat Furnace. This cost analysis follows the criteria established in EPA's draft BACT guidance document (EPA's March 15, 1990 Draft Document). According to the guidance, cost effectiveness is the key criterion to be used in assessing the economic feasibility of a control alternative. It further states that where a control technology has been successfully applied to similar sources in a source category, an applicant should concentrate on documenting significant cost differences, if any, between the application of the control technology on those other sources and the particular source under review.

Table 20 - - RTO Cost Summary for the Reheat Furnace			
Costs	**$**	**Total $**	
Direct Purchased Equipment Cost	755,000	1,054,000.00	
Direct Installation Cost	299,000		
Indirect Capital Cost	250,000		
Capital Recovery (7%, 10 years)	186,000		630,000.00
Operation and Maintenance Direct Cost	294,000	444,000.00	
Operation and Maintenance Indirect Cost	150,000		
Annual Cost Effectiveness		$12,000.00	

The CO PTE of the Reheat Furnace = 68.07 tons/year.

$$\text{Annual Cost} = \frac{\$630{,}000.00}{(68.07 \text{ tons/year})*(80\% \text{ Eff})} = \$12{,}000.00/\text{ton}$$

At 80% CO control, the total annualized capital costs and operational/maintenance cost would be $630,000.00 and the cost/ton is $12,000.00. Based on this amount, use of RTO in addition to post combustion chamber is not economically feasible.

(5) CO Existing BACT Emission Limitations

The table below lists the CO BACT limits of Reheat Furnaces. Limits are arranged in an ascending order.

Table 21 - - Reheat Furnace CO BACT of Other Similar Sources		
Source Name	CO Limit (lb/MMBTU)	
Charter Steel, WI	0.011	Review of the RBLC indicates that proper combustion practices is common in controlling CO emissions from a reheat furnace. The RBLC indicates CO limits ranging from 0.011 lb/MMBTU to 1.97 lb/MMBTU. Note: The sources shown above as SDI, Hendricks, IN and Qualitech, IN are one and the same plant under different ownerships.
SDI, Whitley, IN	0.030	
MacQuanex, AR	0.035	
Republic Technologies, OH	0.039	
Beta Steel, IN	0.040	
Qualitech, IN	0.061	
Arkansas Steel, AR	0.063	
Chaparral Steel, VA	0.075	
Nucor-Yamato, AR	0.0824	
Nucor Steel, NC	0.084	
SDI, Hendricks, IN	0.084	
Nucor Steel, SC	0.187	
Ameristeel, FL	0.350	
Nucor Steel, SC	1.970	

There is no CO limit specified for the Reheat Furnace under the original permit. The CO limit for Qualitech specified in the above table was not indicated in the permit. This information was taken from the calculation supporting document.

BACT limits for permits in Indiana have been historically based on the latest AP-42 Emission factors for combustion units (AP-42, Chapter 1.4. Tables 1.4-1,1.4-2).

Since NO_x emissions are more of a concern due to it being a precursor in the formation of ozone, and the NOx BACT limit (0.08 lb/MMBTU) for the Reheat Furnace will be the most stringent among existing mini mills, and decrease in NOx emissions has the tendency to affect the CO emissions, the OAQ believes that the CO BACT limit will be equal to the latest AP-42 EF for low NOx combustion units (AP-42, Chapter 1.4. Tables 1.4-1,1.4-2).

(6) Proposed CO BACT for SDI -Bar Products Division, IN

The CO BACT for the reheat furnace is the use of natural gas and good combustion practices and CO emissions shall not exceed 0.084 lb/MMBTU. This limit is also based on the recent AP-42 EF for similar combustion units (AP-42, Chapter 1.4. Tables 1.4-1,1.4-2).

(7) VOC Control Technology Technical Feasibility Study

VOC will be a by-product of incomplete combustion of natural gas. Due to the small amount of VOC that will be emitted (maximum of 4.6 tons per year) from the reheat furnace, any add-on controls is considered impractical.

The same control technologies evaluated for the EAF were also examined for controlling VOC emissions from the reheat furnace.

The OAQ is not aware of a steel mill using any add-on control technology to control VOC emissions from a reheat furnace.

(8) VOC Existing BACT Emission Limitations

The table below lists the VOC BACT limits of Reheat Furnaces. Limits are arranged in an ascending order.

Table 22 - - Reheat Furnace VOC BACT of Other Similar Sources

Source Name	VOC Limit (lb/MMBTU)	Comment
Charter Steel, WI	0.0014	The RBLC indicates VOC limits ranging from 0.0014 lb/MMBTU to 0.0054 lb/MMBTU. Note: The sources shown above as SDI, Hendricks, IN and Qualitech, IN are one and the same plant under different ownerships.
Qualitech, IN	0.0028	
SDI, Hendricks, IN	0.005	
Nucor Steel, NC	0.005	
Chaparral Steel, VA	0.0053	
Nucor-Yamato, AR	0.0054	
SDI, Whitley, IN	0.0055	

The VOC limit specified for Charter Steel, WI, was in terms of lb/hour rate and was specified based on a limited annual fuel usage, such that VOC is not subject to PSD review. Based on this, this will not be consider as BACT.

There is no VOC limit specified for the Reheat Furnace under the original permit. The VOC limit for Qualitech specified in the above table was not indicated in the permit. This information was taken from the calculation supporting document.

There is also no VOC limit in the SDI, Whitley, IN permit for the Reheat Furnace. The VOC limit listed in the table above was taken from the calculation supporting document.

BACT limits for permits in Indiana have been historically based on the latest AP-42 Emission factors for combustion units (AP-42, Chapter 1.4. Tables 1.4-1,1.4-2).

(9) Proposed VOC BACT for SDI -Bar Products Division, IN

The VOC BACT for the Reheat Furnace is the use of natural gas, perform good combustion practices, and VOC emissions shall not exceed 0.005 lb/MMBTU. This limit is comparable to existing BACT limits in the RBLC. This limit is also based on the recent AP-42 EF for similar combustion units (AP-42, Chapter 1.4. Tables 1.4-1,1.4-2).

(10) SO_2 Control Technology Technical Feasibility Study

SO_2 will be generated during the combustion of natural gas. Due to the small amount of SO_2 that will be emitted from the reheat furnace (0.49 ton per year), any add-on controls is considered impractical.

(11) SO_2 Existing BACT Emission Limitations

The table below lists the SO_2 BACT limits of Reheat Furnaces. Limits are arranged in an ascending order.

BACT limits for permits in Indiana have been historically based on the latest AP-42 Emission factors for combustion units (AP-42, Chapter 1.4. Tables 1.4-1,1.4-2).

Table 23 - - Reheat Furnace SO_2 BACT of Other Similar Sources

Source Name	SO_2 Limit (lb/MMBTU)	Comment
Nucor Steel, SC	0.00057	Note: The sources shown above as SDI, Hendricks, IN and Qualitech, IN are one and the same plant under different ownerships.
Nucor Steel, NC	0.00058	
Chaparral Steel, VA	0.0006	
Nucor-Yamato, AR	0.0006	
Qualitech, IN	0.0006	
SDI, Hendricks, IN	0.0006	
SDI, Whitley, IN	0.0006	
Charter Steel, WI	0.00061	
Nucor Steel, SC	0.00086	

There is no SO_2 limit specified for the Reheat Furnace under the original permit. The SO_2 limit for Qualitech specified in the above table was not indicated in the permit. This information was taken from the calculation supporting document.

There is also no SO_2 limit in the SDI, Whitley, IN permit for the Reheat Furnace. The SO_2 limit listed in the table above was taken from the calculation supporting document.

(12) Proposed SO_2 BACT for SDI -Bar Products Division, IN

The SO_2 BACT for the Reheat Furnace is the use of natural gas, perform good combustion practices and SO_2 emissions shall not exceed 0.0006 lb/MMBTU. This limit is also based on the recent AP-42 EF for similar combustion units (AP-42, Chapter 1.4. Tables 1.4-1,1.4-2).

(13) PM/PM_{10} Control Technology Technical Feasibility Study

Particulate matter in natural gas combustion are usually larger molecular weight hydrocarbons that are not fully combusted. Trace amounts of mill scale from the steel slabs being heated will be exhausted.

Due to the small amount of particulate that will be emitted from the reheat furnace (1.5 ton/year to 6.2 ton/year), installing and using add-on controls is considered impractical.

(14) PM/PM_{10} Existing BACT Emission Limitations

The table below lists the PM and PM_{10} BACT limits of Reheat Furnaces. Limits are arranged in an ascending order.

BACT limits for permits in Indiana have been historically based on the latest AP-42 Emission factors for combustion units (AP-42, Chapter 1.4. Tables 1.4-1,1.4-2).

Table 24- - Reheat Furnace PM/PM_{10} BACT of Other Similar Sources

Source Name	PM/PM_{10} Limit (lb/MMBTU)	Comment
SDI, Hendricks, IN	0.0019	Note: The sources shown above as SDI, Hendricks, IN and Qualitech, IN are one and the same plant under different ownerships.
Qualitech, IN	0.003	
MacQuanex, AR	0.0031	
Republic Technologies, OH	0.005	
IPSCO, AL	0.0058	
SDI, Hendricks, IN	0.0076	
SDI, Whitley, IN	0.0076	
Nucor Steel, NC	0.0078	
Chaparral Steel, VA	0.010	
Nucor Steel, SC	0.014	
Arkansas Steel, AR	0.015	
Nucor-Yamato, AR	0.0168	
Charter Steel, WI	0.082	

There is also no PM limit in the SDI, Whitley, IN permit for the Reheat Furnace. The PM limit listed in the table above was taken from the calculation supporting document.

(15) Proposed PM/PM_{10} BACT for SDI -Bar Products Division, IN

The PM BACT for the Reheat Furnace is the use of natural gas, good combustion practices, and PM shall not exceed 0.0019 lb/MMBTU. This limit is also based on the recent AP-42 EF for similar combustion units (AP-42, Chapter 1.4. Tables 1.4-1,1.4-2).

The PM_{10} BACT for the Reheat Furnace is the use of natural gas, good combustion practices, and PM_{10} shall not exceed 0.0076 lb/MMBTU. This limit is also based on the recent AP-42 EF for similar combustion units (AP-42, Chapter 1.4. Tables 1.4-1,1.4-2).

The visible emission from the Reheat Furnace shall not exceed 3% opacity.

Tundish Preheaters, Ladle Preheaters/Dryers, Tundish Dryer, and Tundish Nozzle Preheater BACT Analysis

SDI - Bar Products Division is proposing to install and operate:

(a) Two (2) natural gas fueled low NO_x Tundish Preheaters, each with nominal capacity of 9 MMBTU/hour.

(b) Five (5) natural gas fueled low NO_x LMS Ladle Preheaters/Dryers, each with nominal capacity of 7.5 MMBTU/hour.

(c) Two (2) natural gas fueled low NO_x Tundish Dryers, each with nominal capacity of 9 MMBTU/hour.

(d) Three (3) natural gas fueled low NO_x Tundish Nozzle Preheaters, with nominal capacity of 6 MMBTU/hour.

Table 25 - - Tundish Preheaters

Pollutant	Existing (lb/MMBTU)	Proposed (lb/MMBTU)
NO_x	0.1	0.050
CO	- -	0.084
VOC	- -	0.0055
SO_2	- -	0.0006
PM	- -	0.0019
PM_{10}	- -	0.0076
Capacity	5 MMBTU/hour	18 MMBTU/hour

Table 26 - - Ladle Preheaters/Dryers

Pollutant	Existing (lb/MMBTU)	Proposed (lb/MMBTU)
NO_x	0.1	0.050
CO	- -	0.084
VOC	- -	0.0055
SO_2	- -	0.0006
PM	- -	0.0019
PM_{10}	- -	0.0076
Capacity	32 MMBTU/hour	37.5 MMBTU/hour

Table 27 - - Tundish Dryers		
Pollutant	Existing (lb/MMBTU)	Proposed (lb/MMBTU)
NO_x	0.1	0.050
CO	- -	0.084
VOC	- -	0.0055
SO_2	- -	0.0006
PM	- -	0.0019
PM_{10}	- -	0.0076
Capacity	5 MMBTU/hour	18 MMBTU/hour

Table 28 - - Tundish Nozzle Preheater	
Pollutant	Proposed (lb/MMBTU)
NO_x	0.050
CO	0.084
VOC	0.0055
SO_2	0.0006
PM	0.0019
PM_{10}	0.0076
Capacity	6 MMBTU/hour

All emissions will be by-products of combustion.

Add-on control is considered infeasible due to the PTE, capacity and size of the burners, and lack of exhaust gas capture systems.

The concept behind ultra low-NO_x burners is to use sealed combustion chambers such as boilers and furnaces where baffle design controls air staging. Also of importance is to control NO_x through the recirculation of gases, which allows heat to dissipate slower thereby reducing NO_x formation. The Tundish Preheaters do not have sealed combustion chambers to allow the recirculation of gases and it is designed to rely on ambient air for facilitate the combustion process.

The OAQ, is not aware of a steel mill using any add-on control technology to control combustion-related emissions from tundish preheater/dryers.

The BACT for the Tundish Preheaters, Ladle Preheaters/Dryers, Tundish Dryer, and Tundish Nozzle Preheater is the use of pipeline natural gas and low-NO_x burners, perform good operating practices with emissions rates as indicated in the tables above. These limits are also based on the recent AP-42 EF for combustion units equipped with low NO_x burners (AP-42, Chapter 1.4. Tables 1.4-1,1.4-2).

VTD Boiler BACT Analysis

Qualitech proposed and was permitted to install a boiler with a nominal capacity of 67.5 MMBTU/hr. SDI -Bar Products Division re-evaluated the capacity of the boiler and is proposing to operate the VTD boiler at its real nominal capacity of 48.4 MMBTU/hour.

All emissions from natural gas-fired combustion sources are products of combustion.

The table below summarizes the proposed BACT limits for the VTD Boiler. The table also shows that previous BACT limits under the Qualitech permit. Detailed BACT evaluations are shown in the subsequent pages.

Table 29 - - VTD Boiler

Pollutants	PSD Existing BACT Limit (lb/MMBTU) Qualitech, IN	PSD BACT/Limit (lb/MMBTU) SDI - Bar Products Division, IN
NO_x	0.081	0.040
CO	- -	0.084
VOC	- -	0.0026
PM	- -	0.0019
PM_{10}	- -	0.0076
SO_2	- -	0.0006
Capacity	67.5 MMBTU/hr	(48.4 MMBTU/hr)

Comparison to existing sources was limited to boilers with less than 100 MMBTU/hour capacity with natural gas as fuel, to make an accurate evaluation based on emission factors and technological and economical feasibility. BACT comparison, however, was not limited to boilers in steel mills to cover a broader scope.

(1) PM and PM_{10} Control Technology Technical Feasibility Study

There are three potential sources of particulate emissions from combustion processes: mineral matter found in the fuel, solids or dust in the ambient air used for combustion, and unburned carbon formed by incomplete combustion of the fuel. Due to the fact that natural gas is a gaseous fuel, PM emissions are typically low. Particulate matter from natural gas combustion has both filterable and condensible fractions. The particulate matter generated from natural gas combustion is usually larger molecular weight hydrocarbons that are not fully combusted. Increased PM emissions may result from poor air/fuel mixing or maintenance problems.

There are two sources of condensible particulate emissions from combustion processes: condensible organic matter that are the result of incomplete combustion and sulfuric acid mist. For natural gas-fired sources such as boilers, there should be no condensible organic matter originating from the source because the main components of natural gas (i.e. methane and ethane) are not condensible at the temperatures found in Method 202 ice bath. As such, any condensed organics are from the ambient air. The most likely condensible particulate matter from natural gas combustion sources is the sulfuric acid dihydrate, which results when the sulfur in the fuel and the ambient air is combusted and then cools.

The following control options were evaluated in the BACT review:
- - Fabric Filter (Baghouse)
- - Electrostatic Precipitator (ESP)

- - Wet Scrubber

All control options are basically technically infeasible because the sole fuel for the proposed boilers is natural gas, which has little to no ash that would contribute to the formation of PM or PM_{10}. Add-on controls have never been applied to commercial natural gas fired boilers, therefore, add on particulate matter control equipment will not be considered in this BACT review.

(2) PM/PM_{10} Existing BACT Emission Limitations

The table below summarizes the PM and PM_{10} limits of boilers in the RBLC.

Note: The sources shown below as SDI, Hendricks, IN and Qualitech, IN are one and the same plant under different ownerships.

Table 30 - - Boiler PM/PM_{10} BACT Limits of Other Sources

Source	Capacity (MMBTU/hr)	Limit (lb/MMBTU)	Source	Capacity (MMBTU/hr)	Limit (lb/MMBTU)
SDI, Hendricks, IN (PM)	48.4	0.0019	Duke, TX	25	0.008
Nucor Steel, IN (PM)	34 & 15	0.0019	Duke, NM	33	0.009
Merk, NJ	99.5	0.003	Duke, NM	44.1	0.009
Tenaska, AL	30	0.005	American Soda, CO	51	0.009
Mid-Georgia, GA	60	0.005	Duke, AL	35	0.009
Gordonsville, VA	22	0.005	NRG, OK	22	0.009
Redbud, OK	93	0.0053	Duke, AR	44.1	0.01
Entergy, IA	48.69	0.007	Duke, AR	33	0.01
GenPower, SC	38	0.007	Genenova, OK	33	0.01
Ameripol, TX	54	0.007	Energetix, OK	30	0.01
Sithe, MA	96	0.007	Kamine, NY	33	0.01
Redbud, OK	20	0.0074	Gen Power, AL	83	0.01
Thunderbird, OK	20	0.0074	Air Liguide, LA	95	0.01
Duke, IN	46.6	0.0075	Quad, OK	62.77	0.01
Arcadia Bay, IN	21	0.0075	Cabot, MA	26.6	0.011
Barton, AL	40	0.0075	Darling, CA	31.2	0.0137
Tenaska, IN	40	0.0075	**Qualitech, IN**	67.5	0.0137
Interstate, IA	68	0.0075	Waupaca, IN	93.9	0.014
SDI, Whitley, IN (PM_{10})	41.8	0.0076	BMW, SC	60	0.014
SDI, Hendricks, IN (PM_{10})	48.4	0.0076	Smith Cogen, OK	48	0.015
Honda, AL	30	0.0076	Cogentrix, IN	35	0.02
Hyundai, AL	50	0.0076	Blount, AL	40	0.02
MidAmerican, IA	68	0.0076	Archer Daniels, ND	28	0.086
Kiowa, OK	27.5	0.0076	Toyota, KY	96	0.1
US Army, AL	11.7	0.0076	Toyota, IN	58	0.2
US Army, AL	13.4	0.0076	Agrimark, VA	27	0.31

The BACT for PM and PM_{10} listed in the RBLC for natural-gas-fired boilers is combustion control and use of natural gas as fuel. As stated above, PM/PM_{10} emissions from natural-gas-fired

sources are minimal, thus making add on PM/PM_{10} control both economically and technically infeasible. Differences in limits are minor and mostly due to rounding off of numbers.

Based on the most recent PSD permit issued, in 2002, by the OAQ to SDI, Whitley, IN, the PM and PM10 BACT limit for the vacuum degasser in this plant is 0.0076 lb/MMBTU. The OAQ believes that this is still consider the BACT for this type of operation.

(3) Proposed PM/PM_{10} BACT Limit for SDI -Bar Products Division, IN

There is no PM limit specified for the boiler under the original permit. The PM limit for Qualitech specified in the above table was not indicated in the permit. This information was taken from the calculation supporting document.

The PM/PM_{10} BACT for the VTD Boiler is good combustion practice, the use of pipeline natural gas as its primary fuel, the PM_{10} emissions shall not exceed 0.0076 lb/MMBTU and and the PM emissions shall not exceed 0.0019 lb/MMBTU. This limit is comparable to PM limits of recently issued PSD permits in Indiana. This limit is also based on the recent AP-42 EF for combustion units equipped with low NO_x burners (AP-42, Chapter 1.4. Tables 1.4-1,1.4-2).

(4) NO_x Control Technology Technical Feasibility Study

Nitrogen oxide formation during combustion consists of three types:

(a) Thermal NO_x
The principal mechanism of NO_x formation in natural gas combustion is thermal NO_X. The thermal NO_X mechanism occurs through the thermal dissociation and subsequent reaction of nitrogen and oxygen molecules in the combustion air. Most NO_X formed through the thermal NO_X is affected by three factors: a) oxygen concentration, b) peak temperature, and c) time of exposure at peak temperature. As these factors increase, NO_X emission levels increase. The emission trends due to changes in these factors are fairly consistent for all types of natural-gas-fired boilers and furnaces. Emission levels vary considerably with the type and size of combustor and with operating conditions (e.g. combustion air temperature, volumetric heat release rate, load, and excess oxygen level).

(b) Prompt NO_x
The second mechanism of NO_X formation, prompt NO_X, occurs through early reactions of nitrogen molecules in the combustion air and hydrocarbon radicals from the fuel. Prompt NO_X, reactions occur within the flame and are usually negligible when compared to the amount on NO_X formed through the thermal NO_X mechanism.

(c) Fuel NO_X
The final mechanism of NO_X formation, fuel NO_X, stems from the evolution and reaction of fuel-bonded nitrogen compounds with oxygen. Due to the characteristically low fuel nitrogen content of natural gas, NO_X formation through the fuel NO_X mechanism is insignificant.

The following control options were evaluated in the BACT review and ranked in order of effectiveness as follows:

(a) Selective Catalytic Reduction (SCR) introduces a reducing agent into the flue gas, upstream of a catalyst bed, which is maintained at an elevated temperature. The

ammonia reacts with NOx formed during combustion to form molecular nitrogen and water. SCR has begun to be used to control emissions from boilers during the last 10 years. The use of SCR on boilers has been demonstrated to be technologically feasible and could therefore be considered if found to be cost effective.

SDI submitted a cost analysis for incorporating SCR as control. Implementing SCR would require substantial capital expenditures and additional energy to keep the catalyst bed at high temperature. The estimated cost effectiveness of using SCR to further reduce NOx to 85% is $18,5602.00 per ton of NOx removed. SCR is considered economically infeasible.

(b) Flue Gas Recirculation (FGR) incorporates the recirculation of a portion of the flue gas back to the primary combustion zone as a replacement for the combustion air. The recirculated combustion products provide inert gases that lower the adiabatic flame temperature and the overall oxygen concentration in the combustion zone. As a result, FGR controls NO_X emissions by reducing the generation of thermal NO_X. FGR has been demonstrated to be technically feasible for controlling NOx emissions from natural gas-fired boilers. This option could be used if found to be economically feasible.

SDI submitted a cost analysis for incorporating external FGR into the boiler design. There is concern regarding the cyclic demand on the boiler and flame instability from external FGR and in order to see the benefit of external FGR, the boiler must be in operation for a minimum of thirty minutes. An estimated fifty percent (50%) control efficiency for NOx was used for the purposes of completing the cost analysis. Since NOx emissions without the external FGR system (using only ultra low NOx burners) are only 5.81 tons per year, the external FGR system would only reduce NOx by 2.9 tons per year. External FGR would also reduce CO emissions by approximately forty percent (40%); therefore, this reduction was also taken into account in the cost effectiveness analysis. The annual cost effectiveness of using external FGR is estimated to be in excess of $40,092 per ton of NOx and CO reduced. FGR is not consider economically feasible.

(c) Low NOx burners are a specially designed set of burners that employ two-staged combustion within the burner. Primary combustion typically occurs at a lower temperature under oxygen deficient conditions and secondary combustion is completed with excess air. Low NOx burners and ultra low NOx burners control mixing of fuel and air in a pattern that keeps flame temperature low and dissipates the heat quickly. Low NOx burners incorporate many different design principles to achieve low NOx operation. Ultra low NOx burners, which are sold under various trade names, are based on essentially the same technology as low NOx burners but are refined to achieve even lower NOx levels. The newest generation of burners create internal air recirculation inside the boiler chamber, thus achieving many of the benefits of external FGR without the cost and inefficiency of external FGR. Such burners have been used extensively in natural gas boilers of similar size and are therefore considered to be feasible as a pollution prevention technique for reducing NOx emissions.

(d) Selective Noncatalytic reduction (SNCR) is a post-combustion process in which a reagent mixture is injected into the elevated temperature flue gas stream. Using urea solution as reagent, a portion of the NOx is converted to nitrogen, water, and carbon dioxide. The process may release ammonia during the incomplete combustion of urea. The operating temperature of SNCR is much higher than the exit gas temperature from the boiler. This temperature difference makes SNCR technically infeasible.

(5) NO_x Existing BACT Emission Limitations

The table below summarizes the NO_x BACT limits of boilers, as listed in the RBLC.

Note: The sources shown below as SDI, Hendricks, IN and Qualitech, IN are one and the same plant under different ownerships.

Table 31 - - Boiler NO_x BACT Limits of Other Sources

Source	Capacity (MMBTU/hr)	Limit (lb/MMBTU)	Source	Capacity (MMBTU/hr)	Limit (lb/MMBTU)
Mustang Power, Ok	31	0.01	Tenaska, IN	40	0.049
Merk, NJ	99.5	0.011	Interstate Power, IA	68	0.049
US Army, AL	11.7	0.03	American Soda, CO	51	0.05
US Army, AL	13.4	0.03	Barton, AL	40	0.05
Duke, TX	25	0.032	MidAmerican, IA	68	0.05
Entergy, IA	48.69	0.034	Energetix, OK	30	0.05
Duke, AR	33	0.035	Gen Power, AL	83	0.05
Honda, AL	30	0.035	Air Liguide, LA	95	0.05
Hyundai, AL	50	0.035	American Soda, CO	80.8	0.05
Quad, OK	62.77	0.035	BMW, SC	60	0.051
Genenova, OK	33	0.035	Indelk, MI	99	0.06
Kamine, NY	33	0.035	NGP of America, OK	3	0.06
MN Corn, NE	54.4	0.035	Waupaca, IN	93.9	0.074
Sithe, MA	96	0.035	Redbud, OK	93	0.075
Duke, NM	33	0.036	Cogentrix, IN	35	0.08
Duke, NM	44.1	0.036	Blount, AL	40	0.08
NRG, OK	22	0.036	**Qualitech, IN**	67.5	0.081
Darling, CA	31.2	0.036	Tenaska, AL	30	0.096
Solvay, WY	100	0.038	Toyota, IN	58	0.1
SDI, Whitley, IN	41.8	0.040	Mid-Georgia, GA	60	0.1
SDI, Hendricks, IN	48.4	0.040	Ameripol, TX	54	0.1
Cabot, MA	26.6	0.041	Kiowa, OK	27.5	0.1
Vicksburg, MS	99	0.042	Toyota, KY	96	0.1
GenPower, SC	38	0.048	Duke, AL	35	0.108
Redbud, OK	20	0.049	Gordonsville, VA	22	0.109
Thunderbird, OK	20	0.049	Duke, AR	44.1	0.12
Duke, IN	46.6	0.049	Smith Cogen, OK	48	0.196
Arcadia Bay, IN	21	0.049	Archer Daniels, ND	28	0.21

RBLC indicates that BACT for boilers utilizing natural gas as fuel is Low NO_x burners. Few sources have used FGR coupled with Low NO_x burners for NO_x emission control for bigger rated boilers. Due to the size of the boilers, FGR and SCR are economically infeasible, therefore, BACT will be the use of Low NO_x burners.

Search of the RBLC specifically for VTD does not show any data for VTD and VTD boiler. It appears IDEM is applying a level of scrutiny higher than other permitting agencies. Many of the

other VTD do not even have limits such as Republic Technologies, OH; Oregon Steel, OR; and Charter Steel, WI.

Based on the most recent PSD permit issued, in 2002, by the OAQ to SDI, Whitley, IN, the NOx BACT limit for the vacuum degasser in this plant is 0.040 lb/MMBTU. The OAQ believes that this is still consider the BACT for this type of operation. This is more stringent that the original NOx limit of 0.081 lb/MMBTU.

(6) Proposed NO_x BACT Limit for SDI -Bar Products Division, IN

The NO_x BACT for the VTD Boiler shall be the use of ultra Low NO_X burner design with pipeline natural gas as primary fuel and NO_x emissions shall not exceed 0.040 lb/MMBTU. This limit is comparable to NO_x limits of SDI, Whitley, IN. This is more stringent that the original NOx limit of 0.081 lb/MMBTU.

(7) SO_2 Control Technology Technical Feasibility Study

Sulfur dioxide emissions from natural-gas-fired combustion sources are low because natural gas has a low sulfur content. A properly designed and operated boiler utilizing low sulfur natural gas will insure minimal SO_2 emissions.

The following control options were evaluated in the BACT review:

(a) Flue Gas Desulfurization (FGD) System
A FGD system is comprised of a spray dryer that uses lime as a reagent followed by particulate control or wet scrubber that uses limestone as a reagent. Lime is injected by a spray dryer into the flue gas in the form of fine droplets under well-controlled conditions such that the droplets will absorb SO_2 from the flue gas and then become dry particulate due to evaporation of water. A particulate control device then captures the dry particulate. The captured particles are removed from the system and disposed.

This control option will generate dry solid waste consisting mainly of lime and $CaSO_4$. This waste must be disposed of in a solid waste landfill giving this option additional environmental concerns. Removal efficiencies decrease as the amount of sulfur contained in the fuel decreases. Also natural gas contains very little sulfur, thus making any FGD economically infeasible. Based on additional environmental concerns with the FGD solid waste, low sulfur removal efficiencies, and cost to control, FGD is eliminated from this BACT analysis.

(b) Use of Low Sulfur Fuel
The use of low sulfur fuels was the next level of control that was evaluated. Natural gas has the lowest sulfur content of all the fossil fuels. Very low SO_2 emission rate results from the use of natural gas.

(8) SO_2 Existing BACT Emission Limitations

The table below shows the SO_2 limits of boilers in the RBLC. Due to insignificant emission rate for natural gas fueled boilers, a big portion of the boilers that have BACT limits for the other pollutants do not have BACT limits for SO_2.

Search of the RBLC specifically for VTD does not show any data for VTD and VTD boiler. It

appears IDEM is applying a level of scrutiny higher than other permitting agencies. Many of the other VTD do not even have limits such as Republic Technologies, OH; Oregon Steel, OR; and Charter Steel, WI.

Based on the most recent PSD permit issued, in 2002, by the OAQ to SDI, Whitley, IN, the NOx BACT limit for the vacuum degasser in this plant is 0.0006 lb/MMBTU. The OAQ believes that this is still consider the BACT for this type of operation.

Note: The sources shown below as SDI, Hendricks, IN and Qualitech, IN are one and the same plant under different ownerships.

Table 32 - - Boiler SO_2 BACT Limits of Other Sources

Source	Capacity (MMBTU/hr)	Limit (lb/MMBTU)	Source	Capacity (MMBTU/hr)	Limit (lb/MMBTU)
Waupaca, IN	93.9	0.0006	Merk, NJ	99.5	0.001
Duke, IN	46.6	0.0006	Gen Power, AL	83	0.001
Arcadia Bay, IN	21	0.0006	Cabot, MA	26.6	0.002
Redbud, OK	20	0.0006	Sithe, MA	96	0.003
Tenaska, IN	40	0.0006	Duke, NM	33	0.003
Qualitech, IN	67.5	0.0006	Duke, NM	44.1	0.003
SDI, Hendricks, IN	48.4	0.0006	Duke, TX	25	0.0052
Interstate Power, IA	68	0.0006	Duke, AL	35	0.0057
SDI, Whitley, IN	41.8	0.0006	Cogentrix, IN	35	0.006
US Army, AL	11.7	0.001	Blount, AL	40	0.006
US Army, AL	13.4	0.001	Smith Cogen, OK	48	0.012
NRG, OK	22	0.001	Ameripol, TX	54	0.014
GenPower, SC	38	0.001	Toyota, KY	96	0.3

There is no SO_2 limit specified for the boiler under the original permit. The SO_2 limit for Qualitech specified in the above table was not indicated in the permit. This information was taken from the calculation supporting document.

(9) Proposed SO_2 BACT Limit for SDI -Bar Products Division, IN

At least six of the recently issued PSD permits in Indiana have the most stringent SO_2 BACT limits for boilers. Based on the information presented above, **the SO_2 BACT for the VTD Boiler shall be the use of low sulfur pipeline natural gas, good combustion practices and the SO_2 emissions shall not exceed 0.0006 lb/MMBTU.** This limit is also based on the recent AP-42 EF for similar combustion units (AP-42, Chapter 1.4. Tables 1.4-1,1.4-2).

(10) CO Control Technology Technical Feasibility Study

Carbon monoxide (CO) emissions from boilers are a result of incomplete combustion of natural gas. Improperly tuned boilers operating at off design levels decrease combustion efficiency resulting in increased CO emissions. Control measures taken to decrease the formation of NO_X during combustion may inhibit complete combustion, which could increase CO emissions. Lowering combustion temperatures through premixed fuel combustion can be counterproductive with regard to CO emissions. However, improved air/fuel mixing inherent to newer combustor design and control systems limits the impact of fuel staging on CO emissions.

Good combustion practice is considered BACT for CO control on natural-gas-fired boilers. Burner manufactures control CO emissions by maintaining various operational combustion parameters. Fuel conditions, draft and changes in air can be adjusted to insure good combustion.

(11) CO Existing BACT Emission Limitations

CO emissions are a result of incomplete combustion of natural gas, thus good combustion practice and good design and operation are industry's standards.

The RBLC indicates a wide range of CO emission limitations (0.0036 lb/MMBTU to 0.37 lb/MMBTU) for this type of control technology.

The table below summarizes the CO BACT limits of boilers in the RBLC.

Table 33 - - Boiler CO BACT Limits of Other Sources

Source	Capacity (MMBTU/hr)	Limit (lb/MMBTU)	Source	Capacity (MMBTU/hr)	Limit (lb/MMBTU)
Merk, NJ	99.5	0.0036	SDI, Whitley, IN	41.8	0.084
Interstate Power, IA	68	0.0164	**SDI, Hendricks, IN**	48.4	0.084
Duke, TX	25	0.032	Honda, AL	30	0.084
Archer Daniels, ND	28	0.036	MidAmerican, IA	68	0.084
Genenova, OK	33	0.037	Kiowa, OK	27.5	0.084
Kamine, NY	33	0.038	Mustang Power, OK	31	0.084
Mid-Georgia, GA	60	0.05	Energetix, OK	30	0.085
Air Liguide, LA	95	0.06	Gen Power, AL	83	0.085
Qualitech, IN	67.5	0.061	Darling, CA	31.2	0.089
Redbud, OK	93	0.07	American Soda, CO	51	0.09
Tenaska, AL	30	0.073	American Soda	80.8	0.09
Entergy, IA	48.69	0.073	Hyundai, AL	50	0.09
Blount, AL	40	0.08	Duke, AL	35	0.135
Gordonsville, VA	22	0.08	Duke, NM	33	0.148
GenPower, SC	38	0.08	Duke, NM	44.1	0.148
Ameripol, TX	54	0.08	Cabot, MA	26.6	0.15
Sithe, MA	96	0.08	Indelk, MI	99	0.15
Cogentrix, IN	35	0.082	Duke, AR	44.1	0.15
Redbud, OK	20	0.082	Duke, AR	33	0.15
Duke, IN	46.6	0.082	Smith Cogen, OK	48	0.165
Arcadia Bay, IN	21	0.082	Waupaca, IN	93.9	0.2
Barton, AL	40	0.082	NRG, OK	22	0.37
Tenaska, IN	40	0.082			

Note: The sources shown below as SDI, Hendricks, IN and Qualitech, IN are one and the same plant under different ownerships.

Search of the RBLC specifically for VTD does not show any data for VTD and VTD boiler. It appears IDEM is applying a level of scrutiny higher than other permitting agencies. Many of the other VTD do not even have limits such as Republic Technologies, OH; Oregon Steel, OR; and

Charter Steel, WI.

Based on the most recent PSD permit issued, in 2002, by the OAQ to SDI, Whitley, IN, the NOx BACT limit for the vacuum degasser in this plant is 0.084 lb/MMBTU. The OAQ believes that this is still consider the BACT for this type of operation.

(12) Proposed CO BACT Limit for SDI -Bar Products Division, IN

There is no CO limit specified for the boiler under the original permit. The CO limit for Qualitech specified in the above table was not indicated in the permit. This information was taken from the calculation supporting document.

The CO BACT for the VTD Boiler shall be the use of good combustion practices and CO emissions shall not exceed 0.084 lb/MMBTU. This limit is comparable to CO limits of recently issued PSD permits in Indiana. This limit is also based on the recent AP-42 EF for similar combustion units (AP-42, Chapter 1.4. Tables 1.4-1,1.4-2).

(13) VOC Control Technology Technical Feasibility Study

The VOC emissions from natural gas-fired sources are the result of two possible formation pathways: incomplete combustion and recombination of the products of incomplete combustion. Complete combustion is a function of three variables; time, temperature and turbulence. Once the combustion process begins, there must be enough residence time at the required combustion temperature to complete the process, and during combustion there must be enough turbulence or mixing to ensure that the fuel gets enough oxygen from the combustion air. Combustion systems with poor control of the fuel to air ratio, poor mixing, and insufficient residence time at combustion temperature have higher VOC emissions than do those with good controls.

The following control options and work practice were evaluated in the BACT review:

(a) Thermal oxidation is a proven technology to control VOC emissions, however, it is rarely used on natural-gas-fired sources. Because of the low VOC concentration generated from the use of natural gas and good combustion practice, the thermal oxidation technology is ineffective. In addition, the thermal oxidation technology requires additional combustion of natural gas, which in turn would generate more emissions and fuel cost.

(b) Oxidation catalyst technology uses precious metal-based catalysts to promote the oxidation of CO and unburned hydrocarbons to CO_2. The amount of VOC conversion is compound specific and a function of the available oxygen and operating temperature. The optimal operating temperature range for VOC conversion ranges from 650 to 1000°F. In addition the use of an oxidation catalyst would require additional combustion of natural gas, which increases NO_X and CO emissions.

(14) VOC Existing BACT Emission Limitations

RBLC indicates good combustion, fuel specification, and good design and operation as BACT for VOC. The table below summarizes the VOC BACT limits of boilers in the RBLC.

Note: The sources shown below as SDI, Hendricks, IN and Qualitech, IN are one and the same plant under different ownerships.

Search of the RBLC specifically for VTD does not show any data for VTD and VTD boiler. It appears IDEM is applying a level of scrutiny higher than other permitting agencies. Many of the other VTD do not even have limits such as Republic Technologies, OH; Oregon Steel, OR; and Charter Steel, WI.

Table 34 - - Boiler VOC BACT Limits of Other Sources

Source	Capacity (MMBTU/hr)	Limit (lb/MMBTU)	Source	Capacity (MMBTU/hr)	Limit (lb/MMBTU)
SDI, Whitley, IN	41.8	0.0026	Kiowa, OK	27.5	0.0055
SDI, Hendricks, IN	48.4	0.0026	Mustang Power, OK	31	0.0055
Qualitech, IN	67.5	0.0028	Waupaca, IN	93.9	0.006
BMW, SC	60	0.0028	Gen Power, AL	83	0.006
Kamine, NY	33	0.003	Redbud, OK	93	0.0075
Merk, NJ	99.5	0.003	Indelk, MI	99	0.01
Tenaska, AL	30	0.004	Smith Cogen, OK	48	0.011
Mid-Georgia, GA	60	0.005	Cogentrix, IN	35	0.011
Entergy, IA	48.69	0.005	Duke, AL	35	0.014
GenPower, SC	38	0.005	Duke, NM	33	0.015
Ameripol, TX	54	0.005	Duke, NM	44.1	0.015
Sithe, MA	96	0.008	Duke, AR	44.1	0.016
Redbud, OK	20	0.005	Duke, AR	33	0.016
Thunderbird, OK	20	0.005	Genenova, OK	33	0.016
Duke, IN	46.6	0.0054	Energetix, OK	30	0.016
Arcadia Bay, IN	21	0.0054	Cabot, MA	26.6	0.015
Barton, AL	40	0.0054	Duke, TX	25	0.016
Tenaska, IN	40	0.0054	Gordonsville, VA	22	0.018
Interstate Power, IA	68	0.0054	Blount, AL	40	0.02

Based on the most recent PSD permit issued, in 2002, by the OAQ to SDI, Whitley, IN, the VOC BACT limit for the vacuum degasser in this plant is 0.0026 lb/MMBTU. The OAQ believes that this is still consider the BACT for this type of operation.

(15) Proposed VOC BACT Limit for SDI -Bar Products Division, IN

There is no VOC limit specified for the boiler under the original permit. The VOC limit for Qualitech specified in the above table was not indicated in the permit. This information was taken from the calculation supporting document.

The VOC BACT for the VTD Boiler shall be good design and operation and VOC emissions shall not exceed 0.0026 lb/MMBTU. This limit is comparable to the VOC limits of recently issued permit in Indiana for VTD boiler.

Scarfer BACT Analysis and Bar Cutting Operation BACT Analysis

Search of the Scarfer Process in the RBLC resulted in one source with this operation permitted as PSD: Qualitech, IN with a baghouse rated at 0.0052 gr/dscf, 1.9 lb/hour and 43,500 dscf/min.

SDI - Bar Products Division is proposing to control the existing Scarfer with a baghouse. The baghouse will have specifications of 0.0052 gr/dscf and 48,200 dscf/min. The PTE after baghouse of the Scarfer is less than 10 tons/year.

The PM and PM_{10} BACT limit for the Scarfer is the use of a baghouse at a rate of 0.0052 gr/dscf and 48,200 dscf/min.

At this time, SDI - Bar Products Division has not finalized what type of particulate control is going to be used for the Bar Cutting Operation, however, the PM BACT limit will be the same regardless of the final control chosen. The PTE after control of the Bar Cutting operation is less than 6 tons/year.

There is no PM BACT limit specified in the original permit, however, the supporting documents indicated that the grain loading of the baghouse control was supposed to be 0.01 gr/dscf.

The PM and PM_{10} BACT for the Bar Cutting operation is the use of a particulate control at a rate of 0.0052 gr/dscf and 30,000 dscf/min.

Material Storage Silos BACT Analysis

SDI - Bar Products Division is proposing to install nine (9) silos to store lime, carbon, flux additives and EAF dust. Each bin vent filter has a grain loading of 0.01 gr/dscf at a flow rate of 1,200 dscf/min.

The table below lists the steel mill sources in the RBLC with silos and their controls.

Note: The sources shown below as SDI, Hendricks, IN and Qualitech, IN are one and the same plant under different ownerships.

Table 35 - - Storage Silos

Source	Silo	Control	Opacity (%)
IPSCO Steel, IA	Lime/Dolomite Storage	Baghouse - -	- -
	Carbon Storage Silo	Baghouse (0.0768 gr/dscf)	3
	Storage Silos, Lime and Dolomite	Baghouse (0.0967 gr/dscf)	3
Nucor Steel, IN	LMS Baghouse Silo	Baghouse (0.01 gr/dscf)	3
	Storage Silo for Blasting Media	Bin Vent (0.01 gr/dscf)	3
SDI, Hendricks, IN	Storage Silos	Bin Vent (0.01/gr/dscf)	3
Qualitech, IN	Storage Silos	Bin Vent - -	3

Individual bin vent filter will control the PM and PM_{10} emissions from the material storage silos. **The use of bin vent filters to control the PM/PM_{10} emissions from the storage bins is considered BACT. Each bin vent filter will have an outlet grain loading of 0.01 grains per dry standard cubic feet and 1,200 dscf/min. The visible emissions from the material storage silos shall not exceed 3% opacity.**

Cooling Towers BACT Analysis

The theory behind cooling towers is that heat is transferred from water drops to the surrounding air by the transfer of sensible and latent heat. Cooling towers fall into two main sub-divisions:

(a) Natural draft designs use very large concrete chimneys to introduce air through the media. Due to the tremendous size of these towers (500 ft high and 400 ft in diameter at the base) they are generally used for water flow rates above 200,000 gal/min. Usually these types of towers are only used by utility power stations in the United States.

(b) Mechanical draft cooling towers are much more widely used. These towers utilize large fans to force air through circulated water. The water falls downward over fill surfaces which help increase the contact time between the water and the air. This helps maximize heat transfer between the two.

Most cooling towers are designed as simple wet cooling towers, but few cases show towers designed to operate as a wet-dry cooling towers. A wet-dry cooling tower adds heat to the airflow prior to discharge through the cooling tower fan stack. The discharge air is warmed above the ambient dewpoint to eliminate any visible plume that could cause local environmental concerns or hazards to local roadways.

Cooling tower may be the most overlooked piece of equipment at a source. A cooling tower uses a combination of heat and mass transfer to cool process water. If improperly selected or poorly maintained, it will add financial costs, cause a loss in production due to increases in circulation water temperature and increase electrical operating costs. Emphasis must be placed on properly specified and designed cooling towers that require minimal maintenance. Factors in proper performance of cooling towers are: water flow rate, air flow rate, water inlet/outlet temperatures, and ambient bulb temperature.

SDI -Bar Products Division is proposing the following:

Table 36 - - Cooling Towers

Cooling Towers	Proposed Capacity (gal/min), under SDI, Hendricks, IN	Previous Capacity (gal/min) under Qualitech, IN
Tower 1 - Meltshop Non-Contact Cooling	26,700	12,000
Tower 2 - VTD Contact Cooling	2,000	2,000
Tower 3 - Bar Mill Contact Cooling	9,700	8,850
Tower 4 - Bar Mill Non-Contact Cooling	5,600	- -
Total	44,000	22,850

The capacity of these cooling towers is the amount of water (gal/min) that a cooling tower will cool through a specified range, at a specified approach and wet-bulb temperature.

SDI - Bar Products Division is going to control emissions using drift eliminators. Drift is the circulating water lost from the tower as liquid droplets entrained in the exhaust air stream, expressed in % of circulating water rate, gal/min or ppm. Drift eliminators are assembly of baffles or labyrinth passages, used to separate small droplets of liquid (mist) from gas streams by trapping the mist droplets through inertial impaction. Drift eliminator provides consistent high collection efficiency, requires very little maintenance and helps maintain a healthy work environment with increased productivity.

The following table lists the sources with cooling towers controlled by drift eliminators. The search of the RBLC was not limited to steel mills only. There are few sources with cooling towers with no control specified in the RBLC.

There is also a wide range of limits of particulates because of the different capacity and numbers of cooling towers in a specific source. PM limits range from 0.0009 lb/hr to 1.6 lb/hr. Some BACT limits are also indicated in terms of percent of drifts (0.0005% to 0.01%).

The emissions from the above mentioned cooling towers are minimal (3.95 tons/year).

Table 37 - - Cooling Towers with Drift Eliminators

Acadia, LA	Duke, AR	North American Power, CO	Plaquemine, LA
AES, NJ	Energetix, OK	Nucor Steel, IN	Ponca City Energy, OK
AES, PR	Exxon Mobil, LA	Occidental Chem, LA	Redbud, OK
Arkansas Electric, AR	Formosa Plastics, TX	Power, IA	**SDI, Hendricks, IN**
Charter Steel, WI	Geneva, OK	PPG, LA	Shell, LA
Carville, LA	Liberty Gen NJ	Rocky Mountain Energy, CO	Tenaska, IN
Cleo Midstream, LA	Mustang Power, OK	PREPA, PR	Tenaska, AR
Cogentrix, IN	Mantua Creek, NJ	PCLP, NJ	Texaco, CA
Conoco Charles Refinery, LA	Mueller Casting, MS	Perryville Power, LA	

Based on the information provided above, **the BACT for the cooling towers is the use of drift eliminators. The opacity BACT for the cooling towers shall not exceed 20%.** This is the same opacity limit specified to the most recently issued PSD permits in Indiana with cooling towers in their operations. This is also the same limit specified to the only one cooling tower with opacity limit specified in the RBLC (GenPower, SC)

Slag Handling and Other Related Processing BACT Analysis

Slag will be generated from the EAF and LMF operations. Slag from these operations will be transported to the slag processing area. The slag processing and handling has a nominal rate of 300 tons/hour.

(A) BACT for PM and PM_{10}

Particulate matter emissions are associated with slag pot dumping, deskulling, slag cooling, digging of slag pits by a front-end loader, loading of grizzly feeder by a front-end loader, crushing, screening, conveyor transfer points, loading of materials into piles, wind erosion of storage piles, load out of materials from piles, and vehicle movement around piles. All particulate emissions from slag handling and processing are fugitive in nature.

The emissions from slag handling and processing are controlled from the time the molten slag exits from under the EAF canopy hood, to the time when the slag is fully processed and is shipped off-site. The controls consist of application of water along with slag rock at the bottom of the ladle to control emissions at the slag dumping area. The other handling points will use dust suppressant for control, while the processing equipment will be controlled by baghouses.

The consideration that slag dumping operation inside the melt shop is that the emissions generated from the dumping of slag inside the melt shop would eventually be captured by the roof canopy system and ducted to the melt shop baghouse instead of being directly emitted to the atmosphere at the slag processing area. Conducting the slag dumping operation inside the melt shop would require a front end loader to fill dump trucks inside the melt shop. The additional uncontrolled dust created during slag dumping and loading operations would require an increase in the air flow of the melt shop baghouse or install a separate slag dumping baghouse. The melt shop area would need to be increased in area to accommodate the slag dumping operation Concerns regarding total enclosure are due to possible visibility and safety concerns which could occur. Particulate matter emitted when trapped in an enclosure with large amounts of moisture and heat may create a dense fog inside the structure which would risk the visibility and safety of workers. Heat dissipation is also a concern with a total enclosure being used for control. If dumped inside a concrete surface, explosion may occur. Slag dumping operation inside the melt shop is not feasible.

The OAQ is not aware of any slag dumping enclosure in the country requiring a baghouse or other particulate control device. Totally enclosing the slag dumping area in a building could cause safety concerns and visibility problems within the building.

(B) Existing PM and PM_{10} Emission Limitation

The following table summarizes the Control Methods and Opacity limits of similar sources.

Note: The sources shown below as SDI, Hendricks, IN and Qualitech, IN are one and the same plant under different ownerships.

Previous BACT limitations established for slag processing in Indiana require “no visible emissions (0% opacity)”. Sources subject to this limitation found it to be unattainable within the required safety and product quality standards and have been revised.

Table 38 - - BACT Slag Handling and Related Processing of Similar Sources			
Source Name	Operation	Control Method	Opacity (%)
Arkansas Steel, AR	Paved and Unpaved Roads	Water Application	- -
	Slag Processing	Water Application	- -
Beta Steel, IN	Vehicular Traffic, Material Handling, Paved Roads	Wet Sweeping	3
Chaparral Steel , VA	Scrap Shredder with Cascade Separator	Intrinsically Wet Process, Work Practices	- -
	Unpaved Roads, Storage Piles, Material Transfer	Dust Management Plan, Work Practices	- -
Georgia Pacific, VA	Paved Roads	- -	10
IPSCO Steel, IA	Caster Slab Hand Scarfing	Baghouse	- -
	Plant Roadways	Hard Surface Pavement, Mechanical Sweeping	0
	Tundish Dumping	--	10
	Steel Scrap Cutting	--	- -
	Slag Hauling Roadways	Crushed Stone and Emulsion Spraying	0
Mac Steel, AR	Slag Processing	Water Sprays on Transfer Points	- -
Marathon Ashland, LA	Unpaved Roads	Wetting by Applying 0.01 Inch of Water	- -
Nucor Steel, AR	Slag Processing	Wet Suppression	- -
Nucor Yamato, AR	Slag Processing	Wet Suppression	- -
Nucor Steel, IN	Dumping Storage and Transfer	Watering Piles	5
	Road Transportation	Speed Limit, Vacuuming Sweeping, Dust Suppressant	10
	EAF Slag Pit, Digout Operation	Contained Within Building	5
	Unpaved Roads	Asphalt Application	3
	Open Aggregates Piles	Water spraying	3
	Slag Process	Water Application	10
	Outdoor Scrap Cutting	- -	3
Nucor Steel, NC	Slag Processing	Water Sprays and Slag Pots	10
Nucor Steel, UT	Paved Roads	Sweeping , Water Flushing	10
	Unpaved Roads	Water Spraying Chemical Treatment	20
	Stock Piles, Transfer Points	Fabric Filter	10
	Conveyor Transfer/Drop Points	Water Sprays	10
Nucor Steel, SC	Slag Processing	Use of Slag Pots and water sprays	10
Qualitech, IN	Material Handling, Storage	Covered Conveyor, Work Practices	3
	Bar Cutting	Baghouse (0.01 gr/dscf)	- -
	Material Crushing	Work Practices,	3
SDI, Hendricks, IN	Slag Processing	Water Application	see below table
	Storage Piles	Water Application	
	Unpaved Road	Water Application, Dust Suppressant	
	Paved Roads	Sweeping	
	Raw Material Silo	Bin Vent	
	EAF Dust Silo	Bin Vent	

Table 38 - - BACT Slag Handling and Related Processing of Similar Sources			
Source Name	Operation	Control Method	Opacity (%)
Steel Stone, ME	Aggregate Handling	Wet Suppression	- -
	Roads	Wet Suppression	- -
Tuscaloosa Steel, Al	Roads	Paved, Vacuum or Flush	- -
	DRI Material Handling	Scrubber and Cyclone	- -

(C) Proposed PM/PM_{10} BACT Limit for SDI -Bar Products Division, IN

Based on the evaluation of the information derived from the RBLC, **the BACT for the slag processing is the use of water sprays, minimizing drop heights, performing good practices.** In addition to these measures, **a slag production limitation will be specified at 2,628,000 tons per year.**

The BACT control and limits for the other related operations are as follows. These opacity limits are comparable to other slag processing opacity limits.

Table 39 - - Proposed Opacity Limits	
Slag Handling/Processing Operation	Opacity (%)
Transferring of skull slag to slag pot	10
Pouring of liquid slag from EAF or LMF to slag pots	3
Dumping of liquid slag from slag pot to slag pit and cooling	3
Transferring of skull slag from slag pot to skull pit	5
Digging skull slag pits	5
Digging slag pits	3
Stockpiling of slag adjacent to the grizzly feeder	3
Wind erosion of stockpiles	3
Crushing	3
Screening	3
Conveyor transfer points	3
Continuous stacking of processed slag to stockpiles	3
Loadout of processed slag from stockpiles to haul trucks for shipment	3
Inplant hauling of slag pots (filled) and processed slag	3

The visible emissions from paved roads, unpaved roads and unpaved areas shall not exceed 10% opacity.

Emergency Generators BACT Analysis

SDI -Bar Products Division, IN is proposing to install diesel fueled emergency generator(s), with total nominal capacity of 485 HP.

An emergency generator is a generator whose sole function is to provide back up power when electric power from the local utility is interrupted. Pursuant to a US EPA memo dated September 6, 1995, potential to emit (PTE) of an emergency generator can be determined on a limited 500 hours per year of operation because inherent physical limitations and operational design can be taken into account. This limited hours of operation is an appropriate default assumption for an emergency generator that is expected to operate under worst case condition.

The table below shows the emergency generators in the RBLC with their hours of operations. Shorter hours of operations are taken voluntarily by the Permittee. It is clearly shown that most of the recently issued PSD permits in Indiana specified the limited hours of operation as BACT. This is in addition to performing good combustion practice and using low sulfur fuel.

Table 40 - - Emergency Generators

Source	Limits (hr/yr)	Source	Limits (hr/yr)
Mantua, NJ	100	AES, NJ	500
AES, PR	200	Arcadia, IN	500
Tenaska, IN	250	Cogentrix, IN	500
		Duke, IN	500
		SDI, Hendricks, IN	**500**
		PSEG, IN	500

The proposed BACT for the emergency generator(s) in SDI -Bar Products Division, IN:

(a) Each emergency generator shall not operate more than 500 hours per year.

(b) The sulfur content of the diesel fuel used shall not exceed 0.05 percent by weight.

(c) Good combustion practices shall be performed.

Continuous Emissions Monitoring (CEM)

In many cases where an air pollution control device is used to reduce emissions, continuous emissions monitoring (CEMs) systems are used to document compliance. If properly operated, maintained and calibrated, CEMs are accurate in showing compliance.

The EAF in SDI -Bar Products Division, IN has a control device for CO, VOC and PM only. The OAQ will require CEM systems for CO and VOC to ensure that the DSE air gap and post combustion chamber are being operated properly. For PM, there are no available technologies to directly monitor mass emissions of PM. However, opacity can be used as a surrogate parameter to ensure that the control device is operating properly. The OAQ will require to continuously monitor the opacity from the EAF stack. Since lead is emitted as particulate matter, the monitoring required for PM is sufficient for determining compliance with the lead emission limitation, in addition to routine compliance testing.

For the other regulated pollutants (SO_2 and NO_x) emitted from the EAF, there are no control devices used to lower emissions. Instead process controls and operating practices are used to control SO_2 and NO_x emissions. SO_2 emissions are directly proportional to the amount of sulfur being introduced into the process. Based on a mass balance of sulfur entering and exiting the EAF, a limitation has been established for the sulfur content of the raw materials which will ensure that the SO_2 limitation is not exceeded. Since sulfur content of the raw materials entering the EAF can be directly monitored, the OAQ does not believe it is necessary to use a CEM to monitor the SO_2 emissions. More frequent stack testing will provide enough information to assess compliance with SO_2 and NO_x limits.

The Permittee will be required to operate these monitors continuously and for the operating life of the mill. Relative accuracy test audits (RATA) are normally monitored by the OAQ. The results of the RATA is public information along with the emissions reports required to be submitted.

Endangered Species

The Clean Air Act (CAA) does not contain or express requirement for the applicant or the permitting agency to analyze or consider the impact of hazardous air pollutants on endangered species when applying for or making a decision on a PSD permit. The CAA only requires impacts to endangered species be considered when the US EPA modifies the HAPs list or promulgates a NESHAP. (42 USC 7412). In addition, Indiana's state rules do not require the performance of studies or analyses to determine the effect of toxic emissions from a source on federal or state-listed endangered species in the PSD permitting process. Endangered species are protected under state and federal laws which prohibit the unlawful taking of an endangered species. IC 14-22-34 and 16 USC 701 et. seq.

The OAQ is not aware of any federally-listed endangered species within the vicinity of this mill. Therefore, emissions from this mill will not adversely affect any federally-listed endangered species nor any state-listed endangered species.

Public Health and Safety

The OAQ takes its responsibility seriously for issuing technically sound permits that are protective of public health. Within the boundaries of the law, the OAQ has conducted appropriate analysis of the impacts of this mill on human health. State Implementation Plan (SIP) requirements are examples of health-based standards, because the SIP requirements were proposed by the state and approved by the U.S. EPA for the purposes of maintaining the NAAQS. These standards are health-based standards and based on the assessment of public health risks associated with certain levels of pollution in the ambient environment. The CAA requires each state to develop air quality plans and outlines how the standards will be met.

Detailed analysis and results of hazardous air pollutants from this mill are specified in Appendix C.

For some pollutants, such as lead, U.S. EPA has established ambient levels that are protective of human health. Anticipated emissions can be modeled and the resulting ambient levels compared to the federal standard. If levels are not expected to increase above U.S. EPA's ambient standard, it is appropriate to conclude that the proposed facility will not pose an increased threat to public health. In this case, based on PTE calculations of the proposed modification, lead is not expected to increase above the PSD significant level.

SDI -Bar Products Division cannot sell steel which contains any radioactive quantities. Therefore, there is great incentive to keep radioactive material from being accepted as scrap metal. The scrap management plan can be specified not to accept any loads of scrap material if radioactive materials or radiation sources are detected. The OAQ is not aware that radioactive materials will be used in this process

Noise Pollution

The OAQ does not have jurisdiction over noise pollution. There is no expected increase in noise level due to this proposed modification.

Environmental Justice (EJ)

Based on the 2000 US Census, there are 12.5% of Indiana residents who identified themselves as racial minority. An area is classified as High Racial Minority if it falls between 18.75% to 24.99 %. Hendricks County, IN, where SDI -Bar Products Division is located at, is not showing to be under this classification.

Based on the 1990 US Census, 28% of Indiana residents lived in households that received an income less than or equal to twice the poverty level. This is classified as Low Income Household. Hendricks County, IN is not showing to be under this classification.

If the source being reviewed is going to be located in an area considered to be either a High Racial Minority or Low Income Household, the OAQ attempts to published the notice for public review in a non-English newspaper, and holds public meeting prior to the issuing a final action. Since Hendricks County is neither of these classifications, the OAQ will publish the notice in the most circulated newspaper in the area.

For more information on EJ, please refer to http://www.in.gov/idem/environmetaljustice.

Environmental Impact and Assessment

Title 326 of the Indiana Administrative Code (IAC) lays out the requirements to regulate air emissions from sources in Indiana. 326 IAC 16 provides regulations for performing environmental assessments and environmental impact studies for recommendations or reports on proposals for legislation and other "major state actions significantly affecting the quality of the human environment." However, under 326 IAC 16-1-3(g), there are specific statutory exemptions to this requirement. One of these exemptions is the issuance of a license or permit by any agency of the state, as exempted by IC 13-1-10-6. This Indiana Code has been recodified to Indiana Code (IC) 13-12-4-8 on July 1, 1998. This recodification has no substantive effect on rule 326 IAC 16-1-3(g) as stated in IC 13-12-1-5. 326 IAC 16 and the Indiana Code 13-12-4-8 specifically states that an environmental impact statement is not required under state law for the issuance of a license or permit by any state agency. Therefore, no environmental impact statement under 326 IAC 16 has been performed for this permit. Similar provisions exempt PSD permit actions from the National Environmental Policy Act (15 USC 793(c)(1)).

LAER

The OAQ has the authority to permit an applicant pursuant 326 IAC 2-3 (Nonattainment Rules), only when the source is located in a designated nonattainment area as specified in 40 CFR 81.315. Hendricks County has been designated as attainment area in 40 CFR 81.315. Therefore, the OAQ does not have the authority to require lowest achievable emission rate (LAER).

However, in doing the analysis for BACT which is required by the PSD rules, there are several instances where BACT is equivalent to LAER. For instance, the PM limitations for the EAF is lowest limitation established for this type of facility.

Indiana Department of Environmental Management
Office of Air Quality

Appendix C - - Air Quality Impact Analysis - - for a Prevention of Significant Deterioration (PSD) and Part 70 Significant Source Modification (SSM)

Source Background and Description

Source Name:	Steel Dynamics, Inc. (SDI) - Bar Products Division
Source Location:	8000 North County Road 225 East, Pittsboro, IN 46167
Mailing Address:	8000 North County Road 225 East, Pittsboro, IN 46167
General Telephone Number:	317/892-7000
Responsible Official:	Plant Manager
County:	Hendricks
SIC Code:	3312 (Steel Mill)
NAICS Code:	331211
Source Categories:	1 of 28 Listed Source Categories Major PSD Source Minor Source under Section 112 of the CAA
Significant Source Modification:	PSD 063-16628-00037
Permit Reviewer:	Michael Mosier

Introduction

Steel Dynamics, Inc., (SDI) has applied for a Prevention of Significant Deterioration (PSD) Permit to operate a steel mill in Hendricks County, Indiana. This mill was formerly permitted as Qualitech Steel. The site is located in Pittsboro at Universal Transverse Mercator (UTM) coordinates 544000 East and 4414000 North. The proposed steel mill will have a maximum production rate of 125 tons per hour. The plant will incorporate one electric arc furnace, a ladle metallurgy furnace, ladle preheaters/dryers, a vacuum tank degasser boiler, a reheat furnace, and associated ancillary processes. Hendricks County is designated attainment for all criteria pollutants. All air quality modeling and analysis treats the proposed steel mill as an existing major source.

The air quality impact analysis portion of the permit application is to accomplish the following objectives which are individually addressed in this document.

A. Establish which pollutants require an air quality analysis.

B. Provide analysis of actual stack height with respect to Good Engineering Practice (GEP).

C. Determine the significant impact area of the source's emissions and establish background air quality levels.

D. 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.

E. Perform analysis of any air toxic compound for a health risk factor on the general population.

F. Perform a qualitative analysis of the source's impact on general growth, soils, vegetation 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 more than 100 kilometers from the proposed site in Hendricks County, Indiana.

G. Summary of Air Quality Analysis

Keramida Environmental prepared the PSD permit application for SDI. The permit application was received by the Office of Air Quality (OAQ) on December 30, 2002. Revised modeling amendments were received on February 10, 2003 and March 28, 2003. This document provides the Air Quality Modeling Section's review of the PSD permit application including an air quality analysis performed by OAQ.

Pollutants Analyzed for Air Quality Impact

The PSD requirements, 326 IAC 2-2, apply in attainment and unclassifiable areas and require an air quality impact analysis of each regulated pollutant emitted in significant amounts by a major stationary source or modification. Significant emission levels for each pollutant are defined in 326 IAC 2-2-1. Particulate Matter less than 10 microns (PM_{10}), Sulfur Dioxide (SO_2), Nitrogen Dioxide (NO_2), Volatile Organic Compounds (VOC)(an Ozone (O_3) precursor), Carbon Monoxide (CO), and Lead (Pb), are the pollutants that will be emitted from the steel mill. Therefore, an air quality analysis is required for these pollutants which exceeded their significant emission rates as shown in Table 1:

TABLE 1 - - Significant Emission Rates for PSD

Pollutant	Source emission rate (Facility totals) (tons/year)	Significant emission rate (tons/year)	Preliminary AQ analysis required
PM_{10}	98.77	15.0	Yes
NO_2	314	40.0	Yes
O_3 (VOCs)	79.7	40.0	No
CO	1225.8	100.0	Yes
Pb	.33	0.6	No
SO_2	401.98	40	Yes

Stack Height Compliance with Good Engineering Practice (GEP)

Stacks should comply with GEP requirements established in 326 IAC 1-7-1. If stacks are lower than GEP, excessive ambient concentrations due to aerodynamic downwash may occur. Stacks, which are taller than 65 meters (213 feet) are limited to GEP, stack height for establishing emission limitations. The GEP stack height takes into effect the distance and dimensions of nearby structures, which will affect the downwind wake of the stack. The downwind wake is considered to extend five times the lesser of the structure's height or width. A GEP stack height is determined for each nearby structure by the following formula:

$$Hg = H + 1.5L$$

Where: Hg is the GEP stack height
H is the structure height
L is the structure's lesser dimension (height or width)

Since the stack heights of the proposed facility were below GEP stack height the effect of aerodynamic downwash will be accounted for in the air quality analysis for the proposed steel mill.

Significant Impact Level/Significant Impact Area (SIA) and Background Air Quality Levels

Keramida Environmental performed an air quality modeling analysis to determine if the source exceeded the PSD significant impact levels (concentrations). If the source's concentrations exceed these levels, further air quality analysis is required. For PM_{10}, SO_2, and NO_2, refined modeling is required since maximum off-property concentrations are above significant impact levels. Refined modeling for CO is not required because it did not exceed its significant impact level. Significant impact levels for Class II PSD areas are defined by the following time periods in Table 2 with all maximum modeled concentrations from the source.

TABLE 2 - - Significant Impact Analysis

Pollutant	Time averaging period	Maximum modeled impacts (ug/m^3)	Significant impact level (ug/m^3)	Refined AQ analysis required
PM_{10}	24 Hour	23.1	5	Yes
PM_{10}	Annual	4.6	1	Yes
NO_2	Annual	4.7	1	Yes
CO	1 Hour	286.7	2000	No
CO	8 Hour	113.4	500	No
SO_2	3 Hour	181.1	25	Yes
SO_2	24 Hour	54.1	5	Yes
SO_2	Annual	.6	1	No

OAQ performed SIA modeling and obtained the same results.

O_3 does not have a significant impact level to determine whether modeling is needed. The significant emission rate for VOCs and NOx is used to determine the need for O_3 modeling. OAQ's policy is to perform an air quality analysis for O_3 since the source's NOx emissions exceed the significant emission rate.

The Reactive Plume Model-IV (RPM-IV) was used to calculate the O_3 concentrations as a result of VOC and NOx emissions from the point source. Results of this ozone modeling is described in more detail in Part D of this document.

Like O_3, Pb has no significant impact level. The source did not exceed the Pb significant emission rate and refined modeling was not required for Pb. Pb modeling was still performed on this pollutant as a precautionary measure.

Pre-Construction Monitoring

Modeling results indicate that of the pollutants, which exceeded significant emission rates, PM_{10} and SO_2 impacts were above pre-construction monitoring de-minimis levels specified in 326 IAC 2-2. Table 3 shows the results of the preconstruction monitoring analysis.

TABLE 3 - - Pre-construction Monitoring Analysis

Pollutant	Averaging period	Maximum concentration (ug/m^3)	De minimis value (ug/m^3)	Above De minimis value
PM_{10}	Highest 24-Hour	23.1	10.0	Yes
NO_2	Annual	4.7	14.0	No
VOC (Ozone)	Tons/Year	79.7	100.0 tons/yr	No
CO	Highest 8-Hour	113.4	575.0	No
Pb	Calendar Quarter	.008	0.1	No
SO_2	Highest 24 Hour	54.1	13	Yes

SDI Steel can satisfy the one-year preconstruction monitoring requirement for PM_{10} and SO_2 since there is existing air quality monitoring data representative of the area.

Table 4 shows the locations and concentrations.

TABLE 4 - - Existing monitoring data used for Background Concentrations (1999-2001)

Pollutant	Monitoring site (Hendricks County)	Averaging period	Concentration (used in NAAQS analysis) (UG/M^3)
PM_{10}	CR 800N and CR 275E	2nd high 24 hour Annual	57.3 31.3
SO_2	CR 800N and CR 275E	2nd high 3 hour 2nd high 24 hour Annual	550 113 15.7
NO_2	CR 800N and CR 275E	Annual	62.0

EPA's "Ambient Monitoring Guidelines for Prevent of Significant Deterioration" (EPA-450/4-87-007) Section 2.4.1 is cited for approval of the regional monitoring sites for this area. The results from these monitoring sites are considered conservative because of the influence of the inventory sources in the monitoring are already in the modeling and thereby are double counted. Qualitech operated 3 monitoring sites that measured PM_{10}, SO_2, NO_2, and CO in the vicinity of the mill.

Background Concentrations

Background concentrations for use in the NAAQS analysis were required since the results of the consultant's modeling for PM_{10}, SO_2, and NO_2 concentrations exceeded the significant impact levels. Existing monitoring data used for the background concentrations are located in Table 4. For all 3 hour and 24 hour background concentrations, the averaged second highest monitoring values were used. All annual background concentrations were taken from maximum annual values. This policy for establishing background concentrations allows for a more conservative view of ambient air quality to insure a worst-case scenario.

OAQ Ozone Analysis

Ozone formation tends to occur in hot, sunny weather when NOx and VOC emissions photochemically react to form ozone. Many factors such as light winds, hot temperatures and sunlight are necessary for higher ozone production

OAQ incorporates a three-tiered approach in evaluating ozone impacts from a single source. The first step is to determine how VOC emissions from the new source compares to area-wide VOC emissions from Hendricks County. Results from this analysis show SDI's 80 tons per year of VOC would comprise 1.4% of the area-wide VOC emissions from point, area, onroad and nonroad mobile source and biogenic (naturally-occurring emissions from trees, grass and plants) emissions. For NOx, the 314 tons per year would comprise 4.2% of the area-wide NOx emissions.

A second step is to review historical monitored data to determine ozone trends for an area. The nearest ozone monitor within the facility is the Avon monitor in Hendricks County. The highest value for the Avon monitor for the 1-hour ozone standard is 94 parts per billion (ppb).

A third step in evaluating the ozone impacts from a single source is to estimate the source individual impact through a screening procedure. The Reactive Plume Model-IV (RPM-IV) has been used in past air quality reviews to determine 1-hour ozone impacts from single VOC/NOx source emissions. RPM-IV is listed as an alternative model in Appendix B to the 40 Code of Federal Register Part 51, Appendix W A Guideline on Air Quality Models. The model is unable to simulate all meteorological and chemistry conditions present during an ozone episode (period of days when ozone concentrations are high). Results from RPM-IV are an estimation of potential ozone impacts. Modeling for 1-hour ozone concentrations was conducted for a typical high ozone day to compare to the ozone National Ambient Air Quality Standard (NAAQS) limit. The maximum cell concentration of ozone for each time and distance specified was used to compare to the ambient ozone. OAQ modeling results are shown in Table 5 below. The impact (difference between the plume-injected and ambient modes) from SDI was 0.0 ppb. All ambient plus plume-injected modes were below the NAAQS limit for ozone at every time period and every distance. No modeled 1-hour NAAQS violations of ozone occurred.

TABLE 5 - - SDI NAAQS Analysis for Ozone

Simulation time (minutes)	Distance (meters)	Ambient mode simulation (ppb)	Plume injected simulation(ppb)	Difference plume - ambient (ppb)
0	100	51	51	0.0
60	6390	65.1	64.4	-.7
120	13700	80.1	79.8	-.3
180	20800	95.6	95.4	-0.2
240	27500	111	110	-1
300	36200	121	121	0.0
360	48400	128	127	-1
420	62200	132	130	-2
480	83100	133	130	-3
540	101000	134	130	-4
600	117000	135	131	-4
720	125000	135	131	-4

All ambient plus plume injected modes are below the NAAQS limit for every time period and every distance. The proposed steel mill's impact is less than 3ppb and will not violate the NAAQS standard of 120 ppb for O_3. Since no modeled NAAQS violations occurred, further modeling for O_3 impacts from this source is not required.

Analysis of Source Impact on NAAQS and PSD Increment for PM10, SO_2, NO_2, CO, and Pb

Keramida Environmental's modeling used Industrial Source Complex Short Term (ISCST3) Version 00101 for PM_{10}, SO_2, NO_2, CO, and Pb emissions for NO_2. OAQ modeling used the BEELINE ISCST3 model, Version 02035, for checking all modeling. Building downwash was taken into account since SDI Steel stacks did not meet GEP stack height.

The meteorological data used in the ISCST3 models consisted of surface data from the Indianapolis National Weather Service station merged with the mixing height from greater Peoria Airport in Peoria, Illinois for the five-year period (1990-1994). The meteorological data was obtained from the EPA Support Center for Regulatory Air Models' Electronic Bulletin Board and processed using EPA procedures. For the full impact modeling analysis, Keramida Environmental utilized a Cartesian grid network with receptors spaced 100 meters apart around and near the property boundary for aerodynamic building downwash. A total of 451 receptors were used extending out to 10 kilometers from the mill. OAQ utilized the same receptor network in their modeling. The emission rates listed in the March 28, 2003, letters are used in the modeling. OAQ reran the modeling using ISCST3.

The consultant used Building Profile Input Program (BPIP) for calculating the wind direction specific building heights and widths of the structure for input to the ISC3 model. OAQ used BEELINE's GEP-BPIP Version 5.1 for their building height and width calculations for input to the

ISC3 model. These calculations take into account the influence of building wake effects for the steel mill. The Schulman - Scire building downwash algorithm was used in the ISC3 since the stack heights were not at GEP.

NAAQS Compliance Analysis and Results

Emission inventories of PM_{10}, SO_2, and NO_2, sources within a 50 kilometer radius of the proposed facility site were supplied to the consultants by IDEM from EPA's Aerometric Information Retrieval System (AIRS). Any source that modeled less than the significant impact in the significant impact area of the steel mill was eliminated from the NAAQS and PSD inventories and was not included in refined air quality modeling.

NAAQS modeling for second highest 24 hour and annual concentrations for PM_{10}; second highest 3 hour, second highest 24 hour and annual concentrations for SO_2; and annual concentrations for NO_2 was conducted and compared to the respective NAAQS limit. OAQ modeling results are shown in Table 6. All maximum-modeled concentrations of PM_{10}, SO_2, and NO_2, for every time-averaged period during the five years, were below NAAQS limits and further modeling was not required. Refined NAAQS modeling for CO is not required because it did not exceed its significant impact level (see Table 2).

Keramida Environmental analysis of Pb included running the ISCST3 model using all 5 meteorological years divided into calendar quarters. The maximum predicted concentration was well below the monitoring de minimis concentration and the NAAQS. OAQ's analysis of Pb included using the ISCST3 model and the 5 meteorological years divided into calendar quarters. OAQ's modeling showed similar concentrations. Since the Pb emission rate is below the significant emission rate as well as below the monitoring de minimis concentration and is below the NAAQS, no further modeling was required.

TABLE 6 - - NAAQS Analysis

Pollutant	Year	Time-averaging period	Maximum concentration (ug/m^3)	Background concentration (ug/m^3)	Total (ug/m^3)	NAAQS limit (ug/m^3)
PM10	1994	2nd high 24 hour	22.2	57.3	79.5	150
PM10	1994	Annual	4.59	31.3	35.9	50
SO_2	1993	2^{nd} high 3 hour	274.4	550	824.4	1300
SO_2	1994	2^{nd} high 24 hour	85.2	113	198.2	365
SO_2	1991	Annual	8.1	10.5	18.6	80
NO_2	1990	Annual	4.7	62	66.7	100

Analysis and Results of Source Impact on PSD Increment

Maximum allowable increases (PSD increments) are established by 326 IAC 2-2 for PM_{10}, SO_2 and NO_2. This rule also limits a source to no more than 80 percent of the available PSD increment to allow for future growth. Since the impacts for PM_{10}, SO_2, and NO_2 from the steel mill

modeled above significant impact levels, a PSD increment analysis for the existing major sources in Hendricks County and its surrounding counties was required.

TABLE 7 - - PSD Increment Analysis

Pollutant	Year	Time-averaging period	Maximum concentration (ug/m^3)	PSD increment (ug/m^3)	Percent impact on the PSD increment
PM_{10}	1994	2nd high 24 hour	22.2	30	76.6
PM_{10}	1994	Annual	4.59	17	27.6
SO_2	1991	2nd high 3 hour	170.1	512	33.2
SO_2	1991	2nd high 24 hour	33.1	91	36.3
SO_2	1991	Annual	.561	20	3
NO_2	1990	Annual	4.7	25	18.8

Table 7 shows the maximum concentrations for each pollutant during the five-year period (1990-1994) and the percent of the available PSD increment used. Results of the PSD increment analysis for PM_{10}, NO_2, and SO_2 showed no violations of the 80 percent available PSD increment for any of the pollutants for any of the time-averaged periods.

Hazardous Air Toxics Analysis and Results

The Office of Air Management presently requests data concerning the emission of 189 Hazardous Air Pollutants (HAPs) listed in the 1990 Clean Air Act Amendments (CAAA) which are either carcinogenic or otherwise considered toxic and may be used by industries in the State of Indiana. These substances are listed as air toxic compounds on the State of Indiana, Department of Environmental Management, Office of Air Quality's construction permit application Form Y. Any one HAP over 10 tons/year or all HAPs with total emissions over 25 tons/year will be subject to toxic modeling analysis

As a precautionary measure, OAQ modeled the toxics using ISCST3 and compared the maximum-modeled 8-hour concentration with the 0.5% Permissible Exposure Limit (PEL) value and the National Air Toxic Assessment/ Cumulative Exposure Project (NATA/CEP) annual benchmarks. The maximum-modeled concentrations are shown in Table 8.

TABLE 8 - - Air Toxic Analysis

Pollutant	Maximum 8 hr concentration (ug/m3)	0.5% of PEL (ug/m3)	Maximum concentration (ug/m3)	NATA/CEP benchmark
Antimony	.00757	2.5	--	No
Arsenic	.00580	.05	.00048	.00023
Benzene	.0116	16	.00097	.13
Benzo(a)anthracene	000	--	0	.00091
Benzo(a)pyrene	000	--	0	.00091
Benzo(b)fluoranthene	000	--	0	.00091
Benzo(k)fluoranthene	000	--	0	.00091
Beryllium	.00006	.01	.00001	.00042
Cadmium	.02786	.025	.00229	.00056
Chromium VI	.2325	2.5	.01895	.000083
Chrysene	000	--	0	.091
Cobalt	.0053	.50	.00043	--
Dibenz(ah)anthracene	000	--	0	--
Dichlorobenzene	.0007	2250	.00008	.091
7,12-Dimethylbenz(a)anthracene	000	--	0	.000014
Formaldehyde	.0451	4.65	.00493	.077
Hexane	1.17	9000	0.13	--
Indeno(1,2,3-cd)pyrene	000	--	0	--
Manganese	1.05	25	0.0856	--
Mercury	.00404	.50	.00018	--
Naphthalene	.00038	250	.00004	--
Nickel	.3373	5	.0027	.0038
Selenium	.00758	1	.00062	--
Toluene	.43192	3750	.013	--

Additional Impact Analysis

Economic Growth and Impact of Construction Analysis

The SDI Steel's PSD permit application provided an additional impact analysis performed by Keramida Environmental. This analysis included an impact on economic growth, soils, and vegetation. The air quality impact due to the associated residential growth will be in the form of additional automobile and home furnace emissions, which will have negligible impact due to emissions, being dispersed over a large area. Commercial growth is expected to occur at a gradual rate. Thus, there should be negligible impact on air quality in the area as a result of the construction and growth in the area.

Soils Analysis

Secondary NAAQS limits were established to protect general welfare, which includes soils, vegetation, animals and crops. Soil types in Hendricks County are of the Loamy Glacial Till, Moderate Thick Loess Over Loamy Glacial Till, and Thin Loess Over Loamy Glacial Till. The general landscape consists of flat to gently rolling terrain (1816-1966 Natural Features of Indiana - Indiana Academy of Science). According to the modeled concentrations of VOC and HAPs analysis, the soils will not be adversely affected by the facility.

Vegetation Analysis

Due to the agricultural nature of the land, crops in the Hendricks County area consist mainly of corn, wheat and soybeans (1997 Agricultural Census for Hendricks County). The maximum modeled concentrations for SDI 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 Hendricks County consist mainly of hogs, beef and milk cows (1992 Agricultural Census for Hendricks County) and will not be adversely impacted from the facility. Trees in the area are mainly hardwoods. These are hardy trees and no significant adverse impacts are expected due to modeled concentrations.

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 includes 12 species of mussels, 4 species of birds, 2 species of bat and butterflies and 1 species of snake. 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 further. The mussels and birds listed are commonly found along major rivers and lakes while the bats are found near caves. A detailed listing of Federal and State endangered species for Indiana can be found on the internet at www.in.gov/dnr/naturepr/species/. The impacts from SDI's facility are not expected to adversely impact these species.

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 further.

The state of Indiana 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.

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 steel mill is Mammoth Cave National Park located approximately 290 km to the south in Kentucky well outside the 100 km Class I range requiring a Class I visibility analysis. SDI will be required to meet opacity limits. The visibility impacts in the immediate vicinity of the mill should be negligible since these limits reduce the events of visible plumes. Finally, the results of the additional impact analysis conclude the operation of the SDI's steel mill will have no significant impact on economic growth, soils, vegetation or visibility in the immediate vicinity or on any Class I area.

Summary of Air Quality Analysis

SDI Steel has applied for a PSD construction permit to construct a steel mill in Pittsboro, Hendricks County, Indiana. The PSD application was prepared by Keramida Environmental Indianapolis, Indiana. Hendricks County is designated as attainment for all criteria pollutants. PM_{10}, SO_2, NO_2, and CO emission rates associated with the proposed steel mill exceeded the respective significant emission rates. RPM-IV modeling results showed the steel mill will not contribute or violate the NAAQS for O_3. Modeling results taken from the latest version of the ISCST3 model showed PM_{10}, SO_2, and NO_2 impacts were predicted to be greater than the significant impact level. CO was below the significant impact level. Refined modeling for CO was not required. Pb was below its significant emission rate and below the monitoring de minimis levels. Refined modeling for lead was not required. Refined modeling for PM_{10}, SO_2, and NO_2 showed no violations of the NAAQS. PSD increment consumption analysis was necessary for PM_{10}, SO_2, and NO_2. Results from the PSD increment analysis for the proposed steel mill showed no increment consumption above 80% of the available PSD increment for any pollutant. An air toxic analysis was performed. Cadmium was the toxic concentration above .5% of the PEL. Arsenic, Cadmium, Chromium were above the NATA/CEP benchmarks. Based on distance and opacity limits, visibility impacts will be negligible. The nearest Class I area is Mammoth Cave National Park in Kentucky which is 290 kilometers. Additional impact analysis showed no significant impact on economic growth, soils, vegetation or visibility in the areas surrounding the proposed steel mill.